



## Full wwPDB EM Validation Report ⓘ

Dec 28, 2023 – 02:36 PM EST

PDB ID : 8FO8  
EMDB ID : EMD-29341  
Title : Cryo-EM structure of Rab29-LRRK2 complex in the LRRK2 dimer state  
Authors : Zhu, H.; Sun, J.  
Deposited on : 2022-12-29  
Resolution : 3.88 Å (reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev70  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

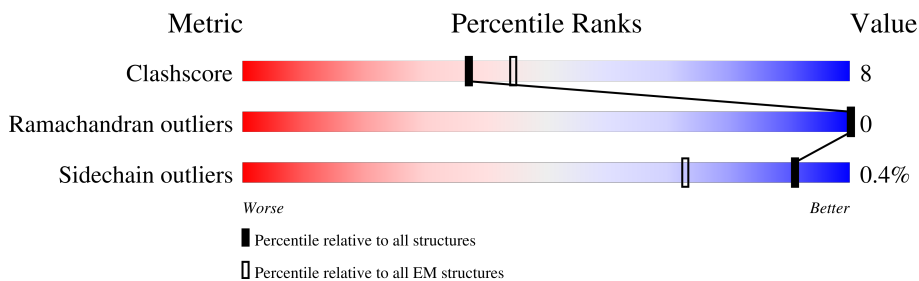
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.88 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	177	95% (Poor fit) 81% (0 outliers), 15% (1 outlier), 4% (2 outliers), 0% (3+ outliers), 0% (Not modelled)
1	B	177	96% (Poor fit) 85% (0 outliers), 12% (1 outlier), 2% (2 outliers), 1% (3+ outliers), 0% (Not modelled)
2	C	2527	21% (Poor fit) 72% (0 outliers), 18% (1 outlier), 10% (2 outliers), 0% (3+ outliers), 0% (Not modelled)
2	E	2527	22% (Poor fit) 72% (0 outliers), 18% (1 outlier), 10% (2 outliers), 0% (3+ outliers), 0% (Not modelled)

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 36432 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 Ras-related protein Rab-7L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	172	1115	714	189	205	7	0	0
1	B	172	1115	714	189	205	7	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	67	LEU	GLN	conflict	UNP O14966
A	71	ALA	THR	conflict	UNP O14966
A	72	ALA	SER	conflict	UNP O14966
B	67	LEU	GLN	conflict	UNP O14966
B	71	ALA	THR	conflict	UNP O14966
B	72	ALA	SER	conflict	UNP O14966

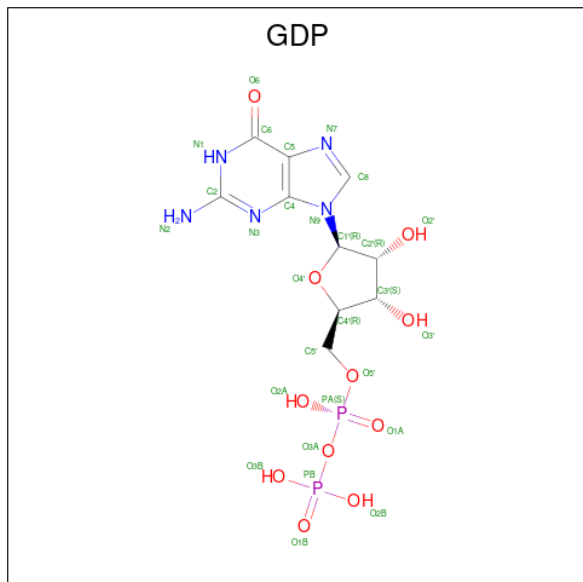
- Molecule 2 is a protein called Leucine-rich repeat serine/threonine-protein kinase 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	2270	17037	10892	2932	3107	106	0	0
2	E	2270	17047	10899	2933	3109	106	0	0

There are 6 discrepancies between the modelled and reference sequences:

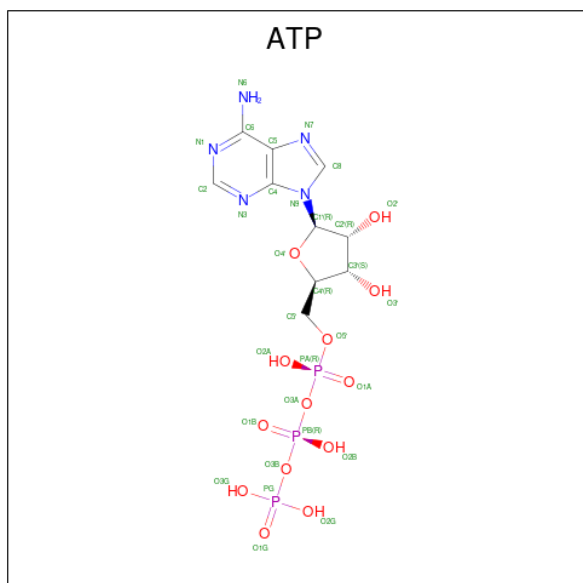
Chain	Residue	Modelled	Actual	Comment	Reference
C	50	HIS	ARG	conflict	UNP Q5S007
C	1647	THR	SER	conflict	UNP Q5S007
C	2397	THR	MET	conflict	UNP Q5S007
E	50	HIS	ARG	conflict	UNP Q5S007
E	1647	THR	SER	conflict	UNP Q5S007
E	2397	THR	MET	conflict	UNP Q5S007

- Molecule 3 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula:  $C_{10}H_{15}N_5O_{11}P_2$ ) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 4 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula:  $C_{10}H_{16}N_5O_{13}P_3$ ) (labeled as "Ligand of Interest" by depositor).

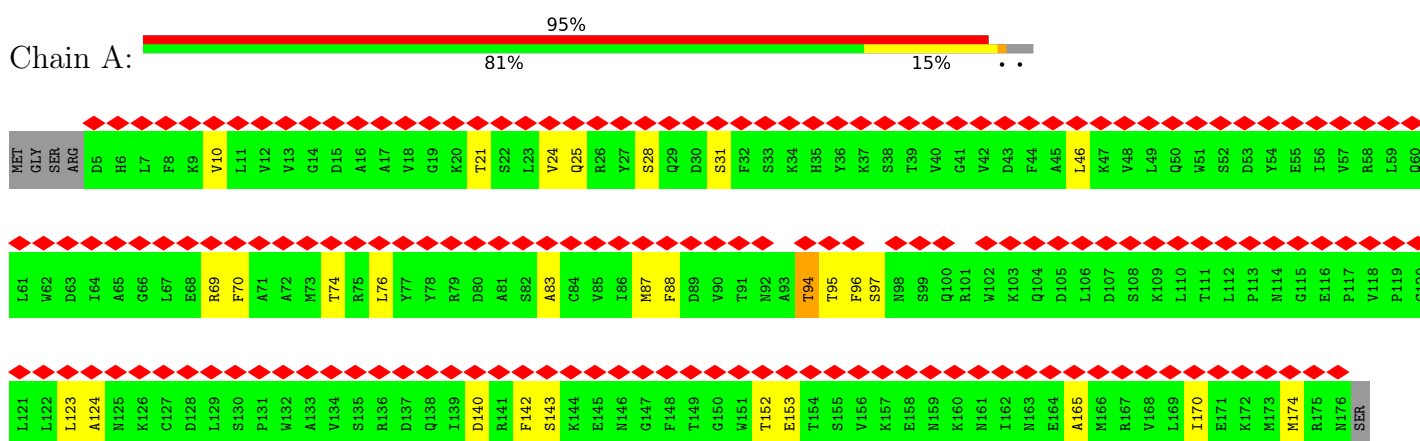


Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
4	C	1	31	10	5	13	3	0
4	E	1	31	10	5	13	3	0

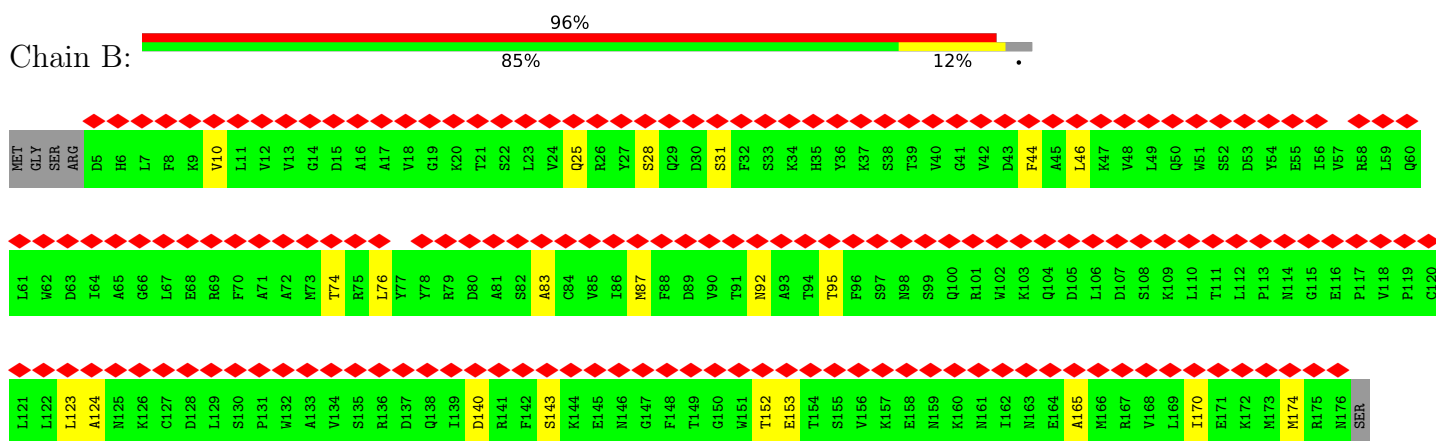
### 3 Residue-property plots [i](#)

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.

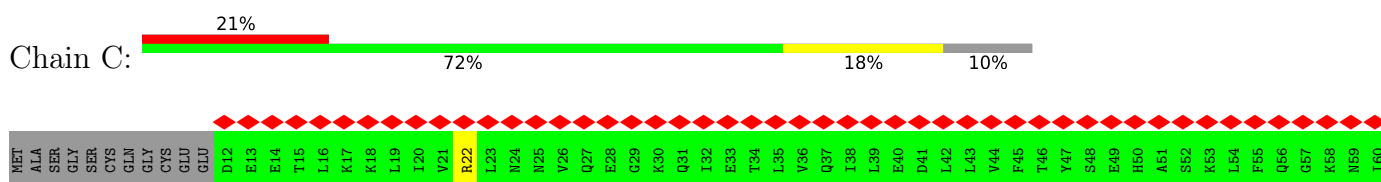
- Molecule 1: Ras-related protein Rab-7L1

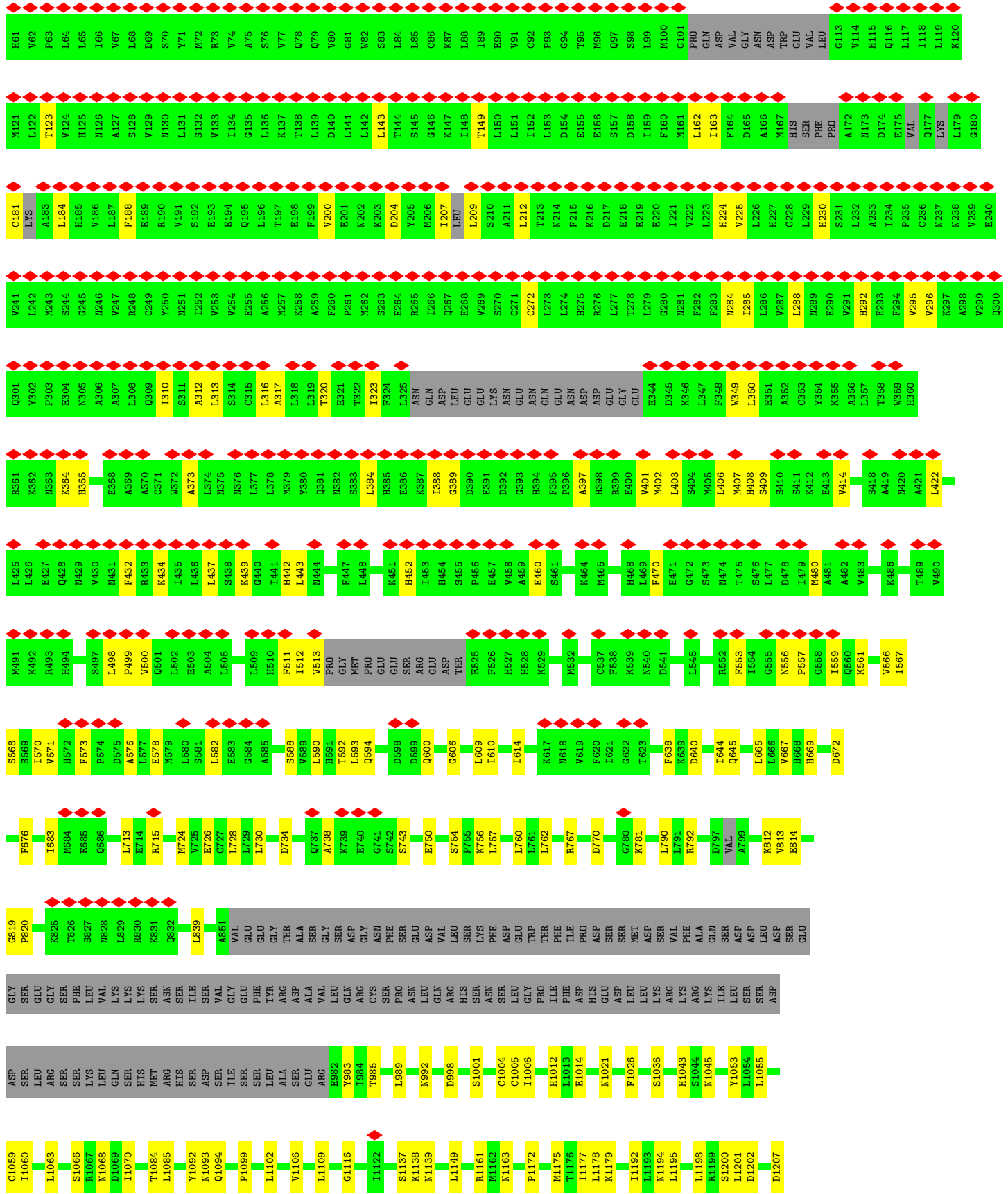


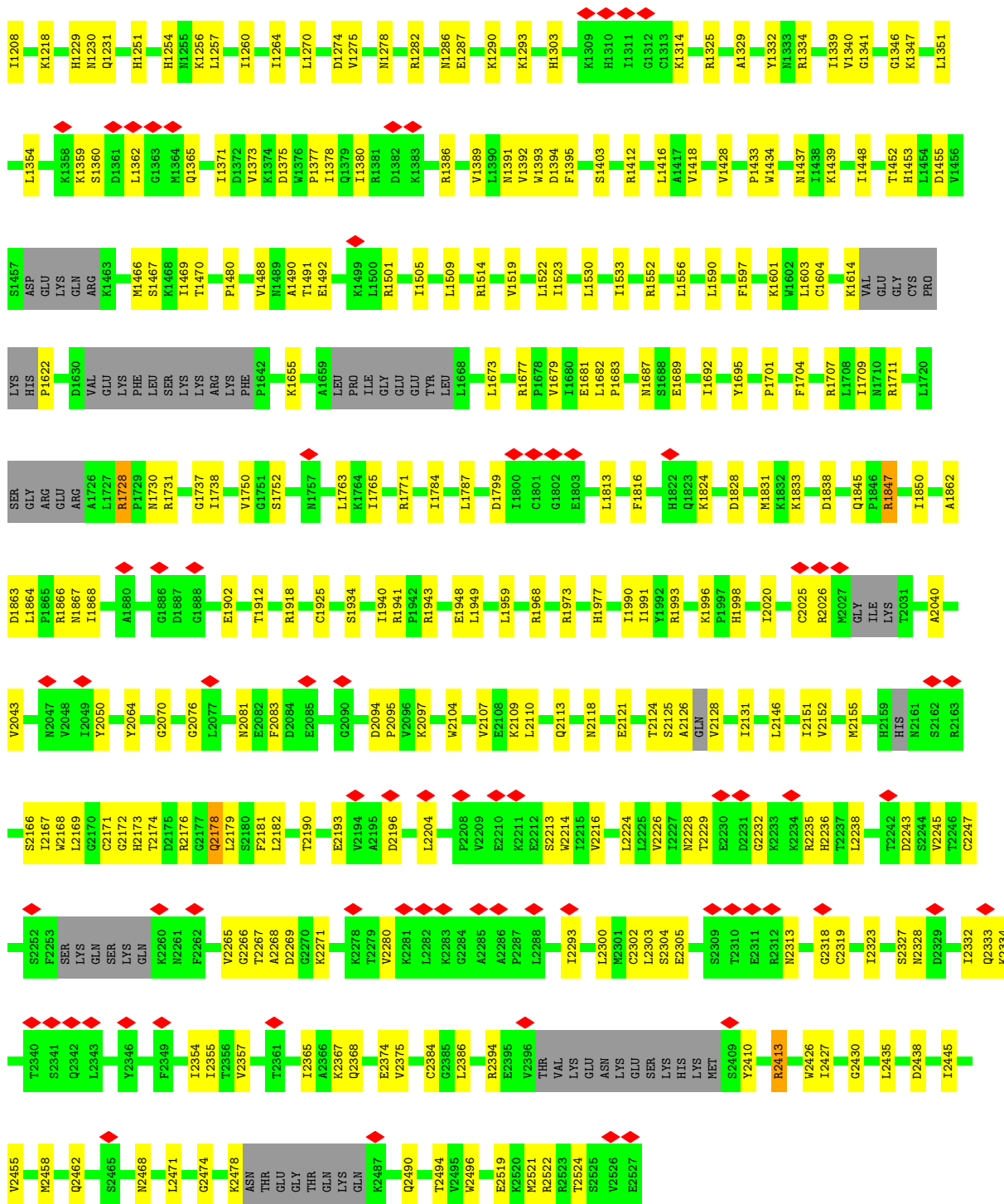
- Molecule 1: Ras-related protein Rab-7L1



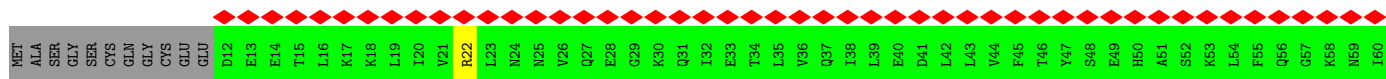
- Molecule 2: Leucine-rich repeat serine/threonine-protein kinase 2







• Molecule 2: Leucine-rich repeat serine/threonine-protein kinase 2





H61	V62	P63	L64	L65	I66	L68	D69	S70	Y71	M72	R73	V74	A75	S76	V77	Q78	Q79	Q80	V80	G81	W82	S83	L84	L85	C86	K87	L88	I89	E90	V91	C92	P93	G94	T95	M96	Q97	S98	L99	M100	G101	PRO	GLN	ASP	VAL	GLY	ASN	ASP	TRP	GLU	SER	VAL	LEU	G113	H114	H115	Q116	L117	I118	L119	K120	
M121	L122	T123	V124	H125	N126	A127	S128	V129	M130	L131	S132	V133	I134	G135	L136	K137	T138	L139	D140	L141	L142	L143	T144	S145	G146	K147	I148	T149	L150	L151	I152	L153	D154	E155	E156	S157	D158	I159	F160	M161	L162	I163	F164	D165	A166	M167	HIS	GLU	SER	PRO	A172	M173	D174	E175	VAL	Q177	L179	G180			
C181	L182	A183	L184	H185	V186	L187	F188	E189	R190	V191	S192	E193	E194	Q195	L196	T197	E198	F199	V200	E201	N202	K203	D204	Y205	M206	I207	LEU	L209	S210	A211	L212	T213	N214	F215	K216	D217	E218	E219	E220	I221	V222	L223	H224	V225	L226	H227	C228	L229	H230	L231	L232	A233	I234	P235	C236	N237	N238	V239	E240		
V241	L242	M243	S244	G245	N246	V247	R248	C249	Y250	M251	I252	V253	V254	E255	A256	M257	K258	A259	F260	P261	M262	S263	E264	R265	I266	Q267	E268	V269	S270	C271	C272	L273	L274	H275	R276	L277	T278	L279	G280	M281	F282	F283	N284	I285	L286	V287	L288	N289	E290	V291	H292	E293	F294	V295	V296	K297	A298	V299	Q300		
Q301	Y302	P303	E304	N305	A306	A307	L308	Q309	I310	S311	A312	L313	S314	C315	L316	A317	L318	L319	T320	E321	T322	I323	F324	L325	ASN	GLN	ASP	LEU	GLU	GLU	LYS	ASN	GLU	GLN	GLU	H275	R276	L277	T278	L279	G280	M281	F282	F283	N284	I285	L286	V287	L288	N289	E290	V291	H292	E293	F294	V295	V296	K297	A298	V299	Q300
R361	K362	M363	K364	H365	E366	A369	A370	C371	M372	A373	L374	N375	N376	L377	L378	M379	Y380	Q381	M382	S383	L384	H385	E386	K387	L388	G389	D390	E391	D392	G393	H394	F395	P396	A397	H398	R399	L403	S404	M405	L406	M407	F408	S409	S410	S411	K412	E413	V414	S418	A419	M420	A421	L422	L425	L426						
E427	Q428	M429	V430	M431	F432	R433	K434	I435	L436	L437	S438	K439	G440	I441	H442	L443	N444	V445	L448	H452	I453	H454	S455	P456	E457	V458	A459	E460	S461	C462	C463	K464	M465	H466	L469	F470	E471	G472	S473	M474	T475	S476	L477	D478	I479	M480	A481	A482	V483	K486	T489	V490	M491	K492							
R493	H494	S497	L498	P499	V500	Q501	L502	E503	A504	L505	H506	L509	H510	F511	L512	V513	PRO	GLY	MET	PRO	GLU	GLU	SER	ARG	GLU	ASP	THR	E525	F526	H527	H528	K534	C537	K535	Q536	F538	K539	N540	D541	L542	L545	F553	L554	G555	N556	P557	G558	I559	K561	V566	I567										
S568	S569	I570	V571	H572	F573	P574	D575	A576	L577	E578	M579	L580	S581	L582	E583	G584	A585	S588	T592	L593	D598	D599	O600	G606	L607	L609	L610	L614	N618	V619	G622	T623	F638	K639	D640	L644	Q645	L665	L666	V667	H668	H669	D672	F676	I683																
M684	E685	Q686	L713	E714	R715	M724	W725	E726	G727	L728	L729	L730	D734	Q737	A738	K739	E740	G741	S743	E750	S754	P755	L757	L760	L761	L762	R767	D770	L779	G780	K781	L790	L791	R792	D797	VAL	A799	R812	V813	E814	G819	P820																			
K825	T826	S827	N828	L829	H830	R831	L839	A851	VAL	GLU	GLU	GLY	GLY	THR	ALA	SER	ALA	VAL	GLY	SER	GLM	ASP	GLN	CYS	SER	PHE	PRO	ASN	GLU	VAL	VAL	SER	LEU	LEU	THR	THR	PHE	ILE	PRO	ASP	SER	SER	LEU	LEU	LYS	ARG	VAL	ALA	ALA	ILE	SER	ASP	ASP	GLU	GLY	SER	GLU				
ARG	SER	SER	LYS	LEU	GLN	SER	HIS	MET	ARG	HIS	SER	ASP	SER	VAL	ILE	GLY	SER	LEU	LEU	TYR	ASP	ALA	GLU	ARG	Y983	L989	N992	D998	S1001	C1004	C1005	I1006	H1012	L1013	E1014	M1021	F1026	S1036	D1041	L1042	H1043	S1044	M1045	Y1053	L1054	L1055	C1059	I1060													
L1063	S1066	R1067	N1068	D1069	I1070	T1084	L1085	L1090	S1091	Y1092	N1093	Q1094	P1099	L1102	V1106	L1109	G1116	I1122	S1137	K1138	N1139	L1149	R1161	M1162	N1163	P1172	L1177	L1178	K1179	N1194	L1195	L1198	R1199	S1200	L1201	D1202	T1208	P1214	K1218																						

H1229	H1230	Q1231	L1237	W1244	V1247	E1248	K1249	L1250	H1251	H1254	M1255	K1256	I1270	D1272	I1260	I1264	D1274	V1275	M1278	R1282	M1286	E1287	K1290	K1293	H1303	K1309	H1310	G1312	C1313	K1314	L1322	R1325	A1329	Y1332	N1333	R1334	I1339	V1340	G1341	G1346											
K1347	L1351	L1354	K1358	K1359	S1360	D1361	L1362	G1363	M1364	Q1365	I1371	D1372	K1374	D1375	W1376	P1377	I1378	Q1379	I1380	R1381	D1382	K1383	R1386	V1389	L1390	N1391	W1392	W1393	D1394	F1395	S1403	R1412	L1416	A1417	V1418	V1428	P1433	W1434	N1437	I1438	K1439	I1448	T1452	H1453							
L1454	D1455	V1456	S1457	ASP	GLU	LYS	GLN	ARG	K1463	M1466	S1467	K1468	I1469	T1470	P1480	W1488	M1489	A1490	T1491	E1492	K1499	L1500	R1501	I1505	L1509	K1512	L1513	R1514	L1517	V1518	V1519	L1522	I1523	L1530	I1533	R1552	L1556	L1590	F1597	K1601	W1602	L1603	C1604								
K1614	VAL	GLU	CYS	PRO	LYS	HIS	P1622	V1630	VAL	GLU	LYS	PHE	LEU	SER	LYS	ARG	LYS	ARG	LYS	PHE	P1642	K1655	A1659	LEU	PRO	ILE	GLY	GLU	TYR	L1668	L1673	R1677	P1678	V1679	I1680	E1681	L1682	P1683	E1689	I1692	Y1695	P1701	F1704	R1707	L1708						
I1709	M1710	R1711	L1720	GLY	ARG	GLU	ARG	A1726	L1727	R1728	F1729	M1730	R1731	M1732	G1737	L1738	Y1739	V1750	M1757	L1763	K1764	I1765	R1771	I1784	L1787	D1799	I1800	C1801	G1802	E1803	L1813	F1816	H1822	L1827	D1828	M1831	K1832	K1833	D1838	D1844	Q1845	P1846									
R1847	I1850	D1858	L1859	A1862	D1863	L1864	P1865	R1866	M1867	I1868	A1880	G1886	D1887	G1888	E1902	T1912	R1918	C1925	S1934	I1940	R1941	P1942	R1943	E1948	L1949	A1950	L1959	R1968	R1973	H1977	I1990	I1991	Y1992	R1993	K1996	S2125	A2126	GLN	V2128	I2131	I2020										
C2025	R2026	M2027	GLY	ILE	LYS	T2031	A2040	V2043	N2047	V2048	L2049	Y2050	Y2064	G2070	G2076	L2077	N2081	E2082	F2083	D2084	E2085	I2088	Q2089	G2090	D2094	P2095	V2096	K2097	W2104	K2109	L2110	Q2113	N2118	E2121	T2124	S2125	A2126	GLN	V2128	I2131	L2146										
I2151	V2152	M2155	H2159	HIS	M2161	S2162	R2163	S2166	I2167	W2168	L2169	G2170	C2171	G2172	H2173	T2174	S2175	R2176	G2177	Q2178	L2179	S2180	F2181	L2182	T2190	S2191	E2192	E2193	D2196	L2204	P2208	V2209	E2210	K2211	E2212	S2213	W2214	I2215	V2216	L2224	L2225	V2226	L2227	N2228	T2229	E2230	D2231	K2232	K2233	K2234	
R2235	H2236	T2237	L2238	E2239	D2243	S2244	V2245	T2246	C2247	S2252	F2253	SER	LYS	GLN	SER	LYS	GLN	K2280	N2281	V2285	G2286	T2287	A2288	D2289	G2270	K2271	K2276	T2279	V2280	K2281	L2282	K2283	G2284	A2285	A2286	P2287	L2288	I2293	L2300	H2301	C2302	L2303	S2304	E2305	S2309	T2310	E2311	R2312	N2313	G2318	C2319
I2323	S2327	N2328	D2329	I2332	Q2333	K2334	T2340	S2341	Q2342	L2343	F2349	I2354	I2355	T2356	V2357	T2361	I2365	A2366	K2367	Q2368	E2374	L2375	K2378	K2379	C2384	G2385	L2386	R2394	E2395	V2396	THR	VAL	LYS	GLU	ASN	C2302	L2303	S2304	E2305	S2309	T2310	E2311	R2312	N2313	G2318	C2319					
W2426	L2427	G2430	L2435	D2438	L2445	V2455	M2458	Q2462	S2465	N2468	L2471	G2474	K2478	ASN	THR	GLU	GLY	THR	GLN	LYS	GLN	K2487	Q2490	T2494	W2495	W2496	E2519	K2520	M2521	R2522	R2523	T2524	S2525	V2526	E2527																

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	96502	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	58.8	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.795	Depositor
Minimum map value	-1.743	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.041	Depositor
Recommended contour level	0.35	Depositor
Map size ( $\text{\AA}$ )	508.8, 508.8, 508.8	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	1.06, 1.06, 1.06	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: GDP, ATP

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	0.29	0/1134	0.56	1/1562 (0.1%)
1	B	0.26	0/1134	0.53	0/1562
2	C	0.29	0/17330	0.58	2/23540 (0.0%)
2	E	0.29	0/17341	0.57	3/23555 (0.0%)
All	All	0.29	0/36939	0.57	6/50219 (0.0%)

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	1732	MET	CA-CB-CG	6.72	124.72	113.30
2	E	1728	ARG	CA-CB-CG	6.06	126.72	113.40
2	C	1728	ARG	CA-CB-CG	5.98	126.55	113.40
1	A	94	THR	CA-CB-CG2	-5.47	104.74	112.40
2	C	316	LEU	CA-CB-CG	5.07	126.95	115.30
2	E	316	LEU	CA-CB-CG	5.04	126.90	115.30

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	1115	0	924	40	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	1115	0	924	15	0
2	C	17037	0	16706	300	0
2	E	17047	0	16717	275	0
3	C	28	0	12	0	0
3	E	28	0	12	0	0
4	C	31	0	12	0	0
4	E	31	0	12	0	0
All	All	36432	0	35319	586	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 8.

All (586) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:97:SER:CB	2:C:406:LEU:HD13	1.01	1.47
1:A:97:SER:CB	2:C:406:LEU:CD1	1.98	1.42
1:A:94:THR:CG2	2:C:402:MET:CE	1.95	1.42
1:A:94:THR:HG22	2:C:402:MET:SD	1.75	1.26
1:A:94:THR:HG21	2:C:402:MET:CE	1.67	1.06
1:A:94:THR:CG2	2:C:402:MET:HE3	1.81	1.04
1:A:94:THR:HG21	2:C:402:MET:HE1	1.08	1.04
1:A:94:THR:CG2	2:C:402:MET:SD	2.43	1.01
1:A:94:THR:HG23	2:C:402:MET:HE3	1.48	0.94
1:A:69:ARG:CB	2:C:443:LEU:CD1	2.47	0.93
1:A:94:THR:HG22	2:C:402:MET:CE	1.91	0.90
1:A:69:ARG:CB	2:C:443:LEU:HD13	2.01	0.90
1:A:94:THR:CG2	2:C:402:MET:HE1	1.76	0.88
1:A:69:ARG:CB	2:C:443:LEU:CD2	2.55	0.85
1:A:88:PHE:HB2	1:A:95:THR:HB	1.64	0.79
2:C:819:GLY:HA2	2:C:1006:ILE:HD11	1.65	0.78
2:E:819:GLY:HA2	2:E:1006:ILE:HD11	1.66	0.77
2:E:1711:ARG:HD2	2:E:1787:LEU:HD12	1.68	0.76
2:C:1711:ARG:HD2	2:C:1787:LEU:HD12	1.68	0.76
2:C:792:ARG:NH2	2:C:820:PRO:O	2.21	0.74
2:E:2216:VAL:HG12	2:E:2226:VAL:HG22	1.69	0.74
1:A:69:ARG:CB	2:C:443:LEU:HD22	2.16	0.73
1:A:94:THR:HB	2:C:439:LYS:O	1.89	0.73
2:C:2216:VAL:HG12	2:C:2226:VAL:HG22	1.69	0.73
1:B:44:PHE:CE2	2:E:406:LEU:HD11	2.24	0.73
2:E:792:ARG:NH2	2:E:820:PRO:O	2.22	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:1070:ILE:H	2:E:1093:ASN:HB3	1.55	0.72
2:C:296:VAL:HG22	2:C:349:TRP:HE1	1.56	0.71
2:E:296:VAL:HG22	2:E:349:TRP:HE1	1.56	0.71
2:C:1070:ILE:H	2:C:1093:ASN:HB3	1.56	0.70
1:A:94:THR:HG23	2:C:402:MET:CE	2.02	0.70
2:C:2293:ILE:HD12	2:C:2332:ILE:HD11	1.74	0.70
2:E:2293:ILE:HD12	2:E:2332:ILE:HD11	1.74	0.69
2:E:2110:LEU:HD13	2:E:2131:ILE:HD11	1.74	0.69
2:C:2109:LYS:HG2	2:C:2113:GLN:HE22	1.59	0.68
2:E:1303:HIS:HB3	2:E:1514:ARG:HD3	1.74	0.68
2:C:2110:LEU:HD13	2:C:2131:ILE:HD11	1.75	0.68
2:C:1339:ILE:HG12	2:C:1416:LEU:HD12	1.75	0.68
2:C:1303:HIS:HB3	2:C:1514:ARG:HD3	1.76	0.67
2:C:992:ASN:O	2:C:1021:ASN:ND2	2.27	0.67
2:E:1378:ILE:HD13	2:E:1505:ILE:HD11	1.76	0.67
1:A:70:PHE:CB	2:C:443:LEU:HB2	2.25	0.66
2:E:1339:ILE:HG12	2:E:1416:LEU:HD12	1.75	0.66
2:E:992:ASN:O	2:E:1021:ASN:ND2	2.28	0.66
2:C:320:THR:HA	2:C:323:ILE:HG22	1.78	0.66
2:C:1378:ILE:HD13	2:C:1505:ILE:HD11	1.76	0.66
2:E:2109:LYS:HG2	2:E:2113:GLN:HE22	1.59	0.66
1:B:44:PHE:CE2	2:E:406:LEU:CD1	2.78	0.65
2:C:181:CYS:HG	2:C:224:HIS:HD1	1.43	0.65
1:A:124:ALA:HB3	1:A:153:GLU:HA	1.77	0.65
2:C:1912:THR:O	2:C:1943:ARG:NH1	2.30	0.65
2:E:320:THR:HA	2:E:323:ILE:HG22	1.78	0.65
2:C:1341:GLY:O	2:C:1434:TRP:NE1	2.30	0.65
2:C:667:VAL:O	2:C:715:ARG:NH2	2.30	0.64
2:E:1912:THR:O	2:E:1943:ARG:NH1	2.29	0.64
2:E:1341:GLY:O	2:E:1434:TRP:NE1	2.30	0.64
2:C:409:SER:O	2:C:452:HIS:NE2	2.31	0.64
1:B:124:ALA:HB3	1:B:153:GLU:HA	1.80	0.64
2:E:667:VAL:O	2:E:715:ARG:NH2	2.30	0.64
2:E:2152:VAL:HG21	2:E:2169:LEU:HD23	1.80	0.64
2:C:2152:VAL:HG21	2:C:2169:LEU:HD23	1.80	0.63
2:E:570:ILE:O	2:E:573:PHE:N	2.31	0.63
2:E:1198:LEU:HD21	2:E:1201:LEU:HB2	1.80	0.63
2:C:570:ILE:O	2:C:573:PHE:N	2.32	0.63
2:E:1902:GLU:HB3	2:E:1949:LEU:HD23	1.80	0.63
1:B:10:VAL:HG22	1:B:83:ALA:HB3	1.82	0.62
1:A:10:VAL:HG22	1:A:83:ALA:HB3	1.82	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:568:SER:HB2	2:E:609:LEU:HD21	1.81	0.62
2:C:1902:GLU:HB3	2:C:1949:LEU:HD23	1.82	0.62
2:E:600:GLN:HG3	2:E:644:ILE:HD11	1.82	0.62
2:C:1622:PRO:HB3	2:E:1677:ARG:HG3	1.82	0.61
2:C:600:GLN:HG3	2:C:644:ILE:HD11	1.82	0.61
1:A:69:ARG:CB	2:C:443:LEU:HD11	2.30	0.61
2:C:568:SER:HB2	2:C:609:LEU:HD21	1.81	0.61
2:C:2318:GLY:HA2	2:C:2323:ILE:HA	1.83	0.61
2:C:1275:VAL:O	2:C:1278:ASN:ND2	2.35	0.60
2:C:1198:LEU:HD21	2:C:1201:LEU:HB2	1.81	0.60
2:C:767:ARG:NH1	2:C:770:ASP:OD2	2.35	0.60
2:E:1195:LEU:HD12	2:E:1198:LEU:HD12	1.82	0.60
2:E:1275:VAL:O	2:E:1278:ASN:ND2	2.34	0.60
2:E:1590:LEU:HD22	2:E:1655:LYS:HG3	1.83	0.60
2:C:1195:LEU:HD12	2:C:1198:LEU:HD12	1.84	0.60
2:E:767:ARG:NH1	2:E:770:ASP:OD2	2.34	0.60
2:E:1045:ASN:HB2	2:E:1068:ASN:HD21	1.65	0.59
2:E:2318:GLY:HA2	2:E:2323:ILE:HA	1.83	0.59
2:E:2462:GLN:HG2	2:E:2468:ASN:H	1.67	0.59
1:A:69:ARG:CB	2:C:443:LEU:HD21	2.32	0.59
2:C:2125:SER:HA	2:C:2128:VAL:HG12	1.83	0.59
2:E:593:LEU:HD11	2:E:606:GLY:HA3	1.83	0.59
2:E:1771:ARG:NH2	2:E:1864:LEU:O	2.35	0.59
2:C:388:ILE:HD11	2:C:397:ALA:HB3	1.85	0.59
2:E:2125:SER:HA	2:E:2128:VAL:HG12	1.83	0.59
2:C:1045:ASN:HB2	2:C:1068:ASN:HD21	1.65	0.59
1:A:70:PHE:CA	2:C:443:LEU:HB2	2.33	0.59
2:E:1106:VAL:HG12	2:E:1109:LEU:HB2	1.85	0.59
2:C:1377:PRO:HB3	2:C:1389:VAL:HG12	1.85	0.58
2:C:1590:LEU:HD22	2:C:1655:LYS:HG3	1.84	0.58
2:C:1043:HIS:HB3	2:C:1066:SER:H	1.69	0.58
2:C:2462:GLN:HG2	2:C:2468:ASN:H	1.67	0.58
2:E:2146:LEU:O	2:E:2490:GLN:NE2	2.35	0.58
2:C:2110:LEU:HD11	2:C:2128:VAL:HG23	1.85	0.58
2:E:2438:ASP:HB2	2:E:2445:ILE:HD11	1.86	0.58
2:C:593:LEU:HD11	2:C:606:GLY:HA3	1.85	0.58
2:C:2267:THR:HG22	2:C:2269:ASP:H	1.68	0.58
2:C:2438:ASP:HB2	2:C:2445:ILE:HD11	1.85	0.58
2:E:207:ILE:HD11	2:E:225:VAL:HG22	1.86	0.58
2:E:1377:PRO:HB3	2:E:1389:VAL:HG12	1.86	0.58
2:E:2267:THR:HG22	2:E:2269:ASP:H	1.68	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:2394:ARG:HH21	2:C:2410:TYR:HB2	1.68	0.58
2:E:1026:PHE:O	2:E:1053:TYR:OH	2.22	0.58
2:E:1439:LYS:HB2	2:E:1480:PRO:HD3	1.86	0.57
2:C:1106:VAL:HG12	2:C:1109:LEU:HB2	1.86	0.57
2:C:1439:LYS:HB2	2:C:1480:PRO:HD3	1.85	0.57
2:E:2110:LEU:HD11	2:E:2128:VAL:HG23	1.85	0.57
2:E:2394:ARG:HH21	2:E:2410:TYR:HB2	1.69	0.57
2:C:207:ILE:HD11	2:C:225:VAL:HG22	1.86	0.57
2:E:1043:HIS:HB3	2:E:1066:SER:H	1.70	0.57
1:B:28:SER:OG	1:B:46:LEU:O	2.22	0.57
2:C:1771:ARG:NH2	2:C:1864:LEU:O	2.36	0.57
2:C:2146:LEU:O	2:C:2490:GLN:NE2	2.36	0.57
2:C:2413:ARG:O	2:C:2430:GLY:N	2.37	0.57
2:E:181:CYS:SG	2:E:224:HIS:ND1	2.72	0.57
2:E:2247:CYS:O	2:E:2266:GLY:N	2.36	0.57
2:C:1260:ILE:HG23	2:C:1264:ILE:HD12	1.87	0.57
2:E:143:LEU:HD22	2:E:149:THR:HG22	1.87	0.57
2:C:2304:SER:OG	2:C:2305:GLU:N	2.38	0.56
2:C:1231:GLN:HB2	2:C:1256:LYS:HE3	1.87	0.56
2:C:1695:TYR:HB2	2:C:1763:LEU:HB3	1.86	0.56
2:C:2243:ASP:HB3	2:C:2268:ALA:HB3	1.87	0.56
2:C:762:LEU:HD11	2:C:790:LEU:HD23	1.88	0.56
2:E:2413:ARG:O	2:E:2430:GLY:N	2.38	0.56
2:C:364:LYS:HG2	2:C:408:HIS:ND1	2.21	0.56
2:C:1334:ARG:O	2:C:1412:ARG:NH2	2.39	0.56
2:E:1231:GLN:HB2	2:E:1256:LYS:HE3	1.88	0.56
2:C:143:LEU:HD22	2:C:149:THR:HG22	1.87	0.56
2:C:230:HIS:CD2	2:C:272:CYS:HG	2.24	0.56
2:C:1026:PHE:O	2:C:1053:TYR:OH	2.21	0.56
2:C:498:LEU:HD13	2:C:553:PHE:HD2	1.71	0.56
2:E:1695:TYR:HB2	2:E:1763:LEU:HB3	1.88	0.56
2:C:2109:LYS:O	2:C:2113:GLN:NE2	2.40	0.55
2:E:2304:SER:OG	2:E:2305:GLU:N	2.37	0.55
2:C:2224:LEU:HB3	2:C:2238:LEU:HB2	1.87	0.55
2:C:1707:ARG:HB3	2:C:1787:LEU:HD11	1.89	0.55
2:E:1334:ARG:O	2:E:1412:ARG:NH2	2.39	0.55
2:E:1678:PRO:HG3	2:E:1732:MET:HE3	1.88	0.55
2:C:2247:CYS:O	2:C:2266:GLY:N	2.36	0.55
2:E:2109:LYS:O	2:E:2113:GLN:NE2	2.39	0.55
2:E:498:LEU:HD13	2:E:553:PHE:HD2	1.72	0.55
2:E:762:LEU:HD11	2:E:790:LEU:HD23	1.87	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:70:PHE:CB	2:C:443:LEU:CB	2.84	0.55
2:C:1433:PRO:O	2:C:1437:ASN:ND2	2.33	0.55
2:C:204:ASP:HA	2:C:207:ILE:HG22	1.89	0.55
2:C:408:HIS:HB2	2:C:414:VAL:HG21	1.87	0.55
2:E:2224:LEU:HB3	2:E:2238:LEU:HB2	1.88	0.55
2:E:2243:ASP:HB3	2:E:2268:ALA:HB3	1.87	0.55
2:C:1092:TYR:OH	2:C:1138:LYS:NZ	2.35	0.55
2:E:2181:PHE:HB3	2:E:2190:THR:HB	1.89	0.55
2:C:1682:LEU:O	2:E:1728:ARG:NH1	2.39	0.54
1:B:44:PHE:CZ	2:E:406:LEU:HD13	2.42	0.54
2:C:1934:SER:OG	2:C:1948:GLU:OE1	2.24	0.54
2:E:1260:ILE:HG23	2:E:1264:ILE:HD12	1.89	0.54
2:C:1194:ASN:OD1	2:C:1218:LYS:NZ	2.36	0.54
2:C:2166:SER:OG	2:C:2182:LEU:O	2.24	0.54
2:E:2302:CYS:SG	2:E:2303:LEU:N	2.80	0.54
2:C:123:THR:HA	2:C:162:LEU:HD21	1.88	0.54
2:E:204:ASP:HA	2:E:207:ILE:HG22	1.88	0.54
1:A:74:THR:HG22	1:A:76:LEU:H	1.72	0.54
2:C:2151:ILE:O	2:C:2172:GLY:N	2.41	0.54
2:C:2126:ALA:O	2:C:2128:VAL:N	2.40	0.54
2:E:1934:SER:OG	2:E:1948:GLU:OE1	2.24	0.54
2:C:2181:PHE:HB3	2:C:2190:THR:HB	1.89	0.54
2:C:460:GLU:HB2	2:C:500:VAL:HG22	1.90	0.54
2:E:123:THR:HA	2:E:162:LEU:HD21	1.89	0.54
2:E:163:ILE:HG21	2:E:184:LEU:HD13	1.90	0.54
2:C:2094:ASP:OD2	2:C:2097:LYS:NZ	2.30	0.54
2:C:2302:CYS:SG	2:C:2303:LEU:N	2.80	0.54
2:E:812:LYS:NZ	2:E:814:GLU:OE2	2.40	0.54
2:E:2126:ALA:O	2:E:2128:VAL:N	2.41	0.54
1:B:74:THR:HG22	1:B:76:LEU:H	1.73	0.53
2:C:1730:ASN:HB3	2:E:1739:TYR:OH	2.08	0.53
2:E:230:HIS:CD2	2:E:272:CYS:HG	2.24	0.53
2:E:409:SER:O	2:E:452:HIS:NE2	2.42	0.53
2:E:1433:PRO:O	2:E:1437:ASN:ND2	2.32	0.53
2:E:2166:SER:OG	2:E:2182:LEU:O	2.23	0.53
2:E:2214:TRP:HD1	2:E:2228:ASN:HA	1.74	0.53
2:C:812:LYS:NZ	2:C:814:GLU:OE2	2.41	0.53
2:E:1707:ARG:HB3	2:E:1787:LEU:HD11	1.90	0.53
2:E:2124:THR:HG23	2:E:2126:ALA:H	1.74	0.53
2:C:1701:PRO:HG2	2:C:1704:PHE:HB2	1.89	0.53
2:E:2151:ILE:O	2:E:2172:GLY:N	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:460:GLU:HB2	2:E:500:VAL:HG22	1.90	0.53
2:E:2094:ASP:OD2	2:E:2097:LYS:NZ	2.30	0.53
2:C:2124:THR:HG23	2:C:2126:ALA:H	1.74	0.53
2:E:2236:HIS:NE2	2:E:2280:VAL:O	2.39	0.53
2:E:2357:VAL:HG23	2:E:2365:ILE:HG12	1.90	0.53
2:C:2357:VAL:HG23	2:C:2365:ILE:HG12	1.91	0.52
2:C:163:ILE:HG21	2:C:184:LEU:HD13	1.90	0.52
2:E:1701:PRO:HG2	2:E:1704:PHE:HB2	1.90	0.52
2:E:1763:LEU:HD21	2:E:1784:ILE:HD11	1.90	0.52
1:B:25:GLN:HB3	1:B:31:SER:HB3	1.91	0.52
2:C:1597:PHE:HD2	2:C:1603:LEU:HD22	1.75	0.52
2:C:2214:TRP:HD1	2:C:2228:ASN:HA	1.74	0.52
2:C:285:ILE:O	2:C:288:LEU:HB3	2.10	0.52
2:C:2305:GLU:OE2	2:C:2313:ASN:ND2	2.42	0.52
1:A:87:MET:HB2	1:A:123:LEU:HD12	1.92	0.52
2:E:2427:ILE:HB	2:E:2435:LEU:HB3	1.91	0.52
2:E:364:LYS:HG2	2:E:408:HIS:ND1	2.25	0.52
2:C:1683:PRO:HD3	2:E:1730:ASN:OD1	2.10	0.52
2:E:434:LYS:HA	2:E:437:LEU:HB3	1.91	0.52
2:E:285:ILE:O	2:E:288:LEU:HB3	2.10	0.51
2:E:1695:TYR:HE2	2:E:1784:ILE:HG21	1.76	0.51
2:C:181:CYS:SG	2:C:224:HIS:ND1	2.72	0.51
2:C:1695:TYR:HE2	2:C:1784:ILE:HG21	1.75	0.51
2:E:638:PHE:O	2:E:645:GLN:NE2	2.43	0.51
2:E:2305:GLU:OE2	2:E:2313:ASN:ND2	2.42	0.51
2:C:2427:ILE:HB	2:C:2435:LEU:HB3	1.91	0.51
2:E:2327:SER:OG	2:E:2328:ASN:N	2.44	0.51
2:C:1728:ARG:NH1	2:E:1682:LEU:O	2.42	0.51
1:A:70:PHE:N	2:C:443:LEU:HB2	2.26	0.51
2:C:713:LEU:HD21	2:C:728:LEU:HB3	1.92	0.51
2:C:573:PHE:HB2	2:C:576:ALA:HB2	1.93	0.51
2:C:1137:SER:HB2	2:C:1161:ARG:HB2	1.93	0.51
2:E:573:PHE:HB2	2:E:576:ALA:HB2	1.93	0.51
2:C:1763:LEU:HD21	2:C:1784:ILE:HD11	1.92	0.50
2:C:2327:SER:OG	2:C:2328:ASN:N	2.44	0.50
2:E:2519:GLU:OE1	2:E:2522:ARG:NH1	2.40	0.50
1:B:44:PHE:HE2	2:E:406:LEU:HD21	1.76	0.50
2:E:209:LEU:HD23	2:E:212:LEU:HD21	1.93	0.50
2:E:388:ILE:HD11	2:E:397:ALA:HB3	1.93	0.50
2:E:1728:ARG:HD3	2:E:1731:ARG:HH22	1.75	0.50
2:E:713:LEU:HD21	2:E:728:LEU:HB3	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:25:GLN:HB3	1:A:31:SER:HB3	1.94	0.50
2:C:638:PHE:O	2:C:645:GLN:NE2	2.44	0.50
2:C:1491:THR:OG1	2:C:1492:GLU:OE1	2.29	0.50
2:E:1491:THR:OG1	2:E:1492:GLU:OE1	2.29	0.50
2:E:1597:PHE:HD2	2:E:1603:LEU:HD22	1.76	0.50
2:E:1004:CYS:SG	2:E:1005:CYS:N	2.84	0.50
2:C:460:GLU:HG3	2:C:499:PRO:HB2	1.94	0.50
2:C:2519:GLU:OE1	2:C:2522:ARG:NH1	2.39	0.50
2:E:734:ASP:OD1	2:E:734:ASP:N	2.45	0.50
2:C:1709:ILE:HB	2:C:1738:ILE:HD11	1.94	0.49
2:C:1530:LEU:HA	2:C:1533:ILE:HG22	1.94	0.49
2:C:1677:ARG:HG3	2:E:1622:PRO:HB3	1.94	0.49
2:E:1137:SER:HB2	2:E:1161:ARG:HB2	1.94	0.49
2:E:2458:MET:HA	2:E:2471:LEU:O	2.12	0.49
2:C:1208:ILE:HG22	2:C:1230:ASN:HB3	1.94	0.49
2:E:1208:ILE:HG22	2:E:1230:ASN:HB3	1.94	0.49
2:E:1455:ASP:OD1	2:E:1455:ASP:N	2.45	0.49
2:E:2354:ILE:HA	2:E:2367:LYS:HD3	1.95	0.49
2:C:750:GLU:O	2:C:781:LYS:NZ	2.44	0.49
2:C:1004:CYS:SG	2:C:1005:CYS:N	2.84	0.49
2:E:566:VAL:O	2:E:570:ILE:HG12	2.13	0.49
2:C:209:LEU:HD23	2:C:212:LEU:HD21	1.94	0.49
2:C:2458:MET:HA	2:C:2471:LEU:O	2.12	0.49
2:E:556:ASN:O	2:E:559:ILE:HG12	2.12	0.49
2:E:1530:LEU:HA	2:E:1533:ILE:HG22	1.94	0.49
2:C:2300:LEU:HA	2:C:2319:CYS:HA	1.95	0.49
2:C:2236:HIS:NE2	2:C:2280:VAL:O	2.39	0.49
2:E:1092:TYR:OH	2:E:1138:LYS:NZ	2.39	0.49
2:E:1362:LEU:HD23	2:E:1365:GLN:HG3	1.94	0.49
2:C:1207:ASP:N	2:C:1207:ASP:OD1	2.46	0.49
2:C:556:ASN:O	2:C:559:ILE:HG12	2.12	0.49
2:E:498:LEU:HD11	2:E:559:ILE:HD13	1.95	0.49
2:E:2300:LEU:HA	2:E:2319:CYS:HA	1.94	0.49
1:A:94:THR:HG22	2:C:402:MET:CG	2.41	0.48
2:C:1362:LEU:HD23	2:C:1365:GLN:HG3	1.93	0.48
1:B:92:ASN:O	1:B:95:THR:OG1	2.30	0.48
2:C:1198:LEU:HD11	2:C:1201:LEU:HD12	1.94	0.48
2:E:754:SER:HB2	2:E:757:LEU:HD23	1.95	0.48
2:C:2354:ILE:HA	2:C:2367:LYS:HD3	1.96	0.48
2:E:1198:LEU:HD11	2:E:1201:LEU:HD12	1.94	0.48
2:E:1509:LEU:HA	2:E:1519:VAL:HG11	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:94:THR:HG21	2:C:402:MET:SD	2.33	0.48
2:C:566:VAL:O	2:C:570:ILE:HG12	2.13	0.48
2:C:1380:ILE:HG13	2:C:1386:ARG:HB2	1.96	0.48
2:E:683:ILE:HD11	2:E:839:LEU:HD21	1.95	0.48
2:C:1488:VAL:HG12	2:C:1490:ALA:H	1.79	0.48
2:C:2040:ALA:HB3	2:C:2043:VAL:HG12	1.96	0.48
2:C:2124:THR:O	2:C:2128:VAL:N	2.46	0.48
2:E:1229:HIS:HA	2:E:1254:HIS:HB2	1.95	0.48
2:E:2124:THR:O	2:E:2128:VAL:N	2.46	0.48
2:C:734:ASP:OD1	2:C:734:ASP:N	2.45	0.48
2:E:1060:ILE:HD11	2:E:1063:LEU:HD13	1.96	0.48
2:E:813:VAL:HG11	2:E:989:LEU:HD21	1.96	0.48
2:E:1194:ASN:OD1	2:E:1218:LYS:NZ	2.36	0.48
2:C:1467:SER:O	2:C:1470:THR:OG1	2.26	0.48
2:C:1375:ASP:HA	2:C:1391:ASN:HA	1.95	0.48
2:C:1455:ASP:OD1	2:C:1455:ASP:N	2.45	0.48
2:C:2173:HIS:CD2	2:C:2174:THR:HG23	2.49	0.48
2:E:1689:GLU:OE1	2:E:1689:GLU:N	2.47	0.48
2:E:1375:ASP:HA	2:E:1391:ASN:HA	1.96	0.48
2:E:1380:ILE:HG13	2:E:1386:ARG:HB2	1.96	0.48
2:E:1403:SER:O	2:E:1707:ARG:NH1	2.45	0.48
2:E:1973:ARG:O	2:E:1977:HIS:ND1	2.42	0.48
2:C:1287:GLU:O	2:C:1290:LYS:NZ	2.47	0.47
2:E:1286:ASN:HD21	2:E:1325:ARG:HE	1.62	0.47
2:C:1673:LEU:HD11	2:E:1679:VAL:HG21	1.96	0.47
2:C:1689:GLU:N	2:C:1689:GLU:OE1	2.47	0.47
2:E:1287:GLU:O	2:E:1290:LYS:NZ	2.47	0.47
2:E:2426:TRP:HB3	2:E:2458:MET:HE1	1.95	0.47
2:C:1099:PRO:HB2	2:C:1102:LEU:HG	1.96	0.47
2:E:284:ASN:O	2:E:288:LEU:N	2.27	0.47
2:E:460:GLU:HG3	2:E:499:PRO:HB2	1.95	0.47
2:E:998:ASP:O	2:E:1001:SER:OG	2.26	0.47
2:E:1099:PRO:HB2	2:E:1102:LEU:HG	1.95	0.47
2:C:2267:THR:HG21	2:C:2271:LYS:HB2	1.97	0.47
2:E:1059:CYS:HA	2:E:1084:THR:HG21	1.97	0.47
2:E:1106:VAL:HG11	2:E:1109:LEU:HD12	1.97	0.47
2:E:2173:HIS:CD2	2:E:2174:THR:HG23	2.49	0.47
2:E:2374:GLU:HA	2:E:2386:LEU:HD23	1.97	0.47
2:C:498:LEU:HD11	2:C:559:ILE:HD13	1.96	0.47
2:E:1329:ALA:HB1	2:E:1522:LEU:HB3	1.97	0.47
2:C:1106:VAL:HG11	2:C:1109:LEU:HD12	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:1229:HIS:HA	2:C:1254:HIS:HB2	1.95	0.47
2:C:1251:HIS:HA	2:C:1274:ASP:HB3	1.97	0.47
2:E:437:LEU:HD13	2:E:470:PHE:HE1	1.80	0.47
2:E:1177:ILE:HG22	2:E:1200:SER:HB3	1.96	0.47
2:E:2040:ALA:HB3	2:E:2043:VAL:HG12	1.96	0.47
2:C:1060:ILE:HD11	2:C:1063:LEU:HD13	1.96	0.47
2:C:1177:ILE:HG22	2:C:1200:SER:HB3	1.97	0.47
2:C:1403:SER:O	2:C:1707:ARG:NH1	2.47	0.47
2:C:1687:ASN:OD1	2:C:1824:LYS:NZ	2.35	0.47
2:E:1341:GLY:N	2:E:1347:LYS:HD3	2.30	0.47
2:E:1488:VAL:HG12	2:E:1490:ALA:H	1.79	0.47
2:E:1709:ILE:HB	2:E:1738:ILE:HD11	1.95	0.47
2:E:2521:MET:HA	2:E:2524:THR:HG23	1.96	0.47
2:C:389:GLY:HA2	2:C:432:PHE:HZ	1.80	0.47
2:C:1286:ASN:HD21	2:C:1325:ARG:HE	1.62	0.47
2:C:1509:LEU:HA	2:C:1519:VAL:HG11	1.97	0.47
2:C:2064:TYR:CE2	2:C:2095:PRO:HG3	2.50	0.47
2:E:2267:THR:HG21	2:E:2271:LYS:HB2	1.96	0.47
2:E:1452:THR:HG23	2:E:1453:HIS:ND1	2.30	0.47
2:C:2155:MET:HB3	2:C:2169:LEU:HG	1.97	0.46
2:E:1990:ILE:HD11	2:E:2020:ILE:HB	1.96	0.46
2:E:2167:ILE:HD11	2:E:2182:LEU:HD23	1.97	0.46
2:E:2427:ILE:HD12	2:E:2435:LEU:HD23	1.97	0.46
2:C:683:ILE:HD11	2:C:839:LEU:HD21	1.96	0.46
2:C:754:SER:HB2	2:C:757:LEU:HD23	1.95	0.46
2:E:2064:TYR:CE2	2:E:2095:PRO:HG3	2.50	0.46
2:C:1452:THR:HG23	2:C:1453:HIS:ND1	2.30	0.46
2:C:1845:GLN:OE1	2:C:1847:ARG:HD2	2.16	0.46
2:E:317:ALA:HB2	2:E:373:ALA:HA	1.97	0.46
2:E:350:LEU:HD11	2:E:384:LEU:HD13	1.98	0.46
2:E:665:LEU:O	2:E:669:HIS:N	2.48	0.46
2:C:2374:GLU:HA	2:C:2386:LEU:HD23	1.98	0.46
2:E:1055:LEU:HD22	2:E:1085:LEU:HD11	1.98	0.46
2:C:317:ALA:HB2	2:C:373:ALA:HA	1.97	0.46
2:C:567:ILE:O	2:C:571:VAL:HG23	2.14	0.46
2:C:2521:MET:HA	2:C:2524:THR:HG23	1.97	0.46
2:E:295:VAL:HG13	2:E:312:ALA:HB1	1.97	0.46
2:E:1351:LEU:HD11	2:E:1392:VAL:HG21	1.98	0.46
2:C:2167:ILE:HD11	2:C:2182:LEU:HD23	1.98	0.46
2:E:750:GLU:O	2:E:781:LYS:NZ	2.47	0.46
2:E:1293:LYS:HE3	2:E:2081:ASN:HD21	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:1816:PHE:HA	2:E:1850:ILE:HD11	1.97	0.46
2:E:1845:GLN:OE1	2:E:1847:ARG:HD2	2.16	0.46
2:C:1329:ALA:HB1	2:C:1522:LEU:HB3	1.96	0.46
2:C:2267:THR:OG1	2:C:2271:LYS:O	2.27	0.46
2:E:567:ILE:O	2:E:571:VAL:HG23	2.14	0.46
2:E:1959:LEU:HD13	2:E:2070:GLY:HA3	1.98	0.46
2:C:998:ASP:O	2:C:1001:SER:OG	2.27	0.46
2:C:1341:GLY:N	2:C:1347:LYS:HD3	2.30	0.46
2:C:2427:ILE:HD12	2:C:2435:LEU:HD23	1.98	0.46
2:C:672:ASP:HB2	2:C:676:PHE:CE2	2.51	0.46
2:C:1863:ASP:OD1	2:C:1863:ASP:N	2.48	0.46
2:E:672:ASP:HB2	2:E:676:PHE:CE2	2.50	0.46
2:E:1346:GLY:H	2:E:1452:THR:HG21	1.81	0.46
2:E:1354:LEU:O	2:E:1501:ARG:NH1	2.46	0.46
1:A:94:THR:CB	2:C:439:LYS:O	2.63	0.46
2:C:295:VAL:HG13	2:C:312:ALA:HB1	1.96	0.45
2:C:1959:LEU:HD13	2:C:2070:GLY:HA3	1.98	0.45
2:C:1990:ILE:HD11	2:C:2020:ILE:HB	1.96	0.45
2:E:1863:ASP:N	2:E:1863:ASP:OD1	2.48	0.45
2:E:2155:MET:HB3	2:E:2169:LEU:HG	1.97	0.45
2:E:2232:GLY:O	2:E:2235:ARG:NH2	2.48	0.45
2:C:350:LEU:HD11	2:C:384:LEU:HD13	1.98	0.45
2:C:1059:CYS:HA	2:C:1084:THR:HG21	1.98	0.45
2:C:1346:GLY:H	2:C:1418:VAL:HG11	1.80	0.45
2:C:1394:ASP:OD1	2:C:1394:ASP:N	2.44	0.45
2:C:2043:VAL:HG23	2:C:2050:TYR:CZ	2.52	0.45
2:E:389:GLY:HA2	2:E:432:PHE:HZ	1.80	0.45
2:C:1816:PHE:HA	2:C:1850:ILE:HD11	1.98	0.45
2:E:2455:VAL:HA	2:E:2474:GLY:HA2	1.98	0.45
1:B:152:THR:HG21	1:B:165:ALA:HB2	1.97	0.45
2:C:756:LYS:HE2	2:C:760:LEU:HD21	1.98	0.45
2:C:2232:GLY:O	2:C:2235:ARG:NH2	2.49	0.45
2:C:2375:VAL:O	2:C:2384:CYS:N	2.50	0.45
2:C:2455:VAL:HA	2:C:2474:GLY:HA2	1.98	0.45
2:C:292:HIS:O	2:C:296:VAL:HG23	2.17	0.45
2:E:1249:LYS:HE2	2:E:1249:LYS:HB3	1.85	0.45
2:C:1373:VAL:HB	2:C:1601:LYS:HB3	1.98	0.45
2:C:2171:CYS:SG	2:C:2178:GLN:N	2.89	0.45
2:E:2375:VAL:O	2:E:2384:CYS:N	2.50	0.45
2:C:1354:LEU:O	2:C:1501:ARG:NH1	2.48	0.45
2:C:1868:ILE:HG13	2:C:1925:CYS:SG	2.57	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:1416:LEU:HD23	2:E:1448:ILE:HB	1.98	0.45
2:E:1868:ILE:HG13	2:E:1925:CYS:SG	2.57	0.45
2:E:1991:ILE:HD11	2:E:1993:ARG:HE	1.82	0.45
2:C:1116:GLY:H	2:C:1138:LYS:HB2	1.81	0.45
2:E:756:LYS:HE2	2:E:760:LEU:HD21	1.98	0.45
2:E:1251:HIS:HA	2:E:1274:ASP:HB3	1.99	0.45
2:E:1376:TRP:HA	2:E:1377:PRO:HD3	1.79	0.45
2:E:2171:CYS:SG	2:E:2178:GLN:N	2.89	0.44
2:C:1351:LEU:HD11	2:C:1392:VAL:HG21	1.98	0.44
2:C:1940:ILE:HG22	2:C:1941:ARG:H	1.83	0.44
2:E:292:HIS:O	2:E:296:VAL:HG23	2.17	0.44
2:E:1466:MET:O	2:E:1469:ILE:HG22	2.17	0.44
2:E:2118:ASN:HB3	2:E:2121:GLU:HB2	1.99	0.44
2:E:2204:LEU:HD21	2:E:2213:SER:HB2	1.99	0.44
1:A:152:THR:HG21	1:A:165:ALA:HB2	1.98	0.44
1:B:140:ASP:HA	1:B:143:SER:HB2	1.99	0.44
2:E:2025:CYS:SG	2:E:2026:ARG:N	2.91	0.44
2:E:2118:ASN:OD1	2:E:2121:GLU:N	2.47	0.44
2:E:2375:VAL:HG12	2:E:2384:CYS:HB2	1.98	0.44
1:B:46:LEU:HD13	2:E:442:HIS:CE1	2.52	0.44
2:C:1416:LEU:HD23	2:C:1448:ILE:HB	1.99	0.44
2:E:1940:ILE:HG22	2:E:1941:ARG:H	1.83	0.44
2:E:2043:VAL:HG23	2:E:2050:TYR:CZ	2.52	0.44
2:C:1373:VAL:HG22	2:C:1393:TRP:CD1	2.53	0.44
2:C:1799:ASP:OD1	2:C:1799:ASP:N	2.45	0.44
2:C:1813:LEU:HD23	2:C:1813:LEU:HA	1.75	0.44
2:C:640:ASP:OD1	2:C:640:ASP:N	2.51	0.44
2:C:1466:MET:O	2:C:1469:ILE:HG22	2.17	0.44
2:C:2118:ASN:HB3	2:C:2121:GLU:HB2	2.00	0.44
2:C:2355:ILE:HD11	2:C:2368:GLN:HG2	2.00	0.44
2:E:1373:VAL:HG22	2:E:1393:TRP:CD1	2.53	0.44
2:E:1799:ASP:OD1	2:E:1799:ASP:N	2.45	0.44
2:C:813:VAL:HG11	2:C:989:LEU:HD21	1.99	0.44
2:C:1045:ASN:HB2	2:C:1068:ASN:ND2	2.32	0.44
2:C:1270:LEU:HD23	2:C:1270:LEU:HA	1.85	0.44
2:C:2196:ASP:OD1	2:C:2196:ASP:N	2.51	0.44
2:E:640:ASP:OD1	2:E:640:ASP:N	2.50	0.44
1:A:97:SER:CB	2:C:406:LEU:CG	2.84	0.44
2:C:2118:ASN:OD1	2:C:2121:GLU:N	2.47	0.44
2:C:2204:LEU:HD21	2:C:2213:SER:HB2	1.99	0.44
1:A:28:SER:OG	1:A:46:LEU:O	2.31	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:200:VAL:O	2:C:204:ASP:CB	2.66	0.43
2:C:1730:ASN:OD1	2:E:1683:PRO:HD3	2.17	0.43
2:E:1394:ASP:OD1	2:E:1394:ASP:N	2.44	0.43
2:C:1991:ILE:HD11	2:C:1993:ARG:HE	1.82	0.43
2:C:2025:CYS:SG	2:C:2026:ARG:N	2.91	0.43
2:E:1214:PRO:HG3	2:E:1237:LEU:HD12	2.01	0.43
2:E:1828:ASP:HB3	2:E:1831:MET:SD	2.58	0.43
2:C:1332:TYR:HB2	2:C:1523:ILE:HG12	2.01	0.43
2:E:1771:ARG:NE	2:E:1866:ARG:HH21	2.16	0.43
2:E:2494:THR:OG1	2:E:2496:TRP:NE1	2.48	0.43
2:C:1838:ASP:OD1	2:C:1838:ASP:N	2.50	0.43
2:C:2426:TRP:HB3	2:C:2458:MET:HE1	1.99	0.43
2:C:2494:THR:OG1	2:C:2496:TRP:NE1	2.47	0.43
2:E:2076:GLY:HA3	2:E:2083:PHE:CD1	2.53	0.43
2:E:2355:ILE:HD11	2:E:2368:GLN:HG2	2.00	0.43
2:C:588:SER:O	2:C:592:THR:HG23	2.19	0.43
2:E:512:ILE:HG23	2:E:513:VAL:HG12	2.01	0.43
2:C:1346:GLY:H	2:C:1452:THR:HG21	1.83	0.43
2:C:1728:ARG:HD3	2:C:1731:ARG:HH22	1.83	0.43
2:C:1828:ASP:HB3	2:C:1831:MET:SD	2.59	0.43
1:B:87:MET:HB2	1:B:123:LEU:HD12	1.99	0.43
2:C:512:ILE:HG23	2:C:513:VAL:HG12	2.00	0.43
2:C:1149:LEU:HB3	2:C:1172:PRO:HD3	2.01	0.43
2:C:1552:ARG:O	2:C:1556:LEU:HG	2.18	0.43
2:C:2375:VAL:HG12	2:C:2384:CYS:HB2	1.99	0.43
2:E:200:VAL:O	2:E:204:ASP:CB	2.66	0.43
2:E:1045:ASN:HB2	2:E:1068:ASN:ND2	2.32	0.43
2:C:401:VAL:HG12	2:C:422:LEU:HD23	2.01	0.43
2:C:437:LEU:HD13	2:C:470:PHE:HE1	1.84	0.43
2:E:1552:ARG:O	2:E:1556:LEU:HG	2.18	0.43
2:E:1968:ARG:HD2	2:E:2104:TRP:CG	2.53	0.43
2:E:2176:ARG:NH1	2:E:2193:GLU:HB3	2.33	0.43
2:C:403:LEU:O	2:C:407:MET:HG3	2.19	0.43
2:C:1293:LYS:HE3	2:C:2081:ASN:HD21	1.84	0.43
2:C:1728:ARG:HH12	2:E:1681:GLU:HG2	1.83	0.43
2:E:361:ARG:HB3	2:E:407:MET:HE1	2.01	0.43
2:C:1771:ARG:NE	2:C:1866:ARG:HH21	2.16	0.42
2:C:2176:ARG:NH1	2:C:2193:GLU:HB3	2.33	0.42
2:E:1116:GLY:H	2:E:1138:LYS:HB2	1.84	0.42
1:A:21:THR:HA	1:A:24:VAL:HG12	2.00	0.42
1:A:140:ASP:HA	1:A:143:SER:HB2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:1139:ASN:HB2	2:E:1163:ASN:ND2	2.33	0.42
2:E:1332:TYR:HB2	2:E:1523:ILE:HG12	2.00	0.42
2:E:1996:LYS:HD2	2:E:1998:HIS:HB3	2.01	0.42
2:C:1139:ASN:HB2	2:C:1163:ASN:ND2	2.35	0.42
2:C:1334:ARG:HA	2:C:1389:VAL:O	2.20	0.42
2:C:1752:SER:O	2:C:1752:SER:OG	2.35	0.42
2:C:1968:ARG:HD2	2:C:2104:TRP:CG	2.54	0.42
2:C:1055:LEU:HD22	2:C:1085:LEU:HD11	2.00	0.42
2:E:2333:GLN:HG3	2:E:2334:LYS:HG3	2.00	0.42
2:C:284:ASN:O	2:C:288:LEU:N	2.27	0.42
2:E:1346:GLY:H	2:E:1418:VAL:HG11	1.83	0.42
2:E:1858:ASP:OD1	2:E:1858:ASP:N	2.52	0.42
2:C:1179:LYS:HA	2:C:1202:ASP:HB2	2.01	0.42
2:E:184:LEU:HG	2:E:188:PHE:CE2	2.54	0.42
1:B:170:ILE:O	1:B:174:MET:HE2	2.19	0.42
2:C:1070:ILE:O	2:C:1094:GLN:HB2	2.20	0.42
2:C:1679:VAL:HG21	2:E:1673:LEU:HD11	2.02	0.42
2:E:588:SER:O	2:E:592:THR:HG23	2.19	0.42
2:E:1813:LEU:HD23	2:E:1813:LEU:HA	1.75	0.42
2:C:1175:MET:HB2	2:C:1195:LEU:HD13	2.02	0.42
2:C:1867:ASN:OD1	2:C:1867:ASN:N	2.53	0.42
2:C:2076:GLY:HA3	2:C:2083:PHE:CD1	2.54	0.42
2:E:2196:ASP:OD1	2:E:2196:ASP:N	2.51	0.42
2:E:1838:ASP:N	2:E:1838:ASP:OD1	2.50	0.42
2:E:1996:LYS:HG3	2:E:1998:HIS:H	1.85	0.42
2:C:557:PRO:O	2:C:561:LYS:HG3	2.20	0.42
2:E:2168:TRP:CZ3	2:E:2179:LEU:HD21	2.55	0.42
1:A:170:ILE:O	1:A:174:MET:HE2	2.19	0.41
2:C:434:LYS:HA	2:C:437:LEU:HB3	2.01	0.41
2:C:1862:ALA:HB1	2:C:1866:ARG:HH22	1.85	0.41
2:E:1149:LEU:HB3	2:E:1172:PRO:HD3	2.01	0.41
2:E:1322:LEU:HD12	2:E:1322:LEU:HA	1.90	0.41
2:E:1692:ILE:HA	2:E:1765:ILE:O	2.20	0.41
2:C:610:ILE:O	2:C:614:ILE:HG12	2.20	0.41
2:C:1614:LYS:HA	2:C:1614:LYS:HD3	1.83	0.41
2:C:1996:LYS:HG3	2:C:1998:HIS:H	1.85	0.41
2:E:779:ILE:HD13	2:E:779:ILE:HA	1.95	0.41
2:E:1334:ARG:HA	2:E:1389:VAL:O	2.19	0.41
2:E:2267:THR:OG1	2:E:2271:LYS:O	2.27	0.41
2:C:1340:VAL:HG22	2:C:1395:PHE:HD2	1.85	0.41
2:C:1681:GLU:HG2	2:E:1728:ARG:HH12	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:2178:GLN:HE21	2:C:2178:GLN:HB3	1.74	0.41
2:E:480:MET:HA	2:E:511:PHE:CE2	2.56	0.41
2:C:184:LEU:HG	2:C:188:PHE:CE2	2.55	0.41
2:C:1428:VAL:HG21	2:C:1469:ILE:HG21	2.02	0.41
2:E:676:PHE:CD1	2:E:724:MET:HG2	2.56	0.41
2:E:1282:ARG:NH1	2:E:1303:HIS:H	2.19	0.41
2:E:1737:GLY:HA2	2:E:1750:VAL:O	2.20	0.41
2:C:2333:GLN:HG3	2:C:2334:LYS:HG3	2.01	0.41
2:E:229:LEU:HA	2:E:232:LEU:HG	2.03	0.41
2:E:738:ALA:HB2	2:E:743:SER:HA	2.02	0.41
2:E:1862:ALA:HB1	2:E:1866:ARG:HH22	1.85	0.41
2:E:1340:VAL:HG22	2:E:1395:PHE:HD2	1.86	0.41
2:E:1359:LYS:HG3	2:E:1360:SER:H	1.85	0.41
2:E:1467:SER:O	2:E:1470:THR:OG1	2.26	0.41
2:C:437:LEU:HD12	2:C:442:HIS:ND1	2.36	0.41
2:C:1359:LYS:HG3	2:C:1360:SER:H	1.86	0.41
2:C:2168:TRP:CZ3	2:C:2179:LEU:HD21	2.55	0.41
2:C:2245:VAL:HG13	2:C:2265:VAL:HG13	2.02	0.41
2:E:610:ILE:O	2:E:614:ILE:HG12	2.21	0.41
2:C:1862:ALA:O	2:C:1866:ARG:NH2	2.54	0.41
2:C:1973:ARG:O	2:C:1977:HIS:ND1	2.44	0.41
2:E:1014:GLU:HA	2:E:1036:SER:O	2.20	0.41
1:A:96:PHE:HZ	1:A:142:PHE:HB2	1.86	0.41
2:C:480:MET:HA	2:C:511:PHE:CE2	2.55	0.41
2:C:590:LEU:O	2:C:594:GLN:HG3	2.21	0.41
2:C:676:PHE:CD1	2:C:724:MET:HG2	2.56	0.41
2:C:726:GLU:O	2:C:730:LEU:HG	2.21	0.41
2:C:1282:ARG:NH1	2:C:1303:HIS:H	2.19	0.41
2:C:1371:ILE:HG12	2:C:1604:CYS:HB3	2.02	0.41
2:C:1996:LYS:HD2	2:C:1998:HIS:HB3	2.01	0.41
2:E:1090:LEU:HD23	2:E:1090:LEU:HA	1.94	0.41
2:E:1179:LYS:HA	2:E:1202:ASP:HB2	2.03	0.41
2:E:1827:LEU:HD21	2:E:1832:LYS:HD3	2.03	0.41
2:C:983:TYR:HD2	2:C:1012:HIS:CG	2.39	0.41
2:C:2107:VAL:O	2:C:2110:LEU:HB3	2.21	0.41
2:E:557:PRO:O	2:E:561:LYS:HG3	2.20	0.41
2:E:578:GLU:O	2:E:582:LEU:HG	2.21	0.41
2:E:726:GLU:O	2:E:730:LEU:HG	2.21	0.41
2:C:578:GLU:O	2:C:582:LEU:HG	2.21	0.40
2:C:985:THR:HG22	2:C:1012:HIS:O	2.21	0.40
2:C:1737:GLY:HA2	2:C:1750:VAL:O	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:229:LEU:HD23	2:E:232:LEU:HD11	2.02	0.40
2:C:738:ALA:HB2	2:C:743:SER:HA	2.02	0.40
2:C:1014:GLU:HA	2:C:1036:SER:O	2.20	0.40
2:C:1692:ILE:HA	2:C:1765:ILE:O	2.20	0.40
2:E:1041:ASP:OD1	2:E:1041:ASP:N	2.53	0.40
2:E:1428:VAL:HG21	2:E:1469:ILE:HG21	2.02	0.40
2:E:1862:ALA:O	2:E:1866:ARG:NH2	2.54	0.40
2:C:310:ILE:HD12	2:C:365:HIS:HB3	2.02	0.40
2:C:313:LEU:HD23	2:C:313:LEU:HA	1.91	0.40
2:E:983:TYR:HD2	2:E:1012:HIS:CG	2.39	0.40
2:E:1833:LYS:HD3	2:E:1859:LEU:HD22	2.03	0.40
2:E:1867:ASN:OD1	2:E:1867:ASN:N	2.53	0.40
1:A:69:ARG:CA	2:C:443:LEU:HD22	2.51	0.40
2:C:665:LEU:O	2:C:669:HIS:N	2.48	0.40
2:C:1257:LEU:HD23	2:C:1257:LEU:HA	1.95	0.40
2:E:1070:ILE:O	2:E:1094:GLN:HB2	2.21	0.40
2:E:1244:TRP:O	2:E:1247:VAL:HG12	2.21	0.40
2:E:1371:ILE:HG12	2:E:1604:CYS:HB3	2.02	0.40
2:E:1373:VAL:HB	2:E:1601:LYS:HB3	2.03	0.40
2:E:1512:LYS:HA	2:E:1517:LEU:H	1.86	0.40
2:E:1950:ALA:HB1	2:E:2002:LEU:O	2.21	0.40
2:E:2085:GLU:O	2:E:2088:ILE:HG22	2.21	0.40
2:C:1178:LEU:HD22	2:C:1192:ILE:HD11	2.03	0.40
2:C:1833:LYS:HA	2:C:1833:LYS:HD2	1.91	0.40
2:C:2228:ASN:OD1	2:C:2229:THR:N	2.55	0.40
2:E:797:ASP:O	2:E:799:ALA:N	2.54	0.40
2:E:2245:VAL:HG13	2:E:2265:VAL:HG13	2.02	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	170/177 (96%)	163 (96%)	7 (4%)	0	100	100
1	B	170/177 (96%)	163 (96%)	7 (4%)	0	100	100
2	C	2230/2527 (88%)	2062 (92%)	168 (8%)	0	100	100
2	E	2230/2527 (88%)	2061 (92%)	169 (8%)	0	100	100
All	All	4800/5408 (89%)	4449 (93%)	351 (7%)	0	100	100

There are no Ramachandran outliers to report.

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

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	84/157 (54%)	84 (100%)	0	100	100
1	B	84/157 (54%)	84 (100%)	0	100	100
2	C	1781/2281 (78%)	1774 (100%)	7 (0%)	91	94
2	E	1783/2281 (78%)	1775 (100%)	8 (0%)	91	94
All	All	3732/4876 (76%)	3717 (100%)	15 (0%)	91	94

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	C	22	ARG
2	C	1314	LYS
2	C	1847	ARG
2	C	1918	ARG
2	C	2178	GLN
2	C	2413	ARG
2	C	2478	LYS
2	E	22	ARG
2	E	444	ASN
2	E	1314	LYS
2	E	1847	ARG
2	E	1918	ARG
2	E	2178	GLN

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Mol	Chain	Res	Type
2	E	2413	ARG
2	E	2478	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
2	C	367	GLN
2	C	1021	ASN
2	C	2113	GLN
2	E	367	GLN
2	E	1021	ASN
2	E	2113	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](#)

4 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
4	ATP	C	2602	-	26,33,33	0.60	0	31,52,52	0.76	2 (6%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	GDP	E	2601	-	24,30,30	0.98	1 (4%)	30,47,47	1.38	5 (16%)
4	ATP	E	2602	-	26,33,33	0.61	0	31,52,52	0.76	2 (6%)
3	GDP	C	2601	-	24,30,30	0.98	1 (4%)	30,47,47	1.41	6 (20%)

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
4	ATP	C	2602	-	-	6/18/38/38	0/3/3/3
3	GDP	E	2601	-	-	6/12/32/32	0/3/3/3
4	ATP	E	2602	-	-	6/18/38/38	0/3/3/3
3	GDP	C	2601	-	-	6/12/32/32	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	2601	GDP	C6-N1	-2.52	1.34	1.37
3	C	2601	GDP	C6-N1	-2.50	1.34	1.37

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	2601	GDP	PA-O3A-PB	-3.82	119.73	132.83
3	C	2601	GDP	PA-O3A-PB	-3.79	119.82	132.83
3	C	2601	GDP	C3'-C2'-C1'	3.19	105.78	100.98
3	E	2601	GDP	C3'-C2'-C1'	3.13	105.69	100.98
3	C	2601	GDP	C5-C6-N1	2.35	118.11	113.95
3	C	2601	GDP	C8-N7-C5	2.31	107.39	102.99
4	E	2602	ATP	C5-C6-N6	2.28	123.82	120.35
4	C	2602	ATP	C5-C6-N6	2.27	123.80	120.35
3	E	2601	GDP	C8-N7-C5	2.25	107.27	102.99
3	E	2601	GDP	C5-C6-N1	2.23	117.89	113.95
3	C	2601	GDP	C2'-C3'-C4'	2.18	106.88	102.64
4	E	2602	ATP	PB-O3B-PG	2.07	139.94	132.83
4	C	2602	ATP	PB-O3B-PG	2.07	139.93	132.83
3	C	2601	GDP	O3B-PB-O3A	2.05	111.50	104.64
3	E	2601	GDP	O3B-PB-O3A	2.01	111.37	104.64

There are no chirality outliers.

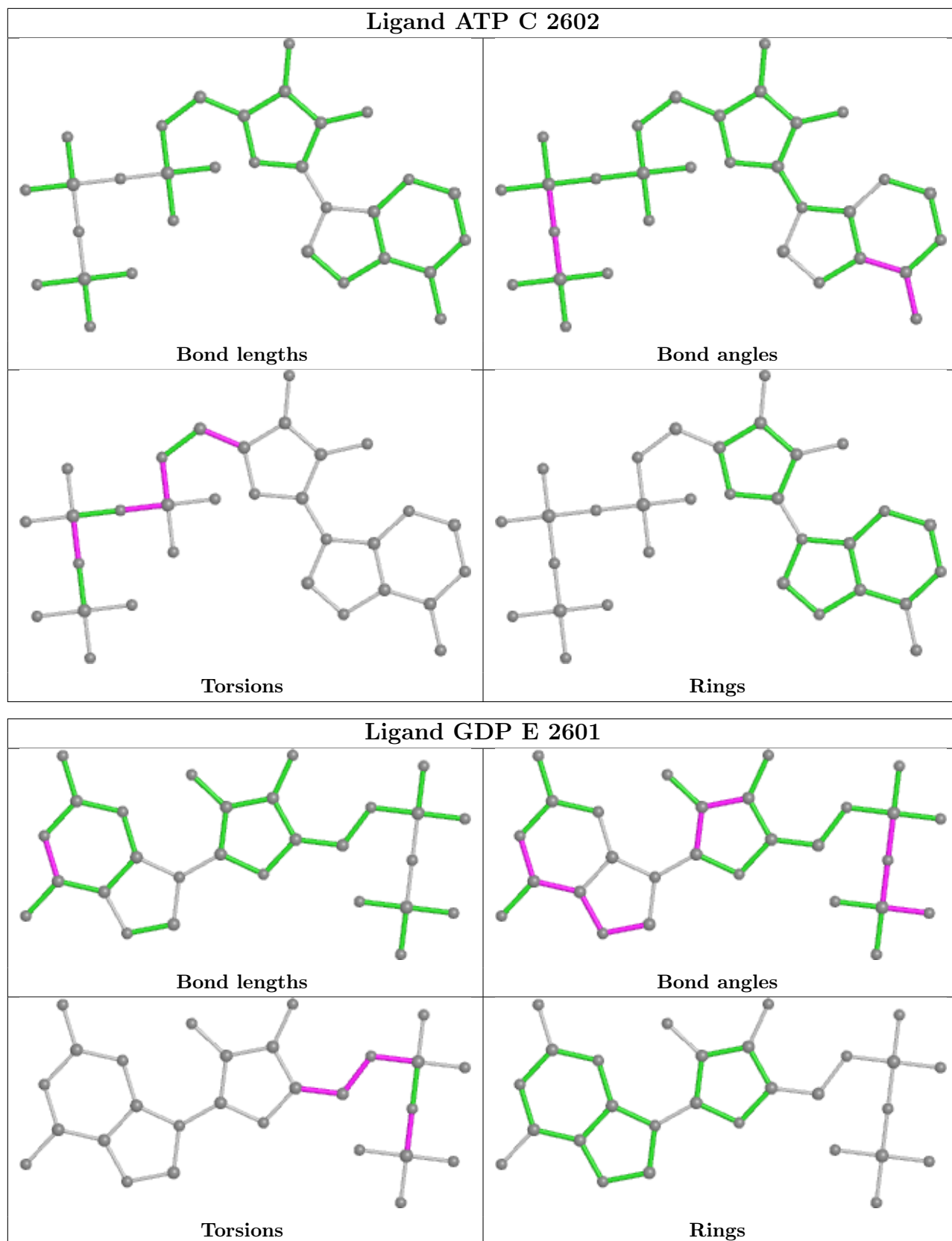
All (24) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	C	2601	GDP	PA-O3A-PB-O3B
3	C	2601	GDP	C3'-C4'-C5'-O5'
3	E	2601	GDP	PA-O3A-PB-O3B
3	E	2601	GDP	C3'-C4'-C5'-O5'
3	C	2601	GDP	O4'-C4'-C5'-O5'
3	E	2601	GDP	O4'-C4'-C5'-O5'
4	C	2602	ATP	O4'-C4'-C5'-O5'
4	E	2602	ATP	O4'-C4'-C5'-O5'
4	C	2602	ATP	C3'-C4'-C5'-O5'
4	E	2602	ATP	C3'-C4'-C5'-O5'
4	E	2602	ATP	C5'-O5'-PA-O3A
3	C	2601	GDP	C4'-C5'-O5'-PA
3	E	2601	GDP	C4'-C5'-O5'-PA
4	C	2602	ATP	PB-O3A-PA-O2A
4	E	2602	ATP	PB-O3A-PA-O2A
3	C	2601	GDP	PA-O3A-PB-O1B
3	E	2601	GDP	PA-O3A-PB-O1B
3	C	2601	GDP	C5'-O5'-PA-O3A
3	E	2601	GDP	C5'-O5'-PA-O3A
4	C	2602	ATP	C5'-O5'-PA-O3A
4	C	2602	ATP	PG-O3B-PB-O2B
4	C	2602	ATP	PB-O3A-PA-O1A
4	E	2602	ATP	PG-O3B-PB-O2B
4	E	2602	ATP	PB-O3A-PA-O1A

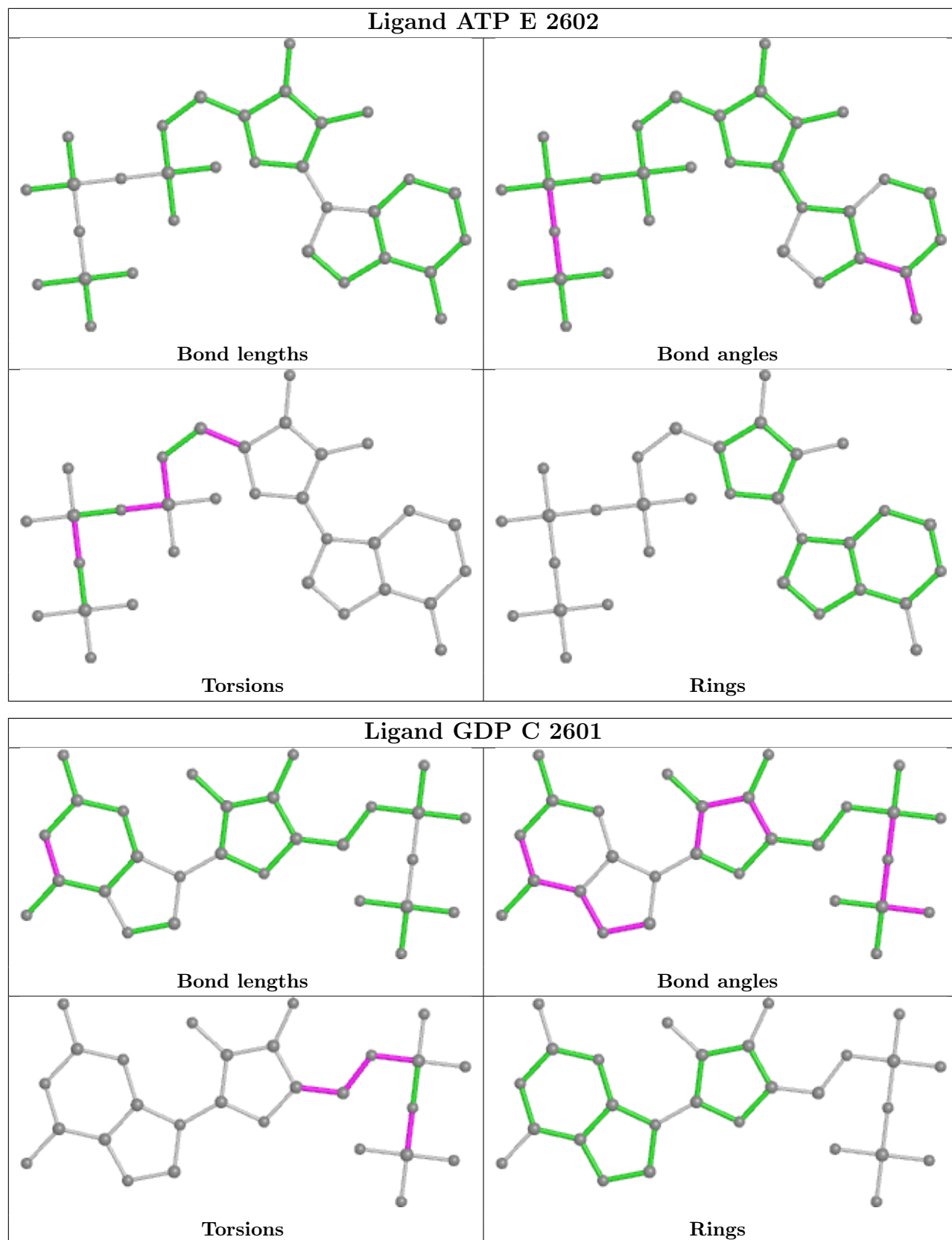
There are no ring outliers.

No monomer is involved in short contacts.

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](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	C	2
2	E	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	C	572:HIS	C	573:PHE	N	3.16
1	E	572:HIS	C	573:PHE	N	3.16
1	C	1328:LYS	C	1329:ALA	N	3.06
1	E	1328:LYS	C	1329:ALA	N	3.06

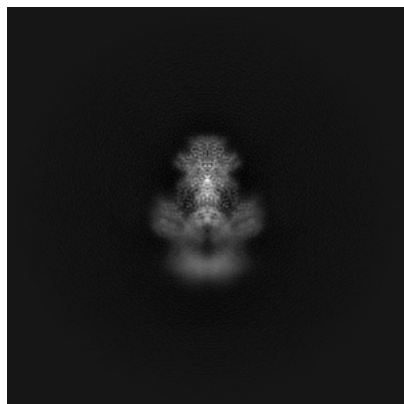
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-29341. These allow visual inspection of the internal detail of the map and identification of artifacts.

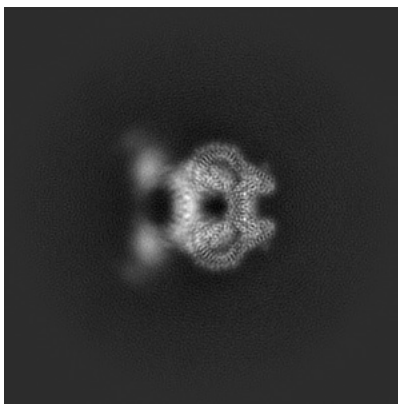
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

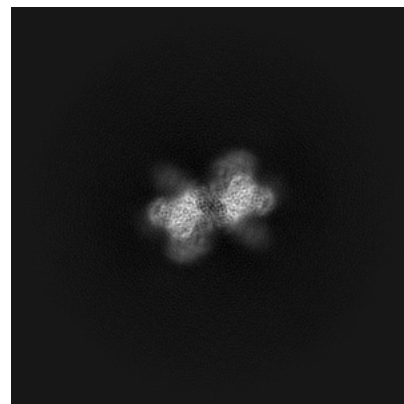
#### 6.1.1 Primary map



X

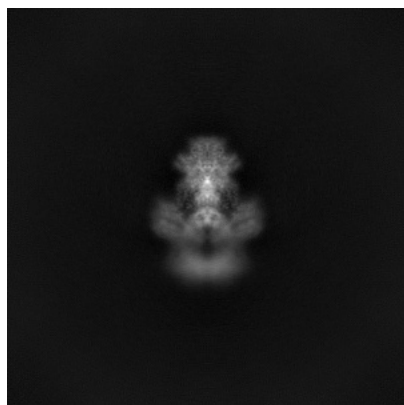


Y

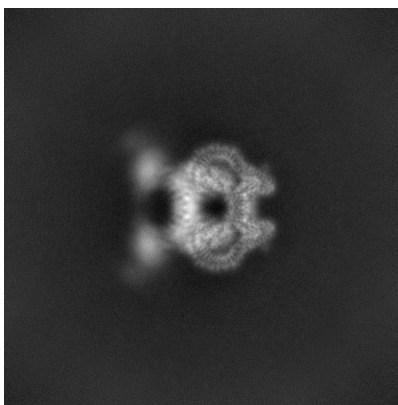


Z

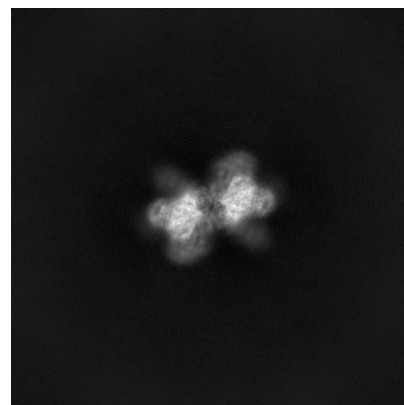
#### 6.1.2 Raw map



X



Y

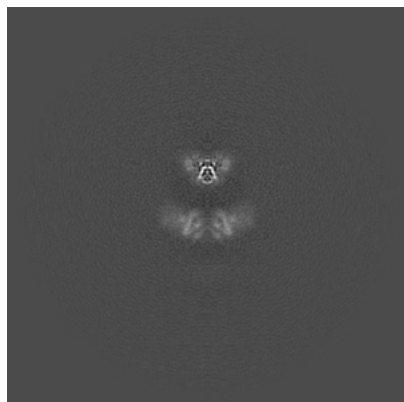


Z

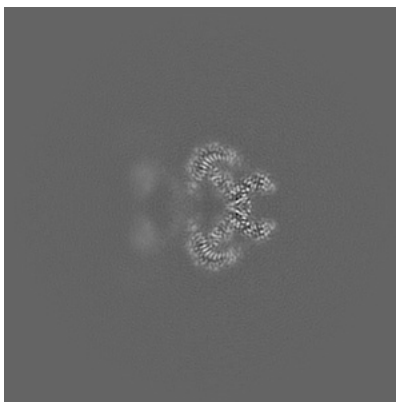
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

### 6.2.1 Primary map



X Index: 240

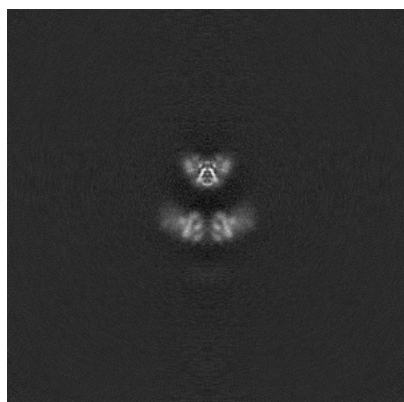


Y Index: 240

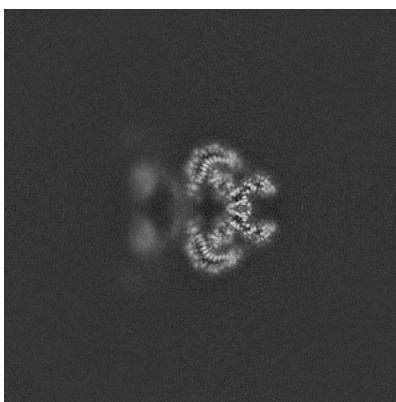


Z Index: 240

### 6.2.2 Raw map



X Index: 240



Y Index: 240

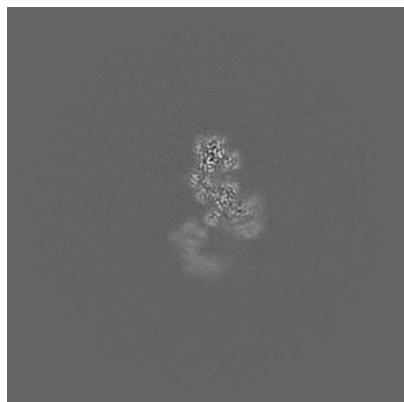


Z Index: 240

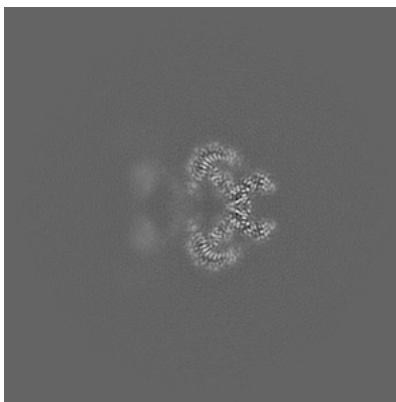
The images above show central slices of the map in three orthogonal directions.

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

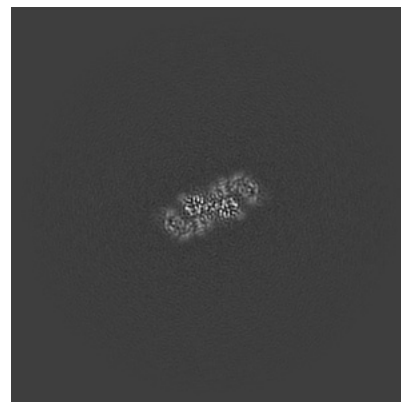
### 6.3.1 Primary map



X Index: 268

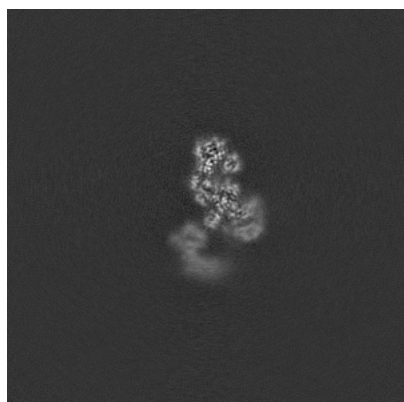


Y Index: 240

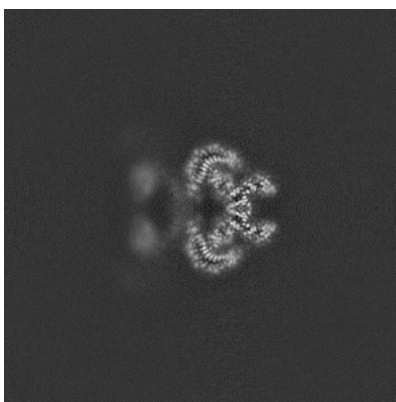


Z Index: 288

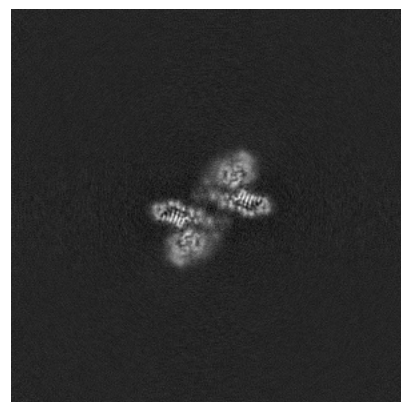
### 6.3.2 Raw map



X Index: 269



Y Index: 240

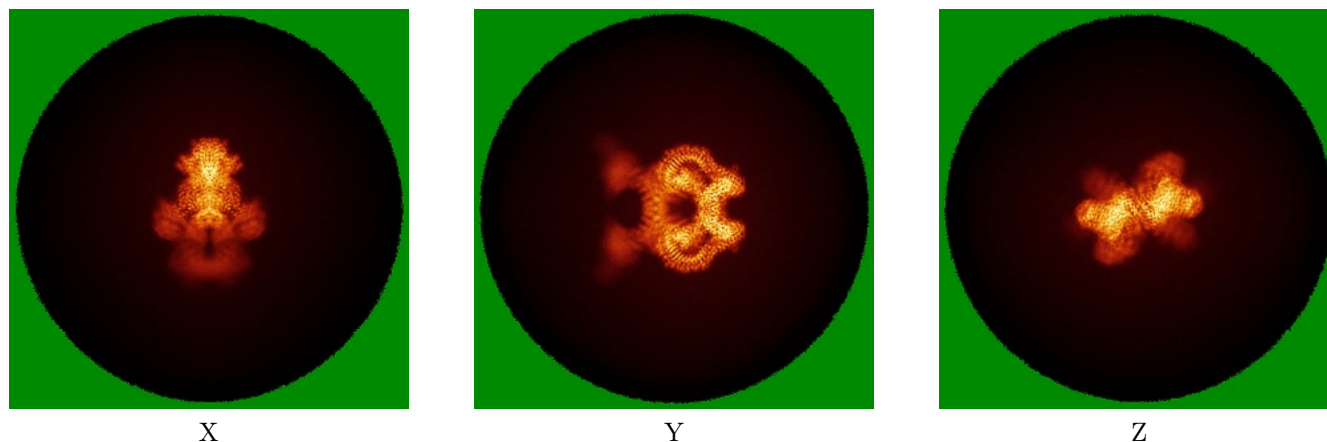


Z Index: 232

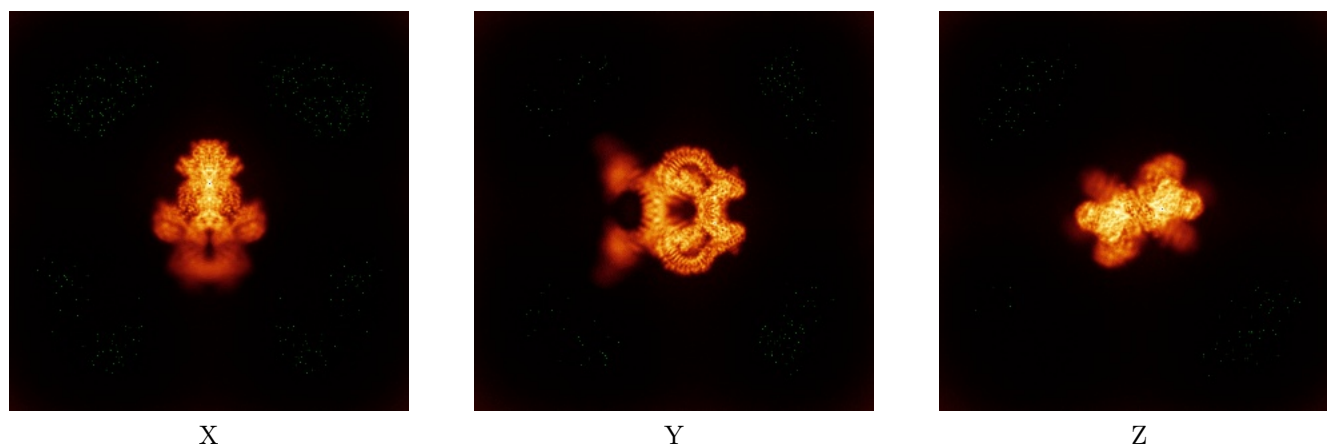
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map



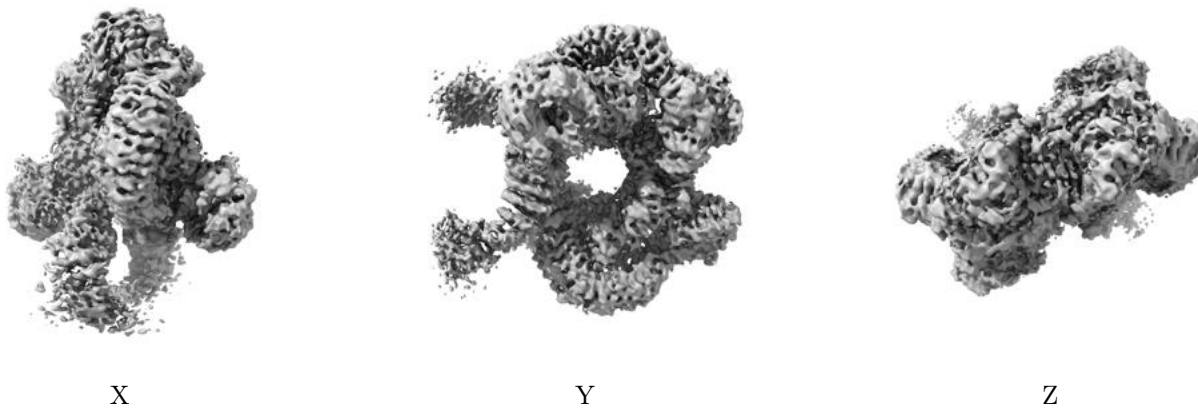
### 6.4.2 Raw map



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

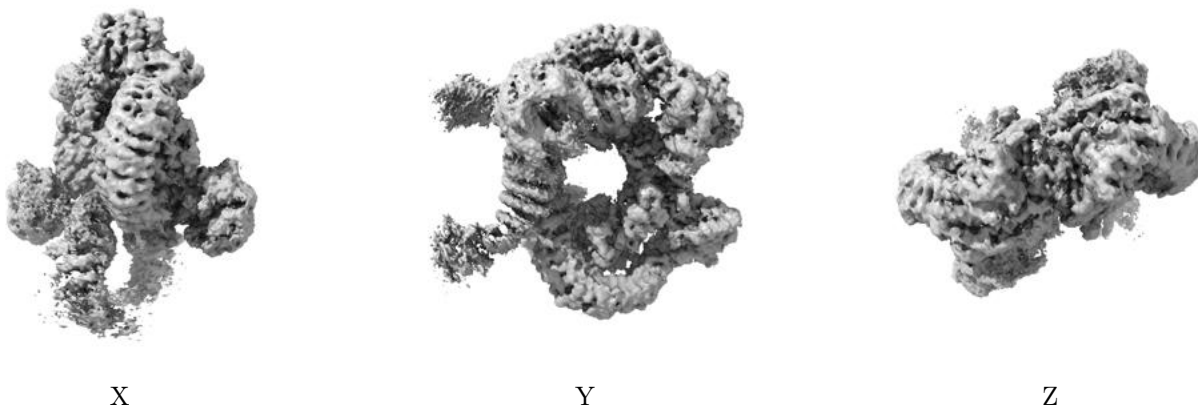
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.35. 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.

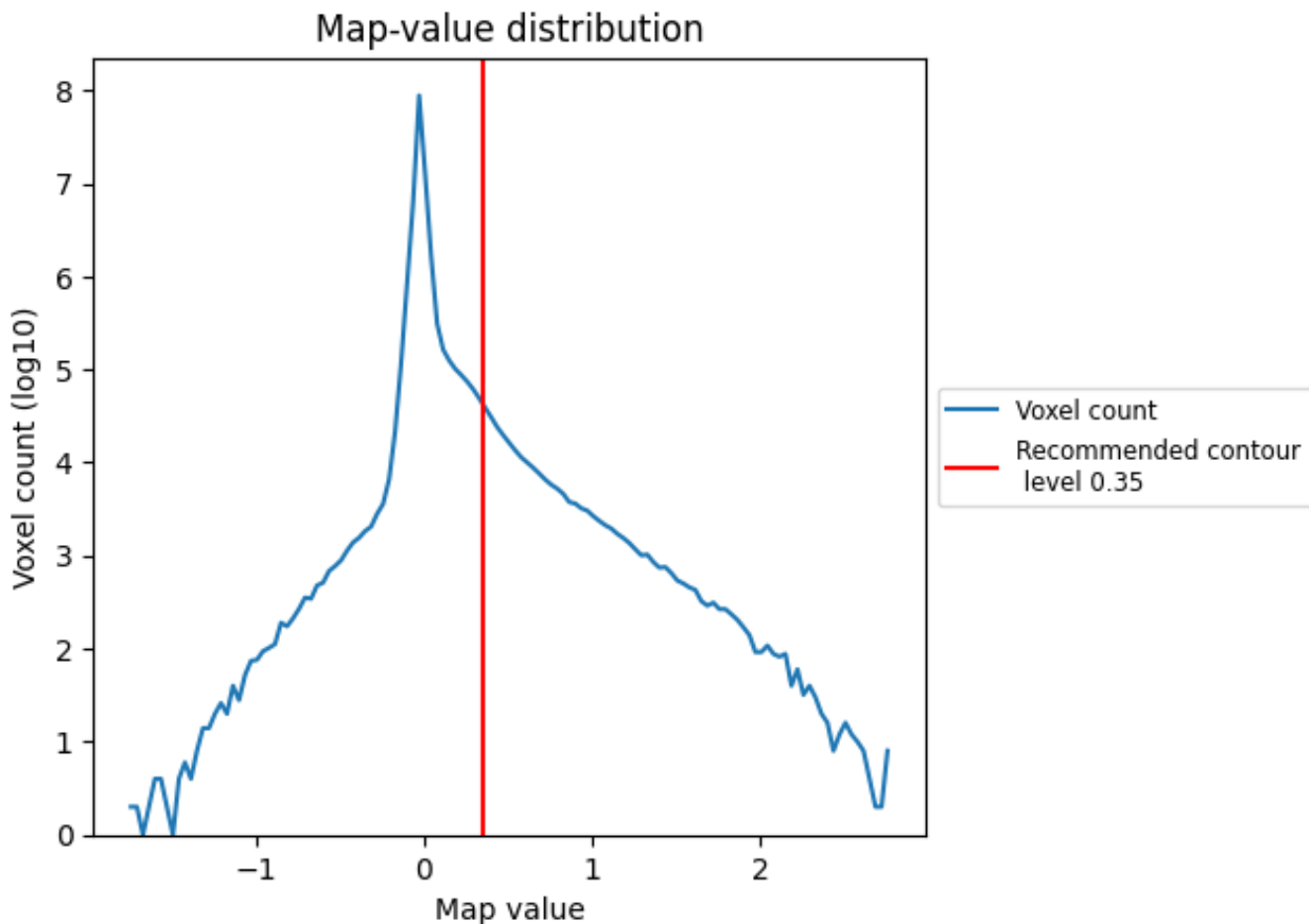
## 6.6 Mask visualisation [i](#)

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.

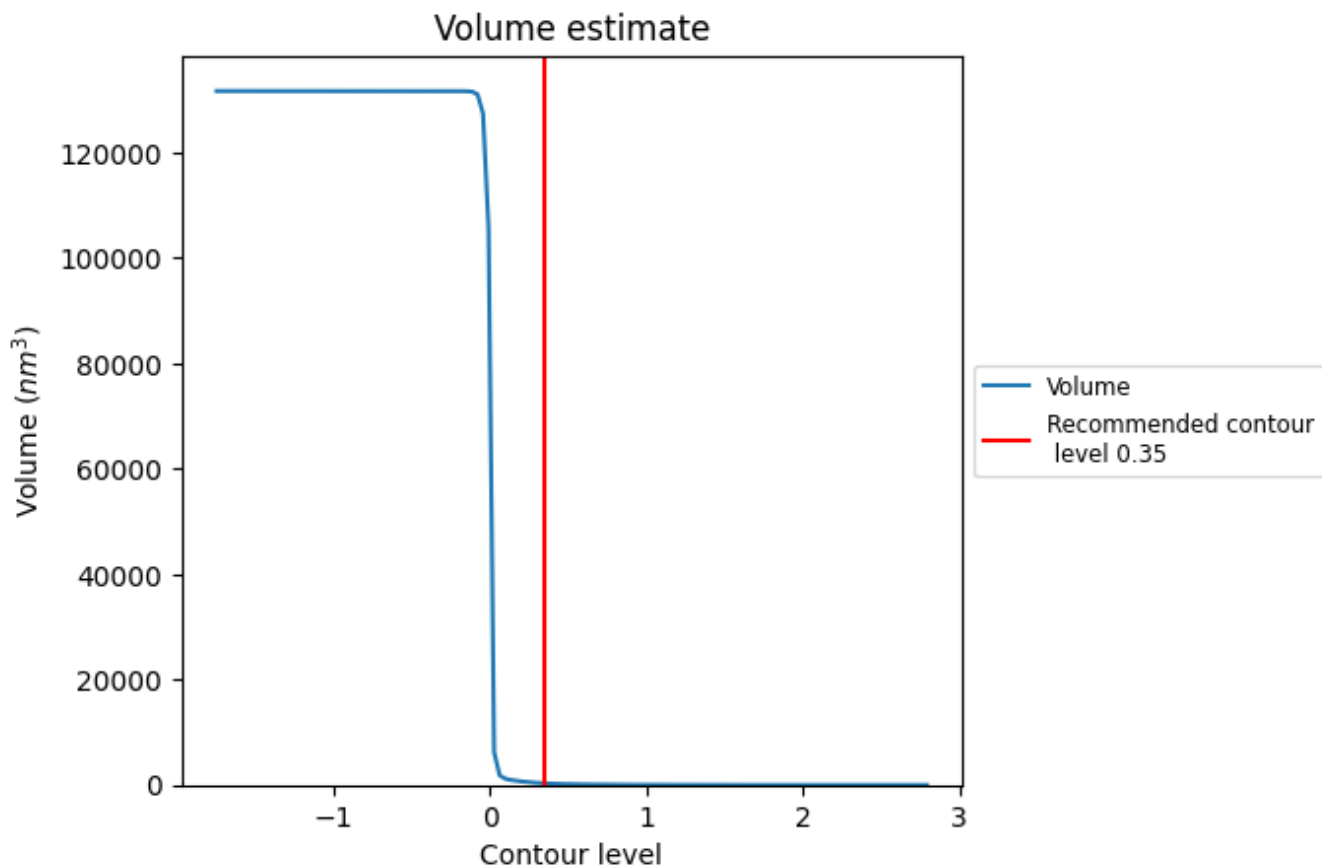
### 7.1 Map-value distribution [i](#)



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.



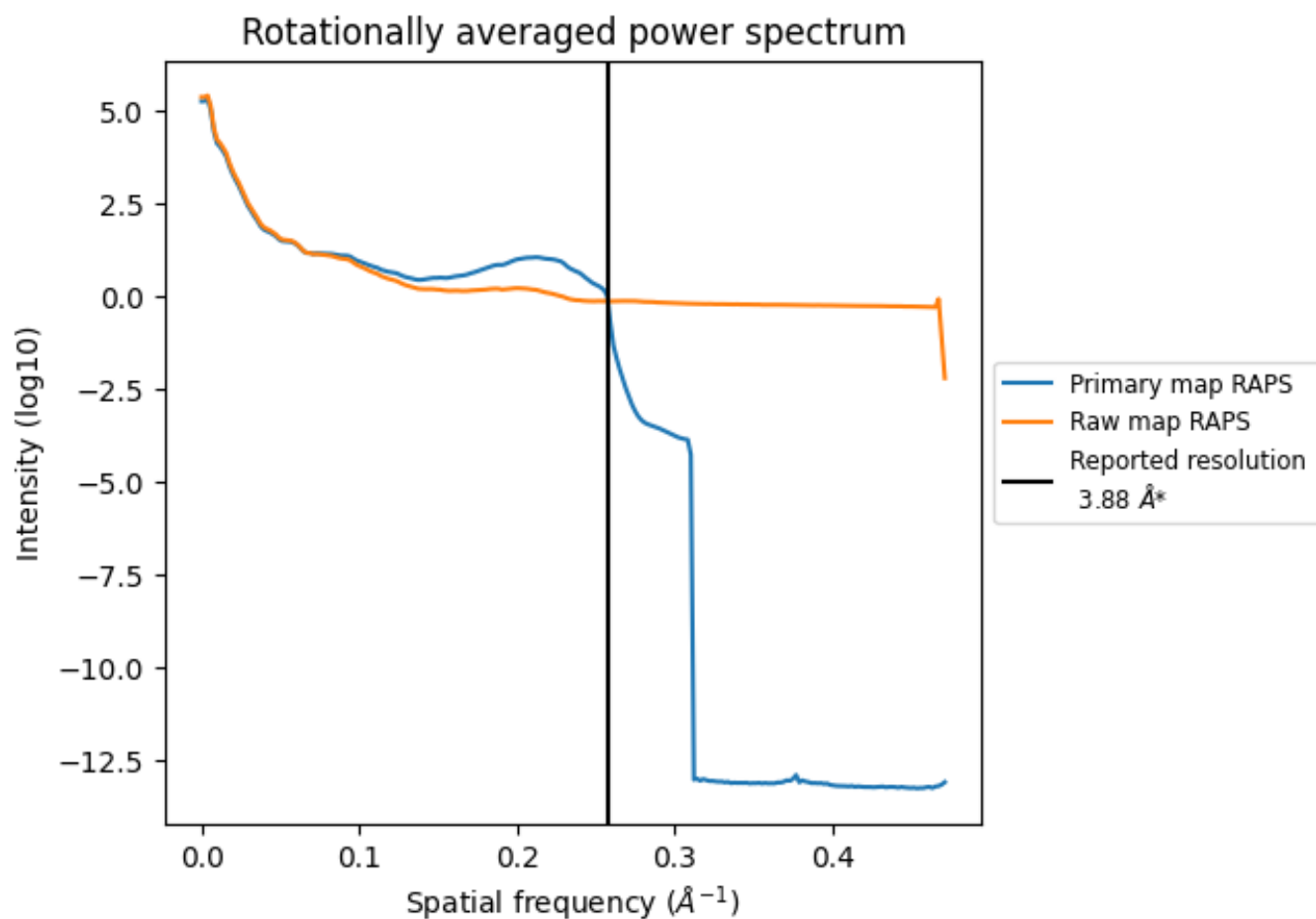
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 311  $\text{nm}^3$ ; this corresponds to an approximate mass of 281 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](#)

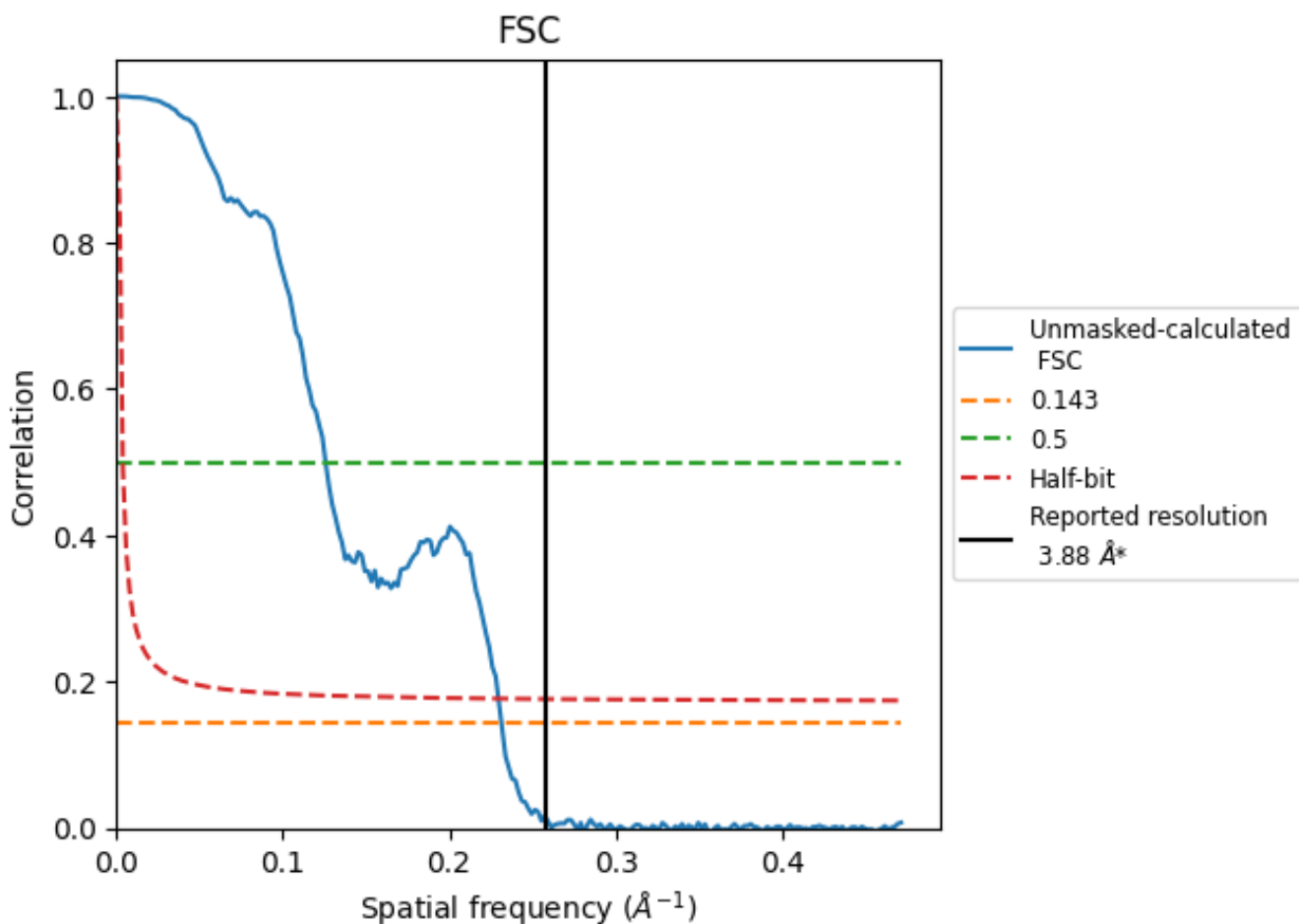


\*Reported resolution corresponds to spatial frequency of 0.258 Å<sup>-1</sup>

## 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 0.258 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

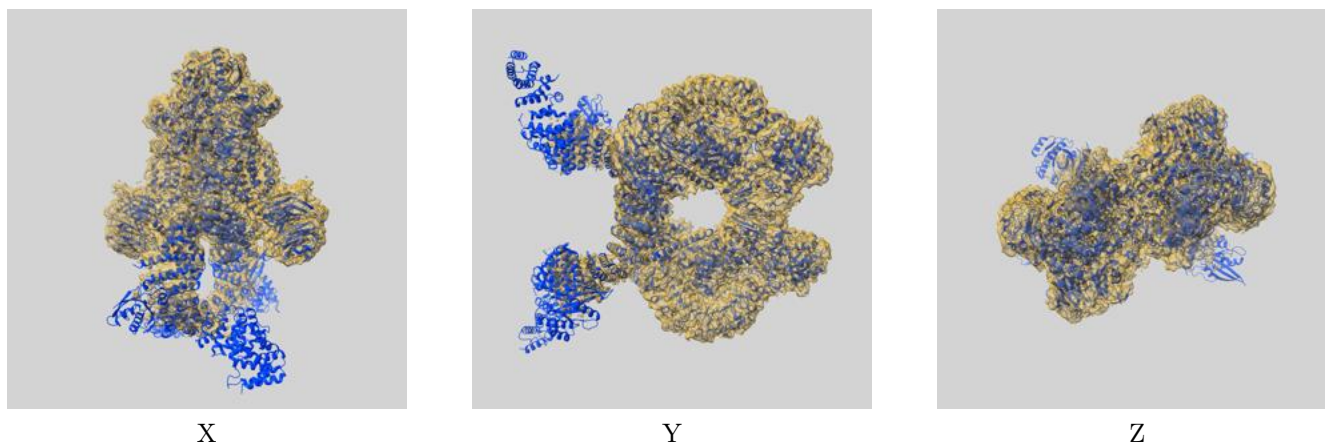
Resolution estimate (Å)	Estimation criterion (FSC cut-off)			
	0.143	0.5	Half-bit	Other
Reported by author	-	-	-	3.88
Author-provided FSC curve	-	-	-	-
Unmasked-calculated*	4.32	7.96	4.36	-

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

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

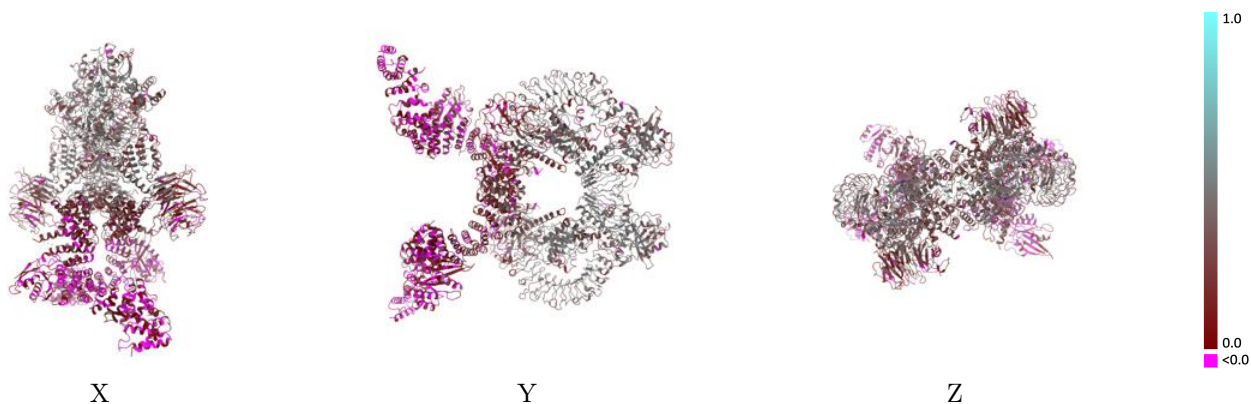
This section contains information regarding the fit between EMDB map EMD-29341 and PDB model 8FO8. Per-residue inclusion information can be found in section 3 on page 6.

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



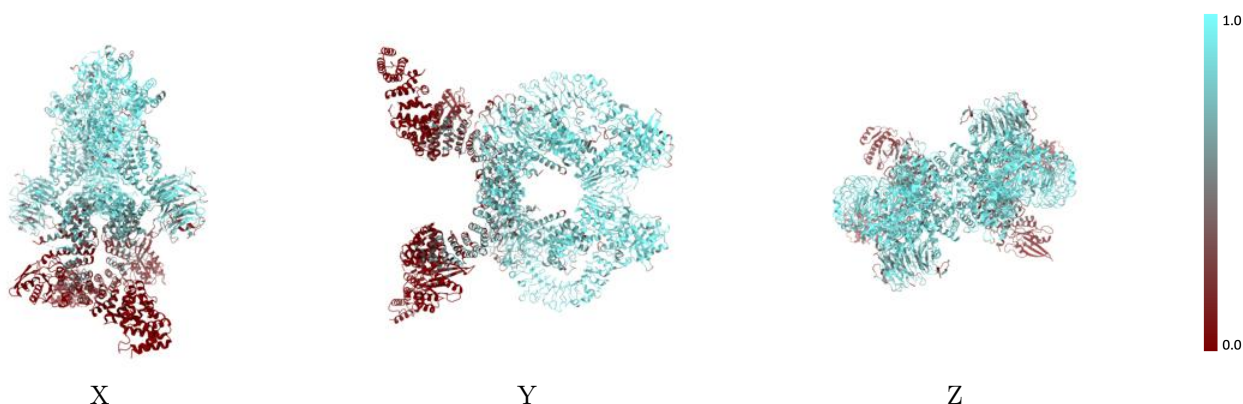
The images above show the 3D surface view of the map at the recommended contour level 0.35 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



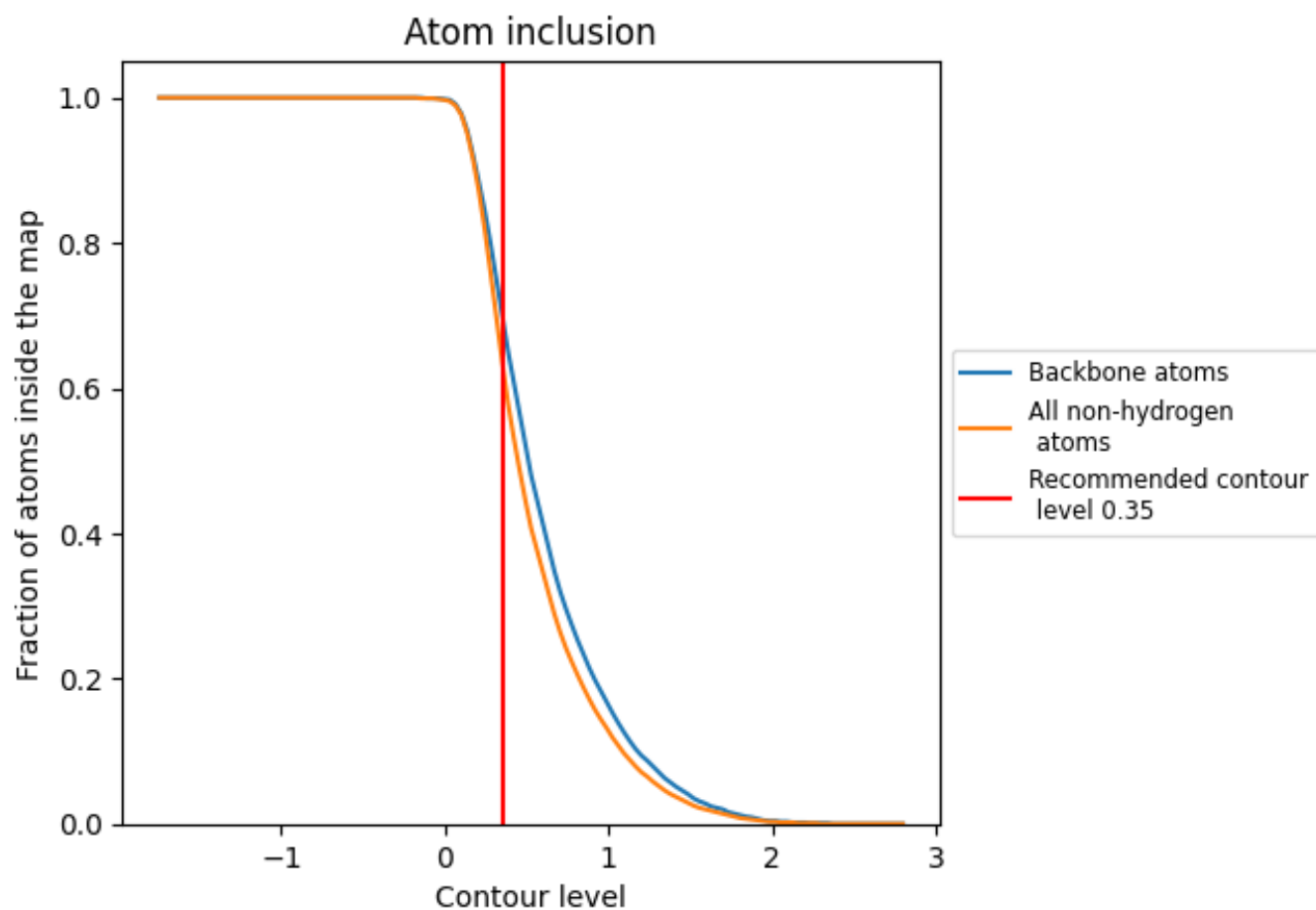
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.35).











## 9.4 Atom inclusion [i](#)



At the recommended contour level, 70% of all backbone atoms, 64% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.35) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6350	 0.2640
A	 0.0370	 0.0590
B	 0.0410	 0.0840
C	 0.6750	 0.2760
E	 0.6730	 0.2760

