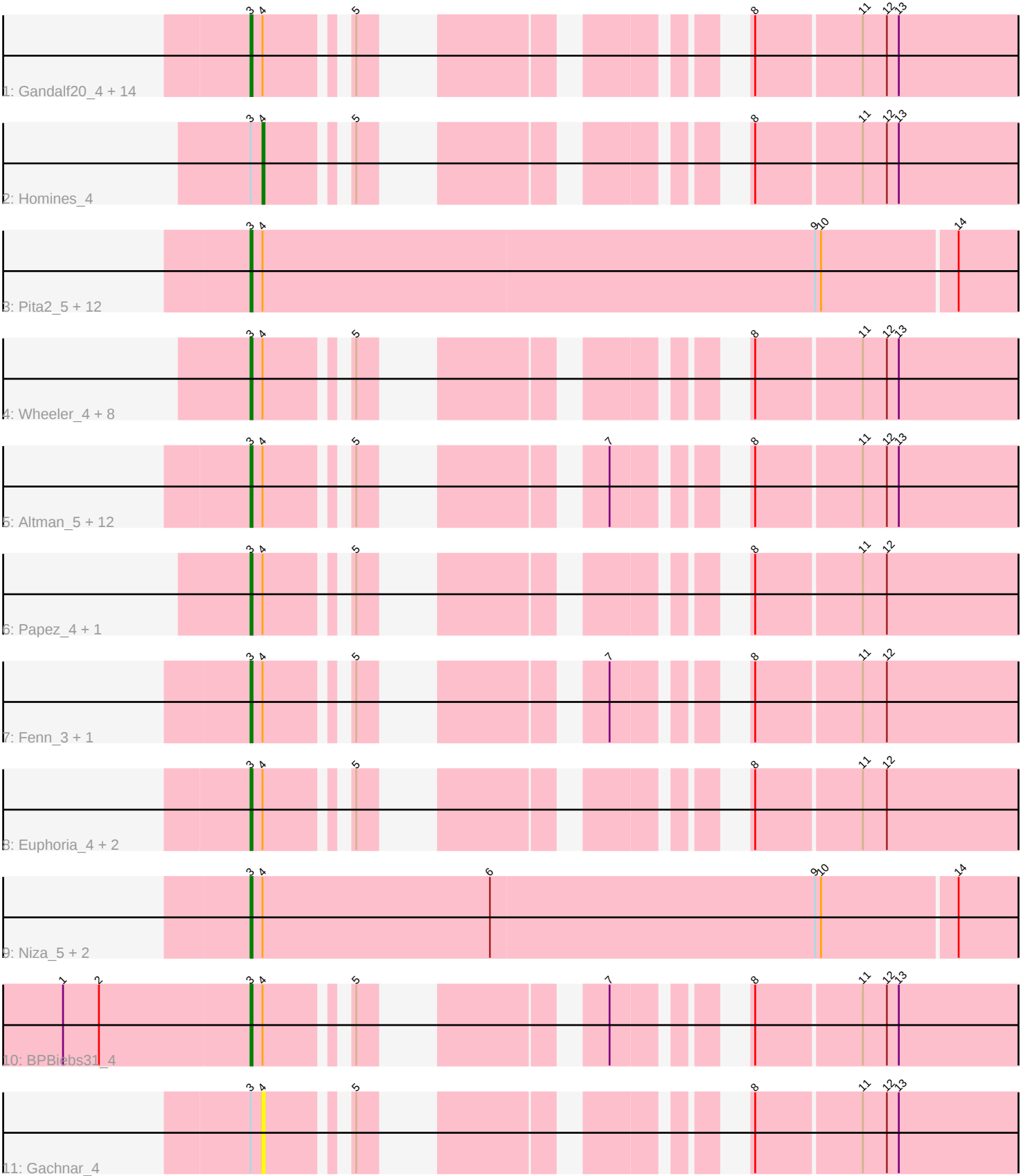


Pham 250533



Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. If this default region is judged to be packed too tightly with annotated starts, the track will be further scaled to only show that region of the ORF with annotated starts. This action will be indicated by adding "Zoomed" to the title. For starts, yellow indicates the location of called starts comprised solely of Glimmer/GeneMark auto-annotations, green indicates the location of called starts with at least 1 manual gene annotation.

Pham 250533 Report

This analysis was run 02/07/26 on database version 634.

Pham number 250533 has 63 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Gandalf20_4, BluSpix_3, McSinger_5, Mule_3, Zephyr_3, Abrogate_40, Graduation_4, StewieG_3, Perseus_3, Bethlehem_4, IgnatiusPatJac_3, Aeneas_3, Sanya_3, Espresso_4, PhrostyMug_3
- Track 2 : Homines_4
- Track 3 : Pita2_5, Pari_4, TwoPeat_4, Tripl3t_4, BarrowTuph_3, Marco3_3, JuliaChild_5, Rohr_4, Tasp14_4, Tote_5, Swole_5, PSullivan_5, Hope4ever_4
- Track 4 : Wheeler_4, DrFeelGood_3, JackSparrow_3, Marcell_4, Gyzlar_5, BillKnuckles_4, Marge_3, Pepe_5, Bxb1_3
- Track 5 : Altman_5, Kanely_5, Forsytheast_3, QTRlifeCrisis_3, MaryBeth_4, Ringer_3, Hami1_3, SwissCheese_3, Puppet_4, Corvo_4, MetalQZJ_4, Phlippers_3, Moose_3
- Track 6 : Papez_4, EnzoK_3
- Track 7 : Fenn_3, Naira_3
- Track 8 : Euphoria_4, Gwendoluna_3, Traft412_6
- Track 9 : Niza_5, Lopton_4, Parliament_3
- Track 10 : BPBiebs31_4
- Track 11 : Gachnar_4

Summary of Final Annotations (See graph section above for start numbers):

The start number called the most often in the published annotations is 3, it was called in 57 of the 58 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abrogate_40, Aeneas_3, Altman_5, BPBiebs31_4, BarrowTuph_3, Bethlehem_4, BillKnuckles_4, BluSpix_3, Bxb1_3, Corvo_4, DrFeelGood_3, EnzoK_3, Espresso_4, Euphoria_4, Fenn_3, Forsytheast_3, Gandalf20_4, Graduation_4, Gwendoluna_3, Gyzlar_5, Hami1_3, Hope4ever_4, IgnatiusPatJac_3, JackSparrow_3, JuliaChild_5, Kanely_5, Lopton_4, Marcell_4, Marco3_3, Marge_3, MaryBeth_4, McSinger_5, MetalQZJ_4, Moose_3, Mule_3, Naira_3, Niza_5, PSullivan_5, Papez_4, Pari_4, Parliament_3, Pepe_5, Perseus_3, Phlippers_3, PhrostyMug_3, Pita2_5, Puppet_4, QTRlifeCrisis_3, Ringer_3, Rohr_4, Sanya_3, StewieG_3, SwissCheese_3, Swole_5, Tasp14_4, Tote_5, Traft412_6, Tripl3t_4, TwoPeat_4, Wheeler_4, Zephyr_3,

Genes that have the "Most Annotated" start but do not call it:

- Gachnar_4, Homines_4,

Genes that do not have the "Most Annotated" start:

-

Summary by start number:

Start 3:

- Found in 63 of 63 (100.0%) of genes in pham
- Manual Annotations of this start: 57 of 58
- Called 96.8% of time when present
- Phage (with cluster) where this start called: Abrogate_40 (A1), Aeneas_3 (A1), Altman_5 (A1), BPBiebs31_4 (A1), BarrowTuph_3 (A1), Bethlehem_4 (A1), BillKnuckles_4 (A1), BluSpix_3 (A1), Bxb1_3 (A1), Corvo_4 (A1), DrFeelGood_3 (A1), EnzoK_3 (A1), Espresso_4 (A1), Euphoria_4 (A1), Fenn_3 (A1), Forsytheast_3 (A1), Gandalf20_4 (A1), Graduation_4 (A1), Gwendoluna_3 (A1), Gyzlar_5 (A1), Hami1_3 (A1), Hope4ever_4 (A1), IgnatiusPatJac_3 (A1), JackSparrow_3 (A1), JuliaChild_5 (A1), Kanely_5 (A1), Lopton_4 (A1), Marcell_4 (A1), Marco3_3 (A1), Marge_3 (A1), MaryBeth_4 (A1), McSinger_5 (A1), MetalQZJ_4 (A1), Moose_3 (A1), Mule_3 (A1), Naira_3 (A1), Niza_5 (A1), PSullivan_5 (A1), Papez_4 (A1), Pari_4 (A1), Parliament_3 (A1), Pepe_5 (A1), Perseus_3 (A1), Phlippers_3 (A1), PhrostyMug_3 (A1), Pita2_5 (A1), Puppet_4 (A1), QTRlifeCrisis_3 (A1), Ringer_3 (A1), Rohr_4 (A1), Sanya_3 (A1), StewieG_3 (A1), SwissCheese_3 (A1), Swole_5 (A1), Tasp14_4 (A1), Tote_5 (A1), Traft412_6 (A1), Tripl3t_4 (A1), TwoPeat_4 (A1), Wheeler_4 (A1), Zephyr_3 (A1),

Start 4:

- Found in 63 of 63 (100.0%) of genes in pham
- Manual Annotations of this start: 1 of 58
- Called 3.2% of time when present
- Phage (with cluster) where this start called: Gachnar_4 (A1), Homines_4 (A1),

Summary by clusters:

There is one cluster represented in this pham: A1

Info for manual annotations of cluster A1:

- Start number 3 was manually annotated 57 times for cluster A1.
- Start number 4 was manually annotated 1 time for cluster A1.

Gene Information:

Gene: Abrogate_40 Start: 2265, Stop: 2576, Start Num: 3

Candidate Starts for Abrogate_40:

(Start: 3 @2265 has 57 MA's), (Start: 4 @2271 has 1 MA's), (5, 2304), (8, 2430), (11, 2481), (12, 2493), (13, 2499),

Gene: Aeneas_3 Start: 1532, Stop: 1843, Start Num: 3

Candidate Starts for Aeneas_3:

(Start: 3 @1532 has 57 MA's), (Start: 4 @1538 has 1 MA's), (5, 1571), (8, 1697), (11, 1748), (12, 1760), (13, 1766),

Gene: Altman_5 Start: 2176, Stop: 2487, Start Num: 3

Candidate Starts for Altman_5:

(Start: 3 @2176 has 57 MA's), (Start: 4 @2182 has 1 MA's), (5, 2215), (7, 2296), (8, 2341), (11, 2392), (12, 2404), (13, 2410),

Gene: BPBiebs31_4 Start: 1769, Stop: 2080, Start Num: 3

Candidate Starts for BPBiebs31_4:

(1, 1676), (2, 1694), (Start: 3 @1769 has 57 MA's), (Start: 4 @1775 has 1 MA's), (5, 1808), (7, 1889), (8, 1934), (11, 1985), (12, 1997), (13, 2003),

Gene: BarrowTuph_3 Start: 1535, Stop: 1954, Start Num: 3

Candidate Starts for BarrowTuph_3:

(Start: 3 @1535 has 57 MA's), (Start: 4 @1541 has 1 MA's), (9, 1817), (10, 1820), (14, 1886),

Gene: Bethlehem_4 Start: 1685, Stop: 1996, Start Num: 3

Candidate Starts for Bethlehem_4:

(Start: 3 @1685 has 57 MA's), (Start: 4 @1691 has 1 MA's), (5, 1724), (8, 1850), (11, 1901), (12, 1913), (13, 1919),

Gene: BillKnuckles_4 Start: 1808, Stop: 2119, Start Num: 3

Candidate Starts for BillKnuckles_4:

(Start: 3 @1808 has 57 MA's), (Start: 4 @1814 has 1 MA's), (5, 1847), (8, 1973), (11, 2024), (12, 2036), (13, 2042),

Gene: BluSpix_3 Start: 1710, Stop: 2021, Start Num: 3

Candidate Starts for BluSpix_3:

(Start: 3 @1710 has 57 MA's), (Start: 4 @1716 has 1 MA's), (5, 1749), (8, 1875), (11, 1926), (12, 1938), (13, 1944),

Gene: Bxb1_3 Start: 1716, Stop: 2027, Start Num: 3

Candidate Starts for Bxb1_3:

(Start: 3 @1716 has 57 MA's), (Start: 4 @1722 has 1 MA's), (5, 1755), (8, 1881), (11, 1932), (12, 1944), (13, 1950),

Gene: Corvo_4 Start: 1868, Stop: 2179, Start Num: 3

Candidate Starts for Corvo_4:

(Start: 3 @1868 has 57 MA's), (Start: 4 @1874 has 1 MA's), (5, 1907), (7, 1988), (8, 2033), (11, 2084), (12, 2096), (13, 2102),

Gene: DrFeelGood_3 Start: 1481, Stop: 1792, Start Num: 3

Candidate Starts for DrFeelGood_3:

(Start: 3 @1481 has 57 MA's), (Start: 4 @1487 has 1 MA's), (5, 1520), (8, 1646), (11, 1697), (12, 1709), (13, 1715),

Gene: EnzoK_3 Start: 1659, Stop: 1970, Start Num: 3

Candidate Starts for EnzoK_3:

(Start: 3 @1659 has 57 MA's), (Start: 4 @1665 has 1 MA's), (5, 1698), (8, 1824), (11, 1875), (12, 1887),

Gene: Espresso_4 Start: 1776, Stop: 2087, Start Num: 3

Candidate Starts for Espresso_4:

(Start: 3 @1776 has 57 MA's), (Start: 4 @1782 has 1 MA's), (5, 1815), (8, 1941), (11, 1992), (12, 2004), (13, 2010),

Gene: Euphoria_4 Start: 1673, Stop: 1984, Start Num: 3

Candidate Starts for Euphoria_4:

(Start: 3 @1673 has 57 MA's), (Start: 4 @1679 has 1 MA's), (5, 1712), (8, 1838), (11, 1889), (12, 1901),

Gene: Fenn_3 Start: 1484, Stop: 1795, Start Num: 3

Candidate Starts for Fenn_3:

(Start: 3 @1484 has 57 MA's), (Start: 4 @1490 has 1 MA's), (5, 1523), (7, 1604), (8, 1649), (11, 1700), (12, 1712),

Gene: Forsytheast_3 Start: 1707, Stop: 2018, Start Num: 3

Candidate Starts for Forsytheast_3:

(Start: 3 @1707 has 57 MA's), (Start: 4 @1713 has 1 MA's), (5, 1746), (7, 1827), (8, 1872), (11, 1923), (12, 1935), (13, 1941),

Gene: Gachnar_4 Start: 1712, Stop: 2017, Start Num: 4

Candidate Starts for Gachnar_4:

(Start: 3 @1706 has 57 MA's), (Start: 4 @1712 has 1 MA's), (5, 1745), (8, 1871), (11, 1922), (12, 1934), (13, 1940),

Gene: Gandalf20_4 Start: 1786, Stop: 2097, Start Num: 3

Candidate Starts for Gandalf20_4:

(Start: 3 @1786 has 57 MA's), (Start: 4 @1792 has 1 MA's), (5, 1825), (8, 1951), (11, 2002), (12, 2014), (13, 2020),

Gene: Graduation_4 Start: 1684, Stop: 1995, Start Num: 3

Candidate Starts for Graduation_4:

(Start: 3 @1684 has 57 MA's), (Start: 4 @1690 has 1 MA's), (5, 1723), (8, 1849), (11, 1900), (12, 1912), (13, 1918),

Gene: Gwendoluna_3 Start: 1480, Stop: 1791, Start Num: 3

Candidate Starts for Gwendoluna_3:

(Start: 3 @1480 has 57 MA's), (Start: 4 @1486 has 1 MA's), (5, 1519), (8, 1645), (11, 1696), (12, 1708),

Gene: Gyzlar_5 Start: 2136, Stop: 2447, Start Num: 3

Candidate Starts for Gyzlar_5:

(Start: 3 @2136 has 57 MA's), (Start: 4 @2142 has 1 MA's), (5, 2175), (8, 2301), (11, 2352), (12, 2364), (13, 2370),

Gene: Hami1_3 Start: 1605, Stop: 1916, Start Num: 3

Candidate Starts for Hami1_3:

(Start: 3 @1605 has 57 MA's), (Start: 4 @1611 has 1 MA's), (5, 1644), (7, 1725), (8, 1770), (11, 1821), (12, 1833), (13, 1839),

Gene: Homines_4 Start: 1717, Stop: 2022, Start Num: 4

Candidate Starts for Homines_4:

(Start: 3 @1711 has 57 MA's), (Start: 4 @1717 has 1 MA's), (5, 1750), (8, 1876), (11, 1927), (12, 1939), (13, 1945),

Gene: Hope4ever_4 Start: 1743, Stop: 2162, Start Num: 3

Candidate Starts for Hope4ever_4:

(Start: 3 @1743 has 57 MA's), (Start: 4 @1749 has 1 MA's), (9, 2025), (10, 2028), (14, 2094),

Gene: IgnatiusPatJac_3 Start: 1710, Stop: 2021, Start Num: 3

Candidate Starts for IgnatiusPatJac_3:

(Start: 3 @1710 has 57 MA's), (Start: 4 @1716 has 1 MA's), (5, 1749), (8, 1875), (11, 1926), (12, 1938), (13, 1944),

Gene: JackSparrow_3 Start: 1540, Stop: 1851, Start Num: 3

Candidate Starts for JackSparrow_3:

(Start: 3 @1540 has 57 MA's), (Start: 4 @1546 has 1 MA's), (5, 1579), (8, 1705), (11, 1756), (12, 1768), (13, 1774),

Gene: JuliaChild_5 Start: 1919, Stop: 2338, Start Num: 3

Candidate Starts for JuliaChild_5:

(Start: 3 @1919 has 57 MA's), (Start: 4 @1925 has 1 MA's), (9, 2201), (10, 2204), (14, 2270),

Gene: Kanely_5 Start: 2176, Stop: 2487, Start Num: 3

Candidate Starts for Kanely_5:

(Start: 3 @2176 has 57 MA's), (Start: 4 @2182 has 1 MA's), (5, 2215), (7, 2296), (8, 2341), (11, 2392), (12, 2404), (13, 2410),

Gene: Lopton_4 Start: 1784, Stop: 2203, Start Num: 3

Candidate Starts for Lopton_4:

(Start: 3 @1784 has 57 MA's), (Start: 4 @1790 has 1 MA's), (6, 1904), (9, 2066), (10, 2069), (14, 2135),

Gene: Marcell_4 Start: 1622, Stop: 1933, Start Num: 3

Candidate Starts for Marcell_4:

(Start: 3 @1622 has 57 MA's), (Start: 4 @1628 has 1 MA's), (5, 1661), (8, 1787), (11, 1838), (12, 1850), (13, 1856),

Gene: Marco3_3 Start: 1534, Stop: 1953, Start Num: 3

Candidate Starts for Marco3_3:

(Start: 3 @1534 has 57 MA's), (Start: 4 @1540 has 1 MA's), (9, 1816), (10, 1819), (14, 1885),

Gene: Marge_3 Start: 1540, Stop: 1851, Start Num: 3

Candidate Starts for Marge_3:

(Start: 3 @1540 has 57 MA's), (Start: 4 @1546 has 1 MA's), (5, 1579), (8, 1705), (11, 1756), (12, 1768), (13, 1774),

Gene: MaryBeth_4 Start: 1868, Stop: 2179, Start Num: 3

Candidate Starts for MaryBeth_4:

(Start: 3 @1868 has 57 MA's), (Start: 4 @1874 has 1 MA's), (5, 1907), (7, 1988), (8, 2033), (11, 2084), (12, 2096), (13, 2102),

Gene: McSinger_5 Start: 1759, Stop: 2079, Start Num: 3

Candidate Starts for McSinger_5:

(Start: 3 @1759 has 57 MA's), (Start: 4 @1765 has 1 MA's), (5, 1798), (8, 1924), (11, 1975), (12, 1987), (13, 1993),

Gene: MetalQZJ_4 Start: 1868, Stop: 2179, Start Num: 3

Candidate Starts for MetalQZJ_4:

(Start: 3 @1868 has 57 MA's), (Start: 4 @1874 has 1 MA's), (5, 1907), (7, 1988), (8, 2033), (11, 2084), (12, 2096), (13, 2102),

Gene: Moose_3 Start: 1707, Stop: 2018, Start Num: 3

Candidate Starts for Moose_3:

(Start: 3 @1707 has 57 MA's), (Start: 4 @1713 has 1 MA's), (5, 1746), (7, 1827), (8, 1872), (11, 1923), (12, 1935), (13, 1941),

Gene: Mule_3 Start: 1532, Stop: 1843, Start Num: 3

Candidate Starts for Mule_3:

(Start: 3 @1532 has 57 MA's), (Start: 4 @1538 has 1 MA's), (5, 1571), (8, 1697), (11, 1748), (12, 1760), (13, 1766),

Gene: Naira_3 Start: 1484, Stop: 1795, Start Num: 3

Candidate Starts for Naira_3:

(Start: 3 @1484 has 57 MA's), (Start: 4 @1490 has 1 MA's), (5, 1523), (7, 1604), (8, 1649), (11, 1700), (12, 1712),

Gene: Niza_5 Start: 2182, Stop: 2601, Start Num: 3

Candidate Starts for Niza_5:

(Start: 3 @2182 has 57 MA's), (Start: 4 @2188 has 1 MA's), (6, 2302), (9, 2464), (10, 2467), (14, 2533),

Gene: PSullivan_5 Start: 1919, Stop: 2338, Start Num: 3

Candidate Starts for PSullivan_5:

(Start: 3 @1919 has 57 MA's), (Start: 4 @1925 has 1 MA's), (9, 2201), (10, 2204), (14, 2270),

Gene: Papez_4 Start: 1712, Stop: 2023, Start Num: 3

Candidate Starts for Papez_4:

(Start: 3 @1712 has 57 MA's), (Start: 4 @1718 has 1 MA's), (5, 1751), (8, 1877), (11, 1928), (12, 1940),

Gene: Pari_4 Start: 1672, Stop: 2091, Start Num: 3

Candidate Starts for Pari_4:

(Start: 3 @1672 has 57 MA's), (Start: 4 @1678 has 1 MA's), (9, 1954), (10, 1957), (14, 2023),

Gene: Parliament_3 Start: 1541, Stop: 1960, Start Num: 3

Candidate Starts for Parliament_3:

(Start: 3 @1541 has 57 MA's), (Start: 4 @1547 has 1 MA's), (6, 1661), (9, 1823), (10, 1826), (14, 1892),

Gene: Pepe_5 Start: 2131, Stop: 2442, Start Num: 3

Candidate Starts for Pepe_5:

(Start: 3 @2131 has 57 MA's), (Start: 4 @2137 has 1 MA's), (5, 2170), (8, 2296), (11, 2347), (12, 2359), (13, 2365),

Gene: Perseus_3 Start: 1532, Stop: 1843, Start Num: 3

Candidate Starts for Perseus_3:

(Start: 3 @1532 has 57 MA's), (Start: 4 @1538 has 1 MA's), (5, 1571), (8, 1697), (11, 1748), (12, 1760), (13, 1766),

Gene: Phlippers_3 Start: 1535, Stop: 1846, Start Num: 3

Candidate Starts for Phlippers_3:

(Start: 3 @1535 has 57 MA's), (Start: 4 @1541 has 1 MA's), (5, 1574), (7, 1655), (8, 1700), (11, 1751), (12, 1763), (13, 1769),

Gene: PhrostyMug_3 Start: 1532, Stop: 1843, Start Num: 3

Candidate Starts for PhrostyMug_3:

(Start: 3 @1532 has 57 MA's), (Start: 4 @1538 has 1 MA's), (5, 1571), (8, 1697), (11, 1748), (12, 1760), (13, 1766),

Gene: Pita2_5 Start: 1919, Stop: 2338, Start Num: 3

Candidate Starts for Pita2_5:

(Start: 3 @1919 has 57 MA's), (Start: 4 @1925 has 1 MA's), (9, 2201), (10, 2204), (14, 2270),

Gene: Puppet_4 Start: 1683, Stop: 1994, Start Num: 3

Candidate Starts for Puppet_4:

(Start: 3 @1683 has 57 MA's), (Start: 4 @1689 has 1 MA's), (5, 1722), (7, 1803), (8, 1848), (11, 1899), (12, 1911), (13, 1917),

Gene: QTRLifeCrisis_3 Start: 1540, Stop: 1851, Start Num: 3

Candidate Starts for QTRLifeCrisis_3:

(Start: 3 @1540 has 57 MA's), (Start: 4 @1546 has 1 MA's), (5, 1579), (7, 1660), (8, 1705), (11, 1756), (12, 1768), (13, 1774),

Gene: Ringer_3 Start: 1712, Stop: 2023, Start Num: 3

Candidate Starts for Ringer_3:

(Start: 3 @1712 has 57 MA's), (Start: 4 @1718 has 1 MA's), (5, 1751), (7, 1832), (8, 1877), (11, 1928), (12, 1940), (13, 1946),

Gene: Rohr_4 Start: 1711, Stop: 2130, Start Num: 3

Candidate Starts for Rohr_4:

(Start: 3 @1711 has 57 MA's), (Start: 4 @1717 has 1 MA's), (9, 1993), (10, 1996), (14, 2062),

Gene: Sanya_3 Start: 2264, Stop: 2584, Start Num: 3

Candidate Starts for Sanya_3:

(Start: 3 @2264 has 57 MA's), (Start: 4 @2270 has 1 MA's), (5, 2303), (8, 2429), (11, 2480), (12, 2492), (13, 2498),

Gene: StewieG_3 Start: 1540, Stop: 1851, Start Num: 3

Candidate Starts for StewieG_3:

(Start: 3 @1540 has 57 MA's), (Start: 4 @1546 has 1 MA's), (5, 1579), (8, 1705), (11, 1756), (12, 1768), (13, 1774),

Gene: SwissCheese_3 Start: 1707, Stop: 2018, Start Num: 3

Candidate Starts for SwissCheese_3:

(Start: 3 @1707 has 57 MA's), (Start: 4 @1713 has 1 MA's), (5, 1746), (7, 1827), (8, 1872), (11, 1923), (12, 1935), (13, 1941),

Gene: Swole_5 Start: 1919, Stop: 2338, Start Num: 3

Candidate Starts for Swole_5:

(Start: 3 @1919 has 57 MA's), (Start: 4 @1925 has 1 MA's), (9, 2201), (10, 2204), (14, 2270),

Gene: Tasp14_4 Start: 1707, Stop: 2126, Start Num: 3

Candidate Starts for Tasp14_4:

(Start: 3 @1707 has 57 MA's), (Start: 4 @1713 has 1 MA's), (9, 1989), (10, 1992), (14, 2058),

Gene: Tote_5 Start: 1919, Stop: 2338, Start Num: 3

Candidate Starts for Tote_5:

(Start: 3 @1919 has 57 MA's), (Start: 4 @1925 has 1 MA's), (9, 2201), (10, 2204), (14, 2270),

Gene: Traft412_6 Start: 2332, Stop: 2643, Start Num: 3

Candidate Starts for Traft412_6:

(Start: 3 @2332 has 57 MA's), (Start: 4 @2338 has 1 MA's), (5, 2371), (8, 2497), (11, 2548), (12, 2560),

Gene: Tripl3t_4 Start: 1738, Stop: 2157, Start Num: 3

Candidate Starts for Tripl3t_4:

(Start: 3 @1738 has 57 MA's), (Start: 4 @1744 has 1 MA's), (9, 2020), (10, 2023), (14, 2089),

Gene: TwoPeat_4 Start: 1712, Stop: 2131, Start Num: 3

Candidate Starts for TwoPeat_4:

(Start: 3 @1712 has 57 MA's), (Start: 4 @1718 has 1 MA's), (9, 1994), (10, 1997), (14, 2063),

Gene: Wheeler_4 Start: 1712, Stop: 2023, Start Num: 3

Candidate Starts for Wheeler_4:

(Start: 3 @1712 has 57 MA's), (Start: 4 @1718 has 1 MA's), (5, 1751), (8, 1877), (11, 1928), (12, 1940), (13, 1946),

Gene: Zephyr_3 Start: 1541, Stop: 1852, Start Num: 3

Candidate Starts for Zephyr_3:

(Start: 3 @1541 has 57 MA's), (Start: 4 @1547 has 1 MA's), (5, 1580), (8, 1706), (11, 1757), (12, 1769), (13, 1775),