wwPDB EM Validation Summary Report ⓘ

Mar 19, 2024 – 10:49 PM JST

PDB ID : 6JV2
EMDB ID : EMD-9889
Title : Structure of RyR2 (P/L-Ca2+/Ca2+-CaM dataset)
Authors : Gong, D.S.; Chi, X.M.; Zhou, G.W.; Huang, G.X.Y.; Lei, J.L.; Yan, N.
Deposited on : 2019-04-15
Resolution : 4.40 Å(reported)

This is a wwPDB EM Validation Summary 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:

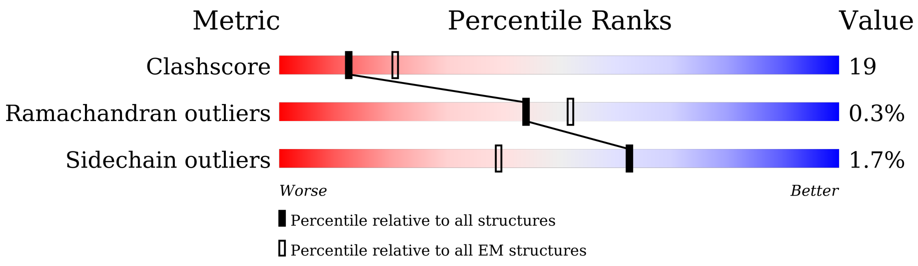
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 4.40 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	4968	7% 42% 27% • 29%
1	C	4968	7% 42% 28% • 29%
1	E	4968	7% 42% 27% • 29%
1	G	4968	7% 42% 28% • 29%
2	B	149	55% 58% 30% 11%
2	D	149	55% 59% 30% 11%
2	F	149	55% 61% 28% 11%
2	H	149	55% 59% 30% 11%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 111080 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 RyR2.

Mol	Chain	Residues	Atoms	AltConf	Trace
1	A	3509	Total C N O S 26722 17028 4575 4961 158	0	0
1	C	3509	Total C N O S 26722 17028 4575 4961 158	0	0
1	E	3509	Total C N O S 26722 17028 4575 4961 158	0	0
1	G	3509	Total C N O S 26722 17028 4575 4961 158	0	0

- Molecule 2 is a protein called Calmodulin-1.

Mol	Chain	Residues	Atoms	AltConf	Trace
2	B	132	Total C N O S 1042 643 169 221 9	0	0
2	D	132	Total C N O S 1042 643 169 221 9	0	0
2	F	132	Total C N O S 1042 643 169 221 9	0	0
2	H	132	Total C N O S 1042 643 169 221 9	0	0

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
3	A	1	Total Zn 1 1	0
3	C	1	Total Zn 1 1	0
3	E	1	Total Zn 1 1	0
3	G	1	Total Zn 1 1	0

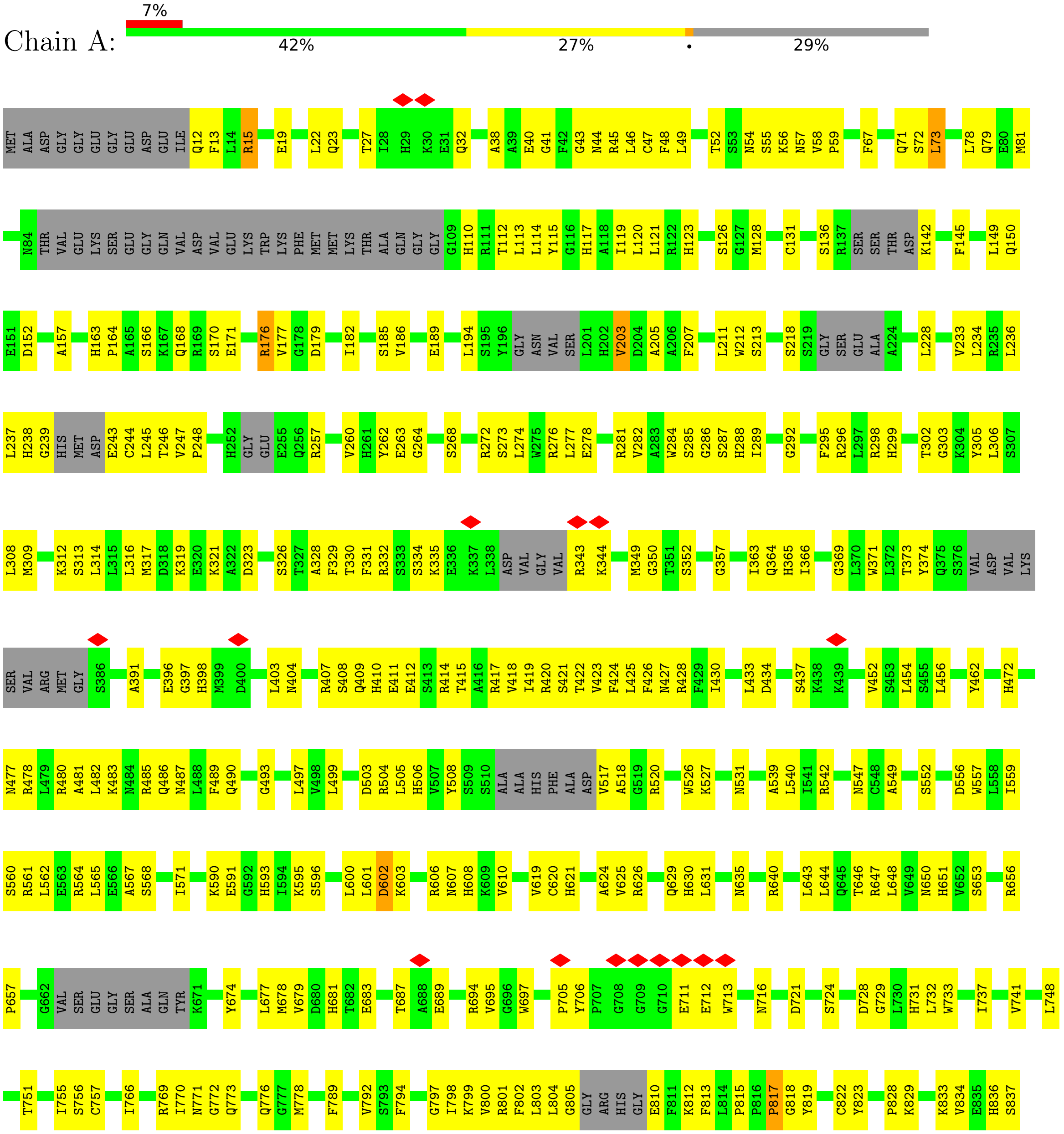
- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

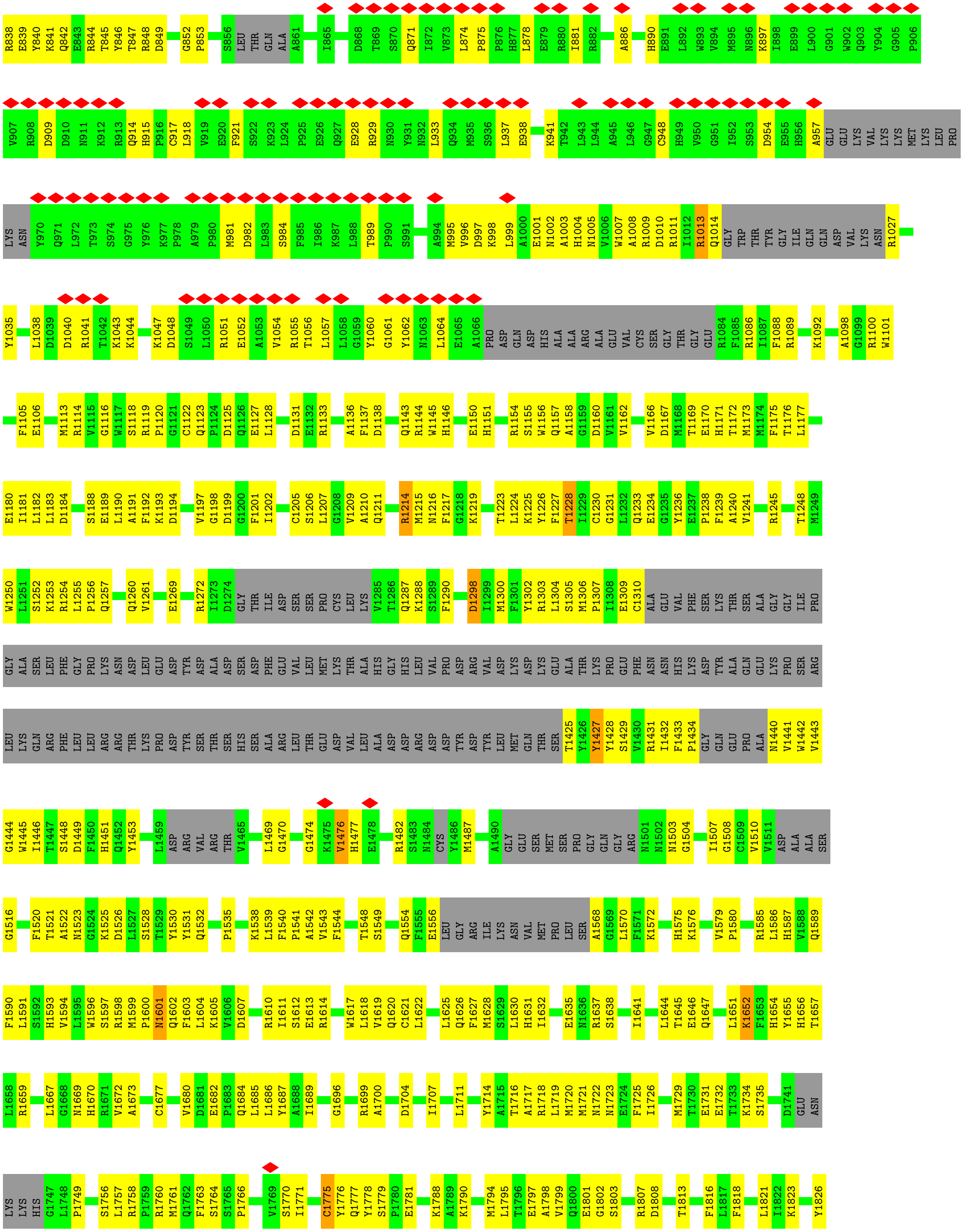
Mol	Chain	Residues	Atoms	AltConf
4	A	1	Total Ca 1 1	0
4	B	4	Total Ca 4 4	0
4	C	1	Total Ca 1 1	0
4	D	4	Total Ca 4 4	0
4	E	1	Total Ca 1 1	0
4	F	4	Total Ca 4 4	0
4	G	1	Total Ca 1 1	0
4	H	4	Total Ca 4 4	0

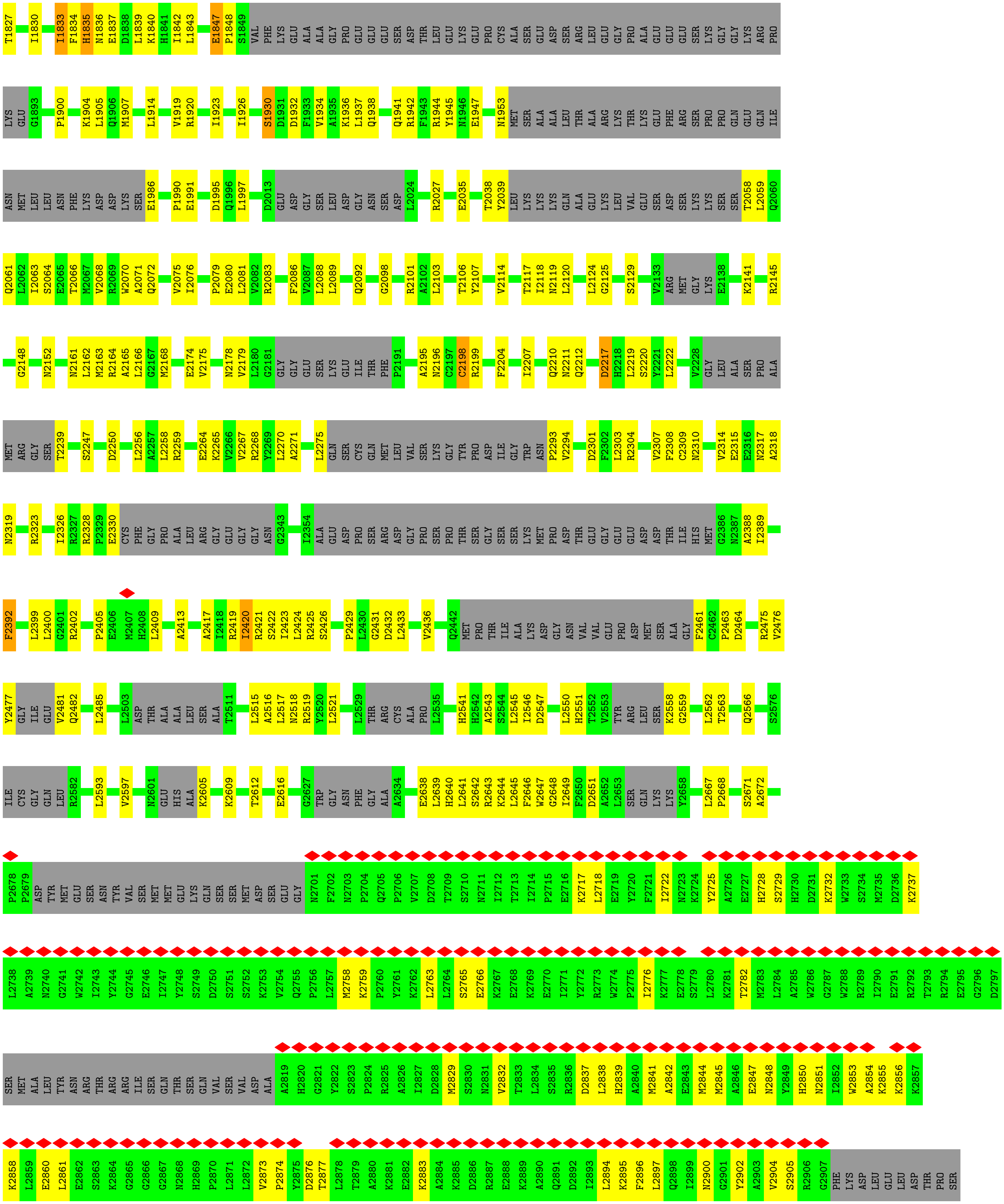
3 Residue-property plots ⓘ

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

- Molecule 1: RyR2




R838 E839 Y840 K841 Q842 E843 R844 T845 Y846 T847 R848 D849 G852 P853 S856 LEU THR GLN ALA A861 I865 D868 T869 S870 Q871 I872 V873 L874 P875 P876 H877 L878 E879 R880 I881 R882 A886 H890 E891 L892 W893 V894 M895 N896 K897 I898 E899 L900 G901 W902 Q903 Y904 G905 P906
V907 R908 D909 D910 N911 K912 R913 Q914 H915 P916 C917 L918 V919 E920 F921 S922 K923 L924 P925 E926 Q927 E928 R929 N930 Y931 N932 L933 Q934 M935 S936 L937 E938 K941 T942 L943 L944 A945 L946 G947 C948 H949 V950 G951 I952 S953 D954 E955 H956 A957 GLU GLU LYS VAL LYS LYS MET LYS LEU PRO
LYS ASN Y970 Q971 L972 T973 S974 G975 Y976 K977 P978 A979 P980 M981 D982 L983 S984 F985 I986 K987 L988 T989 P990 S991 A994 M995 V996 D997 K998 L999 A1000 E1001 N1002 A1003 H1004 N1005 V1006 W1007 A1008 R1009 D1010 R1011 I1012 R1013 Q1014 GLY TRP THR THR TYR GLY ILE GLN GLN ASP VAL LYS ASN R1027
Y1035 L1038 D1039 D1040 R1041 T1042 K1043 K1044 K1047 D1048 S1049 L1050 R1051 E1052 A1053 V1054 R1055 T1056 L1057 L1058 G1059 Y1060 G1061 Y1062 N1063 L1064 E1065 A1066 PRO ASP GLN ASP HIS ALA ALA ARG ALA GLU VAL CYS SER GLY THR GLY GLU R1084 F1085 R1086 I1087 F1088 R1089 K1092 A1098 G1099 R1100 W1101
F1105 E1106 M1113 R1114 V1115 G1116 W1117 S1118 R1119 P1120 G1121 C1122 Q1123 P1124 D1125 Q1126 E1127 L1128 D1131 E1132 R1133 A1136 F1137 D1138 Q1143 R1144 W1145 H1146 E1150 H1151 R1154 S1155 W1156 Q1157 A1158 G1159 D1160 V1161 V1162 V1166 D1167 M1168 T1169 E1170 H1171 T1172 M1173 M1174 F1175 T1176 L1177
E1180 I1181 L1182 L1183 D1184 S1188 E1189 L1190 A1191 F1192 K1193 D1194 V1197 G1198 D1199 G1200 F1201 I1202 C1205 S1206 L1207 G1208 V1209 A1210 Q1211 R1214 M1215 N1216 F1217 G1218 K1219 T1223 L1224 K1225 Y1226 F1227 T1228 I1229 C1230 G1231 L1232 Q1233 E1234 G1235 Y1236 E1237 P1238 F1239 A1240 V1241 R1245 T1248 M1249
W1250 L1251 S1252 K1253 R1254 L1255 P1256 Q1257 Q1260 V1261 E1269 R1272 I1273 D1274 GLY THR ILE ASP SER SER PRO CYS LEU LYS V1285 T1286 Q1287 K1288 S1289 F1290 D1298 I1299 M1300 F1301 Y1302 R1303 L1304 S1305 M1306 P1307 I1308 E1309 C1310 ALA GLU VAL PHE SER LYS THR SER ALA GLY GLY ILE PRO
GLY ALA SER LEU PHE GLY PRO LYS ASN ASP LEU GLU ASP TYR ASP ALA ASP SER ASP PHE GLU VAL LEU MET LYS THR ALA HIS GLY HIS LEU VAL PRO ASP ARG VAL ASP LYS ASP LYS GLU ALA THR LYS PRO GLU PHE ASN ASN HIS LYS ASP TYR ALA GLN GLU LYS PRO SER ARG
LEU LYS GLN ARG PHE LEU LEU ARG ARG THR LYS PRO ASP TYR SER THR SER HIS SER ALA ARG LEU THR GLU ASP VAL LEU ALA ASP ARG ASP ASP TYR ASP TYR LEU MET GLN THR SER T1425 Y1426 Y1427 T1428 S1429 V1430 R1431 I1432 F1433 P1434 GLY GLN GLU PRO ALA N1440 V1441 W1442 V1443
G1444 W1445 I1446 T1447 S1448 D1449 F1450 H1451 Q1452 Y1453 L1459 ASP ARG VAL ARG THR V1465 L1469 G1470 G1474 K1475 V1476 H1477 E1478 R1482 S1483 N1484 CYS Y1486 M1487 A1490 GLY GLU SER MET SER PRO GLY GLN GLY ARG N1501 N1502 N1503 G1504 I1507 G1508 C1509 V1510 V1511 ASP ALA ALA SER
G1516 F1520 T1521 A1522 N1523 G1524 K1525 D1526 L1527 S1528 T1529 Y1530 Y1531 Q1532 P1535 K1538 L1539 F1540 P1541 A1542 V1543 F1544 T1548 S1549 Q1554 F1555 E1556 LEU GLY ARG ILE LYS ASN VAL MET PRO LEU SER A1568 G1569 L1570 F1571 K1572 H1575 K1576 V1579 P1580 R1585 L1586 H1587 V1588 Q1589
F1590 L1591 S1592 H1593 V1594 L1595 W1596 S1597 R1598 M1599 P1600 N1601 Q1602 F1603 L1604 K1605 V1606 D1607 R1610 I1611 S1612 E1613 R1614 W1617 L1618 V1619 Q1620 C1621 L1622 L1625 Q1626 F1627 M1628 S1629 L1630 H1631 I1632 E1635 N1636 R1637 S1638 I1641 L1644 T1645 E1646 Q1647 L1651 K1652 F1653 H1654 Y1655 H1656 T1657
L1658 R1659 L1667 G1668 N1669 H1670 R1671 V1672 A1673 C1677 V1680 D1681 E1682 P1683 Q1684 L1685 L1686 Y1687 A1688 I1689 G1696 R1699 A1700 D1704 I1707 L1711 Y1714 A1715 T1716 A1717 R1718 L1719 M1720 M1721 N1722 N1723 E1724 F1725 I1726 M1729 T1730 E1731 E1732 T1733 K1734 S1735 D1741 GLU ASN
LYS LYS HIS G1747 L1748 P1749 S1756 L1757 R1758 P1759 R1760 M1761 Q1762 F1763 S1764 S1765 P1766 V1769 S1770 I1771 C1775 Y1776 Q1777 Y1778 S1779 P1780 E1781 K1788 A1789 K1790 M1794 L1795 T1796 E1797 A1798 V1799 Q1800 E1801 G1802 S1803 R1807 D1808 T1813 F1816 L1817 F1818 L1821 I1822 K1823 Y1826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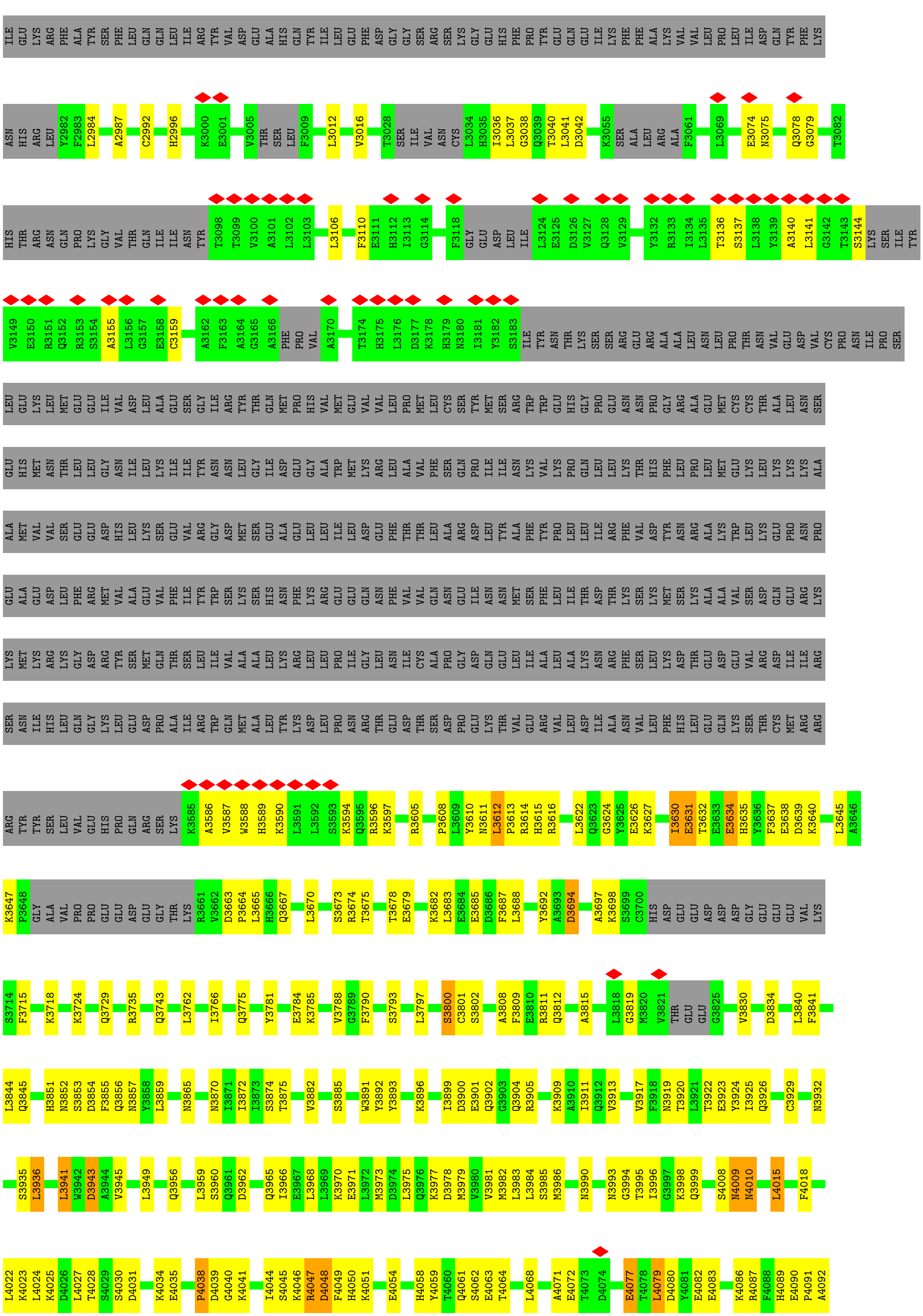
LYS GLU G1893 P1900 K1904 L1905 Q1906 M1907 L1914 V1919 R1920 I1923 I1926 S1930 D1931 D1932 F1933 V1934 A1935 K1936 L1937 Q1938 Q1941 R1942 F1943 R1944 Y1945 N1946 E1947 N1953 MET SER ALA ALA LEU THR ALA ARG LYS THR LYS GLU PHE ARG SER PRO PRO GLN GLU GLN ILE
ASN MET LEU LEU ASN PHE LYS ASP ASP LYS SER E1986 P1990 E1991 D1995 Q1996 L1997 D2013 GLU ASP GLY SER LEU ASP GLY ASN SER ASP L2024 R2027 E2035 T2038 Y2039 LEU LYS LYS LYS GLN ALA GLU LYS LEU VAL GLU SER ASP SER LYS LYS SER SER T2058 L2059 Q2060
Q2061 L2062 I2063 S2064 E2065 T2066 M2067 V2068 R2069 W2070 A2071 Q2072 V2075 I2076 P2079 E2080 L2081 V2082 R2083 F2086 V2087 L2088 L2089 Q2092 G2098 R2101 A2102 L2103 T2106 Y2107 V2114 T2117 I2118 N2119 L2120 L2124 G2125 S2129 V2133 ARG MET GLY LYS E2138 K2141 R2145
G2148 N2152 N2161 L2162 M2163 R2164 A2165 L2166 G2167 M2168 E2174 V2175 N2178 V2179 I2180 G2181 GLY GLY GLU SER LYS GLU ILE THR PHE P2191 A2195 N2196 C2197 C2198 R2199 F2204 I2207 Q2210 N2211 Q2212 D2217 H2218 L2219 S2220 Y2221 L2222 V2228 GLY LEU ALA SER PRO ALA
MET ARG GLY SER T2239 S2247 D2250 L2256 A2257 L2258 R2259 E2264 K2265 V2266 V2267 R2268 Y2269 L2270 A2271 L2275 GLN SER CYS GLN MET LEU VAL SER LYS GLY TYR PRO ASP ILE GLY TRP ASN P2293 V2294 D2301 F2302 L2303 R2304 V2307 F2308 C2309 N2310 V2314 E2315 E2316 N2317 A2318
N2319 R2323 I2326 R2327 R2328 P2329 E2330 CYS PHE GLY PRO ALA LEU ARG GLY GLU GLY ASN G2343 I2354 ALA GLU ASP PRO SER ARG ASP GLY PRO SER PRO THR SER GLY SER SER LYS MET PRO ASP THR GLU GLY GLU ASP ASP THR ILE HIS MET G2386 N2387 A2388 I2389
F2392 L2399 L2400 G2401 R2402 P2405 E2406 M2407 H2408 L2409 A2413 A2417 I2418 R2419 I2420 R2421 S2422 I2423 L2424 R2425 S2426 P2429 L2430 G2431 D2432 L2433 V2436 Q2442 MET PRO THR ILE ALA LYS ASP GLY ASN VAL VAL GLU PRO ASP MET SER ALA GLY F2461 C2462 P2463 D2464 R2475 V2476
Y2477 GLY ILE GLU V2481 Q2482 L2485 L2503 ASP THR ALA ALA LEU SER ALA T2511 L2515 A2516 L2517 N2518 R2519 Y2520 L2521 L2529 THR ARG CYS ALA PRO L2535 H2541 H2542 A2543 S2544 L2545 I2546 D2547 L2550 H2551 T2552 V2553 TYR ARG LEU SER K2558 G2559 L2562 T2563 Q2566 S2576
ILE CYS GLY GLN LEU R2582 L2593 V2597 N2601 GLU HIS ALA K2605 K2609 T2612 E2616 G2627 TRP GLY ASN PHE GLY ALA A2634 E2638 L2639 H2640 L2641 S2642 R2643 K2644 L2645 F2646 W2647 G2648 I2649 F2650 D2651 A2652 L2653 SER GLN LYS LYS Y2658 L2667 P2668 S2671 A2672
P2678 P2679 ASP TYR MET GLU SER ASN TYR VAL SER MET MET GLU LYS GLN SER SER MET ASP SER GLU GLY N2701 F2702 N2703 P2704 Q2705 P2706 V2707 D2708 T2709 S2710 N2711 I2712 T2713 I2714 P2715 E2716 K2717 L2718 E2719 Y2720 F2721 I2722 N2723 K2724 Y2725 A2726 E2727 H2728 S2729 H2730 D2731 K2732 W2733 S2734 M2735 D2736 K2737
L2738 A2739 N2740 G2741 W2742 I2743 Y2744 G2745 E2746 I2747 Y2748 S2749 D2750 S2751 S2752 K2753 V2754 Q2755 P2756 L2757 M2758 K2759 P2760 Y2761 K2762 L2763 L2764 S2765 E2766 K2767 E2768 K2769 E2770 I2771 Y2772 R2773 W2774 P2775 I2776 K2777 E2778 S2779 L2780 K2781 T2782 M2783 L2784 A2785 W2786 G2787 W2788 R2789 I2790 E2791 R2792 T2793 R2794 E2795 G2796 D2797
SER MET ALA LEU TYR ASN ARG THR ARG ARG ILE SER GLN THR SER GLN VAL SER VAL ASP ALA A2819 H2820 G2821 Y2822 S2823 P2824 R2825 A2826 I2827 D2828 M2829 S2830 N2831 V2832 T2833 L2834 S2835 R2836 D2837 L2838 H2839 A2840 M2841 A2842 E2843 M2844 M2845 A2846 E2847 N2848 Y2849 H2850 N2851 I2852 W2853 A2854 K2855 K2856 K2857
K2858 L2859 E2860 L2861 E2862 S2863 K2864 G2865 G2866 G2867 N2868 H2869 P2870 L2871 L2872 V2873 P2874 Y2875 D2876 T2877 L2878 T2879 A2880 K2881 E2882 K2883 A2884 K2885 D2886 R2887 E2888 K2889 A2890 Q2891 D2892 I2893 L2894 K2895 F2896 L2897 Q2898 I2899 N2900 G2901 Y2902 A2903 V2904 S2905 R2906 G2907 PHE LYS ASP LEU GLU LEU ASP THR PRO SER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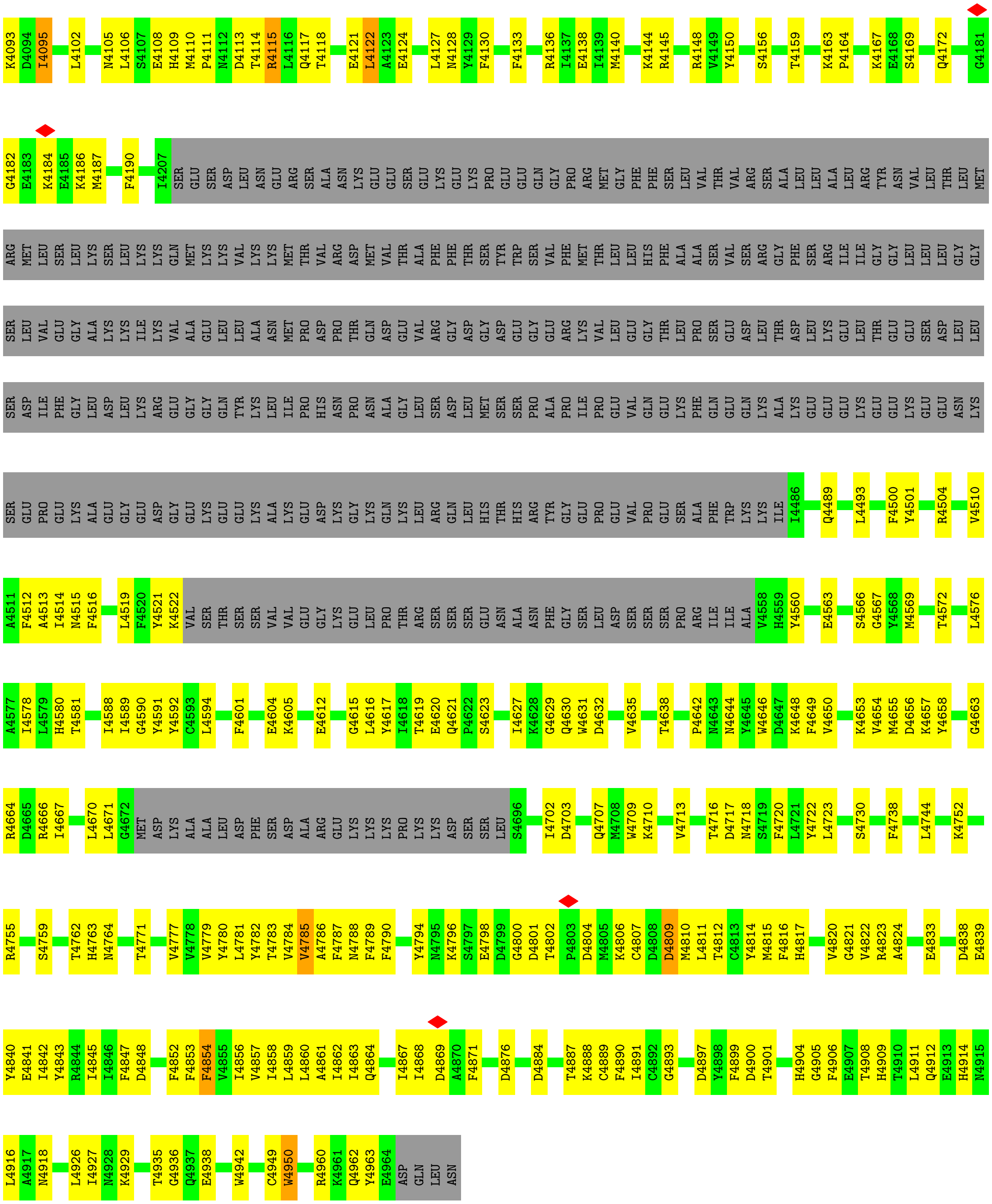
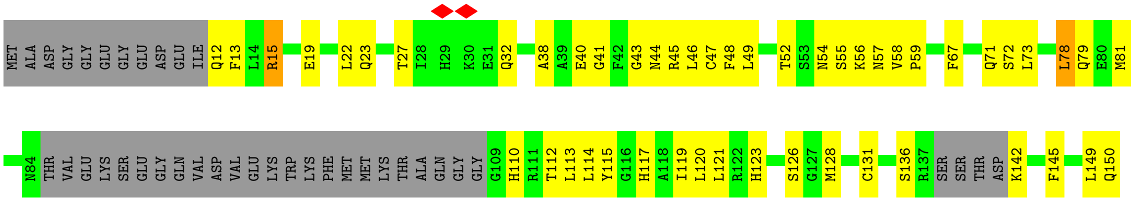
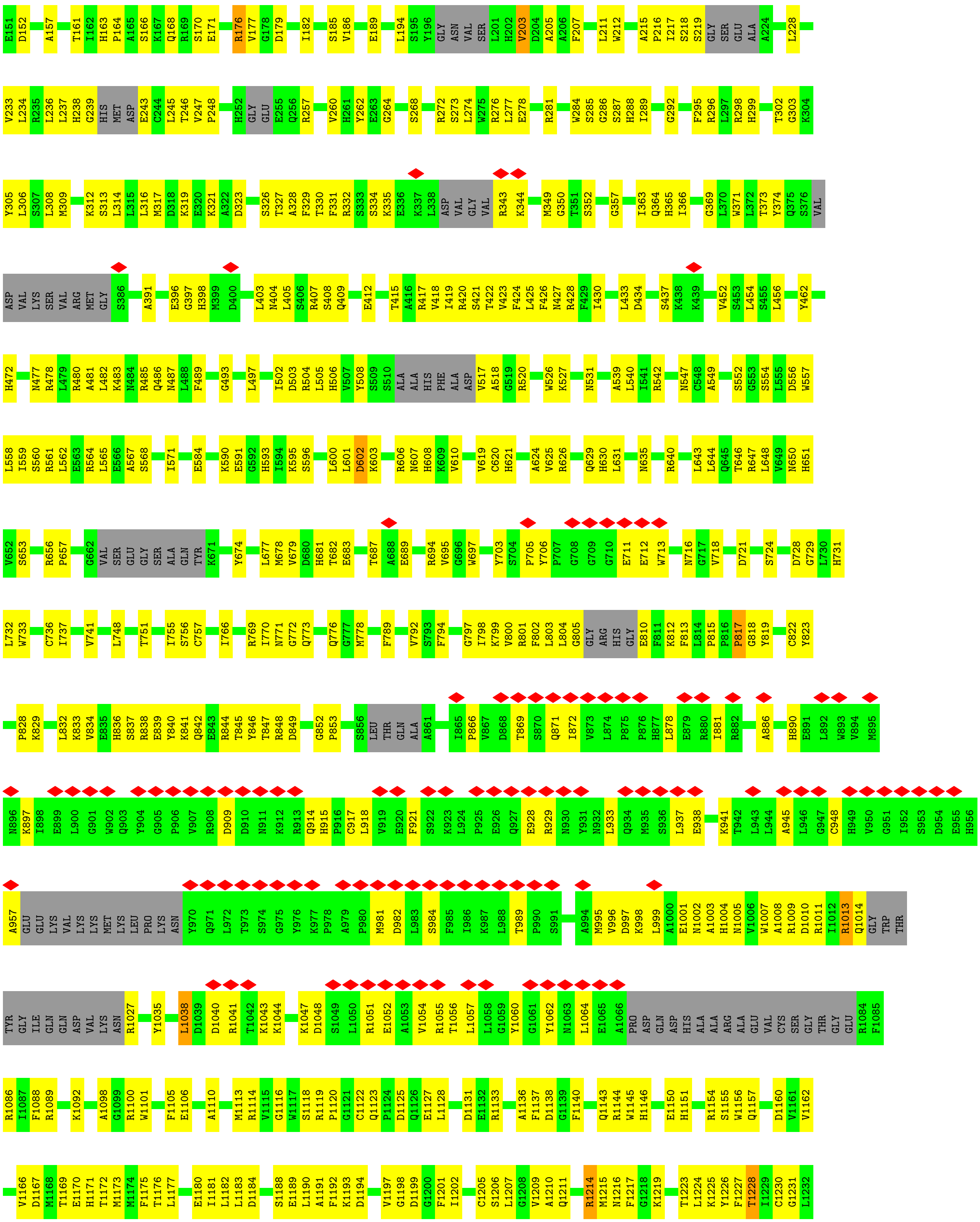
ASN HIS ARG LEU Y2982 F2983 L2984 A2987 C2992 H2996 K3000 E3001 V3005 THR SER LEU F3009 L3012 V3016 T3028 SER ILE VAL ASN CYS L3034 H3035 I3036 L3037 G3038 Q3039 T3040 L3041 D3042 K3055 SER ALA LEU ARG ALA F3061 L3069 E3074 N3075 Q3078 G3079 T3082
HIS THR ARG ASN GLN PRO LYS GLY VAL THR GLN ILE ILE ASN TYR T3098 T3099 V3100 A3101 L3102 L3103 L3106 F3110 E3111 H3112 I3113 G3114 F3118 GLY GLU ASP LEU ILE L3124 E3125 D3126 V3127 Q3128 V3129 Y3132 R3133 I3134 L3135 T3136 S3137 L3138 Y3139 A3140 L3141 G3142 T3143 S3144 LYS SER ILE TYR
V3149 E3150 R3151 Q3152 R3153 S3154 A3155 L3156 G3157 E3158 C3159 A3162 F3163 A3164 G3165 A3166 PHE PRO VAL A3170 T3174 H3175 L3176 D3177 K3178 H3179 N3180 I3181 Y3182 S3183 ILE TYR ASN THR LYS SER SER ARG GLU ARG ALA ALA LEU ASN LEU PRO THR ASN VAL GLU ASP VAL CYS PRO ASN ILE PRO SER
LEU GLU LYS LEU MET GLU GLU ILE VAL ASP LEU ALA GLU SER GLY ILE ARG TYR THR GLN MET PRO HIS VAL MET GLU VAL VAL LEU PRO MET LEU CYS SER TYR MET SER ARG TRP TRP GLU HIS GLY PRO GLU ASN ASN PRO GLY ARG ALA GLU MET CYS CYS THR ALA LEU ASN SER
GLU HIS MET ASN THR LEU LEU GLY ASN ILE LEU LYS ILE ILE TYR ASN ASN LEU GLY ILE ASP GLU GLY ALA TRP MET LYS ARG LEU ALA VAL PHE SER GLN PRO ILE ILE ASN LYS VAL LYS PRO GLN LEU LEU LYS THR HIS PHE LEU PRO LEU MET GLU LYS LEU LYS LYS LYS ALA
ALA MET VAL VAL SER GLU GLU ASP HIS LEU LYS SER GLU VAL ARG GLY ASP MET SER GLU ALA GLU LEU LEU ILE LEU ASP GLU PHE THR THR LEU ALA ARG ASP LEU TYR ALA PHE TYR PRO LEU LEU ILE ARG PHE VAL ASP TYR ASN ARG ALA LYS TRP LEU LYS GLU PRO ASN PRO
GLU ALA GLU ASP LEU PHE ARG MET VAL ALA GLU VAL PHE ILE TYR TRP SER LYS SER HIS ASN PHE LYS ARG GLU GLU GLN ASN PHE VAL VAL GLN ASN GLU ILE ASN ASN MET SER PHE LEU ILE THR ASP THR LYS SER LYS MET SER LYS ALA ALA VAL SER ASP GLN GLU ARG LYS
LYS MET LYS ARG LYS GLY ASP ARG TYR SER MET GLN THR SER LEU ILE VAL ALA ALA LEU LYS ARG LEU LEU PRO ILE GLY LEU ASN ILE CYS ALA PRO GLY ASP GLN GLU LEU ILE ALA LEU ALA LYS ASN ARG PHE SER LEU LYS ASP THR GLU ASP GLU VAL ARG ASP ILE ILE ARG
SER ASN ILE HIS LEU GLN GLY LYS LEU GLU ASP PRO ALA ILE ARG TRP GLN MET ALA LEU TYR LYS ASP LEU PRO ASN ARG THR GLU ASP THR SER ASP PRO GLU LYS THR VAL GLU ARG VAL LEU ASP ILE ALA ASN VAL LEU PHE HIS LEU GLU GLN LYS SER THR CYS MET ARG ARG
ARG TYR TYR SER LEU VAL GLU HIS PRO GLN ARG SER LYS K3585 A3586 V3587 W3588 H3589 K3590 L3591 L3592 S3593 K3594 Q3595 R3596 K3597 R3605 P3608 L3609 Y3610 N3611 L3612 P3613 R3614 H3615 R3616 L3622 Q3623 G3624 Y3625 E3626 K3627 I3630 E3631 T3632 E3633 E3634 H3635 Y3636 F3637 E3638 D3639 K3640 L3645 A3646
K3647 P3648 GLY ALA VAL PRO PRO GLU GLU ASP GLU GLY THR LYS R3661 V3662 D3663 P3664 L3665 H3666 Q3667 L3670 S3673 R3674 T3675 T3678 E3679 K3682 L3683 E3684 E3685 D3686 F3687 L3688 Y3692 A3693 D3694 A3697 K3698 S3699 C3700 HIS ASP GLU GLU ASP ASP ASP GLY GLU GLU GLU VAL LYS
S3714 F3715 K3718 K3724 Q3729 R3735 Q3743 L3762 I3766 Q3775 Y3781 E3784 K3785 V3788 G3789 F3790 S3793 L3797 S3800 C3801 S3802 A3808 F3809 E3810 R3811 Q3812 A3815 L3818 G3819 M3820 V3821 THR GLU GLU G3825 V3830 D3834 L3840 F3841
L3844 Q3845 H3851 N3852 S3853 D3854 F3855 Q3856 N3857 Y3858 L3859 N3865 N3870 I3871 I3872 I3873 S3874 T3875 V3882 S3885 W3891 Y3892 Y3893 K3896 I3899 D3900 E3901 Q3902 G3903 Q3904 R3905 K3909 A3910 I3911 Q3912 V3913 V3917 F3918 N3919 T3920 L3921 T3922 E3923 Y3924 I3925 Q3926 C3929 N3932
S3935 L3936 L3941 W3942 D3943 A3944 V3945 L3949 Q3956 L3959 S3960 Q3961 D3962 Q3965 I3966 E3967 L3968 L3969 K3970 E3971 L3972 M3973 D3974 L3975 Q3976 K3977 D3978 M3979 V3980 V3981 M3982 L3983 L3984 S3985 M3986 N3990 N3993 G3994 T3995 I3996 G3997 K3998 Q3999 S4008 N4009 N4010 L4015 F4018
L4022 K4023 L4024 K4025 D4026 L4027 T4028 S4029 S4030 D4031 K4034 E4035 P4038 D4039 G4040 K4041 I4044 S4045 K4046 R4047 D4048 F4049 H4050 K4051 E4054 H4058 Y4059 T4060 Q4061 S4062 E4063 T4064 L4068 A4071 E4072 T4073 D4074 E4077 T4078 L4079 D4080 Y4081 E4082 E4083 K4086 R4087 F4088 H4089 E4090 P4091 A4092



- Molecule 1: RyR2

Chain C:

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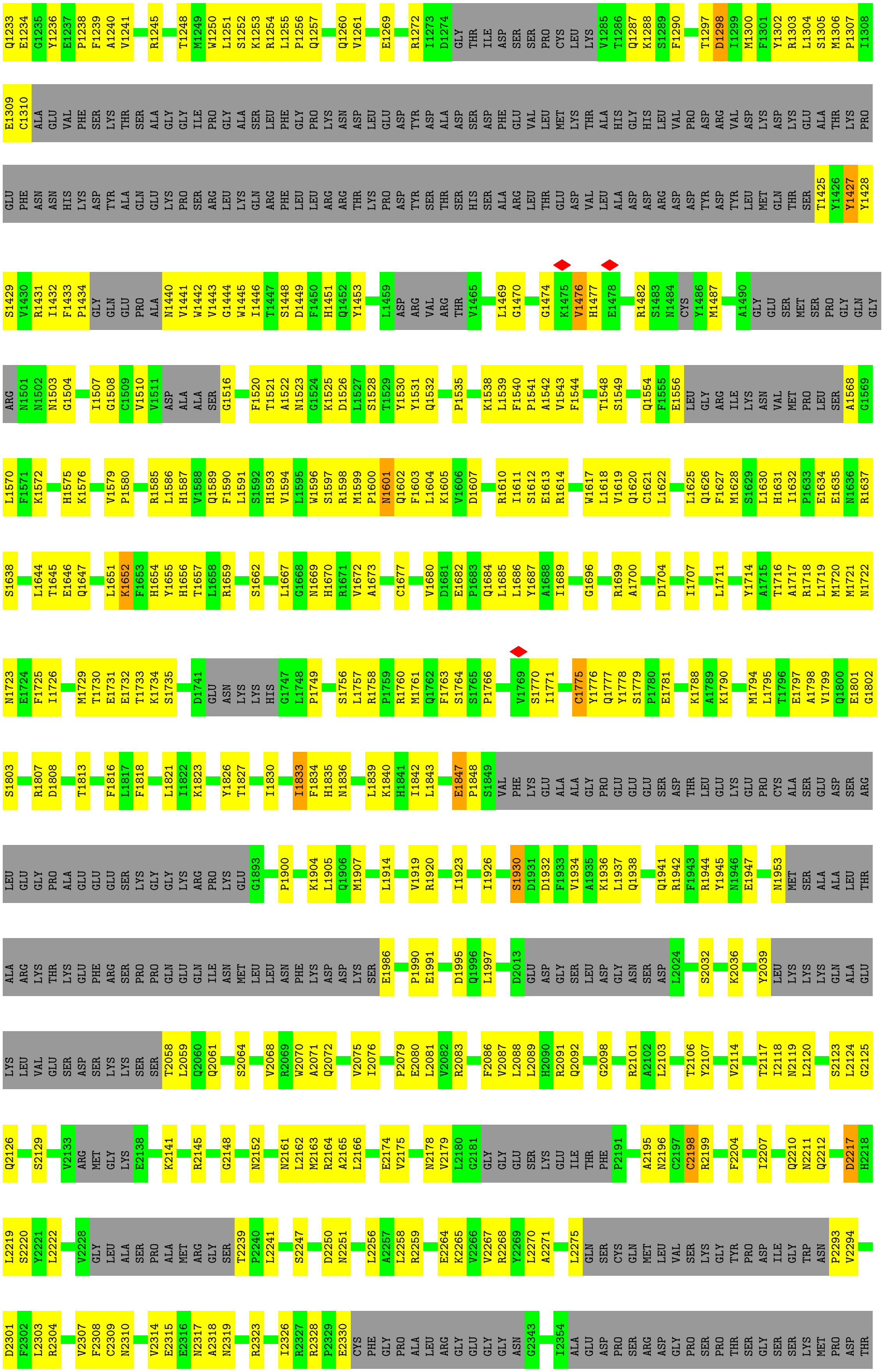
V233 L234 R235 L236 L237 H238 G239 HIS MET ASP E243 C244 L245 T246 V247 P248 H252 GLY GLU E255 Q256 R257 V260 H261 Y262 E263 G264 S268 R272 S273 L274 W275 R276 L277 E278 R281 W284 S285 G286 S287 H288 I289 G292 F295 R296 L297 R298 H299 T302 G303 K304
Y305 L306 S307 L308 M309 K312 S313 L314 L315 L316 M317 D318 K319 E320 K321 A322 D323 S326 T327 A328 F329 T330 F331 R332 S333 S334 K335 E336 K337 L338 ASP VAL GLY VAL R343 K344 M349 G350 T351 S352 G357 I363 Q364 H365 I366 G369 L370 W371 L372 T373 Y374 Q375 S376 VAL
ASP VAL LYS SER VAL ARG MET GLY S386 A391 E396 G397 H398 M399 D400 L403 N404 L405 S406 R407 S408 Q409 E412 T415 A416 R417 V418 I419 R420 S421 T422 V423 F424 L425 F426 N427 R428 F429 I430 L433 D434 S437 K438 K439 V452 S453 L454 S455 L456 Y462
H472 N477 R478 L479 R480 A481 L482 K483 N484 R485 Q486 N487 L488 F489 G493 L497 I502 D503 R504 L505 H506 V507 Y508 S509 S510 ALA ALA HIS PHE ALA ASP V517 A518 G519 R520 W526 K527 N531 A539 L540 I541 R542 N547 C548 A549 S552 G553 S554 L555 D556 W557
L558 I559 S560 R561 L562 E563 R564 L565 E566 A567 S568 I571 E584 K590 E591 G592 H593 I594 K595 S596 L600 L601 D602 K603 R606 N607 H608 K609 V610 V619 C620 H621 A624 V625 R626 Q629 H630 L631 N635 R640 L643 L644 Q645 T646 R647 L648 V649 N650 H651
V652 S653 R656 P657 G662 VAL SER GLU GLY SER ALA GLN TYR K671 Y674 L677 M678 V679 D680 H681 T682 E683 T687 A688 E689 R694 V695 G696 W697 Y703 S704 P705 Y706 P707 G708 G709 G710 E711 E712 W713 N716 G717 V718 D721 S724 D728 G729 L730 H731
L732 W733 C736 I737 V741 L748 T751 I755 S756 C757 I766 R769 I770 N771 G772 Q773 Q776 G777 M778 F789 V792 S793 F794 G797 I798 K799 V800 R801 F802 L803 L804 G805 GLY ARG HIS GLY E810 F811 K812 F813 L814 P815 P816 P817 G818 Y819 C822 Y823
P828 K829 L832 K833 V834 E835 H836 S837 R838 E839 Y840 K841 Q842 E843 R844 T845 Y846 T847 R848 D849 G852 P853 S856 LEU THR GLN ALA A861 I865 P866 V867 D868 T869 S870 Q871 I872 V873 L874 P875 P876 H877 L878 E879 R880 I881 R882 A886 H890 E891 L892 W893 V894 M895
N896 K897 I898 E899 L900 G901 W902 Q903 Y904 G905 P906 V907 R908 D909 D910 N911 K912 R913 Q914 H915 P916 C917 L918 V919 E920 F921 S922 K923 L924 P925 E926 Q927 E928 R929 N930 Y931 N932 L933 Q934 M935 S936 L937 E938 K941 T942 L943 L944 A945 L946 G947 C948 H949 V950 G951 I952 S953 D954 E955 H956
A957 GLU GLU LYS VAL LYS LYS MET LYS LEU PRO LYS ASN Y970 Q971 L972 T973 S974 G975 Y976 K977 P978 A979 P980 M981 D982 L983 S984 F985 I986 K987 L988 T989 P990 S991 A994 M995 V996 D997 K998 L999 A1000 E1001 N1002 A1003 H1004 N1005 V1006 W1007 A1008 R1009 D1010 R1011 I1012 R1013 Q1014 GLY TRP THR
TYR GLY ILE GLN GLN ASP VAL LYS ASN R1027 Y1035 L1038 D1039 D1040 R1041 T1042 K1043 K1044 K1047 D1048 S1049 L1050 R1051 E1052 A1053 V1054 R1055 T1056 L1057 L1058 S1059 Y1060 G1061 Y1062 N1063 L1064 E1065 A1066 PRO ASP GLN ASP HIS ALA ALA ARG ALA GLU VAL CYS SER GLY THR GLY GLU R1084 F1085
R1086 I1087 F1088 R1089 K1092 A1098 G1099 R1100 W1101 F1105 E1106 A1110 M1113 R1114 V1115 G1116 W1117 S1118 R1119 P1120 G1121 C1122 Q1123 P1124 D1125 Q1126 E1127 L1128 D1131 E1132 R1133 A1136 F1137 D1138 G1139 F1140 Q1143 R1144 W1145 H1146 E1150 H1151 R1154 S1155 W1156 Q1157 D1160 V1161 V1162
V1166 D1167 M1168 T1169 E1170 H1171 T1172 M1173 M1174 F1175 T1176 L1177 E1180 I1181 L1182 L1183 D1184 S1188 E1189 L1190 A1191 F1192 K1193 D1194 V1197 G1198 D1199 G1200 F1201 I1202 C1205 S1206 L1207 G1208 V1209 A1210 Q1211 R1214 M1215 N1216 F1217 G1218 K1219 T1223 L1224 K1225 Y1226 F1227 T1228 I1229 C1230 G1231 L1232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E1309 C1310 ALA GLU VAL PHE SER LYS THR SER ALA GLY GLY ILE PRO GLY ALA SER LEU PHE GLY PRO LYS ASN ASP LEU GLU ASP TYR ASP ALA ASP SER ASP PHE GLU VAL LEU MET LYS THR ALA HIS GLY HIS LEU VAL PRO ASP ARG VAL ASP LYS ASP LYS GLU ALA THR LYS PRO
GLU PHE ASN ASN HIS LYS ASP TYR ALA GLN GLU LYS PRO SER ARG LEU LYS GLN ARG PHE LEU LEU ARG ARG THR LYS PRO ASP TYR SER THR SER HIS SER ALA ARG LEU THR GLU ASP VAL LEU ALA ASP ARG ASP ASP TYR ASP TYR LEU MET GLN THR SER T1425 Y1426 Y1427 Y1428
S1429 V1430 R1431 I1432 F1433 P1434 GLY GLN GLU PRO ALA N1440 V1441 W1442 V1443 G1444 W1445 I1446 T1447 S1448 D1449 F1450 H1451 Q1452 Y1453 L1459 ASP ARG VAL ARG THR V1465 L1469 G1470 G1474 K1475 V1476 H1477 E1478 R1482 S1483 N1484 CYS Y1486 M1487 A1490 GLY GLU SER MET SER PRO GLY GLN GLY
ARG N1501 N1502 N1503 G1504 I1507 G1508 C1509 V1510 V1511 ASP ALA ALA SER G1516 F1520 T1521 A1522 N1523 G1524 K1525 D1526 L1527 S1528 T1529 Y1530 Y1531 Q1532 P1535 K1538 L1539 F1540 P1541 A1542 V1543 F1544 T1548 S1549 Q1554 F1555 E1556 LEU GLY ARG ILE LYS ASN VAL MET PRO LEU SER A1568 G1569
L1570 F1571 K1572 H1575 K1576 V1579 P1580 R1585 L1586 H1587 V1588 Q1589 F1590 L1591 S1592 H1593 V1594 L1595 W1596 S1597 R1598 M1599 P1600 N1601 Q1602 F1603 L1604 K1605 V1606 D1607 R1610 I1611 S1612 E1613 R1614 W1617 L1618 V1619 Q1620 C1621 L1622 L1625 Q1626 F1627 M1628 S1629 L1630 H1631 I1632 P1633 E1634 E1635 N1636 R1637
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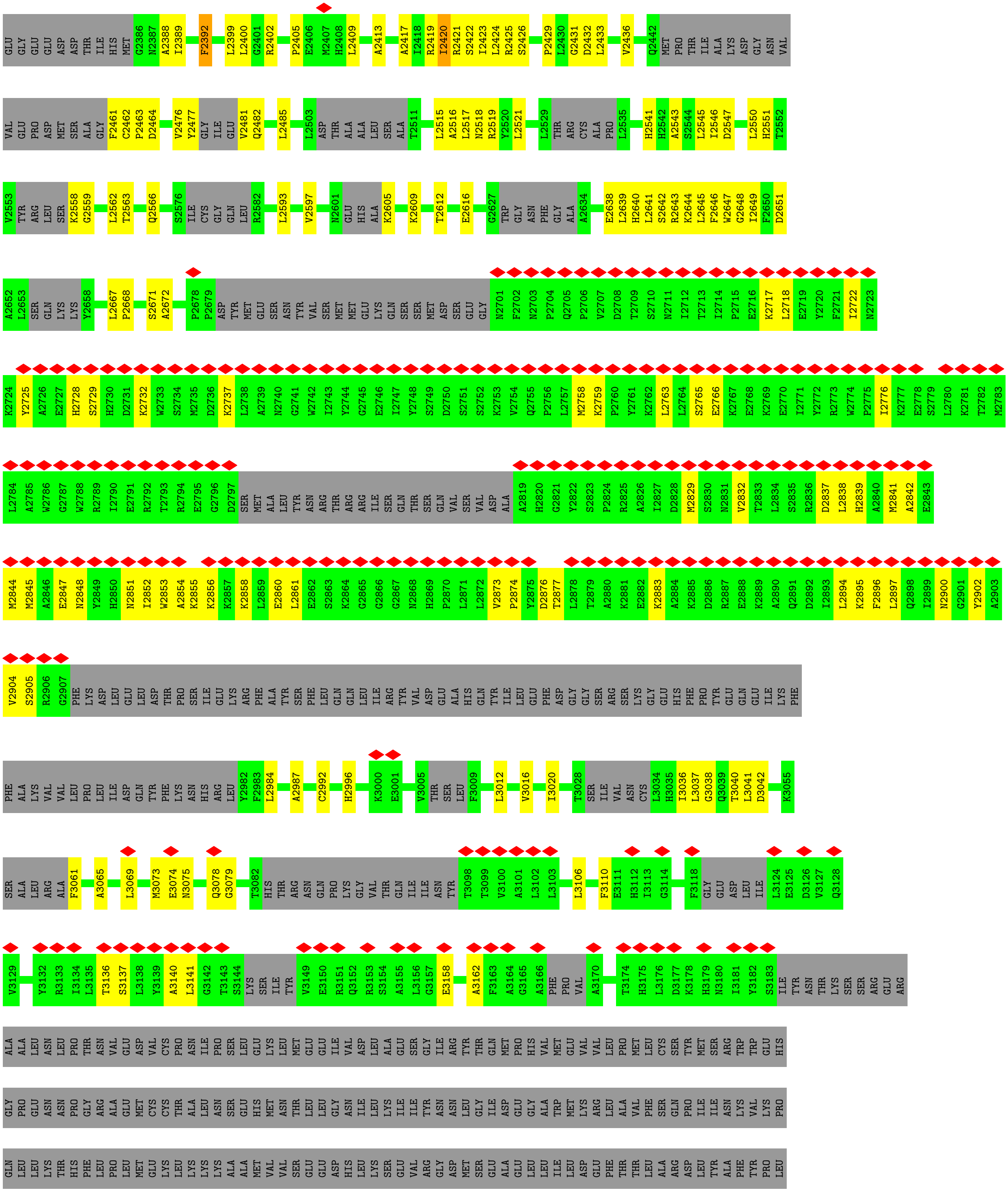
N1723 E1724 F1725 I1726 M1729 T1730 E1731 E1732 T1733 K1734 S1735 D1741 GLU ASN LYS LYS HIS G1747 L1748 P1749 S1756 L1757 R1758 P1759 R1760 M1761 Q1762 F1763 S1764 S1765 P1766 V1769 S1770 I1771 C1775 Y1776 Q1777 Y1778 S1779 P1780 E1781 K1788 A1789 K1790 M1794 L1795 T1796 E1797 A1798 V1799 Q1800 E1801 G1802
S1803 R1807 D1808 T1813 F1816 L1817 F1818 L1821 I1822 K1823 Y1826 T1827 I1830 I1833 F1834 H1835 N1836 L1839 K1840 H1841 I1842 L1843 E1847 P1848 S1849 VAL PHE LYS GLU ALA ALA GLY PRO GLU GLU GLU SER ASP THR LEU GLU LYS GLU PRO CYS ALA SER GLU ASP SER ARG
LEU GLU GLY PRO ALA GLU GLU GLU SER LYS GLY GLY LYS ARG PRO LYS GLU G1893 P1900 K1904 L1905 Q1906 M1907 L1914 V1919 R1920 I1923 I1926 S1930 D1931 D1932 F1933 V1934 A1935 K1936 L1937 Q1938 Q1941 R1942 F1943 R1944 Y1945 N1946 E1947 N1953 MET SER ALA ALA LEU THR
ALA ARG LYS THR LYS GLU PHE ARG SER PRO PRO GLN GLU GLN ILE ASN MET LEU LEU ASN PHE LYS ASP ASP LYS SER E1986 P1990 E1991 D1995 Q1996 L1997 D2013 GLU ASP GLY SER LEU ASP GLY ASN SER ASP L2024 S2032 K2036 Y2039 LEU LYS LYS LYS GLN ALA GLU
LYS LEU VAL GLU SER ASP SER LYS LYS SER SER T2058 L2059 Q2060 Q2061 S2064 V2068 R2069 W2070 A2071 Q2072 V2075 I2076 P2079 E2080 L2081 V2082 R2083 F2086 V2087 L2088 L2089 H2090 R2091 Q2092 G2098 R2101 A2102 L2103 T2106 Y2107 V2114 T2117 I2118 N2119 L2120 S2123 L2124 G2125
Q2126 S2129 V2133 ARG MET GLY LYS E2138 K2141 R2145 G2148 N2152 N2161 L2162 M2163 R2164 A2165 L2166 E2174 V2175 N2178 V2179 L2180 G2181 GLY GLY GLU SER LYS GLU ILE THR PHE P2191 A2195 N2196 C2197 C2198 R2199 F2204 I2207 Q2210 N2211 Q2212 D2217 H2218
L2219 S2220 Y2221 L2222 V2228 GLY LEU ALA SER PRO ALA MET ARG GLY SER T2239 P2240 L2241 S2247 D2250 N2251 L2256 A2257 L2258 R2259 E2264 K2265 V2266 V2267 R2268 Y2269 L2270 A2271 L2275 GLN SER CYS GLN MET LEU VAL SER LYS GLY TYR PRO ASP ILE GLY TRP ASN P2293 V2294
D2301 F2302 L2303 R2304 V2307 F2308 C2309 N2310 V2314 E2315 E2316 N2317 A2318 N2319 R2323 I2326 R2327 R2328 P2329 E2330 CYS PHE GLY PRO ALA LEU ARG GLY GLU GLY GLY ASN G2343 I2354 ALA GLU ASP PRO SER ARG ASP GLY PRO SER PRO THR SER GLY SER SER LYS MET PRO ASP THR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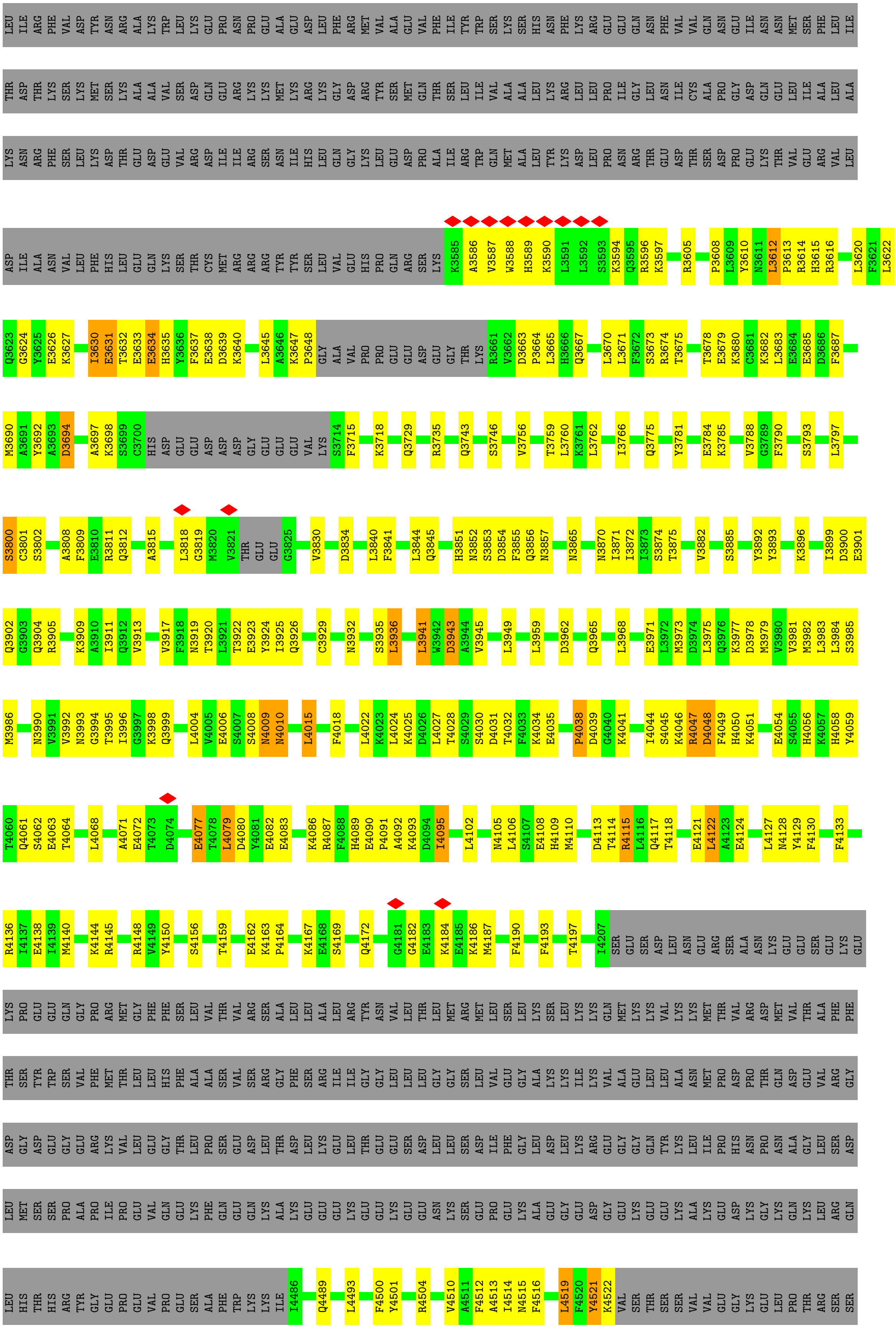
VAL GLU PRO ASP MET SER ALA GLY F2461 C2462 P2463 D2464 V2476 Y2477 GLY ILE GLU V2481 Q2482 L2485 L2503 ASP THR ALA ALA LEU SER ALA T2511 L2515 A2516 L2517 N2518 R2519 Y2520 L2521 L2529 THR ARG CYS ALA PRO L2535 H2541 H2542 A2543 S2544 L2545 I2546 D2547 L2550 H2551 T2552
V2553 TYR ARG LEU SER K2558 G2559 L2562 T2563 Q2566 S2576 ILE CYS GLY GLN LEU R2582 L2593 V2597 N2601 GLU HIS ALA K2605 K2609 T2612 E2616 G2627 TRP GLY ASN PHE GLY ALA A2634 E2638 L2639 H2640 L2641 S2642 R2643 K2644 L2645 F2646 W2647 G2648 I2649 F2650 D2651
A2652 L2653 SER GLN LYS LYS Y2658 L2667 P2668 S2671 A2672 P2678 P2679 ASP TYR MET GLU SER ASN TYR VAL SER MET MET GLU LYS GLN SER SER MET ASP SER GLU GLY N2701 F2702 N2703 P2704 Q2705 P2706 V2707 D2708 T2709 S2710 N2711 I2712 T2713 I2714 P2715 E2716 K2717 L2718 E2719 Y2720 F2721 I2722 N2723
K2724 Y2725 A2726 E2727 H2728 S2729 H2730 D2731 K2732 W2733 S2734 M2735 D2736 K2737 L2738 A2739 N2740 G2741 W2742 I2743 Y2744 G2745 E2746 I2747 Y2748 S2749 D2750 S2751 S2752 K2753 V2754 Q2755 P2756 L2757 M2758 K2759 P2760 Y2761 K2762 L2763 L2764 S2765 E2766 K2767 E2768 K2769 E2770 I2771 Y2772 R2773 W2774 P2775 I2776 K2777 E2778 S2779 L2780 K2781 T2782 M2783
L2784 A2785 W2786 G2787 W2788 R2789 I2790 E2791 R2792 T2793 R2794 E2795 G2796 D2797 SER MET ALA LEU TYR ASN ARG THR ARG ARG ILE SER GLN THR SER GLN VAL SER VAL ASP ALA A2819 H2820 G2821 Y2822 S2823 P2824 R2825 A2826 I2827 D2828 M2829 S2830 N2831 V2832 T2833 L2834 S2835 R2836 D2837 L2838 H2839 A2840 M2841 A2842 E2843
M2844 M2845 A2846 E2847 N2848 Y2849 H2850 N2851 I2852 W2853 A2854 K2855 K2856 K2857 K2858 L2859 E2860 L2861 E2862 S2863 K2864 G2865 G2866 G2867 N2868 H2869 P2870 L2871 L2872 V2873 P2874 Y2875 D2876 T2877 L2878 T2879 A2880 K2881 E2882 K2883 A2884 K2885 D2886 R2887 E2888 K2889 A2890 Q2891 D2892 I2893 L2894 K2895 F2896 L2897 Q2898 I2899 N2900 G2901 Y2902 A2903
V2904 S2905 R2906 G2907 PHE LYS ASP LEU GLU LEU ASP THR PRO SER ILE GLU LYS ARG PHE ALA TYR SER PHE LEU GLN GLN LEU ILE ARG TYR VAL ASP GLU ALA HIS GLN TYR ILE LEU GLU PHE ASP GLY GLY SER ARG SER LYS GLY GLU HIS PHE PRO TYR GLU GLN GLU ILE LYS PHE
PHE ALA LYS VAL VAL LEU PRO LEU ILE ASP GLN TYR PHE LYS ASN HIS ARG LEU Y2982 F2983 L2984 A2987 C2992 H2996 K3000 E3001 V3005 THR SER LEU F3009 L3012 V3016 I3020 T3028 SER ILE VAL ASN CYS L3034 H3035 I3036 L3037 G3038 Q3039 T3040 L3041 D3042 K3055
SER ALA LEU ARG ALA F3061 A3065 L3069 M3073 E3074 N3075 Q3078 G3079 T3082 HIS THR ARG ASN GLN PRO LYS GLY VAL THR GLN ILE ILE ASN TYR T3098 T3099 V3100 A3101 L3102 L3103 L3106 F3110 E3111 H3112 I3113 G3114 F3118 GLY GLU ASP LEU ILE L3124 E3125 D3126 V3127 Q3128
V3129 Y3132 R3133 I3134 L3135 T3136 S3137 L3138 Y3139 A3140 L3141 G3142 T3143 S3144 LYS SER ILE TYR V3149 E3150 R3151 Q3152 R3153 S3154 A3155 L3156 G3157 E3158 A3162 F3163 A3164 G3165 A3166 PHE PRO VAL A3170 T3174 H3175 L3176 D3177 K3178 H3179 N3180 I3181 Y3182 S3183 ILE TYR ASN THR LYS SER SER ARG GLU ARG
ALA ALA LEU ASN LEU PRO THR ASN VAL GLU ASP VAL CYS PRO ASN ILE PRO SER LEU GLU LYS LEU MET GLU GLU ILE VAL ASP LEU ALA GLU SER GLY ILE ARG TYR THR GLN MET PRO HIS VAL MET GLU VAL VAL LEU PRO MET LEU CYS SER TYR MET SER ARG TRP TRP GLU HIS
GLY PRO GLU ASN ASN PRO GLY ARG ALA GLU MET CYS CYS THR ALA LEU ASN SER GLU HIS MET ASN THR LEU LEU GLY ASN ILE LEU LYS ILE ILE TYR ASN ASN LEU GLY ILE ASP GLU GLY ALA TRP MET LYS ARG LEU ALA VAL PHE SER GLN PRO ILE ILE ASN LYS VAL LYS PRO
GLN LEU LEU LYS THR HIS PHE LEU PRO LEU MET GLU LYS LEU LYS LYS LYS ALA ALA MET VAL VAL SER GLU GLU ASP HIS LEU LYS SER GLU VAL ARG GLY ASP MET SER GLU ALA GLU LEU LEU ILE LEU ASP GLU PHE THR THR LEU ALA ARG ASP LEU TYR ALA PHE TYR PRO LEU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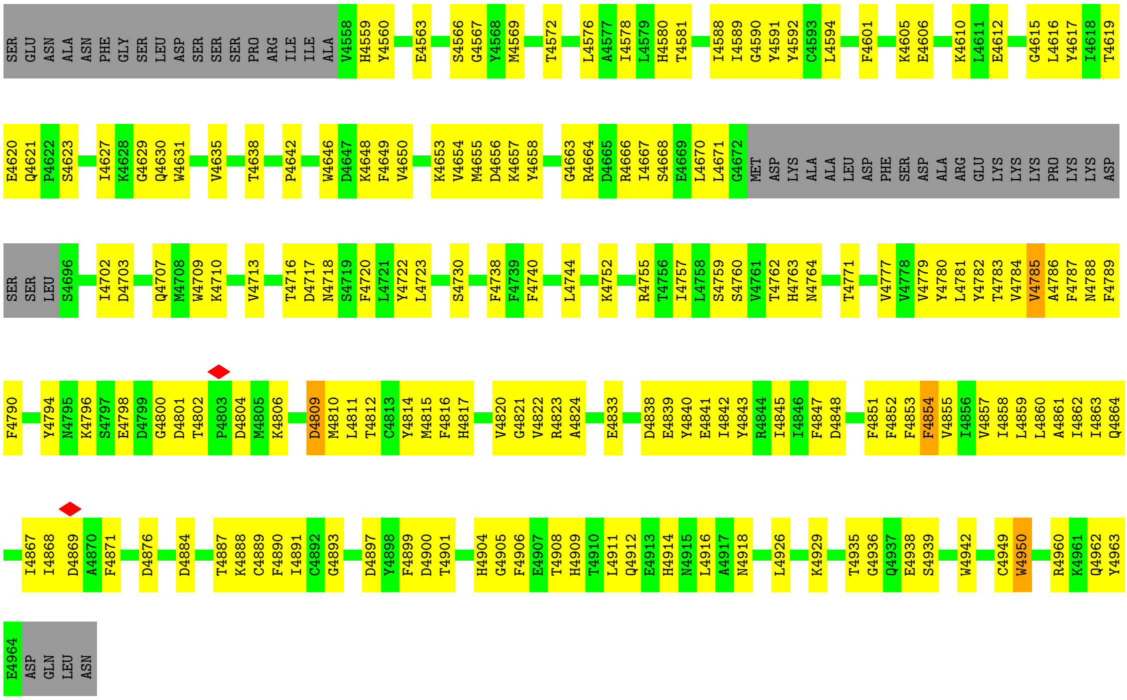
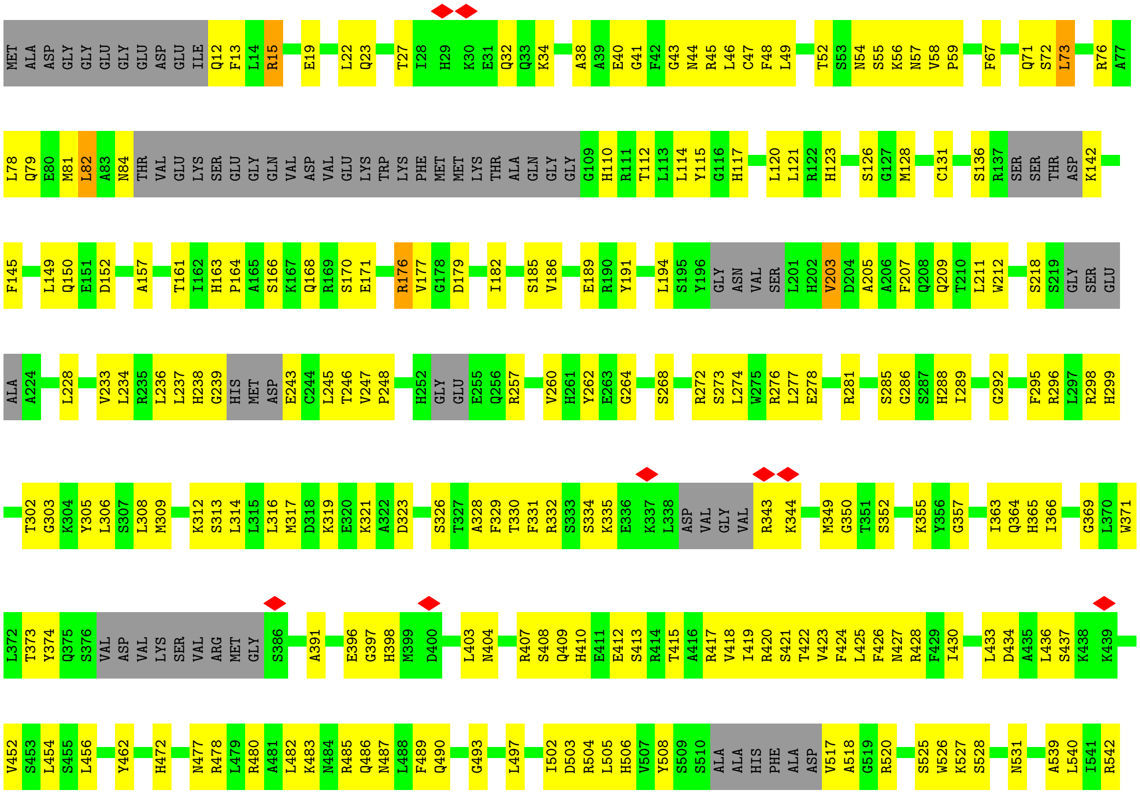
THR ASP THR LYS SER LYS MET SER LYS ALA ALA VAL SER ASP GLN GLU ARG LYS LYS MET LYS ARG LYS GLY ASP ARG TYR SER MET GLN THR SER LEU ILE VAL ALA ALA LEU LYS ARG LEU LEU PRO ILE GLY LEU ASN ILE CYS ALA PRO GLY ASP GLN GLU LEU ILE ALA LEU ALA
LYS ASN ARG PHE SER LEU LYS ASP THR GLU ASP GLU VAL ARG ASP ILE ILE ARG SER ASN ILE HIS LEU GLN GLY LYS LEU GLU ASP PRO ALA ILE ARG TRP GLN MET ALA LEU TYR LYS ASP LEU PRO ASN ARG THR GLU ASP THR SER ASP PRO GLU LYS THR VAL GLU ARG VAL LEU
ASP ILE ALA ASN VAL LEU PHE HIS LEU GLU GLN LYS SER THR CYS MET ARG ARG ARG TYR SER LEU VAL GLU HIS PRO GLN ARG SER LYS K3585 A3586 V3587 W3588 H3589 K3590 L3591 L3592 S3593 K3594 Q3595 R3596 K3597 R3605 P3608 L3609 Y3610 N3611 L3612 P3613 R3614 H3615 R3616 L3620 F3621 L3622
Q3623 G3624 Y3625 E3626 K3627 I3630 E3631 T3632 E3633 E3634 H3635 Y3636 F3637 E3638 D3639 K3640 L3645 A3646 K3647 P3648 GLY ALA VAL PRO PRO GLU GLU ASP GLU GLY THR LYS R3661 V3662 D3663 P3664 L3665 H3666 Q3667 L3670 L3671 F3672 S3673 R3674 T3675 T3678 E3679 K3680 C3681 K3682 L3683 E3684 E3685 D3686 F3687
M3690 A3691 Y3692 A3693 D3694 A3697 K3698 S3699 C3700 HIS ASP GLU GLU ASP ASP GLY GLU GLU GLU VAL LYS S3714 F3715 K3718 Q3729 R3735 Q3743 S3746 V3756 T3759 L3760 K3761 L3762 I3766 Q3775 Y3781 E3784 K3785 V3788 G3789 F3790 S3793 L3797
S3800 C3801 S3802 A3808 F3809 E3810 R3811 Q3812 A3815 L3818 G3819 M3820 V3821 THR GLU GLU G3825 V3830 D3834 L3840 F3841 L3844 Q3845 H3851 N3852 S3853 D3854 F3855 Q3856 N3857 N3865 N3870 I3871 I3872 I3873 S3874 T3875 V3882 S3885 Y3892 Y3893 K3896 I3899 D3900 E3901
Q3902 G3903 Q3904 R3905 K3909 A3910 I3911 Q3912 V3913 V3917 F3918 N3919 T3920 L3921 T3922 E3923 Y3924 I3925 Q3926 C3929 N3932 S3935 L3936 L3941 W3942 D3943 A3944 V3945 L3949 L3959 D3962 Q3965 L3968 E3971 L3972 M3973 D3974 L3975 Q3976 K3977 D3978 M3979 V3980 V3981 M3982 L3983 L3984 S3985
M3986 N3990 V3991 V3992 N3993 G3994 T3995 I3996 G3997 K3998 Q3999 L4004 V4005 E4006 S4007 S4008 N4009 N4010 L4015 F4018 L4022 K4023 L4024 K4025 D4026 L4027 T4028 S4029 S4030 D4031 T4032 F4033 K4034 E4035 P4038 D4039 G4040 K4041 I4044 S4045 K4046 R4047 D4048 F4049 H4050 K4051 E4054 S4055 H4056 K4057 H4058 Y4059
T4060 Q4061 S4062 E4063 T4064 L4068 A4071 E4072 T4073 D4074 E4077 T4078 L4079 D4080 Y4081 E4082 E4083 K4086 R4087 F4088 H4089 E4090 P4091 A4092 K4093 D4094 I4095 L4102 N4105 L4106 S4107 E4108 H4109 M4110 D4113 T4114 R4115 L4116 Q4117 T4118 E4121 L4122 A4123 E4124 L4127 N4128 Y4129 F4130 F4133
R4136 I4137 E4138 I4139 M4140 K4144 R4145 R4148 V4149 Y4150 S4156 T4159 E4162 K4163 P4164 K4167 E4168 S4169 Q4172 G4181 G4182 E4183 K4184 E4185 K4186 M4187 F4190 F4193 T4197 I4207 SER GLU SER ASP LEU ASN GLU ARG SER ALA ASN LYS GLU GLU SER GLU LYS GLU
LYS PRO GLU GLU GLN GLY PRO ARG MET GLY PHE PHE SER LEU VAL THR VAL ARG SER ALA LEU LEU ALA LEU ARG TYR ASN VAL LEU THR LEU MET ARG MET LEU SER LEU LYS SER LEU LYS LYS GLN MET LYS VAL LYS LYS MET THR VAL ARG ASP MET VAL THR ALA PHE PHE
THR SER TYR TRP SER VAL PHE MET THR LEU LEU HIS PHE ALA ALA SER VAL SER ARG GLY PHE SER ARG ILE ILE GLY GLY LEU LEU LEU GLY GLY SER LEU VAL GLU GLY ALA LYS LYS ILE LYS VAL ALA GLU LEU LEU ALA ASN MET PRO ASP PRO THR GLN ASP GLU VAL ARG GLY
ASP GLY ASP GLU GLY GLU ARG LYS VAL LEU GLU GLY THR LEU PRO SER GLU ASP LEU THR ASP LEU LYS GLU LEU THR GLU GLU SER ASP LEU LEU SER ASP ILE PHE GLY LEU ASP LEU LYS ARG GLU GLY GLY GLN TYR LYS LEU ILE PRO HIS ASN PRO ASN ALA GLY LEU SER ASP
LEU MET SER SER PRO ALA PRO ILE PRO GLU VAL GLN GLU LYS PHE GLN GLU GLN LYS ALA LYS GLU GLU GLU LYS GLU GLU LYS GLU GLU ASN LYS SER GLU PRO GLU LYS ALA GLU GLY GLU ASP GLY GLU LYS GLU GLU LYS ALA LYS GLU ASP LYS GLY LYS GLN LYS LEU ARG GLN
LEU HIS THR HIS ARG TYR GLY GLY PRO GLU VAL PRO GLU SER ALA PHE TRP LYS LYS ILE I4486 Q4489 L4493 F4500 Y4501 R4504 V4510 A4511 F4512 A4513 I4514 N4515 F4516 L4519 F4520 Y4521 K4522 VAL SER THR SER SER VAL VAL GLU GLY LYS GLU LEU PRO THR ARG SER SER



- Molecule 1: RyR2

Chain E:

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Q645 T646 R647 L648 V649 N650 H651 V652 S653 R656 P657 L661 G662 VAL SER GLU GLY SER ALA GLN TYR K671 Y674 L677 M678 V679 D680 H681 T682 E683 T687 A688 E689 R694 V695 G696 W697 P705 Y706 P707 G708 G709 G710 E711 E712 W713 N716 D721 S724
D728 G729 L730 H731 L732 W733 I737 V741 L748 T751 I755 S756 C757 P764 S765 I766 R769 I770 N771 G772 Q773 Q776 G777 M778 F779 E780 F788 F789 V792 S793 F794 G797 I798 K799 V800 R801 F802 L803 L804 G805 GLY ARG HIS GLY E810 F811 K812 F813 L814
P815 P816 P817 G818 Y819 C822 Y823 P828 K829 K833 V834 E835 H836 S837 R838 E839 Y840 K841 Q842 E843 R844 T845 Y846 T847 R848 D849 G852 P853 S856 LEU THR GLN ALA A861 I865 P866 V867 D868 T869 S870 Q871 I872 V873 L874 P875 P876 H877 L878 E879 R880 I881 R882 A886
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V950 G951 I952 S953 D954 E955 H956 A957 GLU GLU LYS VAL LYS LYS MET LYS LEU PRO LYS ASN Y970 Q971 L972 T973 S974 G975 Y976 K977 P978 A979 P980 M981 D982 L983 S984 F985 I986 K987 L988 T989 P990 A994 M995 V996 D997 K998 L999 A1000 E1001 N1002 A1003 H1004 N1005 V1006 W1007 A1008 R1009 D1010 R1011
I1012 R1013 Q1014 GLY TRP THR TYR GLY ILE GLN GLN ASP VAL LYS ASN R1027 Y1035 L1038 D1039 D1040 R1041 T1042 K1043 K1044 K1047 D1048 S1049 L1050 R1051 E1052 A1053 V1054 R1055 T1056 L1057 L1058 G1059 Y1060 G1061 Y1062 N1063 L1064 E1065 A1066 PRO ASP GLN ASP HIS ALA ALA ARG ALA GLU VAL CYS SER
GLY THR GLY GLU R1084 F1085 R1086 I1087 F1088 R1089 K1092 K1097 A1098 G1099 R1100 W1101 E1106 M1113 R1114 V1115 G1116 W1117 S1118 R1119 P1120 G1121 C1122 Q1123 P1124 D1125 Q1126 E1127 L1128 D1131 E1132 R1133 A1136 F1137 D1138 Q1143 R1144 W1145 H1146 E1150 H1151 R1154 S1155 W1156 Q1157 A1158 G1159
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P1307 I1308 E1309 C1310 ALA GLU VAL PHE SER LYS THR SER ALA GLY GLY ILE PRO GLY ALA SER LEU PHE GLY PRO LYS ASN ASP LEU GLU ASP TYR ASP ALA ASP SER ASP PHE GLU VAL LEU MET LYS THR ALA HIS GLY HIS LEU VAL PRO ASP ARG VAL ASP LYS ASP LYS GLU ALA THR
LYS PRO GLU PHE ASN ASN HIS LYS ASP TYR ALA GLN GLU LYS PRO SER ARG LEU LYS GLN ARG PHE LEU LEU ARG ARG THR LYS PRO ASP TYR SER THR SER HIS SER ALA ARG LEU THR GLU ASP VAL LEU ALA ASP ASP ARG ASP ASP TYR ASP TYR LEU MET GLN THR SER T1425 Y1426
Y1427 Y1428 S1429 V1430 R1431 I1432 F1433 P1434 GLY GLN GLU PRO ALA N1440 V1441 W1442 V1443 G1444 W1445 I1446 H1451 Q1452 Y1453 L1459 ASP ARG VAL ARG THR V1465 L1469 G1470 G1474 K1475 V1476 H1477 E1478 R1482 S1483 N1484 CYS Y1486 M1487 A1490 GLY GLU SER MET SER PRO GLY GLN GLY ARG
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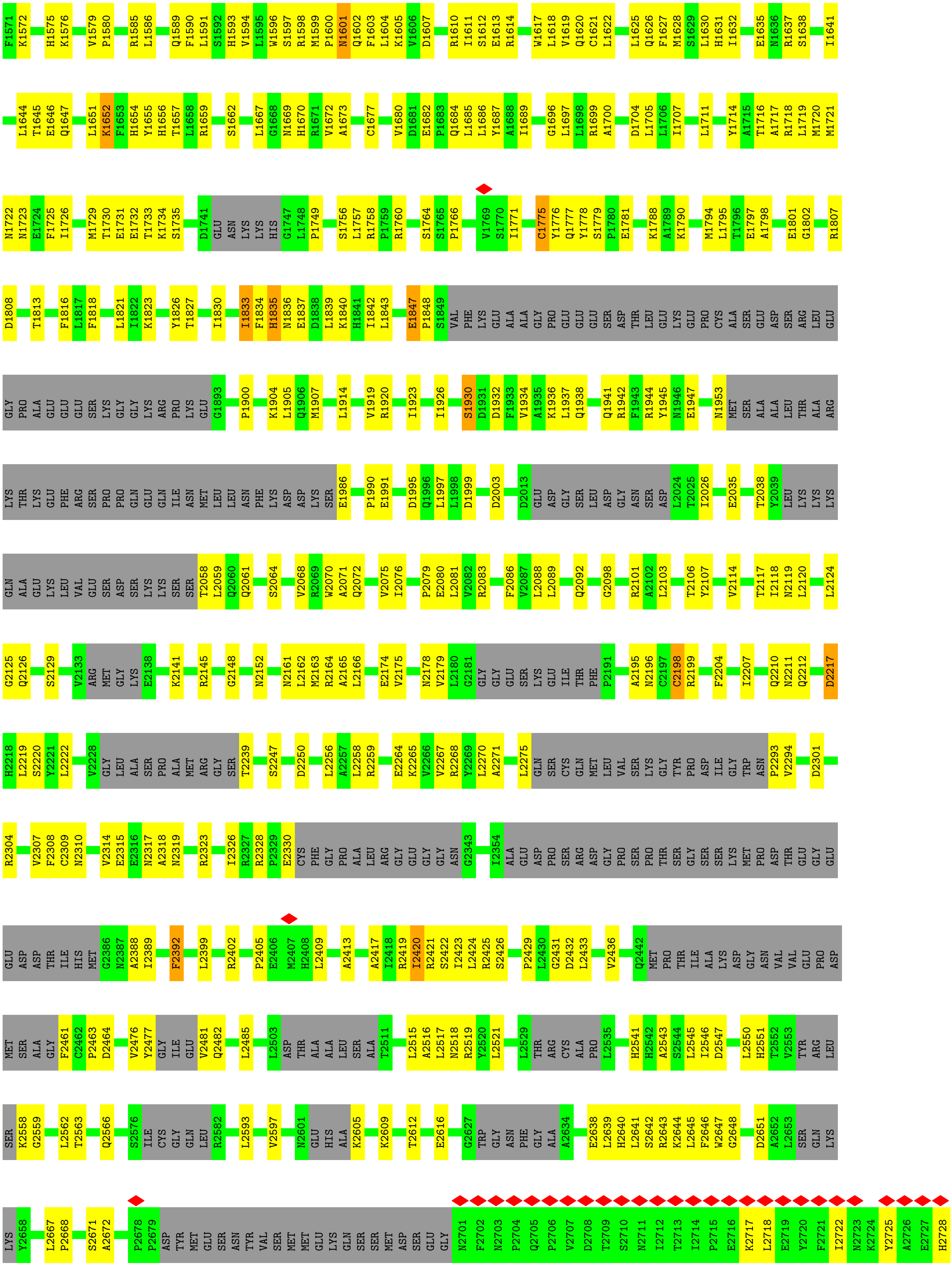
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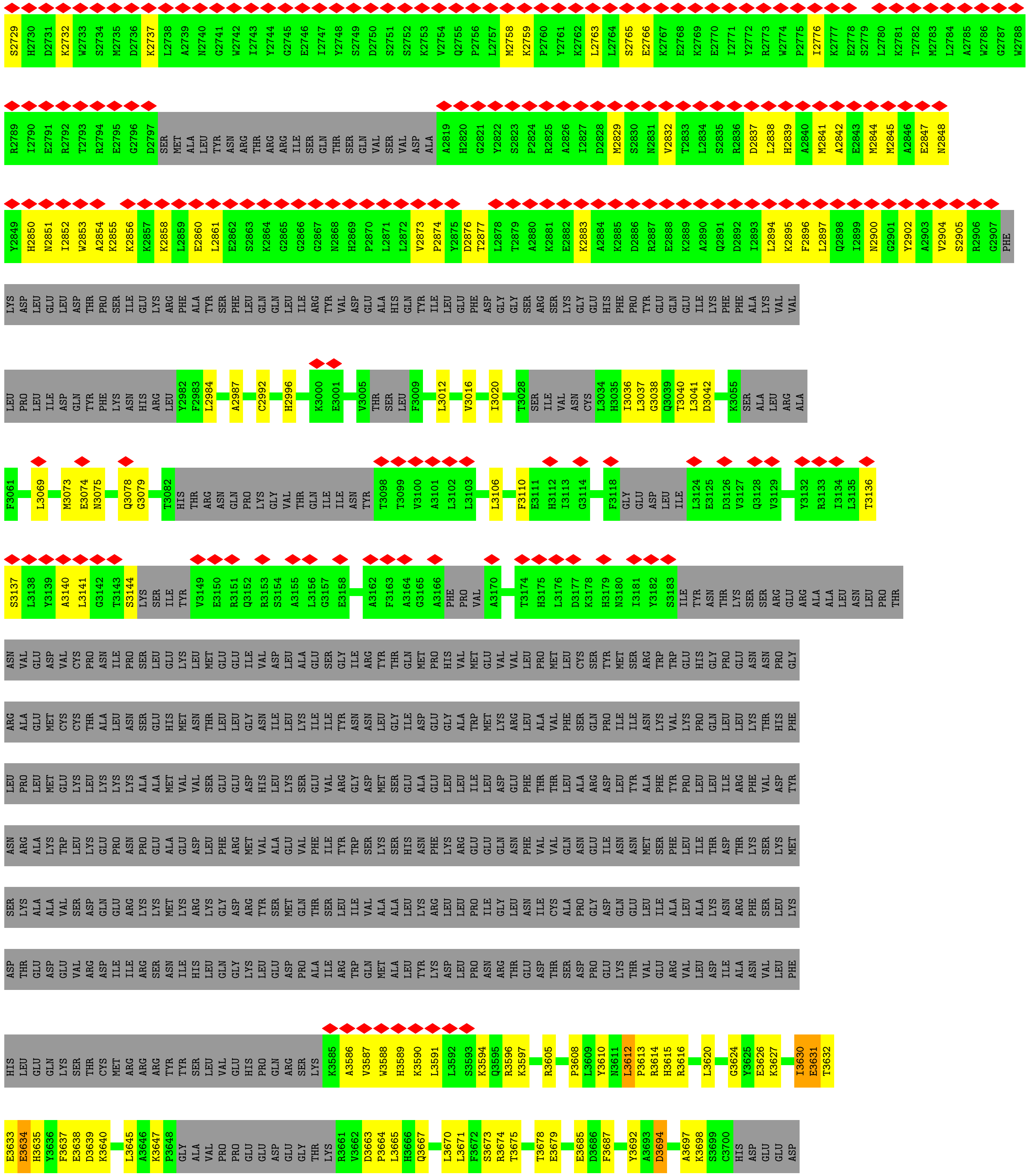
D1808 T1813 F1816 L1817 F1818 L1821 I1822 K1823 Y1826 T1827 I1830 I1833 F1834 H1835 N1836 E1837 D1838 L1839 K1840 H1841 I1842 L1843 E1847 P1848 S1849 VAL PHE LYS GLU ALA ALA GLY PRO GLU GLU GLU SER ASP THR LEU GLU LYS GLU PRO CYS ALA SER GLU ASP SER ARG LEU GLU
GLY PRO ALA GLU GLU GLU SER LYS GLY GLY LYS ARG PRO LYS GLU G1893 P1900 K1904 L1905 Q1906 M1907 L1914 V1919 R1920 I1923 I1926 S1930 D1931 D1932 F1933 V1934 A1935 K1936 L1937 Q1938 Q1941 R1942 F1943 R1944 Y1945 N1946 E1947 N1953 MET SER ALA ALA LEU THR ALA ARG
LYS THR LYS GLU PHE ARG SER PRO PRO GLN GLU GLN ILE ASN MET LEU LEU ASN PHE LYS ASP ASP LYS SER E1986 P1990 E1991 D1995 Q1996 L1997 L1998 D1999 D2003 D2013 GLU ASP GLY SER LEU ASP GLY ASN SER ASP L2024 T2025 I2026 E2035 T2038 Y2039 LEU LYS LYS LYS
GLN ALA GLU LYS LEU VAL GLU SER ASP SER LYS LYS SER SER T2058 L2059 Q2060 Q2061 S2064 V2068 R2069 W2070 A2071 Q2072 V2075 I2076 P2079 E2080 L2081 V2082 R2083 F2086 V2087 L2088 L2089 Q2092 G2098 R2101 A2102 L2103 T2106 Y2107 V2114 T2117 I2118 N2119 L2120 L2124
G2125 Q2126 S2129 V2133 ARG MET GLY LYS E2138 K2141 R2145 G2148 N2152 N2161 L2162 M2163 R2164 A2165 L2166 E2174 V2175 N2178 V2179 L2180 G2181 GLY GLY GLU SER LYS GLU ILE THR PHE P2191 A2195 N2196 C2197 C2198 R2199 F2204 I2207 Q2210 N2211 Q2212 D2217
H2218 L2219 S2220 Y2221 L2222 V2228 GLY LEU ALA SER PRO ALA MET ARG GLY SER T2239 S2247 D2250 L2256 A2257 L2258 R2259 E2264 K2265 V2266 V2267 R2268 Y2269 L2270 A2271 L2275 GLN SER CYS GLN MET LEU VAL SER LYS GLY TYR PRO ASP ILE GLY TRP ASN P2293 V2294 D2301
R2304 V2307 F2308 C2309 N2310 V2314 E2315 E2316 N2317 A2318 N2319 R2323 I2326 R2327 R2328 P2329 E2330 CYS PHE GLY PRO ALA LEU ARG GLY GLU GLY GLY ASN G2343 I2354 ALA GLU ASP PRO SER ARG ASP GLY PRO SER PRO THR SER GLY SER SER LYS MET PRO ASP THR GLU GLY GLU
GLU ASP ASP THR ILE HIS MET G2386 N2387 A2388 I2389 F2392 L2399 R2402 P2405 E2406 M2407 H2408 L2409 A2413 A2417 I2418 R2419 I2420 R2421 S2422 I2423 L2424 R2425 S2426 P2429 L2430 G2431 D2432 L2433 V2436 Q2442 MET PRO THR THR ILE ALA LYS ASP GLY ASN VAL VAL GLU PRO ASP
MET SER ALA GLY F2461 C2462 P2463 D2464 V2476 Y2477 GLY ILE GLU V2481 Q2482 L2485 L2503 ASP THR ALA ALA LEU SER ALA T2511 L2515 A2516 L2517 N2518 R2519 Y2520 L2521 L2529 THR ARG CYS ALA PRO L2535 H2541 H2542 A2543 S2544 L2545 I2546 D2547 L2550 H2551 T2552 V2553 TYR ARG LEU
SER K2558 G2559 L2562 T2563 Q2566 S2576 ILE CYS GLY GLN LEU R2582 L2593 V2597 N2601 GLU HIS ALA K2605 K2609 T2612 E2616 G2627 TRP GLY ASN PHE GLY ALA A2634 E2638 L2639 H2640 L2641 S2642 R2643 K2644 L2645 F2646 W2647 G2648 D2651 A2652 L2653 SER GLN LYS
LYS Y2658 L2667 P2668 S2671 A2672 P2678 P2679 ASP TYR MET GLU SER ASN TYR VAL SER MET MET GLU LYS GLN SER SER MET ASP SER GLU GLY N2701 F2702 N2703 P2704 Q2705 P2706 V2707 D2708 T2709 S2710 N2711 I2712 T2713 I2714 P2715 E2716 K2717 L2718 E2719 Y2720 F2721 I2722 N2723 K2724 Y2725 A2726 E2727 H2728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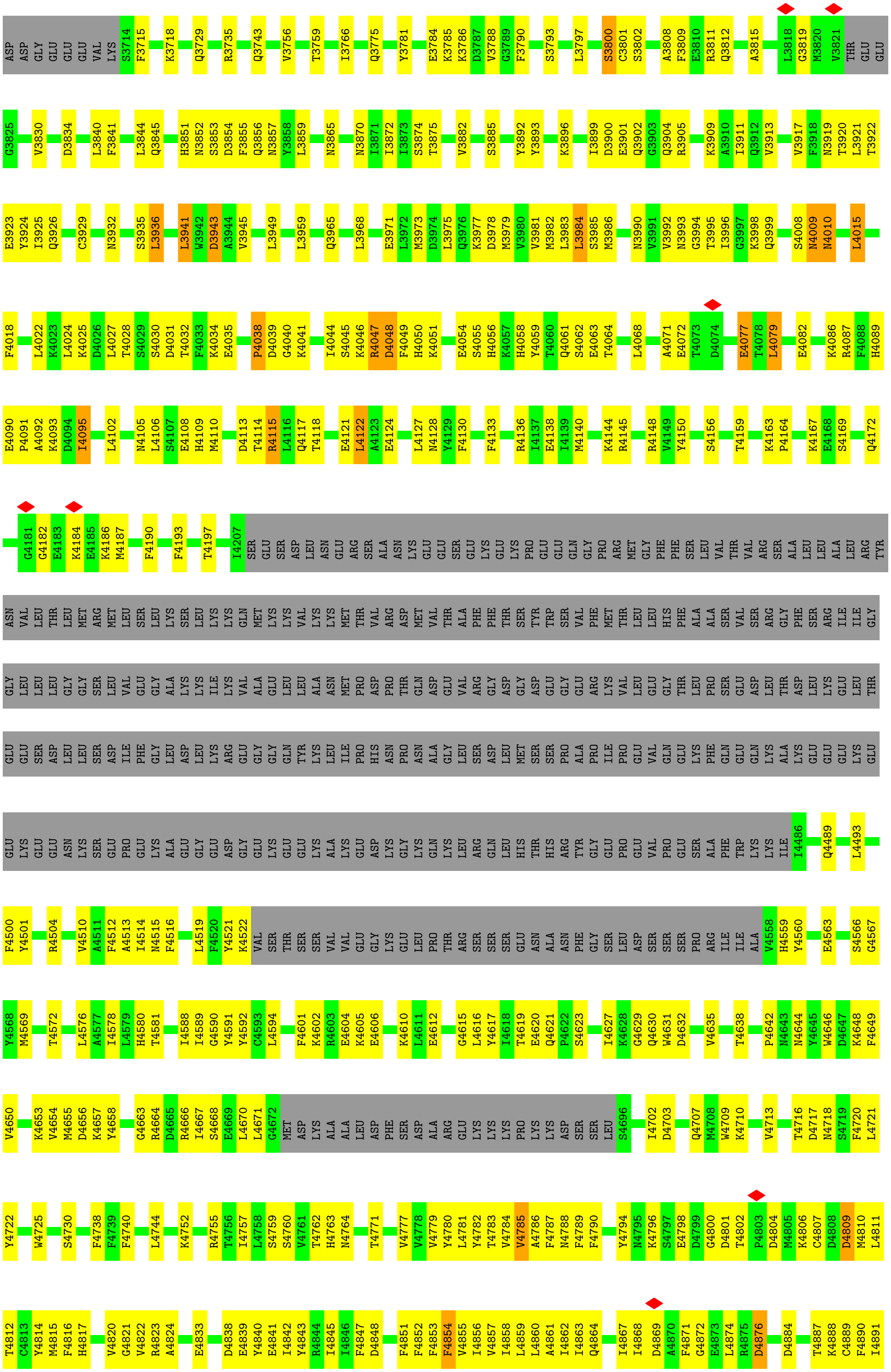
R2789 I2790 E2791 R2792 T2793 R2794 E2795 G2796 D2797 SER MET ALA LEU TYR ASN ARG THR ARG ARG ILE SER GLN THR SER GLN VAL SER VAL ASP ALA A2819 H2820 G2821 Y2822 S2823 P2824 R2825 A2826 I2827 D2828 M2829 S2830 N2831 V2832 T2833 L2834 S2835 R2836 D2837 L2838 H2839 A2840 M2841 A2842 E2843 M2844 M2845 A2846 E2847 N2848
Y2849 H2850 N2851 I2852 W2853 A2854 K2855 K2856 K2857 K2858 L2859 E2860 L2861 E2862 S2863 K2864 G2865 G2866 G2867 N2868 H2869 P2870 L2871 L2872 V2873 P2874 Y2875 D2876 T2877 L2878 T2879 A2880 K2881 E2882 K2883 A2884 K2885 D2886 R2887 E2888 K2889 A2890 Q2891 D2892 I2893 L2894 K2895 F2896 L2897 Q2898 I2899 N2900 G2901 Y2902 A2903 V2904 S2905 R2906 G2907 PHE
LYS ASP LEU GLU LEU ASP THR PRO SER ILE GLU LYS ARG PHE ALA TYR SER PHE LEU GLN GLN LEU ILE ARG TYR VAL ASP GLU ALA HIS GLN TYR ILE LEU GLU PHE ASP GLY GLY SER ARG SER LYS GLY GLU HIS PHE PRO TYR GLU GLN GLU ILE LYS PHE PHE ALA LYS VAL VAL
LEU PRO LEU ILE ASP GLN TYR PHE LYS ASN HIS ARG LEU Y2982 F2983 L2984 A2987 C2992 H2996 K3000 E3001 V3005 THR SER LEU F3009 L3012 V3016 I3020 T3028 SER ILE VAL ASN CYS L3034 H3035 I3036 L3037 G3038 Q3039 T3040 L3041 D3042 K3055 SER ALA LEU ARG ALA
F3061 L3069 M3073 E3074 N3075 Q3078 G3079 T3082 HIS THR ARG ASN GLN PRO LYS GLY VAL THR GLN ILE ILE ASN TYR T3098 T3099 V3100 A3101 L3102 L3103 L3106 F3110 E3111 H3112 I3113 G3114 F3118 GLY GLU ASP LEU ILE L3124 E3125 D3126 V3127 Q3128 V3129 Y3132 R3133 I3134 L3135 T3136
S3137 L3138 Y3139 A3140 L3141 G3142 T3143 S3144 LYS SER ILE TYR V3149 E3150 R3151 Q3152 R3153 S3154 A3155 L3156 G3157 E3158 A3162 F3163 A3164 G3165 A3166 PHE PRO VAL A3170 T3174 H3175 L3176 D3177 K3178 H3179 N3180 I3181 Y3182 S3183 ILE TYR ASN THR LYS SER SER ARG GLU ARG ALA ALA LEU ASN LEU PRO THR
ASN VAL GLU ASP VAL CYS PRO ASN ILE PRO SER LEU GLU LYS LEU MET GLU GLU ILE VAL ASP LEU ALA GLU SER GLY ILE ARG TYR THR GLN MET PRO HIS VAL MET GLU VAL VAL LEU PRO MET LEU CYS SER TYR MET SER ARG TRP TRP GLU HIS GLY PRO GLU ASN ASN PRO GLY
ARG ALA GLU MET CYS CYS THR ALA LEU ASN SER GLU HIS MET ASN THR LEU LEU GLY ASN ILE LEU LYS ILE ILE TYR ASN ASN LEU GLY ILE ASP GLU GLY ALA TRP MET LYS ARG LEU ALA VAL PHE SER GLN PRO ILE ILE ASN LYS VAL LYS PRO GLN LEU LEU LYS THR HIS PHE
LEU PRO LEU MET GLU LYS LEU LYS LYS LYS ALA ALA MET VAL VAL SER GLU GLU ASP HIS LEU LYS SER GLU VAL ARG GLY ASP MET SER GLU ALA GLU LEU LEU ILE LEU ASP GLU PHE THR THR LEU ALA ARG ASP LEU TYR ALA PHE TYR PRO LEU LEU ILE ARG PHE VAL ASP TYR
ASN ARG ALA LYS TRP LEU LYS GLU PRO ASN PRO GLU ALA GLU ASP LEU PHE ARG MET VAL ALA GLU VAL PHE ILE TYR TRP SER LYS SER HIS ASN PHE LYS ARG GLU GLU GLN ASN PHE VAL VAL GLN ASN GLU ILE ASN ASN MET SER PHE LEU ILE THR ASP THR LYS SER LYS MET
SER LYS ALA ALA VAL SER ASP GLN GLU ARG LYS LYS MET LYS ARG LYS GLY ASP ARG TYR SER MET GLN THR SER LEU ILE VAL ALA ALA LEU LYS ARG LEU LEU PRO ILE GLY LEU ASN ILE CYS ALA PRO GLY ASP GLN GLU LEU ILE ALA LEU ALA LYS ASN ARG PHE SER LEU LYS
ASP THR GLU ASP GLU VAL ARG ASP ILE ILE ARG SER ASN ILE HIS LEU GLN GLY LYS LEU GLU ASP PRO ALA ILE ARG TRP GLN MET ALA LEU TYR LYS ASP LEU PRO ASN ARG THR GLU ASP THR SER ASP PRO GLU LYS THR VAL GLU ARG VAL LEU ASP ILE ALA ASN VAL LEU PHE
HIS LEU GLU GLN LYS SER THR CYS MET ARG ARG ARG TYR TYR SER LEU VAL GLU HIS PRO GLN ARG SER LYS K3585 A3586 V3587 W3588 H3589 K3590 L3591 L3592 S3593 K3594 Q3595 R3596 K3597 R3605 P3608 L3609 Y3610 N3611 L3612 P3613 R3614 H3615 R3616 L3620 G3624 Y3625 E3626 K3627 I3630 E3631 T3632
E3633 E3634 H3635 Y3636 F3637 E3638 D3639 K3640 L3645 A3646 K3647 P3648 GLY ALA VAL PRO PRO GLU GLU ASP GLU GLY THR LYS R3661 V3662 D3663 P3664 L3665 H3666 Q3667 L3670 L3671 F3672 S3673 R3674 T3675 T3678 E3679 E3685 D3686 F3687 Y3692 A3693 D3694 A3697 K3698 S3699 C3700 HIS ASP GLU GLU ASP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G3825 V3830 D3834 L3840 F3841 L3844 Q3845 H3851 N3852 S3853 D3854 F3855 Q3856 N3857 Y3858 L3859 N3865 N3870 I3871 I3872 I3873 S3874 T3875 V3882 S3885 Y3892 Y3893 K3896 I3899 D3900 E3901 Q3902 G3903 Q3904 R3905 K3909 A3910 I3911 Q3912 V3913 V3917 F3918 N3919 T3920 L3921 T3922
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G4181 G4182 E4183 K4184 E4185 K4186 M4187 F4190 F4193 T4197 I4207 SER GLU SER ASP LEU ASN GLU ARG SER ALA ASN LYS GLU GLU SER GLU LYS GLU LYS PRO GLU GLU GLN GLY PRO ARG MET GLY PHE PHE SER LEU VAL THR VAL ARG SER ALA LEU LEU ALA LEU ARG TYR
ASN VAL LEU THR LEU MET ARG MET LEU SER LEU LYS SER LEU LYS LYS GLN MET LYS LYS VAL LYS LYS MET THR VAL ARG ASP MET VAL THR ALA PHE PHE THR SER TYR TRP SER VAL PHE MET THR LEU LEU HIS PHE ALA ALA SER VAL SER ARG GLY PHE SER ARG ILE ILE GLY
GLY LEU LEU LEU GLY GLY SER LEU VAL GLU GLY ALA LYS LYS ILE LYS VAL ALA GLU LEU LEU ALA ASN MET PRO ASP PRO THR GLN ASP GLU VAL ARG GLY ASP GLY ASP GLU GLY GLU ARG LYS VAL LEU GLU GLY THR LEU PRO SER GLU ASP LEU THR ASP LEU LYS GLU LEU THR
GLU GLU SER ASP LEU LEU SER ASP ILE PHE GLY LEU ASP LEU LYS ARG GLU GLY GLY GLN TYR LYS LEU ILE PRO HIS ASN PRO ASN ALA GLY LEU SER ASP LEU MET SER SER PRO ALA PRO ILE PRO GLU VAL GLN GLU LYS PHE GLN GLU GLN LYS ALA LYS GLU GLU GLU LYS GLU
GLU LYS GLU GLU ASN LYS SER GLU PRO GLU LYS ALA GLU GLY GLU ASP GLY GLU LYS GLU GLU LYS ALA LYS GLU ASP LYS GLY LYS GLN LYS LEU ARG GLN LEU HIS THR HIS ARG TYR GLY GLU PRO GLU VAL PRO GLU SER ALA PHE TRP LYS LYS ILE I4486 Q4489 L4493
F4500 Y4501 R4504 V4510 A4511 F4512 A4513 I4514 N4515 F4516 L4519 F4520 Y4521 K4522 VAL SER THR SER SER VAL VAL GLU GLY LYS GLU LEU PRO THR ARG SER SER SER GLU ASN ALA ASN PHE GLY SER LEU ASP SER SER SER PRO ARG ILE ILE ALA V4558 H4559 Y4560 E4563 S4566 G4567
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V4650 K4653 V4654 M4655 D4656 K4657 Y4658 G4663 R4664 D4665 R4666 I4667 S4668 E4669 L4670 L4671 G4672 MET ASP LYS ALA ALA LEU ASP PHE SER ASP ALA ARG GLU LYS LYS LYS PRO LYS LYS ASP SER SER LEU S4696 I4702 D4703 Q4707 M4708 W4709 K4710 V4713 T4716 D4717 N4718 S4719 F4720 L4721
Y4722 W4725 S4730 F4738 F4739 F4740 L4744 K4752 R4755 T4756 I4757 L4758 S4759 S4760 V4761 T4762 H4763 N4764 T4771 V4777 V4778 Y4779 Y4780 L4781 Y4782 T4783 V4784 V4785 A4786 F4787 N4788 F4789 F4790 Y4794 N4795 K4796 S4797 E4798 D4799 G4800 D4801 T4802 P4803 D4804 M4805 K4806 C4807 D4808 D4809 M4810 L4811
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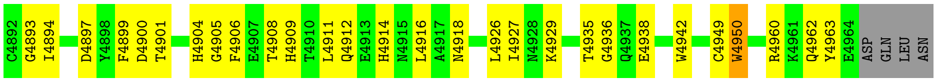
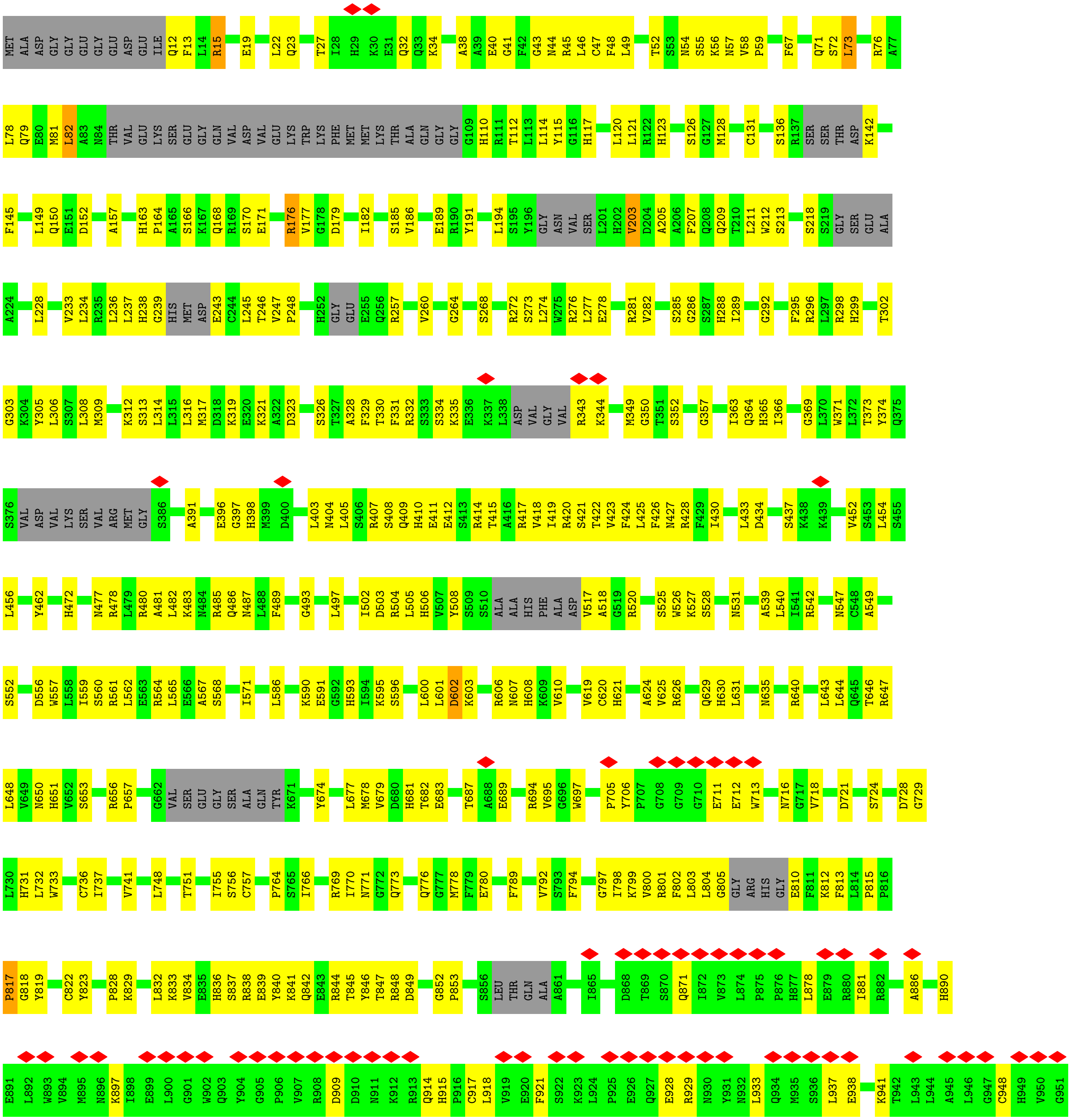
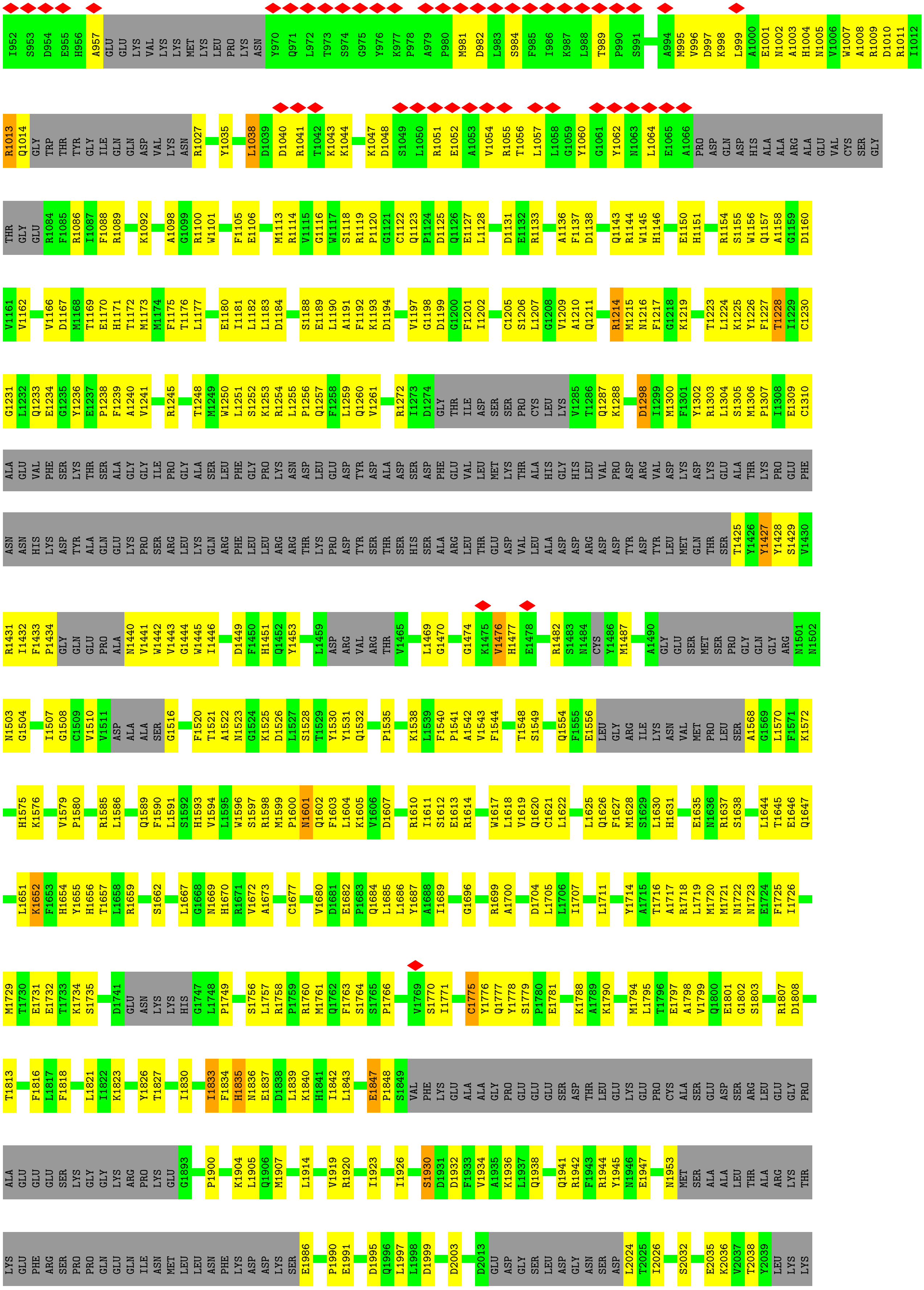


- Molecule 1: RyR2

Chain G:

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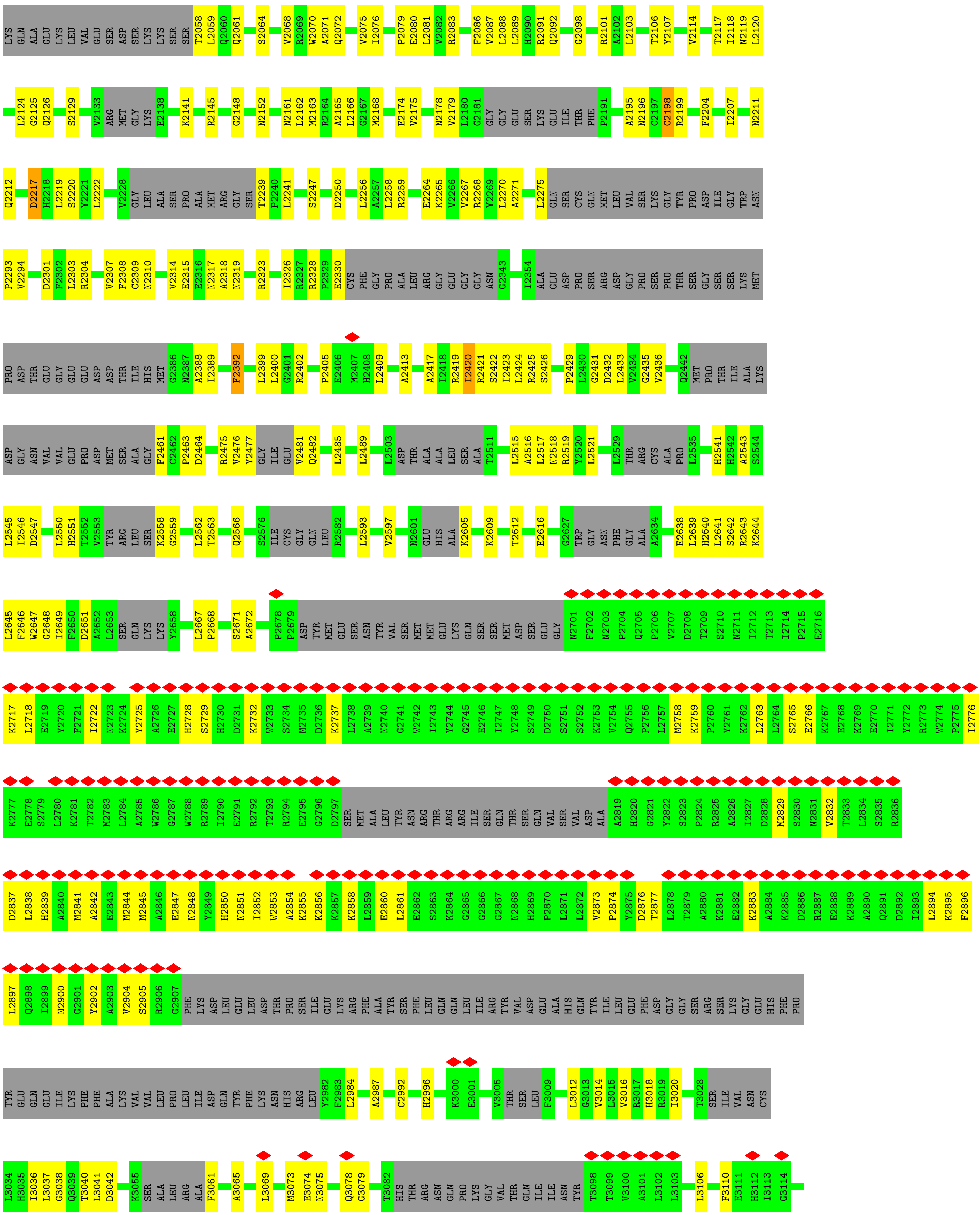
R1013 Q1014 GLY TRP THR TYR GLY ILE GLN GLN ASP VAL LYS ASN R1027 Y1035 L1038 D1039 D1040 R1041 T1042 K1043 K1044 K1047 D1048 S1049 L1050 R1051 E1052 A1053 V1054 R1055 T1056 L1057 L1058 G1059 Y1060 G1061 Y1062 N1063 L1064 E1065 A1066 PRO ASP GLN ASP HIS ALA ALA ARG ALA GLU VAL CYS SER GLY
THR GLY GLU R1084 F1085 R1086 I1087 F1088 R1089 K1092 A1098 G1099 R1100 W1101 F1105 E1106 M1113 R1114 V1115 G1116 W1117 S1118 R1119 P1120 G1121 C1122 Q1123 P1124 D1125 Q1126 E1127 L1128 D1131 E1132 R1133 A1136 F1137 D1138 Q1143 R1144 W1145 H1146 E1150 H1151 R1154 S1155 W1156 Q1157 A1158 G1159 D1160
V1161 V1162 V1166 D1167 M1168 T1169 E1170 H1171 T1172 M1173 M1174 F1175 T1176 L1177 E1180 I1181 L1182 L1183 D1184 S1188 E1189 L1190 A1191 F1192 K1193 D1194 V1197 G1198 D1199 G1200 F1201 I1202 C1205 S1206 L1207 G1208 V1209 A1210 Q1211 R1214 M1215 N1216 F1217 G1218 K1219 T1223 L1224 K1225 Y1226 F1227 T1228 I1229 C1230
G1231 L1232 Q1233 E1234 G1235 Y1236 E1237 P1238 F1239 A1240 V1241 R1245 T1248 M1249 W1250 L1251 S1252 K1253 R1254 L1255 P1256 Q1257 F1258 L1259 Q1260 V1261 R1272 I1273 D1274 GLY THR ILE ASP SER SER PRO CYS LEU LYS V1285 T1286 Q1287 K1288 D1298 I1299 M1300 F1301 Y1302 R1303 L1304 S1305 M1306 P1307 I1308 E1309 C1310
ALA GLU VAL PHE SER LYS THR SER ALA GLY GLY ILE PRO GLY ALA SER LEU PHE GLY PRO LYS ASN ASP LEU GLU ASP TYR ASP ALA ASP SER ASP PHE GLU VAL LEU MET LYS THR ALA HIS GLY HIS LEU VAL PRO ASP ARG VAL ASP LYS ASP LYS GLU ALA THR LYS PRO GLU PHE
ASN ASN HIS LYS ASP TYR ALA GLN GLU LYS PRO SER ARG LEU LYS GLN ARG PHE LEU LEU ARG ARG THR LYS PRO ASP TYR SER THR SER HIS SER ALA ARG LEU THR GLU ASP VAL LEU ALA ASP ASP ARG ASP ASP TYR ASP TYR LEU MET GLN THR SER T1425 Y1426 Y1427 Y1428 S1429 V1430
R1431 I1432 F1433 P1434 GLY GLN GLU PRO ALA N1440 V1441 W1442 V1443 G1444 W1445 I1446 D1449 F1450 H1451 Q1452 Y1453 L1459 ASP ARG VAL ARG THR V1465 L1469 G1470 G1474 K1475 V1476 H1477 E1478 R1482 S1483 N1484 CYS Y1486 M1487 A1490 GLY GLU SER MET SER PRO GLY GLN GLY ARG N1501 N1502
N1503 G1504 I1507 G1508 C1509 V1510 V1511 ASP ALA ALA SER G1516 F1520 T1521 A1522 N1523 G1524 K1525 D1526 L1527 S1528 T1529 Y1530 Y1531 Q1532 P1535 K1538 L1539 F1540 P1541 A1542 V1543 F1544 T1548 S1549 Q1554 F1555 E1556 LEU GLY ARG ILE LYS ASN VAL MET PRO LEU SER A1568 G1569 L1570 F1571 K1572
H1575 K1576 V1579 P1580 R1585 L1586 Q1589 F1590 L1591 S1592 H1593 V1594 L1595 W1596 S1597 R1598 M1599 P1600 N1601 Q1602 F1603 L1604 K1605 V1606 D1607 R1610 I1611 S1612 E1613 R1614 W1617 L1618 V1619 Q1620 C1621 L1622 L1625 Q1626 F1627 M1628 S1629 L1630 H1631 E1635 N1636 R1637 S1638 L1644 T1645 E1646 Q1647
L1651 K1652 F1653 H1654 Y1655 H1656 T1657 L1658 R1659 S1662 L1667 G1668 N1669 H1670 R1671 V1672 A1673 C1677 V1680 D1681 E1682 P1683 Q1684 L1685 L1686 Y1687 A1688 I1689 G1696 R1699 A1700 D1704 L1705 L1706 I1707 L1711 Y1714 A1715 T1716 A1717 R1718 L1719 M1720 M1721 N1722 N1723 E1724 F1725 I1726
M1729 T1730 E1731 E1732 T1733 K1734 S1735 D1741 GLU ASN LYS LYS HIS G1747 L1748 P1749 S1756 L1757 R1758 P1759 R1760 M1761 Q1762 F1763 S1764 S1765 P1766 V1769 S1770 I1771 C1775 Y1776 Q1777 Y1778 S1779 P1780 E1781 K1788 A1789 K1790 M1794 L1795 T1796 E1797 A1798 V1799 Q1800 E1801 G1802 S1803 R1807 D1808
T1813 F1816 L1817 F1818 L1821 I1822 K1823 Y1826 T1827 I1830 I1833 F1834 H1835 N1836 E1837 D1838 L1839 K1840 H1841 I1842 L1843 E1847 P1848 S1849 VAL PHE LYS GLU ALA ALA GLY PRO GLU GLU GLU SER ASP THR LEU GLU LYS GLU PRO CYS ALA SER GLU ASP SER ARG LEU GLU GLY PRO
ALA GLU GLU GLU SER LYS GLY GLY LYS ARG PRO LYS GLU G1893 P1900 K1904 L1905 Q1906 M1907 L1914 V1919 R1920 I1923 I1926 S1930 D1931 D1932 F1933 V1934 A1935 K1936 L1937 Q1938 Q1941 R1942 F1943 R1944 Y1945 N1946 E1947 N1953 MET SER ALA ALA LEU THR ALA ARG LYS THR
LYS GLU PHE ARG SER PRO PRO GLN GLU GLN ILE ASN MET LEU LEU ASN PHE LYS ASP ASP LYS SER E1986 P1990 E1991 D1995 Q1996 L1997 L1998 D1999 D2003 D2013 GLU ASP GLY SER LEU ASP GLY ASN SER ASP L2024 T2025 I2026 S2032 E2035 K2036 V2037 T2038 Y2039 LEU LYS LYS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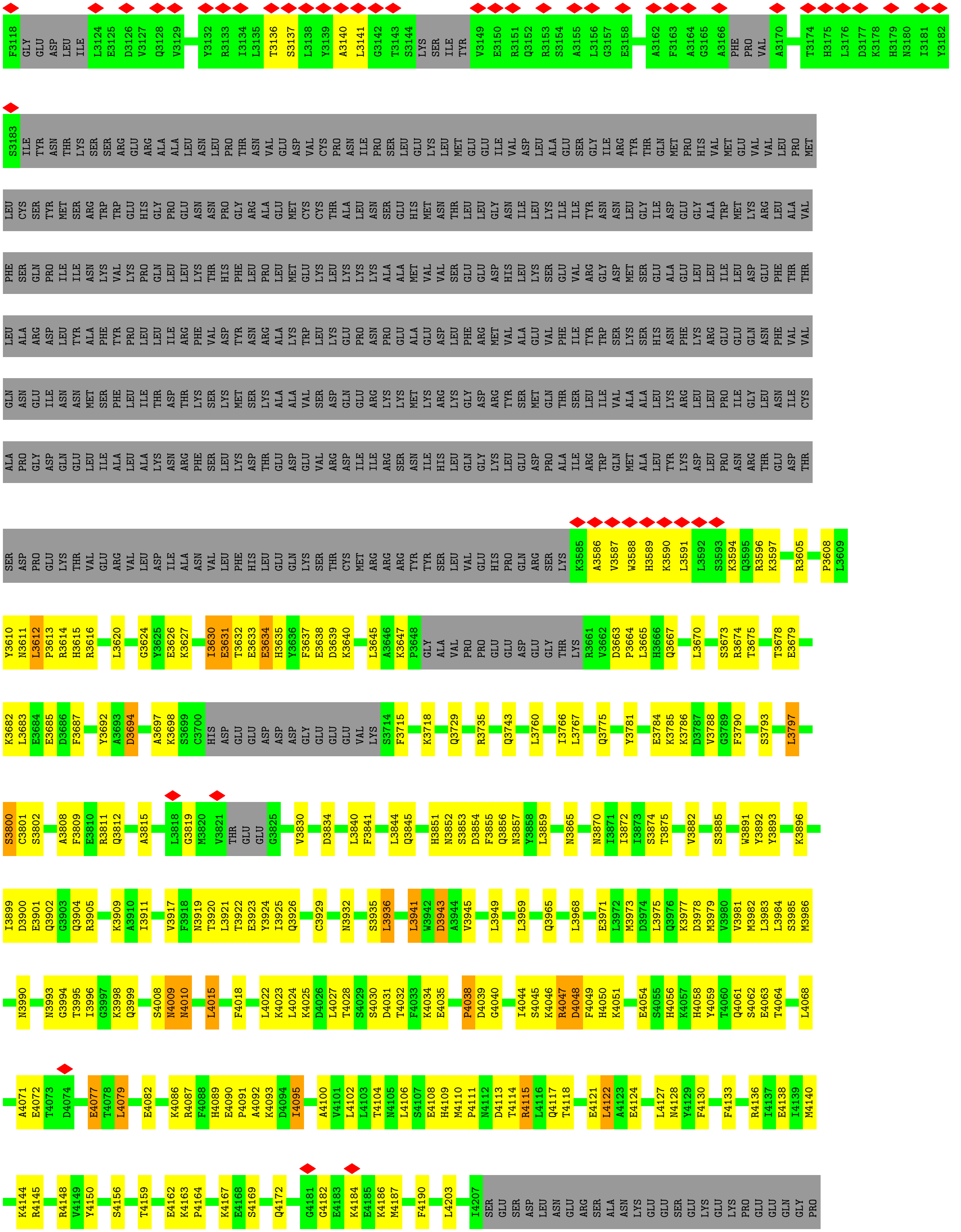
L2124 G2125 Q2126 S2129 V2133 ARG MET GLY LYS E2138 K2141 R2145 G2148 N2152 N2161 L2162 M2163 R2164 A2165 L2166 G2167 M2168 E2174 V2175 N2178 V2179 L2180 G2181 GLY GLY GLU SER LYS GLU ILE THR PHE P2191 A2195 N2196 C2197 C2198 R2199 F2204 I2207 N2211
Q2212 D2217 H2218 L2219 S2220 Y2221 L2222 V2228 GLY LEU ALA SER PRO ALA MET ARG GLY SER T2239 P2240 L2241 S2247 D2250 L2256 A2257 L2258 R2259 E2264 K2265 V2266 V2267 R2268 Y2269 L2270 A2271 L2275 GLN SER CYS GLN MET LEU VAL SER LYS GLY TYR PRO ASP ILE GLY TRP ASN
P2293 V2294 D2301 F2302 L2303 R2304 V2307 F2308 C2309 N2310 V2314 E2315 E2316 N2317 A2318 N2319 R2323 I2326 R2327 R2328 P2329 E2330 CYS PHE GLY PRO ALA LEU ARG GLY GLU GLY GLY ASN G2343 I2354 ALA GLU ASP PRO SER ARG ASP GLY PRO SER PRO THR SER GLY SER SER LYS MET
PRO ASP THR GLU GLY GLU GLU ASP ASP THR ILE HIS MET G2386 N2387 A2388 I2389 F2392 L2399 L2400 G2401 R2402 P2405 E2406 M2407 H2408 L2409 A2413 A2417 I2418 R2419 I2420 R2421 S2422 I2423 L2424 R2425 S2426 P2429 L2430 G2431 D2432 L2433 V2434 G2435 V2436 Q2442 MET PRO THR ILE ALA LYS
ASP GLY ASN VAL VAL GLU PRO ASP MET SER ALA GLY F2461 C2462 P2463 D2464 R2475 V2476 Y2477 GLY ILE GLU V2481 Q2482 L2485 L2489 L2503 ASP THR ALA ALA LEU SER ALA T2511 L2515 A2516 L2517 N2518 R2519 Y2520 L2521 L2529 THR ARG CYS ALA PRO L2535 H2541 H2542 A2543 S2544
L2545 I2546 D2547 L2550 H2551 T2552 V2553 TYR ARG LEU SER K2558 G2559 L2562 T2563 Q2566 S2576 ILE CYS GLY GLN LEU R2582 L2593 V2597 N2601 GLU HIS ALA K2605 K2609 T2612 E2616 G2627 TRP GLY ASN PHE GLY ALA A2634 E2638 L2639 H2640 L2641 S2642 R2643 K2644
L2645 F2646 W2647 G2648 I2649 F2650 D2651 A2652 L2653 SER GLN LYS LYS Y2658 L2667 P2668 S2671 A2672 P2678 P2679 ASP TYR MET GLU SER ASN TYR VAL SER MET MET GLU LYS GLN SER SER MET ASP SER GLU GLY N2701 F2702 N2703 P2704 Q2705 P2706 V2707 D2708 T2709 S2710 N2711 I2712 T2713 L2714 P2715 E2716
K2717 L2718 E2719 Y2720 F2721 I2722 N2723 K2724 Y2725 A2726 E2727 H2728 S2729 H2730 D2731 K2732 W2733 S2734 M2735 D2736 K2737 L2738 A2739 N2740 G2741 W2742 I2743 Y2744 G2745 E2746 I2747 Y2748 S2749 D2750 S2751 S2752 K2753 V2754 Q2755 P2756 L2757 M2758 K2759 P2760 Y2761 K2762 L2763 L2764 S2765 E2766 K2767 E2768 K2769 E2770 I2771 Y2772 R2773 W2774 P2775 I2776
K2777 E2778 S2779 L2780 K2781 T2782 M2783 L2784 A2785 W2786 G2787 W2788 R2789 I2790 E2791 R2792 T2793 R2794 E2795 G2796 D2797 SER MET ALA LEU TYR ASN ARG THR ARG ARG ILE SER GLN THR SER GLN VAL SER VAL ASP ALA A2819 H2820 G2821 Y2822 S2823 P2824 R2825 A2826 I2827 D2828 M2829 S2830 N2831 V2832 T2833 L2834 S2835 R2836
D2837 L2838 H2839 A2840 M2841 A2842 E2843 M2844 M2845 A2846 E2847 N2848 Y2849 H2850 N2851 I2852 W2853 A2854 K2855 K2856 K2857 K2858 L2859 E2860 L2861 E2862 S2863 K2864 G2865 G2866 G2867 N2868 H2869 P2870 L2871 L2872 V2873 P2874 Y2875 D2876 T2877 L2878 T2879 A2880 K2881 E2882 K2883 A2884 K2885 D2886 R2887 E2888 K2889 A2890 Q2891 D2892 I2893 L2894 K2895 F2896
L2897 Q2898 I2899 N2900 G2901 Y2902 A2903 V2904 S2905 R2906 G2907 PHE LYS ASP LEU GLU LEU ASP THR PRO SER ILE GLU LYS ARG PHE ALA TYR SER PHE LEU GLN GLN LEU ILE ARG TYR VAL ASP GLU ALA HIS GLN TYR ILE LEU GLU PHE ASP GLY GLY SER ARG SER LYS GLY GLU HIS PHE PRO
TYR GLU GLN GLU ILE LYS PHE PHE ALA LYS VAL VAL LEU PRO LEU ILE ASP GLN TYR PHE LYS ASN HIS ARG LEU Y2982 F2983 L2984 A2987 C2992 H2996 K3000 E3001 V3005 THR SER LEU F3009 L3012 G3013 V3014 L3015 V3016 R3017 H3018 R3019 I3020 T3028 SER ILE VAL ASN CYS
L3034 H3035 I3036 L3037 G3038 Q3039 T3040 L3041 D3042 K3055 SER ALA LEU ARG ALA F3061 A3065 L3069 M3073 E3074 N3075 Q3078 G3079 T3082 HIS THR ARG ASN GLN PRO LYS GLY VAL THR GLN ILE ILE ASN TYR T3098 T3099 V3100 A3101 L3102 L3103 L3106 F3110 E3111 H3112 I3113 G3114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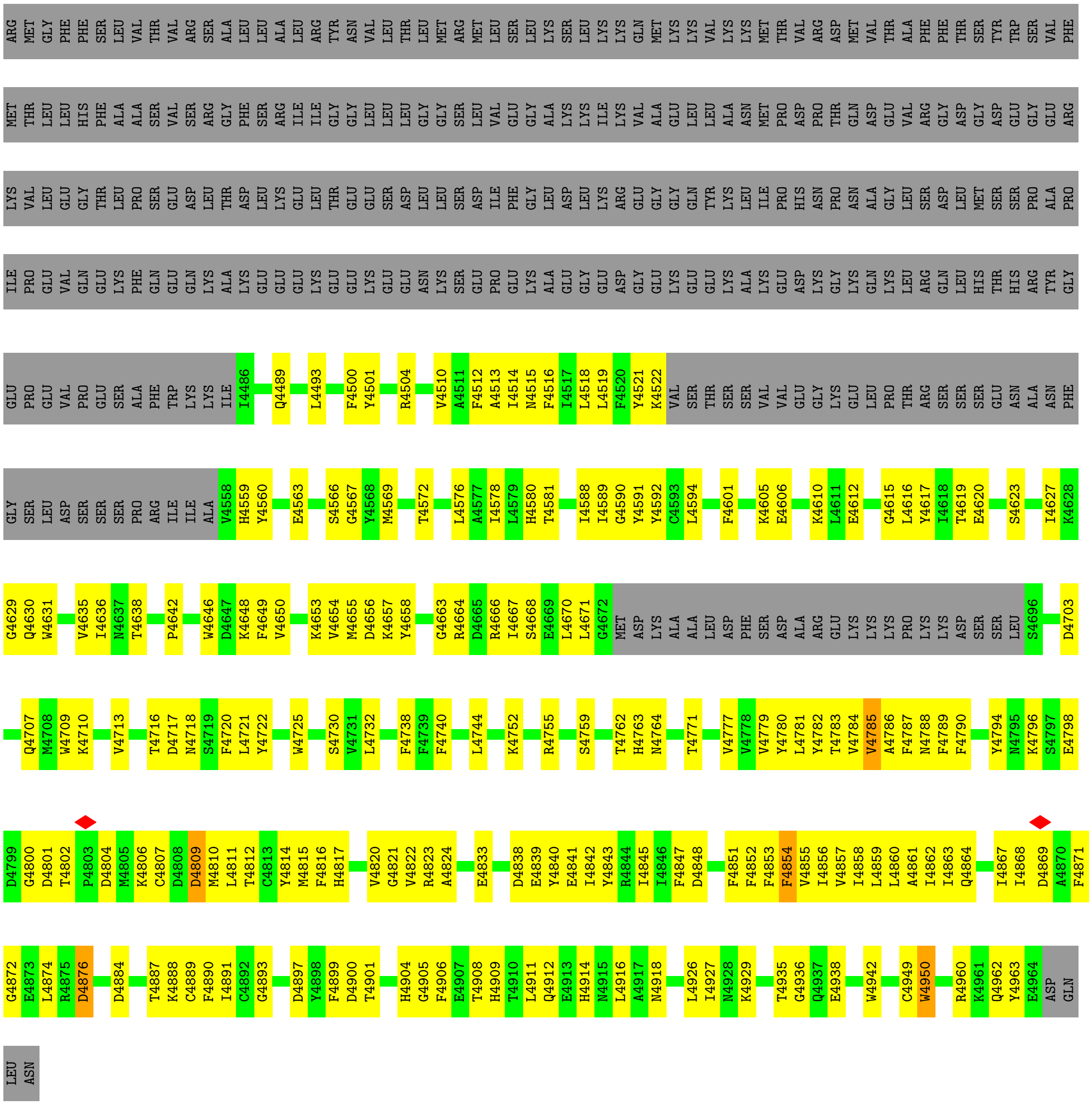
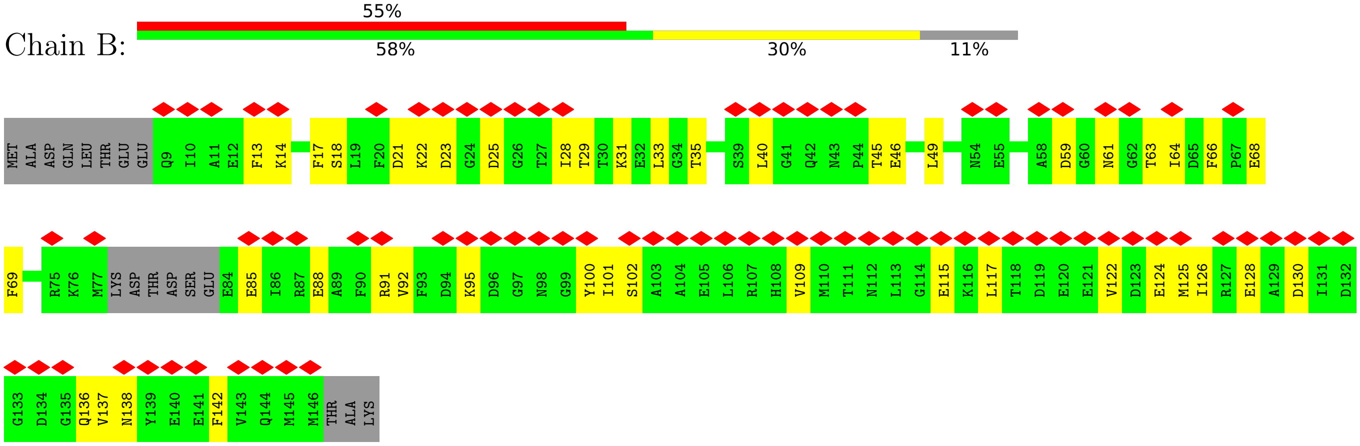
S3183 ILE TYR ASN THR LYS SER SER ARG GLU ARG ALA ALA LEU ASN LEU PRO THR ASN VAL GLU ASP VAL CYS PRO ASN ILE PRO SER LEU GLU LYS LEU MET GLU GLU ILE VAL ASP LEU ALA GLU SER GLY ILE ARG TYR THR GLN MET PRO HIS VAL MET GLU VAL VAL LEU PRO MET
LEU CYS SER TYR MET SER ARG TRP TRP GLU HIS GLY PRO GLU ASN ASN PRO GLY ARG ALA GLU MET CYS CYS THR ALA LEU ASN SER GLU HIS MET ASN THR LEU LEU GLY ASN ILE LEU LYS ILE ILE TYR ASN ASN LEU GLY ILE ASP GLU GLY ALA TRP MET LYS ARG LEU ALA VAL
PHE SER GLN PRO ILE ILE ASN LYS VAL LYS PRO GLN LEU LEU LYS THR HIS PHE LEU PRO LEU MET GLU LYS LEU LYS LYS ALA ALA MET VAL VAL SER GLU GLU ASP HIS LEU LYS SER GLU VAL ARG GLY ASP MET SER GLU ALA GLU LEU LEU ILE LEU ASP GLU PHE THR THR
LEU ALA ARG ASP LEU TYR ALA PHE TYR PRO LEU LEU ILE ARG PHE VAL ASP TYR ASN ARG ALA LYS TRP LEU LYS GLU PRO ASN PRO GLU ALA GLU ASP LEU PHE ARG MET VAL ALA GLU VAL PHE ILE TYR TRP SER LYS SER HIS ASN PHE LYS ARG GLU GLU GLN ASN PHE VAL VAL
GLN ASN GLU ILE ASN ASN MET SER PHE LEU ILE THR ASP THR LYS SER LYS MET SER LYS ALA ALA VAL SER ASP GLN GLU ARG LYS LYS MET LYS ARG LYS GLY ASP ARG TYR SER MET GLN THR SER LEU ILE VAL ALA ALA LEU LYS ARG LEU LEU PRO ILE GLY LEU ASN ILE CYS
ALA PRO GLY ASP GLN GLU LEU ILE ALA LEU ALA LYS ASN ARG PHE SER LEU LYS ASP THR GLU ASP GLU VAL ARG ASP ILE ILE ARG SER ASN ILE HIS LEU GLN GLY LYS LEU GLU ASP PRO ALA ILE ARG TRP GLN MET ALA LEU TYR LYS ASP LEU PRO ASN ARG THR GLU ASP THR
SER ASP PRO GLU LYS THR VAL GLU ARG VAL LEU ASP ILE ALA ASN VAL LEU PHE HIS LEU GLU GLN LYS SER THR CYS MET ARG ARG ARG TYR TYR SER LEU VAL GLU HIS PRO GLN ARG SER LYS K3585 A3586 V3587 W3588 H3589 K3590 L3591 L3592 S3593 K3594 Q3595 R3596 K3597 R3605 P3608 L3609
Y3610 N3611 L3612 P3613 R3614 H3615 R3616 L3620 G3624 Y3625 E3626 K3627 I3630 E3631 T3632 E3633 E3634 H3635 Y3636 F3637 E3638 D3639 K3640 L3645 A3646 K3647 P3648 GLY ALA VAL PRO PRO GLU GLU ASP GLU GLY THR LYS R3661 V3662 D3663 P3664 L3665 H3666 Q3667 L3670 S3673 R3674 T3675 T3678 E3679
K3682 L3683 E3684 E3685 D3686 F3687 Y3692 A3693 D3694 A3697 K3698 S3699 C3700 HIS ASP GLU GLU ASP ASP ASP GLY GLU GLU GLU VAL LYS S3714 F3715 K3718 Q3729 R3735 Q3743 L3760 I3766 L3767 Q3775 Y3781 E3784 K3785 K3786 D3787 V3788 G3789 F3790 S3793 L3797
S3800 C3801 S3802 A3808 F3809 E3810 R3811 Q3812 A3815 L3818 G3819 M3820 V3821 THR GLU GLU G3825 V3830 D3834 L3840 F3841 L3844 Q3845 H3851 N3852 S3853 D3854 F3855 Q3856 N3857 Y3858 L3859 N3865 N3870 I3871 I3872 I3873 S3874 T3875 V3882 S3885 W3891 Y3892 Y3893 K3896
I3899 D3900 E3901 Q3902 G3903 Q3904 R3905 K3909 A3910 I3911 V3917 F3918 N3919 T3920 L3921 T3922 E3923 Y3924 I3925 Q3926 C3929 N3932 S3935 L3936 L3941 W3942 D3943 A3944 V3945 L3949 L3959 Q3965 L3968 E3971 L3972 M3973 D3974 L3975 Q3976 K3977 D3978 M3979 V3980 V3981 M3982 L3983 L3984 S3985 M3986
N3990 N3993 G3994 T3995 I3996 G3997 K3998 Q3999 S4008 N4009 N4010 L4015 F4018 L4022 K4023 L4024 K4025 D4026 L4027 T4028 S4029 S4030 D4031 T4032 F4033 K4034 E4035 P4038 D4039 G4040 I4044 S4045 K4046 R4047 D4048 F4049 H4050 K4051 E4054 S4055 H4056 K4057 H4058 Y4059 T4060 Q4061 S4062 E4063 T4064 L4068
A4071 E4072 T4073 D4074 E4077 T4078 L4079 E4082 K4086 R4087 F4088 H4089 E4090 P4091 A4092 K4093 D4094 I4095 A4100 V4101 L4102 L4103 T4104 N4105 L4106 S4107 E4108 H4109 M4110 P4111 N4112 D4113 T4114 R4115 L4116 Q4117 T4118 E4121 L4122 A4123 E4124 L4127 N4128 Y4129 F4130 F4133 R4136 I4137 E4138 I4139 M4140
K4144 R4145 R4148 V4149 Y4150 S4156 T4159 E4162 K4163 P4164 K4167 E4168 S4169 Q4172 G4181 G4182 E4183 K4184 E4185 K4186 M4187 F4190 L4203 I4207 SER GLU SER ASP LEU ASN GLU ARG SER ALA ASN LYS GLU GLU SER GLU LYS GLU LYS PRO GLU GLU GLN GLY PRO

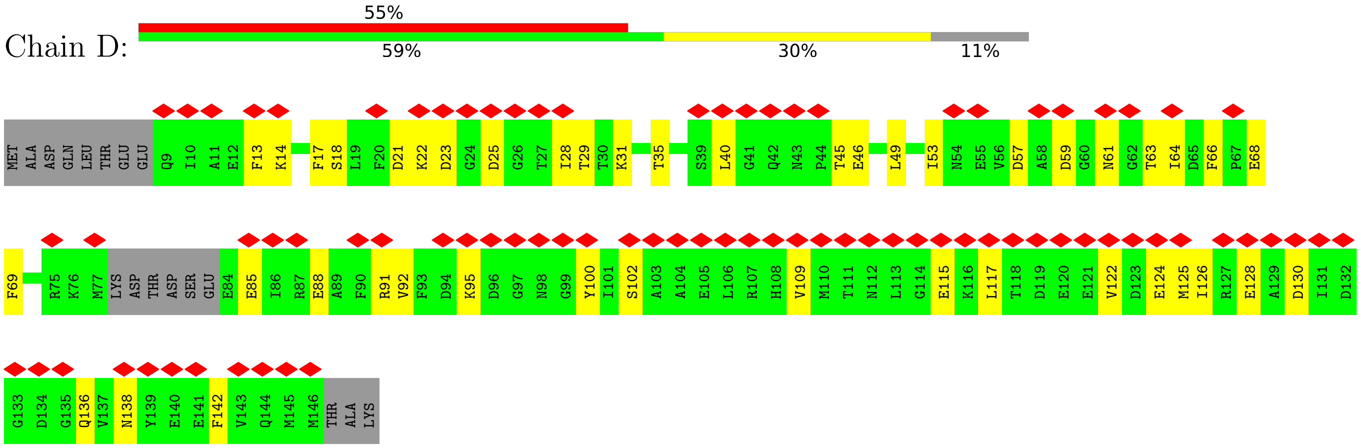


- Molecule 2: Calmodulin-1



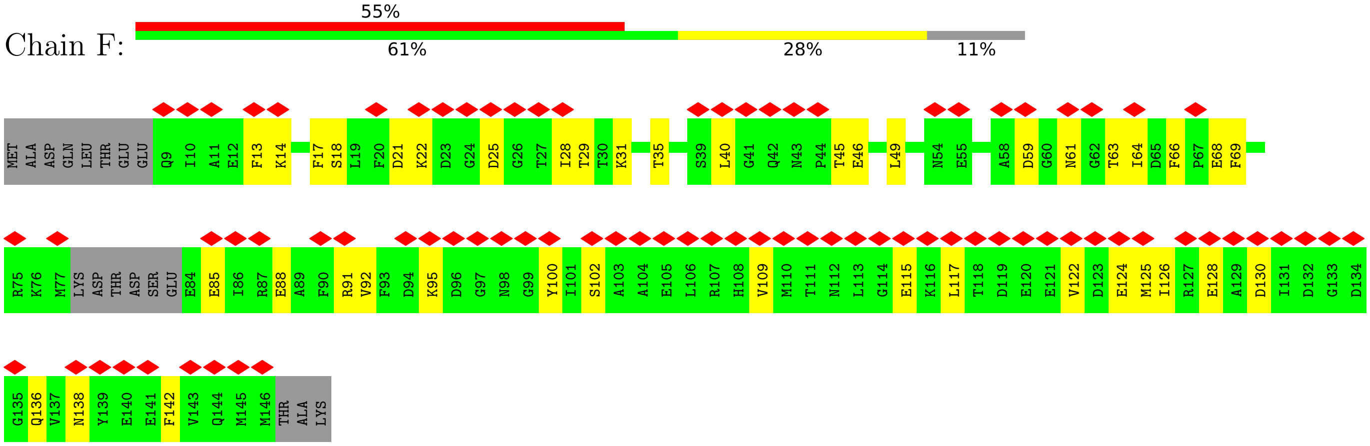
- Molecule 2: Calmodulin-1

Chain D:



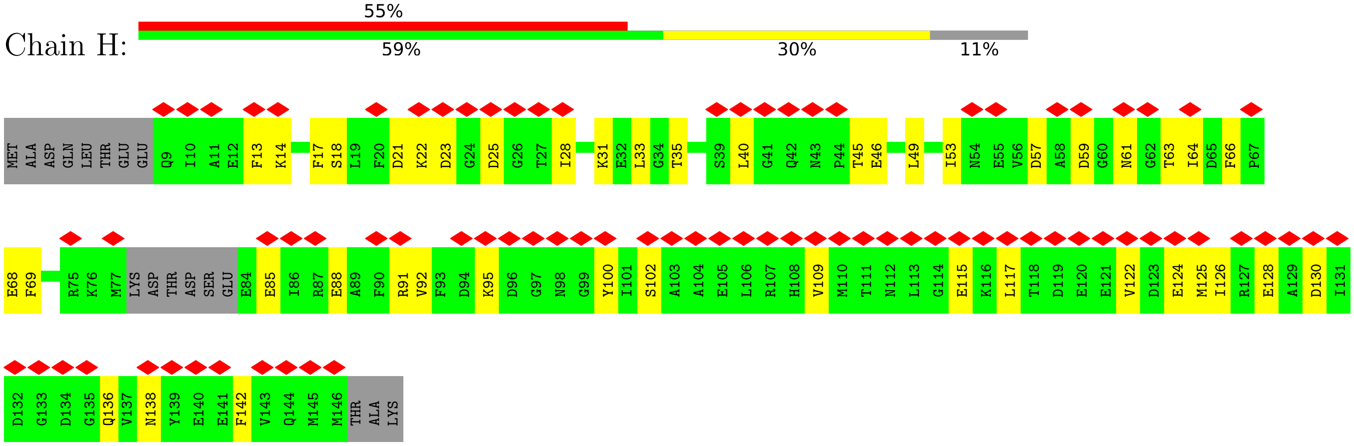
- Molecule 2: Calmodulin-1

Chain F:



- Molecule 2: Calmodulin-1

Chain H:



4 Experimental information ⓘ

Property	**Value**	**Source**
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C4	Depositor
Number of particles used	22876	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 $(e^-/\text{Å}^2)$	50	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	0.058	Depositor
Minimum map value	-0.016	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.015	Depositor
Map size (Å)	436.4, 436.4, 436.4	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.091, 1.091, 1.091	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.56	2/27223 (0.0%)	0.69	7/36827 (0.0%)
1	C	0.56	2/27223 (0.0%)	0.69	8/36827 (0.0%)
1	E	0.56	2/27223 (0.0%)	0.69	8/36827 (0.0%)
1	G	0.56	2/27223 (0.0%)	0.69	7/36827 (0.0%)
2	B	0.33	0/1053	0.52	0/1411
2	D	0.33	0/1053	0.52	0/1411
2	F	0.33	0/1053	0.52	0/1411
2	H	0.33	0/1053	0.52	0/1411
All	All	0.56	8/113104 (0.0%)	0.69	30/152952 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	33
1	C	0	33
1	E	0	33
1	G	0	33
All	All	0	132

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	4950	TRP	CB-CG	-5.59	1.40	1.50
1	C	4950	TRP	CB-CG	-5.59	1.40	1.50
1	E	4950	TRP	CB-CG	-5.59	1.40	1.50
1	G	4950	TRP	CB-CG	-5.59	1.40	1.50
1	A	4942	TRP	CB-CG	-5.18	1.41	1.50

The worst 5 of 30 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	4519	LEU	CB-CA-C	-9.78	91.61	110.20
1	A	3797	LEU	CA-CB-CG	-6.82	99.61	115.30
1	C	3797	LEU	CA-CB-CG	-6.82	99.61	115.30
1	E	3797	LEU	CA-CB-CG	-6.82	99.61	115.30
1	G	3797	LEU	CA-CB-CG	-6.82	99.61	115.30

There are no chirality outliers.

5 of 132 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	729	GLY	Peptide
1	A	817	PRO	Peptide
1	A	818	GLY	Peptide
1	A	819	TYR	Peptide
1	A	829	LYS	Peptide

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	26722	0	25168	1034	0
1	C	26722	0	25168	1062	0
1	E	26722	0	25168	1051	0
1	G	26722	0	25168	1057	0
2	B	1042	0	979	31	0
2	D	1042	0	979	31	0
2	F	1042	0	979	31	0
2	H	1042	0	979	33	0
3	A	1	0	0	0	0
3	C	1	0	0	0	0
3	E	1	0	0	0	0
3	G	1	0	0	0	0
4	A	1	0	0	0	0
4	B	4	0	0	0	0
4	C	1	0	0	0	0
4	D	4	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	E	1	0	0	0	0
4	F	4	0	0	0	0
4	G	1	0	0	0	0
4	H	4	0	0	0	0
All	All	111080	0	104588	4092	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 19.

The worst 5 of 4092 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:E:4811:LEU:CD2	1:G:4519:LEU:HD13	1.75	1.15
1:A:4860:LEU:HD13	1:C:4863:ILE:HD12	1.29	1.11
1:A:4863:ILE:HD12	1:G:4860:LEU:HD13	1.29	1.11
1:E:4860:LEU:HD13	1:G:4863:ILE:HD12	1.29	1.10
1:C:4860:LEU:HD13	1:E:4863:ILE:HD12	1.29	1.09

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	3387/4968 (68%)	2919 (86%)	459 (14%)	9 (0%)	41	76
1	C	3387/4968 (68%)	2917 (86%)	460 (14%)	10 (0%)	41	76
1	E	3387/4968 (68%)	2921 (86%)	457 (14%)	9 (0%)	41	76
1	G	3387/4968 (68%)	2920 (86%)	458 (14%)	9 (0%)	41	76
2	B	128/149 (86%)	120 (94%)	8 (6%)	0	100	100
2	D	128/149 (86%)	120 (94%)	8 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	F	128/149 (86%)	120 (94%)	8 (6%)	0	100	100
2	H	128/149 (86%)	120 (94%)	8 (6%)	0	100	100
All	All	14060/20468 (69%)	12157 (86%)	1866 (13%)	37 (0%)	44	76

5 of 37 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	4521	TYR
1	A	853	PRO
1	A	1580	PRO
1	A	2309	CYS
1	C	853	PRO

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	2675/4355 (61%)	2627 (98%)	48 (2%)	59	77
1	C	2675/4355 (61%)	2627 (98%)	48 (2%)	59	77
1	E	2676/4355 (61%)	2626 (98%)	50 (2%)	57	75
1	G	2675/4355 (61%)	2626 (98%)	49 (2%)	59	77
2	B	112/127 (88%)	112 (100%)	0	100	100
2	D	112/127 (88%)	112 (100%)	0	100	100
2	F	112/127 (88%)	112 (100%)	0	100	100
2	H	112/127 (88%)	112 (100%)	0	100	100
All	All	11149/17928 (62%)	10954 (98%)	195 (2%)	62	78

5 of 195 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	1601	ASN
1	E	4809	ASP

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Mol	Chain	Res	Type
1	E	2198	CYS
1	E	3943	ASP
1	G	81	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 202 such sidechains are listed below:

Mol	Chain	Res	Type
1	E	1265	HIS
1	E	3993	ASN
1	G	4643	ASN
1	E	1602	GLN
1	E	2442	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 ⓘ

Of 24 ligands modelled in this entry, 24 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

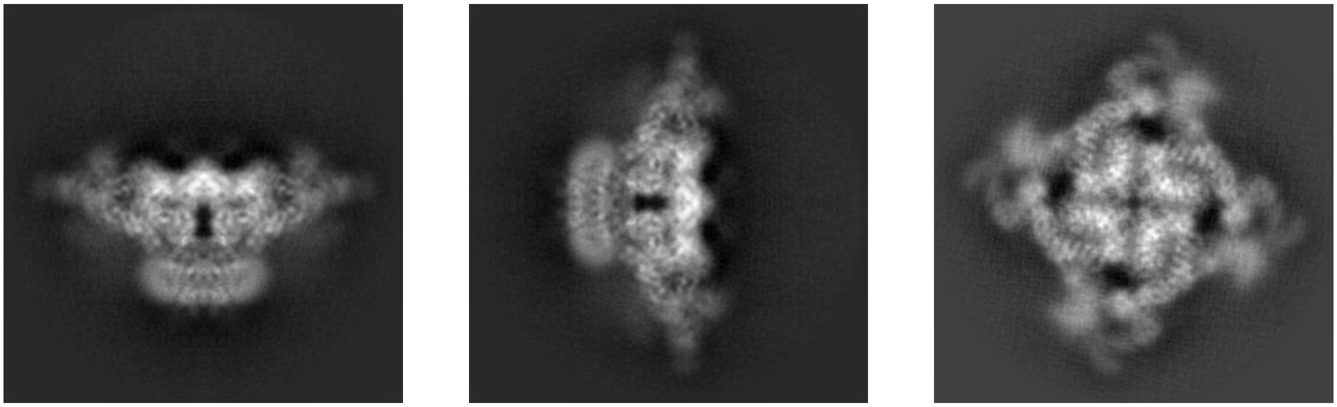
6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-9889. 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

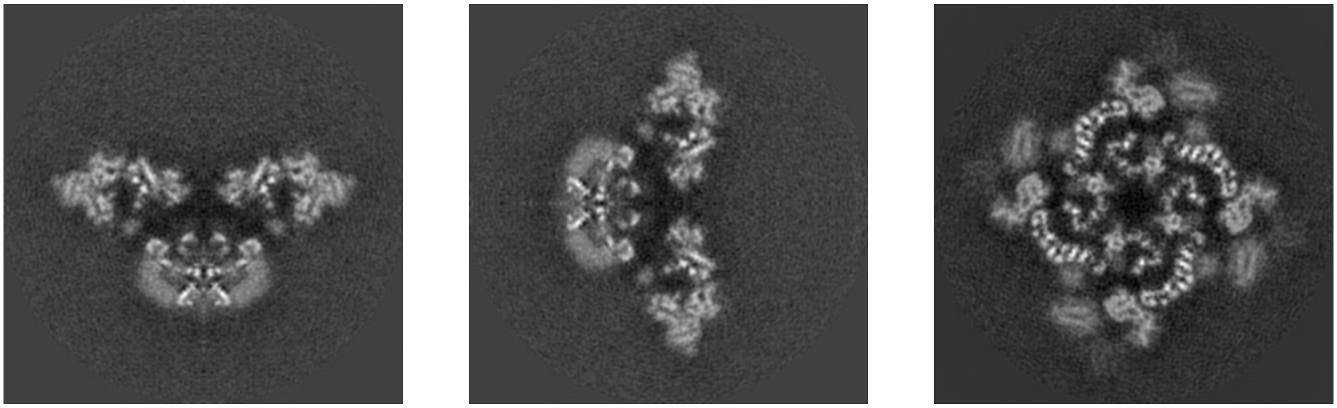


X Y Z

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

6.2 Central slices ⓘ

6.2.1 Primary map

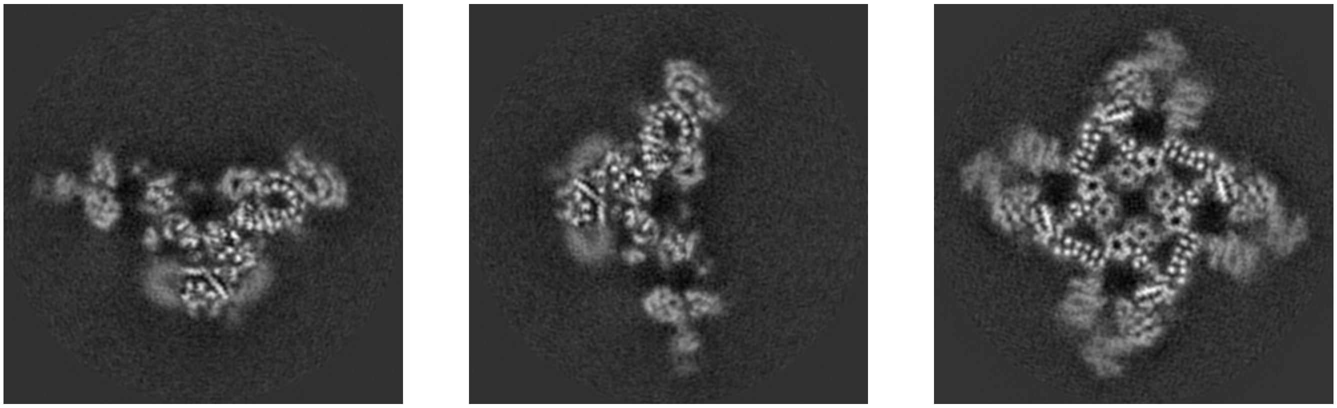


X Index: 200 Y Index: 200 Z Index: 200

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map

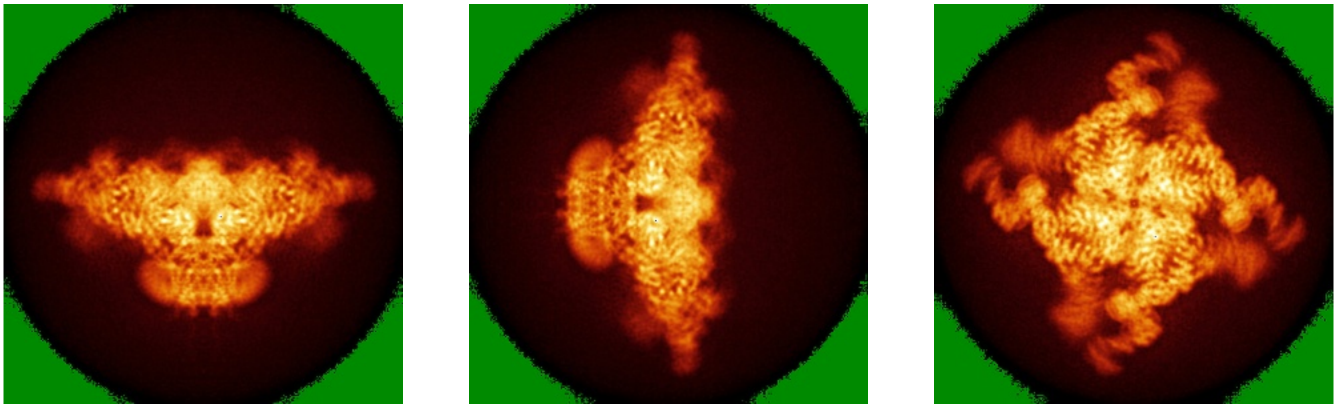


X Index: 187 Y Index: 213 Z Index: 211

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

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

6.4.1 Primary map

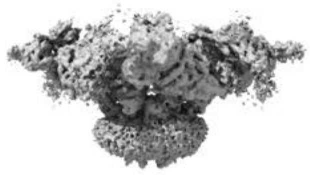


X Y Z

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.

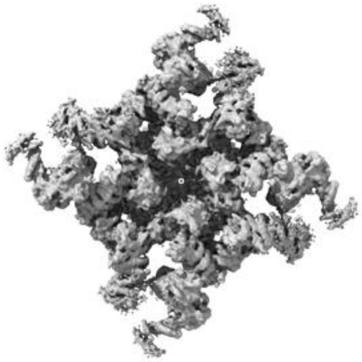
6.5 Orthogonal surface views ⓘ

6.5.1 Primary map



X

Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.015. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

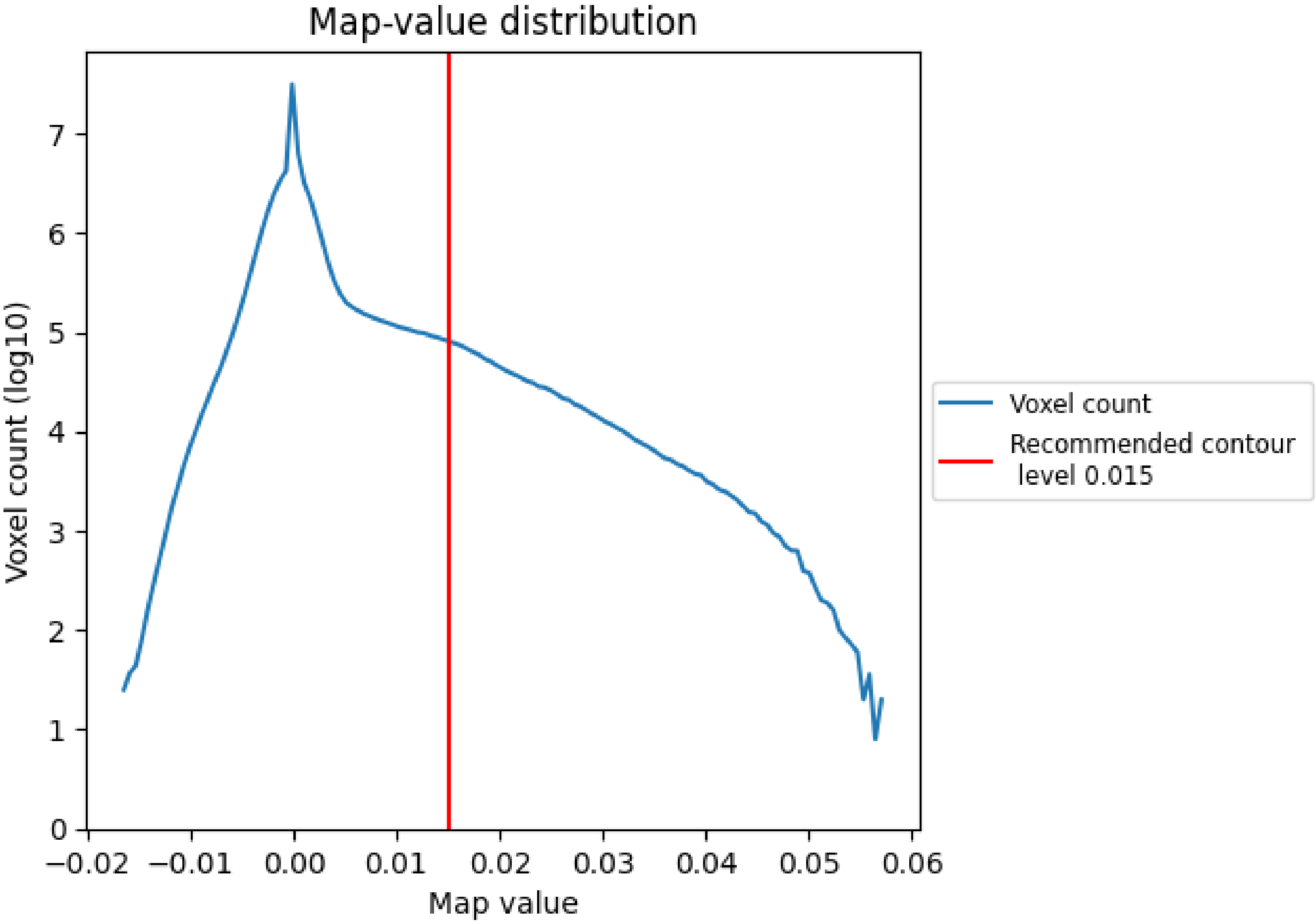
6.6 Mask visualisation ⓘ

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

7 Map analysis ⓘ

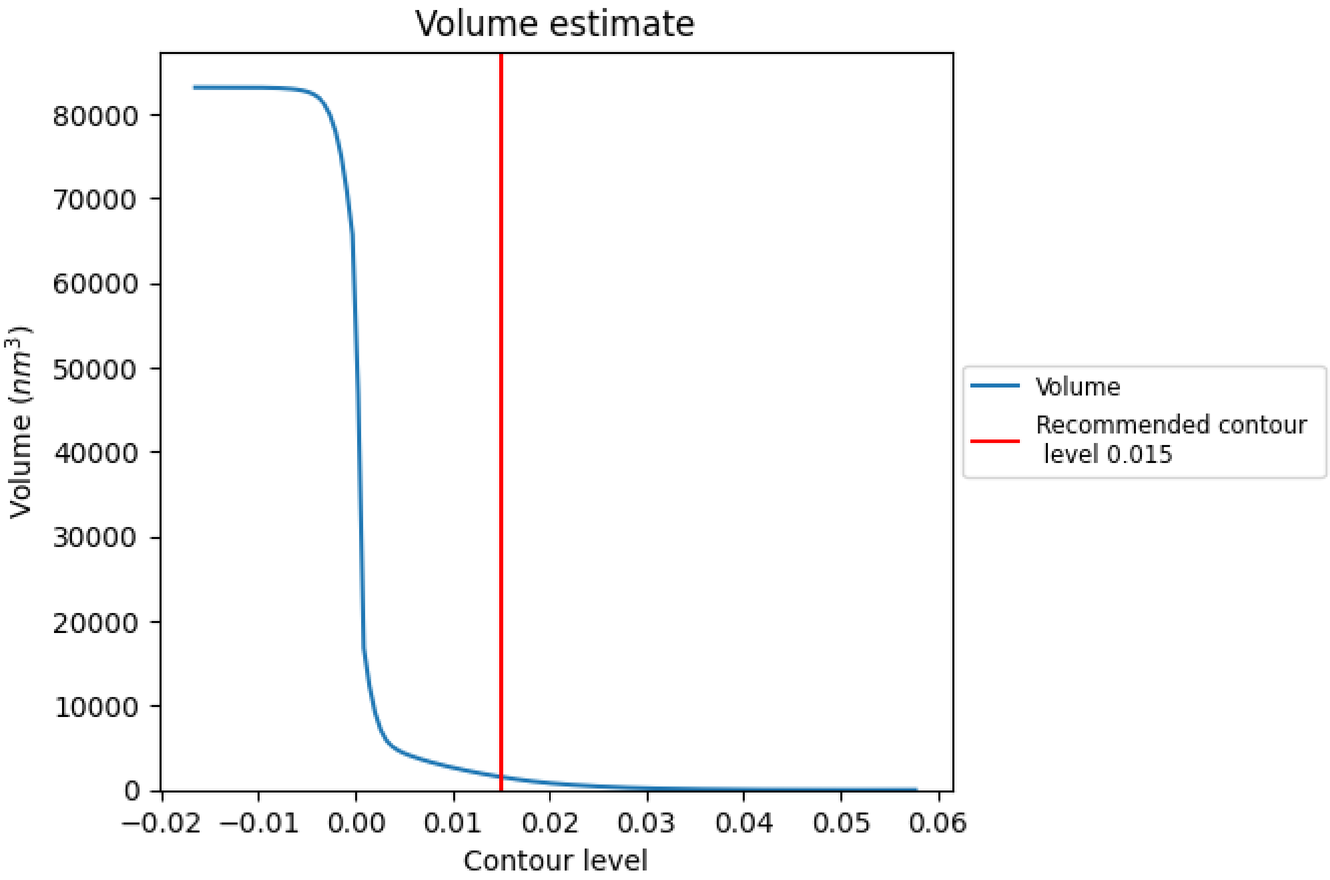
This section contains the results of statistical analysis of the map.

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.

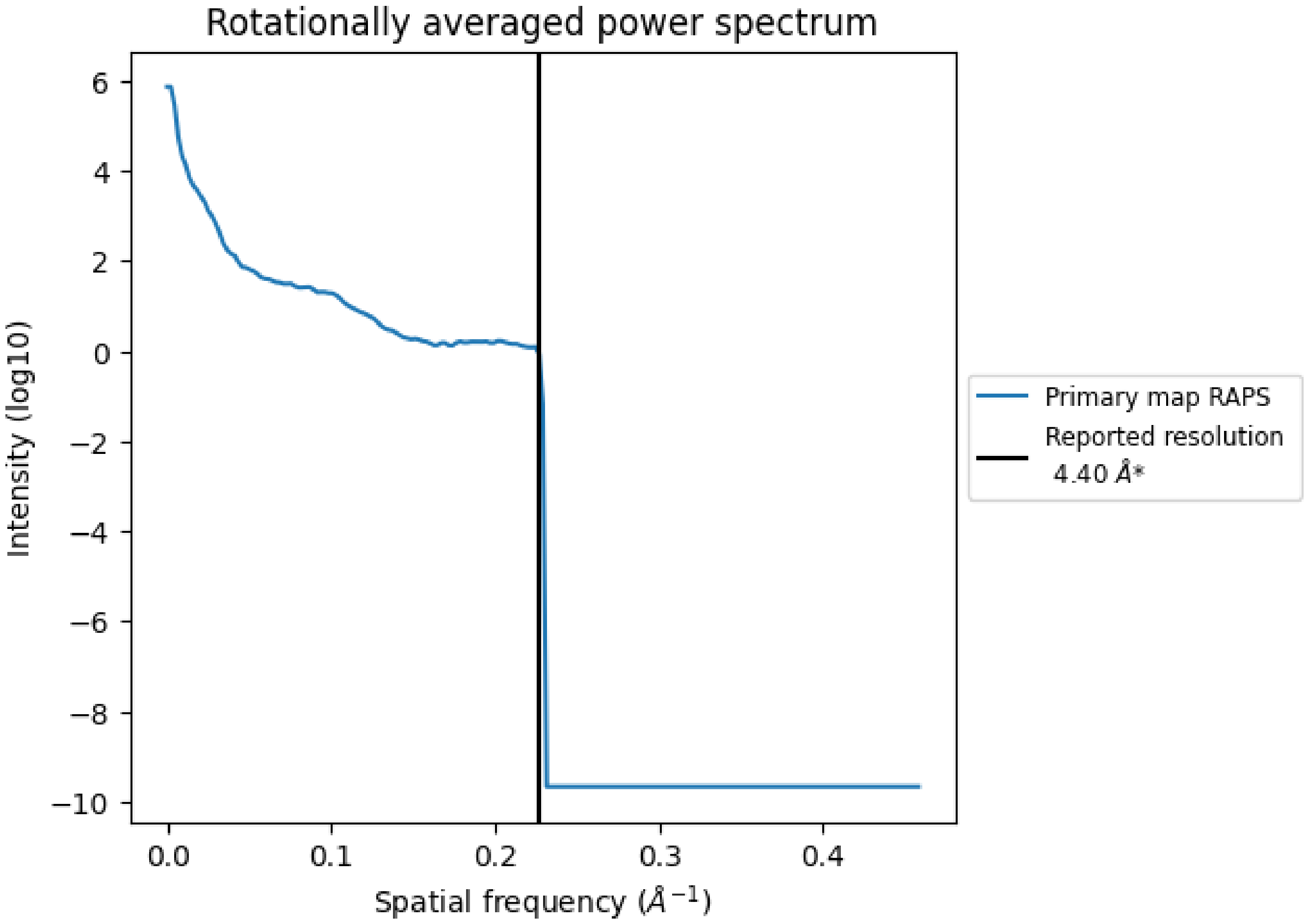
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 1535 nm^3; this corresponds to an approximate mass of 1386 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

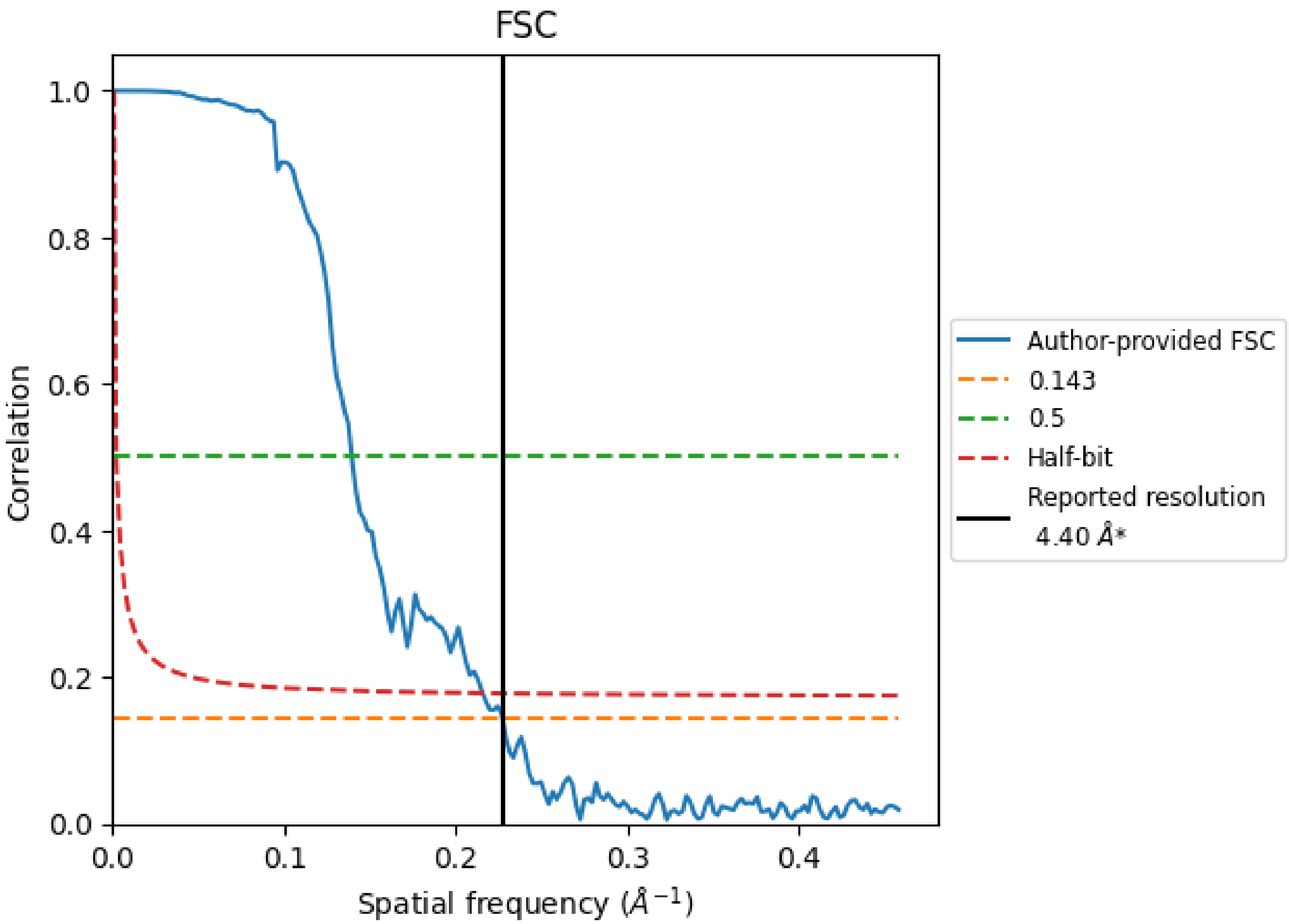


*Reported resolution corresponds to spatial frequency of 0.227 Å^{-1}

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 0.227 $\AA^{-1}$

8.2 Resolution estimates ⓘ

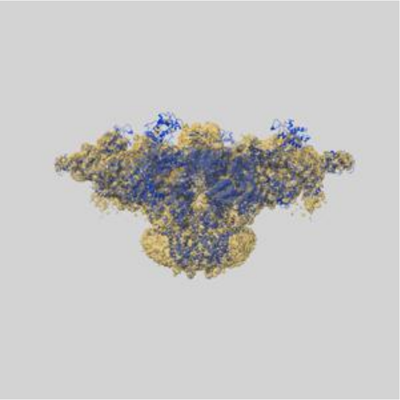
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	4.40	-	-
Author-provided FSC curve	4.40	7.17	4.64
Unmasked-calculated*	-	-	-

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

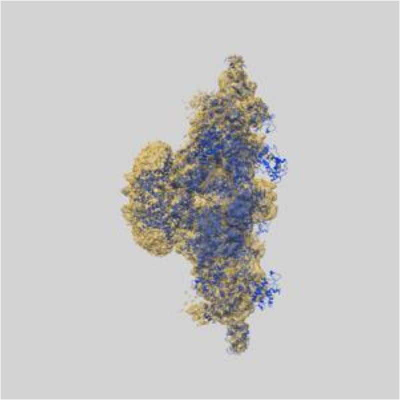
9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-9889 and PDB model 6JV2. Per-residue inclusion information can be found in section 3 on page 5.

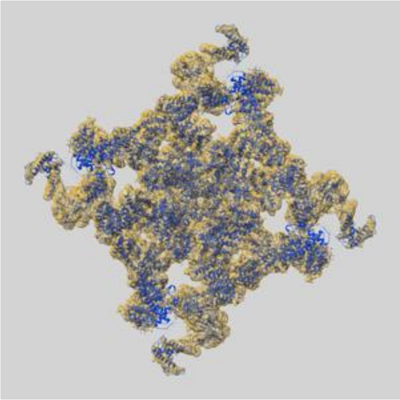
9.1 Map-model overlay ⓘ



X



Y



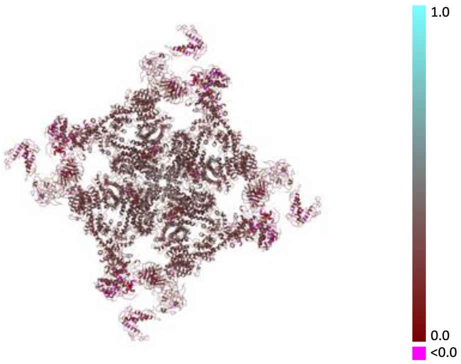
Z

The images above show the 3D surface view of the map at the recommended contour level 0.015 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

X

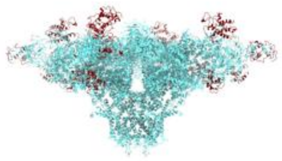
Y



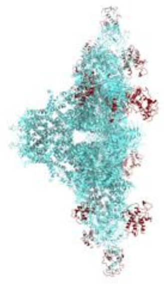
Z

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.

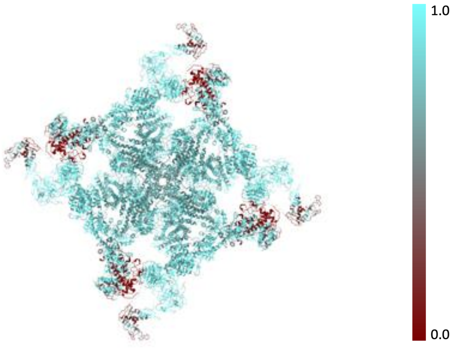
9.3 Atom inclusion mapped to coordinate model



X



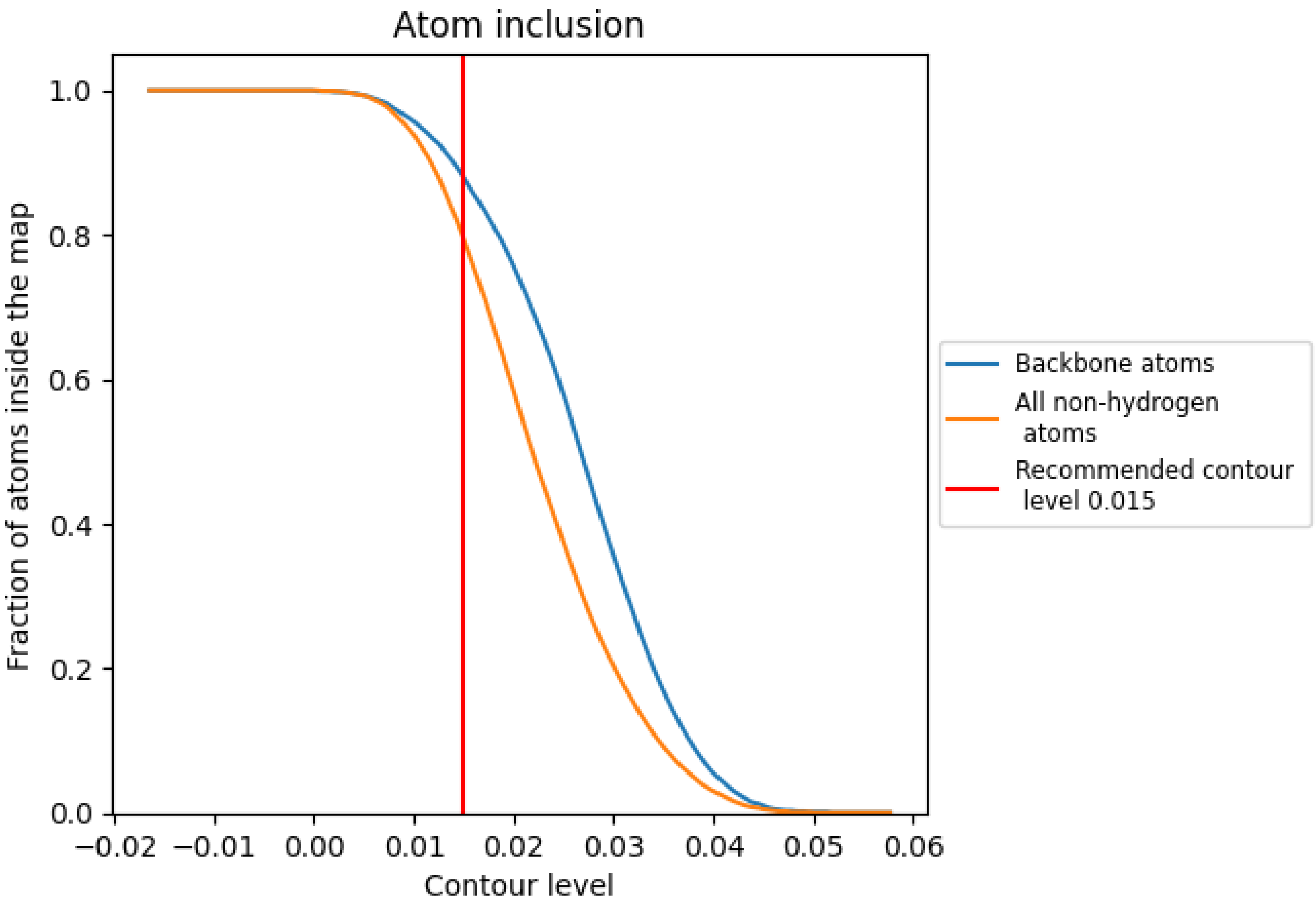
Y



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 (0.015).

9.4 Atom inclusion ⓘ



At the recommended contour level, 88% of all backbone atoms, 79% 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 (0.015) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	🟦 0.7940	🟫 0.2670
A	🟦 0.8120	🟫 0.2680
B	🟫 0.3300	🟫 0.2230
C	🟦 0.8130	🟫 0.2690
D	🟫 0.3290	🟫 0.2250
E	🟦 0.8130	🟫 0.2680
F	🟫 0.3300	🟫 0.2220
G	🟦 0.8120	🟫 0.2680
H	🟫 0.3290	🟫 0.2210