



Full wwPDB EM Validation Report ⓘ

Sep 23, 2025 – 06:43 pm BST

PDB ID : 7ZR6 / pdb_00007zr6
EMDB ID : EMD-14884
Title : CryoEM structure of HSP90-CDC37-BRAF(V600E)-PP5(open) complex
Authors : Oberoi, J.; Pearl, L.H.
Deposited on : 2022-05-03
Resolution : 4.20 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.dev129
Mogul : 1.8.4, 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) : 2.46

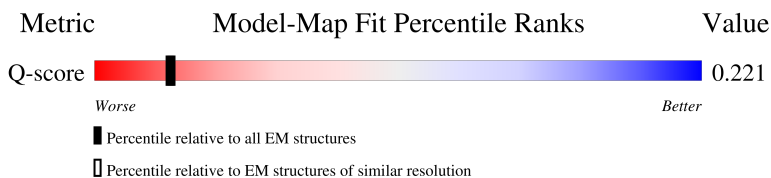
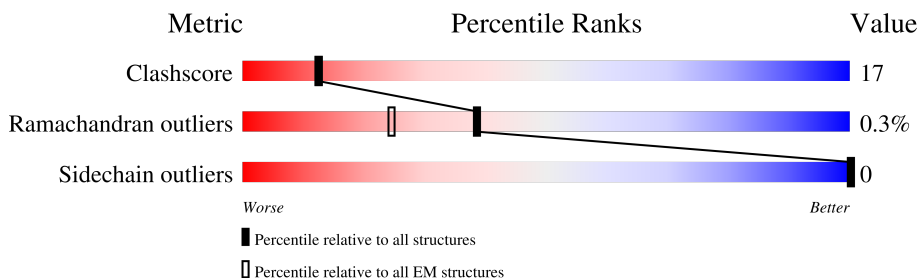
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.20 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	5410 (3.70 - 4.70)

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	749	
1	B	749	
2	C	396	
3	K	828	

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Mol	Chain	Length	Quality of chain
4	P	489	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 17700 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 Heat shock protein HSP 90-beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	633	Total	C	N	O	S	0	0
			5132	3251	862	996	23		
1	B	631	Total	C	N	O	S	0	0
			5112	3240	857	992	23		

There are 50 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-24	MET	-	initiating methionine	UNP P08238
A	-23	ARG	-	expression tag	UNP P08238
A	-22	GLY	-	expression tag	UNP P08238
A	-21	SER	-	expression tag	UNP P08238
A	-20	HIS	-	expression tag	UNP P08238
A	-19	HIS	-	expression tag	UNP P08238
A	-18	HIS	-	expression tag	UNP P08238
A	-17	HIS	-	expression tag	UNP P08238
A	-16	HIS	-	expression tag	UNP P08238
A	-15	HIS	-	expression tag	UNP P08238
A	-14	HIS	-	expression tag	UNP P08238
A	-13	HIS	-	expression tag	UNP P08238
A	-12	GLY	-	expression tag	UNP P08238
A	-11	MET	-	expression tag	UNP P08238
A	-10	ALA	-	expression tag	UNP P08238
A	-9	LEU	-	expression tag	UNP P08238
A	-8	GLU	-	expression tag	UNP P08238
A	-7	VAL	-	expression tag	UNP P08238
A	-6	LEU	-	expression tag	UNP P08238
A	-5	PHE	-	expression tag	UNP P08238
A	-4	GLN	-	expression tag	UNP P08238
A	-3	GLY	-	expression tag	UNP P08238
A	-2	PRO	-	expression tag	UNP P08238
A	-1	SER	-	expression tag	UNP P08238
A	0	ALA	-	expression tag	UNP P08238
B	-24	MET	-	initiating methionine	UNP P08238

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-23	ARG	-	expression tag	UNP P08238
B	-22	GLY	-	expression tag	UNP P08238
B	-21	SER	-	expression tag	UNP P08238
B	-20	HIS	-	expression tag	UNP P08238
B	-19	HIS	-	expression tag	UNP P08238
B	-18	HIS	-	expression tag	UNP P08238
B	-17	HIS	-	expression tag	UNP P08238
B	-16	HIS	-	expression tag	UNP P08238
B	-15	HIS	-	expression tag	UNP P08238
B	-14	HIS	-	expression tag	UNP P08238
B	-13	HIS	-	expression tag	UNP P08238
B	-12	GLY	-	expression tag	UNP P08238
B	-11	MET	-	expression tag	UNP P08238
B	-10	ALA	-	expression tag	UNP P08238
B	-9	LEU	-	expression tag	UNP P08238
B	-8	GLU	-	expression tag	UNP P08238
B	-7	VAL	-	expression tag	UNP P08238
B	-6	LEU	-	expression tag	UNP P08238
B	-5	PHE	-	expression tag	UNP P08238
B	-4	GLN	-	expression tag	UNP P08238
B	-3	GLY	-	expression tag	UNP P08238
B	-2	PRO	-	expression tag	UNP P08238
B	-1	SER	-	expression tag	UNP P08238
B	0	ALA	-	expression tag	UNP P08238

- Molecule 2 is a protein called Hsp90 co-chaperone Cdc37.

Mol	Chain	Residues	Atoms						AltConf	Trace
2	C	277	Total	C	N	O	P	S	0	0
			2337	1454	416	450	1	16		

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	379	LEU	-	expression tag	UNP Q16543
C	380	GLU	-	expression tag	UNP Q16543
C	381	VAL	-	expression tag	UNP Q16543
C	382	LEU	-	expression tag	UNP Q16543
C	383	PHE	-	expression tag	UNP Q16543
C	384	GLN	-	expression tag	UNP Q16543
C	385	GLY	-	expression tag	UNP Q16543
C	386	PRO	-	expression tag	UNP Q16543

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Chain	Residue	Modelled	Actual	Comment	Reference
C	387	LEU	-	expression tag	UNP Q16543
C	388	GLU	-	expression tag	UNP Q16543
C	389	HIS	-	expression tag	UNP Q16543
C	390	HIS	-	expression tag	UNP Q16543
C	391	HIS	-	expression tag	UNP Q16543
C	392	HIS	-	expression tag	UNP Q16543
C	393	HIS	-	expression tag	UNP Q16543
C	394	HIS	-	expression tag	UNP Q16543
C	395	HIS	-	expression tag	UNP Q16543
C	396	HIS	-	expression tag	UNP Q16543

- Molecule 3 is a protein called Serine/threonine-protein kinase B-raf.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	K	186	Total	C	N	O	S	0	0
			1503	966	260	266	11		

There are 63 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	-61	MET	-	initiating methionine	UNP P15056
K	-60	GLY	-	expression tag	UNP P15056
K	-59	GLY	-	expression tag	UNP P15056
K	-58	SER	-	expression tag	UNP P15056
K	-57	HIS	-	expression tag	UNP P15056
K	-56	HIS	-	expression tag	UNP P15056
K	-55	HIS	-	expression tag	UNP P15056
K	-54	HIS	-	expression tag	UNP P15056
K	-53	HIS	-	expression tag	UNP P15056
K	-52	HIS	-	expression tag	UNP P15056
K	-51	HIS	-	expression tag	UNP P15056
K	-50	HIS	-	expression tag	UNP P15056
K	-49	GLY	-	expression tag	UNP P15056
K	-48	GLY	-	expression tag	UNP P15056
K	-47	SER	-	expression tag	UNP P15056
K	-46	TRP	-	expression tag	UNP P15056
K	-45	SER	-	expression tag	UNP P15056
K	-44	HIS	-	expression tag	UNP P15056
K	-43	PRO	-	expression tag	UNP P15056
K	-42	GLN	-	expression tag	UNP P15056
K	-41	PHE	-	expression tag	UNP P15056
K	-40	GLU	-	expression tag	UNP P15056

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Chain	Residue	Modelled	Actual	Comment	Reference
K	-39	LYS	-	expression tag	UNP P15056
K	-38	GLY	-	expression tag	UNP P15056
K	-37	GLY	-	expression tag	UNP P15056
K	-36	GLY	-	expression tag	UNP P15056
K	-35	SER	-	expression tag	UNP P15056
K	-34	GLY	-	expression tag	UNP P15056
K	-33	GLY	-	expression tag	UNP P15056
K	-32	GLY	-	expression tag	UNP P15056
K	-31	SER	-	expression tag	UNP P15056
K	-30	GLY	-	expression tag	UNP P15056
K	-29	GLY	-	expression tag	UNP P15056
K	-28	GLY	-	expression tag	UNP P15056
K	-27	SER	-	expression tag	UNP P15056
K	-26	TRP	-	expression tag	UNP P15056
K	-25	SER	-	expression tag	UNP P15056
K	-24	HIS	-	expression tag	UNP P15056
K	-23	PRO	-	expression tag	UNP P15056
K	-22	GLN	-	expression tag	UNP P15056
K	-21	PHE	-	expression tag	UNP P15056
K	-20	GLU	-	expression tag	UNP P15056
K	-19	LYS	-	expression tag	UNP P15056
K	-18	GLY	-	expression tag	UNP P15056
K	-17	ALA	-	expression tag	UNP P15056
K	-16	GLU	-	expression tag	UNP P15056
K	-15	THR	-	expression tag	UNP P15056
K	-14	ALA	-	expression tag	UNP P15056
K	-13	VAL	-	expression tag	UNP P15056
K	-12	PRO	-	expression tag	UNP P15056
K	-11	ASN	-	expression tag	UNP P15056
K	-10	SER	-	expression tag	UNP P15056
K	-9	LEU	-	expression tag	UNP P15056
K	-8	GLU	-	expression tag	UNP P15056
K	-7	VAL	-	expression tag	UNP P15056
K	-6	LEU	-	expression tag	UNP P15056
K	-5	PHE	-	expression tag	UNP P15056
K	-4	GLN	-	expression tag	UNP P15056
K	-3	GLY	-	expression tag	UNP P15056
K	-2	PRO	-	expression tag	UNP P15056
K	-1	SER	-	expression tag	UNP P15056
K	0	ALA	-	expression tag	UNP P15056
K	600	GLU	VAL	variant	UNP P15056

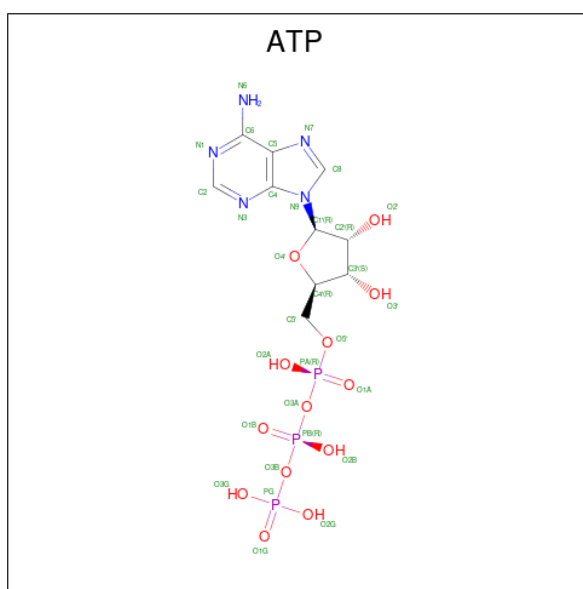
- Molecule 4 is a protein called Serine/threonine-protein phosphatase 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	P	441	Total	C	N	O	S	0	0
			3554	2265	607	664	18		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
P	500	HIS	-	expression tag	UNP P53041
P	501	HIS	-	expression tag	UNP P53041
P	502	HIS	-	expression tag	UNP P53041
P	503	HIS	-	expression tag	UNP P53041
P	504	HIS	-	expression tag	UNP P53041
P	505	HIS	-	expression tag	UNP P53041

- Molecule 5 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).

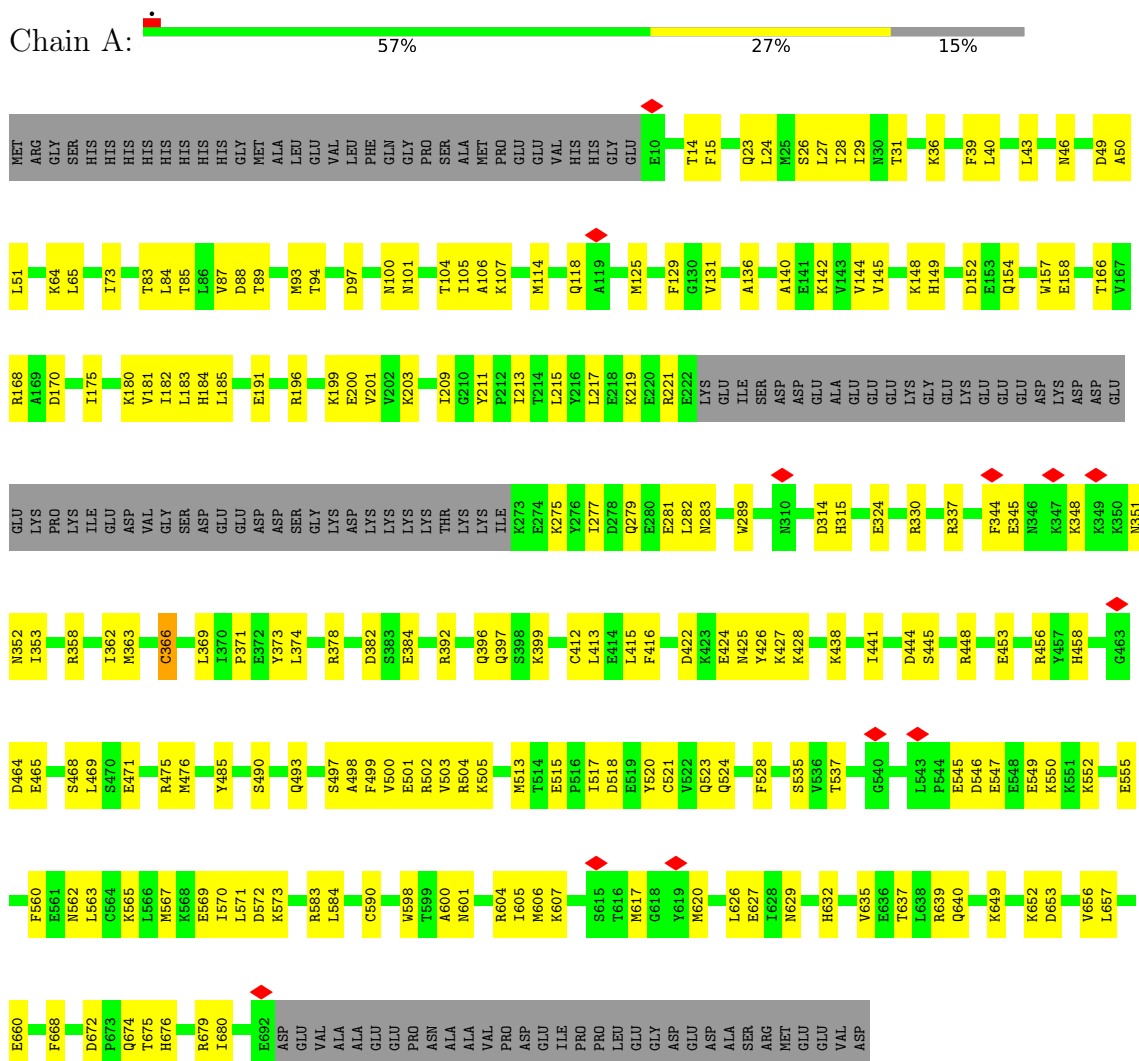


Mol	Chain	Residues	Atoms					AltConf
5	A	1	Total	C	N	O	P	0
			31	10	5	13	3	
5	B	1	Total	C	N	O	P	0
			31	10	5	13	3	

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: Heat shock protein HSP 90-beta



• Molecule 1: Heat shock protein HSP 90-beta



[illegible]

- Molecule 3: Serine/threonine-protein kinase B-raf



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

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

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

SER	PRO	GLY	PRO	GLN	ARG	GLU	ARG	GLY	LYS	SER	SER	SER	SER	SER	ASP	GLU	GLY	ARG	ASN	ARG	MET	LYS	THR	LEU	GLY	ARG	ARG	ASP	SER	SER	SER	ASP	ASP	TRP	TRP	GLU	ILE	ILE	ILE	THR	THR	VAL	GLY	GLN	ARG	ILE	GLY	GLY	SER	PHE	GLY	THR	THR	VAL	THR	LYS	GLY	GLY	TRP	HIS	CYS
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[illegible]

S550	1550	Red
S551	1551	Red
S552	1552	Red
S553	1553	Red
S554	1554	Red
S555	1555	Yellow
S556	1556	Yellow
S557	1557	Yellow
S558	1558	Yellow
S559	1559	Yellow
S560	1560	Yellow
S561	1561	Yellow
S562	1562	Yellow
S563	1563	Yellow
S564	1564	Yellow
S565	1565	Yellow
S566	1566	Yellow
S567	1567	Yellow
S568	1568	Yellow
S569	1569	Yellow
S570	1570	Yellow
S571	1571	Yellow
S572	1572	Yellow
S573	1573	Yellow
S574	1574	Yellow
S575	1575	Yellow
S576	1576	Yellow
S577	1577	Yellow
S578	1578	Yellow
S579	1579	Yellow
S580	1580	Yellow
S581	1581	Yellow
S582	1582	Yellow
S583	1583	Yellow
S584	1584	Yellow
S585	1585	Yellow
S586	1586	Yellow
S587	1587	Yellow
S588	1588	Yellow
S589	1589	Yellow
S590	1590	Yellow
S591	1591	Red
S592	1592	Red
S593	1593	Red
S594	1594	Red
S595	1595	Red
S596	1596	Red
S597	1597	Red
S598	1598	Red
S599	1599	Red
S600	1600	Red
S601	1601	Red
S602	1602	Red
S603	1603	Red
S604	1604	Red
S605	1605	Red
S606	1606	Red
S607	1607	Red
S608	1608	Red
S609	1609	Red
S610	1610	Red
S611	1611	Red
S612	1612	Red
S613	1613	Red
S614	1614	Red
S615	1615	Red
S616	1616	Red
S617	1617	Red
S618	1618	Red
S619	1619	Red
S620	1620	Red
S621	1621	Red
S622	1622	Red
S623	1623	Red
S624	1624	Red
S625	1625	Red
S626	1626	Red
S627	1627	Red
S628	1628	Red
S629	1629	Red
S630	1630	Red
S631	1631	Red
S632	1632	Red
S633	1633	Red
S634	1634	Red
S635	1635	Red
S636	1636	Red
S637	1637	Red
S638	1638	Red
S639	1639	Red
S640	1640	Red
S641	1641	Red
S642	1642	Red
S643	1643	Red
S644	1644	Red
S645	1645	Red
S646	1646	Red
S647	1647	Red
S648	1648	Red
S649	1649	Red
S650	1650	Red
S651	1651	Red
S652	1652	Red
S653	1653	Red
S654	1654	Red
S655	1655	Red
S656	1656	Red
S657	1657	Red
S658	1658	Red
S659	1659	Red
S660	1660	Red
S661	1661	Red
S662	1662	Red
S663	1663	Red
S664	1664	Red
S665	1665	Red
S666	1666	Red
S667	1667	Red
S668	1668	Red
S669	1669	Red
S670	1670	Red
S671	1671	Red
S672	1672	Red
S673	1673	Red
S674	1674	Red
S675	1675	Red
S676	1676	Red
S677	1677	Red
S678	1678	Red
S679	1679	Red
S680	1680	Red
S681	1681	Red
S682	1682	Red
S683	1683	Red
S684	1684	Red
S685	1685	Red
S686	1686	Red
S687	1687	Red
S688	1688	Red
S689	1689	Red
S690	1690	Red
S691	1691	Red
S692	1692	Red
S693	1693	Red
S694	1694	Red
S695	1695	Red
S696	1696	Red
S697	1697	Red
S698	1698	Red
S699	1699	Red
S700	1700	Red
S701	1701	Red
S702	1702	Red
S703	1703	Red
S704	1704	Red
S705	1705	Red
S706	1706	Red
S707	1707	Red
S708	1708	Red
S709	1709	Red
S710	1710	Red
S711	1711	Red
S712	1712	Red
S713	1713	Red
S714	1714	Red
S715	1715	Red
S716	1716	Red
S717	1717	Red
S718	1718	Red
S719	1719	Red
S720	1720	Red
S721	1721	Red
S722	1722	Red
S723	1723	Red
S724	1724	Red
S725	1725	Red
S726	1726	Red
S727	1727	Red
S728	1728	Red
S729	1729	Red
S730	1730	Red
S731	1731	Red
S732	1732	Red
S733	1733	Red
S734	1734	Red
S735	1735	Red
S736	1736	Red
S737	1737	Red
S738	1738	Red
S739	1739	Red
S740	1740	Red
S741	1741	Red
S742	1742	Red
S743	1743	Red
S744	1744	Red
S745	1745	Red
S746	1746	Red
S747	1747	Red
S748	1748	Red
S749	1749	Red
S750	1750	Red
S751	1751	Red
S752	1752	Red
S753	1753	Red
S754	1754	Red
S755	1755	Red
S756	1756	Red
S757	1757	Red
S758	1758	Red
S759	1759	Red
S760	1760	Red
S761	1761	Red
S762	1762	Red
S763	1763	Red
S764	1764	Red
S765	1765	Red
S766	1766	Red
S767	1767	Red
S768	1768	Red
S769	1769	Red
S770	1770	Red
S771	1771	Red
S772	1772	Red
S773	1773	Red
S774	1774	Red
S775	1775	Red
S776	1776	Red
S777	1777	Red
S778	1778	Red
S779	1779	Red
S780	1780	Red
S781	1781	Red
S782	1782	Red
S783	1783	Red
S784	1784	Red
S785	1785	Red
S786	1786	Red
S787	1787	Red
S788	1788	Red
S789	1789	Red
S790	1790	Red
S791	1791	Red
S792	1792	Red
S793	1793	Red
S794	1794	Red
S795	1795	Red
S796	1796	Red
S797	1797	Red
S798	1798	Red
S799	1799	Red
S800	1800	Red
S801	1801	Red
S802	1802	Red
S803	1803	Red
S804	1804	Red
S805	1805	Red
S806	1806	Red
S807	1807	Red
S808	1808	Red
S809	1809	Red
S810	1810	Red
S811	1811	Red
S812	1812	Red
S813	1813	Red
S814	1814	Red
S815	1815	Red
S816	1816	Red
S817	1817	Red
S818	1818	Red
S819	1819	Red
S820	1820	Red
S821	1821	Red
S822	1822	Red
S823	1823	Red
S824	1824	Red
S825	1825	Red
S826	1826	Red
S827	1827	Red
S828	1828	Red
S829	1829	Red
S830	1830	Red
S831	1831	Red
S832	1832	Red
S833	1833	Red
S834	1834	Red
S835	1835	Red
S836	1836	Red
S837	1837	Red
S838	1838	Red
S839	1839	Red
S840	1840	Red
S841	1841	Red
S842	1842	Red
S843	1843	Red
S844	1844	Red
S845	1845	Red
S846	1846	Red
S847	1847	Red
S848	1848	Red
S849	1849	Red
S850	1850	Red
S851	1851	Red
S852	1852	Red
S853	1853	Red
S854	1854	Red
S855	1855	Red
S856	1856	Red
S857	1857	Red
S858	1858	Red
S859	1859	Red
S860	1860	Red
S861	1861	Red
S862	1862	Red
S863	1863	Red
S864	1864	Red
S865	1865	Red
S866	1866	Red
S867	1867	Red
S868	1868	Red
S869	1869	Red
S870	1870	Red
S871	1871	Red
S872	1872	Red
S873	1873	Red
S874	1874	Red
S875	1875	Red
S876	1876	Red
S877	1877	Red
S878	1878	Red
S879	1879	Red
S880	1880	Red
S881	1881	Red
S882	1882	Red
S883	1883	Red
S884	1884	Red
S885	1885	Red
S886	1886	Red
S887	1887	Red
S888	1888	Red
S889	1889	Red
S890	1890	Red
S891	1891	Red
S892	1892	Red
S893	1893	Red
S894	1894	Red
S895	1895	Red
S896	1896	Red
S897	1897	Red
S898	1898	Red
S899	1899	Red
S900	1900	Red
S901	1901	Red
S902	1902	Red
S903	1903	Red
S904	1904	Red
S905	1905	Red
S906	1906	Red
S907	1907	Red
S908	1908	Red
S909	1909	Red
S910	1910	Red
S911	1911	Red
S912	1912	Red
S913	1913	Red
S914	1914	Red
S915	1915	Red
S916	1916	Red
S917	1917	Red
S918	1918	Red
S919	1919	Red
S920	1920	Red
S921	1921	Red
S922	1922	Red
S923	1923	Red
S924	1924	Red
S925	1925	Red
S926	1926	Red
S927	1927	Red
S928	1928	Red
S929	1929	Red
S930	1930	Red
S931	1931	Red
S932	1932	Red
S933	1933	Red
S934	1934	Red
S935	1935	Red
S936	1936	Red
S937	1937	Red
S938	1938	Red
S939	1939	Red
S940	1940	Red
S941	1941	Red
S942	1942	Red
S943	1943	Red
S944	1944	Red
S945	1945	Red
S946	1946	Red
S947	1947	Red
S948	1948	Red
S949	1949	Red
S950	1950	Red
S951	1951	Red
S952	1952	Red
S953	1953	Red
S954	1954	Red
S955	1955	Red
S956	1956	Red
S957	1957	Red
S958	1958	Red
S959	1959	Red
S960	1960	Red
S961	1961	Red
S962	1962	Red
S963	1963	Red
S964	1964	Red
S965	1965	Red
S966	1966	Red
S967	1967	Red
S968	1968	Red
S969	1969	Red
S970	1970	Red
S971	1971	Red
S972	1972	Red
S973	1973	Red
S974	1974	Red
S975	1975	Red
S976	1976	Red
S977	1977	Red
S978	1978	Red
S979	1979	Red
S980	1980	Red
S981	1981	Red
S982	1982	Red
S983	1983	Red
S984	1984	Red
S985	1985	Red
S986	1986	Red
S987	1987	Red
S988	1988	Red
S989	1989	Red
S990	1990	Red
S991	1991	Red
S992	1992	Red
S993	1993	Red
S994	1994	Red
S995	1995	Red
S996	1996	Red
S997	1997	Red
S998	1998	Red
S999	1999	Red
S1000	2000	Red

Year	Value	Change
L618	1618	▲
W619	1619	■
P622	1622	■
E623	1623	■
V624	1624	■
I625	1625	■
R626	1626	■
M627	1627	■
Q628	1628	■
D629	1629	▲
K630	1630	▲
N631	1631	■
P632	1632	■
D638	1638	■
V639	1639	■
Y640	1640	▲
Y647	1647	■
E648	1648	■
L649	1649	■
M650	1650	■
T651	1651	▲
G652	1652	■
Q653	1653	■
Y656	1656	▲
S657	1657	▲
N658	1658	■
I659	1659	■
M660	1660	▲
N661	1661	■
Q664	1664	■
I665	1665	▲
I666	1666	▲
F667	1667	▲
M668	1668	■
Y673	1673	■
L678	1678	▲
S679	1679	■
K680	1680	■
V681	1681	■
R682	1682	■
S683	1683	▲
N684	1684	■
C685	1685	■
F686	1686	■
K687	1687	■
A688	1688	■
M689	1689	■
K690	1690	■
R691	1691	▲
L692	1692	■
F695	1695	▲
C696	1696	■

L697	K698	K699	K700	R701	R704	P705	L706	F707	P708	Q709	I710	L711	A712	S713	I714	E715	L716	L717	S720	L721	P722	K723	I724	H725	ARG	SER	ALA	SER	GLU	PRO	PRO	SER	LEU	ASN	ARG	ALA	GLY	PHE	GLN	THR	GLU	ASP	PHE	SER	LEU	TVR	ALA	CYS	ALA	SER	PRO	LYS	THR	PRO	ILE	GLN	GLY
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

GLY
TYR
GLY
ALA
PHE
PRO
VAL
HIS

- Molecule 4: Serine/threonine-protein phosphatase 5



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	67985	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 ($e^-/\text{\AA}^2$)	45	Depositor
Minimum defocus (nm)	1300	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	2.060	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.029	Depositor
Recommended contour level	0.03	Depositor
Map size ($\text{\AA}$)	282.08002, 282.08002, 282.08002	wwPDB
Map dimensions	328, 328, 328	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing ($\text{\AA}$)	0.8600001, 0.8600001, 0.8600001	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.16	0/5216	0.45	0/7010
1	B	0.16	0/5196	0.46	1/6984 (0.0%)
2	C	0.18	0/2365	0.50	0/3159
3	K	0.17	0/1534	0.52	1/2066 (0.0%)
4	P	0.15	0/3636	0.41	0/4904
All	All	0.16	0/17947	0.46	2/24123 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	K	587	ASP	CB-CA-C	-5.90	109.21	117.23
1	B	118	GLN	CB-CA-C	-5.90	108.77	115.79

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5132	0	5162	172	0
1	B	5112	0	5142	186	0
2	C	2337	0	2295	95	0
3	K	1503	0	1543	54	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	P	3554	0	3484	102	0
5	A	31	0	12	4	0
5	B	31	0	12	0	0
All	All	17700	0	17650	585	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 17.

All (585) 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:B:578:VAL:HG12	1:B:626:LEU:HB3	1.52	0.91
1:A:363:MET:HE1	1:A:366:CYS:H	1.34	0.90
1:B:577:LYS:HZ2	1:B:578:VAL:H	1.19	0.89
1:B:570:ILE:HD12	1:B:655:VAL:HG11	1.58	0.85
2:C:92:ARG:HG3	2:C:96:ARG:HH11	1.42	0.83
1:B:568:LYS:HZ1	1:B:577:LYS:HA	1.44	0.82
1:B:28:ILE:HD12	1:B:32:PHE:HE1	1.47	0.80
3:K:582:ILE:HG23	3:K:590:VAL:HG13	1.62	0.79
1:B:51:LEU:HD11	1:B:73:ILE:HD11	1.65	0.79
2:C:233:CYS:SG	2:C:236:GLN:NE2	2.55	0.79
4:P:395:ARG:NE	4:P:404:CYS:SG	2.56	0.79
3:K:556:ILE:HD11	3:K:588:LEU:HD12	1.65	0.79
1:A:453:GLU:O	1:A:456:ARG:NH1	2.18	0.77
4:P:311:GLN:HA	4:P:316:GLU:HB2	1.68	0.76
1:B:434:SER:OG	1:B:438:LYS:NZ	2.18	0.75
1:B:581:SER:N	1:B:627:GLU:OE2	2.19	0.74
3:K:555:ASP:O	3:K:559:GLN:NE2	2.19	0.74
4:P:424:ILE:HG12	4:P:443:VAL:HB	1.68	0.74
2:C:184:GLU:HG3	2:C:188:ASN:HD21	1.52	0.74
1:B:83:THR:HB	1:B:182:ILE:HD11	1.68	0.74
1:B:502:ARG:HH22	1:B:505:LYS:HE2	1.53	0.74
1:A:366:CYS:HB3	1:A:369:LEU:HD13	1.70	0.73
1:B:342:ASP:HB2	1:B:345:GLU:HG2	1.70	0.73
1:A:125:MET:O	1:A:358:ARG:NH1	2.22	0.73
1:B:576:GLU:OE1	1:B:625:HIS:NE2	2.21	0.73
3:K:686:PRO:HG2	3:K:689:MET:HB2	1.71	0.73
1:A:27:LEU:HD13	1:A:31:THR:HG21	1.68	0.72
4:P:423:ILE:HD12	4:P:425:ARG:HD3	1.70	0.72
3:K:706:LEU:HD23	3:K:708:PRO:HD3	1.71	0.72
2:C:106:ARG:O	2:C:106:ARG:NH1	2.22	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:144:VAL:HG12	1:A:158:GLU:OE1	1.89	0.72
1:A:140:ALA:HB2	1:A:185:LEU:HD23	1.72	0.71
1:B:125:MET:O	1:B:358:ARG:NH1	2.23	0.71
3:K:578:LYS:HD3	3:K:617:ILE:HB	1.73	0.71
1:A:567:MET:HA	1:A:570:ILE:HG22	1.72	0.70
1:B:513:MET:HB3	1:B:518:ASP:HB3	1.74	0.70
3:K:653:GLN:HE21	3:K:680:LYS:HE3	1.56	0.70
1:B:98:LEU:HA	1:B:102:LEU:HD13	1.74	0.70
1:B:536:VAL:O	1:B:583:ARG:NH1	2.25	0.69
4:P:233:GLU:HB2	4:P:466:GLY:HA3	1.74	0.69
2:C:271:ILE:HG22	2:C:275:MET:HE1	1.75	0.69
2:C:178:ASN:O	2:C:182:VAL:N	2.18	0.69
1:B:612:ARG:NH1	1:B:614:ASN:OD1	2.26	0.69
4:P:370:GLU:O	4:P:373:ARG:NH1	2.26	0.69
4:P:30:GLU:OE1	4:P:34:GLN:NE2	2.26	0.69
1:A:626:LEU:HD12	1:A:627:GLU:H	1.57	0.68
2:C:172:GLN:OE1	2:C:242:LYS:NZ	2.26	0.68
1:A:501:GLU:HG2	1:A:504:ARG:HH21	1.59	0.68
2:C:37:VAL:HA	2:C:40:MET:HE3	1.76	0.68
1:A:660:GLU:OE1	1:A:676:HIS:CE1	2.47	0.67
1:A:289:TRP:HD1	1:A:330:ARG:HD3	1.59	0.67
3:K:688:ALA:HB3	3:K:717:LEU:HD22	1.76	0.67
1:B:568:LYS:HE3	1:B:578:VAL:HG22	1.77	0.67
1:A:142:LYS:HB3	1:A:184:HIS:HB2	1.76	0.67
1:A:351:ASN:O	1:A:378:ARG:NH2	2.28	0.67
1:B:543:LEU:HD12	1:B:544:PRO:HD2	1.76	0.67
1:A:106:ALA:HB1	1:B:23:GLN:HB3	1.77	0.66
1:B:297:THR:O	1:B:299:GLU:N	2.28	0.66
1:B:320:HIS:O	1:B:320:HIS:ND1	2.29	0.66
1:B:548:GLU:OE1	1:B:552:LYS:NZ	2.29	0.66
2:C:106:ARG:HH12	2:C:110:LYS:HG3	1.61	0.66
2:C:168:TRP:HB3	2:C:242:LYS:HE2	1.77	0.66
2:C:195:ILE:O	2:C:270:ARG:NH1	2.29	0.65
1:A:49:ASP:OD1	1:A:50:ALA:N	2.28	0.65
2:C:128:MET:HE1	2:C:130:ASN:HB2	1.76	0.65
1:B:630:PRO:HA	1:B:635:VAL:HG21	1.76	0.65
1:A:490:SER:O	1:A:493:GLN:NE2	2.28	0.65
4:P:391:PRO:HB3	4:P:437:ALA:HB1	1.78	0.65
4:P:216:VAL:HA	4:P:219:VAL:HG12	1.78	0.65
4:P:216:VAL:HG11	4:P:287:PHE:HB3	1.77	0.64
1:B:460:SER:O	1:B:504:ARG:NH2	2.30	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:448:ARG:HH12	1:A:524:GLN:HE21	1.43	0.64
3:K:555:ASP:OD1	3:K:559:GLN:NE2	2.30	0.64
1:A:140:ALA:HA	1:A:185:LEU:HA	1.79	0.64
1:A:289:TRP:O	1:A:330:ARG:NE	2.30	0.64
1:A:209:ILE:O	1:A:283:ASN:ND2	2.30	0.64
1:B:104:THR:HB	1:B:107:LYS:HE2	1.80	0.64
1:A:324:GLU:N	1:A:324:GLU:OE2	2.31	0.64
1:B:76:ILE:HB	1:B:85:THR:HB	1.79	0.64
3:K:625:ILE:HG12	3:K:666:ILE:HD11	1.80	0.63
1:A:27:LEU:O	1:A:31:THR:OG1	2.11	0.63
1:B:102:LEU:O	1:B:134:TYR:OH	2.15	0.63
3:K:616:SER:HA	3:K:619:TRP:HB2	1.81	0.63
1:A:499:PHE:HE2	1:A:537:THR:HG23	1.64	0.63
4:P:62:ALA:HA	4:P:65:TYR:HD2	1.64	0.63
1:A:101:ASN:OD1	5:A:801:ATP:O3'	2.16	0.63
4:P:197:TRP:HE1	4:P:202:LYS:HB2	1.64	0.63
4:P:323:TYR:HB3	4:P:327:MET:HE3	1.81	0.63
3:K:686:PRO:HB2	3:K:717:LEU:HD21	1.81	0.63
1:B:402:LYS:NZ	2:C:15:ASP:OD1	2.26	0.62
1:B:449:ARG:NH2	1:B:529:ASP:OD1	2.32	0.62
2:C:248:TYR:OH	3:K:522:LYS:NZ	2.24	0.62
1:B:63:SER:HB3	1:B:64:LYS:HZ2	1.64	0.62
1:B:389:ASN:OD1	1:B:390:ILE:N	2.32	0.62
3:K:653:GLN:NE2	3:K:680:LYS:HE3	2.15	0.62
4:P:69:SER:O	4:P:73:LEU:HG	1.99	0.62
2:C:94:GLU:HB3	2:C:98:TRP:HZ3	1.64	0.62
4:P:37:ASP:HA	4:P:40:LYS:HD2	1.81	0.62
4:P:186:VAL:HG12	4:P:191:MET:HE3	1.80	0.62
2:C:39:ARG:HH12	2:C:43:PHE:HB2	1.65	0.61
1:B:527:GLU:OE2	1:B:530:GLY:N	2.32	0.61
4:P:188:ILE:HA	4:P:191:MET:SD	2.40	0.61
1:A:289:TRP:NE1	1:A:382:ASP:OD2	2.33	0.61
1:A:46:ASN:ND2	5:A:801:ATP:O1A	2.32	0.61
1:B:79:PRO:HG3	1:B:193:LEU:HD21	1.81	0.61
1:B:143:VAL:HG12	1:B:183:LEU:HG	1.83	0.61
2:C:184:GLU:O	2:C:188:ASN:ND2	2.34	0.61
4:P:303:ASN:HB2	4:P:386:TRP:CE2	2.35	0.61
1:B:562:ASN:OD1	1:B:563:LEU:N	2.34	0.60
1:B:72:LYS:HZ1	1:B:74:ASP:HB2	1.66	0.60
4:P:149:GLU:OE2	4:P:150:ARG:NH1	2.34	0.60
1:B:516:PRO:HB3	1:B:605:ILE:HD13	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:P:205:HIS:NE2	4:P:207:LYS:HG3	2.17	0.60
1:B:72:LYS:NZ	1:B:74:ASP:HB2	2.15	0.60
1:A:674:GLN:NE2	1:B:496:ASN:OD1	2.35	0.60
4:P:237:ILE:HD11	4:P:267:ILE:HD12	1.82	0.60
1:B:209:ILE:O	1:B:283:ASN:ND2	2.35	0.60
1:B:477:LYS:HZ2	1:B:479:THR:HB	1.64	0.60
4:P:139:CYS:HA	4:P:142:ILE:HD12	1.83	0.60
4:P:300:LEU:HD21	4:P:342:GLN:HG2	1.83	0.60
1:A:424:GLU:O	1:A:428:LYS:NZ	2.29	0.59
4:P:185:LYS:NZ	4:P:186:VAL:O	2.35	0.59
2:C:244:ALA:HB3	2:C:249:MET:HE2	1.83	0.59
3:K:640:TYR:HD2	3:K:704:ARG:HH22	1.50	0.59
1:A:105:ILE:H	1:B:19:ALA:HA	1.67	0.59
1:A:464:ASP:OD2	4:P:206:ARG:NH1	2.36	0.59
1:A:601:ASN:OD1	1:A:604:ARG:NH2	2.36	0.59
1:B:548:GLU:O	1:B:552:LYS:NZ	2.35	0.59
1:A:513:MET:HE2	1:A:518:ASP:HB3	1.85	0.58
4:P:130:LYS:HA	4:P:133:LYS:HD3	1.85	0.58
1:A:168:ARG:HH12	1:A:170:ASP:HB2	1.68	0.58
2:C:18:GLU:OE2	3:K:566:TYR:OH	2.21	0.58
4:P:84:ASP:OD1	4:P:87:ARG:NH2	2.35	0.58
1:A:358:ARG:NE	1:A:384:GLU:OE2	2.37	0.58
2:C:222:LEU:O	2:C:226:LEU:CB	2.52	0.58
2:C:94:GLU:N	2:C:94:GLU:OE2	2.37	0.58
1:A:148:LYS:HB2	1:A:154:GLN:HG2	1.85	0.58
4:P:72:TYR:O	4:P:76:GLU:N	2.36	0.58
4:P:409:ASP:OD1	4:P:410:VAL:N	2.36	0.58
2:C:92:ARG:HG3	2:C:96:ARG:NH1	2.17	0.58
2:C:222:LEU:O	2:C:226:LEU:HB2	2.03	0.58
1:B:388:LEU:HD12	1:B:392:ARG:HG3	1.86	0.58
1:B:485:TYR:HB2	1:B:513:MET:HE1	1.86	0.58
1:B:569:GLU:N	1:B:569:GLU:OE1	2.36	0.57
1:B:598:TRP:HZ3	1:B:606:MET:HE3	1.69	0.57
1:B:515:GLU:HG3	1:B:516:PRO:HD2	1.86	0.57
2:C:20:HIS:HB2	3:K:566:TYR:CE1	2.38	0.57
2:C:105:MET:O	2:C:109:GLU:HG2	2.04	0.57
1:A:144:VAL:CG2	1:A:182:ILE:HB	2.34	0.57
3:K:623:GLU:HG2	3:K:632:PRO:HB2	1.86	0.57
1:A:520:TYR:O	1:A:523:GLN:NE2	2.37	0.57
1:A:598:TRP:CZ3	1:A:606:MET:HG2	2.39	0.57
1:B:146:ILE:HB	1:B:180:LYS:HB2	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:254:ASP:OD1	2:C:255:GLU:N	2.37	0.57
1:B:428:LYS:HE3	1:B:428:LYS:HA	1.86	0.57
4:P:395:ARG:HD2	4:P:405:GLN:O	2.05	0.57
1:B:499:PHE:HE1	1:B:590:CYS:HB2	1.70	0.56
4:P:308:ASN:ND2	4:P:377:ASP:OD1	2.38	0.56
1:A:549:GLU:HA	1:A:552:LYS:HZ2	1.70	0.56
2:C:240:LYS:HZ2	3:K:522:LYS:HA	1.70	0.56
3:K:543:ILE:HG22	3:K:544:ILE:HG13	1.88	0.56
4:P:365:ASP:OD1	4:P:366:ILE:N	2.37	0.56
4:P:45:GLU:OE1	4:P:49:LYS:NZ	2.34	0.56
1:A:85:THR:HG22	1:A:182:ILE:HD12	1.86	0.56
2:C:202:LYS:HD2	2:C:205:LEU:HD22	1.86	0.56
1:A:438:LYS:NZ	1:A:518:ASP:OD1	2.31	0.56
4:P:457:ASN:ND2	4:P:458:LYS:O	2.39	0.56
1:A:145:VAL:HG12	1:A:181:VAL:HG22	1.88	0.56
4:P:455:MET:HG2	4:P:457:ASN:H	1.71	0.56
4:P:65:TYR:HE1	4:P:87:ARG:HE	1.54	0.55
1:B:604:ARG:NH2	1:B:669:SER:H	2.04	0.55
1:B:215:LEU:HD23	1:B:217:LEU:H	1.72	0.55
1:A:87:VAL:HG12	1:A:180:LYS:HB2	1.87	0.55
1:A:196:ARG:NH2	1:A:200:GLU:OE2	2.39	0.55
1:B:68:GLY:O	1:B:177:ARG:NH1	2.39	0.55
1:B:346:ASN:O	1:B:348:LYS:N	2.40	0.55
1:A:314:ASP:OD1	1:A:337:ARG:NE	2.40	0.54
1:A:14:THR:OG1	1:B:164:SER:OG	2.25	0.54
1:A:83:THR:HG22	1:A:184:HIS:CD2	2.43	0.54
1:B:75:ILE:HG22	1:B:77:PRO:HD3	1.90	0.54
1:B:649:LYS:HA	1:B:652:LYS:HE2	1.88	0.54
4:P:249:ASP:O	4:P:253:ILE:HG12	2.08	0.54
1:A:425:ASN:OD1	1:A:426:TYR:N	2.40	0.54
2:C:94:GLU:HB3	2:C:98:TRP:CZ3	2.42	0.54
1:A:191:GLU:N	1:A:191:GLU:OE1	2.41	0.53
1:B:296:ILE:HG21	1:B:301:TYR:CE1	2.43	0.53
2:C:37:VAL:O	2:C:40:MET:HG2	2.08	0.53
3:K:697:LEU:HB2	3:K:701:ARG:CZ	2.38	0.53
1:A:458:HIS:ND1	1:A:465:GLU:O	2.42	0.53
1:B:657:LEU:O	1:B:661:THR:HG23	2.06	0.53
2:C:223:ALA:O	2:C:227:LYS:N	2.41	0.53
3:K:537:LEU:HD11	3:K:649:LEU:HD11	1.90	0.53
1:B:149:HIS:ND1	1:B:151:ASP:OD1	2.27	0.53
1:B:475:ARG:O	1:B:475:ARG:HG2	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:180:HIS:O	2:C:231:ARG:NH2	2.41	0.53
3:K:705:PRO:HB2	3:K:709:GLN:HE21	1.74	0.53
1:B:577:LYS:NZ	1:B:578:VAL:H	2.00	0.53
4:P:179:PRO:HB3	4:P:208:CYS:SG	2.49	0.53
1:A:352:ASN:OD1	1:A:353:ILE:N	2.41	0.53
1:A:660:GLU:OE1	1:A:676:HIS:HE1	1.90	0.53
4:P:376:PRO:HG3	4:P:381:MET:SD	2.48	0.53
1:B:82:ARG:HH12	1:B:187:GLU:HA	1.74	0.53
2:C:56:GLU:O	2:C:59:ARG:HG3	2.09	0.53
1:A:100:ASN:O	1:A:107:LYS:HE3	2.09	0.52
1:A:490:SER:H	1:A:493:GLN:HE21	1.56	0.52
1:A:605:ILE:HD12	1:B:608:ALA:HA	1.92	0.52
1:A:105:ILE:HG23	1:A:131:VAL:HG21	1.91	0.52
4:P:450:ASN:HA	4:P:456:GLY:H	1.73	0.52
1:B:662:ALA:O	1:B:665:SER:OG	2.19	0.52
1:B:352:ASN:ND2	1:B:375:ASN:OD1	2.42	0.52
4:P:300:LEU:HD21	4:P:342:GLN:HE21	1.75	0.52
1:A:84:LEU:O	1:A:182:ILE:HA	2.10	0.52
1:B:604:ARG:HH21	1:B:669:SER:H	1.58	0.52
2:C:17:ASP:OD1	2:C:18:GLU:N	2.43	0.52
1:B:502:ARG:HH21	1:B:506:ARG:HG2	1.74	0.52
2:C:216:MET:O	2:C:220:LEU:HD23	2.10	0.52
1:A:497:SER:OG	1:A:498:ALA:N	2.43	0.52
2:C:206:MET:HE2	2:C:260:LYS:HZ3	1.74	0.52
1:A:424:GLU:HG3	1:A:427:LYS:HZ1	1.75	0.51
4:P:142:ILE:O	4:P:146:LYS:HG2	2.10	0.51
1:A:15:PHE:HB2	1:B:165:PHE:CE2	2.45	0.51
1:B:557:LYS:NZ	1:B:580:ILE:H	2.09	0.51
1:A:653:ASP:HA	1:A:656:VAL:HG22	1.91	0.51
1:B:515:GLU:HG2	1:B:517:ILE:HG22	1.91	0.51
1:B:614:ASN:HA	1:B:617:MET:HE1	1.92	0.51
1:B:679:ARG:O	1:B:682:ARG:HG2	2.11	0.51
2:C:18:GLU:OE2	3:K:570:LYS:NZ	2.43	0.51
3:K:710:ILE:O	3:K:714:ILE:HG12	2.10	0.51
1:A:148:LYS:NZ	1:A:152:ASP:O	2.44	0.51
1:B:108:SER:HB2	1:B:111:LYS:HG2	1.92	0.51
2:C:57:CYS:O	2:C:61:VAL:HG23	2.10	0.51
3:K:619:TRP:HE1	3:K:656:TYR:HD2	1.58	0.51
4:P:238:THR:HG23	4:P:463:HIS:CE1	2.46	0.51
1:B:602:MET:HA	1:B:605:ILE:HG22	1.92	0.51
1:A:114:MET:HE2	1:A:114:MET:N	2.26	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:219:LYS:NZ	1:A:277:ILE:HG21	2.26	0.51
1:B:568:LYS:NZ	1:B:577:LYS:HA	2.22	0.51
1:B:604:ARG:NH2	1:B:668:PHE:HA	2.25	0.51
2:C:196:ASP:O	2:C:270:ARG:NH2	2.43	0.51
1:A:441:ILE:HD11	1:A:521:CYS:HB2	1.92	0.51
1:B:168:ARG:NH1	1:B:170:ASP:HB3	2.26	0.51
3:K:555:ASP:CG	3:K:559:GLN:HE22	2.18	0.51
1:A:363:MET:HE1	1:A:366:CYS:N	2.16	0.51
1:B:577:LYS:NZ	1:B:578:VAL:O	2.41	0.51
1:B:28:ILE:HD12	1:B:32:PHE:CE1	2.38	0.50
1:B:425:ASN:HD21	2:C:131:THR:HG23	1.76	0.50
3:K:668:MET:SD	3:K:673:TYR:HA	2.52	0.50
1:A:158:GLU:HB2	1:A:166:THR:OG1	2.11	0.50
1:A:344:PHE:HE1	1:B:611:LEU:HB3	1.77	0.50
4:P:94:LYS:HA	4:P:99:TYR:HE2	1.76	0.50
1:A:73:ILE:HB	1:A:213:ILE:HA	1.92	0.50
1:B:213:ILE:HG13	1:B:282:LEU:HB2	1.94	0.50
1:B:519:GLU:OE1	1:B:602:MET:N	2.44	0.50
1:B:600:ALA:O	1:B:603:GLU:HB2	2.12	0.50
2:C:94:GLU:O	2:C:98:TRP:HE3	1.94	0.50
4:P:44:TYR:CE2	4:P:74:ARG:HD2	2.47	0.50
4:P:106:ASN:ND2	4:P:114:ALA:HB3	2.26	0.50
1:A:626:LEU:HD12	1:A:627:GLU:N	2.27	0.50
1:B:425:ASN:OD1	2:C:131:THR:OG1	2.17	0.50
1:A:413:LEU:HA	1:A:416:PHE:HD1	1.76	0.50
1:A:549:GLU:HA	1:A:552:LYS:NZ	2.26	0.50
1:B:25:MET:HA	1:B:28:ILE:HG22	1.93	0.50
1:B:170:ASP:N	1:B:170:ASP:OD1	2.42	0.50
1:B:323:VAL:O	1:B:328:GLU:HG2	2.12	0.50
1:B:389:ASN:HA	1:B:396:GLN:HE22	1.77	0.50
1:B:477:LYS:NZ	1:B:479:THR:HB	2.27	0.50
1:B:485:TYR:CZ	1:B:535:SER:HB2	2.46	0.50
1:B:561:GLU:CD	1:B:561:GLU:H	2.20	0.50
1:B:590:CYS:SG	1:B:627:GLU:HB3	2.52	0.50
2:C:195:ILE:HG23	2:C:266:ARG:HD3	1.93	0.50
4:P:31:LEU:HD22	4:P:50:PHE:HD1	1.77	0.50
1:A:279:GLN:NE2	1:A:281:GLU:HB2	2.26	0.50
1:B:35:ASN:HB3	1:B:37:GLU:OE1	2.12	0.50
2:C:128:MET:SD	2:C:129:VAL:N	2.85	0.50
2:C:189:TYR:HA	2:C:192:ILE:HG12	1.94	0.50
1:A:563:LEU:O	1:A:567:MET:HG3	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:675:THR:O	1:A:679:ARG:HG2	2.12	0.49
3:K:538:TYR:HH	3:K:542:HIS:HE2	1.53	0.49
1:A:93:MET:HE1	1:A:101:ASN:ND2	2.27	0.49
1:B:145:VAL:CG1	1:B:157:TRP:HB3	2.42	0.49
1:A:468:SER:OG	1:A:469:LEU:N	2.43	0.49
1:A:517:ILE:HA	1:A:520:TYR:HD2	1.76	0.49
1:A:632:HIS:O	1:A:635:VAL:HG12	2.13	0.49
1:B:97:ASP:O	1:B:101:ASN:HB3	2.11	0.49
1:B:682:ARG:HG3	1:B:683:MET:HG2	1.94	0.49
4:P:38:TYR:HB3	4:P:43:ASP:HB3	1.94	0.49
1:A:46:ASN:HD22	5:A:801:ATP:H8	1.60	0.49
1:A:607:LYS:NZ	1:A:617:MET:SD	2.81	0.49
1:A:565:LYS:O	1:A:569:GLU:HG2	2.13	0.49
1:A:637:THR:HA	1:A:640:GLN:HG3	1.93	0.49
1:A:344:PHE:CE1	1:B:611:LEU:HB3	2.48	0.49
1:B:427:LYS:HG2	1:B:466:MET:HE3	1.95	0.49
2:C:172:GLN:NE2	2:C:235:ARG:HH22	2.10	0.49
1:A:424:GLU:HG3	1:A:427:LYS:NZ	2.27	0.48
1:A:515:GLU:OE1	1:A:518:ASP:N	2.36	0.48
2:C:267:ALA:O	2:C:271:ILE:HG12	2.13	0.48
1:A:620:MET:HE3	1:A:620:MET:HA	1.95	0.48
2:C:178:ASN:C	2:C:182:VAL:HG22	2.38	0.48
2:C:196:ASP:HA	2:C:270:ARG:CZ	2.43	0.48
4:P:193:GLU:O	4:P:196:GLN:HG3	2.13	0.48
4:P:244:HIS:CE1	4:P:271:ASP:HB3	2.48	0.48
1:A:88:ASP:OD1	1:A:89:THR:N	2.46	0.48
1:B:346:ASN:OD1	1:B:347:LYS:N	2.47	0.48
3:K:555:ASP:OD2	3:K:558:ARG:NH2	2.46	0.48
4:P:197:TRP:NE1	4:P:202:LYS:HB2	2.27	0.48
4:P:106:ASN:ND2	4:P:111:LYS:O	2.46	0.48
4:P:293:TYR:HB3	4:P:296:HIS:HB2	1.94	0.48
1:B:50:ALA:HB1	1:B:91:ILE:H	1.79	0.48
2:C:202:LYS:O	2:C:206:MET:N	2.41	0.48
3:K:625:ILE:HG12	3:K:666:ILE:CD1	2.43	0.48
1:B:289:TRP:HD1	1:B:330:ARG:HD2	1.79	0.48
4:P:32:LYS:HE2	4:P:36:ASN:HD21	1.79	0.48
4:P:447:SER:HA	4:P:459:ALA:HA	1.96	0.48
1:A:373:TYR:CE2	1:A:374:LEU:HG	2.49	0.48
1:A:537:THR:HG22	1:A:537:THR:O	2.14	0.48
1:B:549:GLU:OE2	1:B:550:LYS:NZ	2.35	0.48
1:B:125:MET:HG3	1:B:126:ILE:N	2.28	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:184:GLU:OE1	2:C:220:LEU:HD21	2.14	0.48
1:A:168:ARG:NH1	1:A:170:ASP:HB2	2.28	0.47
1:B:101:ASN:HA	1:B:107:LYS:HE3	1.95	0.47
2:C:191:VAL:O	2:C:195:ILE:HG12	2.14	0.47
1:A:145:VAL:CG2	1:A:157:TRP:HB3	2.43	0.47
4:P:341:ALA:O	4:P:342:GLN:NE2	2.47	0.47
4:P:353:GLY:HA3	4:P:385:LEU:HA	1.94	0.47
1:A:362:ILE:HG22	1:A:363:MET:HG3	1.94	0.47
1:A:598:TRP:HZ3	1:A:606:MET:HG2	1.78	0.47
1:B:688:LEU:HD23	1:B:688:LEU:H	1.79	0.47
1:B:545:GLU:OE1	1:B:545:GLU:N	2.47	0.47
2:C:216:MET:SD	2:C:217:GLN:NE2	2.87	0.47
4:P:320:LYS:HA	4:P:320:LYS:HE2	1.97	0.47
1:A:221:ARG:HB2	1:A:275:LYS:HD3	1.96	0.47
1:B:28:ILE:HG12	1:B:131:VAL:HG21	1.95	0.47
1:B:111:LYS:HD3	1:B:128:GLN:HA	1.96	0.47
2:C:166:ARG:HB2	2:C:208:GLN:HG2	1.96	0.47
3:K:622:PRO:HA	3:K:625:ILE:HD13	1.96	0.47
1:B:22:ALA:O	1:B:25:MET:HG2	2.14	0.47
4:P:97:LYS:O	4:P:101:ARG:HD3	2.14	0.47
1:A:129:PHE:HE2	1:A:392:ARG:HH21	1.62	0.47
1:A:203:LYS:HD2	1:A:203:LYS:C	2.40	0.47
1:B:131:VAL:HG23	1:B:134:TYR:HD2	1.79	0.47
4:P:191:MET:O	4:P:195:MET:HG3	2.13	0.47
4:P:349:LEU:HB3	4:P:420:LEU:HD11	1.97	0.47
1:A:114:MET:SD	1:A:125:MET:HG2	2.55	0.47
1:B:313:GLU:CD	1:B:338:ARG:HH12	2.23	0.47
1:B:456:ARG:HB3	1:B:466:MET:HB2	1.97	0.47
1:B:502:ARG:O	1:B:502:ARG:NE	2.48	0.47
2:C:262:ARG:HA	2:C:262:ARG:HH11	1.79	0.47
1:A:196:ARG:HA	1:A:199:LYS:HE2	1.97	0.47
1:A:289:TRP:CD1	1:A:330:ARG:HD3	2.47	0.47
1:B:358:ARG:NE	1:B:384:GLU:OE2	2.47	0.47
1:A:639:ARG:HH12	1:A:640:GLN:HB3	1.80	0.46
1:B:385:ASP:O	1:B:386:LEU:HD22	2.15	0.46
1:B:388:LEU:H	1:B:388:LEU:HD23	1.80	0.46
2:C:183:CYS:SG	2:C:184:GLU:N	2.75	0.46
2:C:206:MET:HE2	2:C:260:LYS:NZ	2.30	0.46
1:A:371:PRO:HB2	1:A:373:TYR:CE1	2.50	0.46
1:A:560:PHE:CE1	1:A:639:ARG:HD3	2.50	0.46
3:K:560:THR:O	3:K:564:MET:HG3	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:P:214:VAL:O	4:P:218:GLU:OE1	2.33	0.46
4:P:396:SER:O	4:P:404:CYS:HB2	2.15	0.46
1:A:215:LEU:HD23	1:A:282:LEU:HD11	1.97	0.46
1:B:219:LYS:HD3	1:B:220:GLU:N	2.31	0.46
1:B:539:GLU:OE2	1:B:594:SER:OG	2.29	0.46
1:A:145:VAL:HG23	1:A:157:TRP:HB3	1.97	0.46
1:A:552:LYS:HA	1:A:555:GLU:HG3	1.97	0.46
1:B:449:ARG:HD2	1:B:449:ARG:HA	1.79	0.46
1:B:539:GLU:HG3	1:B:594:SER:HA	1.98	0.46
1:A:65:LEU:HD23	1:A:65:LEU:H	1.80	0.46
3:K:627:MET:HG3	3:K:627:MET:O	2.15	0.46
1:A:46:ASN:ND2	5:A:801:ATP:H8	2.12	0.46
4:P:95:TYR:CZ	4:P:97:LYS:HB2	2.51	0.46
1:A:219:LYS:HZ3	1:A:277:ILE:HG21	1.81	0.46
1:B:352:ASN:OD1	1:B:353:ILE:N	2.49	0.46
2:C:258:ALA:HA	2:C:261:GLU:CD	2.40	0.46
1:A:24:LEU:O	1:A:28:ILE:HG12	2.15	0.46
1:A:425:ASN:HA	1:A:428:LYS:HZ3	1.81	0.46
1:A:499:PHE:HE1	1:A:590:CYS:HB3	1.81	0.46
1:A:672:ASP:N	1:A:672:ASP:OD1	2.49	0.46
1:B:59:LEU:O	1:B:59:LEU:HD23	2.16	0.46
1:B:86:LEU:O	1:B:86:LEU:HD23	2.16	0.46
1:B:131:VAL:O	1:B:131:VAL:HG13	2.16	0.46
2:C:227:LYS:HD2	2:C:227:LYS:HA	1.78	0.46
4:P:135:LYS:O	4:P:138:GLU:HG3	2.16	0.46
1:A:315:HIS:O	1:A:337:ARG:NE	2.49	0.46
1:B:131:VAL:HG23	1:B:134:TYR:CD2	2.51	0.46
1:B:314:ASP:OD1	1:B:337:ARG:NE	2.39	0.46
2:C:178:ASN:O	2:C:182:VAL:HG22	2.16	0.46
1:A:144:VAL:HG23	1:A:182:ILE:HB	1.97	0.45
1:A:649:LYS:O	1:A:652:LYS:HG2	2.16	0.45
1:B:56:TYR:CZ	1:B:117:LEU:HD21	2.51	0.45
4:P:462:ILE:HA	4:P:472:GLN:O	2.16	0.45
4:P:28:ALA:O	4:P:64:TYR:OH	2.34	0.45
1:B:41:ARG:NH2	1:B:392:ARG:HB3	2.32	0.45
1:B:203:LYS:NZ	1:B:282:LEU:O	2.47	0.45
1:B:319:LYS:HE2	2:C:127:SER:HB3	1.98	0.45
1:A:83:THR:HA	1:A:183:LEU:O	2.16	0.45
1:B:157:TRP:HE1	1:B:165:PHE:HB2	1.82	0.45
1:A:545:GLU:N	1:A:545:GLU:OE1	2.50	0.45
1:B:565:LYS:NZ	1:B:569:GLU:OE2	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:19:THR:HG22	2:C:20:HIS:N	2.31	0.45
1:B:49:ASP:HA	1:B:125:MET:HE2	1.99	0.45
4:P:226:LEU:HD21	4:P:363:LEU:HD22	1.98	0.45
2:C:162:PHE:CZ	2:C:171:SER:HA	2.51	0.45
1:A:397:GLN:HE22	1:A:399:LYS:HB3	1.81	0.45
1:A:425:ASN:HA	1:A:428:LYS:NZ	2.32	0.45
1:A:471:GLU:O	1:A:475:ARG:HG3	2.17	0.45
1:B:575:VAL:HA	1:B:624:LYS:HG3	1.99	0.45
2:C:211:HIS:O	2:C:215:VAL:HG12	2.16	0.45
2:C:223:ALA:HB1	2:C:228:VAL:O	2.17	0.45
4:P:352:HIS:HE1	4:P:427:HIS:HB2	1.82	0.45
1:A:140:ALA:HB3	1:A:183:LEU:HD12	1.98	0.45
1:B:216:TYR:HA	1:B:277:ILE:O	2.16	0.45
4:P:39:PHE:O	4:P:42:LYS:HD3	2.17	0.45
4:P:326:GLN:O	4:P:329:GLU:HG3	2.16	0.45
1:A:148:LYS:HD3	1:A:175:ILE:O	2.17	0.44
1:A:422:ASP:HB3	1:A:425:ASN:ND2	2.33	0.44
3:K:523:PRO:HB2	3:K:524:GLN:H	1.53	0.44
4:P:96:ILE:HA	4:P:99:TYR:HD2	1.83	0.44
1:A:676:HIS:O	1:A:680:ILE:HD12	2.17	0.44
1:B:78:ASN:HB3	1:B:83:THR:OG1	2.18	0.44
1:B:606:MET:SD	1:B:607:LYS:N	2.90	0.44
2:C:169:ASP:OD1	2:C:170:ASP:N	2.51	0.44
4:P:31:LEU:HD22	4:P:50:PHE:CD1	2.52	0.44
1:A:84:LEU:HB3	1:A:183:LEU:HB2	1.99	0.44
1:B:617:MET:O	1:B:621:MET:HG2	2.18	0.44
1:A:94:THR:OG1	1:A:97:ASP:OD2	2.35	0.44
1:B:691:ASP:OD1	1:B:691:ASP:N	2.50	0.44
2:C:15:ASP:OD1	2:C:16:GLU:N	2.50	0.44
4:P:140:ASN:O	4:P:144:LYS:HG3	2.18	0.44
1:A:469:LEU:HB3	1:A:528:PHE:HE2	1.82	0.44
4:P:137:GLN:HB2	4:P:141:LYS:NZ	2.32	0.44
4:P:181:LEU:H	4:P:181:LEU:HD23	1.83	0.44
1:A:26:SER:HA	1:A:29:ILE:HG22	2.00	0.44
1:A:657:LEU:O	1:A:660:GLU:HG3	2.18	0.44
4:P:185:LYS:HA	4:P:185:LYS:HD2	1.78	0.44
4:P:193:GLU:OE1	4:P:197:TRP:HE3	2.01	0.44
1:A:106:ALA:H	1:A:131:VAL:CG2	2.30	0.44
1:A:502:ARG:O	1:A:505:LYS:HG3	2.17	0.44
1:B:678:ASN:CG	1:B:679:ARG:HH21	2.26	0.44
2:C:47:LYS:HA	2:C:50:LEU:HG	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:64:LYS:HD2	1:A:64:LYS:N	2.33	0.44
1:A:485:TYR:CZ	1:A:535:SER:HB3	2.53	0.44
1:B:141:GLU:HG2	1:B:184:HIS:O	2.17	0.44
1:B:209:ILE:HD12	1:B:209:ILE:H	1.83	0.44
1:B:515:GLU:HB3	1:B:518:ASP:OD2	2.17	0.44
1:B:598:TRP:CE2	1:B:602:MET:HE1	2.53	0.44
4:P:230:THR:HG23	4:P:232:LYS:HZ1	1.83	0.44
1:A:547:GLU:O	1:A:550:LYS:HG2	2.18	0.43
2:C:128:MET:SD	2:C:130:ASN:N	2.91	0.43
2:C:248:TYR:HH	3:K:522:LYS:HZ3	1.57	0.43
3:K:538:TYR:OH	3:K:542:HIS:NE2	2.44	0.43
1:B:208:PHE:O	1:B:359:ARG:HD2	2.18	0.43
3:K:651:THR:HA	3:K:682:ARG:HH11	1.81	0.43
2:C:34:GLN:HA	2:C:37:VAL:HG22	1.99	0.43
3:K:661:ASN:O	3:K:665:ILE:HG13	2.19	0.43
4:P:106:ASN:HD22	4:P:114:ALA:HB3	1.83	0.43
1:A:217:LEU:O	1:A:277:ILE:HG22	2.18	0.43
1:A:345:GLU:HG3	1:A:348:LYS:HG2	1.99	0.43
4:P:54:ALA:O	4:P:58:ASN:N	2.47	0.43
4:P:282:VAL:O	4:P:286:LEU:HG	2.18	0.43
1:A:36:LYS:O	1:A:39:PHE:HD1	2.01	0.43
1:A:500:VAL:O	1:A:504:ARG:NE	2.51	0.43
1:B:157:TRP:NE1	1:B:165:PHE:HB2	2.33	0.43
3:K:578:LYS:HZ3	3:K:579:SER:HB2	1.82	0.43
1:A:40:LEU:HD23	1:A:201:VAL:HG11	2.01	0.43
1:B:53:LYS:HD2	1:B:91:ILE:HG21	2.01	0.43
1:B:553:MET:O	1:B:556:SER:OG	2.28	0.43
1:B:299:GLU:N	1:B:299:GLU:OE2	2.52	0.43
1:B:319:LYS:HD3	2:C:126:LYS:O	2.17	0.43
2:C:172:GLN:HE22	2:C:235:ARG:HH22	1.67	0.43
2:C:213:THR:HA	2:C:216:MET:HG3	2.01	0.43
4:P:434:TYR:HA	4:P:444:THR:O	2.19	0.43
1:A:570:ILE:HG23	1:A:571:LEU:HD22	2.01	0.43
1:B:682:ARG:NH2	4:P:150:ARG:O	2.52	0.43
2:C:19:THR:HG22	2:C:20:HIS:H	1.84	0.43
2:C:187:ALA:O	2:C:191:VAL:HG23	2.18	0.43
3:K:707:PHE:HA	3:K:710:ILE:HD13	2.01	0.43
1:A:500:VAL:HG23	1:A:503:VAL:HB	2.01	0.42
1:A:583:ARG:HB3	1:A:584:LEU:HD12	2.01	0.42
1:A:629:ASN:HD21	1:A:632:HIS:HB2	1.84	0.42
1:B:414:GLU:HA	1:B:450:ARG:HH22	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:199:VAL:HG23	2:C:270:ARG:HH22	1.84	0.42
4:P:292:LEU:HG	4:P:293:TYR:CD2	2.54	0.42
1:A:97:ASP:HB3	1:A:101:ASN:ND2	2.34	0.42
1:B:300:GLU:HA	1:B:303:GLU:HB3	2.01	0.42
1:B:453:GLU:HG3	1:B:528:PHE:HZ	1.85	0.42
1:A:444:ASP:OD1	1:A:445:SER:N	2.52	0.42
1:B:126:ILE:HD13	1:B:358:ARG:HB2	1.99	0.42
2:C:44:GLN:O	2:C:47:LYS:N	2.52	0.42
2:C:260:LYS:HD3	2:C:260:LYS:HA	1.79	0.42
4:P:232:LYS:HA	4:P:232:LYS:HD3	1.84	0.42
1:A:637:THR:HG21	1:B:688:LEU:HD13	2.01	0.42
2:C:262:ARG:HA	2:C:262:ARG:HD2	1.91	0.42
4:P:51:TYR:HD2	4:P:68:ARG:HG2	1.83	0.42
4:P:211:GLN:HA	4:P:214:VAL:HG22	2.01	0.42
4:P:230:THR:HG23	4:P:232:LYS:NZ	2.34	0.42
4:P:301:ARG:HD2	4:P:338:LEU:HB2	2.02	0.42
1:A:23:GLN:O	1:A:27:LEU:HD23	2.19	0.42
1:B:646:LYS:HG3	1:B:647:ASN:OD1	2.19	0.42
1:B:335:ILE:HD11	1:B:416:PHE:HE1	1.85	0.42
4:P:463:HIS:HB2	4:P:472:GLN:HB2	2.01	0.42
1:A:148:LYS:HD2	1:A:154:GLN:HG3	2.01	0.42
1:A:476:MET:HE3	1:A:476:MET:HB2	1.86	0.42
1:B:453:GLU:N	1:B:453:GLU:OE1	2.53	0.42
1:B:485:TYR:CE2	1:B:522:VAL:HG21	2.55	0.42
2:C:92:ARG:O	2:C:96:ARG:HD3	2.20	0.42
4:P:62:ALA:HB1	4:P:88:ALA:HB1	2.01	0.42
1:A:23:GLN:O	1:A:26:SER:OG	2.30	0.42
1:A:51:LEU:HD13	1:A:211:TYR:CD2	2.55	0.42
1:A:396:GLN:O	1:A:397:GLN:HG3	2.19	0.42
1:A:490:SER:H	1:A:493:GLN:NE2	2.17	0.42
1:A:600:ALA:HA	1:A:668:PHE:HE1	1.84	0.42
2:C:189:TYR:O	2:C:193:TRP:CD1	2.73	0.42
3:K:688:ALA:O	3:K:692:LEU:HD23	2.20	0.42
1:B:137:TYR:CD2	1:B:161:ALA:HB2	2.55	0.42
2:C:197:LEU:HD23	2:C:197:LEU:HA	1.93	0.42
3:K:574:HIS:C	3:K:576:ASP:H	2.27	0.42
4:P:199:LYS:HA	4:P:199:LYS:HE2	2.02	0.42
4:P:364:ASP:C	4:P:368:LYS:HZ2	2.28	0.42
1:A:217:LEU:HD11	1:A:219:LYS:NZ	2.35	0.41
1:A:412:CYS:O	1:A:416:PHE:CD1	2.73	0.41
1:A:424:GLU:HA	1:A:427:LYS:HE2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:545:GLU:HG2	1:A:546:ASP:O	2.20	0.41
1:B:125:MET:HG3	1:B:126:ILE:H	1.84	0.41
2:C:108:LYS:O	2:C:111:SER:OG	2.38	0.41
1:A:104:THR:HB	1:A:107:LYS:HE2	2.02	0.41
1:A:499:PHE:CE2	1:A:537:THR:HG23	2.50	0.41
1:B:318:VAL:HG12	2:C:128:MET:HB3	2.01	0.41
1:A:83:THR:HG22	1:A:184:HIS:HD2	1.84	0.41
1:A:412:CYS:O	1:A:415:LEU:HB3	2.20	0.41
1:B:28:ILE:CG1	1:B:131:VAL:HG21	2.50	0.41
1:B:641:LYS:HA	1:B:644:ALA:HB3	2.02	0.41
4:P:27:ARG:O	4:P:30:GLU:HG3	2.20	0.41
1:A:196:ARG:O	1:A:200:GLU:HG2	2.20	0.41
1:B:654:LEU:HD12	1:B:655:VAL:N	2.36	0.41
2:C:222:LEU:O	2:C:226:LEU:HB3	2.20	0.41
4:P:424:ILE:HA	4:P:443:VAL:O	2.19	0.41
1:B:602:MET:O	1:B:605:ILE:HG22	2.20	0.41
2:C:114:TRP:HB3	2:C:119:LEU:HD21	2.03	0.41
2:C:179:VAL:HG21	2:C:234:PHE:CD1	2.56	0.41
3:K:697:LEU:HB2	3:K:701:ARG:NE	2.35	0.41
4:P:99:TYR:O	4:P:102:ARG:HD3	2.20	0.41
4:P:301:ARG:HG3	4:P:338:LEU:HD13	2.03	0.41
1:A:572:ASP:C	1:A:573:LYS:HG3	2.46	0.41
1:B:150:ASN:OD1	1:B:151:ASP:N	2.53	0.41
1:B:581:SER:OG	1:B:582:ASN:N	2.52	0.41
3:K:547:LYS:HA	3:K:547:LYS:HD2	1.85	0.41
1:B:145:VAL:HG12	1:B:157:TRP:HB3	2.02	0.41
1:B:274:GLU:O	1:B:275:LYS:HG2	2.21	0.41
1:B:319:LYS:NZ	1:B:415:LEU:HB2	2.36	0.41
1:B:489:GLU:OE2	1:B:601:ASN:ND2	2.47	0.41
1:B:598:TRP:N	1:B:622:ALA:HB2	2.36	0.41
3:K:521:THR:O	3:K:522:LYS:HE2	2.21	0.41
3:K:658:ASN:OD1	3:K:659:ILE:N	2.52	0.41
4:P:65:TYR:HB2	4:P:88:ALA:HB2	2.03	0.41
1:A:562:ASN:OD1	1:A:562:ASN:N	2.52	0.41
1:B:660:GLU:OE1	1:B:676:HIS:ND1	2.53	0.41
2:C:189:TYR:CD1	2:C:192:ILE:HD11	2.56	0.41
3:K:535:SER:O	3:K:584:LEU:N	2.54	0.41
3:K:578:LYS:HG2	3:K:617:ILE:HD13	2.03	0.41
1:A:501:GLU:HA	1:A:504:ARG:HE	1.86	0.41
2:C:150:THR:HA	2:C:153:GLU:CD	2.45	0.41
2:C:263:VAL:HA	2:C:266:ARG:HG3	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:P:207:LYS:O	4:P:211:GLN:OE1	2.38	0.41
4:P:430:LYS:HD3	4:P:430:LYS:HA	1.82	0.41
2:C:131:THR:O	2:C:131:THR:HG22	2.21	0.41
3:K:710:ILE:HD12	3:K:710:ILE:H	1.86	0.41
1:A:515:GLU:OE1	1:A:517:ILE:HG22	2.21	0.40
2:C:24:ASP:HB3	2:C:27:SER:OG	2.20	0.40
1:B:71:LEU:HD23	1:B:72:LYS:N	2.36	0.40
1:B:300:GLU:CD	1:B:300:GLU:H	2.28	0.40
1:B:313:GLU:OE1	1:B:313:GLU:N	2.55	0.40
1:B:546:ASP:OD1	1:B:547:GLU:N	2.51	0.40
3:K:578:LYS:NZ	3:K:579:SER:HB2	2.36	0.40
3:K:712:ALA:O	3:K:715:GLU:HG2	2.21	0.40
2:C:214:ILE:HD12	2:C:214:ILE:HA	1.92	0.40
1:A:118:GLN:H	1:A:118:GLN:CD	2.28	0.40
1:B:527:GLU:HG2	1:B:531:LYS:O	2.21	0.40
2:C:30:ARG:NH1	3:K:594:ASP:HB3	2.36	0.40
3:K:630:LYS:HG3	3:K:630:LYS:O	2.22	0.40
1:A:43:LEU:HD21	1:A:136:ALA:HB2	2.04	0.40
1:A:93:MET:O	1:A:149:HIS:HB2	2.21	0.40
1:B:46:ASN:O	1:B:49:ASP:HB2	2.22	0.40
1:B:285:THR:HG23	1:B:285:THR:O	2.22	0.40
4:P:319:VAL:HG11	4:P:328:TYR:CD1	2.57	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	629/749 (84%)	568 (90%)	60 (10%)	1 (0%)	44	77
1	B	627/749 (84%)	576 (92%)	49 (8%)	2 (0%)	37	71
2	C	274/396 (69%)	260 (95%)	14 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	K	182/828 (22%)	155 (85%)	25 (14%)	2 (1%)	12	46
4	P	437/489 (89%)	418 (96%)	18 (4%)	1 (0%)	44	77
All	All	2149/3211 (67%)	1977 (92%)	166 (8%)	6 (0%)	38	71

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	298	GLN
3	K	523	PRO
1	B	347	LYS
4	P	274	ASP
1	A	366	CYS
3	K	722	PRO

5.3.2 Protein sidechains ⓘ

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	572/672 (85%)	572 (100%)	0	100	100
1	B	570/672 (85%)	570 (100%)	0	100	100
2	C	253/357 (71%)	253 (100%)	0	100	100
3	K	167/702 (24%)	167 (100%)	0	100	100
4	P	381/424 (90%)	381 (100%)	0	100	100
All	All	1943/2827 (69%)	1943 (100%)	0	100	100

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

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	493	GLN
1	A	676	HIS
1	B	524	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	C	34	GLN
2	C	89	GLN
2	C	188	ASN
3	K	709	GLN
4	P	310	ASN
4	P	342	GLN
4	P	352	HIS
4	P	405	GLN
4	P	427	HIS
4	P	463	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

1 non-standard protein/DNA/RNA residue is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	SEP	C	13	2	8,9,10	1.98	1 (12%)	8,12,14	3.09	4 (50%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	SEP	C	13	2	-	0/5/8/10	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	13	SEP	P-O1P	4.81	1.66	1.50

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	13	SEP	OG-CB-CA	6.44	114.41	108.14
2	C	13	SEP	P-OG-CB	-4.21	106.70	118.30
2	C	13	SEP	OG-P-O1P	3.28	115.66	106.47
2	C	13	SEP	O2P-P-OG	2.21	112.60	106.73

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

2 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
5	ATP	B	801	-	26,33,33	0.61	0	31,52,52	0.74	2 (6%)
5	ATP	A	801	-	26,33,33	0.60	0	31,52,52	0.74	2 (6%)

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
5	ATP	B	801	-	-	6/18/38/38	0/3/3/3
5	ATP	A	801	-	-	3/18/38/38	0/3/3/3

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	801	ATP	C5-C6-N6	2.31	123.87	120.35
5	B	801	ATP	C5-C6-N6	2.30	123.85	120.35
5	A	801	ATP	PB-O3B-PG	2.04	139.84	132.83
5	B	801	ATP	PB-O3B-PG	2.02	139.76	132.83

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	801	ATP	C3'-C4'-C5'-O5'
5	B	801	ATP	O4'-C4'-C5'-O5'
5	A	801	ATP	O4'-C4'-C5'-O5'
5	B	801	ATP	PB-O3A-PA-O1A
5	B	801	ATP	C3'-C4'-C5'-O5'
5	A	801	ATP	C5'-O5'-PA-O3A
5	B	801	ATP	C5'-O5'-PA-O3A
5	B	801	ATP	PB-O3A-PA-O2A
5	B	801	ATP	C5'-O5'-PA-O2A

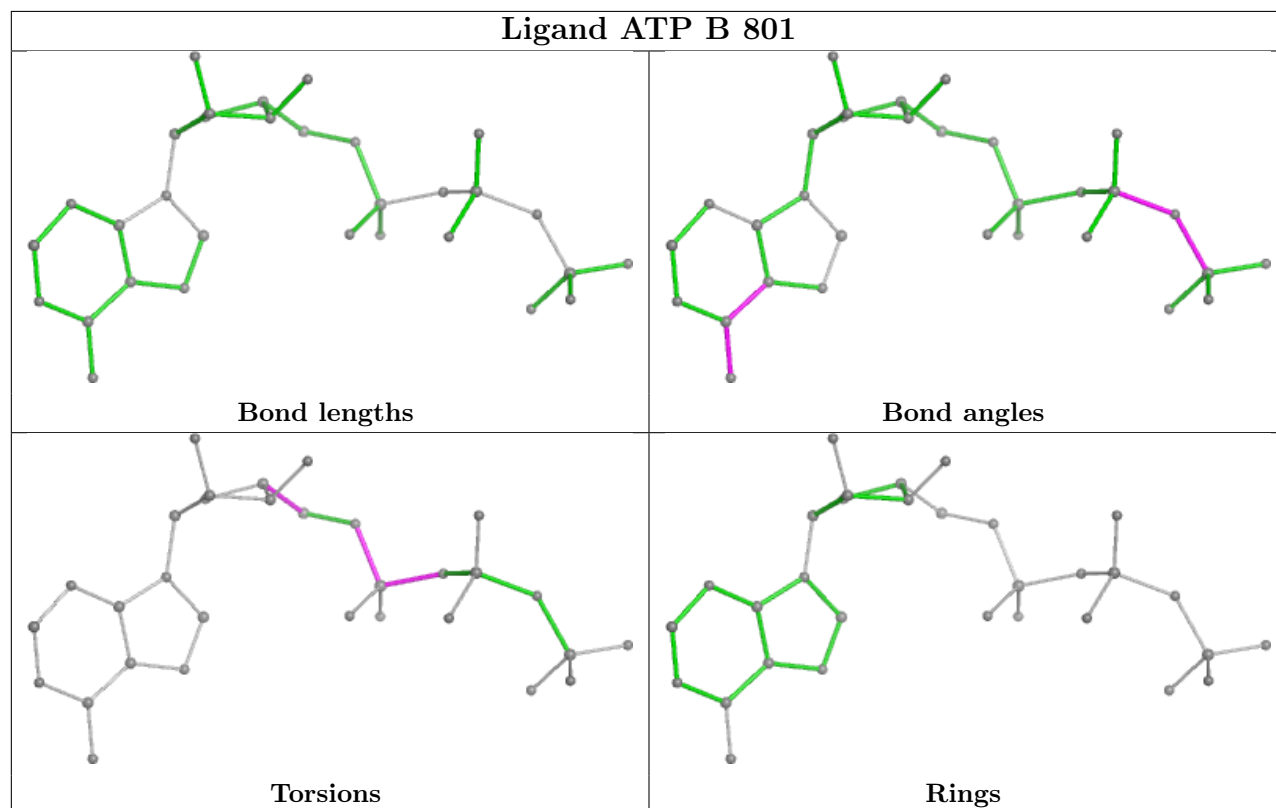
There are no ring outliers.

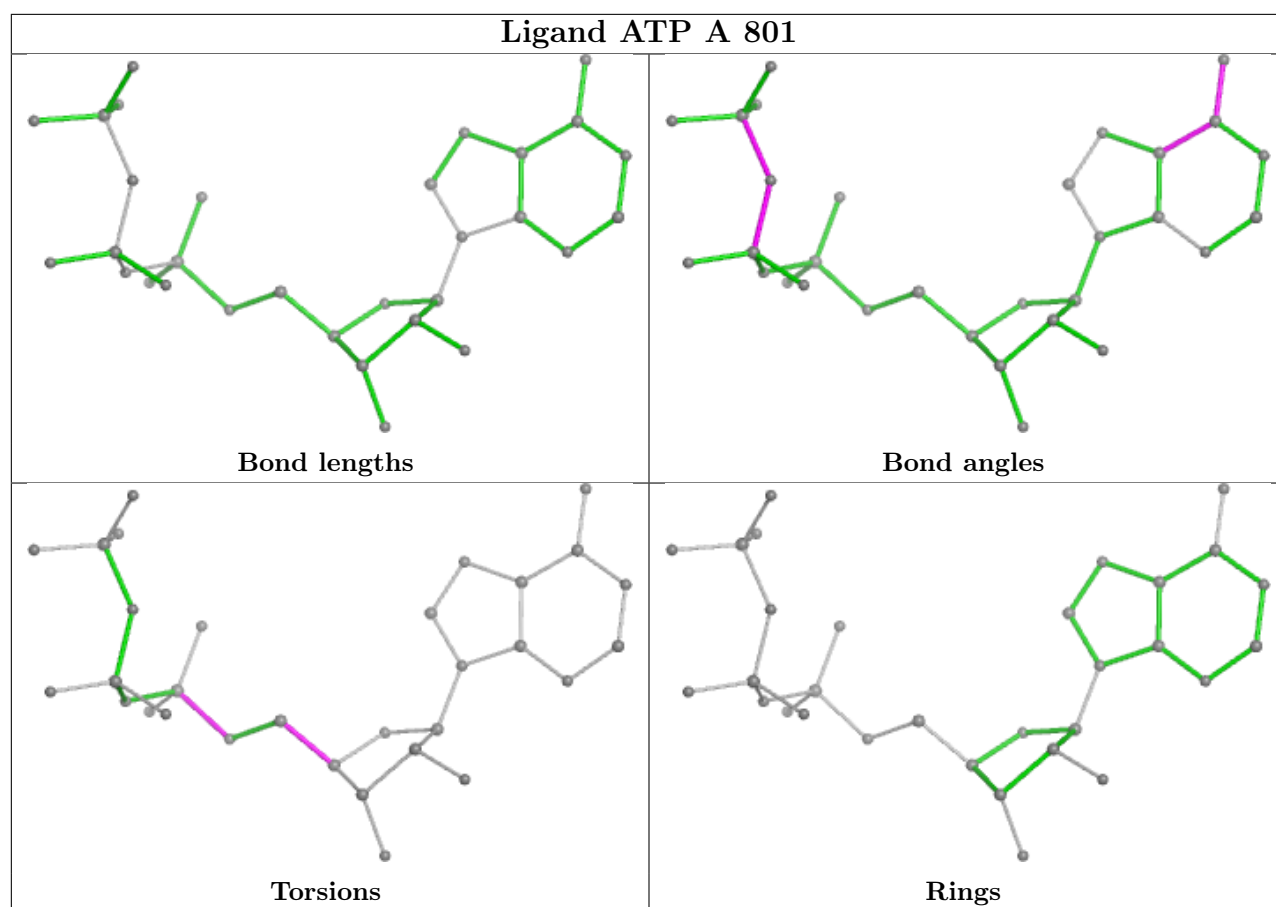
1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	801	ATP	4	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.

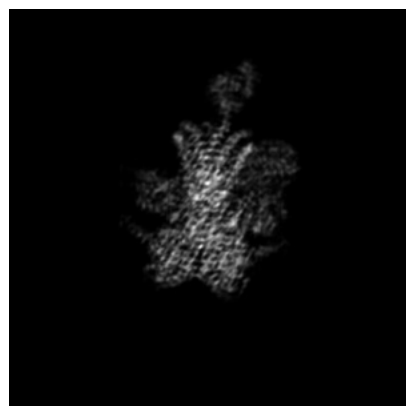
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-14884. These allow visual inspection of the internal detail of the map and identification of artifacts.

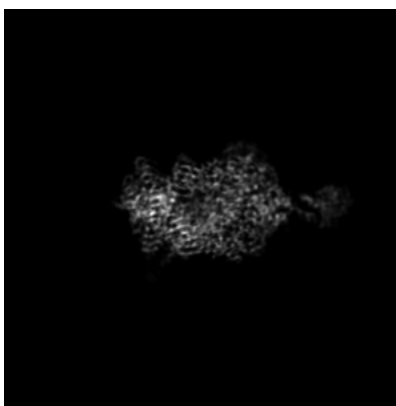
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

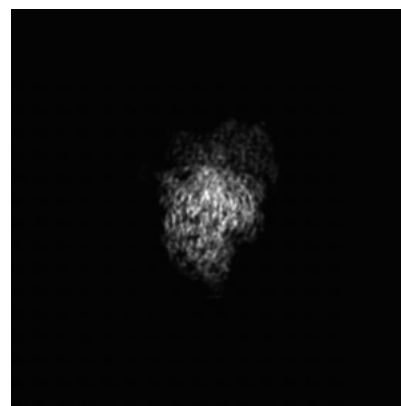
6.1.1 Primary map



X

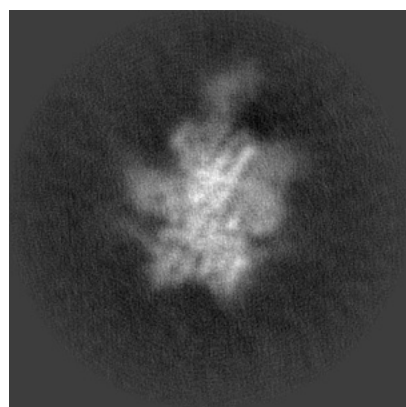


Y

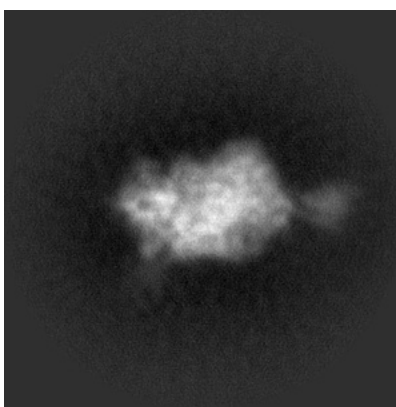


Z

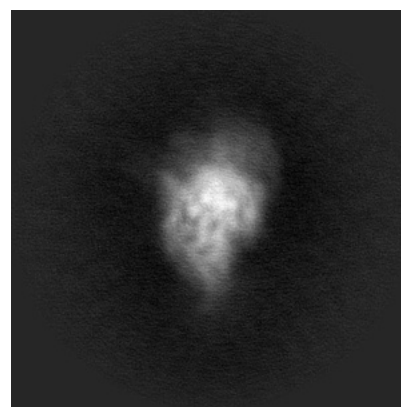
6.1.2 Raw map



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: 164

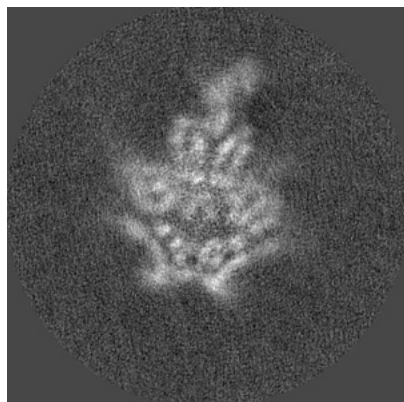


Y Index: 164

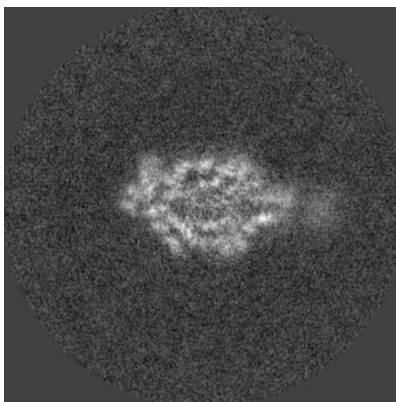


Z Index: 164

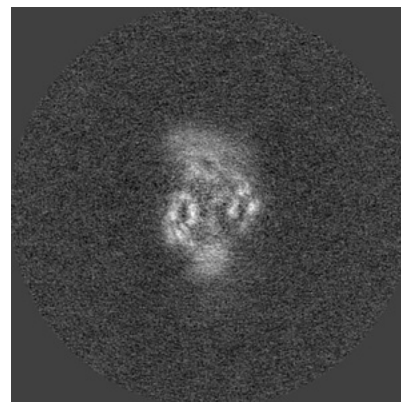
6.2.2 Raw map



X Index: 164



Y Index: 164



Z Index: 164

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: 160

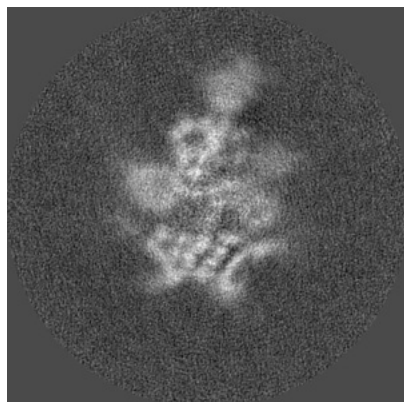


Y Index: 169

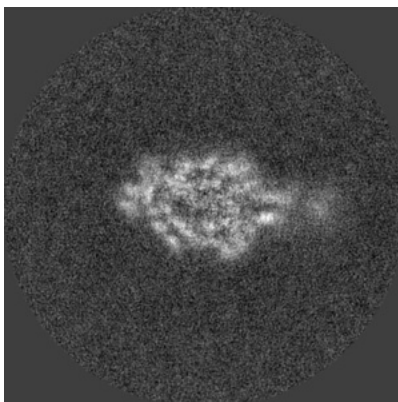


Z Index: 121

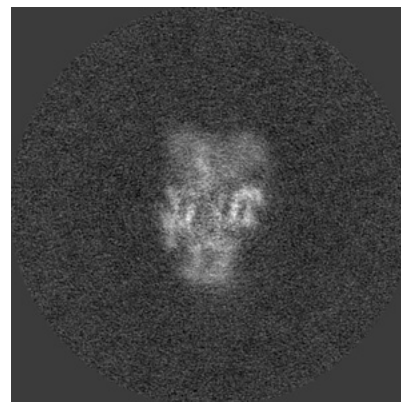
6.3.2 Raw map



X Index: 171



Y Index: 166

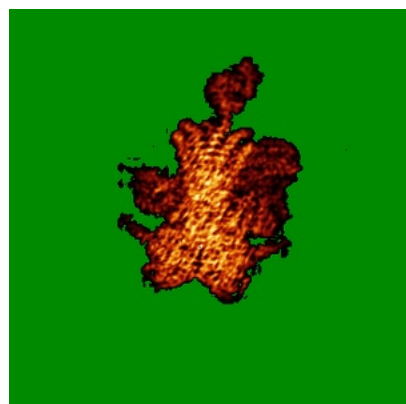


Z Index: 174

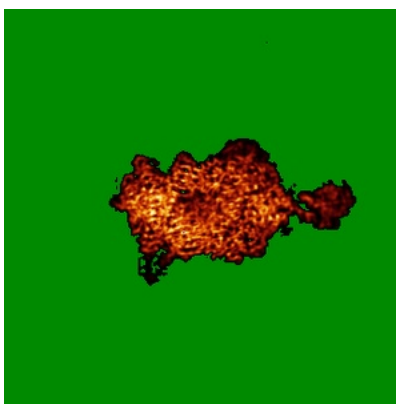
The images above show the largest variance slices of the map in three orthogonal directions.

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

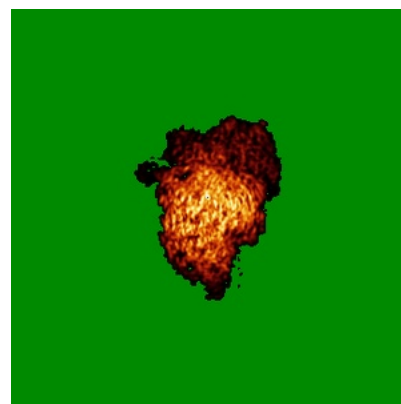
6.4.1 Primary map



X

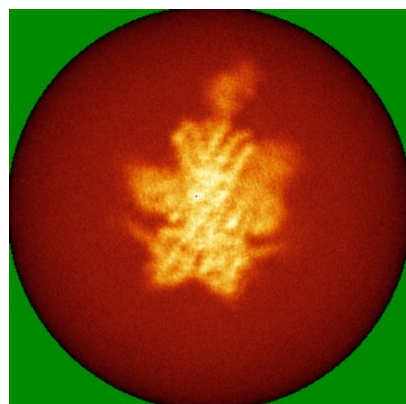


Y

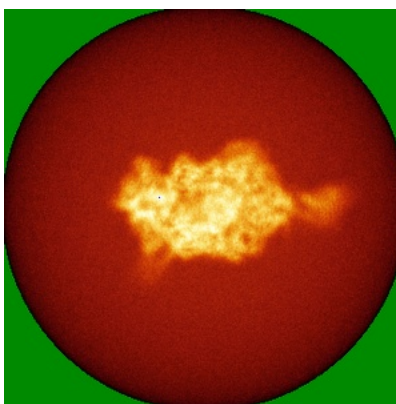


Z

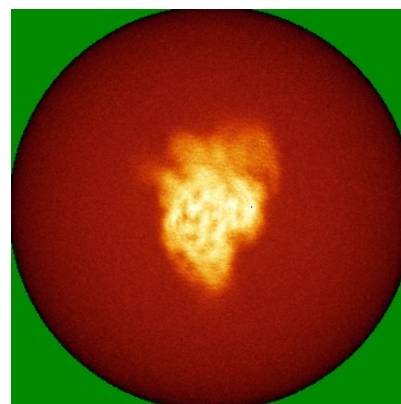
6.4.2 Raw map



X



Y

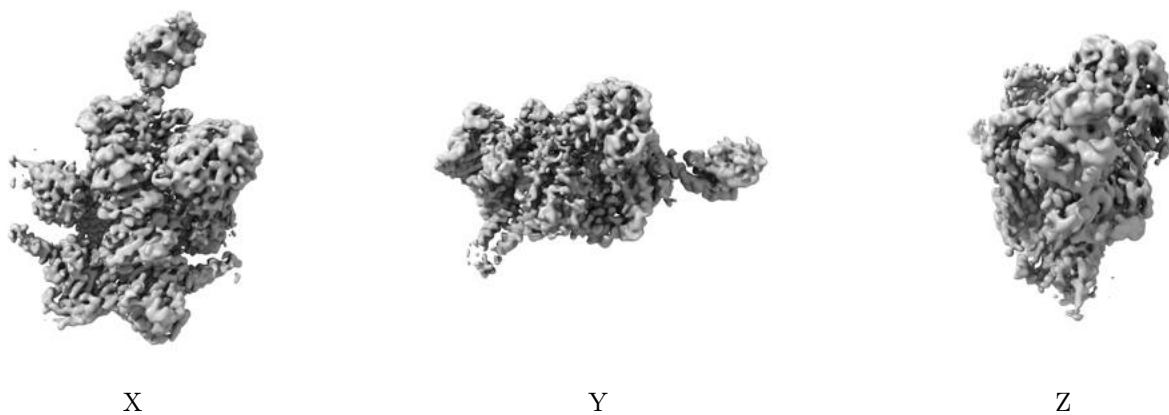


Z

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

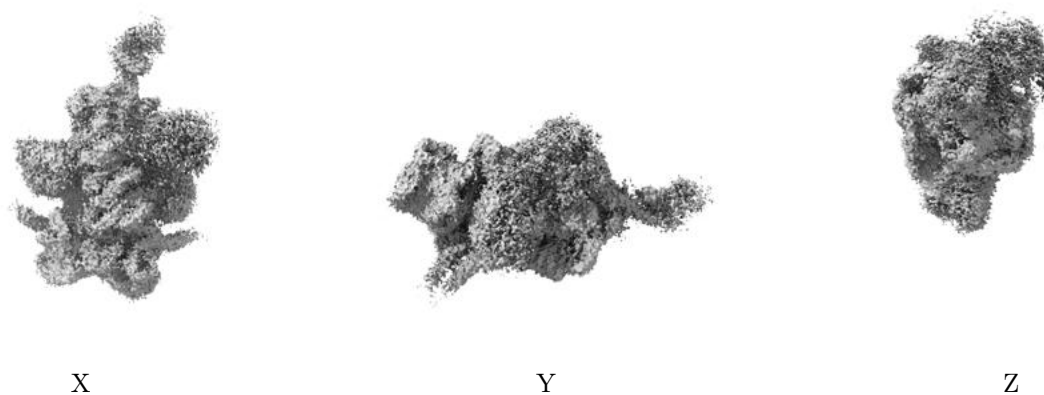
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.03. 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



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.

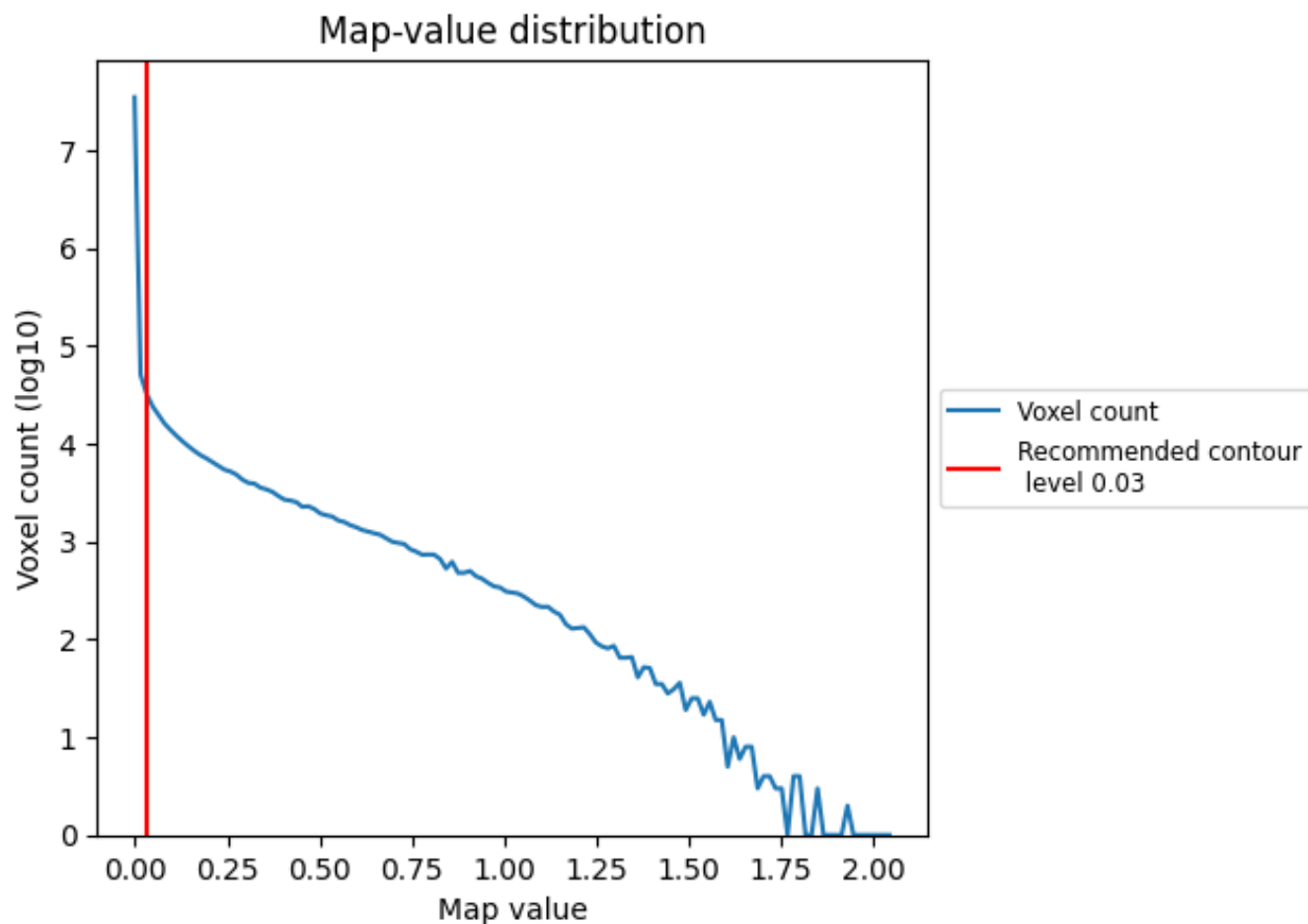
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

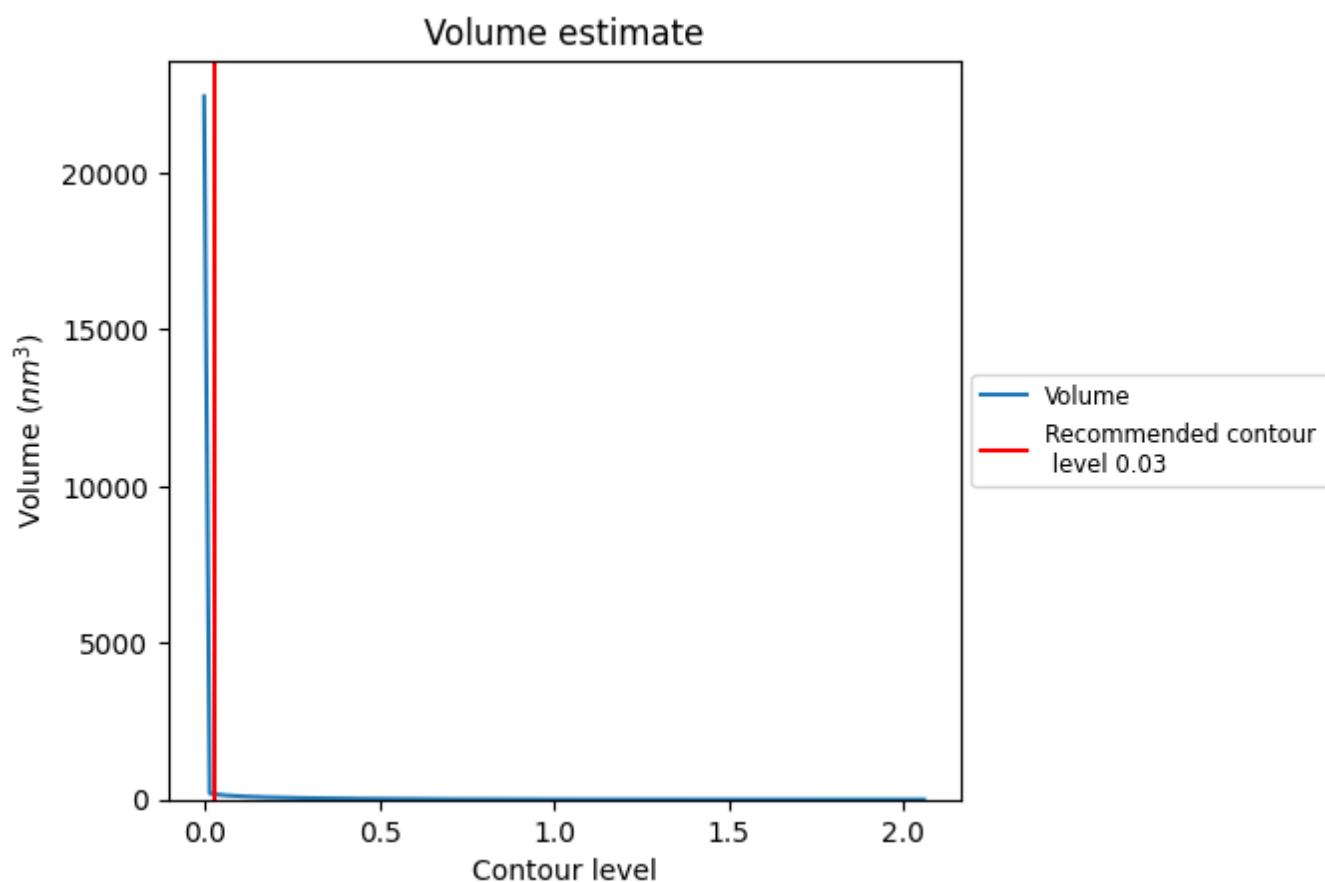
This section contains the results of statistical analysis of the map.

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.

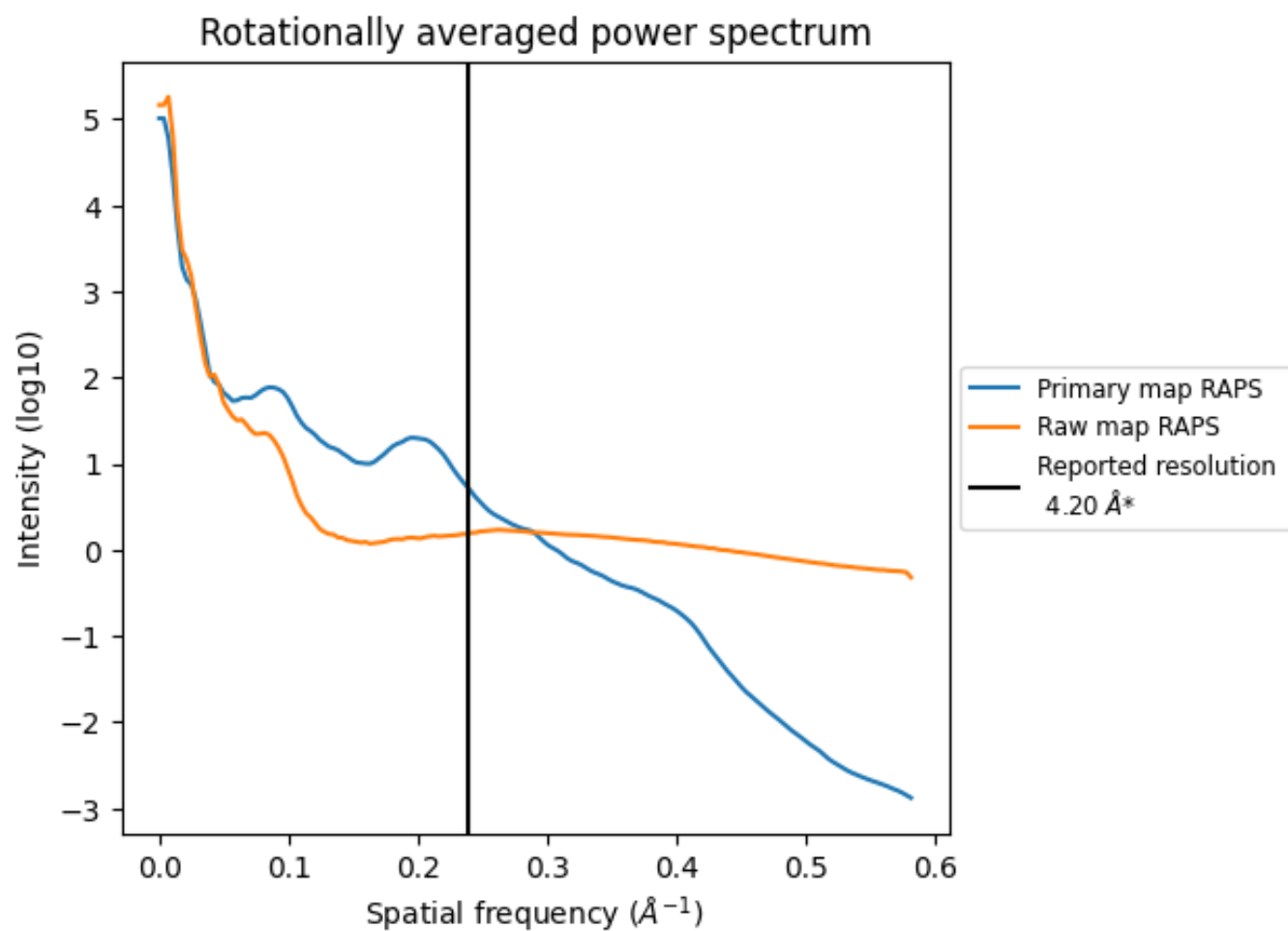
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 169 nm³; this corresponds to an approximate mass of 153 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 ⓘ

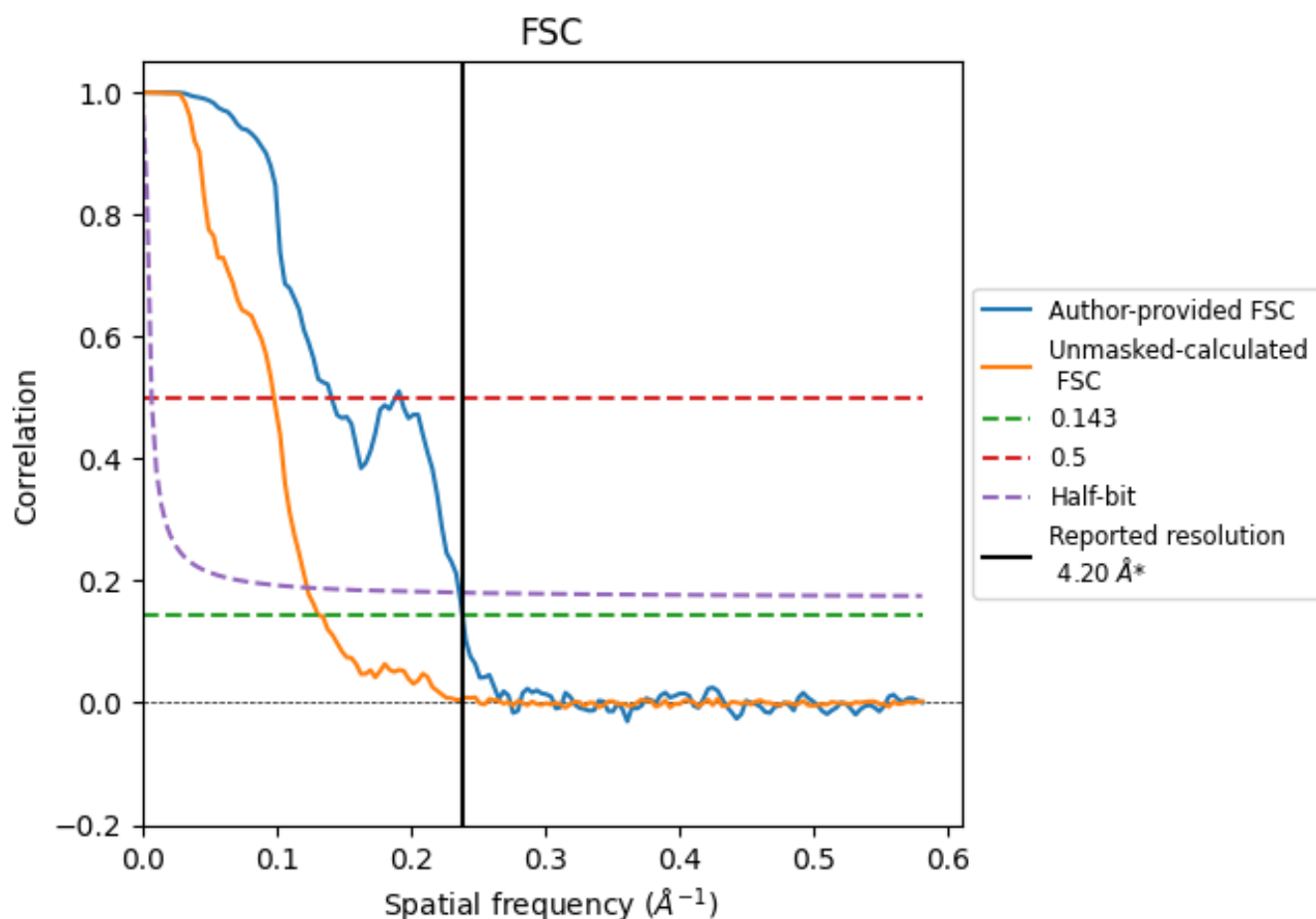


*Reported resolution corresponds to spatial frequency of $0.238 \text{ \AA}^{-1}$

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 0.238 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

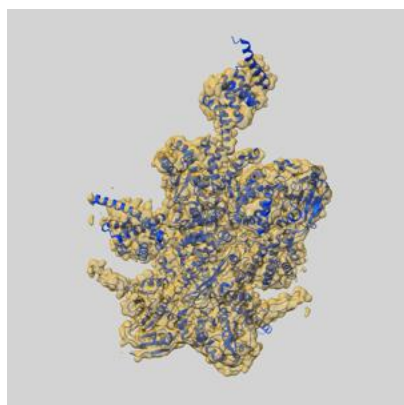
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.20	-	-
Author-provided FSC curve	4.19	7.09	4.23
Unmasked-calculated*	7.56	10.18	8.14

*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 7.56 differs from the reported value 4.2 by more than 10 %

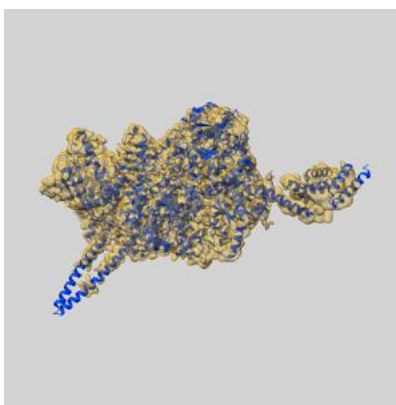
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-14884 and PDB model 7ZR6. Per-residue inclusion information can be found in section [3](#) on page [9](#).

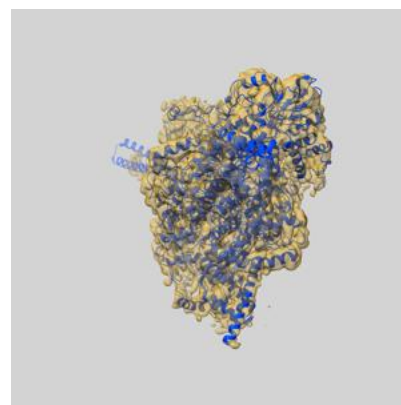
9.1 Map-model overlay [i](#)



X



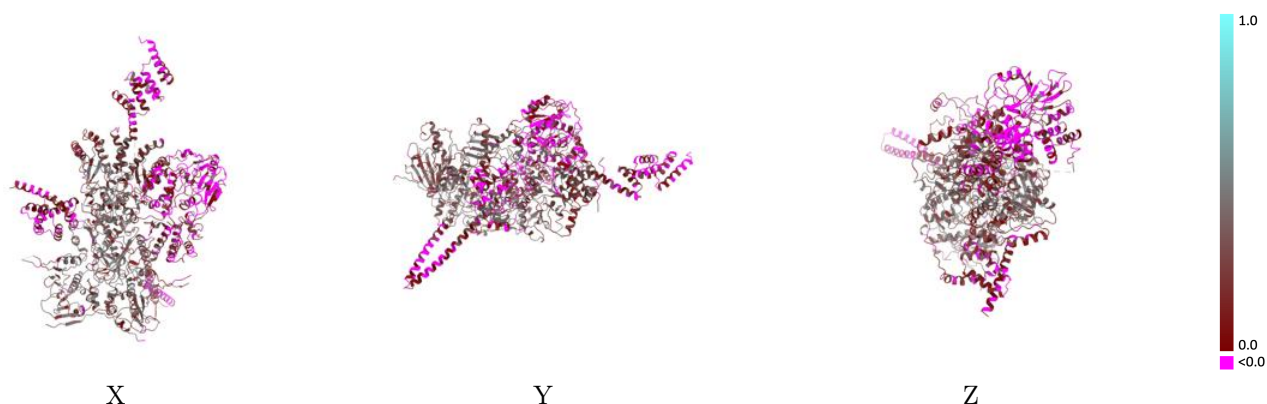
Y



Z

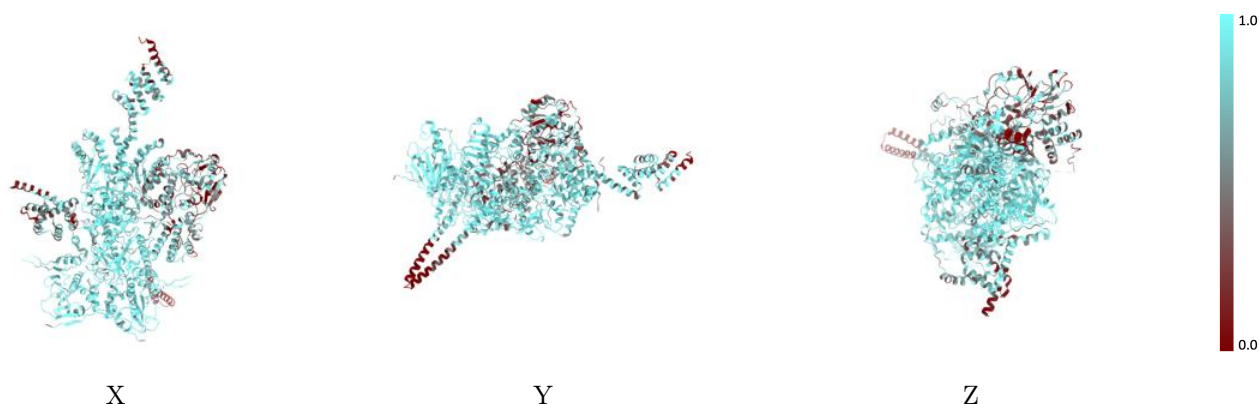
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



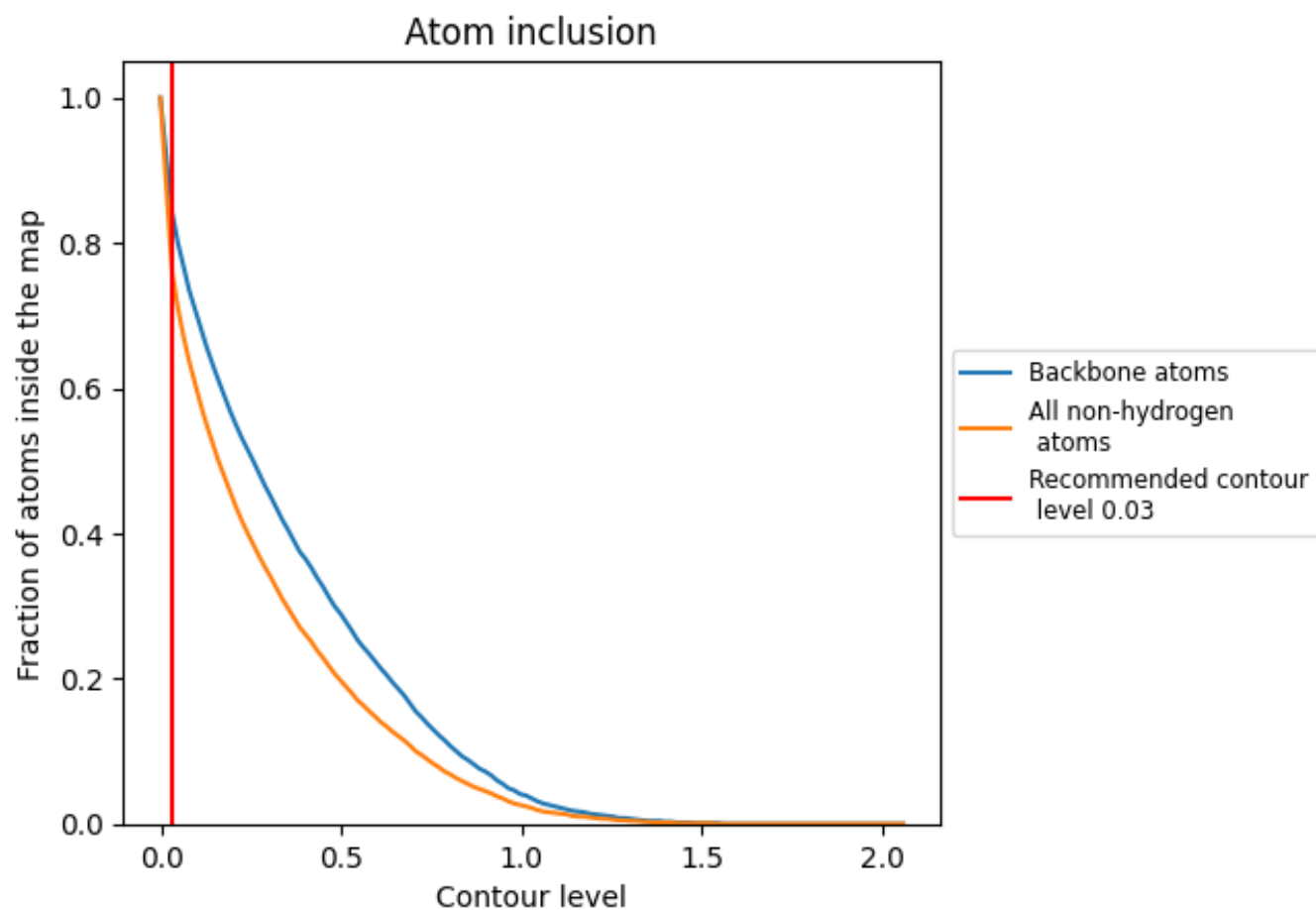
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.03).

9.4 Atom inclusion ⓘ



At the recommended contour level, 84% of all backbone atoms, 76% 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 (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7620	0.2210
A	0.8870	0.3150
B	0.8780	0.3270
C	0.5860	0.1090
K	0.6710	0.1250
P	0.5670	0.0480

