Full wwPDB EM Validation Report ⓘ

Feb 24, 2024 – 01:39 PM EST

PDB ID	:	7K1N
EMDB ID	:	EMD-22626
Title	:	CryoEM structure of inactivated-form DNA-PK (Complex V)
Authors	:	Chen, X.; Gellert, M.; Yang, W.
Deposited on	:	2020-09-08
Resolution	:	3.90 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:

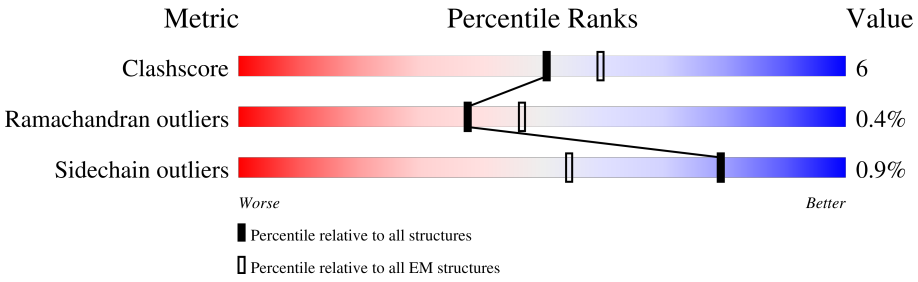
EMDB validation analysis	:	0.0.1.dev70
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.90 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	4128	74% 13% 12%
2	B	609	66% 14% 20%
3	C	732	17% 72% 17% 11%
4	D	24	88% 12%
4	F	24	8% 88% 12%
5	E	16	6% 69% 12% 19%
5	G	16	100%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 39521 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 DNA-dependent protein kinase catalytic subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	3634	28808	18485	4884	5252	187	0	0

- Molecule 2 is a protein called X-ray repair cross-complementing protein 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	490	3954	2533	671	733	17	0	0

- Molecule 3 is a protein called X-ray repair cross-complementing protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	655	5251	3359	877	989	26	0	0

- Molecule 4 is a DNA chain called DNA (5'-D(P*GP*CP*AP*TP*GP*CP*TP*CP*TP*AP *CP*TP*GP*CP*TP*TP*CP*GP*AP*TP*AP*TP*CP*G)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	D	24	484	233	82	146	23	0	0
4	F	21	Total	C	N	O	P	0	0
			425	204	69	131	21		

- Molecule 5 is a DNA chain called DNA (5'-D(P*AP*AP*GP*CP*AP*GP*TP*AP*GP*AP *GP*CP*A)-3').

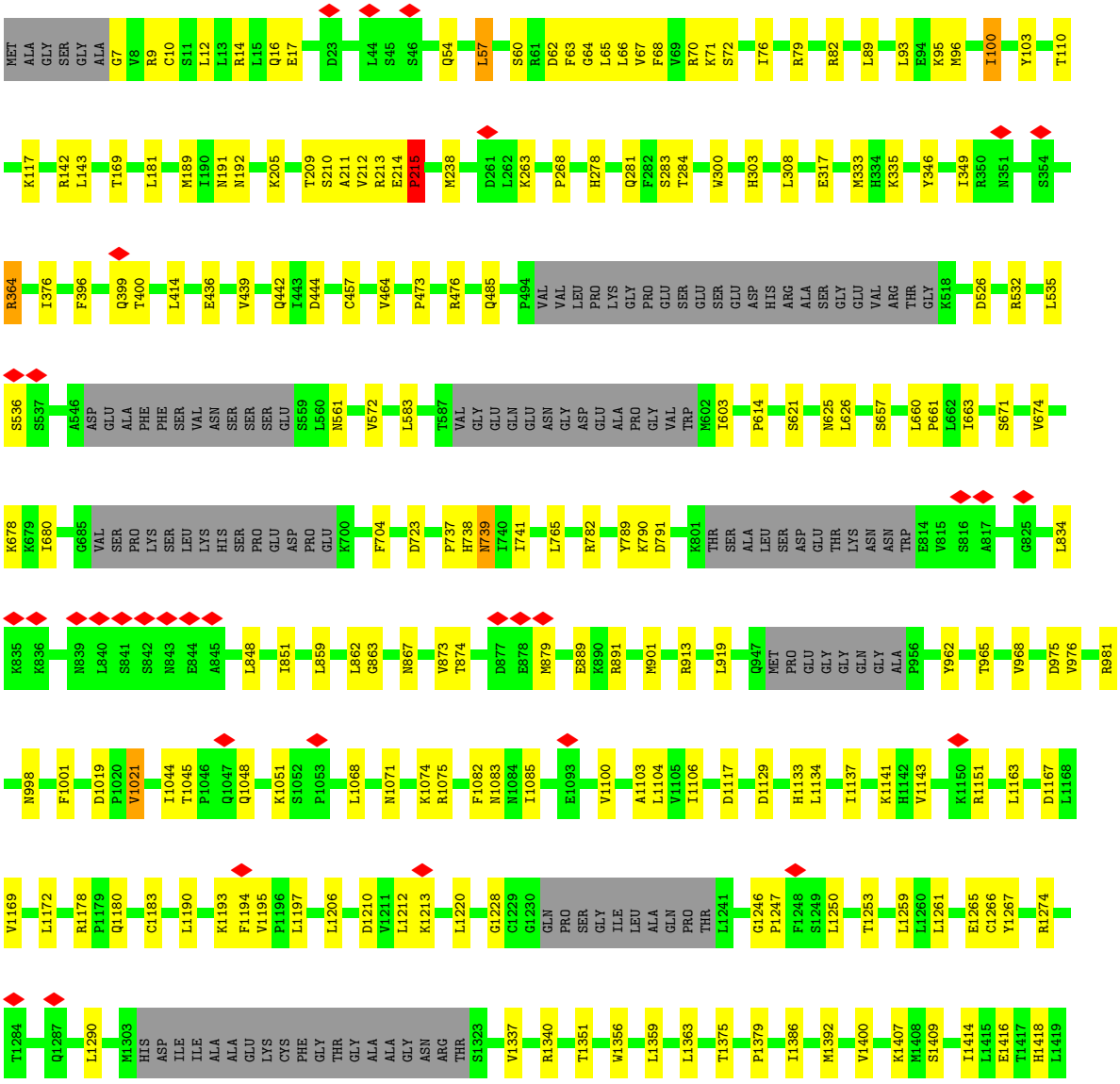
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
5	E	13	269	128	58	71	12	0	0
5	G	16	Total	C	N	O	P	0	0
			330	157	68	90	15		

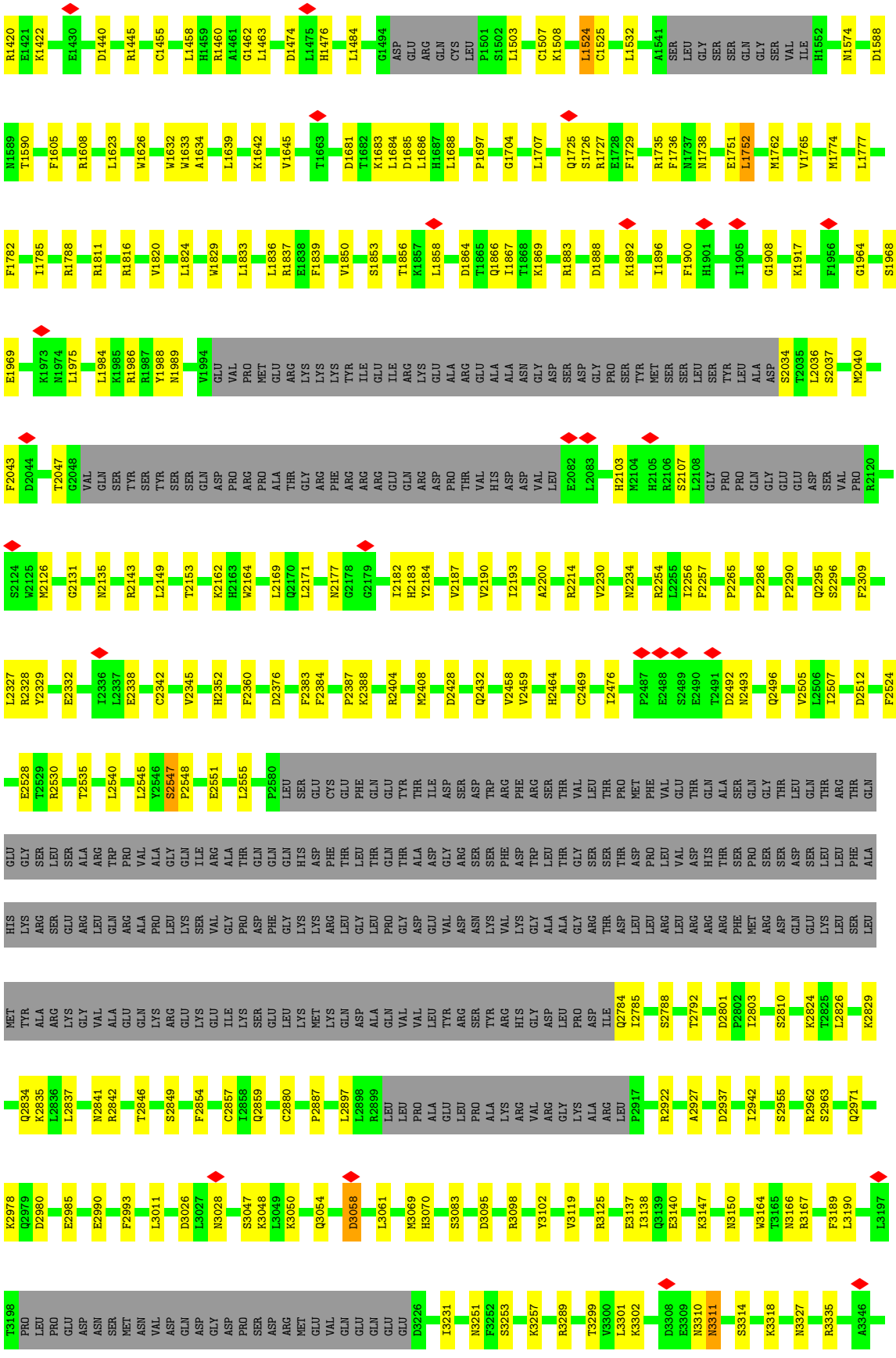
3 Residue-property plots (i)

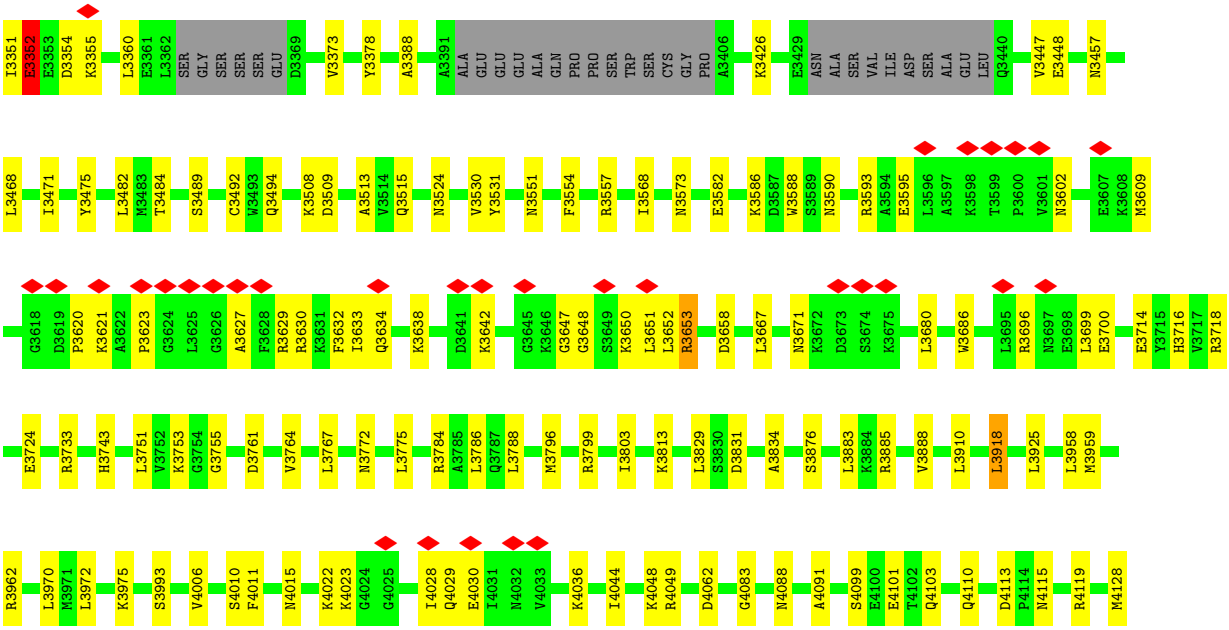
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: DNA-dependent protein kinase catalytic subunit

Chain A:

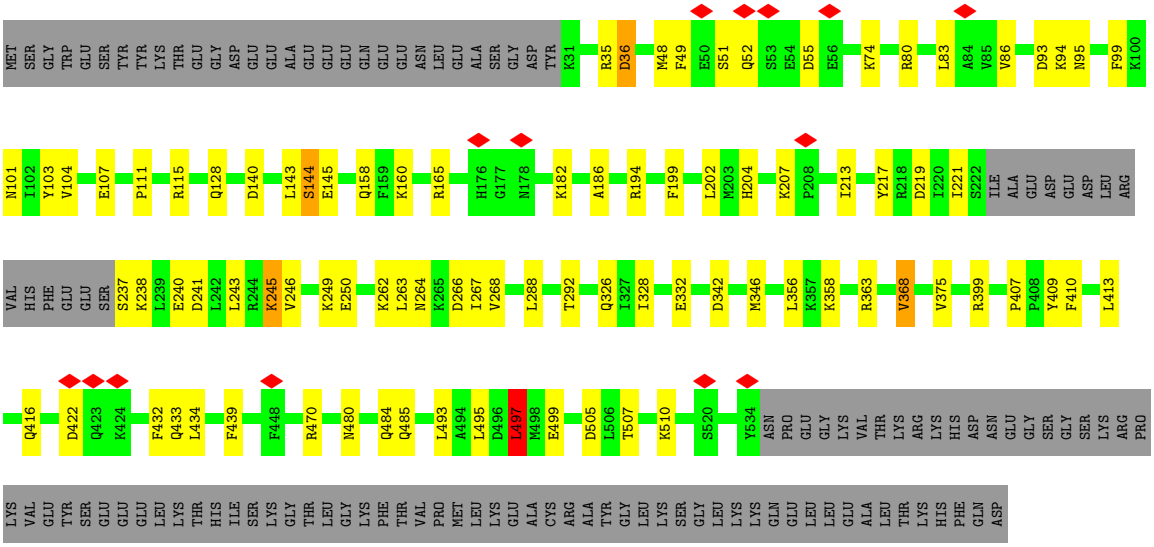



R1420 E1421 K1422 E1430 D1440 R1445 C1455 L1458 H1459 R1460 A1461 G1462 L1463 D1474 L1475 H1476 L1484 G1494 ASP GLU ARG GLN CYS LEU P1501 S1502 L1503 C1507 K1508 L1524 C1525 L1532 A1541 SER LEU GLY SER SER GLN GLY SER VAL ILE H1552 N1574 D1588
N1589 T1590 F1605 R1608 L1623 W1626 W1632 W1633 A1634 L1639 K1642 V1645 T1663 D1681 T1682 K1683 L1684 D1685 L1686 H1687 L1688 P1697 G1704 L1707 Q1725 S1726 R1727 E1728 F1729 R1735 F1736 N1737 N1738 E1751 L1752 M1762 V1765 M1774 L1777
F1782 I1785 R1788 R1811 R1816 V1820 L1824 W1829 L1833 L1836 R1837 E1838 F1839 V1850 S1853 T1856 K1857 L1858 D1864 T1865 Q1866 I1867 T1868 K1869 R1883 D1888 K1892 I1896 F1900 H1901 I1905 G1908 K1917 F1956 G1964 S1968
E1969 K1973 N1974 L1975 L1984 K1985 R1986 R1987 Y1988 N1989 V1994 GLU VAL PRO MET GLU ARG LYS LYS LYS TYR ILE GLU ILE ARG LYS GLU ALA ARG GLU ASP SER ASP GLY PRO SER TYR MET SER SER LEU SER TYR LEU ALA ASP S2034 T2035 L2036 S2037 M2040
F2043 D2044 T2047 G2048 VAL GLN SER TYR SER TYR SER GLN ASP PRO ARG PRO ALA THR GLY ARG PHE ARG ARG ARG GLU GLN ARG ASP PRO THR VAL HIS ASP ASP VAL LEU E2082 L2083 H2103 M2104 H2105 R2106 S2107 L2108 GLY PRO PRO GLN GLY GLU GLU ASP SER VAL PRO R2120
S2124 W2125 M2126 G2131 N2135 R2143 L2149 T2153 K2162 H2163 W2164 L2169 Q2170 L2171 N2177 G2178 G2179 I2182 H2183 Y2184 V2187 V2190 I2193 A2200 R2214 V2230 N2234 R2254 L2255 I2256 F2257 P2265 P2286 P2290 Q2295 S2296 F2309
L2327 R2328 Y2329 E2332 I2336 L2337 E2338 C2342 V2345 H2352 F2360 D2376 F2383 F2384 P2387 K2388 R2404 M2408 D2428 Q2432 V2458 V2459 H2464 C2469 I2476 P2487 E2488 S2489 E2490 T2491 D2492 N2493 Q2496 V2505 L2506 I2507 D2512 F2524
E2528 T2529 R2530 T2535 L2540 L2545 Y2546 S2547 P2548 E2551 L2555 P2580 LEU SER GLU CYS GLU PHE GLN GLU TYR THR ILE ASP SER ASP TRP ARG PHE ARG SER SER THR VAL LEU THR PRO MET PHE VAL GLU THR GLN ALA SER GLN GLY THR LEU GLN THR ARG THR GLN
GLU GLY SER LEU SER ALA ARG TRP PRO VAL ALA GLY GLN ILE ARG ALA THR GLN GLN HIS ASP PHE THR LEU THR GLN THR ALA ASP GLY ARG SER SER PHE ASP TRP LEU THR GLY SER SER THR ASP PRO LEU VAL ASP HIS THR SER PRO SER SER ASP SER LEU LEU PHE ALA
HIS LYS ARG SER GLU ARG LEU GLN ARG ALA PRO LEU LYS SER VAL GLY PRO ASP PHE GLY LYS LYS ARG LEU GLY LEU PRO GLY ASP GLU VAL ASP ASN LYS VAL LYS GLY ALA ALA GLY ARG THR ASP LEU LEU LEU THR GLY SER SER ARG LEU ARG LEU ARG ARG ARG PHE MET ARG ASP GLN GLU LYS LEU LEU SER LEU
MET TYR ALA ARG LYS GLY VAL ALA GLU GLN LYS LYS ARG GLU LYS GLU ILE LYS SER GLU LEU LYS MET LYS GLN ASP ALA GLN VAL LEU TYR ARG SER TYR ARG HIS GLY ASP LEU PRO ASP ILE Q2784 I2785 S2788 T2792 D2801 P2802 I2803 S2810 K2824 T2825 L2826 K2829
Q2834 K2835 L2836 L2837 N2841 R2842 T2846 S2849 F2854 C2857 I2858 Q2859 C2880 P2887 L2897 L2898 R2899 LEU LEU PRO ALA GLU LEU PRO ALA LYS ARG VAL ARG GLY LYS ALA ARG LEU P2917 R2922 A2927 D2937 I2942 S2955 R2962 S2963 Q2971
K2978 Q2979 D2980 E2985 E2990 F2993 L3011 D3026 L3027 N3028 S3047 K3048 L3049 K3050 Q3054 D3058 L3061 M3069 H3070 S3083 D3095 R3098 Y3102 V3119 R3125 E3137 I3138 Q3139 E3140 K3147 N3150 W3164 T3165 N3166 R3167 F3189 L3190 L3197
T3198 PRO LEU PRO GLU ASP ASN SER MET ASN VAL ASP GLN ASP GLY ASP PRO SER ASP ARG MET GLU VAL GLN GLU GLN GLU GLU D3226 I3231 N3251 F3252 S3253 K3257 R3289 T3299 Y3300 L3301 K3302 D3308 E3309 N3310 N3311 S3314 K3318 N3327 R3335 A3346



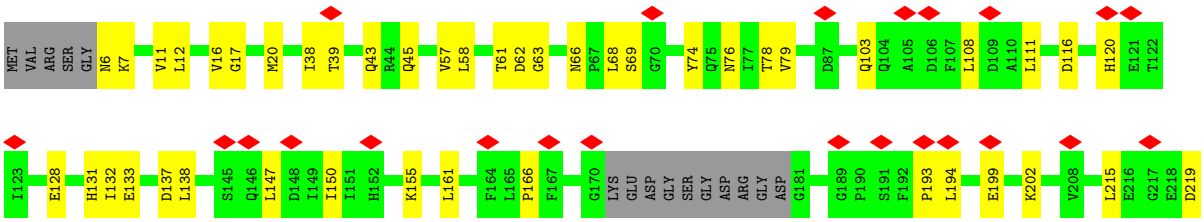
• Molecule 2: X-ray repair cross-complementing protein 6

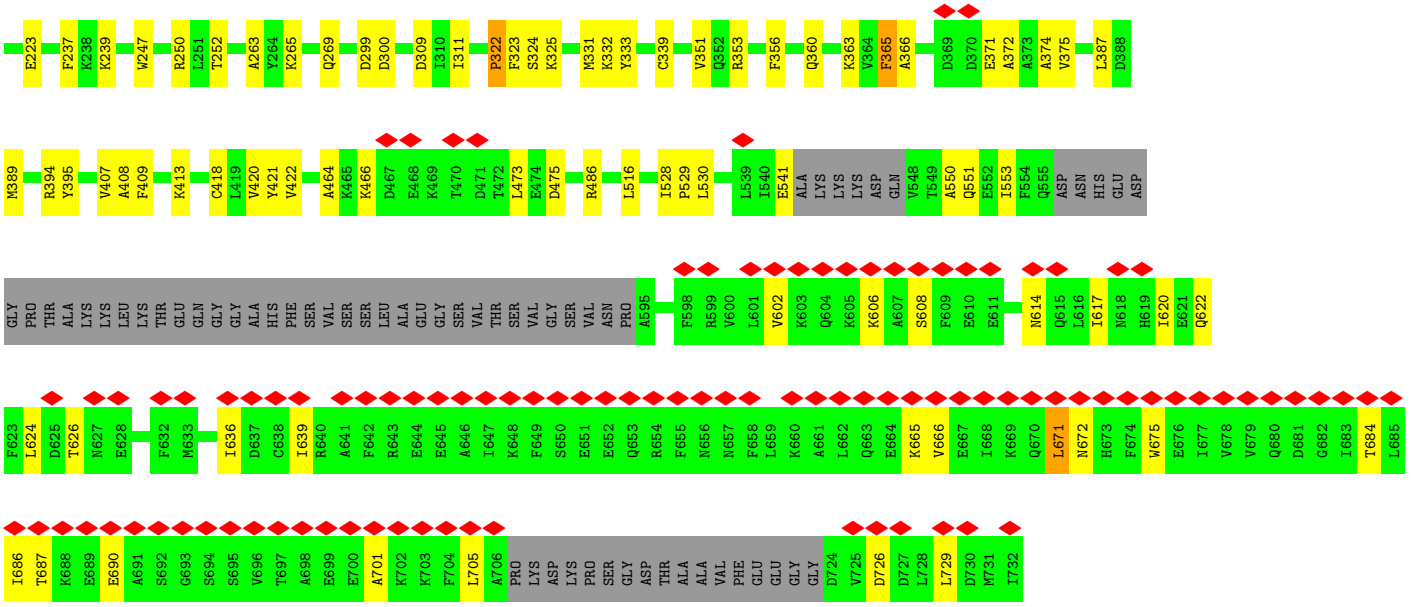
Chain B:



• Molecule 3: X-ray repair cross-complementing protein 5

Chain C:





• Molecule 4: DNA (5'-D(P*GP*CP*AP*TP*GP*CP*TP*CP*TP*AP*CP*TP*GP*CP*TP*TP*CP*GP*AP*TP*AP*TP*CP*G)-3')

Chain D:

• Molecule 4: DNA (5'-D(P*GP*CP*AP*TP*GP*CP*TP*CP*TP*AP*CP*TP*GP*CP*TP*TP*CP*GP*AP*TP*AP*TP*CP*G)-3')

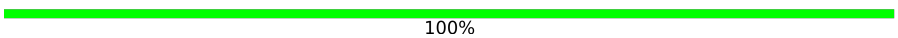
Chain F:

• Molecule 5: DNA (5'-D(P*AP*AP*GP*CP*AP*GP*TP*AP*GP*AP*GP*CP*A)-3')

Chain E:

• Molecule 5: DNA (5'-D(P*AP*AP*GP*CP*AP*GP*TP*AP*GP*AP*GP*CP*A)-3')

Chain G:



There are no outlier residues recorded for this chain.

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	138985	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	45	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.104	Depositor
Minimum map value	-0.055	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.013	Depositor
Map size (Å)	408.31998, 408.31998, 408.31998	wwPDB
Map dimensions	352, 352, 352	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.16, 1.16, 1.16	Depositor

5 Model quality

5.1 Standard geometry

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	0.37	1/29394 (0.0%)	0.59	11/39755 (0.0%)
2	B	0.36	0/4031	0.60	2/5429 (0.0%)
3	C	0.32	0/5351	0.60	2/7213 (0.0%)
4	D	0.80	0/540	1.06	0/831
4	F	0.77	0/473	1.05	0/727
5	E	0.60	0/304	0.87	0/468
5	G	0.77	0/372	0.90	0/573
All	All	0.39	1/40465 (0.0%)	0.62	15/54996 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1195	VAL	C-N	5.33	1.44	1.34

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	3311	ASN	N-CA-C	-8.40	88.33	111.00
3	C	671	LEU	CA-CB-CG	7.85	133.36	115.30
1	A	2887	PRO	CB-CA-C	7.76	131.41	112.00
1	A	1984	LEU	CA-CB-CG	6.89	131.15	115.30
2	B	497	LEU	N-CA-C	-5.85	95.20	111.00
1	A	2545	LEU	CA-CB-CG	5.58	128.13	115.30
2	B	356	LEU	CA-CB-CG	5.55	128.07	115.30
1	A	1524	LEU	CA-CB-CG	5.53	128.03	115.30
3	C	194	LEU	CA-CB-CG	5.50	127.96	115.30
1	A	765	LEU	CA-CB-CG	5.48	127.89	115.30
1	A	444	ASP	CB-CG-OD2	5.45	123.20	118.30
1	A	3918	LEU	CA-CB-CG	5.17	127.19	115.30
1	A	975	ASP	CB-CG-OD2	5.17	122.95	118.30
1	A	2528	GLU	C-N-CA	5.12	134.50	121.70
1	A	1044	ILE	C-N-CA	5.06	134.36	121.70

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	28808	0	29022	330	0
2	B	3954	0	4042	66	0
3	C	5251	0	5269	78	0
4	D	484	0	274	2	0
4	F	425	0	240	0	0
5	E	269	0	146	1	0
5	G	330	0	180	0	0
All	All	39521	0	39173	460	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 6.

All (460) 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:3352:GLU:HG3	1:A:3355:LYS:HG3	1.38	1.00
1:A:7:GLY:N	1:A:10:CYS:HG	1.69	0.90
1:A:3352:GLU:HG3	1:A:3355:LYS:CG	2.13	0.77
1:A:1416:GLU:O	1:A:1420:ARG:HB2	1.86	0.74
2:B:495:LEU:HB3	2:B:497:LEU:CD2	2.24	0.68
2:B:165:ARG:HA	2:B:199:PHE:O	1.94	0.68
2:B:495:LEU:HB3	2:B:497:LEU:HD23	1.76	0.68
1:A:1151:ARG:HD2	1:A:1163:LEU:H	1.60	0.66
1:A:3586:LYS:HG2	1:A:3667:LEU:HD21	1.78	0.66
3:C:387:LEU:HB3	3:C:389:MET:HG2	1.78	0.66
1:A:3647:GLY:HA2	1:A:3651:LEU:HB2	1.78	0.65
1:A:1206:LEU:O	1:A:1210:ASP:HB2	1.95	0.65
2:B:264:ASN:HD22	3:C:530:LEU:HD13	1.62	0.65
1:A:3630:ARG:HG2	1:A:3632:PHE:H	1.63	0.64
1:A:4028:ILE:HG22	1:A:4029:GLN:HG2	1.81	0.63
1:A:1356:TRP:HE1	1:A:1409:SER:HB2	1.63	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:408:ALA:HA	3:C:420:VAL:O	1.99	0.62
2:B:35:ARG:NH2	2:B:80:ARG:O	2.34	0.61
3:C:409:PHE:HB2	3:C:420:VAL:HG22	1.84	0.60
1:A:1178:ARG:NH1	1:A:1183:CYS:SG	2.75	0.60
1:A:54:GLN:HA	1:A:57:LEU:HB3	1.84	0.60
2:B:36:ASP:OD1	2:B:36:ASP:N	2.35	0.59
2:B:368:VAL:HG13	2:B:434:LEU:HD11	1.84	0.59
1:A:1375:THR:HA	1:A:1379:PRO:HB3	1.84	0.59
1:A:3648:GLY:O	1:A:3653:ARG:NH1	2.36	0.59
1:A:2524:PHE:O	1:A:2530:ARG:NH2	2.36	0.59
2:B:204:HIS:O	2:B:237:SER:N	2.36	0.59
1:A:215:PRO:HD3	3:C:550:ALA:HB2	1.85	0.59
1:A:1704:GLY:HA2	1:A:1707:LEU:HB3	1.85	0.59
1:A:859:LEU:O	1:A:867:ASN:ND2	2.36	0.59
1:A:791:ASP:OD1	1:A:791:ASP:N	2.36	0.59
3:C:466:LYS:HA	3:C:473:LEU:HA	1.85	0.59
3:C:684:THR:HG21	3:C:705:LEU:HD21	1.84	0.59
1:A:1266:CYS:SG	1:A:1267:TYR:N	2.75	0.58
1:A:3959:MET:SD	1:A:3959:MET:N	2.73	0.58
2:B:413:LEU:HB3	2:B:432:PHE:HD2	1.68	0.58
1:A:3755:GLY:HA2	1:A:3799:ARG:HB2	1.86	0.58
3:C:11:VAL:HB	3:C:132:ILE:HG12	1.85	0.58
2:B:241:ASP:OD1	2:B:241:ASP:N	2.37	0.58
1:A:3831:ASP:HB3	1:A:3834:ALA:HB2	1.86	0.58
1:A:1684:LEU:HB3	1:A:1688:LEU:HB2	1.86	0.58
1:A:1969:GLU:HB2	1:A:1975:LEU:HB3	1.85	0.58
1:A:3050:LYS:O	1:A:3054:GLN:NE2	2.37	0.57
1:A:3327:ASN:HB2	1:A:3388:ALA:HB2	1.86	0.57
1:A:72:SER:O	1:A:82:ARG:NH1	2.37	0.57
3:C:131:HIS:NE2	3:C:133:GLU:OE2	2.38	0.57
1:A:1274:ARG:NH1	1:A:1351:THR:OG1	2.38	0.57
1:A:3515:GLN:NE2	1:A:3551:ASN:OD1	2.38	0.57
3:C:407:VAL:O	3:C:421:TYR:HA	2.05	0.57
1:A:998:ASN:HA	1:A:1001:PHE:HB2	1.87	0.57
2:B:245:LYS:O	2:B:245:LYS:HG3	2.05	0.57
1:A:1190:LEU:O	1:A:1194:PHE:HB2	2.05	0.56
1:A:3119:VAL:O	1:A:3125:ARG:NH2	2.38	0.56
1:A:3289:ARG:NH1	1:A:3993:SER:OG	2.38	0.56
1:A:1261:LEU:HD13	1:A:1337:VAL:HG12	1.88	0.56
1:A:3595:GLU:OE2	1:A:3602:ASN:ND2	2.37	0.56
2:B:48:MET:SD	2:B:48:MET:N	2.77	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:76:ASN:ND2	3:C:103:GLN:O	2.38	0.56
1:A:1829:TRP:O	1:A:1883:ARG:NH2	2.38	0.56
1:A:2177:ASN:HB3	1:A:2182:ILE:HG12	1.86	0.56
1:A:3299:THR:HA	1:A:3302:LYS:HE3	1.87	0.56
1:A:2458:VAL:HG11	1:A:2476:ILE:HD11	1.86	0.56
3:C:265:LYS:NZ	3:C:360:GLN:OE1	2.37	0.56
1:A:1681:ASP:HB3	1:A:1683:LYS:HE3	1.87	0.56
1:A:1751:GLU:O	1:A:1788:ARG:NH2	2.39	0.56
1:A:2143:ARG:HG2	1:A:2171:LEU:HD21	1.88	0.56
1:A:3314:SER:O	1:A:3318:LYS:NZ	2.39	0.56
2:B:144:SER:HB3	2:B:186:ALA:HA	1.88	0.56
2:B:399:ARG:NH2	3:C:516:LEU:O	2.38	0.56
1:A:723:ASP:OD1	1:A:723:ASP:N	2.37	0.56
1:A:657:SER:HA	1:A:660:LEU:HB2	1.88	0.56
1:A:901:MET:SD	1:A:2535:THR:OG1	2.63	0.56
1:A:3190:LEU:HD22	1:A:3231:ILE:HG23	1.88	0.56
1:A:3352:GLU:HB3	1:A:3355:LYS:HB2	1.87	0.56
1:A:2963:SER:OG	1:A:3251:ASN:ND2	2.39	0.55
1:A:1104:LEU:HD12	1:A:1134:LEU:HD23	1.88	0.55
1:A:10:CYS:SG	1:A:14:ARG:NH2	2.73	0.55
1:A:4083:GLY:HA3	1:A:4091:ALA:HB2	1.87	0.55
1:A:210:SER:HB2	2:B:332:GLU:HG3	1.88	0.55
1:A:1021:VAL:O	1:A:1021:VAL:HG13	2.06	0.55
1:A:1833:LEU:HB3	1:A:1836:LEU:HB2	1.88	0.55
1:A:2810:SER:HG	1:A:2857:CYS:HG	1.53	0.55
1:A:3360:LEU:HG	1:A:3373:VAL:HG11	1.88	0.55
1:A:1129:ASP:O	1:A:1133:HIS:ND1	2.40	0.55
1:A:3573:ASN:HB3	1:A:3627:ALA:HB2	1.89	0.55
2:B:495:LEU:CB	2:B:497:LEU:HD21	2.37	0.55
3:C:137:ASP:HA	3:C:166:PRO:HD3	1.89	0.55
1:A:442:GLN:NE2	1:A:457:CYS:SG	2.79	0.55
1:A:2230:VAL:O	1:A:2234:ASN:ND2	2.40	0.55
1:A:3484:THR:HG22	1:A:3513:ALA:HA	1.88	0.55
3:C:66:ASN:ND2	3:C:68:LEU:O	2.38	0.55
1:A:1228:GLY:HA3	1:A:1259:LEU:HD13	1.89	0.55
3:C:371:GLU:HB2	3:C:374:ALA:HB3	1.87	0.55
1:A:3253:SER:O	1:A:3257:LYS:NZ	2.39	0.54
3:C:57:VAL:HG22	3:C:79:VAL:HG12	1.89	0.54
1:A:1071:ASN:O	1:A:1075:ARG:NH1	2.41	0.54
1:A:1075:ARG:NH2	1:A:1117:ASP:OD1	2.38	0.54
5:E:28:DC:H2"	5:E:29:DA:C8	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:74:LYS:HE2	2:B:83:LEU:HD11	1.89	0.54
1:A:2376:ASP:OD1	1:A:2404:ARG:NH2	2.41	0.54
1:A:526:ASP:OD1	1:A:526:ASP:N	2.39	0.54
1:A:1590:THR:HG1	1:A:1632:TRP:HE1	1.54	0.54
1:A:3378:TYR:OH	1:A:3426:LYS:NZ	2.40	0.54
1:A:4088:ASN:ND2	1:A:4113:ASP:OD2	2.39	0.54
1:A:414:LEU:HD12	1:A:464:VAL:HG21	1.88	0.54
1:A:621:SER:O	1:A:625:ASN:ND2	2.40	0.54
2:B:219:ASP:OD1	2:B:219:ASP:N	2.40	0.54
1:A:7:GLY:N	1:A:10:CYS:SG	2.76	0.54
1:A:3813:LYS:HB2	1:A:3925:LEU:HB3	1.89	0.54
2:B:95:ASN:HD21	2:B:99:PHE:HB2	1.73	0.54
1:A:1400:VAL:HG11	1:A:1460:ARG:HG2	1.90	0.54
1:A:14:ARG:HA	1:A:17:GLU:HB2	1.90	0.54
1:A:1414:ILE:O	1:A:1418:HIS:ND1	2.36	0.54
3:C:219:ASP:OD1	3:C:219:ASP:N	2.35	0.54
1:A:212:VAL:HG12	1:A:213:ARG:HB2	1.88	0.53
1:A:3714:GLU:O	1:A:3718:ARG:NH1	2.42	0.53
1:A:76:ILE:O	1:A:79:ARG:NH1	2.42	0.53
2:B:249:LYS:NZ	2:B:250:GLU:O	2.42	0.53
1:A:1143:VAL:HG23	1:A:1197:LEU:HD21	1.90	0.53
1:A:4006:VAL:HA	1:A:4011:PHE:HZ	1.73	0.53
1:A:1100:VAL:HA	1:A:1103:ALA:HB3	1.90	0.53
1:A:2034:SER:N	1:A:2037:SER:HG	2.05	0.53
1:A:4049:ARG:NH2	1:A:4062:ASP:OD2	2.38	0.53
3:C:111:LEU:HD11	3:C:150:ILE:HD12	1.91	0.53
1:A:2962:ARG:NH1	1:A:4101:GLU:OE2	2.42	0.53
2:B:95:ASN:OD1	2:B:95:ASN:N	2.41	0.53
1:A:1267:TYR:HE2	1:A:1290:LEU:HD13	1.73	0.53
1:A:1820:VAL:HG23	1:A:1824:LEU:HD11	1.90	0.52
2:B:143:LEU:HD23	2:B:182:LYS:HE3	1.90	0.52
3:C:687:THR:HG22	3:C:701:ALA:HB2	1.90	0.52
1:A:2103:HIS:O	1:A:2107:SER:CB	2.58	0.52
1:A:572:VAL:HG23	1:A:626:LEU:HD11	1.92	0.52
1:A:2978:LYS:NZ	1:A:2985:GLU:OE2	2.43	0.52
2:B:49:PHE:O	2:B:128:GLN:NE2	2.42	0.52
1:A:1169:VAL:HA	1:A:1172:LEU:HD12	1.92	0.52
1:A:60:SER:OG	1:A:63:PHE:O	2.26	0.52
1:A:278:HIS:HB3	1:A:281:GLN:HG3	1.92	0.52
1:A:3652:LEU:HD22	1:A:3653:ARG:HH21	1.75	0.51
1:A:2384:PHE:O	1:A:2388:LYS:NZ	2.43	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4010:SER:O	1:A:4015:ASN:ND2	2.43	0.51
3:C:250:ARG:HH21	3:C:252:THR:HG21	1.75	0.51
1:A:9:ARG:HA	1:A:12:LEU:HD13	1.92	0.51
1:A:603:ILE:HG13	1:A:1083:ASN:HB3	1.91	0.51
1:A:2254:ARG:HA	1:A:2257:PHE:HB3	1.92	0.51
1:A:2493:ASN:HA	1:A:2496:GLN:HE21	1.74	0.51
1:A:3602:ASN:N	1:A:3602:ASN:OD1	2.42	0.51
2:B:55:ASP:OD1	2:B:55:ASP:N	2.43	0.51
1:A:142:ARG:HE	1:A:143:LEU:H	1.58	0.51
1:A:1634:ALA:O	1:A:1642:LYS:NZ	2.43	0.51
1:A:1440:ASP:OD1	1:A:1440:ASP:N	2.35	0.51
1:A:3048:LYS:HB3	1:A:3061:LEU:HD22	1.92	0.51
1:A:3147:LYS:HB3	1:A:3150:ASN:HB2	1.93	0.51
2:B:505:ASP:OD2	3:C:333:TYR:OH	2.28	0.51
1:A:739:ASN:OD1	1:A:739:ASN:N	2.44	0.51
1:A:3137:GLU:OE2	1:A:3167:ARG:NH2	2.42	0.51
2:B:52:GLN:HE22	2:B:207:LYS:HA	1.74	0.51
3:C:624:LEU:HD12	3:C:665:LYS:HE2	1.92	0.51
1:A:3026:ASP:N	1:A:3026:ASP:OD1	2.44	0.51
1:A:1206:LEU:O	1:A:1210:ASP:CB	2.58	0.51
1:A:1685:ASP:H	1:A:1688:LEU:HD12	1.75	0.51
1:A:1726:SER:OG	1:A:1727:ARG:N	2.44	0.51
1:A:1986:ARG:NH2	1:A:1988:TYR:OH	2.43	0.51
2:B:480:ASN:O	2:B:484:GLN:HB2	2.11	0.51
3:C:223:GLU:OE2	3:C:239:LYS:NZ	2.43	0.50
1:A:1407:LYS:NZ	1:A:1462:GLY:O	2.44	0.50
1:A:2131:GLY:O	1:A:2135:ASN:ND2	2.44	0.50
3:C:6:ASN:ND2	3:C:128:GLU:OE1	2.43	0.50
1:A:1019:ASP:OD1	1:A:1019:ASP:N	2.43	0.50
1:A:2824:LYS:O	1:A:2829:LYS:NZ	2.38	0.50
1:A:3354:ASP:OD1	1:A:3354:ASP:N	2.44	0.50
1:A:1836:LEU:HD21	1:A:1839:PHE:HB3	1.93	0.50
3:C:17:GLY:O	3:C:20:MET:HB3	2.11	0.50
1:A:189:MET:HG2	1:A:192:ASN:HD21	1.77	0.50
1:A:738:HIS:ND1	1:A:741:ILE:O	2.44	0.50
1:A:2507:ILE:HG21	1:A:2547:SER:HB3	1.93	0.50
2:B:266:ASP:OD1	2:B:266:ASP:N	2.43	0.50
1:A:1418:HIS:O	1:A:1422:LYS:NZ	2.36	0.50
1:A:1888:ASP:OD1	1:A:1888:ASP:N	2.42	0.50
2:B:245:LYS:O	2:B:246:VAL:HG22	2.11	0.50
2:B:288:LEU:HB3	3:C:311:ILE:HG13	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:16:GLN:NE2	1:A:62:ASP:O	2.45	0.49
1:A:889:GLU:O	1:A:891:ARG:NH1	2.45	0.49
1:A:2897:LEU:HD11	1:A:2922:ARG:HB3	1.94	0.49
1:A:3588:TRP:NE1	1:A:3609:MET:SD	2.80	0.49
2:B:35:ARG:HH22	2:B:80:ARG:HB2	1.77	0.49
2:B:86:VAL:HG13	2:B:104:VAL:HG12	1.93	0.49
3:C:63:GLY:O	3:C:78:THR:OG1	2.30	0.49
1:A:66:LEU:HD11	1:A:110:THR:HG21	1.94	0.49
1:A:399:GLN:HG3	1:A:400:THR:HG23	1.94	0.49
1:A:2428:ASP:O	1:A:2432:GLN:NE2	2.44	0.49
1:A:3140:GLU:OE2	1:A:3164:TRP:NE1	2.45	0.49
2:B:194:ARG:NH1	2:B:219:ASP:O	2.46	0.49
2:B:202:LEU:HG	2:B:221:ILE:HD12	1.94	0.49
1:A:1068:LEU:HD21	1:A:1106:ILE:HD11	1.95	0.49
1:A:1178:ARG:HG2	1:A:1180:GLN:H	1.77	0.49
1:A:1588:ASP:N	1:A:1588:ASP:OD1	2.46	0.49
1:A:2290:PRO:HB3	1:A:2295:GLN:HA	1.94	0.49
1:A:1503:LEU:HD13	1:A:1508:LYS:HE2	1.94	0.48
2:B:507:THR:OG1	3:C:394:ARG:NH1	2.45	0.48
1:A:2551:GLU:OE2	1:A:2849:SER:OG	2.30	0.48
1:A:2990:GLU:HA	1:A:2993:PHE:HB3	1.95	0.48
1:A:3468:LEU:HA	1:A:3471:ILE:HG22	1.95	0.48
1:A:3700:GLU:OE2	1:A:3716:HIS:ND1	2.36	0.48
2:B:107:GLU:O	2:B:115:ARG:NH1	2.37	0.48
3:C:199:GLU:HA	3:C:202:LYS:HD2	1.95	0.48
1:A:1455:CYS:HA	1:A:1458:LEU:HD12	1.95	0.48
1:A:535:LEU:O	1:A:561:ASN:ND2	2.46	0.48
1:A:1440:ASP:O	1:A:1445:ARG:NH1	2.46	0.48
2:B:326:GLN:HE21	2:B:328:ILE:HD11	1.77	0.48
1:A:100:ILE:HG22	1:A:103:TYR:HB2	1.96	0.48
1:A:737:PRO:O	1:A:739:ASN:OD1	2.32	0.48
1:A:1853:SER:OG	1:A:1866:GLN:NE2	2.46	0.48
1:A:2859:GLN:NE2	1:A:2880:CYS:SG	2.77	0.48
1:A:333:MET:SD	1:A:333:MET:N	2.76	0.48
1:A:1045:THR:OG1	1:A:1048:GLN:NE2	2.46	0.48
1:A:1265:GLU:OE2	1:A:1340:ARG:NE	2.42	0.48
1:A:268:PRO:HB2	1:A:308:LEU:HD11	1.96	0.48
1:A:4011:PHE:HA	1:A:4015:ASN:HD22	1.78	0.48
1:A:1359:LEU:HB3	1:A:1363:LEU:HD21	1.95	0.48
1:A:2103:HIS:O	1:A:2107:SER:HB3	2.13	0.48
1:A:2265:PRO:HB3	1:A:2309:PHE:CG	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3590:ASN:HA	1:A:3593:ARG:HG2	1.94	0.48
1:A:2162:LYS:HA	1:A:2200:ALA:HB2	1.96	0.48
1:A:1167:ASP:OD1	1:A:1167:ASP:N	2.44	0.48
2:B:416:GLN:NE2	2:B:433:GLN:OE1	2.40	0.48
1:A:191:ASN:OD1	1:A:191:ASN:N	2.47	0.47
3:C:636:ILE:HA	3:C:639:ILE:HG12	1.95	0.47
1:A:1250:LEU:O	1:A:1253:THR:OG1	2.28	0.47
1:A:2290:PRO:HD3	1:A:2296:SER:HB3	1.95	0.47
1:A:2540:LEU:HD11	1:A:2835:LYS:HD2	1.95	0.47
1:A:2555:LEU:HD21	1:A:2854:PHE:HD1	1.79	0.47
1:A:3069:MET:O	1:A:3070:HIS:ND1	2.48	0.47
2:B:495:LEU:HD22	2:B:497:LEU:HD21	1.97	0.47
1:A:3448:GLU:HG2	1:A:3482:LEU:HD11	1.95	0.47
1:A:3471:ILE:O	1:A:3475:TYR:HB2	2.13	0.47
1:A:3751:LEU:HB3	1:A:3803:ILE:HG23	1.95	0.47
1:A:671:SER:HA	1:A:674:VAL:HG12	1.97	0.47
1:A:2149:LEU:O	1:A:2153:THR:OG1	2.29	0.47
1:A:3457:ASN:OD1	1:A:3494:GLN:NE2	2.47	0.47
1:A:2937:ASP:OD1	1:A:3784:ARG:NH2	2.46	0.47
1:A:3786:LEU:HD22	1:A:3910:LEU:HD22	1.97	0.47
3:C:351:VAL:HG21	3:C:407:VAL:HG21	1.97	0.47
1:A:2103:HIS:O	1:A:2107:SER:OG	2.32	0.47
1:A:2459:VAL:HB	1:A:2505:VAL:HG21	1.96	0.47
2:B:375:VAL:HG12	3:C:541:GLU:HB2	1.96	0.47
1:A:1407:LYS:HD3	1:A:1463:LEU:HD12	1.96	0.47
3:C:309:ASP:OD1	3:C:309:ASP:N	2.39	0.47
3:C:365:PHE:CD2	3:C:366:ALA:N	2.83	0.47
3:C:672:ASN:HA	3:C:675:TRP:HB2	1.96	0.47
1:A:583:LEU:HA	1:A:614:PRO:HA	1.97	0.46
1:A:1071:ASN:HD22	1:A:1074:LYS:HG3	1.80	0.46
1:A:1762:MET:HA	1:A:1765:VAL:HG12	1.97	0.46
1:A:2327:LEU:HD11	1:A:2345:VAL:HG11	1.96	0.46
1:A:3620:PRO:HG2	1:A:3621:LYS:HE2	1.96	0.46
1:A:3761:ASP:HA	1:A:3764:VAL:HG22	1.97	0.46
1:A:1782:PHE:HA	1:A:1785:ILE:HD12	1.96	0.46
1:A:3658:ASP:OD1	1:A:3658:ASP:N	2.47	0.46
1:A:4044:ILE:O	1:A:4048:LYS:HB2	2.15	0.46
3:C:11:VAL:O	3:C:132:ILE:HA	2.15	0.46
3:C:666:VAL:O	3:C:675:TRP:NE1	2.40	0.46
1:A:2184:TYR:HA	1:A:2187:VAL:HG22	1.97	0.46
1:A:4099:SER:O	1:A:4103:GLN:HB2	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:962:TYR:HA	1:A:965:THR:HG22	1.97	0.46
1:A:1686:LEU:HB3	1:A:1738:ASN:HD21	1.80	0.46
1:A:2837:LEU:O	1:A:2841:ASN:ND2	2.35	0.46
1:A:211:ALA:HB2	3:C:551:GLN:HE21	1.81	0.46
3:C:39:THR:O	3:C:43:GLN:HB2	2.15	0.46
1:A:96:MET:SD	1:A:96:MET:N	2.89	0.46
1:A:3492:CYS:SG	1:A:3524:ASN:ND2	2.88	0.46
1:A:704:PHE:HD1	1:A:704:PHE:O	1.99	0.46
1:A:873:VAL:HG13	1:A:874:THR:H	1.80	0.46
1:A:1896:ILE:HD12	1:A:1908:GLY:HA2	1.97	0.46
1:A:3508:LYS:NZ	1:A:3509:ASP:O	2.44	0.46
1:A:3289:ARG:NH1	1:A:3993:SER:O	2.49	0.46
3:C:6:ASN:HB3	3:C:7:LYS:H	1.58	0.46
1:A:263:LYS:HA	1:A:263:LYS:HD2	1.76	0.46
1:A:2169:LEU:HD21	1:A:2193:ILE:HG21	1.98	0.46
2:B:140:ASP:OD1	2:B:140:ASP:N	2.42	0.46
2:B:263:LEU:HB2	2:B:267:ILE:HG13	1.97	0.46
2:B:407:PRO:HG2	3:C:486:ARG:HD2	1.97	0.46
1:A:3530:VAL:HG11	1:A:3568:ILE:HG21	1.99	0.45
1:A:3885:ARG:HA	1:A:3888:VAL:HG12	1.98	0.45
2:B:160:LYS:HB2	2:B:160:LYS:HE3	1.78	0.45
1:A:2927:ALA:HB2	1:A:2942:ILE:HD11	1.98	0.45
1:A:3883:LEU:HB3	1:A:3970:LEU:HD13	1.98	0.45
2:B:83:LEU:HD12	2:B:111:PRO:HD3	1.99	0.45
3:C:686:ILE:HD12	3:C:690:GLU:HB2	1.99	0.45
1:A:1917:LYS:O	1:A:1917:LYS:NZ	2.46	0.45
1:A:2126:MET:HG3	1:A:2164:TRP:HE1	1.80	0.45
1:A:976:VAL:O	1:A:981:ARG:NH1	2.49	0.45
1:A:300:TRP:HD1	1:A:303:HIS:HD2	1.64	0.45
3:C:528:ILE:HG23	3:C:529:PRO:HD3	1.98	0.45
3:C:666:VAL:HA	3:C:671:LEU:HD21	1.99	0.45
1:A:317:GLU:OE2	1:A:364:ARG:NE	2.42	0.45
1:A:1856:THR:HG22	1:A:1858:LEU:HD22	1.97	0.45
2:B:93:ASP:HB3	2:B:101:ASN:H	1.82	0.45
3:C:69:SER:HA	3:C:74:TYR:HB2	1.99	0.45
1:A:1507:CYS:SG	1:A:1508:LYS:N	2.90	0.45
1:A:2338:GLU:O	1:A:2342:CYS:CB	2.65	0.45
1:A:4115:ASN:OD1	1:A:4119:ARG:NH2	2.49	0.45
1:A:1623:LEU:HA	1:A:1626:TRP:HD1	1.82	0.45
3:C:464:ALA:HA	3:C:475:ASP:HA	1.99	0.45
2:B:495:LEU:CB	2:B:497:LEU:CD2	2.90	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:169:THR:OG1	4:D:14:DC:OP1	2.30	0.44
1:A:532:ARG:O	1:A:536:SER:OG	2.32	0.44
1:A:704:PHE:O	1:A:704:PHE:CD1	2.70	0.44
1:A:1212:LEU:HD13	1:A:1220:LEU:HB2	1.99	0.44
1:A:1633:TRP:HA	1:A:1642:LYS:HZ2	1.81	0.44
1:A:3680:LEU:HD22	1:A:3724:GLU:HG2	1.99	0.44
1:A:3772:ASN:HA	1:A:3775:LEU:HB2	1.98	0.44
3:C:356:PHE:HD2	3:C:422:VAL:HG11	1.81	0.44
1:A:65:LEU:HD11	1:A:89:LEU:HD21	1.98	0.44
1:A:1816:ARG:HA	1:A:1816:ARG:HD2	1.80	0.44
1:A:1892:LYS:HD2	1:A:1896:ILE:HD11	1.99	0.44
1:A:3095:ASP:N	1:A:3095:ASP:OD1	2.50	0.44
1:A:3447:VAL:HG22	1:A:3468:LEU:HD22	1.99	0.44
1:A:3958:LEU:O	1:A:4110:GLN:NE2	2.50	0.44
1:A:4029:GLN:HB3	1:A:4030:GLU:H	1.47	0.44
2:B:363:ARG:HH11	3:C:269:GLN:HE22	1.65	0.44
1:A:1697:PRO:HG3	1:A:1752:LEU:HD21	2.00	0.44
2:B:342:ASP:OD1	2:B:342:ASP:N	2.50	0.44
1:A:2043:PHE:O	1:A:2047:THR:OG1	2.31	0.44
1:A:238:MET:SD	1:A:283:SER:N	2.91	0.44
1:A:1386:ILE:HG23	1:A:1392:MET:HG3	2.00	0.44
1:A:2842:ARG:O	1:A:2846:THR:OG1	2.31	0.44
1:A:215:PRO:HG2	3:C:553:ILE:HG21	2.00	0.44
1:A:678:LYS:HD2	1:A:737:PRO:HA	1.99	0.44
1:A:1850:VAL:HA	1:A:1853:SER:HB3	1.98	0.44
1:A:9:ARG:HB3	1:A:63:PHE:HE2	1.83	0.44
1:A:68:PHE:HA	1:A:71:LYS:HG2	2.00	0.44
1:A:1869:LYS:HE3	1:A:1869:LYS:HB2	1.87	0.44
1:A:1964:GLY:O	1:A:1968:SER:OG	2.36	0.44
3:C:365:PHE:HB3	3:C:418:CYS:SG	2.57	0.44
1:A:2492:ASP:O	1:A:2496:GLN:NE2	2.51	0.43
1:A:2788:SER:O	1:A:2792:THR:OG1	2.34	0.43
1:A:3531:TYR:HB3	1:A:3796:MET:HA	2.00	0.43
2:B:207:LYS:HB2	2:B:213:ILE:HD11	2.00	0.43
2:B:237:SER:OG	2:B:238:LYS:N	2.51	0.43
1:A:436:GLU:HA	1:A:439:VAL:HG12	2.00	0.43
1:A:2512:ASP:OD1	1:A:2512:ASP:N	2.48	0.43
1:A:3629:ARG:HH12	1:A:3634:GLN:HG3	1.84	0.43
1:A:3767:LEU:HD13	1:A:3918:LEU:HD22	2.00	0.43
3:C:363:LYS:HG2	3:C:420:VAL:HG12	1.99	0.43
2:B:485:GLN:NE2	3:C:332:LYS:O	2.39	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:16:VAL:HG13	3:C:58:LEU:HD11	2.01	0.43
3:C:602:VAL:HA	3:C:606:LYS:HD2	2.00	0.43
1:A:93:LEU:HD12	1:A:100:ILE:HD13	2.00	0.43
1:A:335:LYS:HE2	1:A:376:ILE:HD11	1.99	0.43
1:A:913:ARG:HH22	1:A:2803:ILE:HG13	1.83	0.43
1:A:1525:CYS:SG	1:A:1574:ASN:ND2	2.91	0.43
1:A:1989:ASN:OD1	1:A:1989:ASN:N	2.45	0.43
1:A:2383:PHE:HE2	1:A:2408:MET:HE1	1.84	0.43
1:A:67:VAL:HA	1:A:70:ARG:HB2	2.00	0.43
1:A:485:GLN:HE22	1:A:2040:MET:HA	1.84	0.43
1:A:1082:PHE:HA	1:A:1085:ILE:HG12	2.01	0.43
1:A:1632:TRP:HB3	1:A:1645:VAL:HG21	2.00	0.43
1:A:3876:SER:O	1:A:3876:SER:OG	2.35	0.43
1:A:1729:PHE:HB2	1:A:1736:PHE:HB2	1.99	0.43
1:A:2784:GLN:HB3	1:A:2785:ILE:H	1.61	0.43
2:B:410:PHE:HB2	2:B:439:PHE:HE1	1.84	0.43
2:B:497:LEU:H	2:B:497:LEU:HG	1.59	0.43
3:C:61:THR:OG1	3:C:62:ASP:N	2.50	0.43
1:A:851:ILE:HD13	1:A:851:ILE:HA	1.89	0.42
1:A:1190:LEU:HA	1:A:1193:LYS:HG2	2.00	0.42
1:A:2387:PRO:O	2:B:158:GLN:NE2	2.46	0.42
1:A:3098:ARG:HE	1:A:3102:TYR:HE2	1.65	0.42
1:A:3138:ILE:HG12	1:A:3189:PHE:HZ	1.84	0.42
1:A:3686:TRP:HH2	1:A:3699:LEU:HD11	1.84	0.42
2:B:143:LEU:O	2:B:145:GLU:N	2.52	0.42
1:A:95:LYS:HA	1:A:834:LEU:HD11	2.00	0.42
1:A:782:ARG:NH1	1:A:3166:ASN:OD1	2.52	0.42
1:A:3011:LEU:HD23	1:A:3047:SER:HB2	2.01	0.42
1:A:3554:PHE:HD1	1:A:3557:ARG:HH21	1.66	0.42
1:A:3829:LEU:HD23	1:A:3829:LEU:HA	1.87	0.42
1:A:346:TYR:HA	1:A:349:ILE:HG22	2.01	0.42
1:A:3623:PRO:HG3	1:A:3633:ILE:HG12	2.02	0.42
2:B:240:GLU:HA	2:B:243:LEU:HD12	2.01	0.42
2:B:245:LYS:O	2:B:246:VAL:CG2	2.67	0.42
1:A:2980:ASP:OD1	1:A:2980:ASP:N	2.46	0.42
2:B:262:LYS:HA	2:B:268:VAL:HG12	2.01	0.42
3:C:116:ASP:O	3:C:120:HIS:ND1	2.49	0.42
1:A:2036:LEU:O	1:A:2040:MET:HB2	2.19	0.42
2:B:51:SER:O	2:B:51:SER:OG	2.38	0.42
3:C:12:LEU:HD13	3:C:38:ILE:HD11	2.02	0.42
1:A:485:GLN:HE21	1:A:2040:MET:HG3	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1900:PHE:HD1	1:A:1900:PHE:HA	1.76	0.42
1:A:1864:ASP:HA	1:A:1867:ILE:HD12	2.01	0.42
1:A:2190:VAL:HA	1:A:2193:ILE:HG22	2.02	0.42
1:A:3883:LEU:HD13	1:A:3970:LEU:HD22	2.01	0.42
3:C:413:LYS:HD3	3:C:413:LYS:HA	1.87	0.42
3:C:606:LYS:NZ	3:C:608:SER:O	2.53	0.42
1:A:2955:SER:O	1:A:2971:GLN:NE2	2.52	0.42
1:A:3733:ARG:HH22	1:A:4022:LYS:HD2	1.85	0.41
3:C:331:MET:HE3	3:C:331:MET:HB2	1.81	0.41
1:A:3351:ILE:O	1:A:3352:GLU:HB2	2.19	0.41
3:C:353:ARG:HA	3:C:356:PHE:HE1	1.85	0.41
3:C:726:ASP:HA	3:C:729:LEU:HG	2.01	0.41
1:A:205:LYS:O	1:A:209:THR:OG1	2.34	0.41
1:A:680:ILE:HD12	1:A:680:ILE:HA	1.95	0.41
1:A:2286:PRO:HB3	1:A:2329:TYR:CE2	2.56	0.41
1:A:2464:HIS:ND1	1:A:2469:CYS:SG	2.93	0.41
3:C:45:GLN:HE21	3:C:237:PHE:HE1	1.68	0.41
3:C:132:ILE:O	3:C:161:LEU:HA	2.21	0.41
1:A:848:LEU:HD12	1:A:848:LEU:HA	1.91	0.41
1:A:863:GLY:HA2	1:A:3167:ARG:HG3	2.01	0.41
1:A:1137:ILE:HD12	1:A:1137:ILE:HA	1.94	0.41
1:A:1590:THR:OG1	1:A:1632:TRP:NE1	2.46	0.41
1:A:1811:ARG:HE	3:C:626:THR:HG23	1.86	0.41
2:B:346:MET:HB2	2:B:346:MET:HE3	1.66	0.41
3:C:108:LEU:HD13	3:C:147:LEU:HD21	2.03	0.41
3:C:372:ALA:HA	3:C:375:VAL:HG12	2.02	0.41
1:A:12:LEU:HD23	1:A:64:GLY:HA2	2.01	0.41
1:A:473:PRO:HA	1:A:476:ARG:HG2	2.01	0.41
1:A:1532:LEU:HD23	1:A:1532:LEU:HA	1.86	0.41
2:B:422:ASP:N	2:B:422:ASP:OD2	2.53	0.41
3:C:155:LYS:NZ	3:C:215:LEU:O	2.49	0.41
3:C:614:ASN:OD1	3:C:614:ASN:N	2.53	0.41
1:A:214:GLU:HA	1:A:215:PRO:HD2	1.73	0.41
1:A:1141:LYS:HD3	1:A:1141:LYS:HA	1.93	0.41
3:C:339:CYS:O	3:C:395:TYR:HA	2.21	0.41
1:A:117:LYS:HE2	1:A:117:LYS:HB2	1.80	0.41
1:A:862:LEU:HD12	1:A:862:LEU:HA	1.94	0.41
1:A:1605:PHE:O	1:A:1608:ARG:NH2	2.45	0.41
1:A:3489:SER:O	1:A:3489:SER:OG	2.34	0.41
3:C:617:ILE:HA	3:C:620:ILE:HG12	2.01	0.41
1:A:790:LYS:HE2	1:A:790:LYS:HB3	1.88	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:879:MET:H	1:A:879:MET:HG2	1.66	0.41
1:A:1774:MET:HB3	1:A:1777:LEU:HD21	2.02	0.41
1:A:2801:ASP:N	1:A:2801:ASP:OD1	2.54	0.41
1:A:3620:PRO:HG3	1:A:3638:LYS:HD3	2.03	0.41
1:A:3753:LYS:HE2	1:A:3803:ILE:HG21	2.01	0.41
3:C:247:TRP:HB3	3:C:263:ALA:HB3	2.03	0.41
1:A:1246:GLY:HA2	1:A:1247:PRO:HD3	1.95	0.41
1:A:1474:ASP:OD1	1:A:1474:ASP:N	2.52	0.41
1:A:2256:ILE:H	1:A:2256:ILE:HG12	1.64	0.41
1:A:2352:HIS:HB3	1:A:2360:PHE:HB2	2.03	0.41
3:C:324:SER:OG	3:C:325:LYS:N	2.53	0.41
1:A:2328:ARG:NH1	1:A:2332:GLU:OE2	2.55	0.40
3:C:138:LEU:HD23	3:C:138:LEU:HA	1.95	0.40
1:A:96:MET:HB2	1:A:100:ILE:HD11	2.04	0.40
1:A:3582:GLU:OE2	1:A:3671:ASN:ND2	2.55	0.40
1:A:3975:LYS:HA	1:A:3975:LYS:HD3	1.89	0.40
4:D:19:DA:H2'	4:D:20:DT:H71	2.04	0.40
1:A:76:ILE:HD13	1:A:76:ILE:HA	1.96	0.40
1:A:2834:GLN:HE21	1:A:2834:GLN:HB2	1.59	0.40
1:A:3714:GLU:H	1:A:3714:GLU:HG2	1.79	0.40
1:A:3772:ASN:HD22	1:A:3788:LEU:HB2	1.86	0.40
1:A:3972:LEU:HD23	1:A:3972:LEU:HA	1.91	0.40
2:B:94:LYS:HB3	2:B:103:TYR:CD1	2.57	0.40
3:C:322:PRO:HB2	3:C:323:PHE:H	1.65	0.40
1:A:919:LEU:HD11	1:A:968:VAL:HG23	2.03	0.40
1:A:1484:LEU:HD22	1:A:1524:LEU:HD21	2.03	0.40
1:A:1725:GLN:HG2	3:C:622:GLN:HG3	2.04	0.40
1:A:3962:ARG:NH1	1:A:4128:MET:O	2.55	0.40
2:B:238:LYS:HZ3	2:B:238:LYS:HG2	1.75	0.40
1:A:181:LEU:HB3	1:A:189:MET:HE1	2.03	0.40
1:A:663:ILE:HD13	1:A:663:ILE:HA	1.93	0.40
2:B:358:LYS:HD2	2:B:358:LYS:HA	1.84	0.40
2:B:510:LYS:HE2	2:B:510:LYS:HB2	1.97	0.40
3:C:666:VAL:HB	3:C:675:TRP:CD1	2.56	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	3594/4128 (87%)	3123 (87%)	459 (13%)	12 (0%)	41	75
2	B	486/609 (80%)	409 (84%)	74 (15%)	3 (1%)	25	63
3	C	645/732 (88%)	549 (85%)	92 (14%)	4 (1%)	25	63
All	All	4725/5469 (86%)	4081 (86%)	625 (13%)	19 (0%)	38	71

All (19) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1476	HIS
1	A	2826	LEU
1	A	3352	GLU
2	B	144	SER
1	A	215	PRO
1	A	3058	ASP
1	A	3311	ASN
2	B	245	LYS
3	C	299	ASP
3	C	322	PRO
1	A	1021	VAL
1	A	3028	ASN
1	A	3083	SER
3	C	300	ASP
1	A	661	PRO
1	A	2548	PRO
1	A	2547	SER
3	C	193	PRO
2	B	499	GLU

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	3174/3671 (86%)	3146 (99%)	28 (1%)	78 87
2	B	444/548 (81%)	436 (98%)	8 (2%)	59 77
3	C	587/649 (90%)	586 (100%)	1 (0%)	93 96
All	All	4205/4868 (86%)	4168 (99%)	37 (1%)	79 87

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	57	LEU
1	A	100	ILE
1	A	215	PRO
1	A	284	THR
1	A	364	ARG
1	A	396	PHE
1	A	739	ASN
1	A	789	TYR
1	A	1051	LYS
1	A	1213	LYS
1	A	1639	LEU
1	A	1735	ARG
1	A	1752	LEU
1	A	1837	ARG
1	A	2183	HIS
1	A	2214	ARG
1	A	3058	ASP
1	A	3301	LEU
1	A	3310	ASN
1	A	3335	ARG
1	A	3352	GLU
1	A	3642	LYS
1	A	3650	LYS
1	A	3653	ARG
1	A	3696	ARG
1	A	3743	HIS

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Mol	Chain	Res	Type
1	A	4023	LYS
1	A	4036	LYS
2	B	36	ASP
2	B	217	TYR
2	B	292	THR
2	B	368	VAL
2	B	409	TYR
2	B	470	ARG
2	B	493	LEU
2	B	497	LEU
3	C	365	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (43) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	109	ASN
1	A	192	ASN
1	A	303	HIS
1	A	442	GLN
1	A	485	GLN
1	A	720	GLN
1	A	867	ASN
1	A	1048	GLN
1	A	1115	HIS
1	A	1598	ASN
1	A	1610	ASN
1	A	1624	GLN
1	A	1772	HIS
1	A	1866	GLN
1	A	2103	HIS
1	A	2135	ASN
1	A	2222	HIS
1	A	2283	ASN
1	A	2365	ASN
1	A	2432	GLN
1	A	2496	GLN
1	A	2834	GLN
1	A	2885	GLN
1	A	3112	GLN
1	A	3122	HIS
1	A	3251	ASN
1	A	3379	GLN

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Mol	Chain	Res	Type
1	A	3383	GLN
1	A	3524	ASN
1	A	3573	ASN
1	A	3760	GLN
1	A	3772	ASN
1	A	3822	GLN
1	A	4110	GLN
2	B	52	GLN
2	B	152	ASN
2	B	264	ASN
2	B	326	GLN
2	B	360	HIS
3	C	269	GLN
3	C	411	HIS
3	C	511	HIS
3	C	551	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

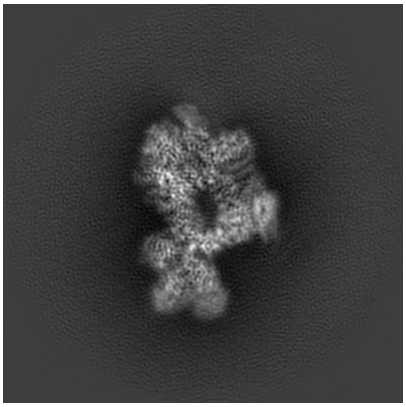
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-22626. These allow visual inspection of the internal detail of the map and identification of artifacts.

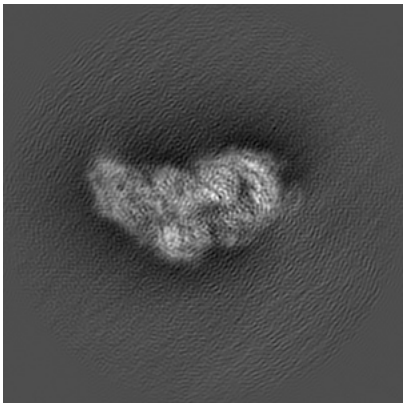
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

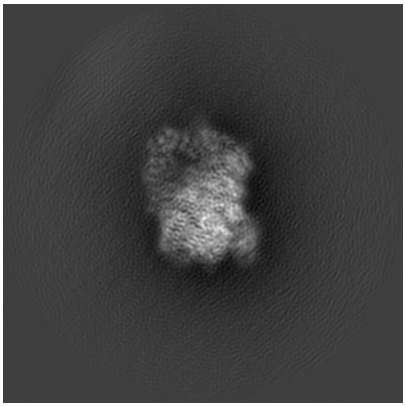
6.1.1 Primary map



X



Y

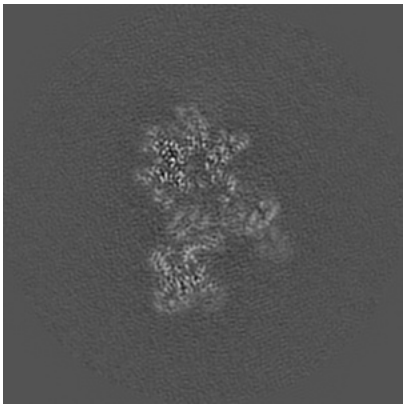


Z

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

6.2 Central slices

6.2.1 Primary map



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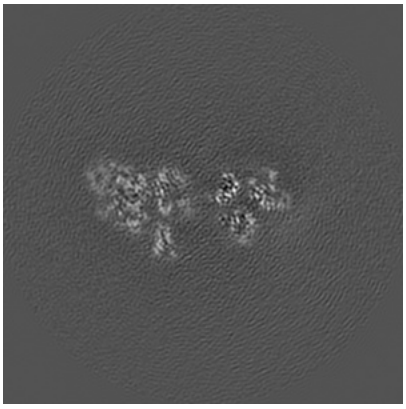
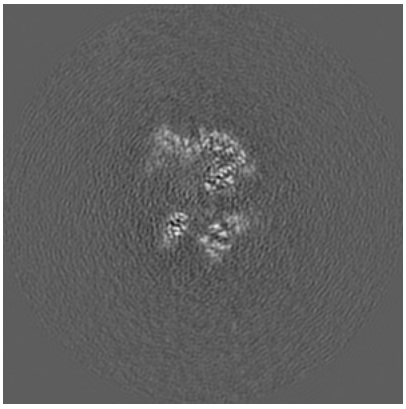


Y Index: 176

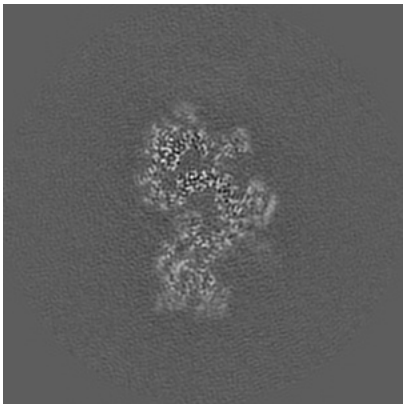


Z Index: 176

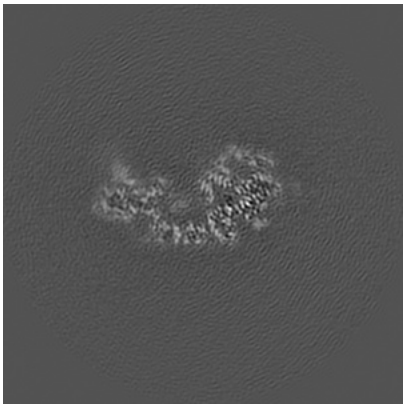
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

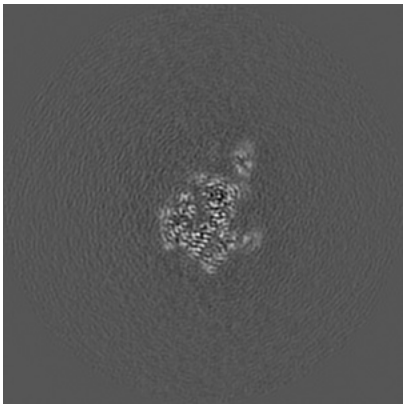
6.3.1 Primary map



X Index: 187



Y Index: 149

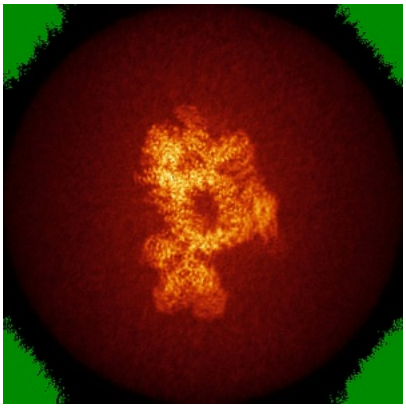


Z Index: 199

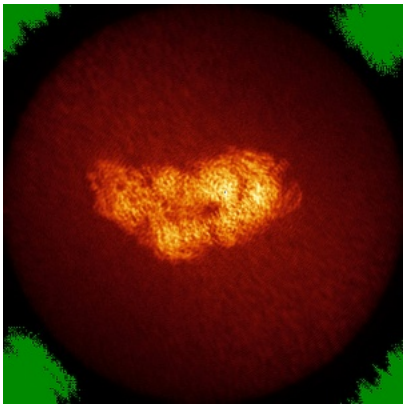
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

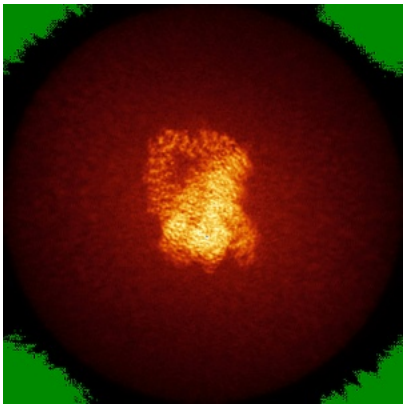
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X

Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.013. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

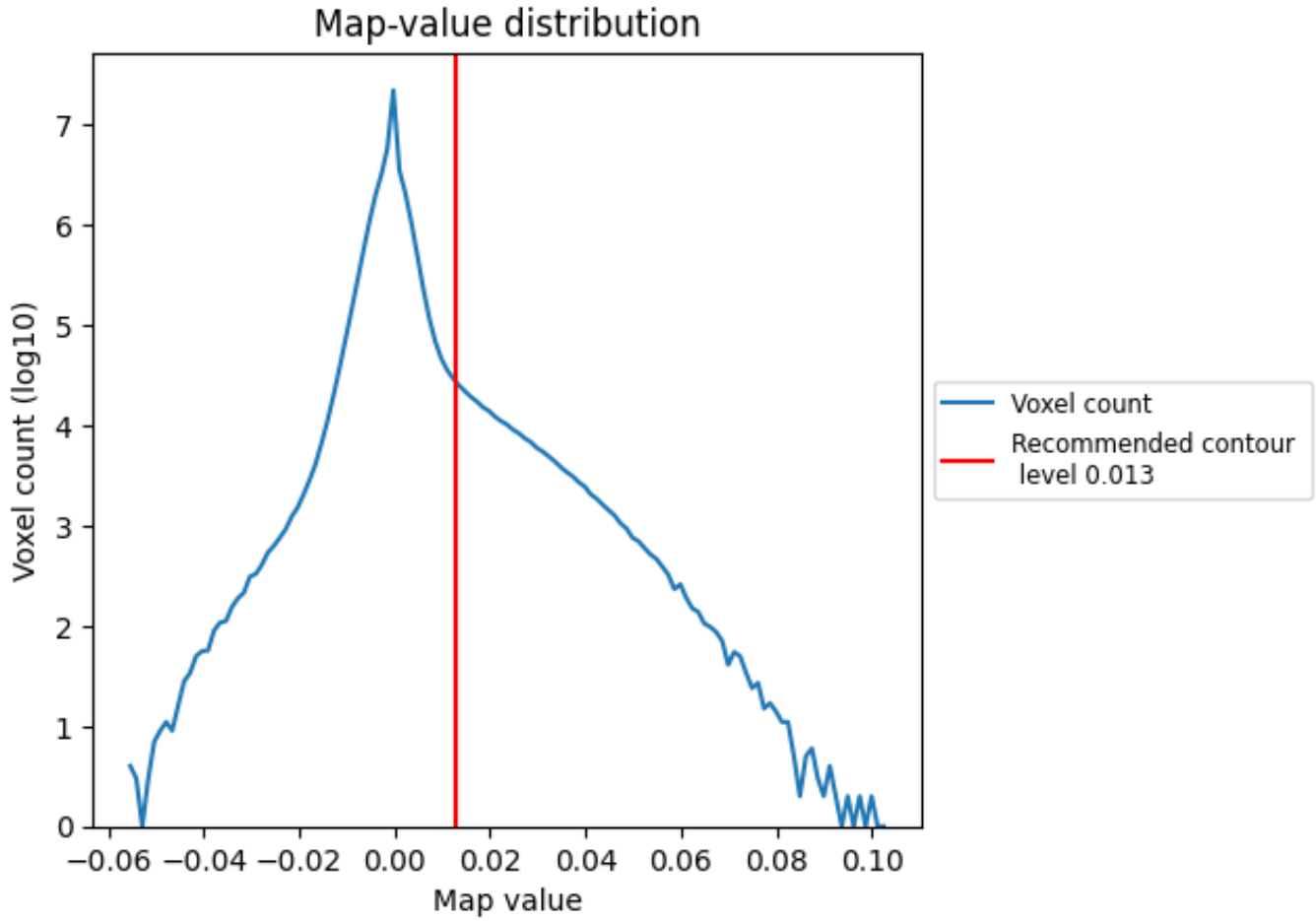
6.6 Mask visualisation (i)

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

7 Map analysis

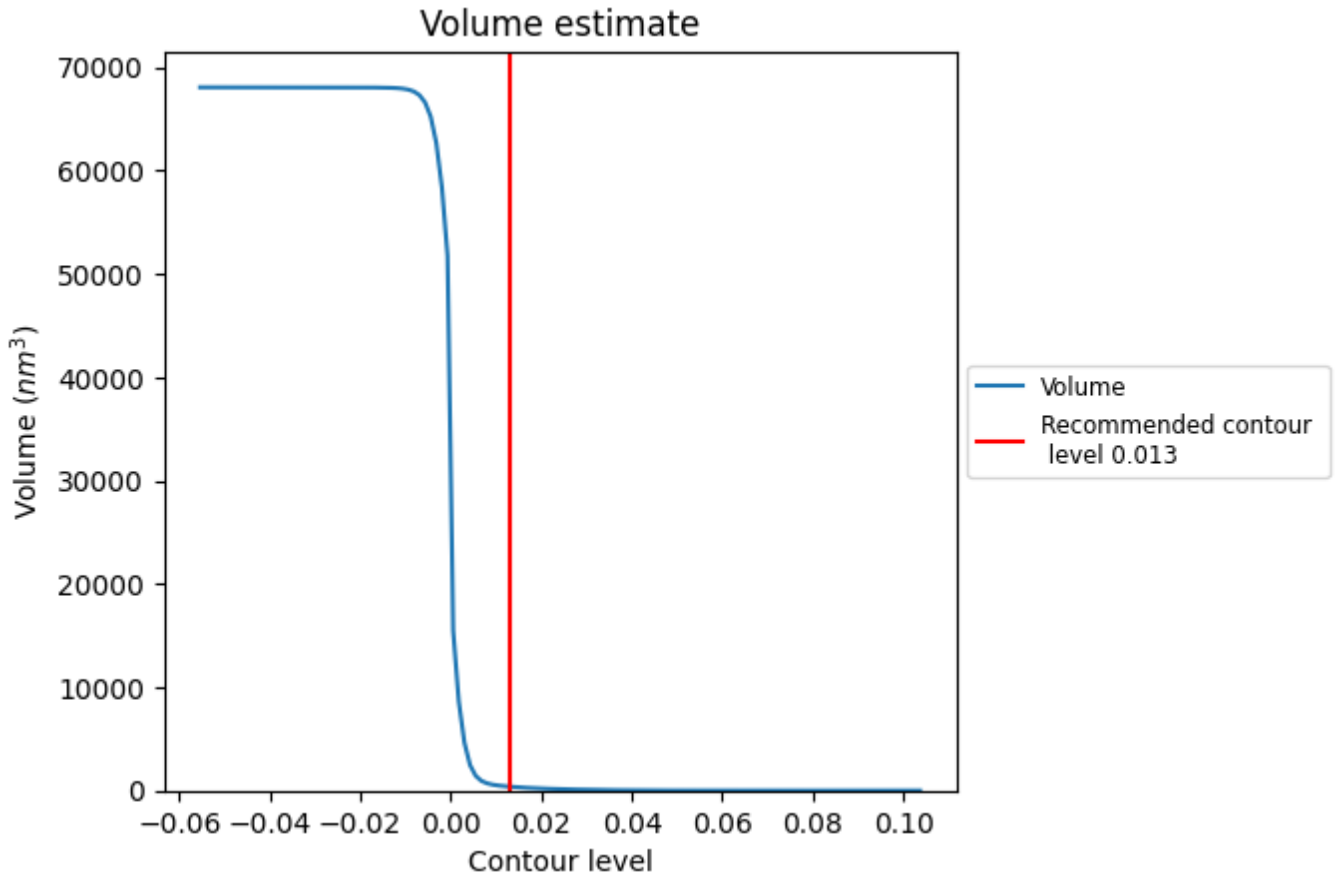
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

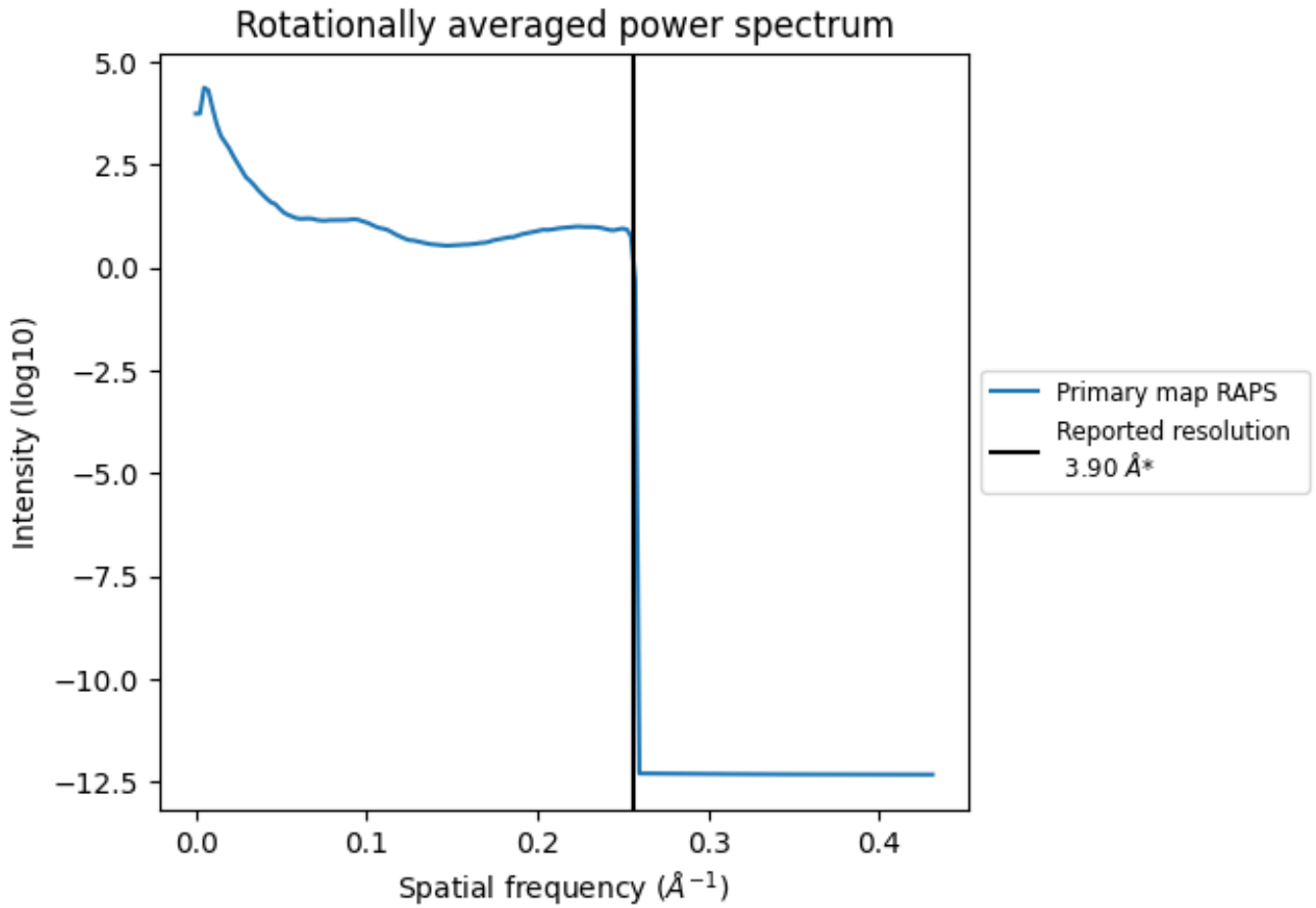
7.2 Volume estimate



The volume at the recommended contour level is 378 nm^3; this corresponds to an approximate mass of 341 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 0.256 $Å^{-1}$

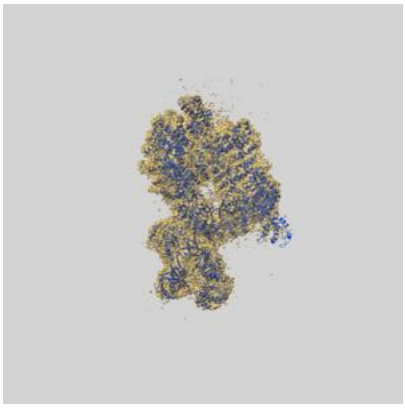
8 Fourier-Shell correlation

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

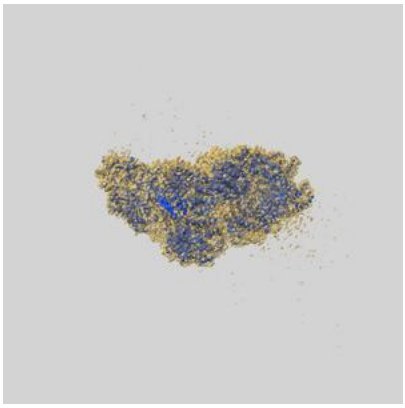
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-22626 and PDB model 7K1N. Per-residue inclusion information can be found in section 3 on page 4.

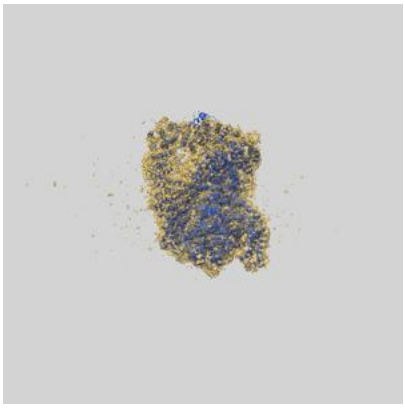
9.1 Map-model overlay



X



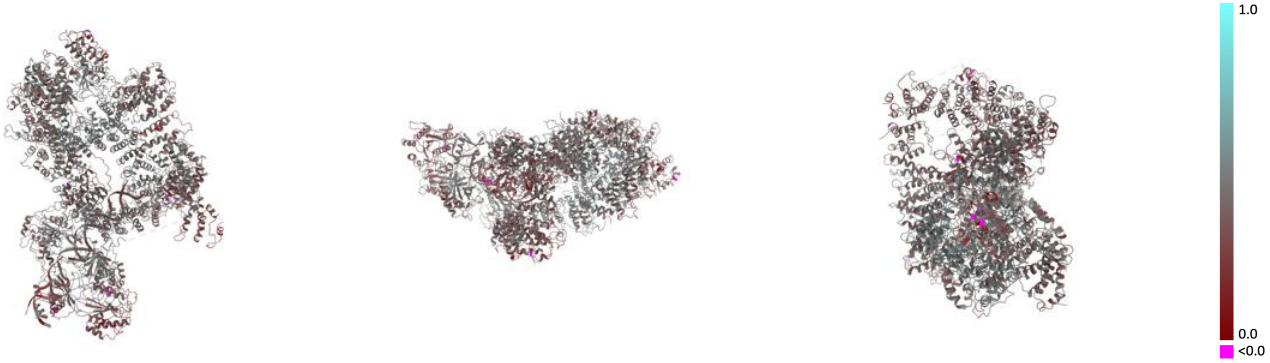
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.013 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.

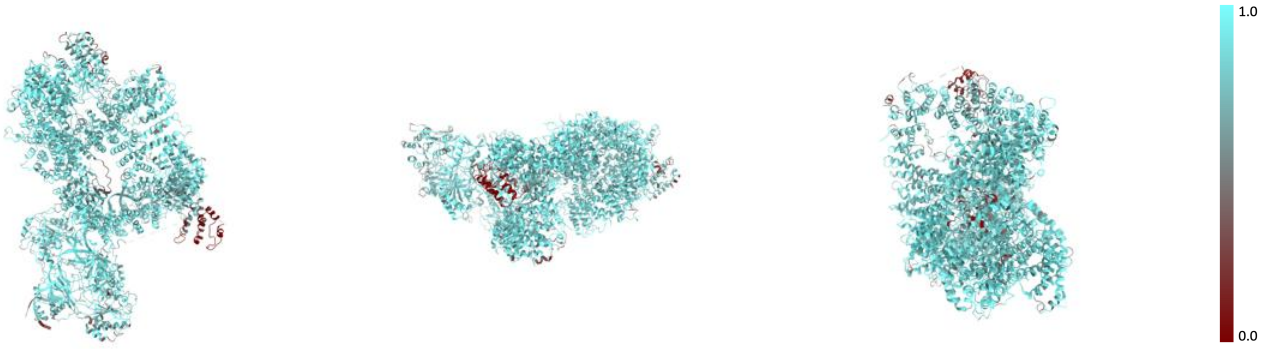
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according 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.

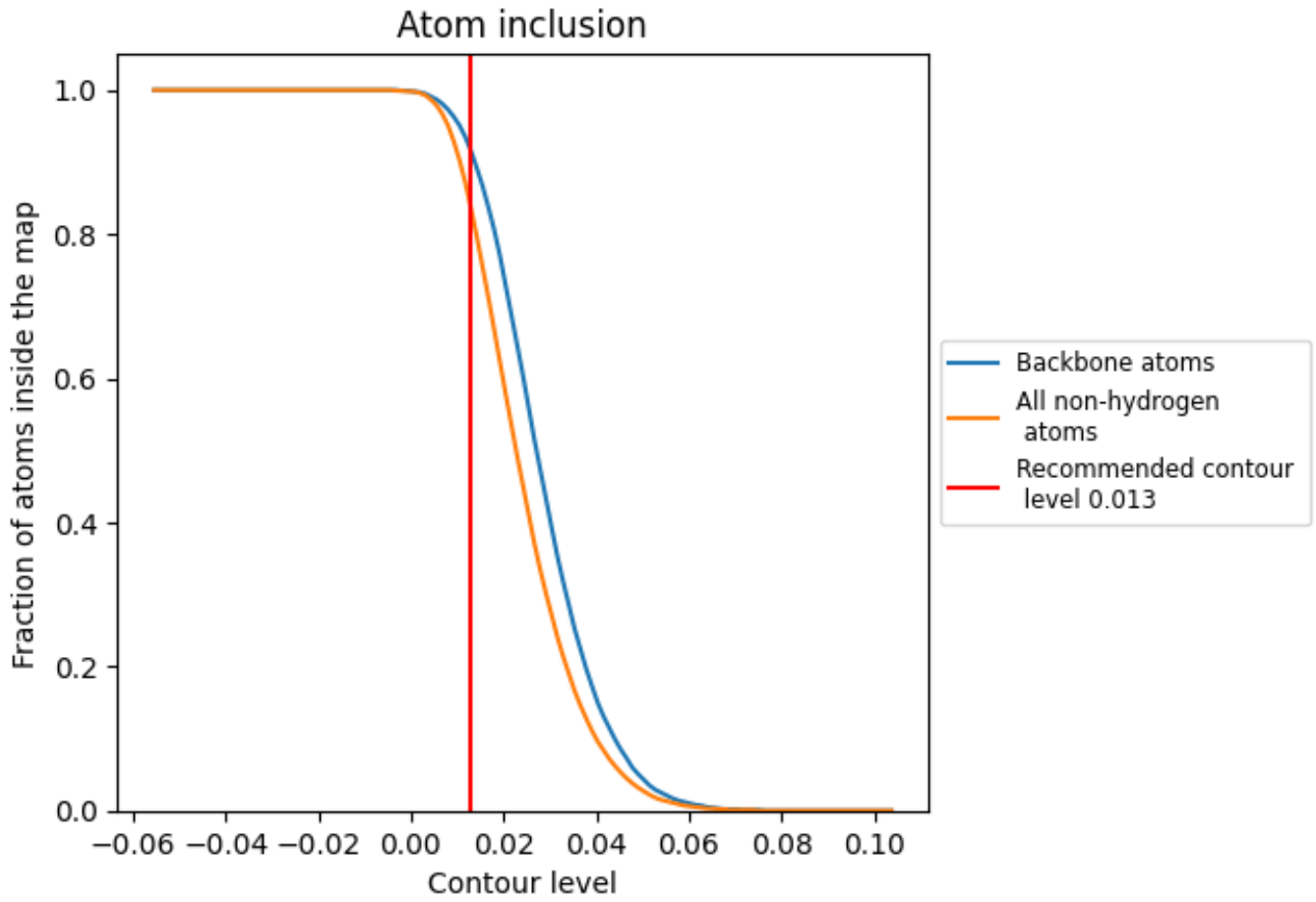
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (0.013).

9.4 Atom inclusion (i)



At the recommended contour level, 92% of all backbone atoms, 84% 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 (0.013) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8350	0.4170
A	0.8590	0.4300
B	0.8490	0.4160
C	0.6850	0.3710
D	0.8930	0.3510
E	0.7580	0.2840
F	0.8590	0.3510
G	0.9000	0.3430