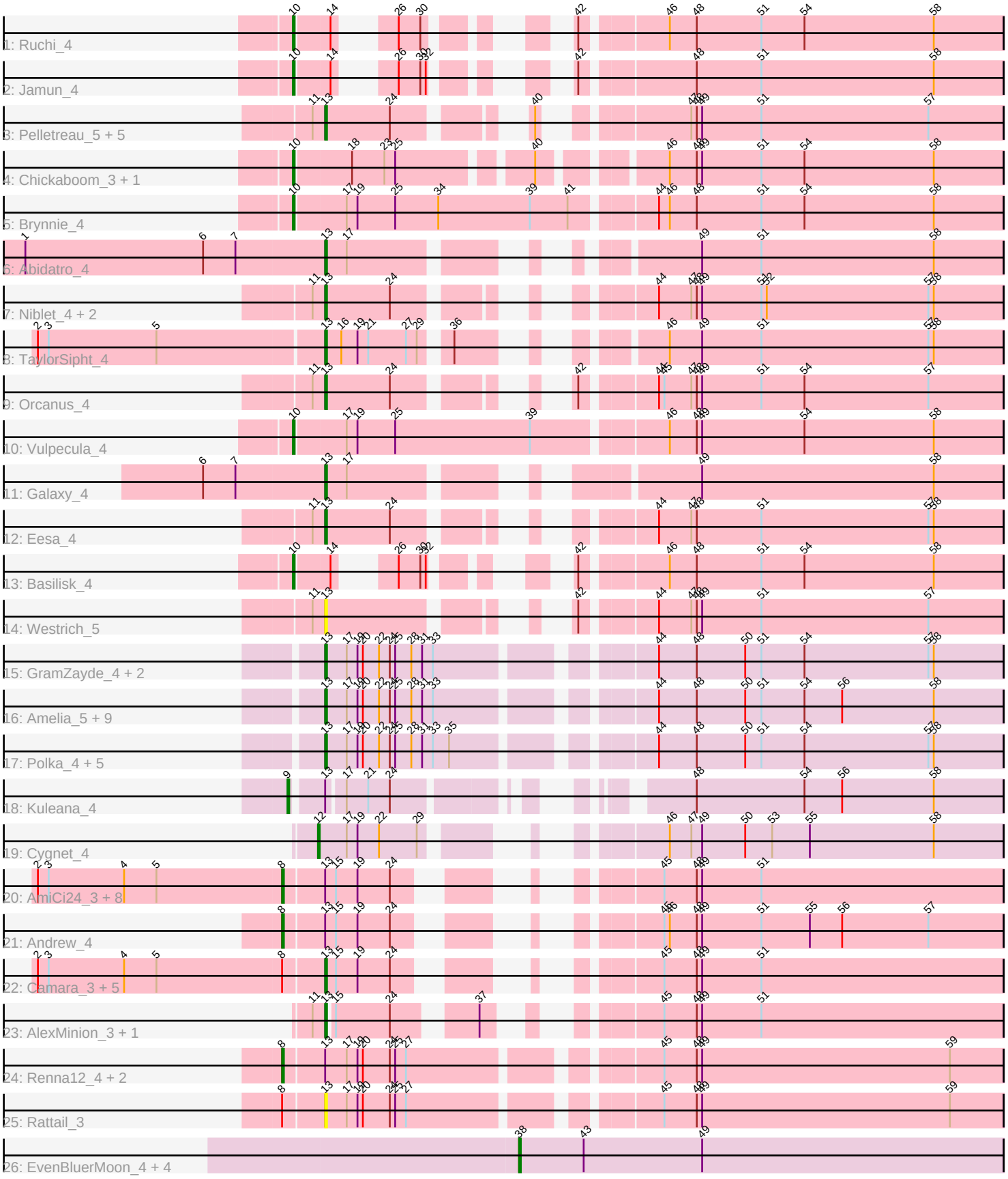
Pham 347578


1: Ruchi_4
2: Jamun_4
3: Pelletreau_5 + 5
4: Chickaboom_3 + 1
5: Brynnie_4
6: Abidatro_4
7: Niblet_4 + 2
8: TaylorSipht_4
9: Orcanus_4
10: Vulpecula_4
11: Galaxy_4
12: Eesa_4
13: Basilisk_4
14: Westrich_5
15: GramZayde_4 + 2
16: Amelia_5 + 9
17: Polka_4 + 5
18: Kuleana_4
19: Cygnet_4
20: AmiCi24_3 + 8
21: Andrew_4
22: Camara_3 + 5
23: AlexMinion_3 + 1
24: Renna12_4 + 2
25: Rattail_3
26: EvenBluerMoon_4 + 4

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 347578 Report

This analysis was run 11/14/26 on database version 672.

Pham number 347578 has 70 members, 14 are drafts.

Phages represented in each track:
• Track 1 : Ruchi_4
• Track 2 : Jamun_4
• Track 3 : Pelletreau_5, Amanises_5, KendraB23_5, Shen_5, Gravel_5, Toad24_5
• Track 4 : Chickaboom_3, WileyE_3
• Track 5 : Brynnie_4
• Track 6 : Abidatro_4
• Track 7 : Niblet_4, Chicken_4, Zixiang_4
• Track 8 : TaylorSipht_4
• Track 9 : Orcanus_4
• Track 10 : Vulpecula_4
• Track 11 : Galaxy_4
• Track 12 : Eesa_4
• Track 13 : Basilisk_4
• Track 14 : Westrich_5
• Track 15 : GramZayde_4, Bibble12_5, HannahPhantana_5
• Track 16 : Amelia_5, Cote_5, Lunar_5, Melons_5, BadWillHunting_5, PhirstandPhine_5, Damocles_5, Bedetta_5, Jerole_5, Pineda_5
• Track 17 : Polka_4, Daob_5, Kepler_4, Colusalem_4, Coral_4, OtsoOtso_4
• Track 18 : Kuleana_4
• Track 19 : Cygnet_4
• Track 20 : AmiCi24_3, DanHam62_3, Laphuphu24k_3, Fingolfin_3, PhluffyCoco_3, Atlantica_3, Glotell_3, RedFox_3, Juno112_3
• Track 21 : Andrew_4
• Track 22 : Camara_3, Amphitrite_3, KHumphrey_3, HamCheese_3, AdoptaAdorbs_3, Oppalora_3
• Track 23 : AlexMinion_3, StuartMinion_3
• Track 24 : Renna12_4, Azaz_3, Leona_3
• Track 25 : Rattail_3
• Track 26 : EvenBluerMoon_4, Aoka_4, Hereford_5, Morrey_5, PrairieDogTown_4

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

The start number called the most often in the published annotations is 13, it was called in 30 of the 56 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Abidatro_4, AdoptaAdorbs_3, AlexMinion_3, Amanises_5, Amelia_5, Amphitrite_3, BadWillHunting_5, Bedetta_5, Bibble12_5, Camara_3, Chicken_4, Colusalem_4, Coral_4, Cote_5, Damocles_5, Daob_5, Eesa_4, Galaxy_4, GramZayde_4, Gravel_5, HamCheese_3, HannahPhantana_5, Jerole_5, KHumphrey_3, KendraB23_5, Kepler_4, Lunar_5, Melons_5, Niblet_4, Oppalora_3, Orcanus_4, OtsoOtso_4, Pelletreau_5, PhirstandPhine_5, Pineda_5, Polka_4, Rattail_3, Shen_5, StuartMinion_3, TaylorSipht_4, Toad24_5, Westrich_5, Zixiang_4,

Genes that have the "Most Annotated" start but do not call it:
• AmiCi24_3, Andrew_4, Atlantica_3, Azaz_3, DanHam62_3, Fingolfin_3, Glotell_3, Juno112_3, Kuleana_4, Laphuphu24k_3, Leona_3, PhluffyCoco_3, RedFox_3, Renna12_4,

Genes that do not have the "Most Annotated" start:
• Aoka_4, Basilisk_4, Brynnie_4, Chickaboom_3, Cygnet_4, EvenBluerMoon_4, Hereford_5, Jamun_4, Morrey_5, PrairieDogTown_4, Ruchi_4, Vulpecula_4, WileyE_3,

Summary by start number:

Start 8:
• Found in 20 of 70 (28.6%) of genes in pham
• Manual Annotations of this start: 13 of 56
• Called 65.0% of time when present
• Phage (with cluster) where this start called: AmiCi24_3 (AS3), Andrew_4 (AS3), Atlantica_3 (AS3), Azaz_3 (AS3), DanHam62_3 (AS3), Fingolfin_3 (AS3), Glotell_3 (AS3), Juno112_3 (AS3), Laphuphu24k_3 (AS3), Leona_3 (AS3), PhluffyCoco_3 (AS3), RedFox_3 (AS3), Renna12_4 (AS3),

Start 9:
• Found in 1 of 70 (1.4%) of genes in pham
• Manual Annotations of this start: 1 of 56
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Kuleana_4 (AS2),

Start 10:
• Found in 7 of 70 (10.0%) of genes in pham
• Manual Annotations of this start: 7 of 56
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Basilisk_4 (AS1), Brynnie_4 (AS1), Chickaboom_3 (AS1), Jamun_4 (AS1), Ruchi_4 (AS1), Vulpecula_4 (AS1), WileyE_3 (AS1),

Start 12:
• Found in 1 of 70 (1.4%) of genes in pham
• Manual Annotations of this start: 1 of 56
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Cygnet_4 (AS2),

Start 13:
• Found in 57 of 70 (81.4%) of genes in pham

• Manual Annotations of this start: 30 of 56
• Called 75.4% of time when present
• Phage (with cluster) where this start called: Abidatro_4 (AS1), AdoptaAdorbs_3 (AS3), AlexMinion_3 (AS3), Amanises_5 (AS1), Amelia_5 (AS2), Amphitrite_3 (AS3), BadWillHunting_5 (AS2), Bedetta_5 (AS2), Bibble12_5 (AS2), Camara_3 (AS3), Chicken_4 (AS1), Colusalem_4 (AS2), Coral_4 (AS2), Cote_5 (AS2), Damocles_5 (AS2), Daob_5 (AS2), Eesa_4 (AS1), Galaxy_4 (AS1), GramZayde_4 (AS2), Gravel_5 (AS1), HamCheese_3 (AS3), HannahPhantana_5 (AS2), Jerole_5 (AS2), KHumphrey_3 (AS3), KendraB23_5 (AS1), Kepler_4 (AS2), Lunar_5 (AS2), Melons_5 (AS2), Niblet_4 (AS1), Oppalora_3 (AS3), Orcanus_4 (AS1), OtsoOtso_4 (AS2), Pelletreau_5 (AS1), PhirstandPhine_5 (AS2), Pineda_5 (AS2), Polka_4 (AS2), Rattail_3 (AS3), Shen_5 (AS1), StuartMinion_3 (AS3), TaylorSipht_4 (AS1), Toad24_5 (AS1), Westrich_5 (AS1), Zixiang_4 (AS1),

Start 38:
• Found in 5 of 70 (7.1%) of genes in pham
• Manual Annotations of this start: 4 of 56
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Aoka_4 (FO), EvenBluerMoon_4 (FO), Hereford_5 (FO), Morrey_5 (FO), PrairieDogTown_4 (FO),

Summary by clusters:

There are 4 clusters represented in this pham: AS3, AS2, AS1, FO,

Info for manual annotations of cluster AS1:
•Start number 10 was manually annotated 7 times for cluster AS1.
•Start number 13 was manually annotated 11 times for cluster AS1.

Info for manual annotations of cluster AS2:
•Start number 9 was manually annotated 1 time for cluster AS2.
•Start number 12 was manually annotated 1 time for cluster AS2.
•Start number 13 was manually annotated 14 times for cluster AS2.

Info for manual annotations of cluster AS3:
•Start number 8 was manually annotated 13 times for cluster AS3.
•Start number 13 was manually annotated 5 times for cluster AS3.

Info for manual annotations of cluster FO:
•Start number 38 was manually annotated 4 times for cluster FO.

Gene Information:

Gene: Abidatro_4 Start: 2358, Stop: 2675, Start Num: 13
Candidate Starts for Abidatro_4:
(1, 2193), (6, 2292), (7, 2310), (Start: 13 @2358 has 30 MA's), (17, 2370), (49, 2508), (51, 2541), (58, 2637),

Gene: AdoptaAdorbs_3 Start: 2010, Stop: 2318, Start Num: 13
Candidate Starts for AdoptaAdorbs_3:

(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: AlexMinion_3 Start: 2011, Stop: 2325, Start Num: 13
Candidate Starts for AlexMinion_3:
(11, 2005), (Start: 13 @2011 has 30 MA's), (15, 2014), (24, 2044), (37, 2080), (45, 2137), (48, 2155), (49, 2158), (51, 2191),

Gene: Amanises_5 Start: 2556, Stop: 2876, Start Num: 13
Candidate Starts for Amanises_5:
(11, 2550), (Start: 13 @2556 has 30 MA's), (24, 2592), (40, 2643), (47, 2703), (48, 2706), (49, 2709), (51, 2742), (57, 2835),

Gene: Amelia_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Amelia_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: AmiCi24_3 Start: 1989, Stop: 2318, Start Num: 8
Candidate Starts for AmiCi24_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: Amphitrite_3 Start: 2008, Stop: 2316, Start Num: 13
Candidate Starts for Amphitrite_3:
(2, 1852), (3, 1858), (4, 1900), (5, 1918), (Start: 8 @1987 has 13 MA's), (Start: 13 @2008 has 30 MA's), (15, 2014), (19, 2026), (24, 2044), (45, 2128), (48, 2146), (49, 2149), (51, 2182),

Gene: Andrew_4 Start: 2360, Stop: 2689, Start Num: 8
Candidate Starts for Andrew_4:
(Start: 8 @2360 has 13 MA's), (Start: 13 @2381 has 30 MA's), (15, 2387), (19, 2399), (24, 2417), (45, 2501), (46, 2504), (48, 2519), (49, 2522), (51, 2555), (55, 2582), (56, 2600), (57, 2648),

Gene: Aoka_4 Start: 2853, Stop: 3122, Start Num: 38
Candidate Starts for Aoka_4:
(Start: 38 @2853 has 4 MA's), (43, 2889), (49, 2955),

Gene: Atlantica_3 Start: 1989, Stop: 2318, Start Num: 8
Candidate Starts for Atlantica_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: Azaz_3 Start: 1992, Stop: 2366, Start Num: 8
Candidate Starts for Azaz_3:
(Start: 8 @1992 has 13 MA's), (Start: 13 @2013 has 30 MA's), (17, 2025), (19, 2031), (20, 2034), (24, 2049), (25, 2052), (27, 2058), (45, 2178), (48, 2196), (49, 2199), (59, 2337),

Gene: BadWillHunting_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for BadWillHunting_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: Basilisk_4 Start: 2627, Stop: 2941, Start Num: 10
Candidate Starts for Basilisk_4:
(Start: 10 @2627 has 7 MA's), (14, 2645), (26, 2660), (30, 2672), (32, 2675), (42, 2714), (46, 2756), (48, 2771), (51, 2807), (54, 2831), (58, 2903),

Gene: Bedetta_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Bedetta_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: Bibble12_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Bibble12_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (57, 2821), (58, 2824),

Gene: Brynnie_4 Start: 2355, Stop: 2738, Start Num: 10
Candidate Starts for Brynnie_4:
(Start: 10 @2355 has 7 MA's), (17, 2382), (19, 2388), (25, 2409), (34, 2433), (39, 2484), (41, 2505), (44, 2547), (46, 2553), (48, 2568), (51, 2604), (54, 2628), (58, 2700),

Gene: Camara_3 Start: 2011, Stop: 2319, Start Num: 13
Candidate Starts for Camara_3:
(2, 1855), (3, 1861), (4, 1903), (5, 1921), (Start: 8 @1990 has 13 MA's), (Start: 13 @2011 has 30 MA's), (15, 2017), (19, 2029), (24, 2047), (45, 2131), (48, 2149), (49, 2152), (51, 2185),

Gene: Chickaboom_3 Start: 2010, Stop: 2372, Start Num: 10
Candidate Starts for Chickaboom_3:
(Start: 10 @2010 has 7 MA's), (18, 2040), (23, 2058), (25, 2064), (40, 2130), (46, 2187), (48, 2202), (49, 2205), (51, 2238), (54, 2262), (58, 2334),

Gene: Chicken_4 Start: 2347, Stop: 2667, Start Num: 13
Candidate Starts for Chicken_4:
(11, 2341), (Start: 13 @2347 has 30 MA's), (24, 2383), (44, 2476), (47, 2494), (48, 2497), (49, 2500), (51, 2533), (52, 2536), (57, 2626), (58, 2629),

Gene: Colusalem_4 Start: 2345, Stop: 2698, Start Num: 13
Candidate Starts for Colusalem_4:
(Start: 13 @2345 has 30 MA's), (17, 2357), (19, 2363), (20, 2366), (22, 2375), (24, 2381), (25, 2384), (28, 2393), (31, 2399), (33, 2405), (35, 2414), (44, 2507), (48, 2528), (50, 2555), (51, 2564), (54, 2588), (57, 2657), (58, 2660),

Gene: Coral_4 Start: 2345, Stop: 2698, Start Num: 13
Candidate Starts for Coral_4:
(Start: 13 @2345 has 30 MA's), (17, 2357), (19, 2363), (20, 2366), (22, 2375), (24, 2381), (25, 2384), (28, 2393), (31, 2399), (33, 2405), (35, 2414), (44, 2507), (48, 2528), (50, 2555), (51, 2564), (54, 2588), (57, 2657), (58, 2660),

Gene: Cote_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Cote_5:

(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: Cygnet_4 Start: 2338, Stop: 2658, Start Num: 12
Candidate Starts for Cygnet_4:
(Start: 12 @2338 has 1 MA's), (17, 2353), (19, 2359), (22, 2371), (29, 2392), (46, 2473), (47, 2485), (49, 2491), (50, 2515), (53, 2530), (55, 2551), (58, 2620),

Gene: Damocles_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Damocles_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: DanHam62_3 Start: 1989, Stop: 2318, Start Num: 8
Candidate Starts for DanHam62_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: Daob_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Daob_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (35, 2578), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (57, 2821), (58, 2824),

Gene: Eesa_4 Start: 2556, Stop: 2876, Start Num: 13
Candidate Starts for Eesa_4:
(11, 2550), (Start: 13 @2556 has 30 MA's), (24, 2592), (44, 2685), (47, 2703), (48, 2706), (51, 2742), (57, 2835), (58, 2838),

Gene: EvenBluerMoon_4 Start: 2851, Stop: 3120, Start Num: 38
Candidate Starts for EvenBluerMoon_4:
(Start: 38 @2851 has 4 MA's), (43, 2887), (49, 2953),

Gene: Fingolfin_3 Start: 1990, Stop: 2319, Start Num: 8
Candidate Starts for Fingolfin_3:
(2, 1855), (3, 1861), (4, 1903), (5, 1921), (Start: 8 @1990 has 13 MA's), (Start: 13 @2011 has 30 MA's), (15, 2017), (19, 2029), (24, 2047), (45, 2131), (48, 2149), (49, 2152), (51, 2185),

Gene: Galaxy_4 Start: 2358, Stop: 2684, Start Num: 13
Candidate Starts for Galaxy_4:
(6, 2292), (7, 2310), (Start: 13 @2358 has 30 MA's), (17, 2370), (49, 2517), (58, 2646),

Gene: Glotell_3 Start: 1989, Stop: 2318, Start Num: 8
Candidate Starts for Glotell_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: GramZayde_4 Start: 2346, Stop: 2699, Start Num: 13
Candidate Starts for GramZayde_4:
(Start: 13 @2346 has 30 MA's), (17, 2358), (19, 2364), (20, 2367), (22, 2376), (24, 2382), (25, 2385), (28, 2394), (31, 2400), (33, 2406), (44, 2508), (48, 2529), (50, 2556), (51, 2565), (54, 2589), (57, 2658),

(58, 2661),

Gene: Gravel_5 Start: 2556, Stop: 2876, Start Num: 13
Candidate Starts for Gravel_5:
(11, 2550), (Start: 13 @2556 has 30 MA's), (24, 2592), (40, 2643), (47, 2703), (48, 2706), (49, 2709), (51, 2742), (57, 2835),

Gene: HamCheese_3 Start: 2010, Stop: 2318, Start Num: 13
Candidate Starts for HamCheese_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: HannahPhantana_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for HannahPhantana_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (57, 2821), (58, 2824),

Gene: Hereford_5 Start: 3032, Stop: 3301, Start Num: 38
Candidate Starts for Hereford_5:
(Start: 38 @3032 has 4 MA's), (43, 3068), (49, 3134),

Gene: Jamun_4 Start: 2627, Stop: 2941, Start Num: 10
Candidate Starts for Jamun_4:
(Start: 10 @2627 has 7 MA's), (14, 2645), (26, 2660), (30, 2672), (32, 2675), (42, 2714), (48, 2771), (51, 2807), (58, 2903),

Gene: Jerole_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Jerole_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: Juno112_3 Start: 1989, Stop: 2318, Start Num: 8
Candidate Starts for Juno112_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: KHumphrey_3 Start: 2010, Stop: 2318, Start Num: 13
Candidate Starts for KHumphrey_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: KendraB23_5 Start: 2556, Stop: 2876, Start Num: 13
Candidate Starts for KendraB23_5:
(11, 2550), (Start: 13 @2556 has 30 MA's), (24, 2592), (40, 2643), (47, 2703), (48, 2706), (49, 2709), (51, 2742), (57, 2835),

Gene: Kepler_4 Start: 2344, Stop: 2697, Start Num: 13
Candidate Starts for Kepler_4:
(Start: 13 @2344 has 30 MA's), (17, 2356), (19, 2362), (20, 2365), (22, 2374), (24, 2380), (25, 2383), (28, 2392), (31, 2398), (33, 2404), (35, 2413), (44, 2506), (48, 2527), (50, 2554), (51, 2563), (54, 2587), (57, 2656), (58, 2659),

Gene: Kuleana_4 Start: 2342, Stop: 2671, Start Num: 9
Candidate Starts for Kuleana_4:
(Start: 9 @2342 has 1 MA's), (Start: 13 @2357 has 30 MA's), (17, 2366), (21, 2378), (24, 2390), (48, 2501), (54, 2561), (56, 2582), (58, 2633),

Gene: Laphuphu24k_3 Start: 1989, Stop: 2318, Start Num: 8
Candidate Starts for Laphuphu24k_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: Leona_3 Start: 1992, Stop: 2366, Start Num: 8
Candidate Starts for Leona_3:
(Start: 8 @1992 has 13 MA's), (Start: 13 @2013 has 30 MA's), (17, 2025), (19, 2031), (20, 2034), (24, 2049), (25, 2052), (27, 2058), (45, 2178), (48, 2196), (49, 2199), (59, 2337),

Gene: Lunar_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Lunar_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: Melons_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Melons_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: Morrey_5 Start: 2853, Stop: 3122, Start Num: 38
Candidate Starts for Morrey_5:
(Start: 38 @2853 has 4 MA's), (43, 2889), (49, 2955),

Gene: Niblet_4 Start: 2347, Stop: 2667, Start Num: 13
Candidate Starts for Niblet_4:
(11, 2341), (Start: 13 @2347 has 30 MA's), (24, 2383), (44, 2476), (47, 2494), (48, 2497), (49, 2500), (51, 2533), (52, 2536), (57, 2626), (58, 2629),

Gene: Oppalora_3 Start: 2010, Stop: 2318, Start Num: 13
Candidate Starts for Oppalora_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: Orcanus_4 Start: 2349, Stop: 2669, Start Num: 13
Candidate Starts for Orcanus_4:
(11, 2343), (Start: 13 @2349 has 30 MA's), (24, 2385), (42, 2442), (44, 2478), (45, 2481), (47, 2496), (48, 2499), (49, 2502), (51, 2535), (54, 2559), (57, 2628),

Gene: OtsoOtso_4 Start: 2345, Stop: 2698, Start Num: 13
Candidate Starts for OtsoOtso_4:
(Start: 13 @2345 has 30 MA's), (17, 2357), (19, 2363), (20, 2366), (22, 2375), (24, 2381), (25, 2384), (28, 2393), (31, 2399), (33, 2405), (35, 2414), (44, 2507), (48, 2528), (50, 2555), (51, 2564), (54, 2588), (57, 2657), (58, 2660),

Gene: Pelletreau_5 Start: 2556, Stop: 2876, Start Num: 13
Candidate Starts for Pelletreau_5:
(11, 2550), (Start: 13 @2556 has 30 MA's), (24, 2592), (40, 2643), (47, 2703), (48, 2706), (49, 2709), (51, 2742), (57, 2835),

Gene: PhirstandPhine_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for PhirstandPhine_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: PhluffyCoco_3 Start: 1989, Stop: 2318, Start Num: 8
Candidate Starts for PhluffyCoco_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: Pineda_5 Start: 2509, Stop: 2862, Start Num: 13
Candidate Starts for Pineda_5:
(Start: 13 @2509 has 30 MA's), (17, 2521), (19, 2527), (20, 2530), (22, 2539), (24, 2545), (25, 2548), (28, 2557), (31, 2563), (33, 2569), (44, 2671), (48, 2692), (50, 2719), (51, 2728), (54, 2752), (56, 2773), (58, 2824),

Gene: Polka_4 Start: 2345, Stop: 2698, Start Num: 13
Candidate Starts for Polka_4:
(Start: 13 @2345 has 30 MA's), (17, 2357), (19, 2363), (20, 2366), (22, 2375), (24, 2381), (25, 2384), (28, 2393), (31, 2399), (33, 2405), (35, 2414), (44, 2507), (48, 2528), (50, 2555), (51, 2564), (54, 2588), (57, 2657), (58, 2660),

Gene: PrairieDogTown_4 Start: 2853, Stop: 3122, Start Num: 38
Candidate Starts for PrairieDogTown_4:
(Start: 38 @2853 has 4 MA's), (43, 2889), (49, 2955),

Gene: Rattail_3 Start: 2013, Stop: 2366, Start Num: 13
Candidate Starts for Rattail_3:
(Start: 8 @1992 has 13 MA's), (Start: 13 @2013 has 30 MA's), (17, 2025), (19, 2031), (20, 2034), (24, 2049), (25, 2052), (27, 2058), (45, 2178), (48, 2196), (49, 2199), (59, 2337),

Gene: RedFox_3 Start: 1989, Stop: 2318, Start Num: 8
Candidate Starts for RedFox_3:
(2, 1854), (3, 1860), (4, 1902), (5, 1920), (Start: 8 @1989 has 13 MA's), (Start: 13 @2010 has 30 MA's), (15, 2016), (19, 2028), (24, 2046), (45, 2130), (48, 2148), (49, 2151), (51, 2184),

Gene: Renna12_4 Start: 2157, Stop: 2531, Start Num: 8
Candidate Starts for Renna12_4:
(Start: 8 @2157 has 13 MA's), (Start: 13 @2178 has 30 MA's), (17, 2190), (19, 2196), (20, 2199), (24, 2214), (25, 2217), (27, 2223), (45, 2343), (48, 2361), (49, 2364), (59, 2502),

Gene: Ruchi_4 Start: 2627, Stop: 2941, Start Num: 10
Candidate Starts for Ruchi_4:
(Start: 10 @2627 has 7 MA's), (14, 2645), (26, 2660), (30, 2672), (42, 2714), (46, 2756), (48, 2771), (51, 2807), (54, 2831), (58, 2903),

Gene: Shen_5 Start: 2556, Stop: 2876, Start Num: 13

Candidate Starts for Shen_5:
(11, 2550), (Start: 13 @2556 has 30 MA's), (24, 2592), (40, 2643), (47, 2703), (48, 2706), (49, 2709), (51, 2742), (57, 2835),

Gene: StuartMinion_3 Start: 2011, Stop: 2325, Start Num: 13
Candidate Starts for StuartMinion_3:
(11, 2005), (Start: 13 @2011 has 30 MA's), (15, 2014), (24, 2044), (37, 2080), (45, 2137), (48, 2155), (49, 2158), (51, 2191),

Gene: TaylorSipht_4 Start: 2373, Stop: 2693, Start Num: 13
Candidate Starts for TaylorSipht_4:
(2, 2217), (3, 2223), (5, 2283), (Start: 13 @2373 has 30 MA's), (16, 2382), (19, 2391), (21, 2397), (27, 2418), (29, 2424), (36, 2436), (46, 2508), (49, 2526), (51, 2559), (57, 2652), (58, 2655),

Gene: Toad24_5 Start: 2556, Stop: 2876, Start Num: 13
Candidate Starts for Toad24_5:
(11, 2550), (Start: 13 @2556 has 30 MA's), (24, 2592), (40, 2643), (47, 2703), (48, 2706), (49, 2709), (51, 2742), (57, 2835),

Gene: Vulpecula_4 Start: 2627, Stop: 3010, Start Num: 10
Candidate Starts for Vulpecula_4:
(Start: 10 @2627 has 7 MA's), (17, 2654), (19, 2660), (25, 2681), (39, 2756), (46, 2825), (48, 2840), (49, 2843), (54, 2900), (58, 2972),

Gene: Westrich_5 Start: 2556, Stop: 2876, Start Num: 13
Candidate Starts for Westrich_5:
(11, 2550), (Start: 13 @2556 has 30 MA's), (42, 2649), (44, 2685), (47, 2703), (48, 2706), (49, 2709), (51, 2742), (57, 2835),

Gene: WileyE_3 Start: 2010, Stop: 2372, Start Num: 10
Candidate Starts for WileyE_3:
(Start: 10 @2010 has 7 MA's), (18, 2040), (23, 2058), (25, 2064), (40, 2130), (46, 2187), (48, 2202), (49, 2205), (51, 2238), (54, 2262), (58, 2334),

Gene: Zixiang_4 Start: 2347, Stop: 2667, Start Num: 13
Candidate Starts for Zixiang_4:
(11, 2341), (Start: 13 @2347 has 30 MA's), (24, 2383), (44, 2476), (47, 2494), (48, 2497), (49, 2500), (51, 2533), (52, 2536), (57, 2626), (58, 2629),