



wwPDB EM Validation Summary Report ⓘ

Nov 8, 2022 – 07:36 AM JST

PDB ID : 5YWB
EMDB ID : EMD-6851
Title : Structure of pancreatic ATP-sensitive potassium channel bound with Mg-ADP
(CTD class2 at 5.2Å)
Authors : Chen, L.; Wu, J.X.
Deposited on : 2017-11-29
Resolution : 5.20 Å(reported)

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

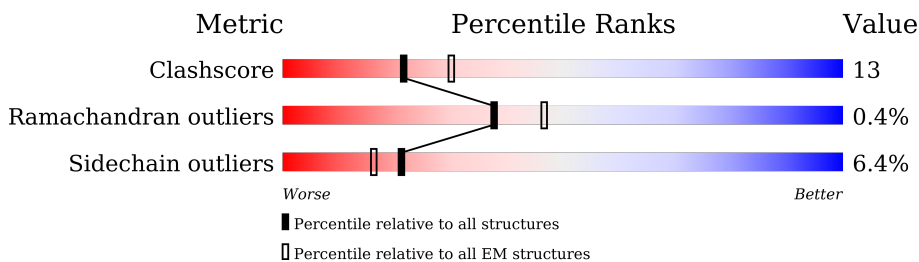
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

1 Overall quality at a glance

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

The reported resolution of this entry is 5.20 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	390	7% (Poor fit), 54% (0 outliers), 26% (1 outlier), 17% (2+ outliers)
1	C	390	7% (Poor fit), 53% (0 outliers), 26% (1 outlier), 17% (2+ outliers)
1	E	390	7% (Poor fit), 54% (0 outliers), 25% (1 outlier), 17% (2+ outliers)
1	G	390	7% (Poor fit), 53% (0 outliers), 26% (1 outlier), 17% (2+ outliers)
2	B	1582	26% (Poor fit), 61% (0 outliers), 21% (1 outlier), 16% (2+ outliers)
2	D	1582	26% (Poor fit), 61% (0 outliers), 21% (1 outlier), 16% (2+ outliers)
2	F	1582	26% (Poor fit), 61% (0 outliers), 21% (1 outlier), 16% (2+ outliers)
2	H	1582	26% (Poor fit), 61% (0 outliers), 21% (1 outlier), 16% (2+ outliers)

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 50928 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called ATP-sensitive inward rectifier potassium channel 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	325	Total 2424	C 1565	N 417	O 427	S 15	0	0
1	C	325	Total 2424	C 1565	N 417	O 427	S 15	0	0
1	E	325	Total 2424	C 1565	N 417	O 427	S 15	0	0
1	G	325	Total 2424	C 1565	N 417	O 427	S 15	0	0

- Molecule 2 is a protein called ATP-binding cassette sub-family C member 8 isoform X2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	1322	Total 10225	C 6658	N 1727	O 1787	S 53	0	0
2	D	1322	Total 10225	C 6658	N 1727	O 1787	S 53	0	0
2	F	1322	Total 10225	C 6658	N 1727	O 1787	S 53	0	0
2	H	1322	Total 10225	C 6658	N 1727	O 1787	S 53	0	0

- Molecule 3 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
3	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	B	1	Total	C	N	O	P	0
			54	20	10	20	4	
3	B	1	Total	C	N	O	P	0
			54	20	10	20	4	
3	C	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	D	1	Total	C	N	O	P	0
			54	20	10	20	4	
3	D	1	Total	C	N	O	P	0
			54	20	10	20	4	
3	E	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	F	1	Total	C	N	O	P	0
			54	20	10	20	4	
3	F	1	Total	C	N	O	P	0
			54	20	10	20	4	
3	G	1	Total	C	N	O	P	0
			27	10	5	10	2	
3	H	1	Total	C	N	O	P	0
			54	20	10	20	4	
3	H	1	Total	C	N	O	P	0
			54	20	10	20	4	

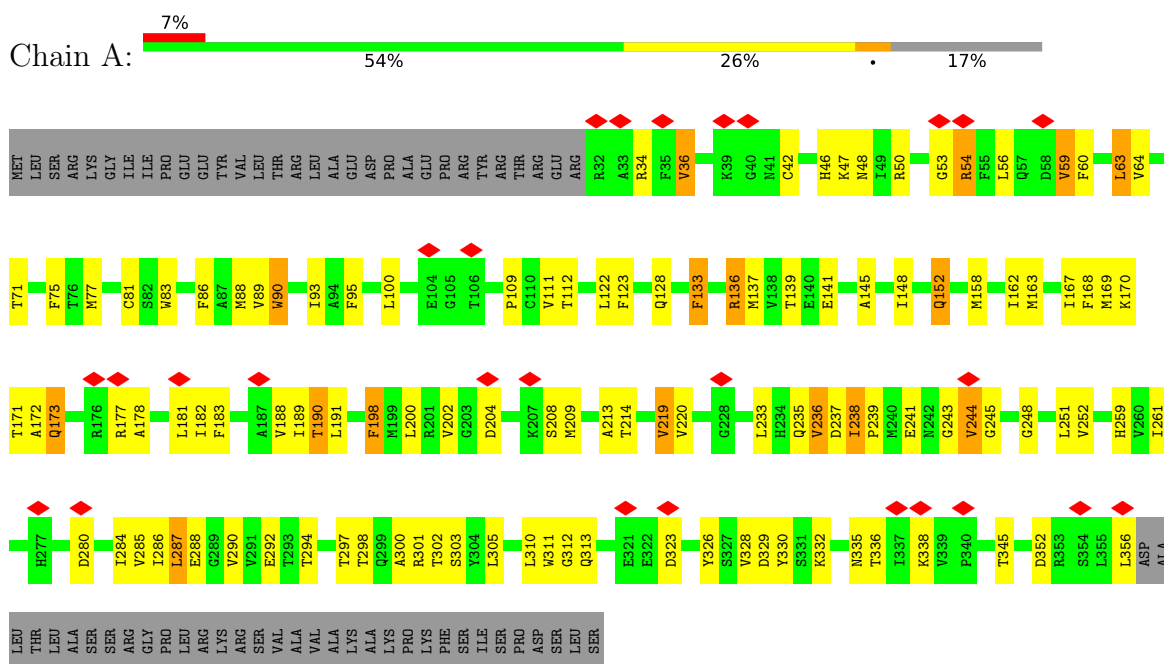
- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
4	B	2	Total 2	Mg 2	0
4	D	2	Total 2	Mg 2	0
4	F	2	Total 2	Mg 2	0
4	H	2	Total 2	Mg 2	0

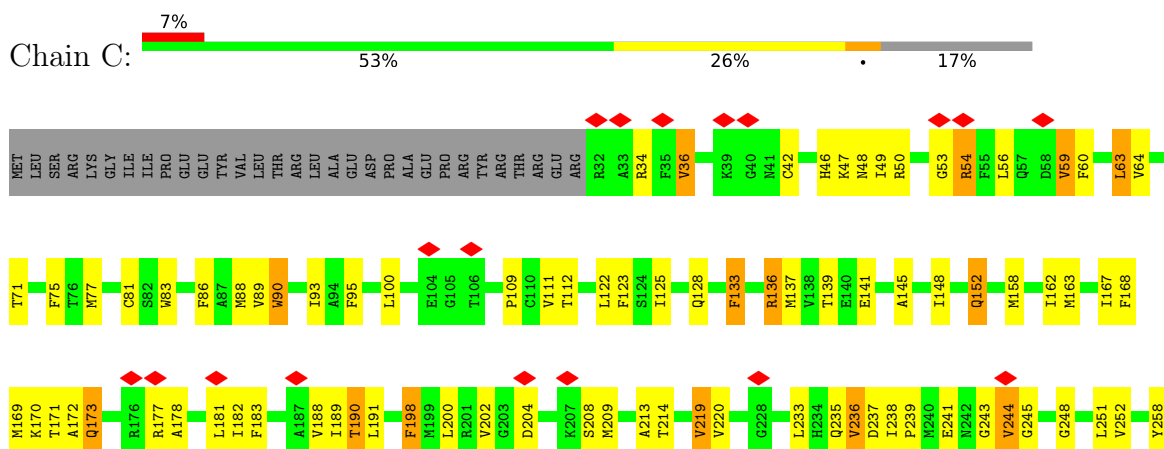
3 Residue-property plots [i](#)

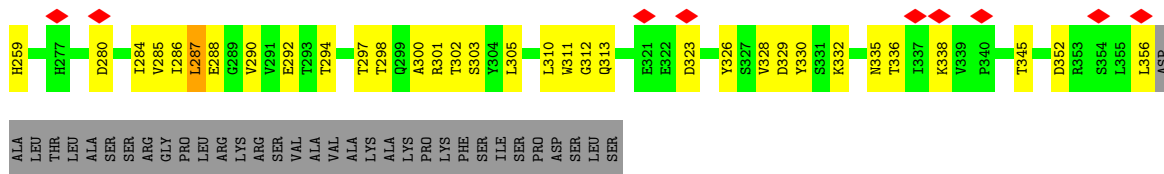
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: ATP-sensitive inward rectifier potassium channel 11

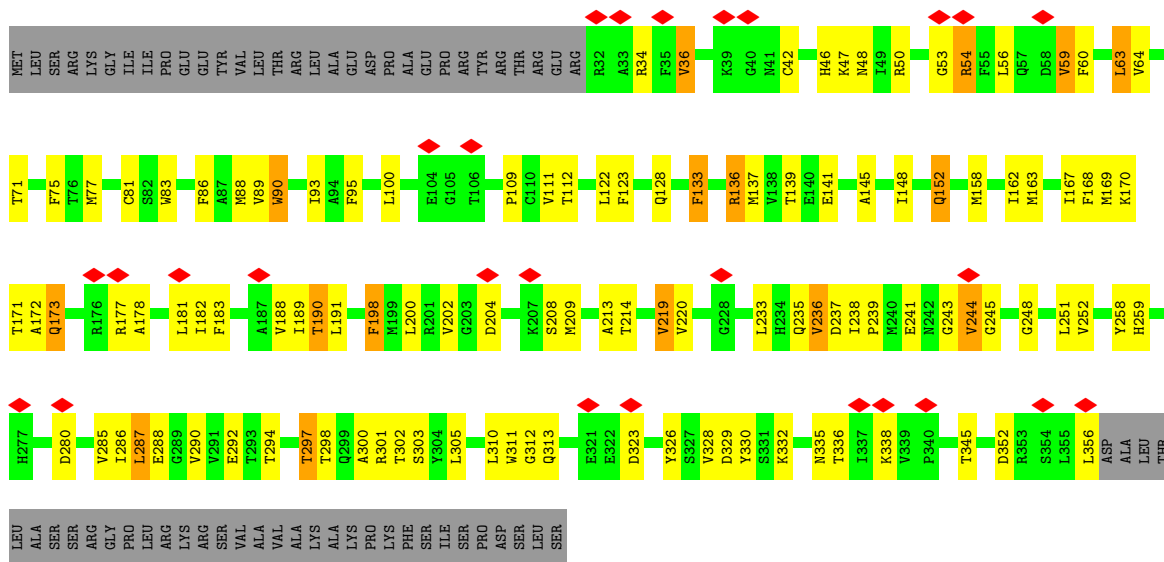


- Molecule 1: ATP-sensitive inward rectifier potassium channel 11

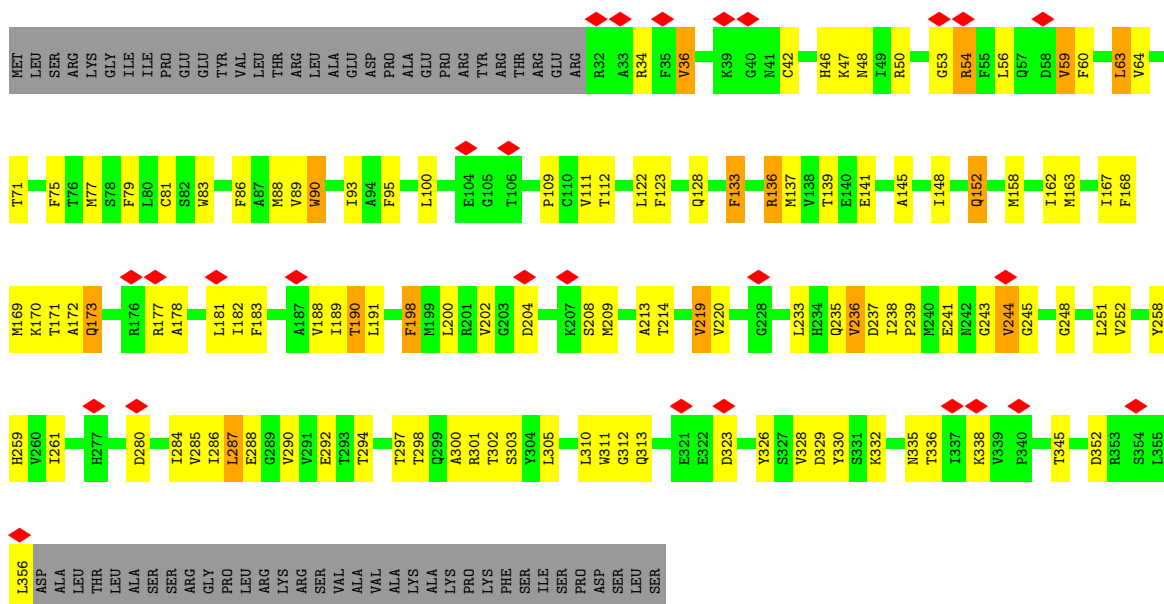




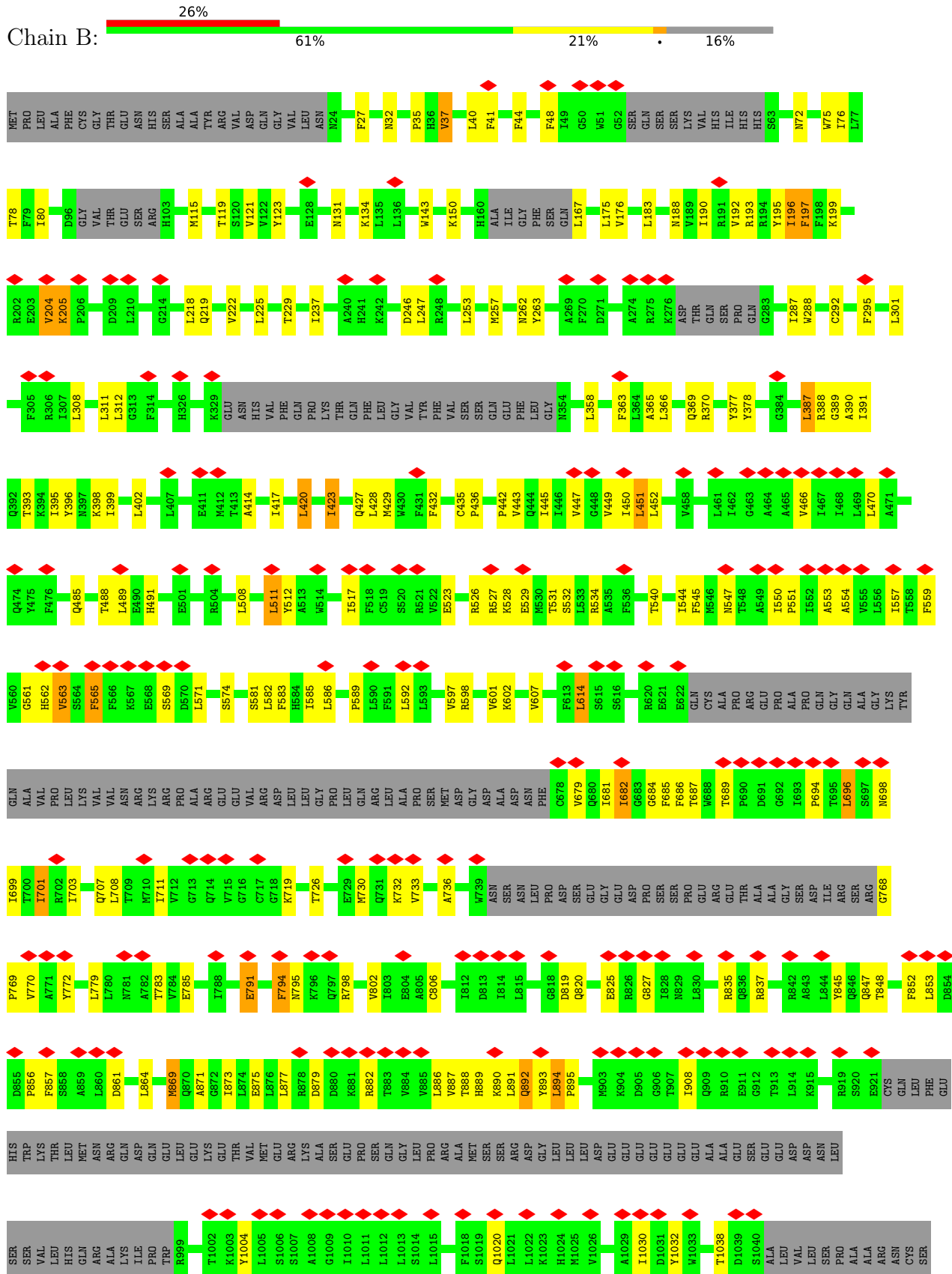
• Molecule 1: ATP-sensitive inward rectifier potassium channel 11

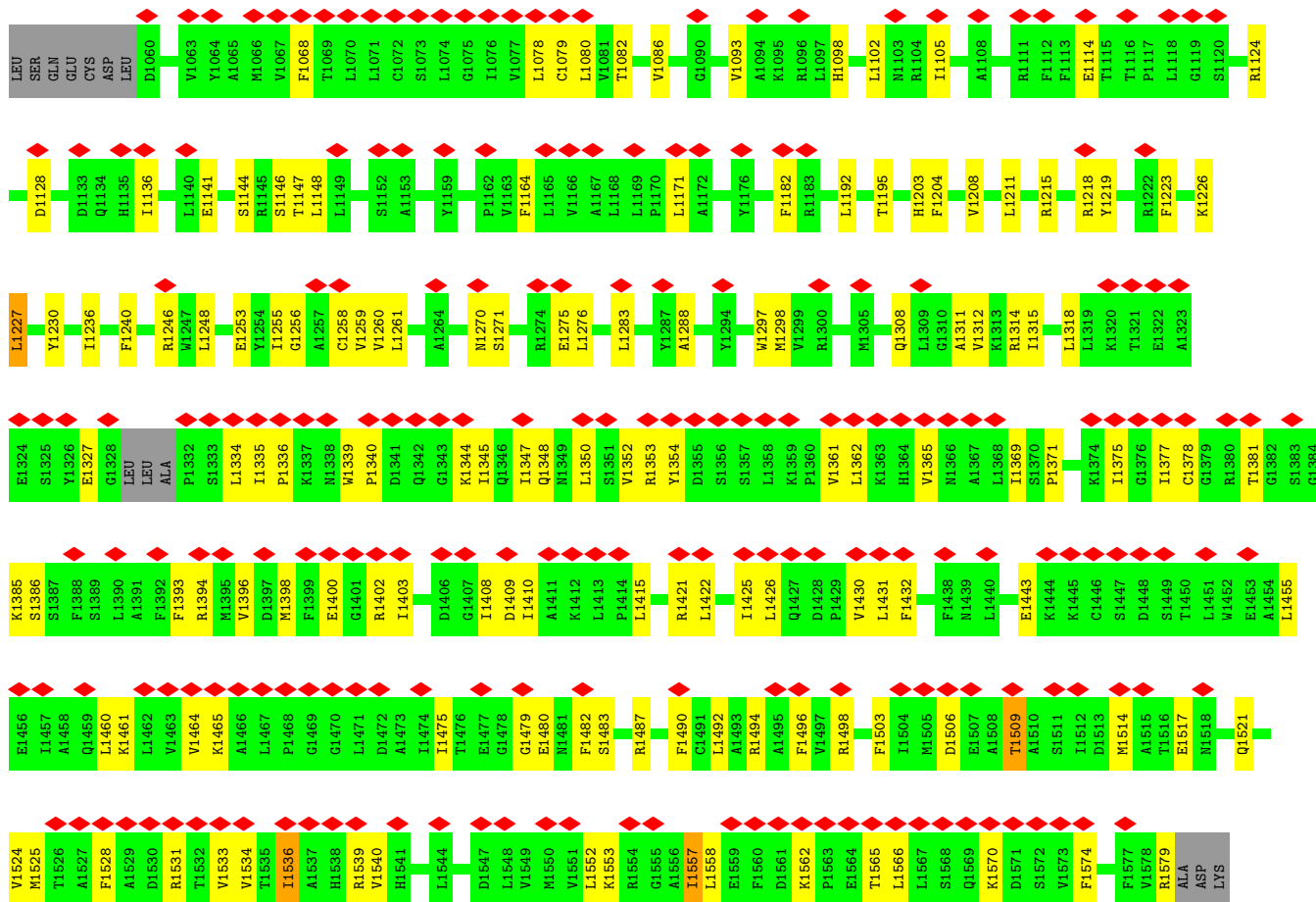


• Molecule 1: ATP-sensitive inward rectifier potassium channel 11

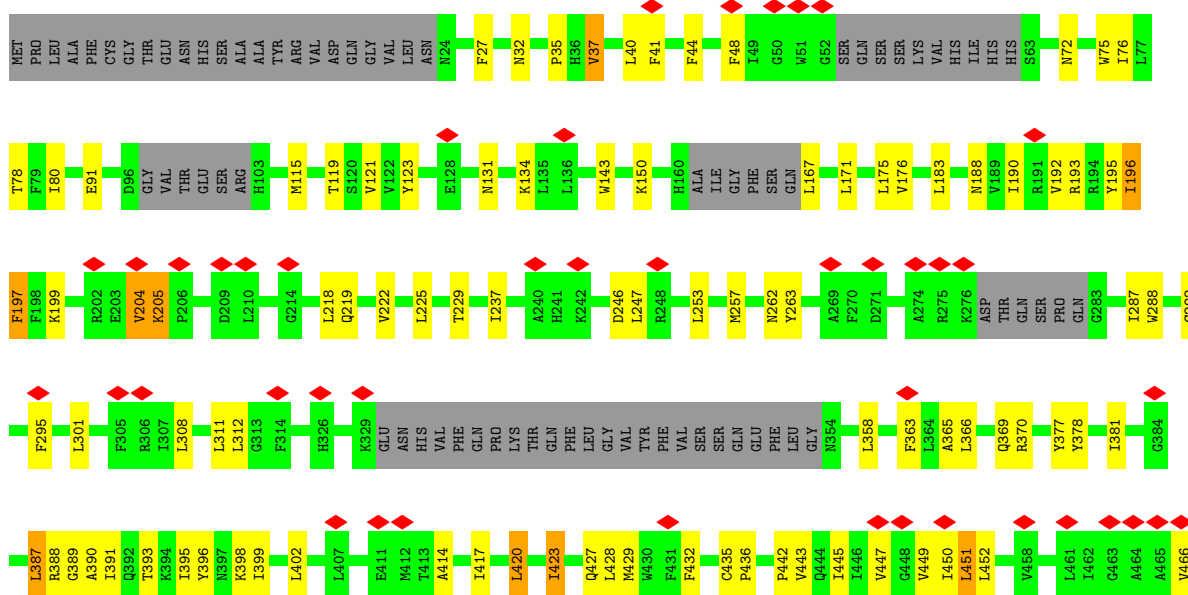


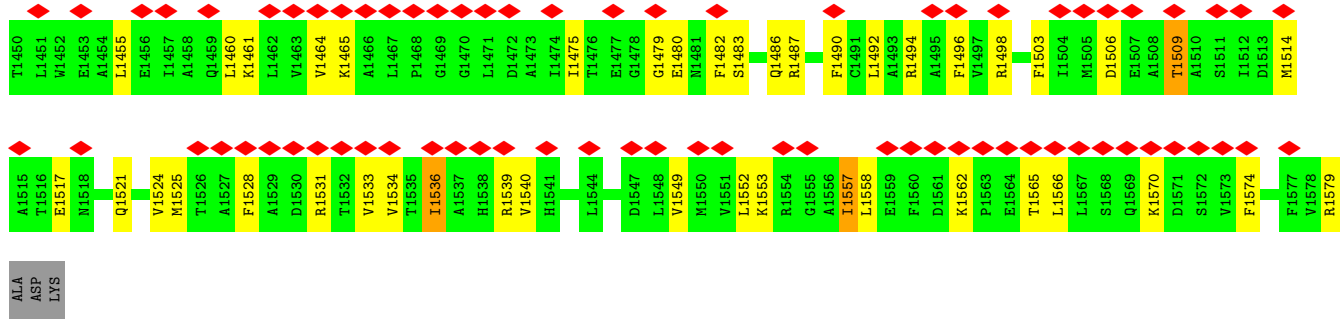
• Molecule 2: ATP-binding cassette sub-family C member 8 isoform X2



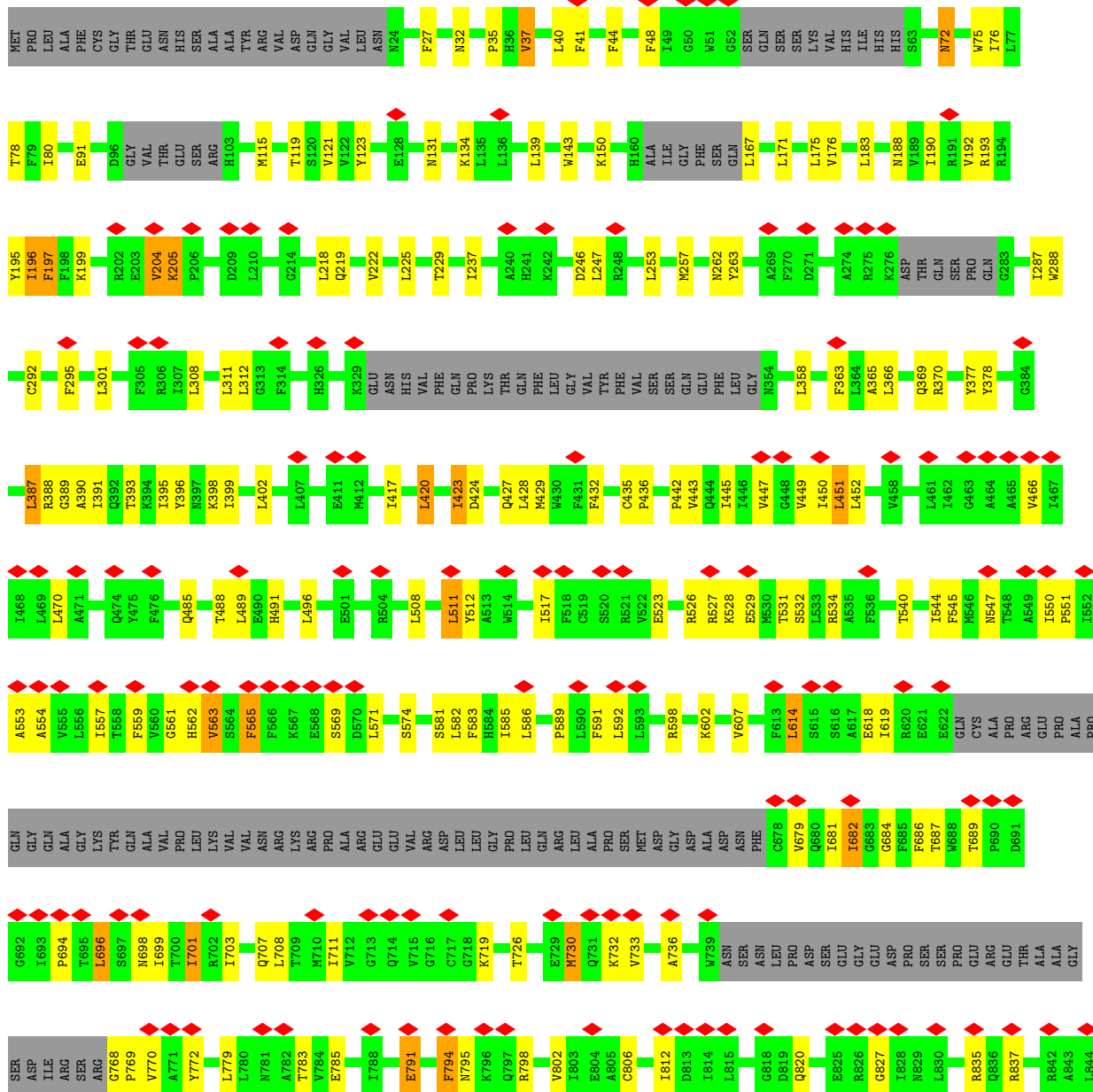


• Molecule 2: ATP-binding cassette sub-family C member 8 isoform X2





• Molecule 2: ATP-binding cassette sub-family C member 8 isoform X2



LEU	A1391	L1462	A1529	LEU	P1332	V1463	D1530	LEU	P1333	V1464	V1531	LEU	P1334	F1392	V1464	R1531	LEU	P1335	V1464	R1532	LEU	P1336	F1393	V1464	R1533	LEU	P1337	V1465	K1465	V1532	LEU	P1338	F1394	V1466	A1533	LEU	P1339	V1396	M1395	V1396	V1533	LEU	P1340	V1397	D1397	M1388	LEU	P1341	V1399	F1399	A1400	E1400	LEU	P1342	V1400	E1400	F1400	LEU	P1343	G1401	G1401	G1401	LEU	P1344	R1402	R1402	R1402	LEU	P1345	I1403	I1403	I1403	LEU	P1346	D1406	D1406	D1406	LEU	P1347	G1407	G1407	G1407	LEU	P1348	I1408	I1408	I1408	LEU	P1349	D1409	D1409	D1409	LEU	P1350	I1410	I1410	I1410	LEU	P1351	A1411	A1411	A1411	LEU	P1352	K1412	K1412	K1412	LEU	P1353	L1413	L1413	L1413	LEU	P1354	P1414	P1414	P1414	LEU	P1355	L1415	L1415	L1415	LEU	P1356	R1421	R1421	R1421	LEU	P1357	L1422	L1422	L1422	LEU	P1358	I1425	I1425	I1425	LEU	P1359	L1426	L1426	L1426	LEU	P1360	Q1427	Q1427	Q1427	LEU	P1361	D1428	D1428	D1428	LEU	P1362	P1429	P1429	P1429	LEU	P1363	V1430	V1430	V1430	LEU	P1364	L1431	L1431	L1431	LEU	P1365	F1432	F1432	F1432	LEU	P1366	F1438	F1438	F1438	LEU	P1367	N1439	N1439	N1439	LEU	P1368	L1440	L1440	L1440	LEU	P1369	E1443	E1443	E1443	LEU	P1370	K1444	K1444	K1444	LEU	P1371	S1445	S1445	S1445	LEU	P1372	C1446	C1446	C1446	LEU	P1373	S1447	S1447	S1447	LEU	P1374	D1448	D1448	D1448	LEU	P1375	S1449	S1449	S1449	LEU	P1376	T1450	T1450	T1450	LEU	P1377	L1451	L1451	L1451	LEU	P1378	W1452	W1452	W1452	LEU	P1379	E1453	E1453	E1453	LEU	P1380	A1454	A1454	A1454	LEU	P1381	V1455	V1455	V1455	LEU	P1382	M1456	M1456	M1456	LEU	P1383	T1457	T1457	T1457	LEU	P1384	A1458	A1458	A1458	LEU	P1385	Q1459	Q1459	Q1459	LEU	P1386	L1460	L1460	L1460	LEU	P1387	K1461	K1461	K1461	LEU	P1388	F1462	F1462	F1462	LEU	P1389	V1463	V1463	V1463	LEU	P1390	R1464	R1464	R1464	LEU	P1391	K1465	K1465	K1465	LEU	P1392	V1466	V1466	V1466	LEU	P1393	P1467	P1467	P1467	LEU	P1394	M1468	M1468	M1468	LEU	P1395	T1469	T1469	T1469	LEU	P1396	G1470	G1470	G1470	LEU	P1397	L1471	L1471	L1471	LEU	P1398	D1472	D1472	D1472	LEU	P1399	A1473	A1473	A1473	LEU	P1400	I1474	I1474	I1474	LEU	P1401	I1475	I1475	I1475	LEU	P1402	T1476	T1476	T1476	LEU	P1403	E1477	E1477	E1477	LEU	P1404	G1478	G1478	G1478	LEU	P1405	E1479	E1479	E1479	LEU	P1406	E1480	E1480	E1480	LEU	P1407	N1481	N1481	N1481	LEU	P1408	F1482	F1482	F1482	LEU	P1409	S1483	S1483	S1483	LEU	P1410	Q1486	Q1486	Q1486	LEU	P1411	R1487	R1487	R1487	LEU	P1412	F1490	F1490	F1490	LEU	P1413	C1491	C1491	C1491	LEU	P1414	L1492	L1492	L1492	LEU	P1415	A1493	A1493	A1493	LEU	P1416	R1494	R1494	R1494	LEU	P1417	A1495	A1495	A1495	LEU	P1418	F1496	F1496	F1496	LEU	P1419	V1497	V1497	V1497	LEU	P1420	R1498	R1498	R1498	LEU	P1421	F1503	F1503	F1503	LEU	P1422	I1504	I1504	I1504	LEU	P1423	M1505	M1505	M1505	LEU	P1424	D1506	D1506	D1506	LEU	P1425	E1507	E1507	E1507	LEU	P1426	A1508	A1508	A1508	LEU	P1427	T1509	T1509	T1509	LEU	P1428	A1510	A1510	A1510	LEU	P1429	S1511	S1511	S1511	LEU	P1430	I1512	I1512	I1512	LEU	P1431	D1513	D1513	D1513	LEU	P1432	M1514	M1514	M1514	LEU	P1433	A1515	A1515	A1515	LEU	P1434	T1516	T1516	T1516	LEU	P1435	E1517	E1517	E1517	LEU	P1436	M1518	M1518	M1518	LEU	P1437	Q1521	Q1521	Q1521	LEU	P1438	V1524	V1524	V1524	LEU	P1439	M1525	M1525	M1525	LEU	P1440	T1526	T1526	T1526	LEU	P1441	A1527	A1527	A1527	LEU	P1442	F1528	F1528	F1528	LEU	P1443	ALA	ALA	ALA	LEU	P1444	ASP	ASP	ASP	LEU	P1445	LYS	LYS	LYS	LEU	P1446	ALA	ALA	ALA	LEU	P1447	ASP	ASP	ASP	LEU	P1448	LYS	LYS	LYS	LEU	P1449	ALA	ALA	ALA	LEU	P1450	ASP	ASP	ASP	LEU	P1451	LYS	LYS	LYS	LEU	P1452	ALA	ALA	ALA	LEU	P1453	ASP	ASP	ASP	LEU	P1454	LYS	LYS	LYS	LEU	P1455	ALA	ALA	ALA	LEU	P1456	ASP	ASP	ASP	LEU	P1457	LYS	LYS	LYS	LEU	P1458	ALA	ALA	ALA	LEU	P1459	ASP	ASP	ASP	LEU	P1460	LYS	LYS	LYS	LEU	P1461	ALA	ALA	ALA	LEU	P1462	ASP	ASP	ASP	LEU	P1463	LYS	LYS	LYS	LEU	P1464	ALA	ALA	ALA	LEU	P1465	ASP	ASP	ASP	LEU	P1466	LYS	LYS	LYS	LEU	P1467	ALA	ALA	ALA	LEU	P1468	ASP	ASP	ASP	LEU	P1469	LYS	LYS	LYS	LEU	P1470	ALA	ALA	ALA	LEU	P1471	ASP	ASP	ASP	LEU	P1472	LYS	LYS	LYS	LEU	P1473	ALA	ALA	ALA	LEU	P1474	ASP	ASP	ASP	LEU	P1475	LYS	LYS	LYS	LEU	P1476	ALA	ALA	ALA	LEU	P1477	ASP	ASP	ASP	LEU	P1478	LYS	LYS	LYS	LEU	P1479	ALA	ALA	ALA	LEU	P1480	ASP	ASP	ASP	LEU	P1481	LYS	LYS	LYS	LEU	P1482	ALA	ALA	ALA	LEU	P1483	ASP	ASP	ASP	LEU	P1484	LYS	LYS	LYS	LEU	P1485	ALA	ALA	ALA	LEU	P1486	ASP	ASP	ASP	LEU	P1487	LYS	LYS	LYS	LEU	P1488	ALA	ALA	ALA	LEU	P1489	ASP	ASP	ASP	LEU	P1490	LYS	LYS	LYS	LEU	P1491	ALA	ALA	ALA	LEU	P1492	ASP	ASP	ASP	LEU	P1493	LYS	LYS	LYS	LEU	P1494	ALA	ALA	ALA	LEU	P1495	ASP	ASP	ASP	LEU	P1496	LYS	LYS	LYS	LEU	P1497	ALA	ALA	ALA	LEU	P1498	ASP	ASP	ASP	LEU	P1499	LYS	LYS	LYS	LEU	P1500	ALA	ALA	ALA	LEU	P1501	ASP	ASP	ASP	LEU	P1502	LYS	LYS	LYS	LEU	P1503	ALA	ALA	ALA	LEU	P1504	ASP	ASP	ASP	LEU	P1505	LYS	LYS	LYS	LEU	P1506	ALA	ALA	ALA	LEU	P1507	ASP	ASP	ASP	LEU	P1508	LYS	LYS	LYS	LEU	P1509	ALA	ALA	ALA	LEU	P1510	ASP	ASP	ASP	LEU	P1511	LYS	LYS	LYS	LEU	P1512	ALA	ALA	ALA	LEU	P1513	ASP	ASP	ASP	LEU	P1514	LYS	LYS	LYS	LEU	P1515	ALA	ALA	ALA	LEU	P1516	ASP	ASP	ASP	LEU	P1517	LYS	LYS	LYS	LEU	P1518	ALA	ALA	ALA	LEU	P1519	ASP	ASP	ASP	LEU	P1520	LYS	LYS	LYS	LEU	P1521	ALA	ALA	ALA	LEU	P1522	ASP	ASP	ASP	LEU	P1523	LYS	LYS	LYS	LEU	P1524	ALA	ALA	ALA	LEU	P1525	ASP	ASP	ASP	LEU	P1526	LYS	LYS	LYS	LEU	P1527	ALA	ALA	ALA	LEU	P1528	ASP	ASP	ASP	LEU	P1529	LYS	LYS	LYS	LEU	P1530	ALA	ALA	ALA	LEU	P1531	ASP	ASP	ASP	LEU	P1532	LYS	LYS	LYS	LEU	P1533	ALA	ALA	ALA	LEU	P1534	ASP	ASP	ASP	LEU	P1535	LYS	LYS	LYS	LEU	P1536	ALA	ALA	ALA	LEU	P1537	ASP	ASP	ASP	LEU	P1538	LYS	LYS	LYS	LEU	P1539	ALA	ALA	ALA	LEU	P1540	ASP	ASP	ASP	LEU	P1541	LYS	LYS	LYS	LEU	P1542	ALA	ALA	ALA	LEU	P1543	ASP	ASP	ASP	LEU	P1544	LYS	LYS	LYS	LEU	P1545	ALA	ALA	ALA	LEU	P1546	ASP	ASP	ASP	LEU	P1547	LYS	LYS	LYS	LEU	P1548	ALA	ALA	ALA	LEU	P1549	ASP	ASP	ASP	LEU	P1550	LYS	LYS	LYS	LEU	P1551	ALA	ALA	ALA	LEU	P1552	ASP	ASP	ASP	LEU	P1553	LYS	LYS	LYS	LEU	P1554	ALA	ALA	ALA	LEU	P1555	ASP	ASP	ASP	LEU	P1556	LYS	LYS	LYS	LEU	P1557	ALA	ALA	ALA	LEU	P1558	ASP	ASP	ASP	LEU	P1559	LYS	LYS	LYS	LEU	P1560	ALA	ALA	ALA	LEU	P1561	ASP	ASP	ASP	LEU	P1562	LYS	LYS	LYS	LEU	P1563	ALA	ALA	ALA	LEU	P1564	ASP	ASP	ASP	LEU	P1565	LYS	LYS	LYS	LEU	P1566	ALA	ALA	ALA	LEU	P1567	ASP	ASP	ASP	LEU	P1568	LYS	LYS	LYS	LEU	P1569	ALA	ALA	ALA	LEU	P1570	ASP	ASP	ASP	LEU	P1571	LYS	LYS	LYS	LEU	P1572	ALA	ALA	ALA	LEU	P1573	ASP	ASP	ASP	LEU	P1574	LYS	LYS	LYS	LEU	P1575	ALA	ALA	ALA	LEU	P1576	ASP	ASP	ASP	LEU	P1577	LYS	LYS	LYS	LEU	P1578	ALA	ALA	ALA	LEU	P1579	ASP	ASP	ASP	LEU	P1580	LYS	LYS	LYS	LEU	P1581	ALA	ALA	ALA	LEU	P1582	ASP	ASP	ASP	LEU	P1583	LYS	LYS	LYS	LEU	P1584	ALA	ALA	ALA	LEU	P1585	ASP	ASP	ASP	LEU	P1586	LYS	LYS	LYS	LEU	P1587	ALA	ALA	ALA	LEU	P1588	ASP	ASP	ASP	LEU	P1589	LYS	LYS	LYS	LEU	P1590	ALA	ALA	ALA	LEU	P1591	ASP	ASP	ASP	LEU	P1592	LYS	LYS	LYS	LEU	P1593	ALA	ALA	ALA	LEU	P1594	ASP	ASP	ASP	LEU	P1595	LYS	LYS	LYS	LEU	P1596	ALA	ALA	ALA	LEU	P1597	ASP	ASP	ASP	LEU	P1598	LYS	LYS	LYS	LEU	P1599	ALA	ALA	ALA	LEU	P1600	ASP	ASP	ASP	LEU	P1601	LYS	LYS	LYS	LEU	P1602	ALA	ALA	ALA	LEU	P1603	ASP	ASP	ASP	LEU	P1604	LYS	LYS	LYS	LEU	P1605	ALA	ALA	ALA	LEU	P1606	ASP	ASP	ASP	LEU	P1607	LYS	LYS	LYS	LEU	P1608	ALA	ALA	ALA	LEU	P1609	ASP	ASP	ASP	LEU	P1610	LYS	LYS	LYS	LEU	P1611	ALA	ALA	ALA	LEU	P1612	ASP	ASP	ASP	LEU	P1613	LYS	LYS	LYS	LEU	P1614	ALA	ALA	ALA	LEU	P1615	ASP	ASP	ASP	LEU	P1616	LYS	LYS	LYS	LEU	P1617	ALA	ALA	ALA	LEU	P1618	ASP	ASP	ASP	LEU	P1619	LYS	LYS	LYS	LEU	P1620	ALA	ALA	ALA	LEU	P1621	ASP	ASP	ASP	LEU	P1622	LYS	LYS	LYS	LEU	P1623	ALA	ALA	ALA	LEU	P1624	ASP	ASP	ASP	LEU	P1625	LYS	LYS	LYS	LEU	P1626	ALA	ALA	ALA	LEU	P1627	ASP	ASP	ASP	LEU	P1628	LYS	LYS	LYS	LEU	P1629	ALA	ALA	ALA	LEU	P1630	ASP	ASP	ASP	LEU	P1631	LYS	LYS	LYS	LEU	P1632	ALA	ALA	ALA	LEU	P1633	ASP	ASP	ASP	LEU	P1634	LYS	LYS	LYS	LEU	P1635	ALA	ALA	ALA	LEU	P1636	ASP	ASP	ASP	LEU	P1637	LYS	LYS	LYS	LEU	P1638	ALA	ALA	ALA	LEU	P1639	ASP	ASP	ASP	LEU	P1640	LYS	LYS	LYS	LEU	P1641	ALA	ALA	ALA	LEU	P1642	ASP	ASP	ASP	LEU	P1643	LYS	LYS	LYS	LEU	P1644	ALA	ALA	ALA	LEU	P1645	ASP	ASP	ASP	LEU	P1646	LYS	LYS	LYS	LEU	P1647	ALA	ALA	ALA	LEU	P1648	ASP	ASP	ASP	LEU	P1649	LYS	LYS	LYS	LEU	P1650	ALA	ALA	ALA	LEU	P1651	ASP	ASP	ASP	LEU	P1652	LYS	LYS	LYS	LEU	P1653	ALA	ALA	ALA	LEU	P1654	ASP	ASP	ASP
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4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	56433	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.080	Depositor
Minimum map value	-0.030	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.025	Depositor
Map size (\AA)	329.15997, 329.15997, 329.15997	wwPDB
Map dimensions	312, 312, 312	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.055, 1.055, 1.055	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: ADP, MG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.27	0/2477	0.48	0/3380
1	C	0.27	0/2477	0.48	0/3380
1	E	0.27	0/2477	0.48	0/3380
1	G	0.27	0/2477	0.48	0/3380
2	B	0.29	0/10430	0.46	0/14168
2	D	0.29	0/10430	0.46	0/14168
2	F	0.29	0/10430	0.46	0/14168
2	H	0.29	0/10430	0.46	0/14168
All	All	0.29	0/51628	0.47	0/70192

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	2424	0	2383	105	0
1	C	2424	0	2383	105	0
1	E	2424	0	2383	104	0
1	G	2424	0	2383	105	0
2	B	10225	0	10456	245	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	10225	0	10456	248	0
2	F	10225	0	10456	250	0
2	H	10225	0	10456	242	0
3	A	27	0	12	0	0
3	B	54	0	24	4	0
3	C	27	0	12	0	0
3	D	54	0	24	3	0
3	E	27	0	12	0	0
3	F	54	0	24	3	0
3	G	27	0	12	0	0
3	H	54	0	24	4	0
4	B	2	0	0	0	0
4	D	2	0	0	0	0
4	F	2	0	0	0	0
4	H	2	0	0	0	0
All	All	50928	0	51500	1335	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 13.

The worst 5 of 1335 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:190:ILE:HG13	2:D:195:TYR:CB	1.79	1.13
2:F:190:ILE:HG13	2:F:195:TYR:CB	1.79	1.13
2:H:190:ILE:HG13	2:H:195:TYR:CB	1.79	1.12
2:B:190:ILE:HG13	2:B:195:TYR:CB	1.79	1.11
1:A:172:ALA:HA	1:G:169:MET:HE1	1.34	1.05

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	323/390 (83%)	305 (94%)	15 (5%)	3 (1%)	17	56
1	C	323/390 (83%)	305 (94%)	15 (5%)	3 (1%)	17	56
1	E	323/390 (83%)	305 (94%)	15 (5%)	3 (1%)	17	56
1	G	323/390 (83%)	305 (94%)	15 (5%)	3 (1%)	17	56
2	B	1300/1582 (82%)	1245 (96%)	51 (4%)	4 (0%)	41	76
2	D	1300/1582 (82%)	1245 (96%)	51 (4%)	4 (0%)	41	76
2	F	1300/1582 (82%)	1245 (96%)	51 (4%)	4 (0%)	41	76
2	H	1300/1582 (82%)	1245 (96%)	51 (4%)	4 (0%)	41	76
All	All	6492/7888 (82%)	6200 (96%)	264 (4%)	28 (0%)	38	72

5 of 28 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	50	ARG
1	A	54	ARG
2	B	197	PHE
2	B	199	LYS
1	C	50	ARG

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	250/339 (74%)	223 (89%)	27 (11%)	6	25
1	C	250/339 (74%)	223 (89%)	27 (11%)	6	25
1	E	250/339 (74%)	223 (89%)	27 (11%)	6	25
1	G	250/339 (74%)	223 (89%)	27 (11%)	6	25
2	B	1095/1371 (80%)	1036 (95%)	59 (5%)	22	48
2	D	1095/1371 (80%)	1036 (95%)	59 (5%)	22	48
2	F	1095/1371 (80%)	1036 (95%)	59 (5%)	22	48
2	H	1095/1371 (80%)	1036 (95%)	59 (5%)	22	48

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	5380/6840 (79%)	5036 (94%)	344 (6%)	21 44

5 of 344 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	F	708	LEU
2	H	72	ASN
2	F	891	LEU
1	G	63	LEU
2	H	420	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 30 such sidechains are listed below:

Mol	Chain	Res	Type
2	D	474	GLN
1	G	259	HIS
1	E	128	GLN
2	H	1203	HIS
1	G	128	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 20 ligands modelled in this entry, 8 are monoatomic - leaving 12 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The

Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	ADP	C	401	-	24,29,29	0.99	1 (4%)	29,45,45	1.45	4 (13%)
3	ADP	D	2502	4	24,29,29	0.93	1 (4%)	29,45,45	1.33	4 (13%)
3	ADP	H	2501	4	24,29,29	0.92	1 (4%)	29,45,45	1.37	4 (13%)
3	ADP	B	2501	4	24,29,29	0.92	1 (4%)	29,45,45	1.37	4 (13%)
3	ADP	A	401	-	24,29,29	0.99	1 (4%)	29,45,45	1.45	4 (13%)
3	ADP	F	2502	4	24,29,29	0.93	1 (4%)	29,45,45	1.33	4 (13%)
3	ADP	D	2501	4	24,29,29	0.92	1 (4%)	29,45,45	1.37	4 (13%)
3	ADP	G	401	-	24,29,29	0.99	1 (4%)	29,45,45	1.45	4 (13%)
3	ADP	H	2502	4	24,29,29	0.93	1 (4%)	29,45,45	1.33	4 (13%)
3	ADP	F	2501	4	24,29,29	0.92	1 (4%)	29,45,45	1.37	4 (13%)
3	ADP	B	2502	4	24,29,29	0.93	1 (4%)	29,45,45	1.33	4 (13%)
3	ADP	E	401	-	24,29,29	0.99	1 (4%)	29,45,45	1.45	4 (13%)

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	ADP	C	401	-	-	4/12/32/32	0/3/3/3
3	ADP	D	2502	4	-	4/12/32/32	0/3/3/3
3	ADP	H	2501	4	-	2/12/32/32	0/3/3/3
3	ADP	B	2501	4	-	2/12/32/32	0/3/3/3
3	ADP	A	401	-	-	4/12/32/32	0/3/3/3
3	ADP	F	2502	4	-	4/12/32/32	0/3/3/3
3	ADP	D	2501	4	-	2/12/32/32	0/3/3/3
3	ADP	G	401	-	-	4/12/32/32	0/3/3/3
3	ADP	H	2502	4	-	4/12/32/32	0/3/3/3
3	ADP	F	2501	4	-	2/12/32/32	0/3/3/3
3	ADP	B	2502	4	-	4/12/32/32	0/3/3/3
3	ADP	E	401	-	-	4/12/32/32	0/3/3/3

The worst 5 of 12 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	401	ADP	C5-C4	2.46	1.47	1.40
3	C	401	ADP	C5-C4	2.46	1.47	1.40
3	E	401	ADP	C5-C4	2.46	1.47	1.40
3	G	401	ADP	C5-C4	2.46	1.47	1.40
3	B	2502	ADP	C5-C4	2.44	1.47	1.40

The worst 5 of 48 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	401	ADP	PA-O3A-PB	-4.01	119.06	132.83
3	C	401	ADP	PA-O3A-PB	-4.01	119.06	132.83
3	E	401	ADP	PA-O3A-PB	-4.01	119.06	132.83
3	G	401	ADP	PA-O3A-PB	-4.01	119.06	132.83
3	A	401	ADP	C3'-C2'-C1'	3.40	106.09	100.98

There are no chirality outliers.

5 of 40 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	401	ADP	O4'-C4'-C5'-O5'
3	B	2502	ADP	C5'-O5'-PA-O3A
3	B	2502	ADP	O4'-C4'-C5'-O5'
3	B	2502	ADP	C3'-C4'-C5'-O5'
3	C	401	ADP	O4'-C4'-C5'-O5'

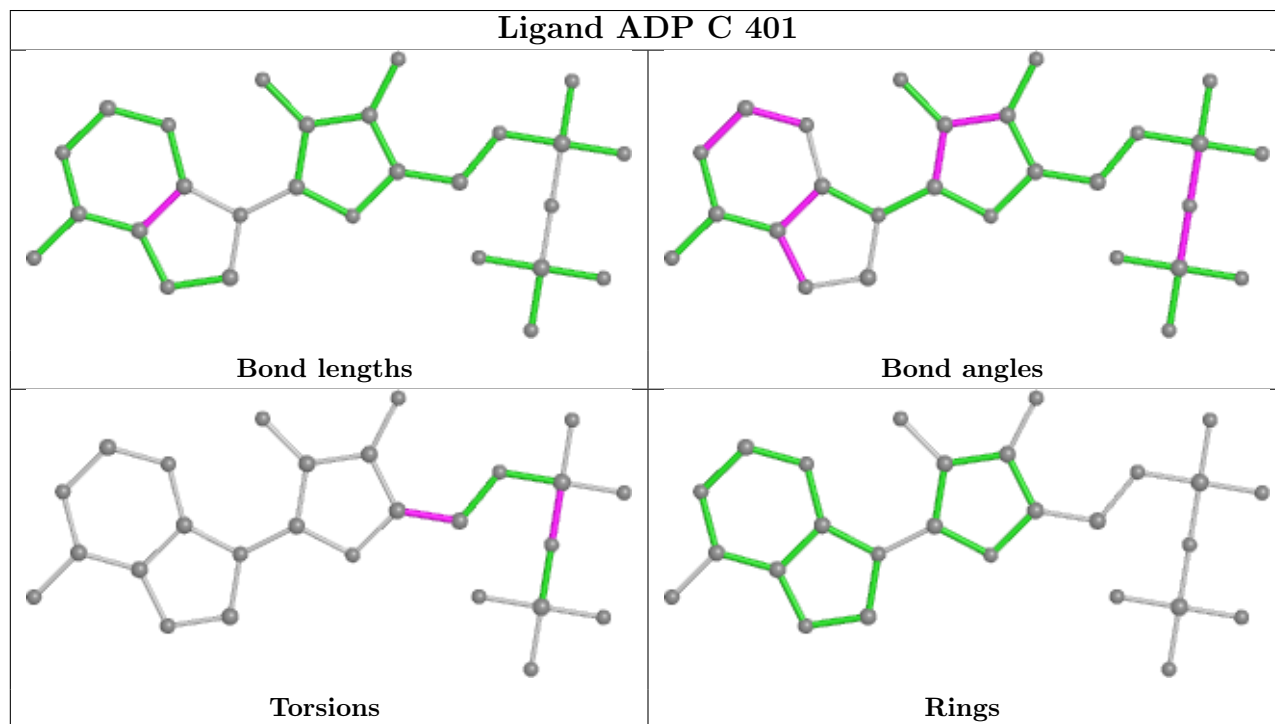
There are no ring outliers.

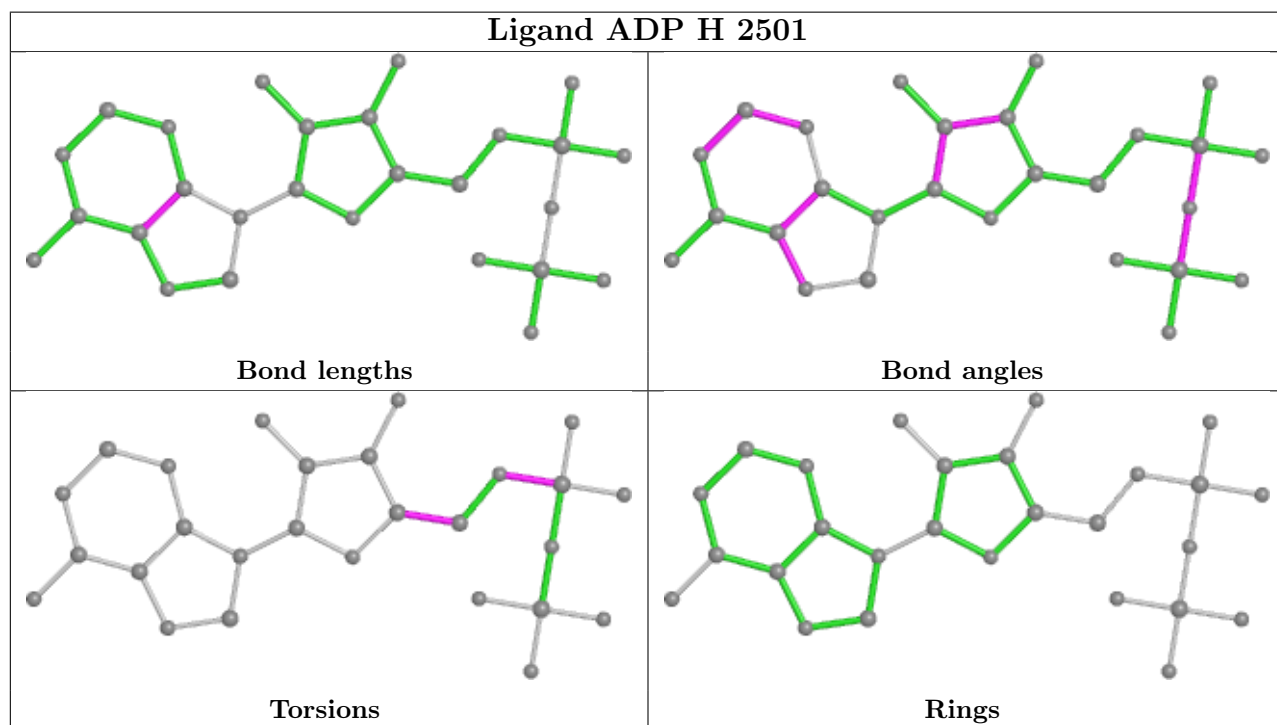
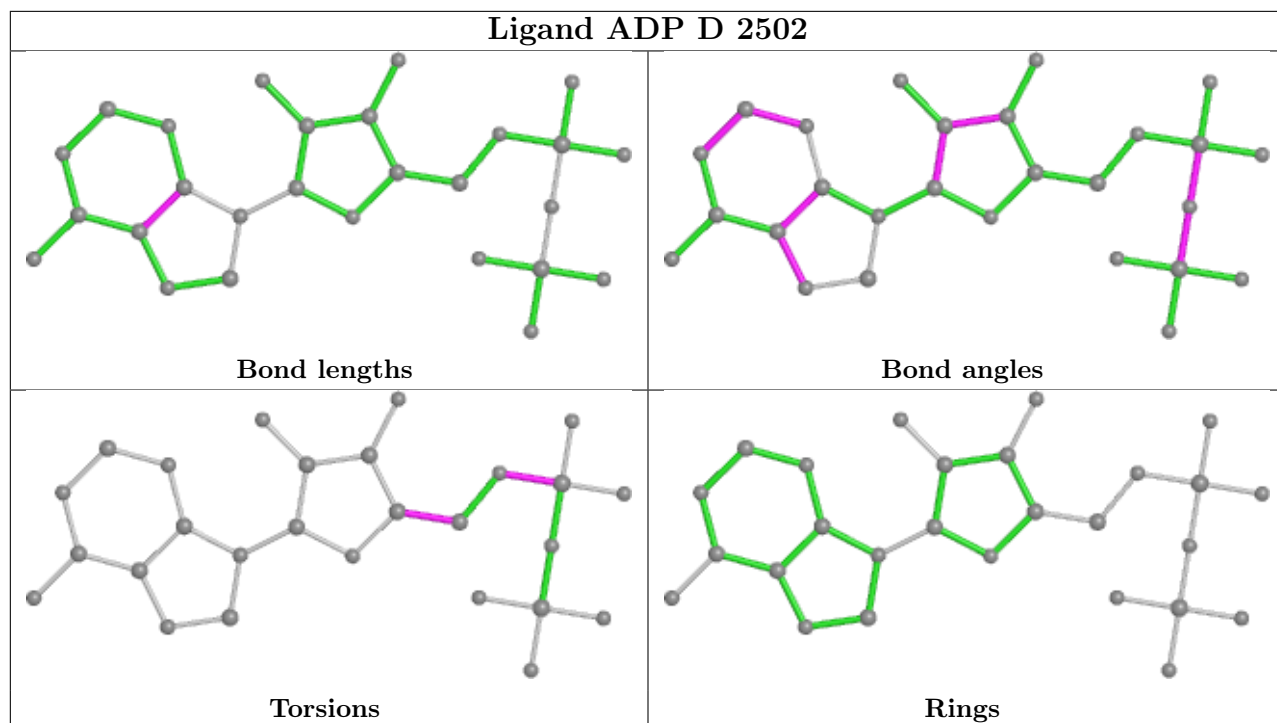
8 monomers are involved in 14 short contacts:

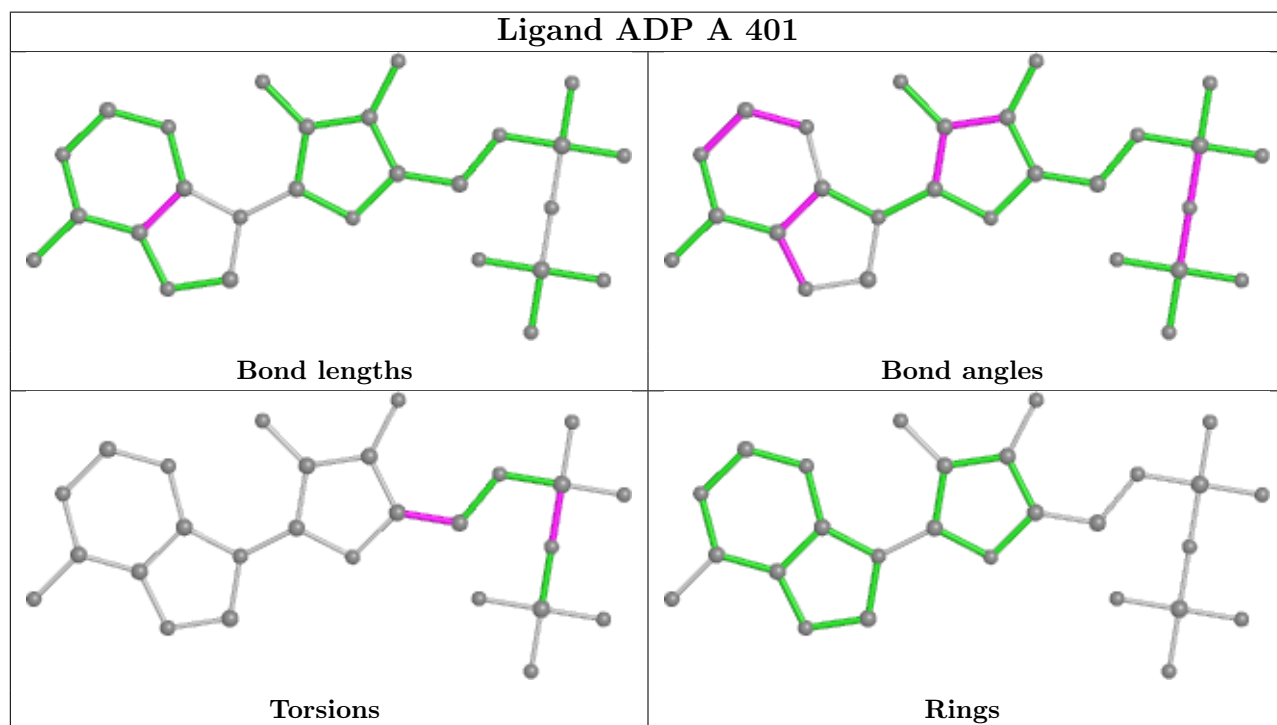
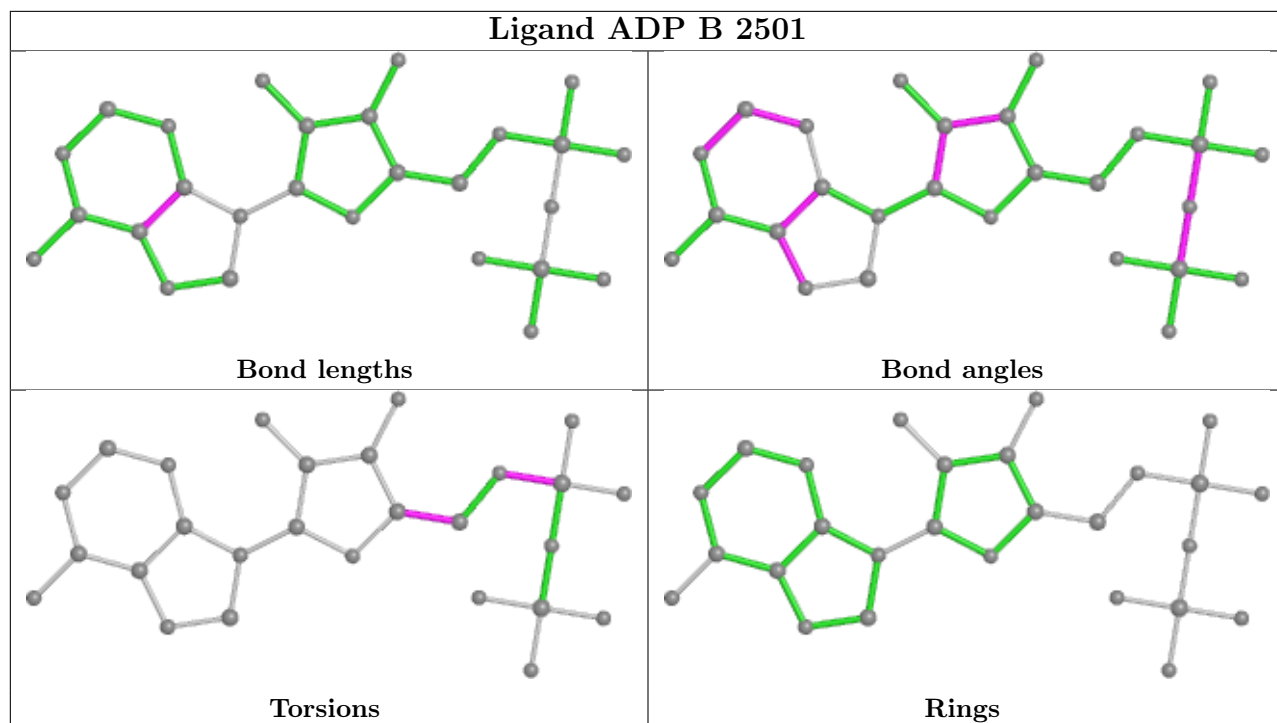
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	2502	ADP	2	0
3	H	2501	ADP	2	0
3	B	2501	ADP	2	0
3	F	2502	ADP	2	0
3	D	2501	ADP	1	0
3	H	2502	ADP	2	0
3	F	2501	ADP	1	0
3	B	2502	ADP	2	0

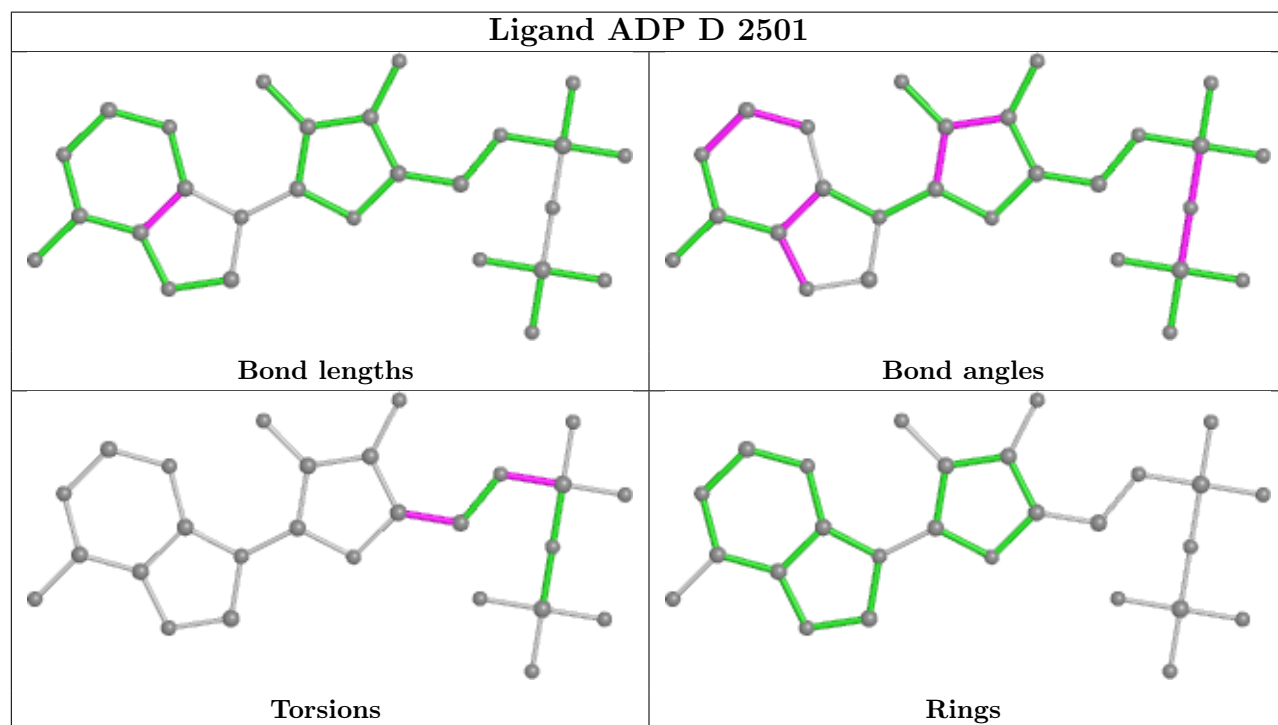
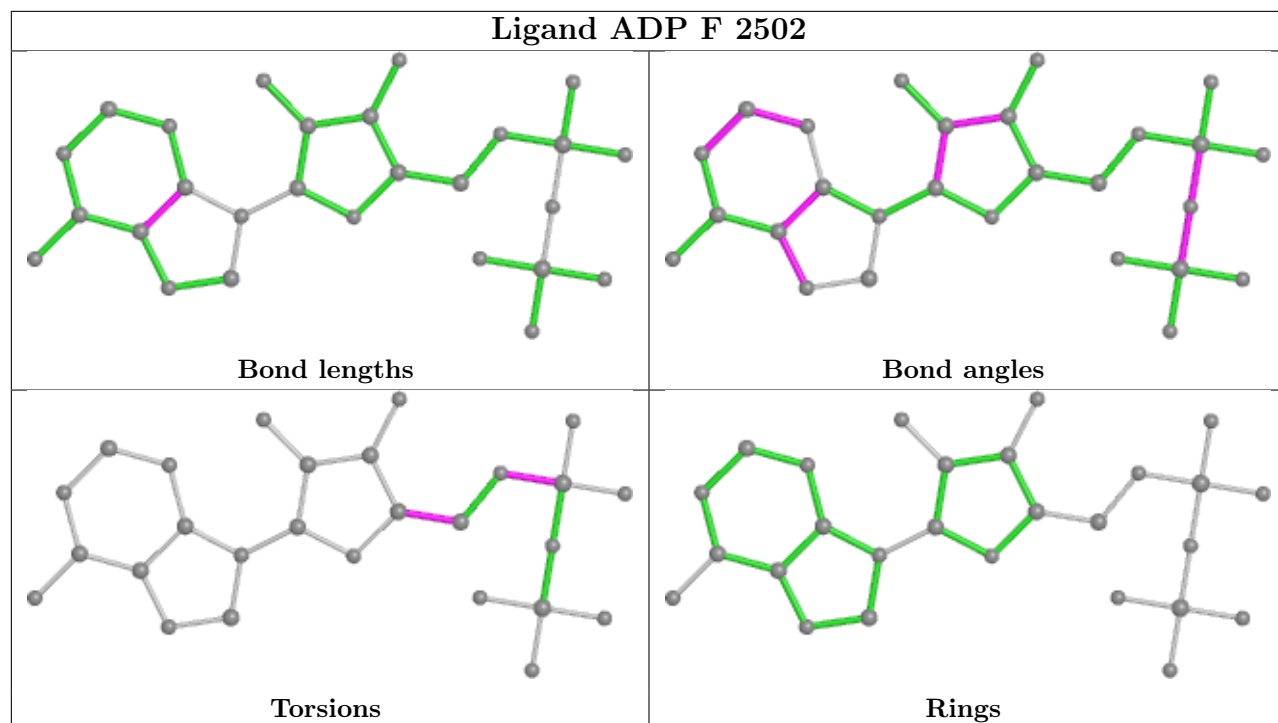
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

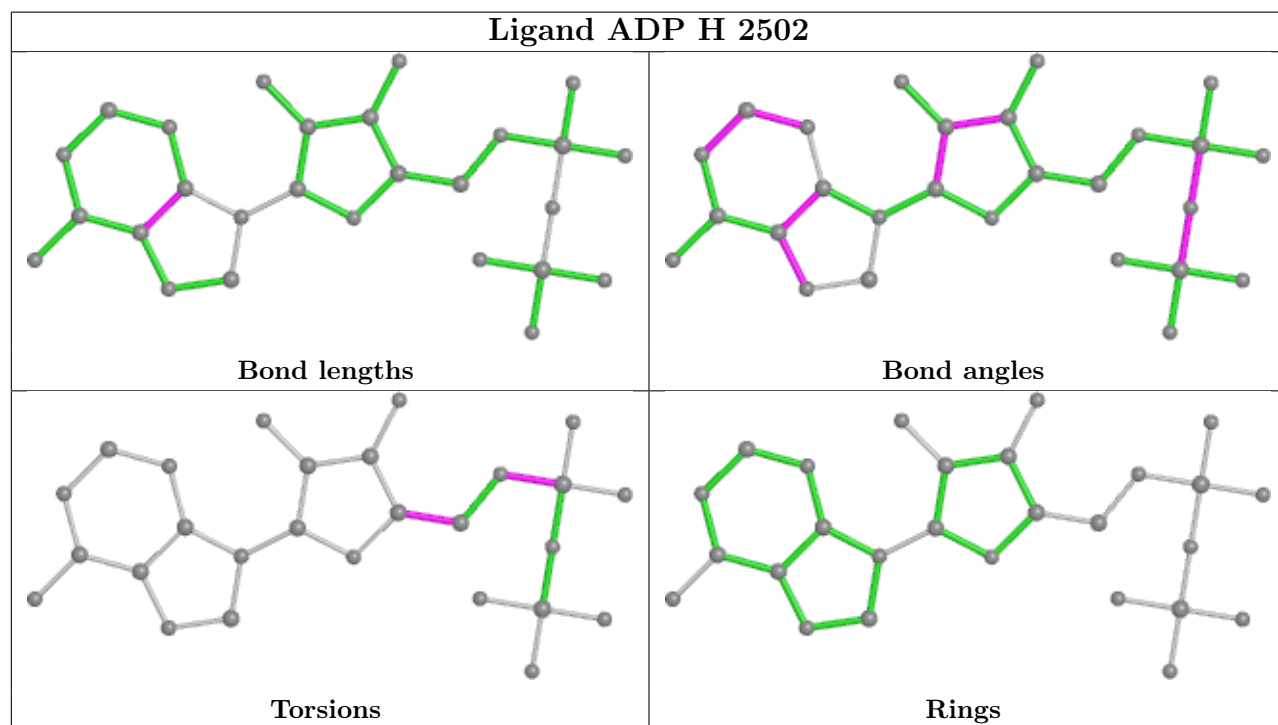
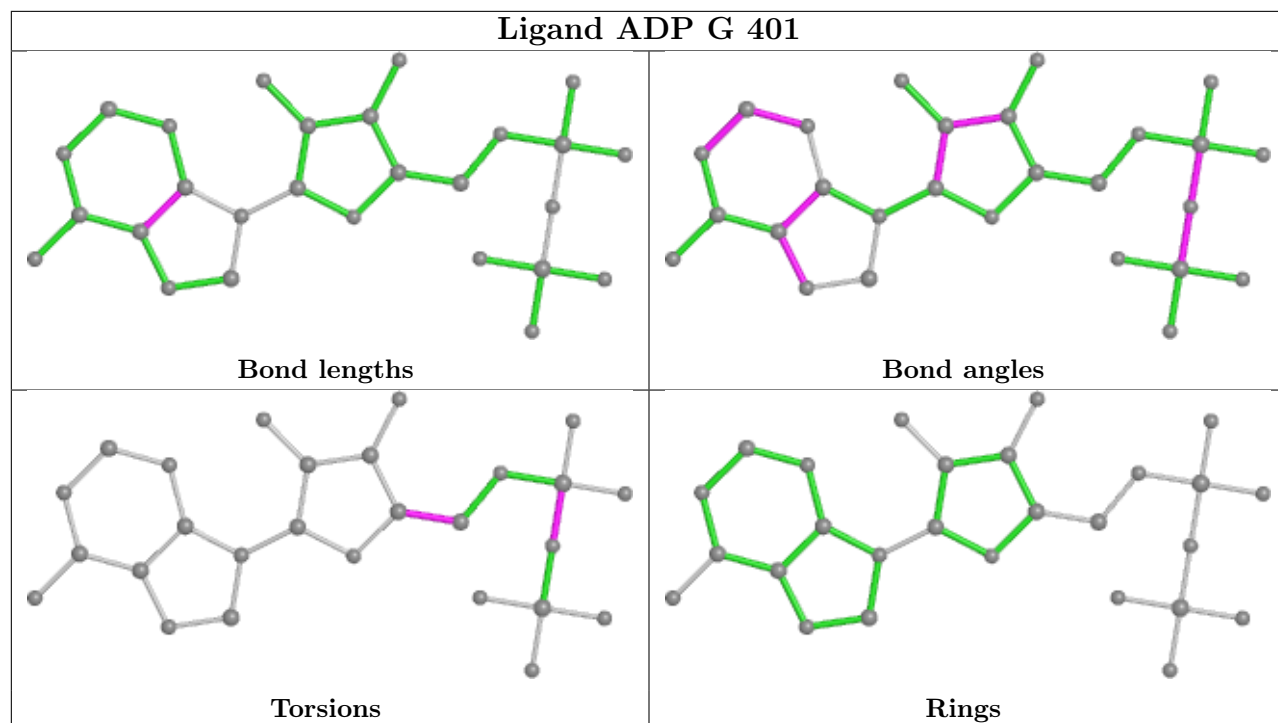
also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted 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.

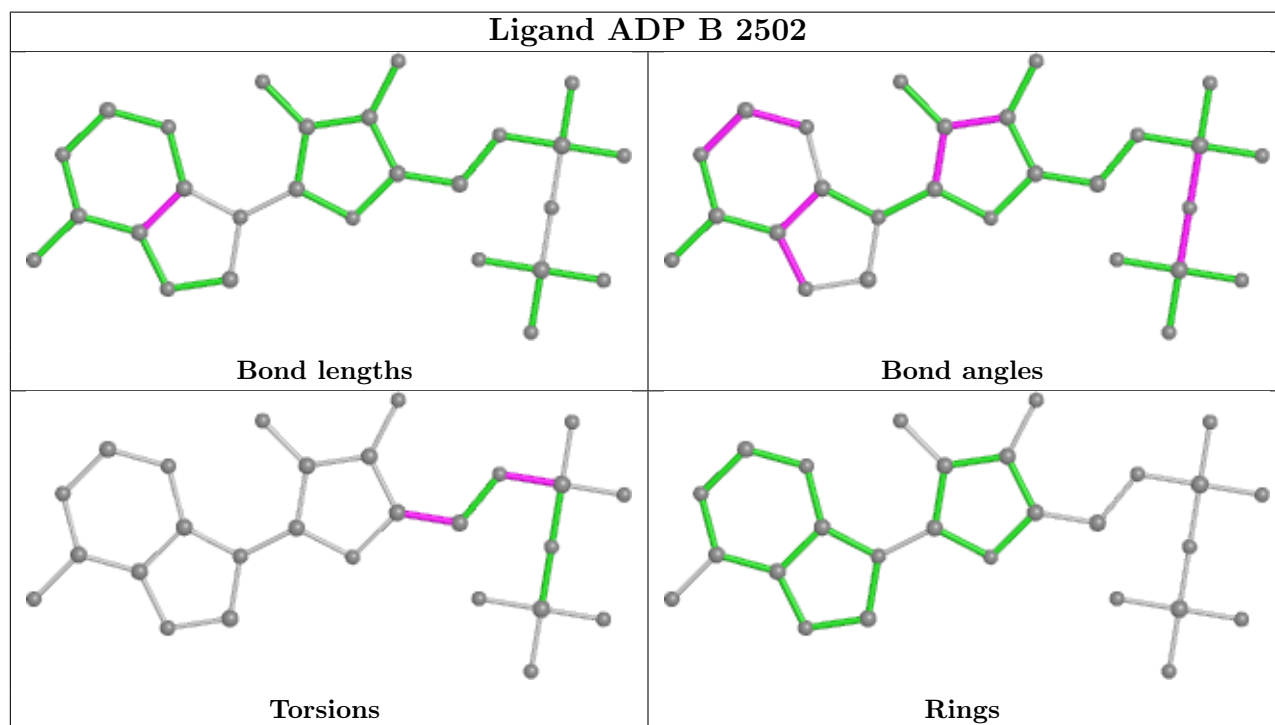
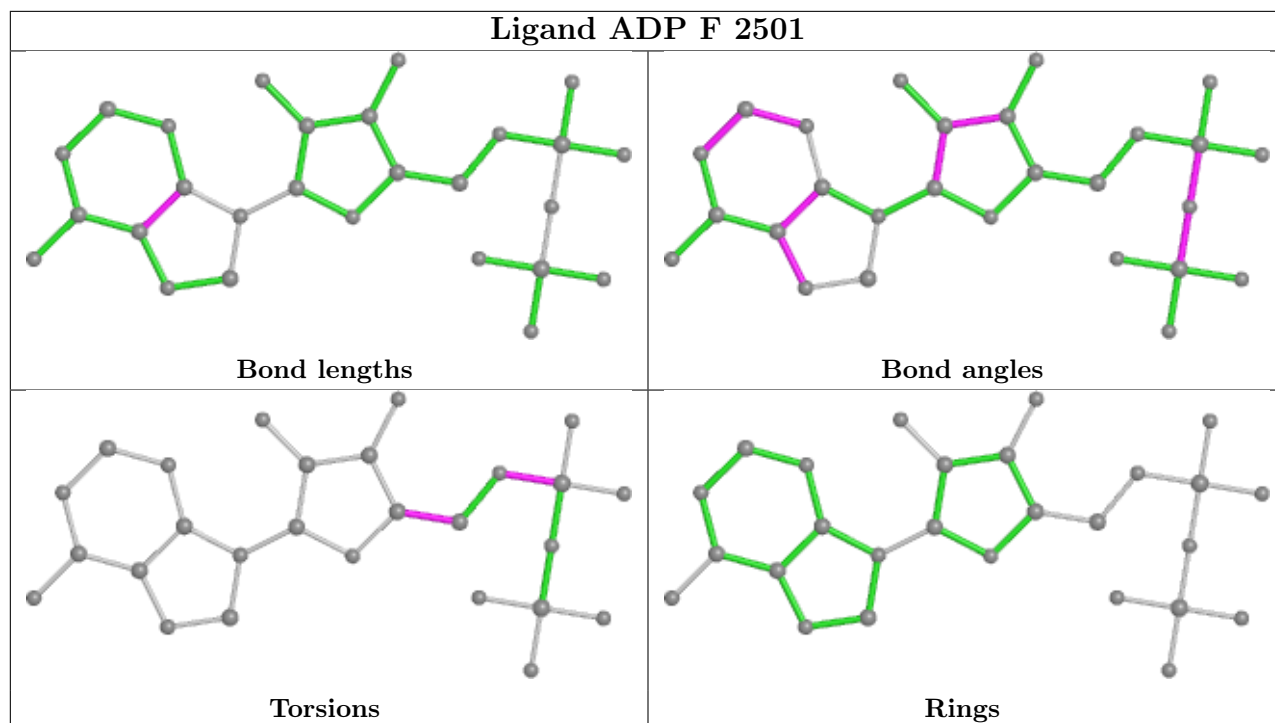


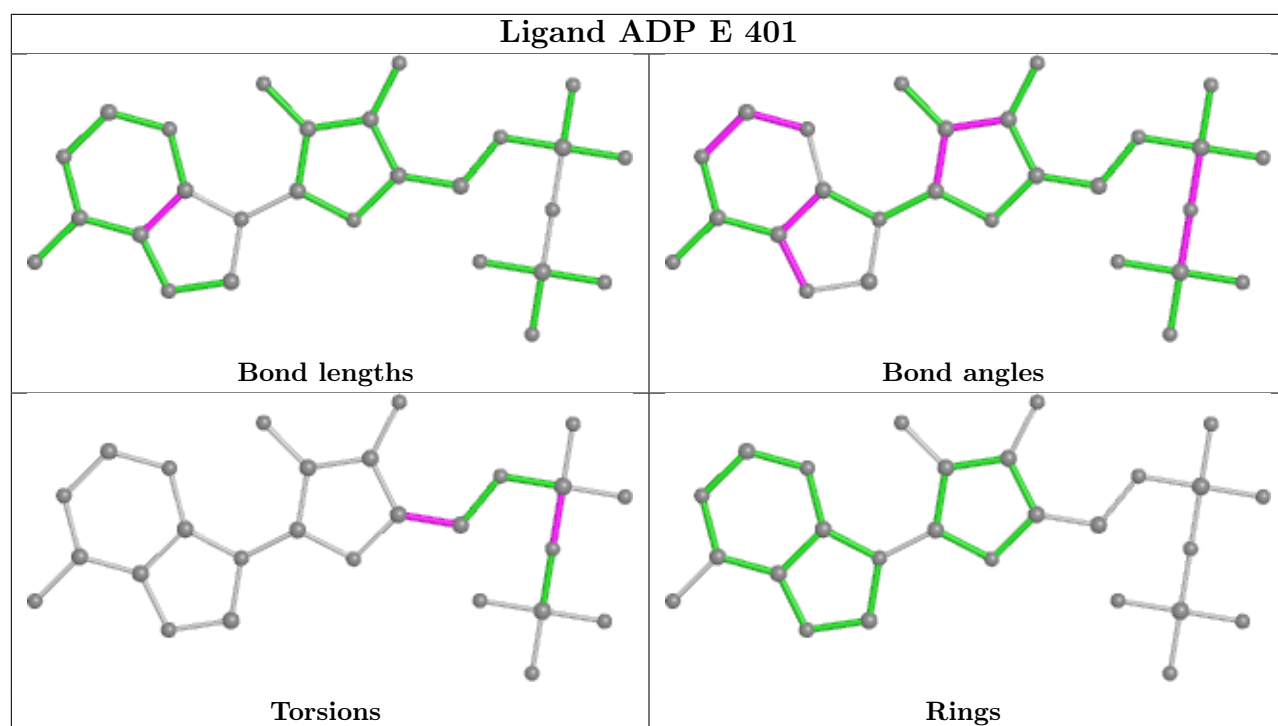












5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

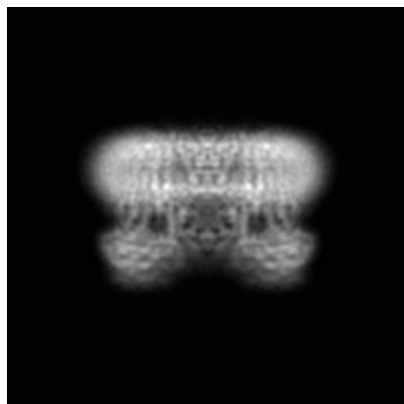
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-6851. These allow visual inspection of the internal detail of the map and identification of artifacts.

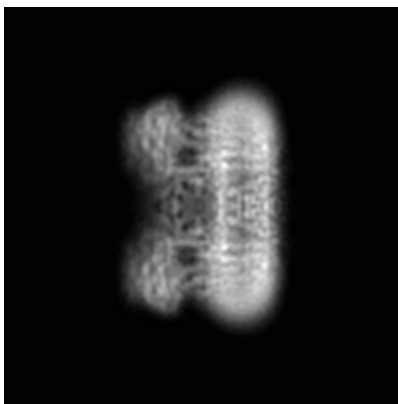
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

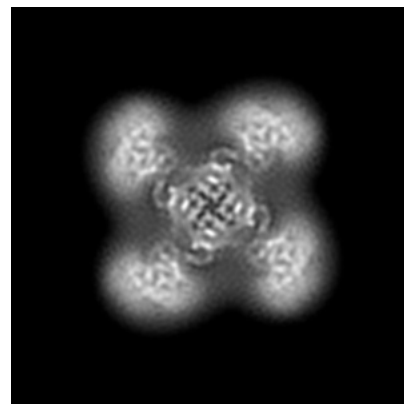
6.1.1 Primary map



X

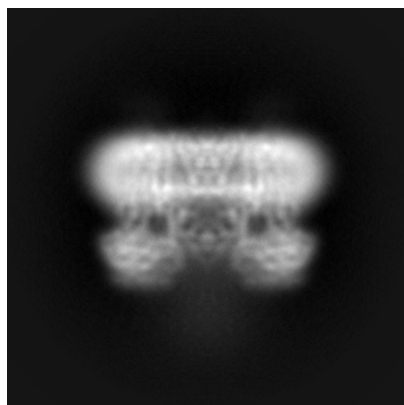


Y

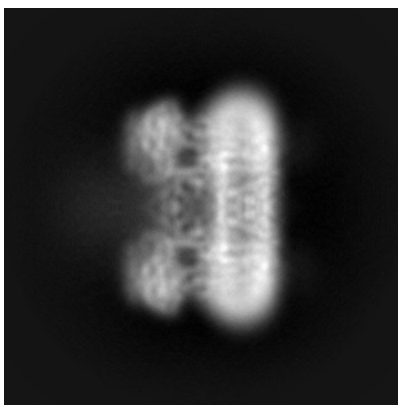


Z

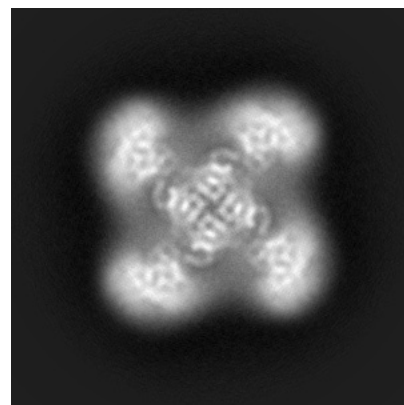
6.1.2 Raw map



X



Y



Z

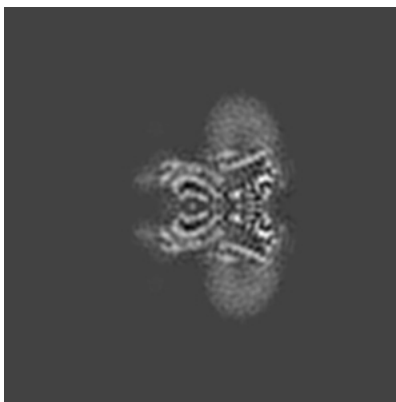
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

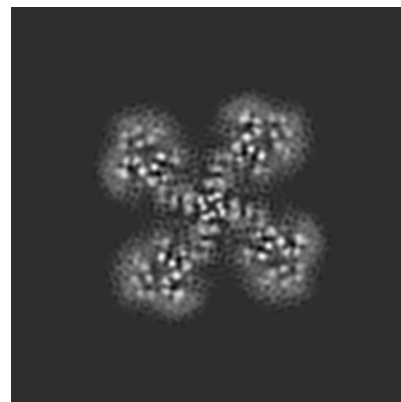
6.2.1 Primary map



X Index: 156

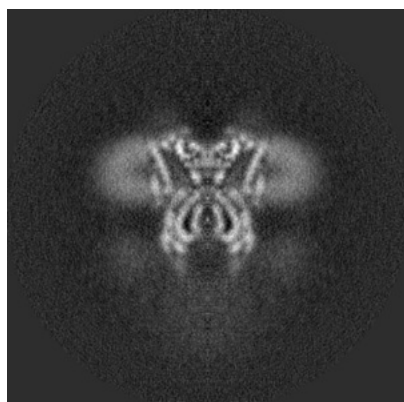


Y Index: 156

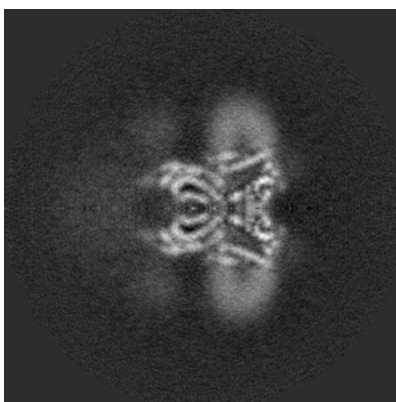


Z Index: 156

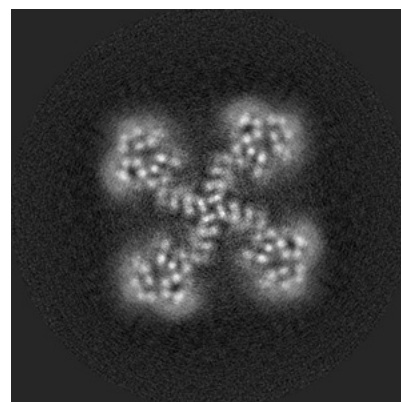
6.2.2 Raw map



X Index: 156



Y Index: 156



Z Index: 156

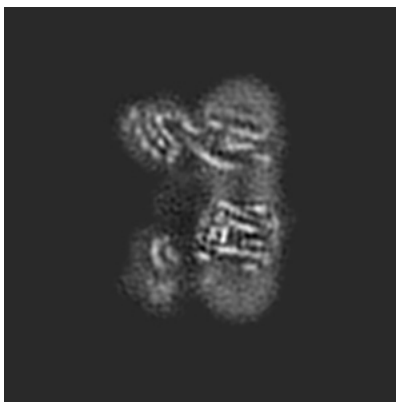
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

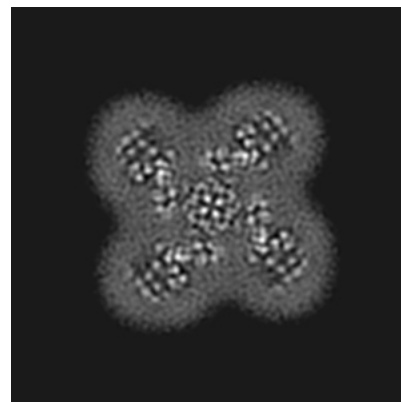
6.3.1 Primary map



X Index: 196

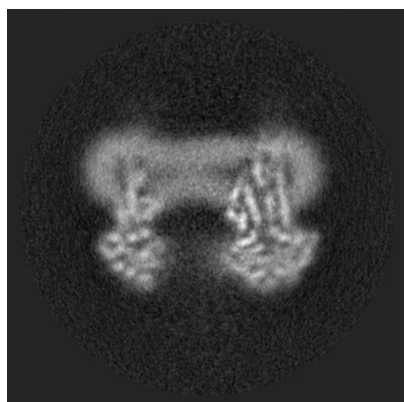


Y Index: 116

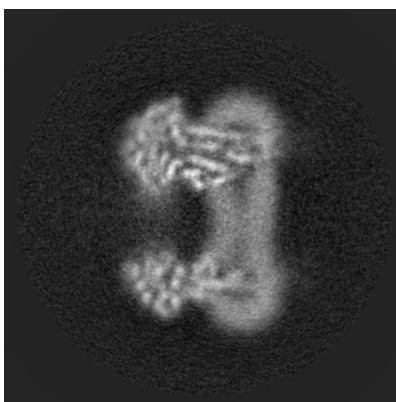


Z Index: 170

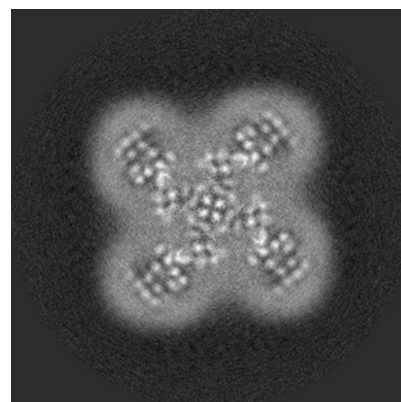
6.3.2 Raw map



X Index: 98



Y Index: 214

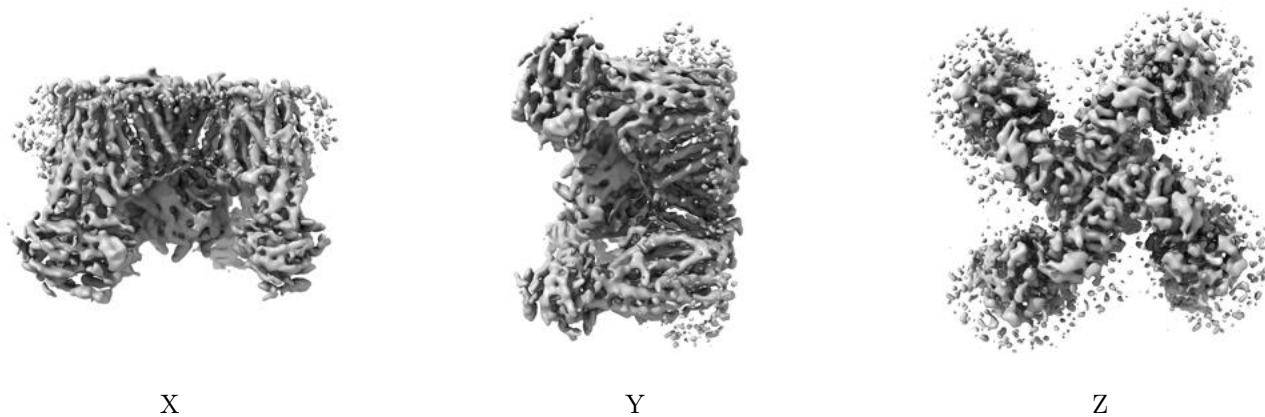


Z Index: 170

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

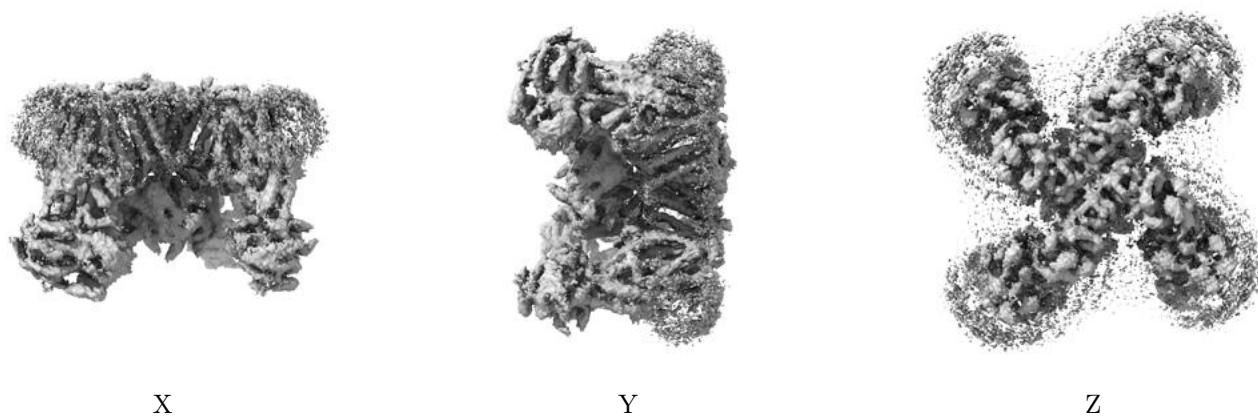
6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



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

6.4.2 Raw map



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.

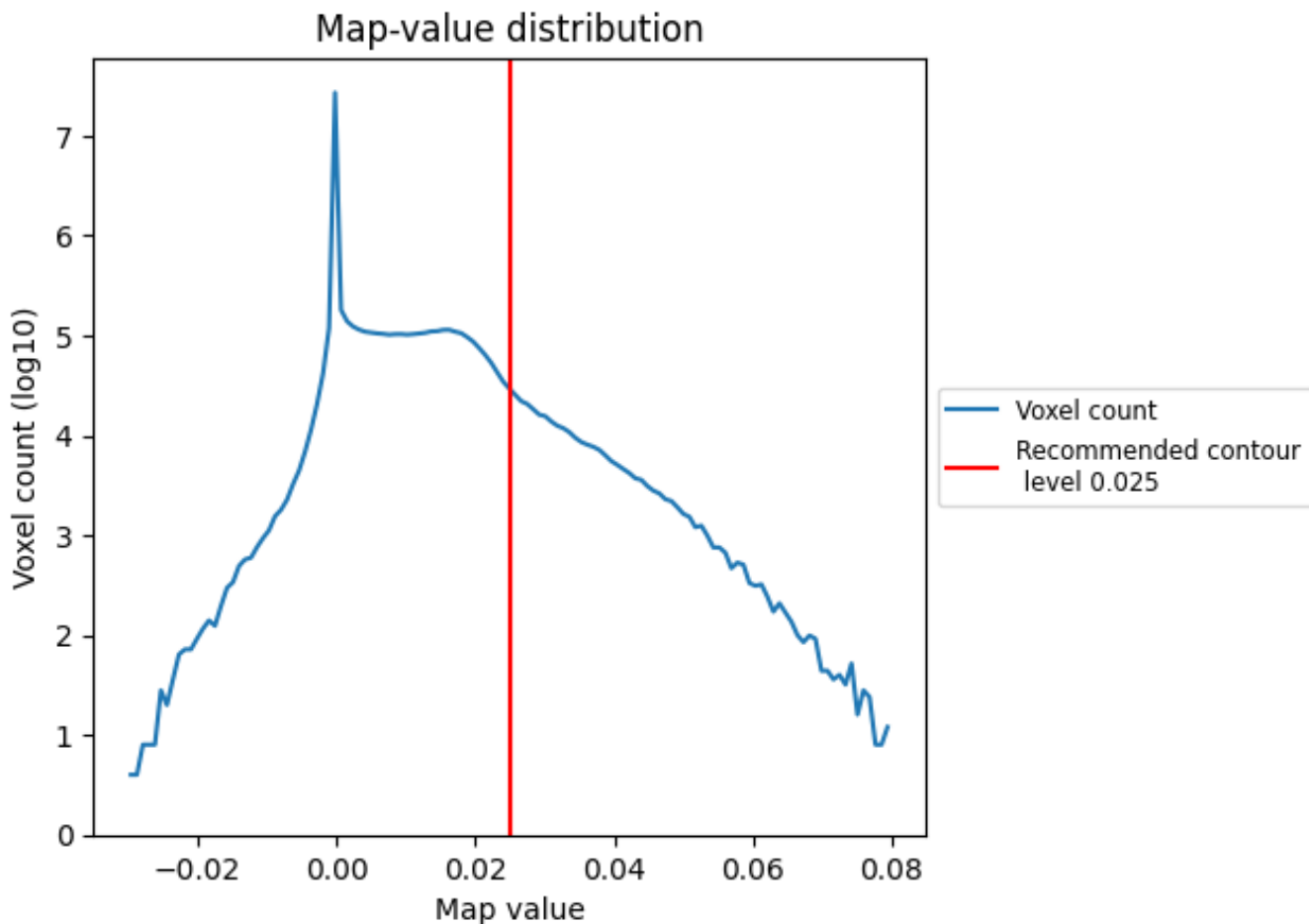
6.5 Mask visualisation [i](#)

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

7 Map analysis [i](#)

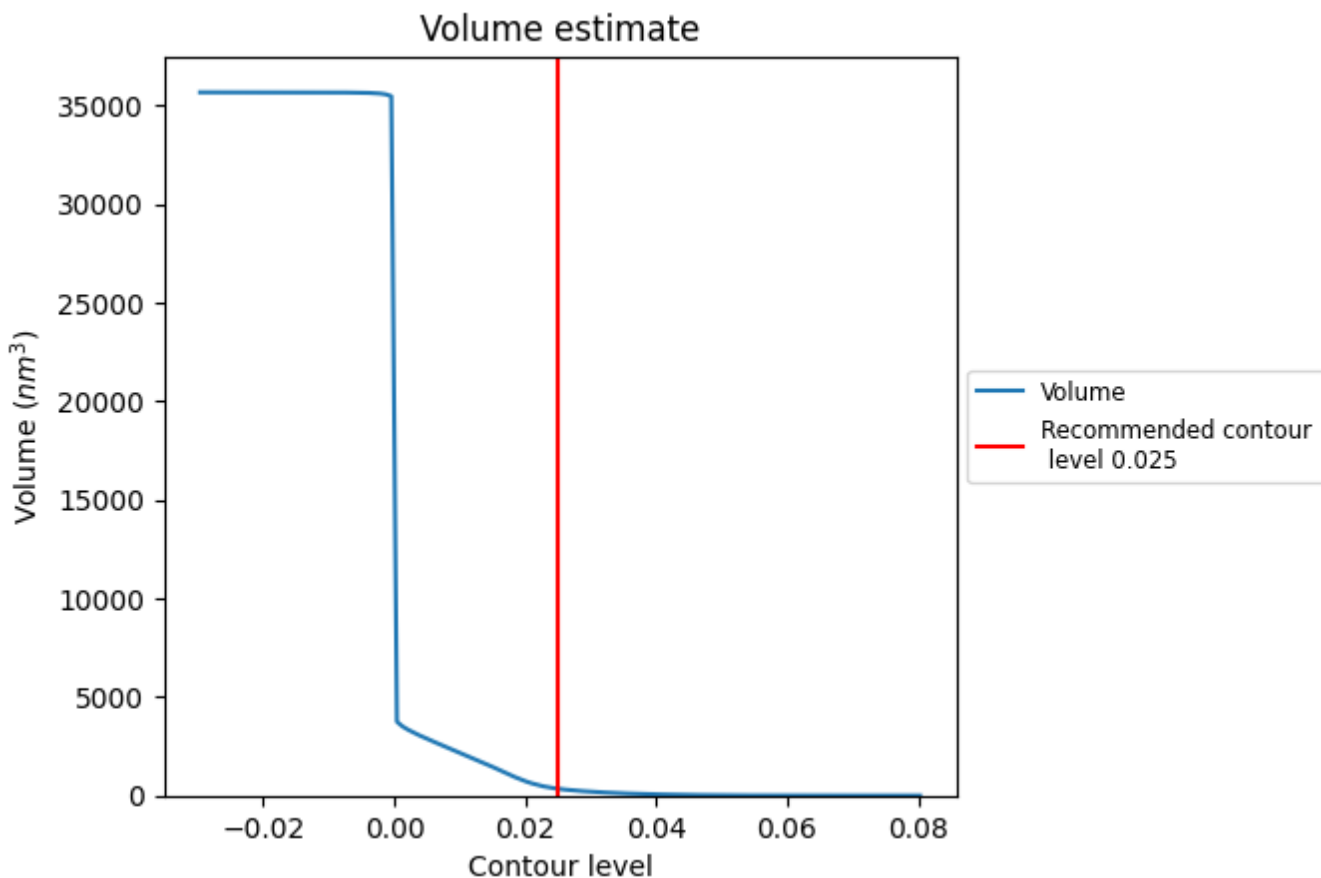
This section contains the results of statistical analysis of the map.

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.

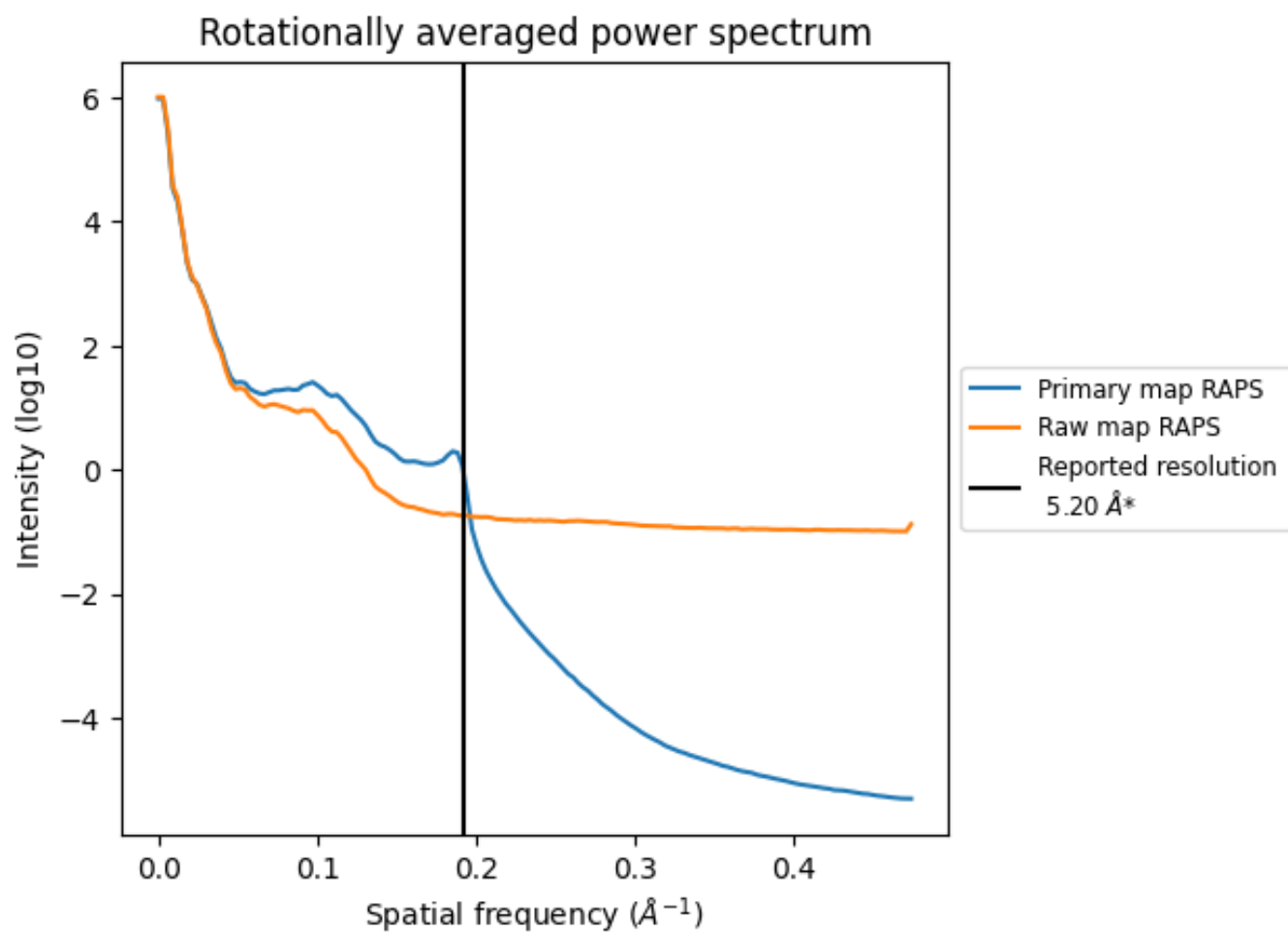
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 347 nm³; this corresponds to an approximate mass of 314 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](#)

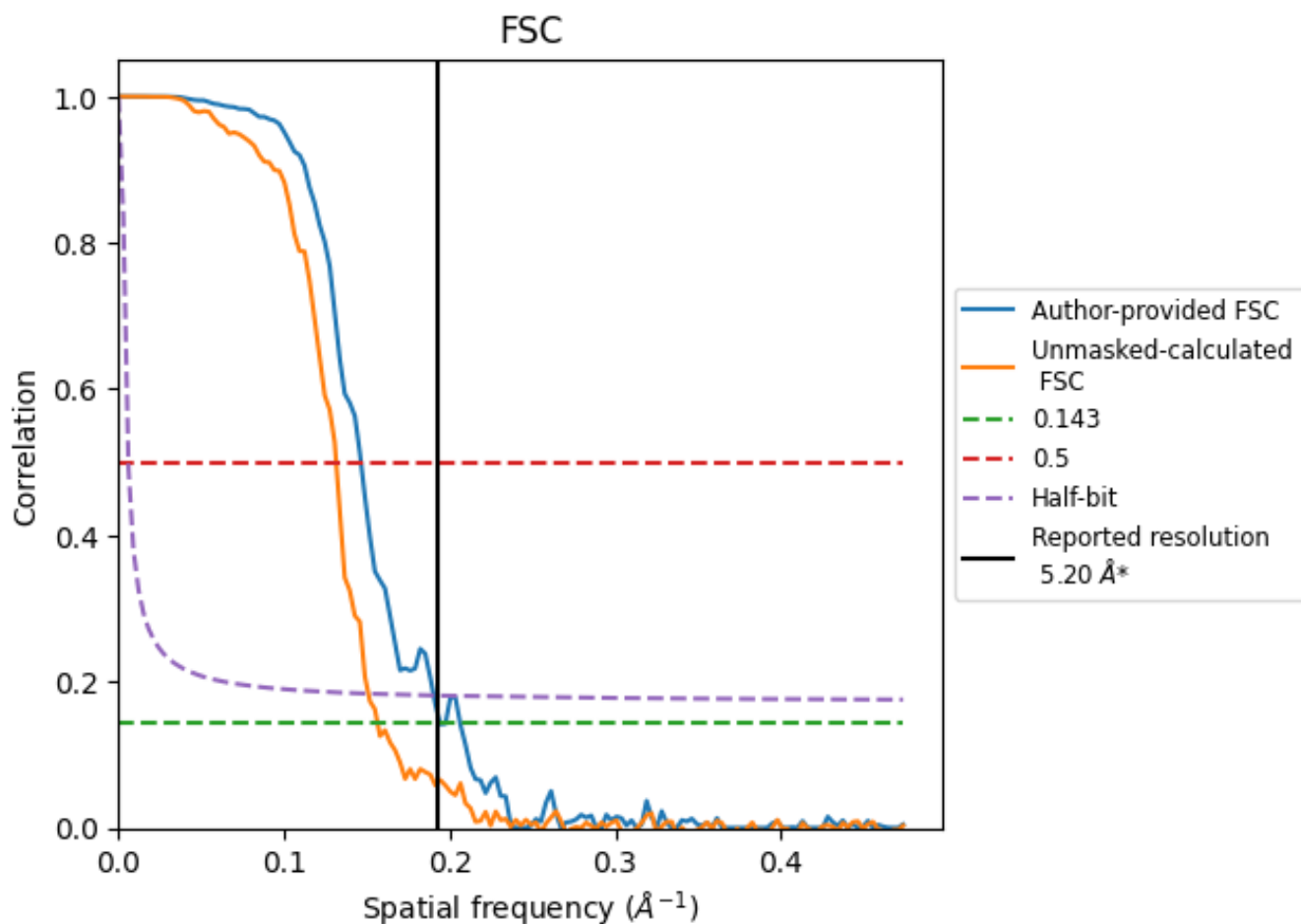


*Reported resolution corresponds to spatial frequency of 0.192 Å⁻¹

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 0.192 \AA^{-1}

8.2 Resolution estimates [i](#)

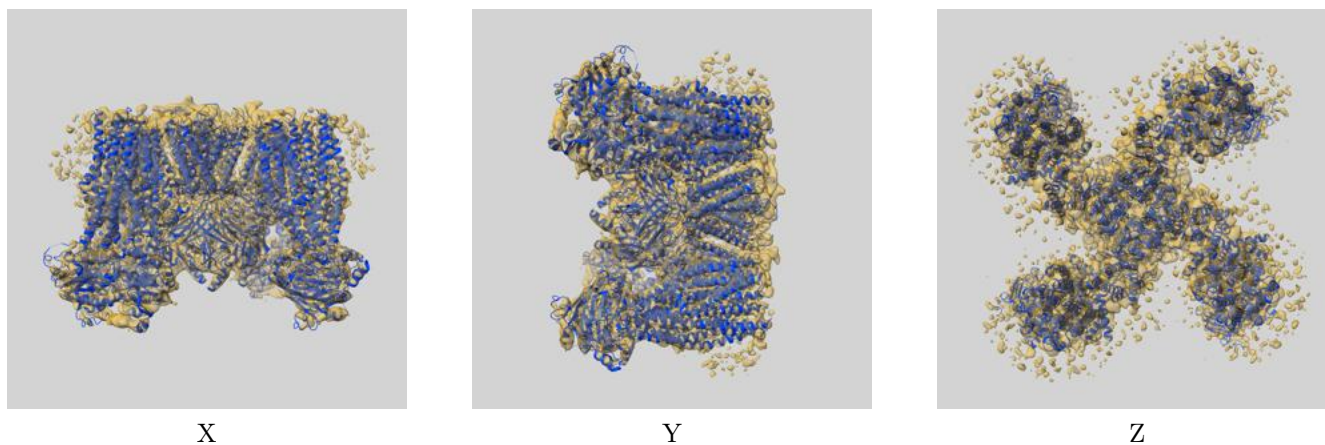
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	5.20	-	-
Author-provided FSC curve	5.15	6.83	5.25
Unmasked-calculated*	6.39	7.60	6.62

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.39 differs from the reported value 5.2 by more than 10 %

9 Map-model fit [i](#)

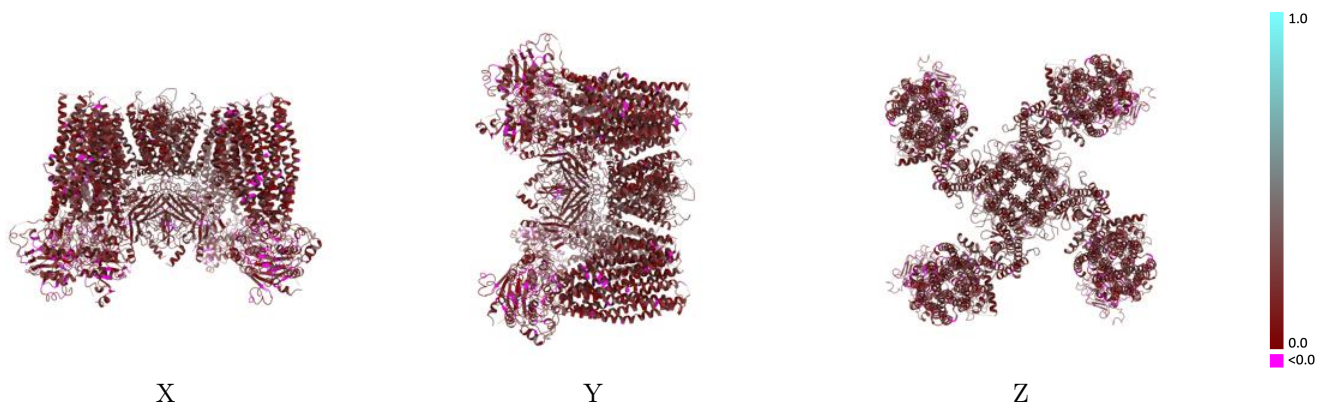
This section contains information regarding the fit between EMDB map EMD-6851 and PDB model 5YWB. Per-residue inclusion information can be found in section 3 on page 6.

9.1 Map-model overlay [i](#)



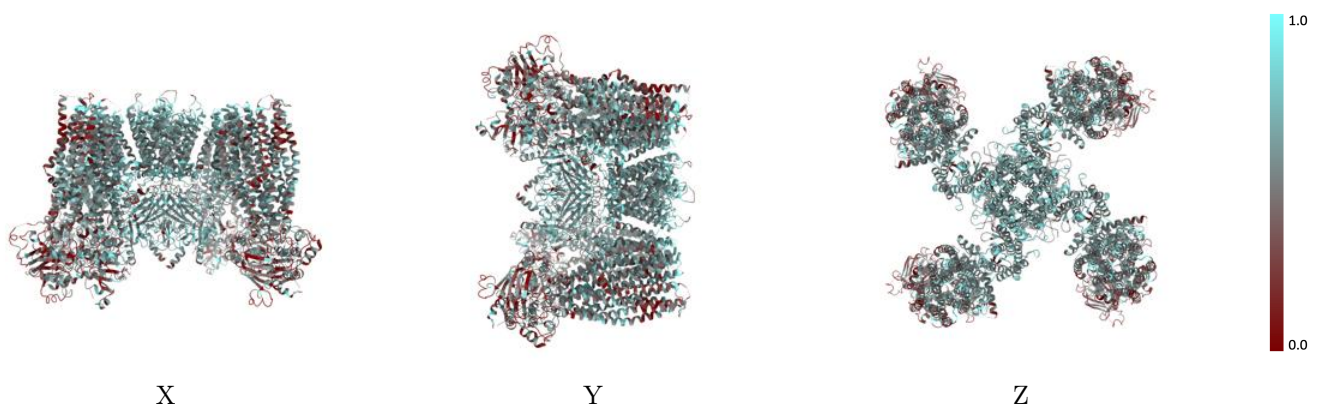
The images above show the 3D surface view of the map at the recommended contour level 0.025 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



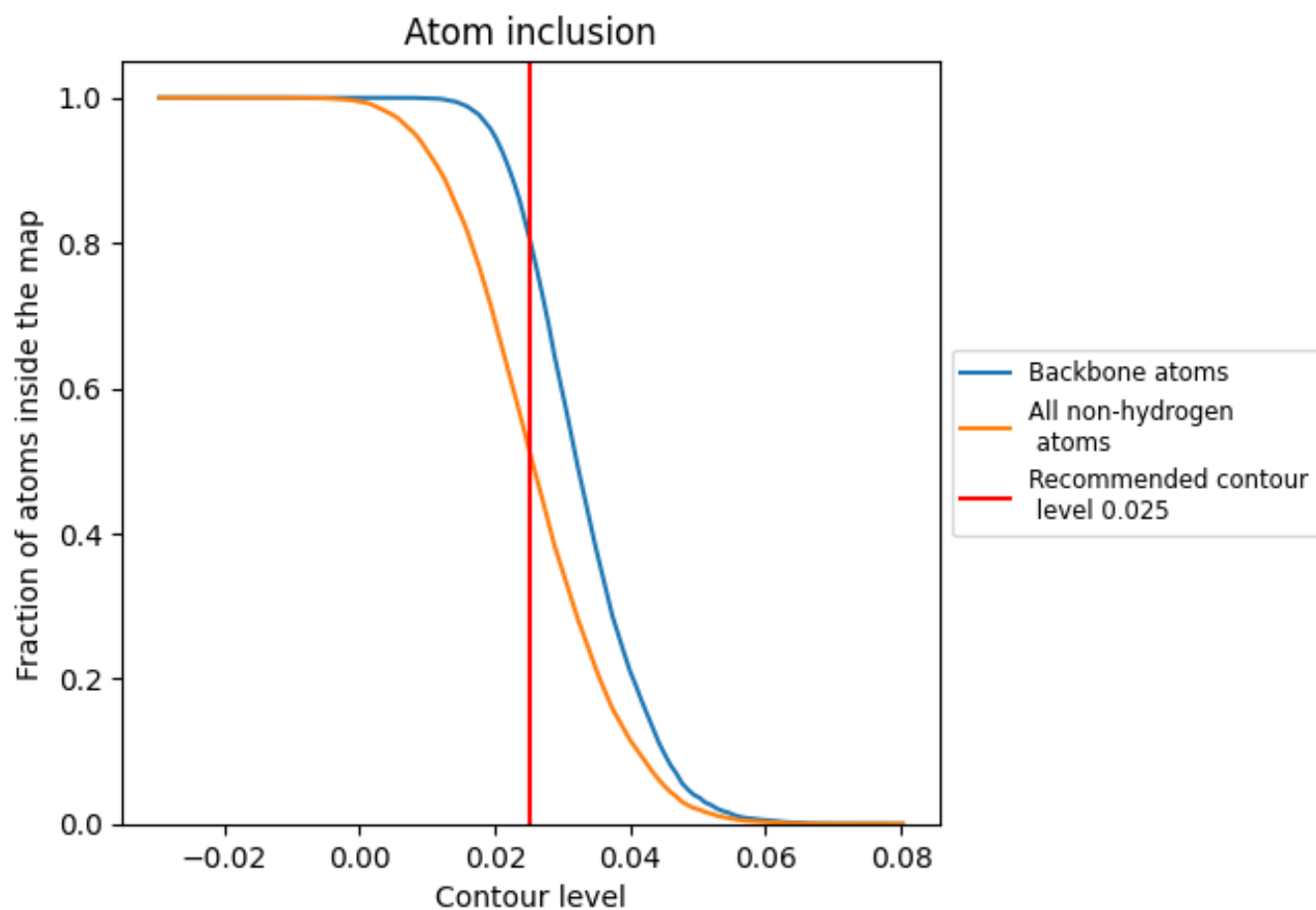
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.025).



















9.4 Atom inclusion [i](#)



At the recommended contour level, 81% of all backbone atoms, 52% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

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

Chain	Atom inclusion	Q-score
All	 0.5156	 0.1930
A	 0.6261	 0.2330
B	 0.4892	 0.1840
C	 0.6265	 0.2350
D	 0.4892	 0.1830
E	 0.6265	 0.2340
F	 0.4892	 0.1830
G	 0.6265	 0.2320
H	 0.4892	 0.1830

