Full wwPDB EM Validation Report

May 14, 2025 – 12:18 AM EDT

PDB ID	:	9BN3 / pdb_00009bn3
EMDB ID	:	EMD-44720
Title	:	The alpha registry-locked dynein motor domain mutant in 5mM ATP condition, class1
Authors	:	Chai, P.; Zhang, K.
Deposited on	:	2024-05-02
Resolution	:	2.80 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:

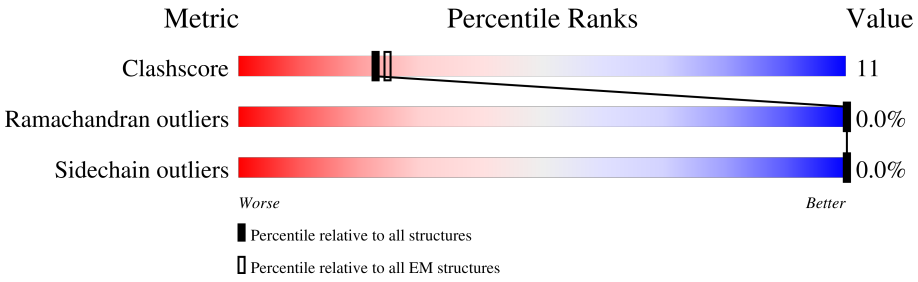
EMDB validation analysis	:	0.0.1.dev118
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0rc1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

1 Overall quality at a glance (i)

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

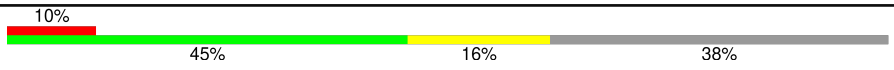
The reported resolution of this entry is 2.80 Å.

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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	4646	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 23152 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.

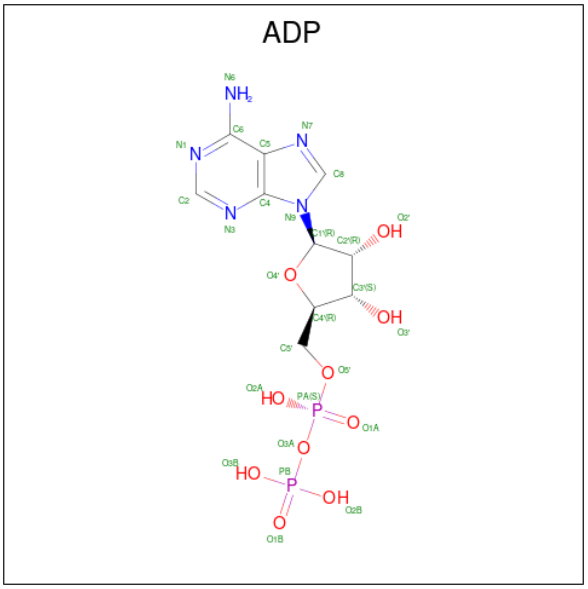
- Molecule 1 is a protein called Cytoplasmic dynein 1 heavy chain 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	2866	23040	14688	3978	4259	115	0	0

There is a discrepancy between the modelled and reference sequences:

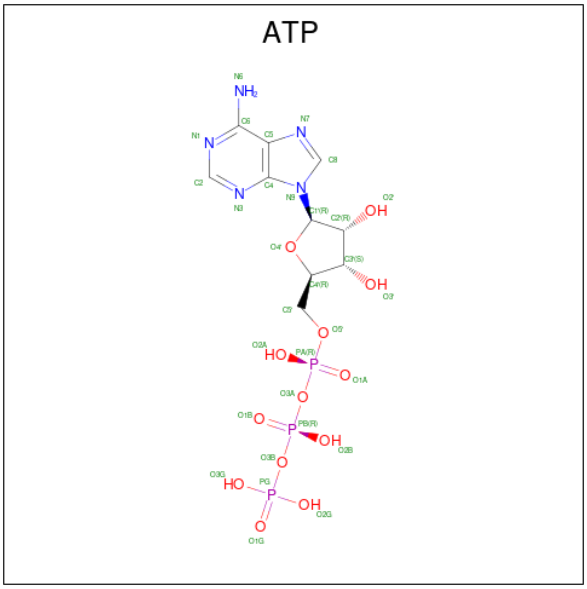
Chain	Residue	Modelled	Actual	Comment	Reference
A	2389	ASP	GLU	conflict	UNP Q14204

- Molecule 2 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	A	1	27	10	5	10	2	0
2	A	1	27	10	5	10	2	0
2	A	1	27	10	5	10	2	0

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



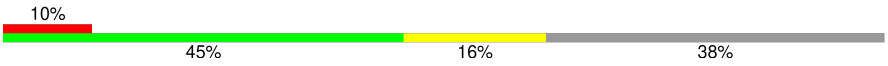
Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total	C	N	O	P	0
			31	10	5	13	3	

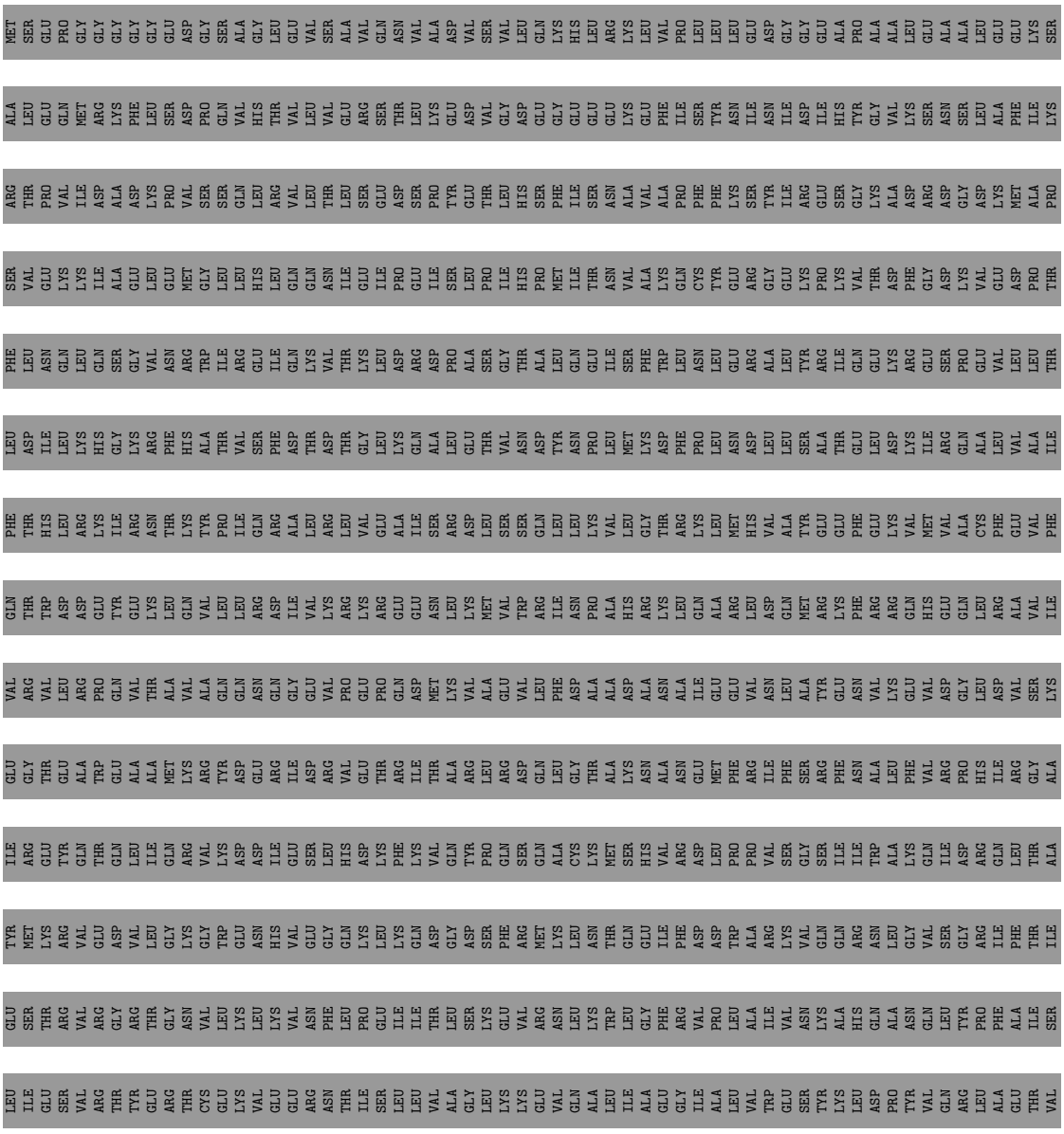
3 Residue-property plots (i)

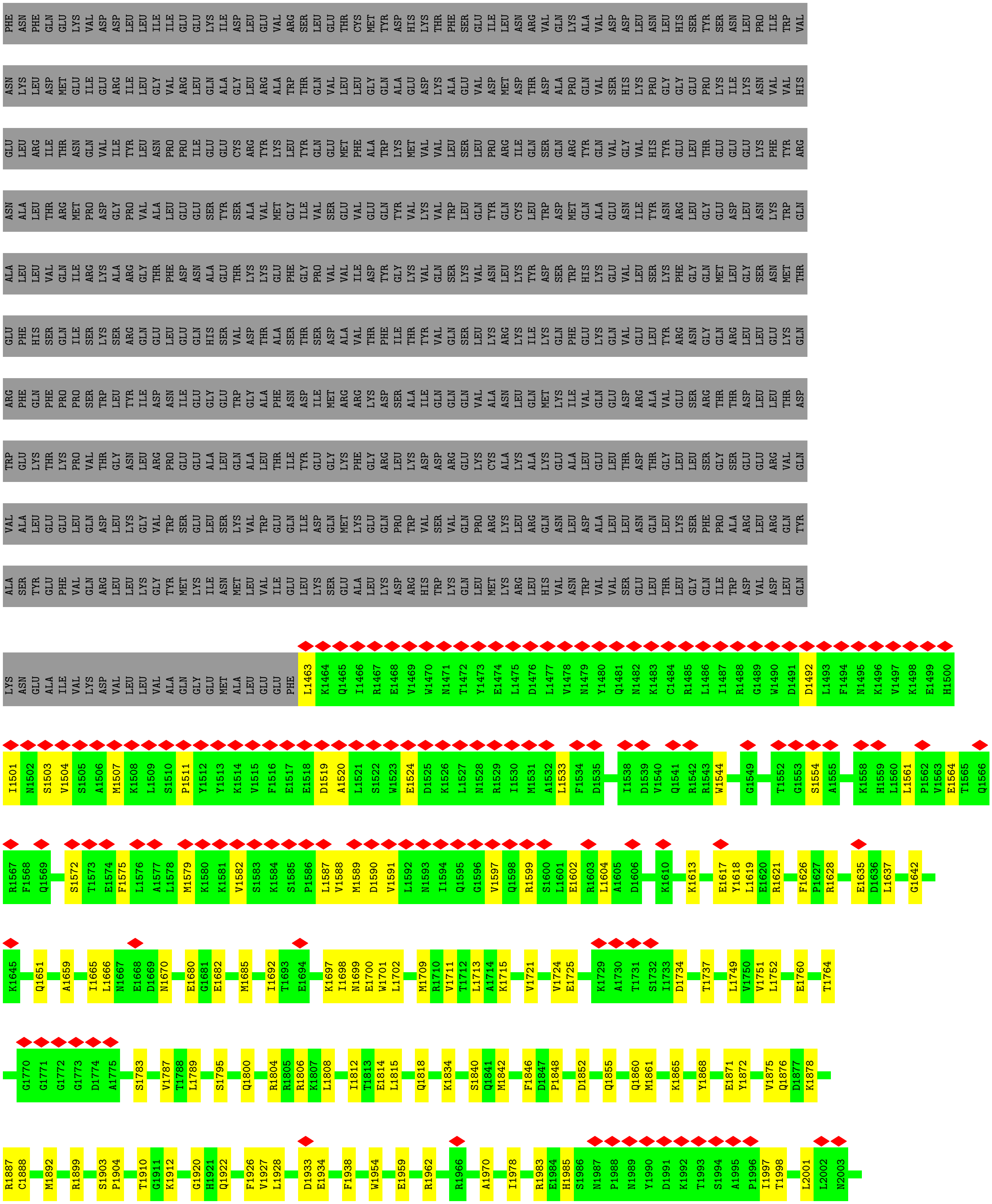
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

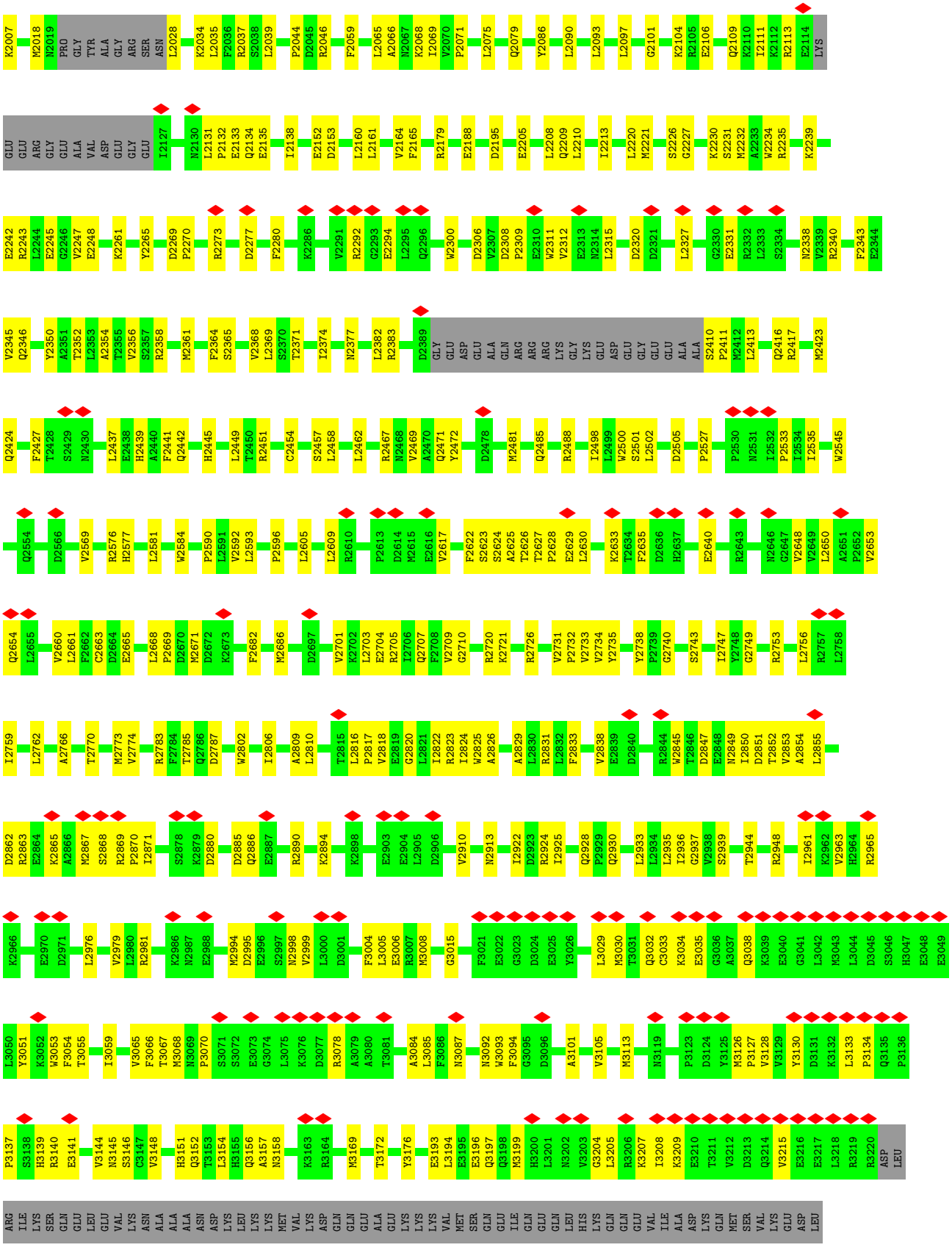
- Molecule 1: Cytoplasmic dynein 1 heavy chain 1

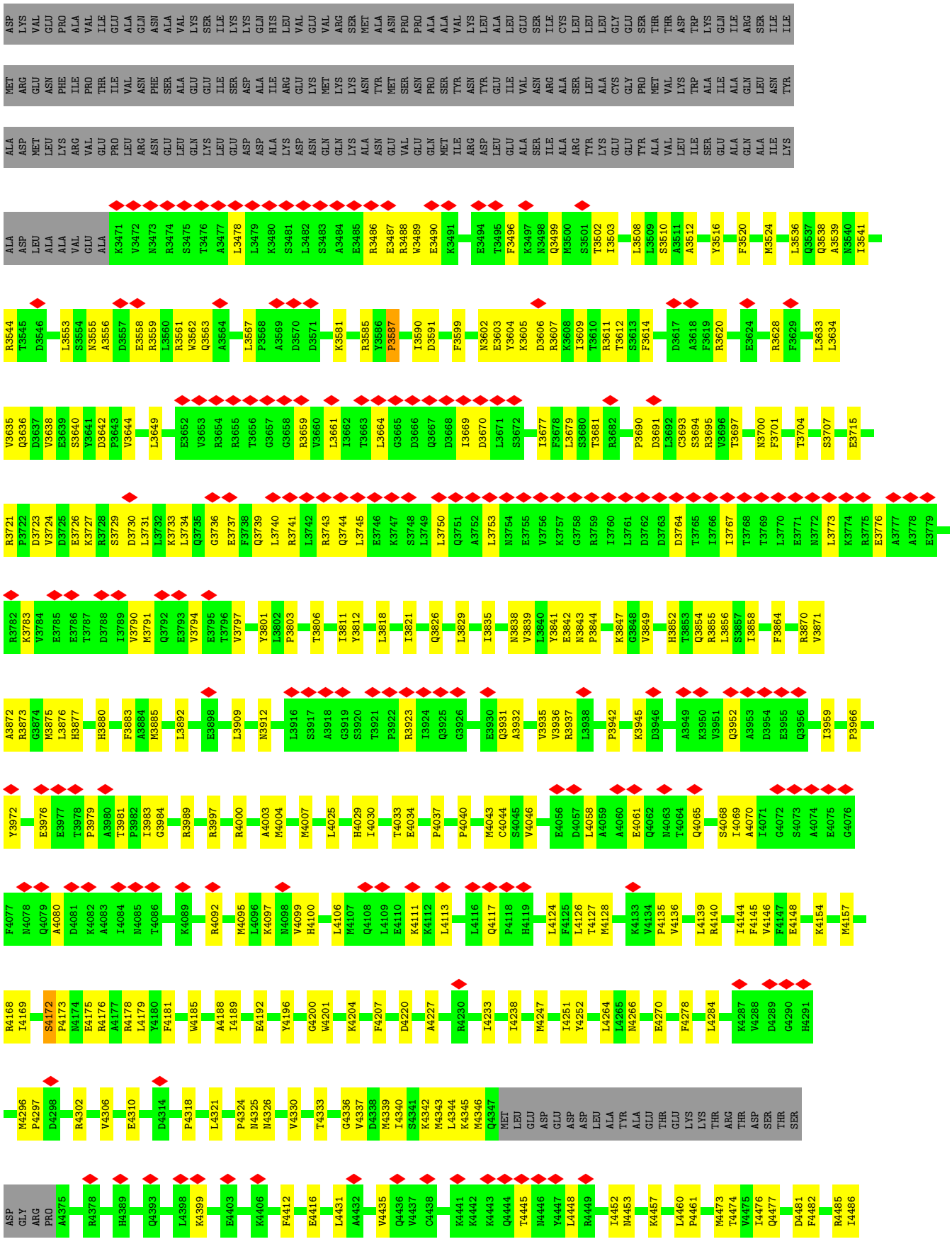
Chain A:






PHE ASN PHE GLN GLU LYS VAL ASP ASP LEU LEU ILE ILE GLU GLU LYS ILE ASP LEU GLU VAL ARG SER LEU GLU THR CYS MET TYR ASP HIS LYS THR PHE SER GLU ILE LEU ASN ARG VAL GLN LYS ALA VAL ASP ASP LEU ASN LEU HIS SER TYR SER ASN LEU PRO ILE TRP VAL
ASN LYS LEU ASP MET GLU ILE GLU ARG ILE LEU GLY VAL ARG LEU GLN ALA GLY LEU ARG ALA TRP THR GLN VAL LEU LEU GLY GLN ALA GLU ASP LYS ALA GLU VAL ASP MET ASP THR ASP ALA PRO GLN VAL SER HIS LYS PRO GLY GLY GLU PRO LYS ILE LYS ASN VAL VAL HIS
GLU LEU ARG ILE THR ASN GLN VAL ILE TYR LEU ASN PRO PRO ILE GLU GLU CYS ARG TYR LYS LEU TYR GLN GLU MET PHE ALA TRP LYS MET VAL VAL LEU SER LEU PRO ARG ILE GLN SER GLN ARG TYR GLN VAL GLY VAL HIS TYR GLU LEU THR GLU GLU GLU LYS PHE TYR ARG
ASN ALA LEU THR ARG MET PRO ASP GLY PRO VAL ALA LEU GLU GLU SER TYR SER ALA VAL MET GLY ILE VAL SER GLU VAL GLU GLN TYR VAL LYS VAL TRP LEU GLN TYR GLN CYS LEU TRP ASP MET GLN ALA GLU ASN ILE TYR ASN ARG LEU GLY GLU ASP LEU ASN LYS TRP GLN
ALA LEU LEU VAL GLN ILE ARG LYS ALA ARG GLY THR PHE ASP ASN ALA GLU THR LYS LYS GLU PHE GLY PRO VAL VAL ILE ASP TYR GLY LYS VAL GLN SER LYS VAL ASN LEU LYS TYR ASP SER TRP HIS LYS GLU VAL LEU SER LYS PHE GLY GLN MET LEU GLY SER ASN MET THR
GLU PHE HIS SER GLN ILE SER LYS SER ARG GLN GLU LEU GLU GLN HIS SER VAL ASP THR ALA SER THR SER ASP ALA VAL THR PHE ILE THR TYR VAL GLN SER LEU LYS ARG LYS ILE LYS GLN PHE GLU LYS GLN VAL GLU LEU TYR ARG ASN GLY GLN ARG LEU LEU GLU LYS GLN
ARG PHE GLN PHE PRO PRO SER TRP LEU TYR ILE ASP ASN ILE GLU GLY GLU TRP GLY ALA PHE ASN ASP ILE MET ARG ARG LYS ASP SER ALA ILE GLN GLN GLN VAL ALA ASN LEU GLN MET LYS ILE VAL GLN GLU ASP ARG ALA VAL GLU SER ARG THR THR ASP LEU LEU THR ASP
TRP GLU LYS THR LYS PRO VAL THR GLY ASN LEU ARG PRO GLU GLU ALA LEU GLN ALA LEU THR ILE TYR GLU GLY LYS PHE GLY ARG LEU LYS ASP ASP ARG GLU LYS CYS ALA LYS ALA LYS GLU ALA LEU GLU LEU THR ASP THR GLY LEU LEU SER GLY SER GLU GLU ARG VAL GLN
VAL ALA LEU GLU GLU LEU GLN ASP LEU LYS GLY VAL TRP SER GLU LEU SER LYS VAL TRP GLU GLN ILE ASP GLN MET LYS GLU GLN PRO TRP VAL SER VAL GLN PRO ARG LYS LEU ARG GLN ASN LEU ASP ALA LEU LEU ASN GLN LEU LYS SER PHE PRO ALA ARG LEU ARG GLN TYR
ALA SER TYR GLU PHE VAL GLN ARG LEU LEU LYS GLY TYR MET LYS ILE ASN MET LEU VAL ILE GLU LEU LYS SER GLU ALA LEU LYS ASP ARG HIS TRP LYS GLN LEU MET LYS ARG LEU HIS VAL ASN TRP VAL SER GLU LEU THR LEU GLY GLN ILE TRP ASP VAL ASP LEU GLN
LYS ASN GLU ALA ILE VAL LYS ASP VAL LEU LEU VAL ALA GLN GLY GLU MET ALA LEU GLU GLU PHE L1463 K1464 Q1465 I1466 R1467 E1468 V1469 W1470 N1471 T1472 Y1473 E1474 L1475 D1476 L1477 V1478 N1479 Y1480 Q1481 N1482 K1483 C1484 R1485 L1486 I1487 R1488 G1489 W1490 D1491 D1492 L1493 F1494 N1495 K1496 V1497 K1498 E1499 H1500
I1501 N1502 S1503 V1504 S1505 A1506 M1507 K1508 L1509 S1510 P1511 Y1512 Y1513 K1514 V1515 F1516 E1517 E1518 D1519 A1520 L1521 S1522 W1523 E1524 D1525 K1526 L1527 N1528 R1529 I1530 M1531 A1532 L1533 F1534 D1535 I1538 D1539 V1540 Q1541 R1542 R1543 W1544 G1549 T1552 G1553 S1554 A1555 K1558 H1559 L1560 L1561 P1562 V1563 E1564 T1565 Q1566
R1567 F1568 Q1569 S1572 T1573 E1574 F1575 L1576 A1577 L1578 M1579 K1580 K1581 V1582 S1583 K1584 S1585 P1586 L1587 V1588 M1589 D1590 V1591 L1592 N1593 I1594 Q1595 G1596 V1597 Q1598 R1599 S1600 L1601 E1602 R1603 L1604 A1605 D1606 K1610 K1613 E1617 Y1618 L1619 E1620 R1621 F1626 P1627 R1628 E1635 D1636 L1637 G1642
K1645 Q1651 A1659 I1665 L1666 N1667 E1668 D1669 N1670 E1680 G1681 E1682 M1685 I1692 T1693 E1694 K1697 I1698 N1699 E1700 W1701 L1702 M1709 R1710 V1711 T1712 L1713 A1714 K1715 V1721 V1724 E1725 K1729 A1730 T1731 S1732 I1733 D1734 T1737 L1749 V1750 V1751 L1752 E1760 T1764
G1770 G1771 G1772 G1773 D1774 A1775 S1783 V1787 T1788 L1789 S1795 Q1800 R1804 R1805 R1806 K1807 L1808 I1812 T1813 E1814 L1815 Q1818 K1834 S1840 Q1841 M1842 F1846 D1847 P1848 D1852 Q1855 Q1860 M1861 K1865 Y1868 E1871 Y1872 V1875 Q1876 D1877 K1878
R1887 C1888 M1892 R1899 S1903 P1904 T1910 G1911 K1912 G1920 H1921 Q1922 F1926 V1927 L1928 D1933 E1934 F1938 W1954 E1959 R1962 R1966 A1970 I1978 R1983 E1984 H1985 S1986 N1987 P1988 N1989 Y1990 D1991 K1992 T1993 S1994 A1995 P1996 I1997 T1998 L2001 L2002 N2003


K2007 M2018 N2019 PRO GLY TYR ALA GLY ARG SER ASN L2028 K2034 L2035 F2036 R2037 S2038 L2039 P2044 D2045 R2046 F2059 L2065 A2066 N2067 K2068 I2069 V2070 P2071 L2075 Q2079 Y2086 L2090 L2093 L2097 G2101 K2104 R2105 E2106 Q2109 K2110 I2111 K2112 R2113 E2114 LYS
GLU GLU ARG GLY GLU ALA VAL ASP GLU GLY GLU I2127 N2130 L2131 P2132 E2133 Q2134 E2135 I2138 E2152 D2153 L2160 L2161 V2164 F2165 R2179 E2188 D2195 E2205 L2208 Q2209 L2210 I2213 L2220 M2221 S2226 G2227 K2230 S2231 M2232 A2233 W2234 R2235 K2239
E2242 R2243 L2244 E2245 G2246 V2247 E2248 K2261 Y2265 D2269 P2270 R2273 D2277 F2280 K2286 V2291 R2292 G2293 E2294 L2295 Q2296 W2300 D2306 V2307 D2308 P2309 E2310 W2311 V2312 E2313 N2314 L2315 D2320 D2321 L2327 G2330 E2331 R2332 L2333 S2334 N2338 V2339 R2340 F2343 E2344
V2345 Q2346 Y2350 A2351 T2352 L2353 A2354 T2355 V2356 S2357 R2358 M2361 F2364 S2365 V2368 L2369 S2370 T2371 I2374 N2377 L2382 R2383 D2389 GLY GLU ASP GLU ALA GLN ARG ARG ARG LYS GLY LYS GLU ASP GLU GLY GLU GLU ALA ALA S2410 P2411 M2412 L2413 Q2416 R2417 M2423
Q2424 F2427 T2428 S2429 N2430 L2437 E2438 H2439 A2440 F2441 Q2442 H2445 L2449 T2450 R2451 C2454 S2457 L2458 L2462 R2467 N2468 V2469 A2470 Q2471 Y2472 D2478 M2481 Q2485 R2488 I2498 L2499 W2500 S2501 L2502 D2505 P2527 P2530 N2531 I2532 P2533 I2534 I2535 W2545
Q2554 D2566 V2569 R2576 H2577 L2581 W2584 P2590 L2591 V2592 L2593 P2596 L2605 L2609 R2610 P2613 D2614 M2615 E2616 V2617 F2622 S2623 S2624 A2625 T2626 T2627 P2628 E2629 L2630 K2633 T2634 F2635 D2636 H2637 E2640 R2643 N2646 G2647 V2648 V2649 L2650 A2651 P2652 V2653
Q2654 L2655 V2660 L2661 F2662 C2663 D2664 E2665 L2668 P2669 D2670 M2671 D2672 K2673 F2682 M2686 D2697 V2701 K2702 L2703 E2704 R2705 I2706 Q2707 F2708 V2709 G2710 R2720 K2721 R2726 V2731 P2732 V2733 V2734 Y2735 Y2738 P2739 G2740 S2743 I2747 Y2748 G2749 R2753 L2756 R2757 L2758
I2759 L2762 A2766 T2770 M2773 V2774 R2783 F2784 T2785 Q2786 D2787 W2802 I2806 A2809 L2810 T2815 L2816 P2817 V2818 E2819 G2820 L2821 I2822 R2823 I2824 W2825 A2826 A2829 L2830 R2831 L2832 F2833 V2838 E2839 D2840 R2844 W2845 T2846 D2847 E2848 N2849 I2850 D2851 T2852 V2853 A2854 L2855
D2862 R2863 E2864 K2865 A2866 M2867 S2868 R2869 P2870 I2871 S2878 K2879 D2880 D2885 Q2886 E2887 R2890 K2894 K2898 E2903 E2904 L2905 D2906 V2910 N2913 I2922 D2923 R2924 I2925 Q2928 P2929 Q2930 L2933 L2934 L2935 I2936 G2937 V2938 S2939 T2944 R2948 I2961 K2962 V2963 H2964 R2965
K2966 E2970 D2971 L2976 V2979 L2980 R2981 K2986 N2987 E2988 M2994 D2995 E2996 S2997 N2998 V2999 L3000 D3001 F3004 L3005 E3006 R3007 M3008 G3015 F3021 E3022 G3023 D3024 E3025 Y3026 L3029 M3030 T3031 Q3032 C3033 K3034 E3035 G3036 A3037 Q3038 K3039 E3040 G3041 L3042 M3043 L3044 D3045 S3046 H3047 E3048 E3049
L3050 Y3051 K3052 W3053 F3054 T3055 I3059 V3065 F3066 T3067 M3068 N3069 P3070 S3071 S3072 E3073 G3074 L3075 K3076 D3077 R3078 A3079 A3080 T3081 A3084 L3085 F3086 N3087 N3092 W3093 F3094 G3095 D3096 A3101 V3105 M3113 N3119 P3123 D3124 Y3125 M3126 P3127 V3128 V3129 Y3130 D3131 K3132 L3133 P3134 Q3135 P3136
P3137 S3138 H3139 R3140 E3141 V3144 N3145 S3146 C3147 V3148 H3151 Q3152 T3153 L3154 H3155 Q3156 A3157 N3158 K3163 R3164 M3169 T3172 Y3176 E3193 L3194 E3195 E3196 Q3197 Q3198 M3199 H3200 L3201 N3202 V3203 G3204 L3205 R3206 K3207 I3208 K3209 E3210 T3211 V3212 D3213 Q3214 V3215 E3216 E3217 L3218 R3219 R3220 ASP LEU
ARG ILE LYS SER GLN GLU LEU GLU VAL LYS ASN ALA ALA ASN ASP LYS LEU LYS LYS MET VAL LYS ASP GLN GLU ALA GLU LYS LYS LYS VAL MET SER GLN GLU ILE GLN GLU GLN LEU HIS LYS GLN GLN GLU VAL ILE ALA ASP LYS GLN MET SER VAL LYS GLU ASP LEU




Q4490
N4491
I4492
S4493
A4497
K4502
E4503
I4507
F4515
Y4520
L4536
E4537
E4538
V4543
T4547
S4548
Q4549
G4550
A4551
T4552
C4570
N4571
L4575
S4576
L4577
S4578
N4579
A4580
I4581
K4594
Q4595
T4596
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K4600
K4601
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S4603
V4609
Y4610
L4611
R4615
I4619
F4620

T4621
V4622
D4623
F4624
T4628
K4629
E4630
D4631
S4634
E4637
R4638
V4642
T4645
GLU

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	433112	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 ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.677	Depositor
Minimum map value	-1.892	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.050	Depositor
Recommended contour level	0.3	Depositor
Map size (Å)	412.488, 412.488, 412.488	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1458, 1.1458, 1.1458	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.15	1/23533 (0.0%)	0.36	4/31898 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	3587	PRO	CG-CD	-5.96	1.30	1.50

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	3587	PRO	N-CD-CG	-10.98	86.73	103.20
1	A	3587	PRO	CA-CB-CG	-8.66	88.05	104.50
1	A	3587	PRO	N-CA-CB	-6.07	98.07	103.35
1	A	3587	PRO	CA-N-CD	-5.47	104.34	112.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	23040	0	23108	513	0
2	A	81	0	36	0	0
3	A	31	0	12	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	23152	0	23156	513	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 11.

All (513) 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:3151:HIS:HD1	1:A:3516:TYR:HH	1.26	0.79
1:A:4043:MET:HB2	1:A:4127:THR:HA	1.63	0.79
1:A:1511:PRO:HG3	1:A:3628:ARG:HE	1.47	0.78
1:A:3209:LYS:HG3	1:A:3486:ARG:HH21	1.48	0.78
1:A:3137:PRO:HB3	1:A:3141:GLU:HB2	1.66	0.77
1:A:3113:MET:O	1:A:3140:ARG:NH2	2.18	0.76
1:A:1814:GLU:HG2	1:A:1878:LYS:HE2	1.67	0.76
1:A:2261:LYS:HE3	1:A:2311:TRP:HB3	1.68	0.75
1:A:3942:PRO:HA	1:A:3945:LYS:HE3	1.69	0.75
1:A:1582:VAL:HG23	1:A:1591:VAL:HG11	1.69	0.74
1:A:2822:ILE:HD11	1:A:2854:ALA:HB1	1.70	0.73
1:A:3730:ASP:OD1	1:A:3733:LYS:NZ	2.21	0.73
1:A:3158:ASN:ND2	1:A:3169:MET:O	2.20	0.73
1:A:4326:ASN:HD21	1:A:4581:ILE:HG23	1.53	0.73
1:A:3839:VAL:O	1:A:3843:ASN:ND2	2.23	0.71
1:A:2500:TRP:HZ2	1:A:2576:ARG:HD3	1.55	0.71
1:A:3826:GLN:HB3	1:A:4140:ARG:HD2	1.73	0.71
1:A:3585:ARG:HB2	1:A:3697:THR:HG23	1.72	0.70
1:A:2294:GLU:O	1:A:2338:ASN:ND2	2.25	0.70
1:A:2467:ARG:O	1:A:2471:GLN:NE2	2.25	0.70
1:A:3602:ASN:HA	1:A:3605:LYS:HE3	1.74	0.70
1:A:1751:VAL:HG13	1:A:1814:GLU:HG3	1.71	0.70
1:A:2829:ALA:O	1:A:2833:PHE:HB2	1.91	0.69
1:A:2640:GLU:HG2	1:A:2653:VAL:HG22	1.74	0.69
1:A:2138:ILE:HD12	1:A:2161:LEU:HD22	1.74	0.69
1:A:2354:ALA:HB1	1:A:2358:ARG:HH21	1.57	0.69
1:A:1978:ILE:HD11	1:A:2001:LEU:HD11	1.76	0.68
1:A:1709:MET:HE3	1:A:1871:GLU:HA	1.75	0.68
1:A:1588:VAL:HG13	1:A:1589:MET:HE3	1.76	0.67
1:A:2625:ALA:HB3	1:A:3006:GLU:HG3	1.76	0.67
1:A:3510:SER:HB3	1:A:3553:LEU:HD21	1.75	0.67
1:A:4176:ARG:NH1	1:A:4220:ASP:OD1	2.28	0.67
1:A:2885:ASP:OD2	1:A:2886:GLN:N	2.28	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2485:GLN:OE1	1:A:2488:ARG:NH2	2.27	0.66
1:A:4037:PRO:HG2	1:A:4117:GLN:HE21	1.61	0.66
1:A:1795:SER:O	1:A:1800:GLN:NE2	2.28	0.66
1:A:4324:PRO:HD3	1:A:4638:ARG:HG3	1.78	0.65
1:A:3912:ASN:O	1:A:3937:ARG:NH1	2.30	0.65
1:A:4033:THR:OG1	1:A:4034:GLU:OE1	2.15	0.65
1:A:2867:MET:SD	1:A:2868:SER:N	2.69	0.64
1:A:3194:LEU:HD13	1:A:3503:ILE:HD11	1.79	0.64
1:A:1808:LEU:O	1:A:1812:ILE:HD12	1.98	0.64
1:A:4065:GLN:HE21	1:A:4092:ARG:HD3	1.62	0.64
1:A:4448:LEU:O	1:A:4452:ILE:HG12	1.98	0.64
1:A:3736:GLY:O	1:A:3740:LEU:N	2.31	0.64
1:A:1711:VAL:O	1:A:1715:LYS:HG2	1.98	0.64
1:A:2937:GLY:HA3	1:A:3094:PHE:HB2	1.80	0.63
1:A:3004:PHE:O	1:A:3008:MET:HG2	1.98	0.63
1:A:3691:ASP:HB2	1:A:3695:ARG:HH12	1.65	0.62
1:A:2068:LYS:NZ	1:A:2164:VAL:O	2.32	0.62
1:A:2356:VAL:HG23	1:A:2361:MET:HE1	1.80	0.62
1:A:3875:MET:HE1	1:A:3883:PHE:HB2	1.82	0.62
1:A:2759:ILE:HD12	1:A:2762:LEU:HD12	1.82	0.62
1:A:3854:GLN:O	1:A:3858:ILE:HG13	2.00	0.61
1:A:3877:HIS:HA	1:A:3880:HIS:CD2	2.35	0.61
1:A:4577:LEU:HD22	1:A:4638:ARG:HD2	1.81	0.61
1:A:3561:ARG:NH1	1:A:3603:GLU:OE2	2.33	0.61
1:A:2505:ASP:HB3	1:A:2733:VAL:HG23	1.81	0.61
1:A:1752:LEU:HD11	1:A:1868:TYR:CZ	2.36	0.61
1:A:2413:LEU:O	1:A:2417:ARG:HG3	2.01	0.61
1:A:1659:ALA:HB2	1:A:1926:PHE:HD1	1.64	0.60
1:A:2704:GLU:HG3	1:A:2705:ARG:HG3	1.84	0.60
1:A:2816:LEU:HD12	1:A:2817:PRO:HD2	1.84	0.60
1:A:2265:TYR:OH	1:A:2311:TRP:O	2.19	0.60
1:A:2930:GLN:OE1	1:A:2930:GLN:N	2.27	0.60
1:A:3508:LEU:HD23	1:A:3536:LEU:HD21	1.81	0.60
1:A:3923:ARG:HH12	1:A:3952:GLN:HB2	1.67	0.60
1:A:2663:CYS:HB2	1:A:2710:GLY:HA2	1.84	0.60
1:A:3520:PHE:HB3	1:A:3524:MET:HB3	1.84	0.60
1:A:3826:GLN:HB2	1:A:4139:LEU:HB3	1.85	0.59
1:A:2270:PRO:HA	1:A:2273:ARG:HH21	1.67	0.59
1:A:1760:GLU:O	1:A:1764:THR:HG23	2.02	0.59
1:A:3215:VAL:HG11	1:A:3478:LEU:HD11	1.83	0.59
1:A:4040:PRO:HB3	1:A:4124:LEU:HD22	1.85	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4172:SER:HB2	1:A:4173:PRO:HD2	1.84	0.59
1:A:1721:VAL:HA	1:A:1724:VAL:HG12	1.84	0.58
1:A:1587:LEU:HB3	1:A:1590:ASP:HB2	1.85	0.58
1:A:3849:VAL:HG12	1:A:3855:ARG:HG3	1.85	0.58
1:A:2622:PHE:CD1	1:A:2626:THR:HG21	2.38	0.58
1:A:1734:ASP:HB3	1:A:1737:THR:HG22	1.84	0.58
1:A:3981:THR:HG23	1:A:3984:GLY:H	1.67	0.58
1:A:2280:PHE:HE1	1:A:2315:LEU:HD21	1.68	0.58
1:A:2179:ARG:HE	1:A:2208:LEU:HD11	1.69	0.58
1:A:3972:TYR:HE1	1:A:3989:ARG:HH21	1.51	0.58
1:A:1910:THR:HG23	1:A:2044:PRO:HD3	1.85	0.57
1:A:1852:ASP:OD2	1:A:1855:GLN:NE2	2.31	0.57
1:A:1887:ARG:HD3	1:A:2039:LEU:HD11	1.85	0.57
1:A:3909:LEU:HB3	1:A:4344:LEU:HD13	1.86	0.57
1:A:1561:LEU:HD23	1:A:1564:GLU:HG3	1.87	0.57
1:A:3873:ARG:HD2	1:A:4025:LEU:HD13	1.87	0.57
1:A:4201:TRP:HZ3	1:A:4207:PHE:HE1	1.52	0.57
1:A:2773:MET:HG3	1:A:2825:TRP:HE1	1.68	0.57
1:A:2890:ARG:HG2	1:A:2894:LYS:HE2	1.87	0.57
1:A:2933:LEU:HD12	1:A:3065:VAL:HG22	1.87	0.57
1:A:4445:THR:HG22	1:A:4448:LEU:HD23	1.86	0.57
1:A:2210:LEU:HG	1:A:2220:LEU:HD21	1.87	0.57
1:A:2533:PRO:HB2	1:A:2535:ILE:HG22	1.87	0.57
1:A:2623:SER:HA	1:A:2668:LEU:HD23	1.87	0.57
1:A:2816:LEU:HD11	1:A:2820:GLY:HA3	1.86	0.57
1:A:2961:ILE:HB	1:A:2998:ASN:HD21	1.68	0.57
1:A:4176:ARG:HH12	1:A:4220:ASP:HA	1.68	0.57
1:A:2851:ASP:OD1	1:A:2865:LYS:NZ	2.38	0.56
1:A:4106:LEU:HD23	1:A:4135:PRO:HD2	1.87	0.56
1:A:3126:MET:HE1	1:A:3538:GLN:HG2	1.87	0.56
1:A:1511:PRO:HG2	1:A:3670:ASP:HB3	1.86	0.56
1:A:1814:GLU:OE2	1:A:1878:LYS:NZ	2.29	0.56
1:A:4399:LYS:NZ	1:A:4493:SER:OG	2.38	0.56
1:A:4453:ASN:O	1:A:4457:LYS:NZ	2.38	0.56
1:A:2292:ARG:H	1:A:2292:ARG:HH11	1.53	0.56
1:A:3208:ILE:HB	1:A:3486:ARG:HH22	1.71	0.56
1:A:4172:SER:OG	1:A:4176:ARG:NE	2.28	0.56
1:A:2280:PHE:CE1	1:A:2315:LEU:HD21	2.41	0.55
1:A:2826:ALA:HA	1:A:2850:ILE:HD11	1.88	0.55
1:A:2423:MET:HE2	1:A:2427:PHE:HE2	1.71	0.55
1:A:2437:LEU:HD21	1:A:2451:ARG:HG3	1.87	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2665:GLU:HB3	1:A:2668:LEU:HB2	1.88	0.55
1:A:4318:PRO:HG2	1:A:4325:ASN:HA	1.89	0.55
1:A:1846:PHE:CE2	1:A:1848:PRO:HG3	2.41	0.55
1:A:2308:ASP:HB3	1:A:2311:TRP:NE1	2.21	0.55
1:A:2231:SER:HA	1:A:2234:TRP:CD1	2.41	0.55
1:A:2320:ASP:HB3	1:A:2358:ARG:HD3	1.87	0.55
1:A:2622:PHE:HD1	1:A:2626:THR:HG21	1.72	0.55
1:A:2849:ASN:HA	1:A:2852:THR:HG22	1.87	0.55
1:A:2065:LEU:HD11	1:A:2133:GLU:HB3	1.88	0.55
1:A:3734:LEU:HD21	1:A:3783:LYS:HB3	1.89	0.54
1:A:4069:ILE:HD13	1:A:4080:ALA:HA	1.89	0.54
1:A:2925:ILE:HG21	1:A:2933:LEU:HG	1.87	0.54
1:A:3033:CYS:HB2	1:A:3053:TRP:HZ3	1.72	0.54
1:A:2922:ILE:HG23	1:A:2933:LEU:HD11	1.89	0.54
1:A:1626:PHE:CE1	1:A:1628:ARG:HB2	2.42	0.54
1:A:3126:MET:SD	1:A:3539:ALA:HB2	2.48	0.54
1:A:2457:SER:HB3	1:A:2732:PRO:HB3	1.88	0.54
1:A:3691:ASP:O	1:A:3695:ARG:NH1	2.40	0.54
1:A:3567:LEU:HB2	1:A:3599:PHE:CE1	2.42	0.54
1:A:4227:ALA:HB2	1:A:4233:ILE:HD13	1.89	0.54
1:A:3207:LYS:HE3	1:A:3753:LEU:HB3	1.90	0.54
1:A:4247:MET:HG2	1:A:4251:ILE:HD11	1.90	0.54
1:A:3614:PHE:HE2	1:A:3638:VAL:HG12	1.73	0.53
1:A:3724:VAL:HA	1:A:3727:LYS:HG2	1.89	0.53
1:A:4169:ILE:HG21	1:A:4302:ARG:HE	1.73	0.53
1:A:1463:LEU:HB2	1:A:1507:MET:HE1	1.90	0.53
1:A:2441:PHE:HA	1:A:2449:LEU:HD23	1.90	0.53
1:A:3502:THR:OG1	1:A:3544:ARG:N	2.42	0.53
1:A:3034:LYS:O	1:A:3038:GLN:HG2	2.09	0.53
1:A:3148:VAL:O	1:A:3152:GLN:HG2	2.08	0.53
1:A:3055:THR:O	1:A:3059:ILE:HG12	2.08	0.53
1:A:3638:VAL:HG11	1:A:3679:LEU:HB3	1.91	0.53
1:A:3730:ASP:HA	1:A:3733:LYS:HZ2	1.73	0.53
1:A:4201:TRP:CZ3	1:A:4207:PHE:HE1	2.26	0.53
1:A:2630:LEU:HA	1:A:2633:LYS:NZ	2.23	0.53
1:A:1806:ARG:NH2	1:A:1876:GLN:O	2.42	0.53
1:A:2113:ARG:O	1:A:2113:ARG:HG3	2.08	0.53
1:A:2221:MET:HG3	1:A:2343:PHE:HB2	1.91	0.53
1:A:3731:LEU:HD11	1:A:3790:VAL:HG12	1.90	0.53
1:A:2648:VAL:HG12	1:A:2701:VAL:HG23	1.90	0.53
1:A:3499:GLN:O	1:A:3503:ILE:HG13	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4201:TRP:HE1	1:A:4264:LEU:HD23	1.74	0.53
1:A:1618:TYR:HA	1:A:1621:ARG:HG2	1.91	0.52
1:A:2423:MET:HE1	1:A:2462:LEU:HD13	1.90	0.52
1:A:2802:TRP:CZ2	1:A:2829:ALA:HB2	2.44	0.52
1:A:1959:GLU:HB3	1:A:1962:ARG:HG3	1.90	0.52
1:A:3723:ASP:O	1:A:3726:GLU:HG3	2.10	0.52
1:A:3729:SER:O	1:A:3733:LYS:HG3	2.09	0.52
1:A:2232:MET:HE2	1:A:2232:MET:HA	1.92	0.52
1:A:3741:ARG:HH12	1:A:3776:GLU:HG2	1.75	0.52
1:A:3559:ARG:O	1:A:3563:GLN:HG2	2.08	0.52
1:A:2963:VAL:HG11	1:A:2998:ASN:HA	1.92	0.52
1:A:2944:THR:O	1:A:2948:ARG:HG3	2.10	0.52
1:A:2382:LEU:O	1:A:2416:GLN:NE2	2.39	0.52
1:A:3818:LEU:HD23	1:A:4346:MET:HE2	1.91	0.52
1:A:4247:MET:O	1:A:4252:TYR:HB2	2.10	0.52
1:A:2910:VAL:HG21	1:A:3105:VAL:HG22	1.92	0.51
1:A:4492:ILE:HG12	1:A:4507:ILE:HD13	1.91	0.51
1:A:4070:ALA:HA	1:A:4097:LYS:HB2	1.92	0.51
1:A:2079:GLN:HG2	1:A:2160:LEU:HD21	1.91	0.51
1:A:2581:LEU:HD13	1:A:2605:LEU:HD12	1.92	0.51
1:A:4188:ALA:O	1:A:4192:GLU:HG2	2.10	0.51
1:A:1659:ALA:HB2	1:A:1926:PHE:CD1	2.43	0.51
1:A:1666:LEU:HB3	1:A:1670:ASN:HA	1.92	0.51
1:A:3556:ALA:HB2	1:A:3737:GLU:OE1	2.11	0.51
1:A:4306:VAL:O	1:A:4310:GLU:HG3	2.11	0.51
1:A:2635:PHE:HB3	1:A:2650:LEU:HD11	1.91	0.51
1:A:3876:LEU:HD23	1:A:4146:VAL:HG11	1.90	0.51
1:A:2346:GLN:HB2	1:A:2726:ARG:HD2	1.92	0.51
1:A:3838:ASN:HA	1:A:3842:GLU:CD	2.36	0.51
1:A:2383:ARG:NH2	1:A:2424:GLN:OE1	2.43	0.51
1:A:1599:ARG:O	1:A:1602:GLU:HG3	2.10	0.51
1:A:2823:ARG:HE	1:A:2871:ILE:HG23	1.75	0.51
1:A:4201:TRP:HZ3	1:A:4207:PHE:CE1	2.29	0.51
1:A:2818:VAL:O	1:A:2822:ILE:HG22	2.11	0.51
1:A:3649:LEU:HB3	1:A:3695:ARG:HB3	1.93	0.51
1:A:1533:LEU:HD11	1:A:1597:VAL:HG12	1.93	0.51
1:A:2354:ALA:HB1	1:A:2358:ARG:NH2	2.25	0.51
1:A:3704:THR:H	1:A:3707:SER:HB3	1.76	0.50
1:A:4168:ARG:NH1	1:A:4220:ASP:OD2	2.41	0.50
1:A:3487:GLU:O	1:A:3490:GLU:HG3	2.11	0.50
1:A:3488:ARG:HH12	1:A:3773:LEU:HD22	1.77	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1619:LEU:HG	1:A:1637:LEU:HD23	1.94	0.50
1:A:2071:PRO:O	1:A:2075:LEU:HG	2.12	0.50
1:A:4460:LEU:HD12	1:A:4461:PRO:HD2	1.93	0.50
1:A:3690:PRO:HA	1:A:3693:CYS:HB2	1.94	0.50
1:A:1698:ILE:HA	1:A:1701:TRP:CD1	2.47	0.49
1:A:1933:ASP:OD1	1:A:1934:GLU:N	2.43	0.49
1:A:3128:VAL:HG22	1:A:3145:ASN:OD1	2.12	0.49
1:A:1904:PRO:HB2	1:A:1912:LYS:HB3	1.94	0.49
1:A:2308:ASP:HB3	1:A:2311:TRP:CD1	2.47	0.49
1:A:1899:ARG:HB3	1:A:1983:ARG:HA	1.95	0.49
1:A:2862:ASP:OD1	1:A:2863:ARG:N	2.45	0.49
1:A:2935:LEU:HD23	1:A:3092:ASN:HB2	1.94	0.49
1:A:3193:GLU:O	1:A:3196:GLU:HG3	2.12	0.49
1:A:1680:GLU:CD	1:A:1680:GLU:H	2.20	0.49
1:A:2868:SER:OG	1:A:2870:PRO:HD2	2.12	0.49
1:A:3923:ARG:NH1	1:A:3952:GLN:HB2	2.28	0.49
1:A:2527:PRO:HD3	1:A:2545:TRP:CD2	2.48	0.49
1:A:2756:LEU:HD12	1:A:2766:ALA:HB2	1.94	0.49
1:A:4486:ILE:O	1:A:4490:GLN:HG3	2.12	0.49
1:A:1926:PHE:CE2	1:A:1928:LEU:HD11	2.47	0.49
1:A:2759:ILE:HG13	1:A:2759:ILE:O	2.13	0.49
1:A:3030:MET:HE1	1:A:3051:TYR:HB2	1.94	0.49
1:A:4474:THR:HG22	1:A:4476:ILE:H	1.78	0.49
1:A:1888:CYS:HA	1:A:2039:LEU:HD22	1.95	0.49
1:A:2188:GLU:OE2	1:A:2243:ARG:NH2	2.46	0.49
1:A:2327:LEU:HD12	1:A:2331:GLU:HB3	1.95	0.49
1:A:2838:VAL:HG13	1:A:3093:TRP:CZ2	2.47	0.49
1:A:3628:ARG:HD3	1:A:3628:ARG:O	2.12	0.49
1:A:2457:SER:OG	1:A:2501:SER:HB2	2.13	0.49
1:A:2671:MET:HB2	1:A:2721:LYS:HG2	1.95	0.49
1:A:3133:LEU:N	1:A:3134:PRO:HD3	2.27	0.49
1:A:4068:SER:HA	1:A:4095:MET:HB3	1.95	0.49
1:A:4140:ARG:HG3	1:A:4140:ARG:HH11	1.78	0.49
1:A:1927:VAL:HG22	1:A:1954:TRP:HB2	1.95	0.49
1:A:2134:GLN:O	1:A:2138:ILE:HG12	2.13	0.49
1:A:3724:VAL:HG21	1:A:3797:VAL:HG11	1.93	0.49
1:A:4046:VAL:HG21	1:A:4148:GLU:HG2	1.93	0.49
1:A:1698:ILE:HA	1:A:1701:TRP:NE1	2.28	0.48
1:A:4481:ASP:OD1	1:A:4482:PHE:N	2.46	0.48
1:A:2269:ASP:OD1	1:A:2269:ASP:N	2.46	0.48
1:A:2617:VAL:HG13	1:A:2660:VAL:HG23	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3628:ARG:HD3	1:A:3628:ARG:C	2.38	0.48
1:A:3587:PRO:O	1:A:3587:PRO:HG2	2.12	0.48
1:A:3931:GLN:O	1:A:3935:VAL:HG23	2.13	0.48
1:A:4175:GLU:HG3	1:A:4278:PHE:CE2	2.48	0.48
1:A:1711:VAL:HG13	1:A:1715:LYS:HE3	1.95	0.48
1:A:2449:LEU:HD11	1:A:2454:CYS:SG	2.53	0.48
1:A:2590:PRO:HB2	1:A:2731:VAL:HG12	1.95	0.48
1:A:2831:ARG:HA	1:A:2831:ARG:NE	2.28	0.48
1:A:2849:ASN:O	1:A:2853:VAL:HG22	2.13	0.48
1:A:4445:THR:H	1:A:4448:LEU:HB2	1.79	0.48
1:A:2660:VAL:HG12	1:A:2707:GLN:HB3	1.94	0.48
1:A:2740:GLY:N	1:A:2743:SER:OG	2.47	0.48
1:A:3591:ASP:HB3	1:A:3701:PHE:HB2	1.94	0.48
1:A:2104:LYS:NZ	1:A:2133:GLU:OE2	2.47	0.48
1:A:2785:THR:OG1	1:A:2787:ASP:OD1	2.27	0.48
1:A:2809:ALA:HB1	1:A:2824:ILE:HD13	1.96	0.48
1:A:3151:HIS:CE1	1:A:3176:TYR:HB2	2.48	0.48
1:A:3642:ASP:OD2	1:A:3644:VAL:HG12	2.14	0.48
1:A:1665:ILE:HG13	1:A:1685:MET:HE1	1.96	0.47
1:A:2309:PRO:HD3	1:A:2350:TYR:O	2.13	0.47
1:A:4100:HIS:HB3	1:A:4128:MET:HB2	1.96	0.47
1:A:1721:VAL:O	1:A:1725:GLU:HG2	2.15	0.47
1:A:2340:ARG:HG2	1:A:2340:ARG:HH11	1.78	0.47
1:A:2472:TYR:CE2	1:A:2481:MET:HB3	2.50	0.47
1:A:3801:TYR:CD1	1:A:3856:LEU:HD13	2.49	0.47
1:A:4095:MET:HE2	1:A:4097:LYS:HE2	1.95	0.47
1:A:4178:ARG:HD2	1:A:4278:PHE:CE2	2.49	0.47
1:A:2365:SER:O	1:A:2368:VAL:HG22	2.14	0.47
1:A:3034:LYS:NZ	1:A:3035:GLU:OE2	2.46	0.47
1:A:2309:PRO:HG3	1:A:2352:THR:HG23	1.96	0.47
1:A:3555:ASN:HB2	1:A:3558:GLU:OE1	2.15	0.47
1:A:2999:VAL:HG11	1:A:3078:ARG:HH12	1.78	0.47
1:A:3144:VAL:O	1:A:3148:VAL:HG23	2.14	0.47
1:A:1938:PHE:HZ	1:A:1970:ALA:HB3	1.79	0.47
1:A:2609:LEU:HD22	1:A:2660:VAL:HG21	1.97	0.47
1:A:3872:ALA:HB1	1:A:3880:HIS:ND1	2.30	0.47
1:A:4575:LEU:HG	1:A:4624:PHE:HB3	1.97	0.47
1:A:1575:PHE:HD1	1:A:1604:LEU:HD21	1.80	0.47
1:A:2423:MET:CE	1:A:2462:LEU:HD13	2.45	0.47
1:A:2654:GLN:O	1:A:2705:ARG:NH2	2.48	0.47
1:A:2939:SER:O	1:A:3172:THR:HB	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4157:MET:HE1	1:A:4181:PHE:CE1	2.50	0.47
1:A:4416:GLU:OE2	1:A:4515:PHE:N	2.31	0.47
1:A:1682:GLU:OE1	1:A:1872:TYR:OH	2.27	0.47
1:A:2059:PHE:HE1	1:A:2101:GLY:HA2	1.80	0.47
1:A:2308:ASP:HB3	1:A:2311:TRP:HE1	1.80	0.47
1:A:2590:PRO:O	1:A:2732:PRO:HD2	2.15	0.47
1:A:2686:MET:SD	1:A:2703:LEU:HD11	2.55	0.47
1:A:2935:LEU:HD22	1:A:3094:PHE:CE1	2.50	0.47
1:A:3872:ALA:O	1:A:3880:HIS:HE1	1.98	0.47
1:A:1463:LEU:HD21	1:A:1519:ASP:HB3	1.97	0.47
1:A:4296:MET:SD	1:A:4297:PRO:HD2	2.55	0.47
1:A:4538:GLU:HB3	1:A:4594:LYS:HE2	1.96	0.47
1:A:1520:ALA:O	1:A:1524:GLU:N	2.47	0.46
1:A:3152:GLN:O	1:A:3156:GLN:HG2	2.14	0.46
1:A:2132:PRO:HB2	1:A:2135:GLU:OE1	2.15	0.46
1:A:2306:ASP:HA	1:A:2345:VAL:HG23	1.97	0.46
1:A:4175:GLU:HG3	1:A:4278:PHE:HE2	1.81	0.46
1:A:2890:ARG:NH2	1:A:2913:ASN:OD1	2.44	0.46
1:A:3197:GLN:HG3	1:A:3496:PHE:CE2	2.50	0.46
1:A:4266:ASN:O	1:A:4270:GLU:HG3	2.15	0.46
1:A:1804:ARG:O	1:A:1808:LEU:HD23	2.16	0.46
1:A:1998:THR:HG22	1:A:2007:LYS:HA	1.98	0.46
1:A:2034:LYS:HG3	1:A:2035:LEU:HG	1.97	0.46
1:A:2179:ARG:NH1	1:A:2195:ASP:OD1	2.49	0.46
1:A:2624:SER:HA	1:A:2669:PRO:HA	1.98	0.46
1:A:3739:GLN:O	1:A:3743:ARG:HG2	2.16	0.46
1:A:4030:ILE:HG21	1:A:4145:PHE:HZ	1.81	0.46
1:A:2226:SER:OG	3:A:4702:ATP:O1G	2.26	0.46
1:A:2937:GLY:C	1:A:3070:PRO:HD3	2.41	0.46
1:A:4201:TRP:NE1	1:A:4264:LEU:HD23	2.30	0.46
1:A:1503:SER:O	1:A:1507:MET:HG3	2.16	0.46
1:A:2138:ILE:HD11	1:A:2165:PHE:CG	2.51	0.46
1:A:2577:HIS:O	1:A:2581:LEU:HG	2.15	0.46
1:A:3659:ARG:HG3	1:A:3661:LEU:HG	1.96	0.46
1:A:3172:THR:HG21	1:A:3694:SER:HB3	1.98	0.46
1:A:2152:GLU:OE2	1:A:2152:GLU:N	2.42	0.45
1:A:4570:CYS:HB3	1:A:4575:LEU:HD23	1.98	0.45
1:A:2650:LEU:HD22	1:A:2703:LEU:HD22	1.98	0.45
1:A:4136:VAL:O	1:A:4140:ARG:HG2	2.17	0.45
1:A:3909:LEU:HD21	1:A:4343:MET:HE3	1.98	0.45
1:A:1699:ASN:OD1	1:A:1700:GLU:N	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3084:ALA:HA	1:A:3087:ASN:HB3	1.99	0.45
1:A:2209:GLN:O	1:A:2213:ILE:HG12	2.16	0.45
1:A:1789:LEU:HD13	1:A:1815:LEU:HB3	1.99	0.45
1:A:2037:ARG:HH21	1:A:4251:ILE:HA	1.81	0.45
1:A:2890:ARG:O	1:A:2894:LYS:HG3	2.15	0.45
1:A:4326:ASN:ND2	1:A:4579:ASN:O	2.50	0.45
1:A:2309:PRO:HA	1:A:2312:VAL:HG22	1.99	0.45
1:A:3204:GLY:HA2	1:A:3750:LEU:HD21	1.99	0.45
1:A:1501:ILE:HA	1:A:1504:VAL:HG22	1.98	0.45
1:A:1579:MET:HA	1:A:1582:VAL:HG12	1.99	0.45
1:A:2469:VAL:HG13	1:A:2481:MET:SD	2.57	0.45
1:A:2242:GLU:HG3	1:A:2248:GLU:HA	1.99	0.45
1:A:4611:LEU:HD23	1:A:4611:LEU:H	1.82	0.45
1:A:1561:LEU:HD11	1:A:1618:TYR:CG	2.52	0.44
1:A:1713:LEU:HD13	1:A:1749:LEU:HD11	1.99	0.44
1:A:2994:MET:HE2	1:A:2994:MET:HB3	1.82	0.44
1:A:3715:GLU:OE2	1:A:3841:TYR:OH	2.29	0.44
1:A:4502:LYS:HE2	1:A:4502:LYS:HB2	1.69	0.44
1:A:2445:HIS:NE2	1:A:2449:LEU:HD22	2.32	0.44
1:A:3590:ILE:HB	1:A:3700:ASN:HA	2.00	0.44
1:A:3612:THR:O	1:A:3635:VAL:HA	2.16	0.44
1:A:4154:LYS:HE3	1:A:4310:GLU:HA	1.98	0.44
1:A:1860:GLN:HG2	1:A:1865:LYS:HG2	2.00	0.44
1:A:2371:THR:HG22	1:A:2451:ARG:HD2	1.99	0.44
1:A:3976:GLU:HB3	1:A:3979:PRO:HD2	1.99	0.44
1:A:4185:TRP:CD1	1:A:4284:LEU:HD12	2.53	0.44
1:A:1697:LYS:HD2	1:A:1698:ILE:H	1.82	0.44
1:A:1888:CYS:O	1:A:1892:MET:HG2	2.18	0.44
1:A:2046:ARG:HG2	1:A:2090:LEU:HD13	2.00	0.44
1:A:2086:TYR:OH	1:A:2153:ASP:OD2	2.24	0.44
1:A:2663:CYS:N	1:A:2709:VAL:O	2.47	0.44
1:A:2770:THR:O	1:A:2774:VAL:HG23	2.18	0.44
1:A:4326:ASN:O	1:A:4330:VAL:HG23	2.18	0.44
1:A:1613:LYS:O	1:A:1617:GLU:HG2	2.18	0.44
1:A:2245:GLU:HB2	1:A:2247:VAL:HG12	2.00	0.44
1:A:2454:CYS:HB3	1:A:2502:LEU:HD12	1.98	0.44
1:A:3015:GLY:HA3	1:A:3059:ILE:HD11	2.00	0.44
1:A:4117:GLN:OE1	1:A:4117:GLN:N	2.50	0.44
1:A:1651:GLN:N	1:A:1651:GLN:OE1	2.49	0.44
1:A:2593:LEU:HD23	1:A:2734:VAL:HB	1.99	0.44
1:A:1920:GLY:HA3	1:A:1927:VAL:HG21	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2106:GLU:OE1	1:A:2109:GLN:NE2	2.50	0.43
1:A:4503:GLU:O	1:A:4507:ILE:HG13	2.17	0.43
1:A:2569:VAL:HG21	1:A:2747:ILE:HA	2.01	0.43
1:A:2845:TRP:CE2	1:A:2849:ASN:ND2	2.87	0.43
1:A:2374:ILE:HA	3:A:4702:ATP:H8	1.83	0.43
1:A:2806:ILE:O	1:A:2810:LEU:HG	2.18	0.43
1:A:3724:VAL:HG11	1:A:3797:VAL:HG21	2.01	0.43
1:A:3811:ILE:HD11	1:A:3864:PHE:CE1	2.53	0.43
1:A:4099:VAL:HG11	1:A:4126:LEU:HB3	2.01	0.43
1:A:4113:LEU:HD23	1:A:4113:LEU:HA	1.86	0.43
1:A:2831:ARG:HG3	1:A:2924:ARG:NH1	2.33	0.43
1:A:3609:ILE:HD11	1:A:3634:LEU:HB2	2.01	0.43
1:A:2458:LEU:O	1:A:2462:LEU:HG	2.19	0.43
1:A:2749:GLY:O	1:A:2753:ARG:HG3	2.18	0.43
1:A:3555:ASN:O	1:A:3559:ARG:HG3	2.19	0.43
1:A:3633:LEU:HB3	1:A:3677:ILE:HD12	2.01	0.43
1:A:3638:VAL:HG22	1:A:3681:THR:HB	2.01	0.43
1:A:1903:SER:N	1:A:2037:ARG:O	2.48	0.43
1:A:2354:ALA:O	1:A:2358:ARG:HB2	2.18	0.43
1:A:2596:PRO:HB2	1:A:2738:TYR:CE1	2.53	0.43
1:A:3620:ARG:HE	1:A:3620:ARG:HB3	1.56	0.43
1:A:3721:ARG:HG2	1:A:3852:HIS:CE1	2.53	0.43
1:A:4196:TYR:O	1:A:4200:GLY:N	2.51	0.43
1:A:4473:MET:HB2	1:A:4477:GLN:OE1	2.19	0.43
1:A:3157:ALA:HB1	1:A:3524:MET:HE2	2.01	0.43
1:A:3812:TYR:CZ	1:A:3829:LEU:HD13	2.54	0.43
1:A:3877:HIS:O	1:A:3877:HIS:ND1	2.49	0.43
1:A:4601:LYS:HE2	1:A:4603:SER:HB3	2.01	0.43
1:A:2075:LEU:HD11	1:A:4536:LEU:HD13	2.01	0.43
1:A:2981:ARG:NH1	1:A:3032:GLN:OE1	2.50	0.43
1:A:2995:ASP:OD2	1:A:2998:ASN:HB2	2.19	0.43
1:A:3562:TRP:CZ2	1:A:3581:LYS:HD2	2.54	0.43
1:A:4172:SER:CB	1:A:4176:ARG:HH21	2.32	0.43
1:A:3204:GLY:C	1:A:3489:TRP:HZ3	2.27	0.42
1:A:4333:THR:O	1:A:4337:VAL:HG23	2.19	0.42
1:A:1588:VAL:HA	1:A:1591:VAL:HG22	2.01	0.42
1:A:3745:LEU:HD12	1:A:3745:LEU:HA	1.88	0.42
1:A:4003:ALA:O	1:A:4007:MET:HG3	2.19	0.42
1:A:1544:TRP:HE1	1:A:1572:SER:HA	1.84	0.42
1:A:1635:GLU:OE1	1:A:1635:GLU:N	2.33	0.42
1:A:3029:LEU:HD11	1:A:3054:PHE:CZ	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3803:PRO:HA	1:A:3806:THR:HG22	2.01	0.42
1:A:3844:PRO:HA	1:A:3847:LYS:HE3	2.00	0.42
1:A:4004:MET:HE3	1:A:4007:MET:HB2	2.01	0.42
1:A:4543:VAL:HG21	1:A:4622:VAL:HG23	2.01	0.42
1:A:1504:VAL:HA	1:A:1507:MET:HE2	2.01	0.42
1:A:1554:SER:OG	1:A:1642:GLY:HA3	2.18	0.42
1:A:3892:LEU:HD13	1:A:3983:ILE:HG21	2.00	0.42
1:A:2410:SER:HB3	1:A:2411:PRO:HD3	2.01	0.42
1:A:3885:MET:HE3	1:A:3885:MET:HB2	1.81	0.42
1:A:4044:CYS:SG	1:A:4144:ILE:HG23	2.59	0.42
1:A:2668:LEU:HD13	1:A:2720:ARG:HH12	1.85	0.42
1:A:3005:LEU:HD21	1:A:3078:ARG:NH1	2.35	0.42
1:A:3146:SER:OG	1:A:3508:LEU:HD21	2.19	0.42
1:A:4179:LEU:HD11	1:A:4238:ILE:HD12	2.01	0.42
1:A:4189:ILE:HD13	1:A:4321:LEU:HD23	2.01	0.42
1:A:2227:GLY:O	1:A:2369:LEU:HD23	2.20	0.42
1:A:2852:THR:HA	1:A:2855:LEU:HG	2.01	0.42
1:A:2965:ARG:NH2	1:A:3640:SER:O	2.53	0.42
1:A:3562:TRP:HB3	1:A:3567:LEU:HD22	2.02	0.42
1:A:1692:ILE:HG23	1:A:1701:TRP:CD1	2.55	0.42
1:A:2592:VAL:HB	1:A:2733:VAL:HG12	2.02	0.42
1:A:2783:ARG:HD3	1:A:2845:TRP:CE2	2.54	0.42
1:A:2820:GLY:O	1:A:2824:ILE:HG13	2.20	0.42
1:A:2935:LEU:N	1:A:3066:PHE:O	2.45	0.42
1:A:3139:HIS:NE2	1:A:3541:ILE:HG23	2.34	0.42
1:A:3512:ALA:O	1:A:3516:TYR:HB2	2.19	0.42
1:A:2066:ALA:HA	1:A:2069:ILE:HG22	2.02	0.42
1:A:2277:ASP:OD1	1:A:2277:ASP:N	2.52	0.42
1:A:2300:TRP:CD1	1:A:2340:ARG:HB2	2.55	0.42
1:A:2961:ILE:HB	1:A:2998:ASN:ND2	2.34	0.42
1:A:3740:LEU:O	1:A:3744:GLN:HG2	2.20	0.42
1:A:3997:ARG:HH21	1:A:4000:ARG:HD3	1.85	0.42
1:A:2627:THR:OG1	1:A:2629:GLU:HG2	2.20	0.42
1:A:3604:TYR:HD1	1:A:3607:ARG:HD3	1.85	0.42
1:A:4634:SER:HA	1:A:4637:GLU:HG2	2.01	0.42
1:A:1492:ASP:OD1	1:A:1492:ASP:N	2.50	0.41
1:A:1814:GLU:O	1:A:1818:GLN:HG3	2.20	0.41
1:A:2457:SER:HB2	1:A:2584:TRP:CZ2	2.55	0.41
1:A:2628:PRO:HB3	1:A:2682:PHE:CD2	2.55	0.41
1:A:2635:PHE:HE1	1:A:2661:LEU:HD11	1.85	0.41
1:A:3154:LEU:HA	1:A:3154:LEU:HD12	1.73	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4339:MET:HE2	1:A:4339:MET:HB3	1.98	0.41
1:A:3030:MET:HA	1:A:3033:CYS:SG	2.60	0.41
1:A:3966:PRO:CD	1:A:4000:ARG:HG3	2.50	0.41
1:A:2179:ARG:NH2	1:A:2205:GLU:OE2	2.53	0.41
1:A:2633:LYS:NZ	1:A:2633:LYS:HB2	2.36	0.41
1:A:2851:ASP:OD2	1:A:2869:ARG:NH1	2.52	0.41
1:A:3196:GLU:HA	1:A:3199:MET:HG3	2.02	0.41
1:A:3611:ARG:NH2	1:A:3636:GLN:OE1	2.53	0.41
1:A:2847:ASP:O	1:A:2850:ILE:HG22	2.21	0.41
1:A:3835:ILE:HG12	1:A:3870:ARG:HD2	2.02	0.41
1:A:4178:ARG:HD2	1:A:4278:PHE:CD2	2.55	0.41
1:A:4631:ASP:OD1	1:A:4631:ASP:N	2.53	0.41
1:A:1840:SER:O	1:A:1861:MET:HE3	2.20	0.41
1:A:2230:LYS:HG2	1:A:2364:PHE:CD1	2.56	0.41
1:A:2925:ILE:O	1:A:2928:GLN:HG2	2.20	0.41
1:A:2935:LEU:O	1:A:3067:THR:HA	2.20	0.41
1:A:2936:ILE:HG12	1:A:3068:MET:HB3	2.03	0.41
1:A:3101:ALA:O	1:A:3105:VAL:HG23	2.20	0.41
1:A:3818:LEU:HD23	1:A:3818:LEU:HA	1.93	0.41
1:A:3821:ILE:HD13	1:A:4345:LYS:HD3	2.03	0.41
1:A:3932:ALA:O	1:A:3936:VAL:HG23	2.21	0.41
1:A:4342:LYS:O	1:A:4345:LYS:HG2	2.20	0.41
1:A:1834:LYS:HA	1:A:1834:LYS:HD2	1.90	0.41
1:A:2235:ARG:O	1:A:2239:LYS:HG2	2.20	0.41
1:A:2505:ASP:HA	1:A:2735:TYR:HB2	2.02	0.41
1:A:2976:LEU:HA	1:A:2979:VAL:HG12	2.02	0.41
1:A:3085:LEU:HD23	1:A:3085:LEU:HA	1.92	0.41
1:A:4628:THR:HG23	1:A:4629:LYS:HG3	2.02	0.41
1:A:1806:ARG:HE	1:A:1875:VAL:HG11	1.86	0.41
1:A:1985:HIS:ND1	1:A:1997:ILE:HD12	2.35	0.41
1:A:2377:ASN:C	1:A:2377:ASN:HD22	2.28	0.41
1:A:2498:ILE:HG23	1:A:2502:LEU:HD22	2.03	0.41
1:A:2668:LEU:HD13	1:A:2720:ARG:NH1	2.36	0.41
1:A:3743:ARG:HA	1:A:3743:ARG:HD3	1.93	0.41
1:A:3764:ASP:HA	1:A:3767:ILE:HB	2.02	0.41
1:A:3959:ILE:HD12	1:A:3959:ILE:H	1.85	0.41
1:A:4431:LEU:O	1:A:4435:VAL:HG23	2.20	0.41
1:A:2111:ILE:CD1	1:A:2131:LEU:HD21	2.51	0.41
1:A:3015:GLY:HA3	1:A:3059:ILE:CD1	2.51	0.41
1:A:3127:PRO:HG2	1:A:3130:TYR:CD1	2.55	0.41
1:A:3133:LEU:HD23	1:A:3141:GLU:OE2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3606:ASP:OD1	1:A:3607:ARG:HG3	2.20	0.41
1:A:3873:ARG:HA	1:A:3873:ARG:HD3	1.76	0.41
1:A:4609:VAL:HG22	1:A:4642:VAL:HB	2.03	0.41
1:A:4629:LYS:HE2	1:A:4629:LYS:HB2	1.90	0.41
1:A:3791:MET:HA	1:A:3794:VAL:HB	2.03	0.41
1:A:3871:VAL:HG12	1:A:3875:MET:SD	2.61	0.41
1:A:4204:LYS:HE2	1:A:4204:LYS:HB2	1.97	0.41
1:A:2605:LEU:HD11	1:A:2709:VAL:HG11	2.02	0.40
1:A:4412:PHE:CZ	1:A:4520:TYR:HB2	2.57	0.40
1:A:4610:TYR:CZ	1:A:4615:ARG:HB3	2.56	0.40
1:A:2093:LEU:O	1:A:2097:LEU:HG	2.21	0.40
1:A:2500:TRP:CZ2	1:A:2576:ARG:HD3	2.45	0.40
1:A:3664:LEU:HB3	1:A:3669:ILE:HD13	2.02	0.40
1:A:1783:SER:O	1:A:1787:VAL:HG23	2.22	0.40
1:A:2439:HIS:O	1:A:2442:GLN:HG2	2.22	0.40
1:A:3154:LEU:HD22	1:A:3516:TYR:CD1	2.56	0.40
1:A:3205:LEU:HG	1:A:3489:TRP:HE3	1.86	0.40
1:A:4111:LYS:HD3	1:A:4111:LYS:HA	1.81	0.40
1:A:4481:ASP:O	1:A:4485:ARG:HG3	2.22	0.40
1:A:4619:ILE:HG22	1:A:4620:PHE:HD1	1.86	0.40
1:A:1702:LEU:HA	1:A:1702:LEU:HD23	1.89	0.40
1:A:2018:MET:SD	1:A:2028:LEU:HB3	2.62	0.40
1:A:2527:PRO:HD3	1:A:2545:TRP:CE2	2.56	0.40
1:A:4336:GLY:O	1:A:4340:ILE:HG12	2.21	0.40
1:A:1842:MET:SD	1:A:1922:GLN:HG2	2.61	0.40
1:A:1912:LYS:HB2	1:A:1912:LYS:HE2	1.92	0.40
1:A:2231:SER:HA	1:A:2234:TRP:NE1	2.36	0.40
1:A:2880:ASP:OD2	1:A:2880:ASP:N	2.44	0.40
1:A:4058:LEU:O	1:A:4061:GLU:HG3	2.21	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	2854/4646 (61%)	2750 (96%)	103 (4%)	1 (0%)	100 100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	4172	SER

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	2548/4125 (62%)	2547 (100%)	1 (0%)	100 100

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4029	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1598	GLN
1	A	1755	GLN
1	A	1863	ASN
1	A	1894	GLN
1	A	1922	GLN
1	A	2005	GLN
1	A	2031	ASN
1	A	2134	GLN
1	A	2139	GLN
1	A	2187	GLN
1	A	2217	ASN
1	A	2439	HIS
1	A	2442	GLN
1	A	2471	GLN

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Mol	Chain	Res	Type
1	A	2689	HIS
1	A	2730	HIS
1	A	3182	HIS
1	A	3200	HIS
1	A	3214	GLN
1	A	3499	GLN
1	A	3542	GLN
1	A	3584	ASN
1	A	3772	ASN
1	A	3843	ASN
1	A	3880	HIS
1	A	3906	GLN
1	A	4065	GLN
1	A	4326	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

4 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	ADP	A	4701	-	24,29,29	0.87	0	29,45,45	1.28	2 (6%)
3	ATP	A	4702	-	28,33,33	0.67	0	34,52,52	0.61	1 (2%)
2	ADP	A	4703	-	24,29,29	0.91	0	29,45,45	1.23	3 (10%)
2	ADP	A	4704	-	24,29,29	0.86	0	29,45,45	1.24	2 (6%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	ADP	A	4701	-	-	3/12/32/32	0/3/3/3
3	ATP	A	4702	-	-	5/18/38/38	0/3/3/3
2	ADP	A	4703	-	-	1/12/32/32	0/3/3/3
2	ADP	A	4704	-	-	3/12/32/32	0/3/3/3

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	4704	ADP	N3-C2-N1	-3.84	123.47	128.67
2	A	4701	ADP	N3-C2-N1	-3.76	123.56	128.67
2	A	4703	ADP	N3-C2-N1	-3.68	123.68	128.67
2	A	4701	ADP	C4-C5-N7	-2.75	106.43	109.34
2	A	4704	ADP	C4-C5-N7	-2.56	106.63	109.34
2	A	4703	ADP	C4-C5-N7	-2.38	106.83	109.34
2	A	4703	ADP	O4'-C1'-N9	2.34	111.85	108.75
3	A	4702	ATP	C5-C6-N6	2.30	123.82	120.31

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	4701	ADP	C5'-O5'-PA-O1A
2	A	4701	ADP	C5'-O5'-PA-O2A
2	A	4701	ADP	C5'-O5'-PA-O3A
2	A	4704	ADP	C5'-O5'-PA-O1A
2	A	4704	ADP	O4'-C4'-C5'-O5'
3	A	4702	ATP	C5'-O5'-PA-O2A

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Mol	Chain	Res	Type	Atoms
3	A	4702	ATP	C5'-O5'-PA-O3A
2	A	4704	ADP	C3'-C4'-C5'-O5'
3	A	4702	ATP	O4'-C4'-C5'-O5'
3	A	4702	ATP	C3'-C4'-C5'-O5'
2	A	4703	ADP	O4'-C4'-C5'-O5'
3	A	4702	ATP	PA-O3A-PB-O2B

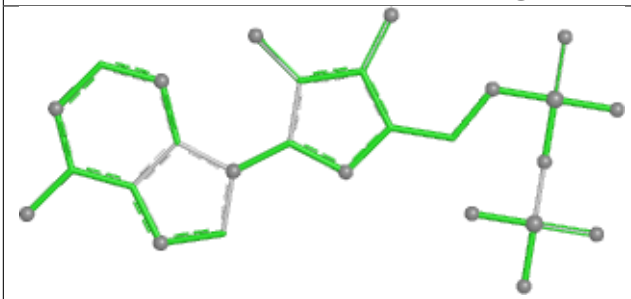
There are no ring outliers.

1 monomer is involved in 2 short contacts:

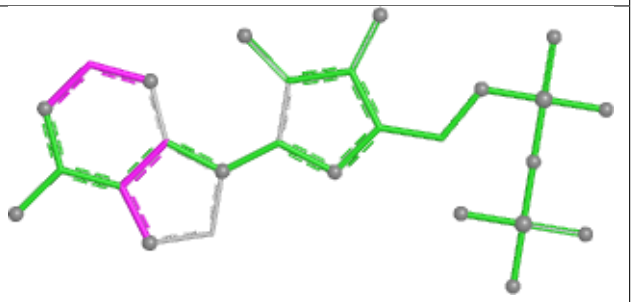
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	4702	ATP	2	0

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

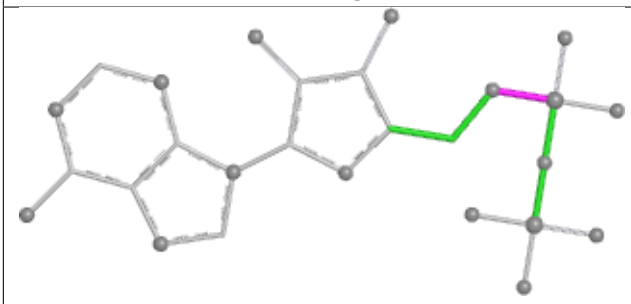
Ligand ADP A 4701



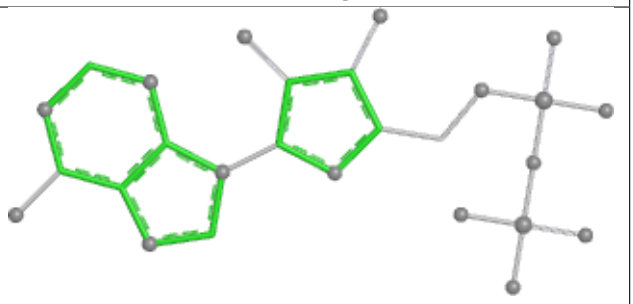
Bond lengths



Bond angles

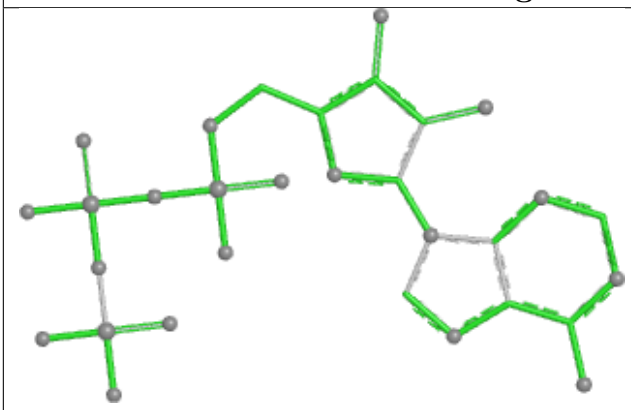


Torsions

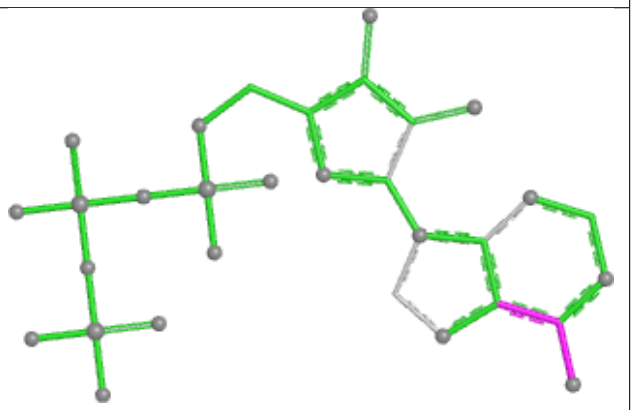


Rings

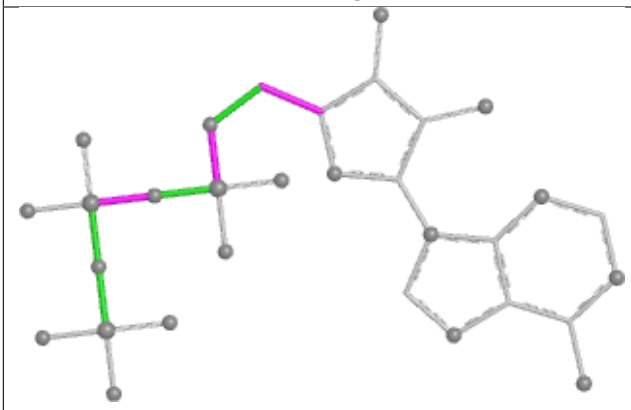
Ligand ATP A 4702



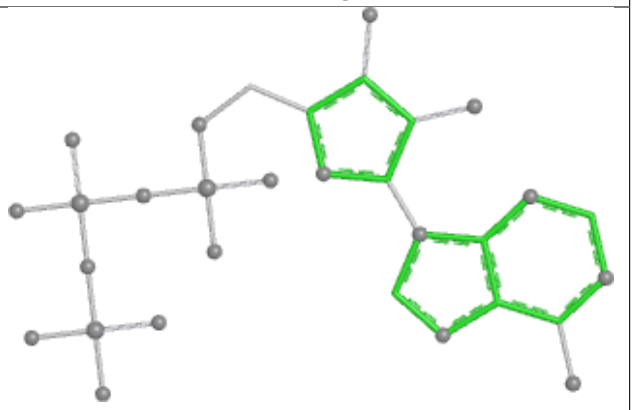
Bond lengths



Bond angles

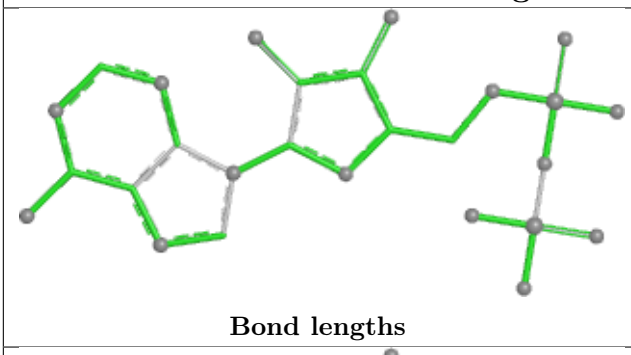


Torsions

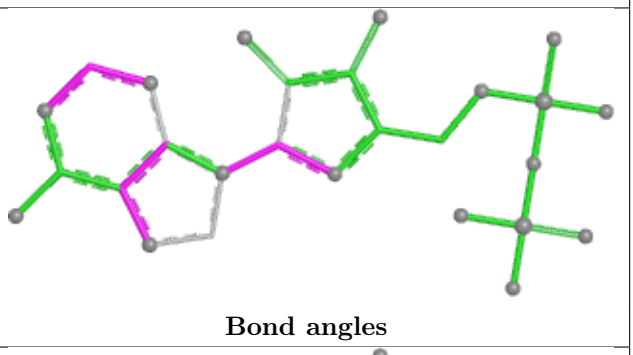


Rings

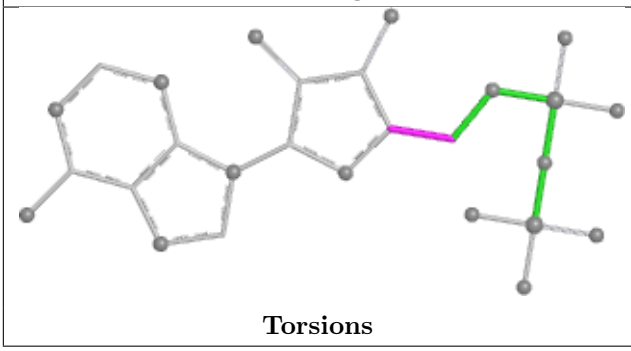
Ligand ADP A 4703



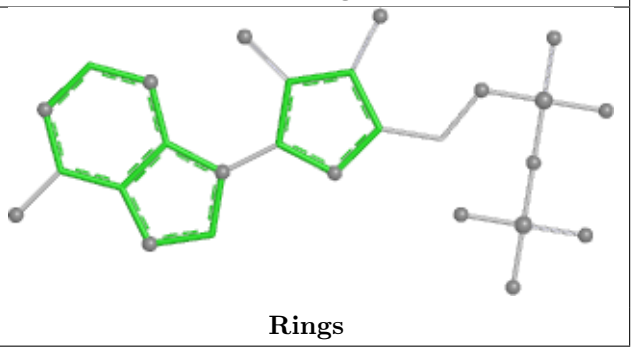
Bond lengths



Bond angles

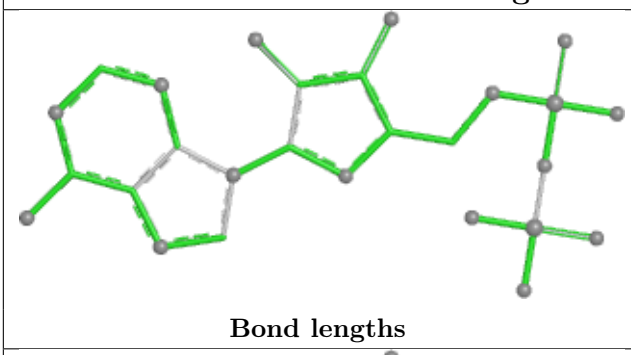


Torsions

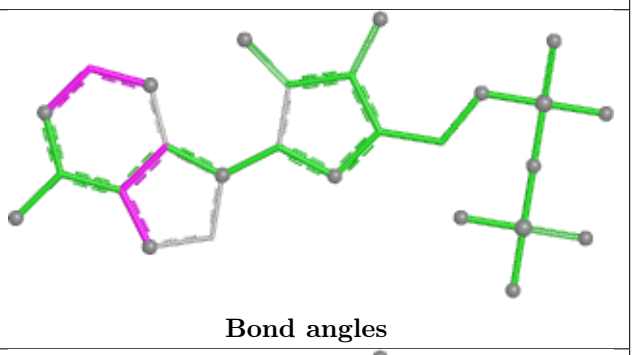


Rings

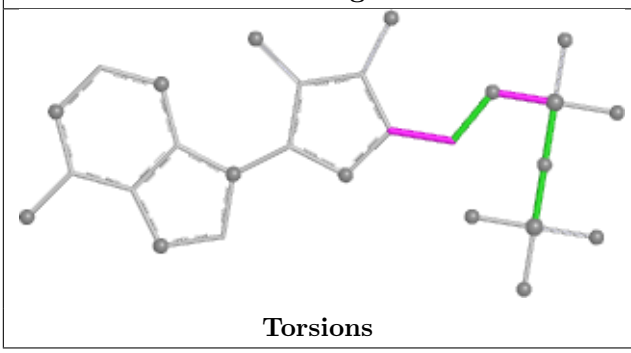
Ligand ADP A 4704



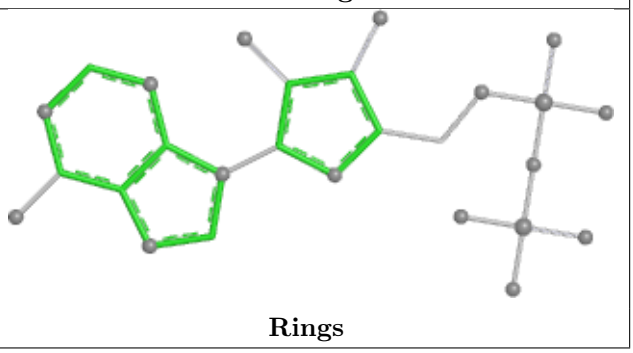
Bond lengths



Bond angles



Torsions



Rings

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.

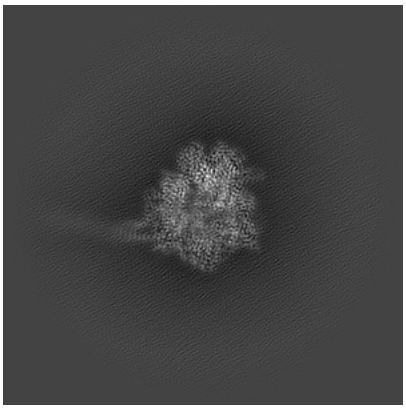
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-44720. These allow visual inspection of the internal detail of the map and identification of artifacts.

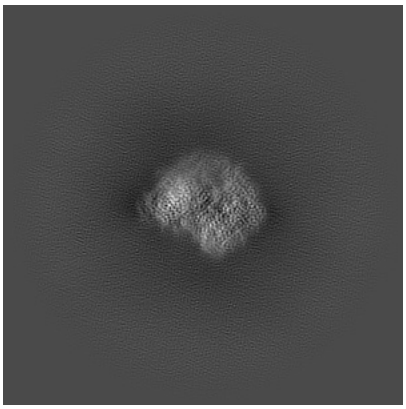
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

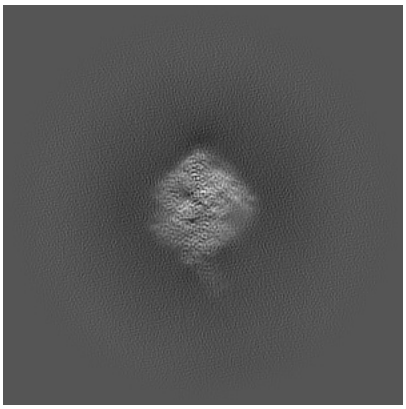
6.1.1 Primary map



X

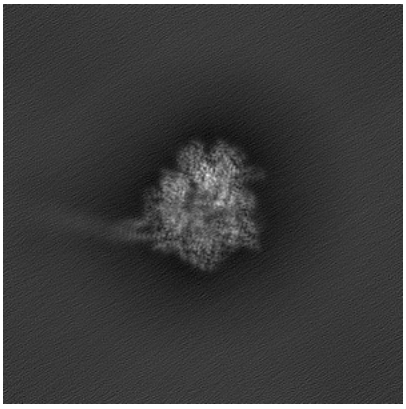


Y

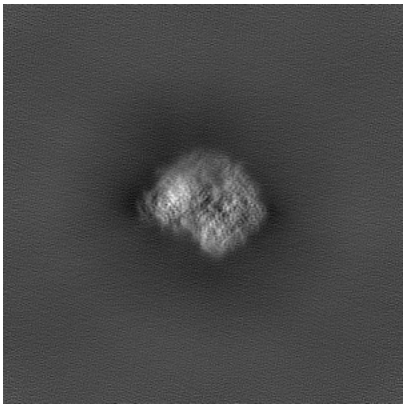


Z

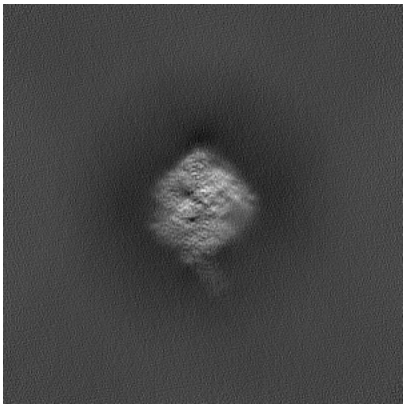
6.1.2 Raw map



X



Y

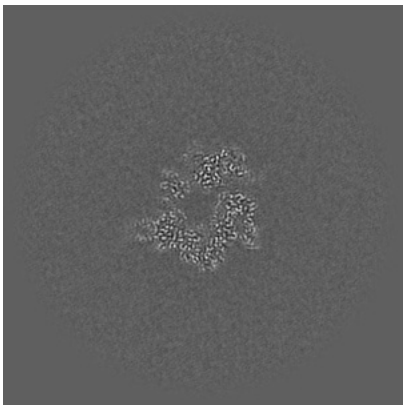


Z

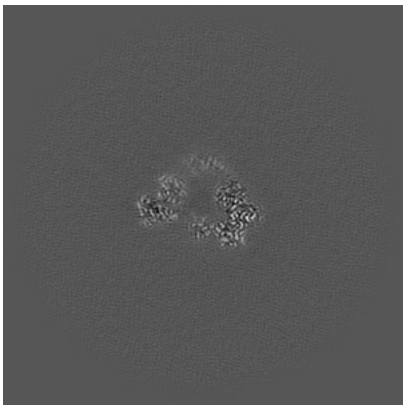
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

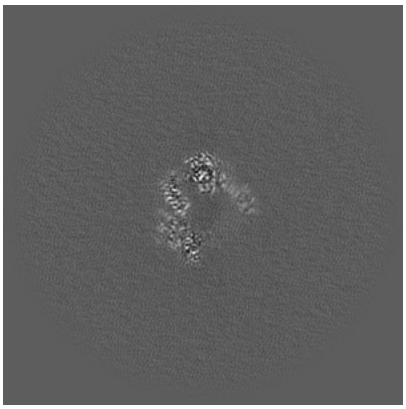
6.2.1 Primary map



X Index: 180

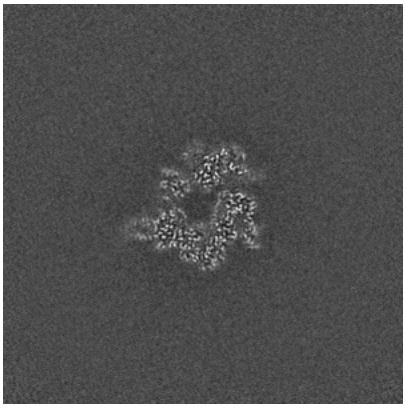


Y Index: 180

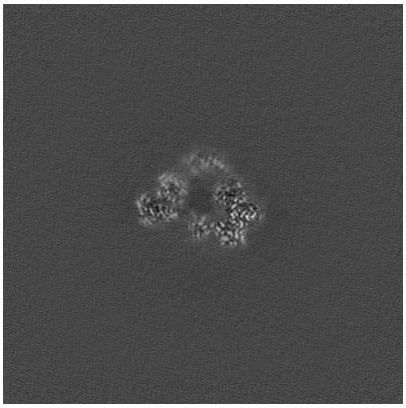


Z Index: 180

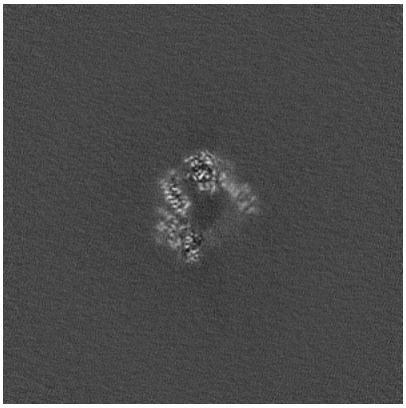
6.2.2 Raw map



X Index: 180



Y Index: 180

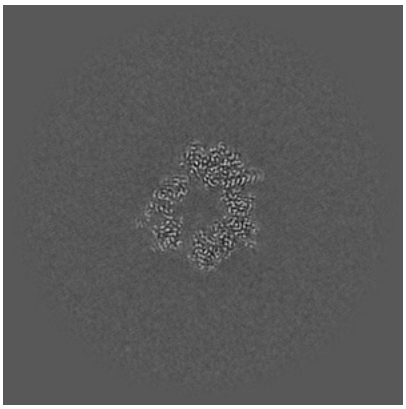


Z Index: 180

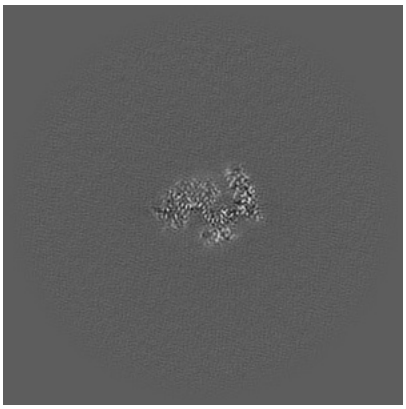
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

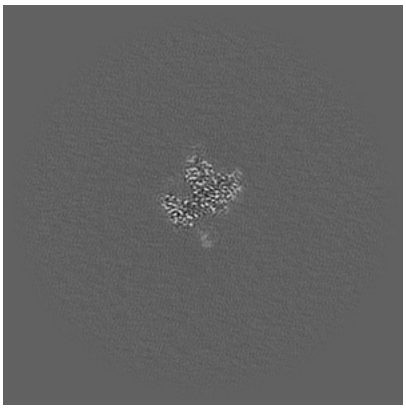
6.3.1 Primary map



X Index: 174

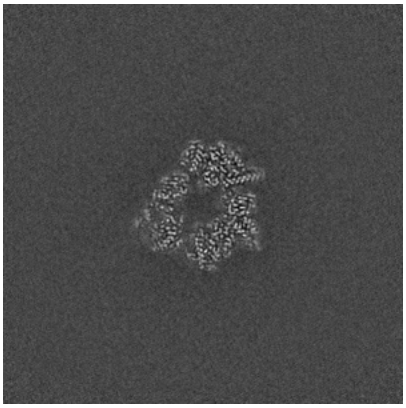


Y Index: 202

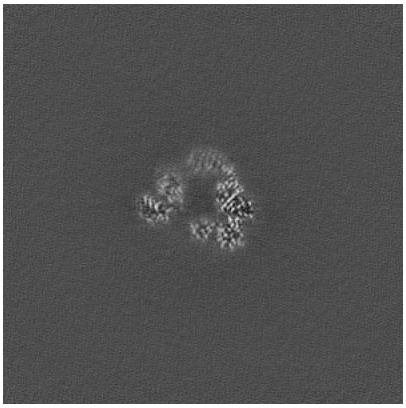


Z Index: 209

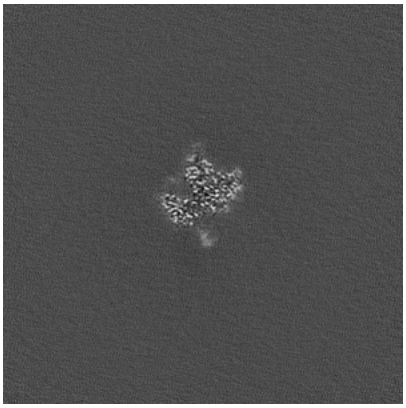
6.3.2 Raw map



X Index: 175



Y Index: 183

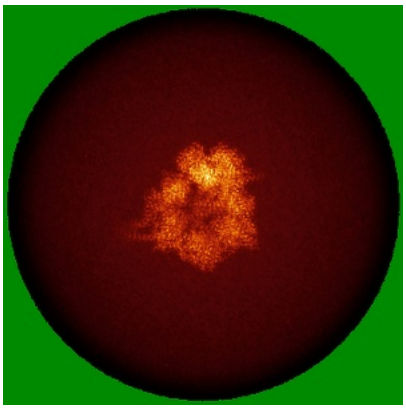


Z Index: 209

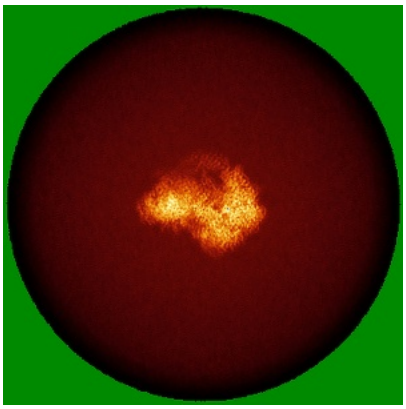
The images above show the largest variance slices of the map in three orthogonal directions.

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

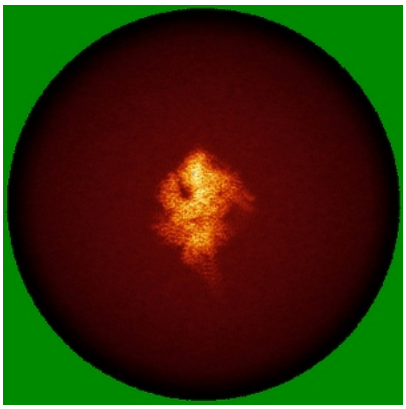
6.4.1 Primary map



X

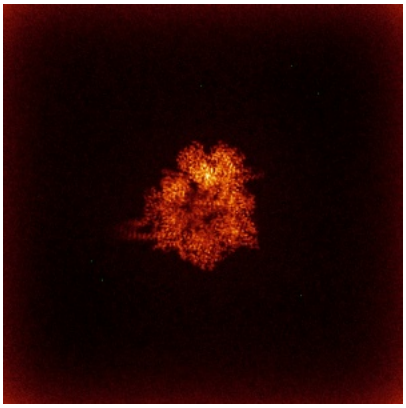


Y

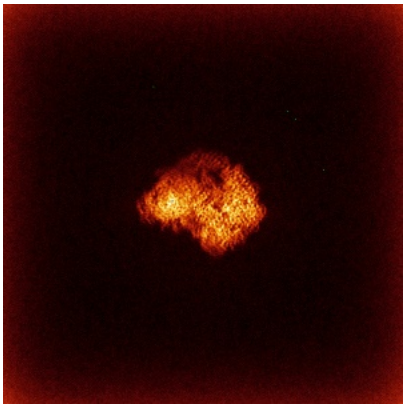


Z

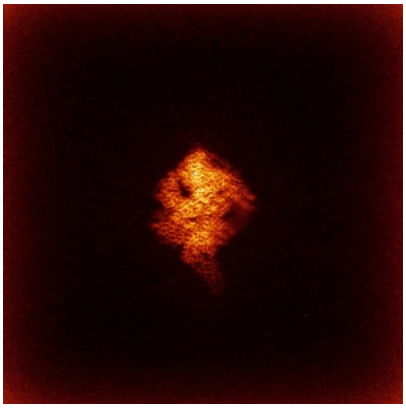
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

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

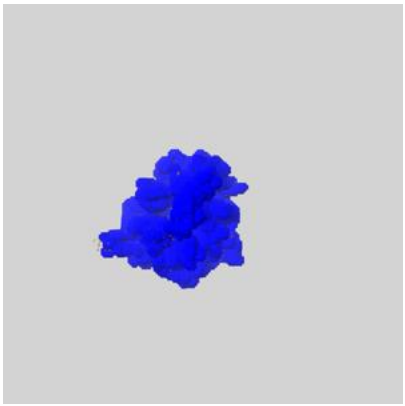
6.6 Mask visualisation

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

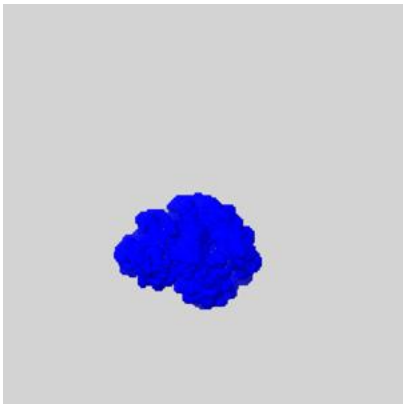
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

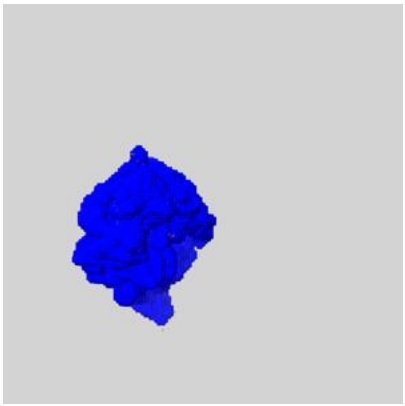
6.6.1 emd_44720_msk_1.map



X



Y

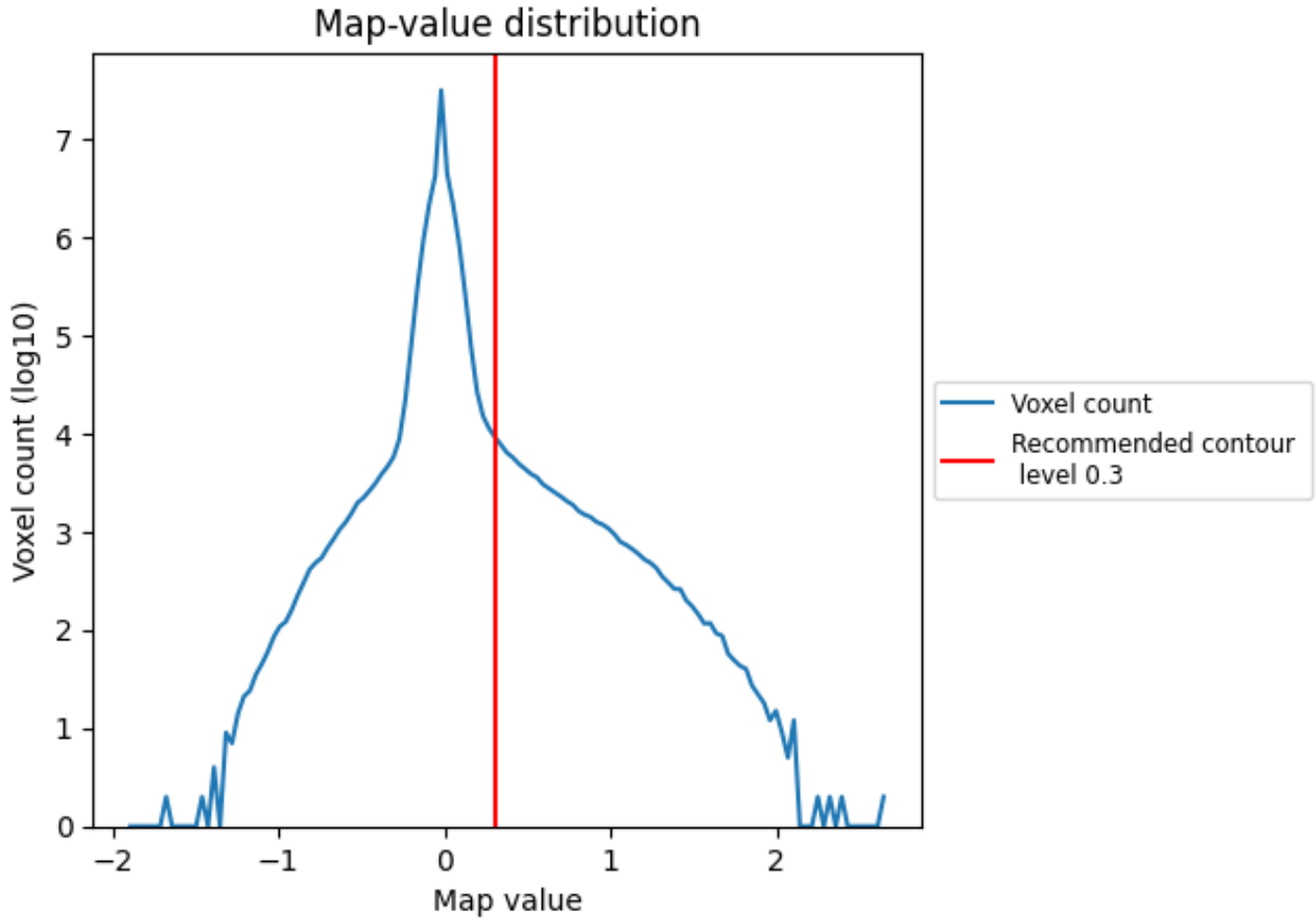


Z

7 Map analysis

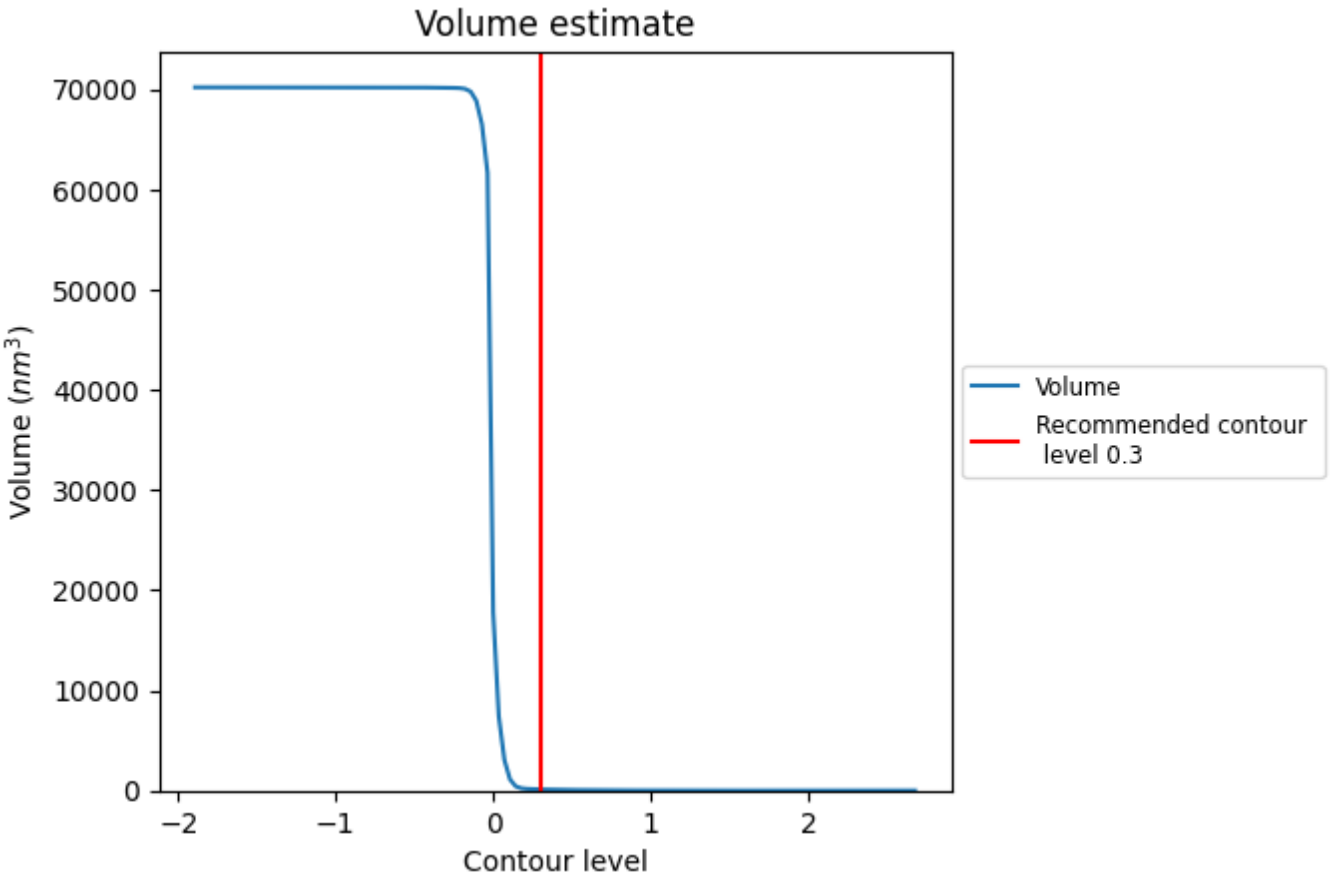
This section contains the results of statistical analysis of the map.

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.

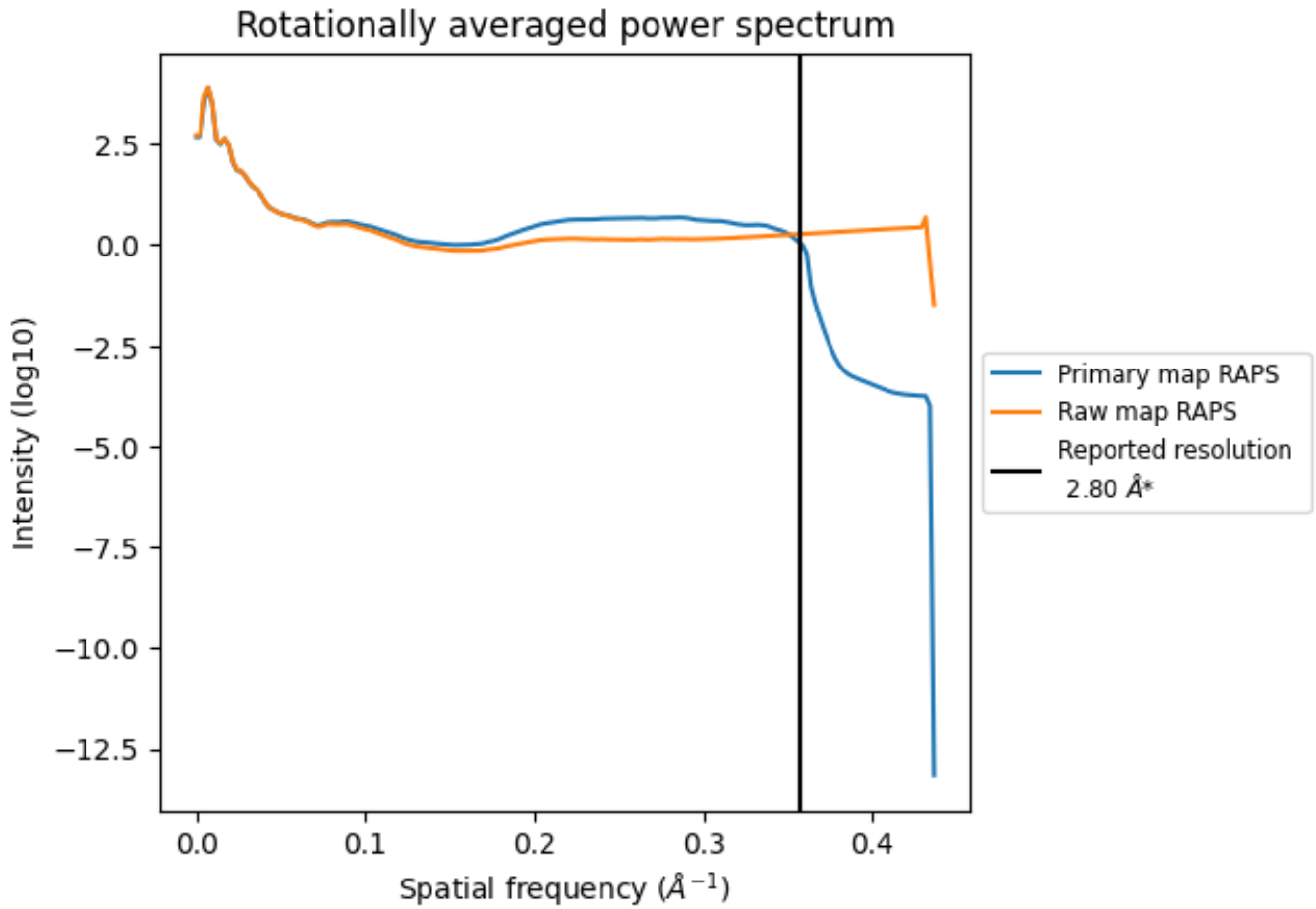
7.2 Volume estimate



The volume at the recommended contour level is 115 nm^3; this corresponds to an approximate mass of 104 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)

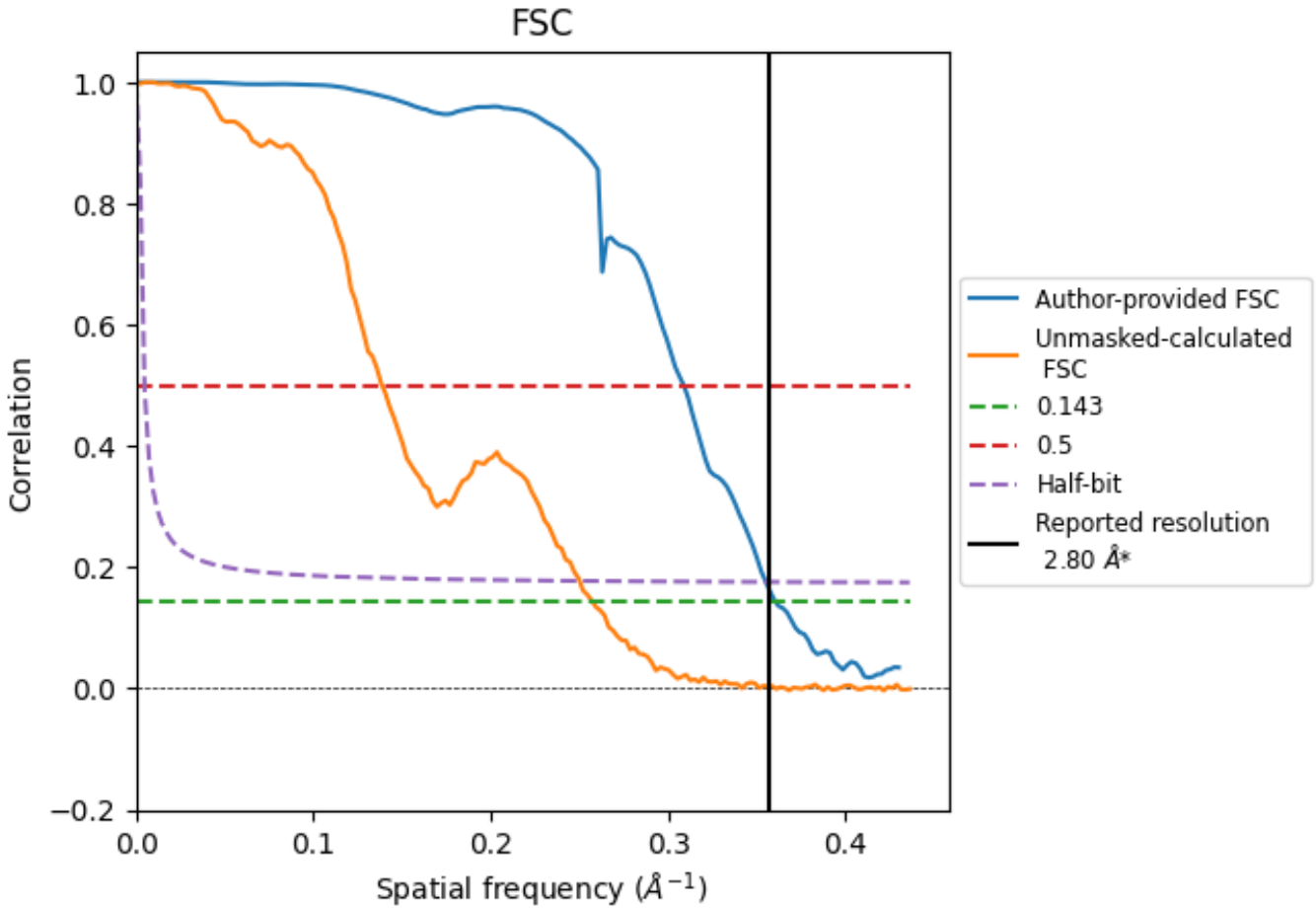


*Reported resolution corresponds to spatial frequency of 0.357 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.357 Å^{-1}

8.2 Resolution estimates (i)

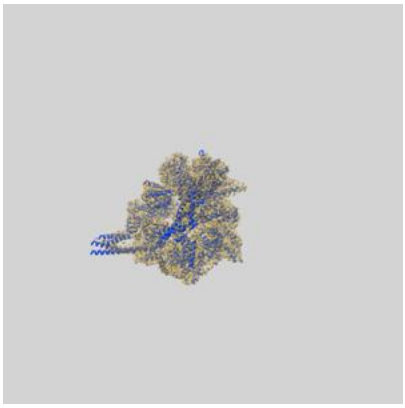
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.80	-	-
Author-provided FSC curve	2.77	3.24	2.81
Unmasked-calculated*	3.89	7.21	4.00

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.89 differs from the reported value 2.8 by more than 10 %

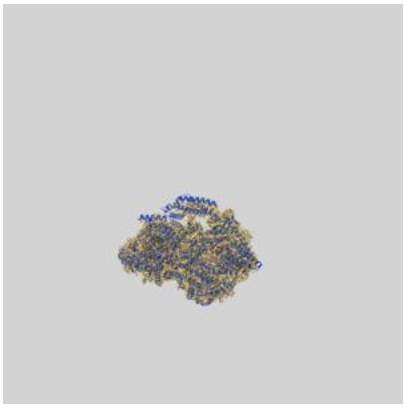
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-44720 and PDB model 9BN3. Per-residue inclusion information can be found in section 3 on page 5.

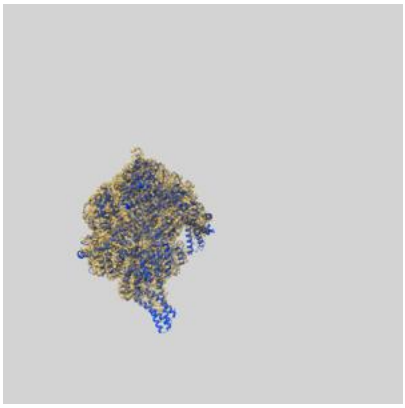
9.1 Map-model overlay



X



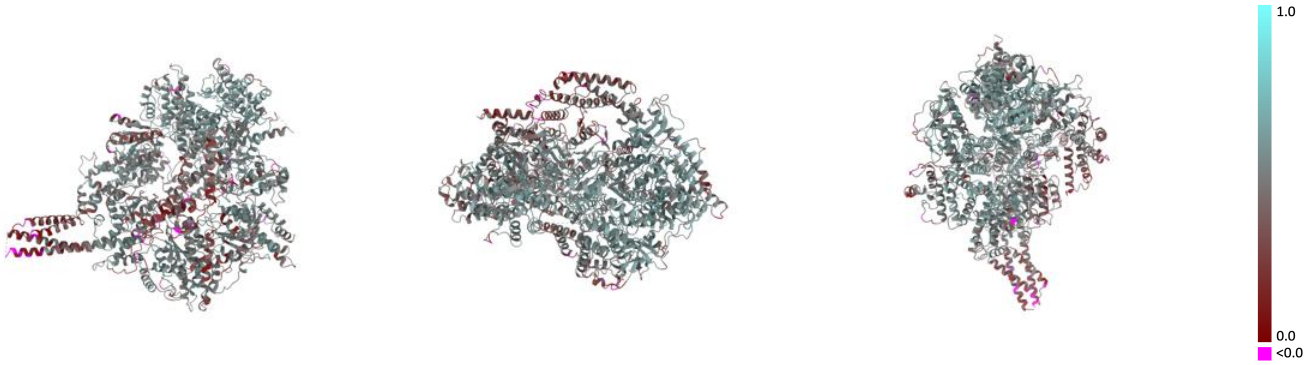
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.3 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.

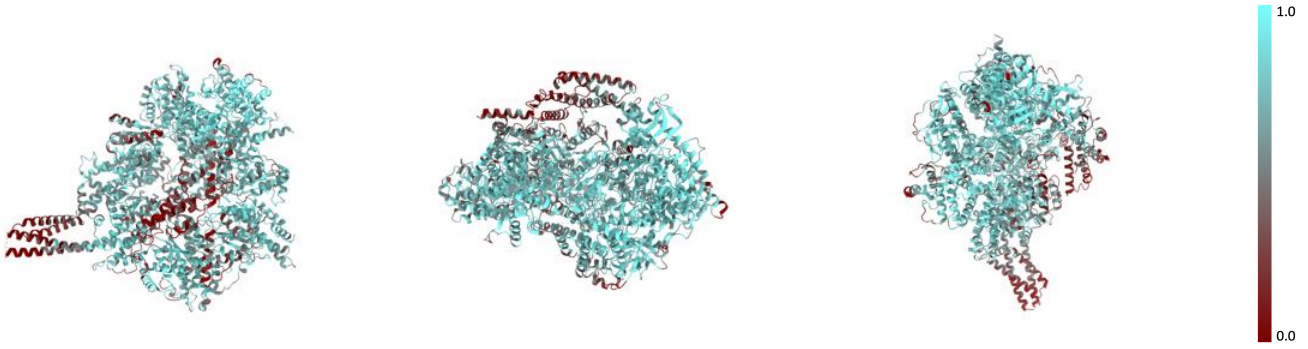
9.2 Q-score mapped to coordinate model (i)



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.

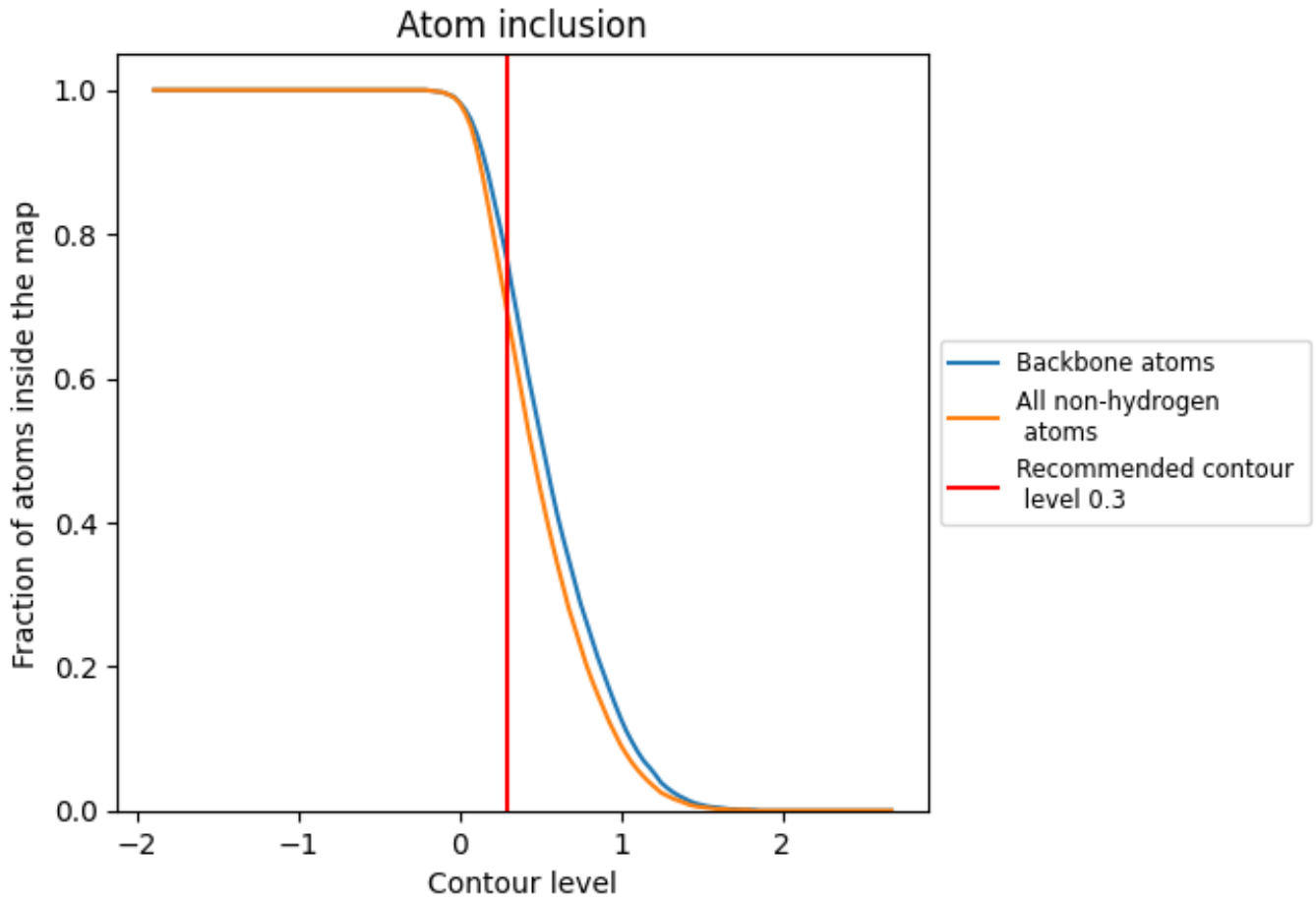
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.3).

9.4 Atom inclusion (i)



At the recommended contour level, 76% of all backbone atoms, 69% 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 (0.3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6880	0.4770
A	0.6880	0.4770