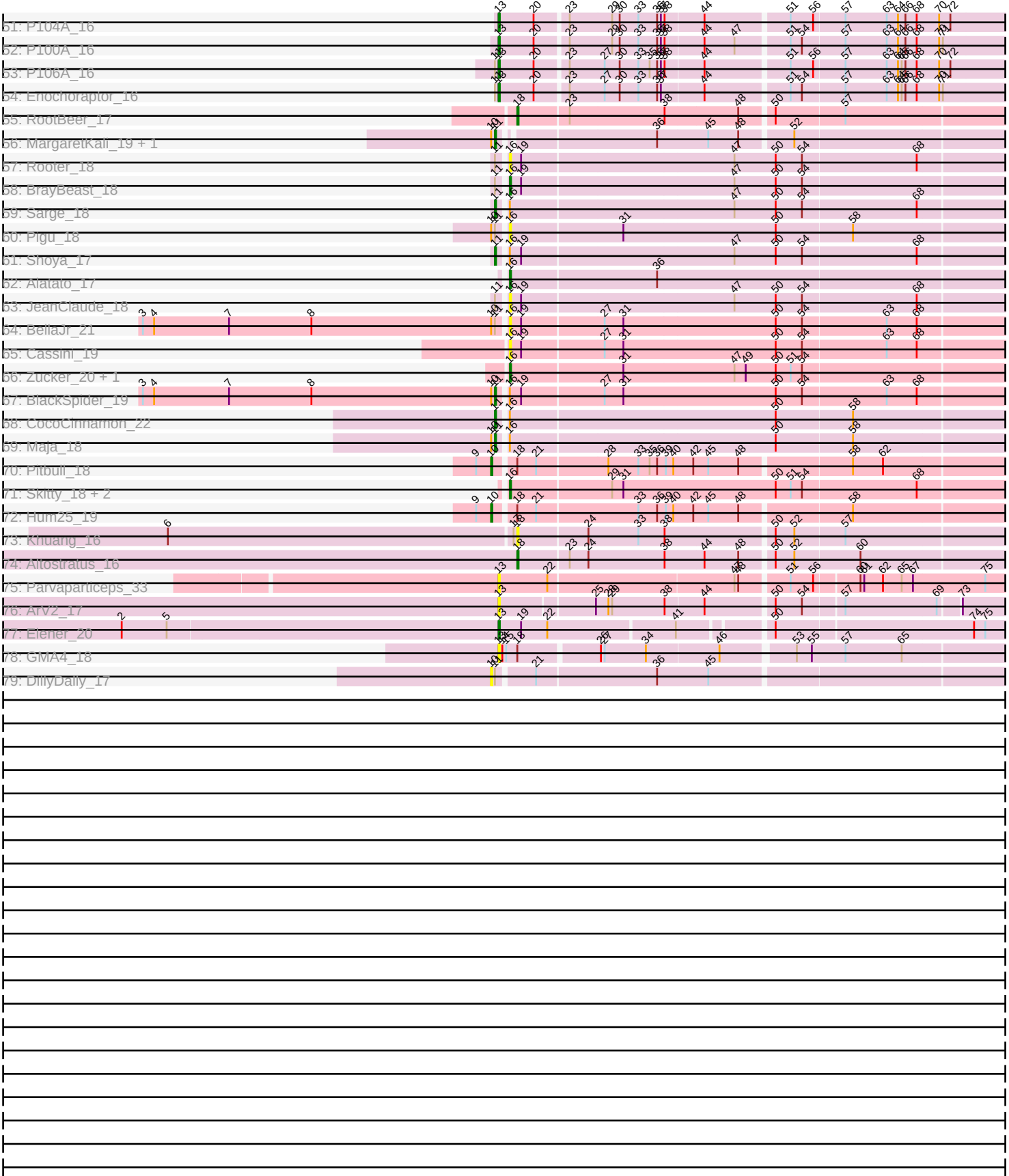


Zoomed Pham 280322

1. AbbyDaisy_19	13	21	21	30	2	50	51		
2. Raqqa_19	13	21	21	30	2	50	51	83	
3. Keiki_16 + 1	13	21	21	30	2	50	51	83	79
4. Kubeo_16	13	21	21	30	2	50	51	83	79
5. Attache_16	13	21	21	30	2	50	51	83	79
6. PI06M_16 + 3	13	21	21	30	2	50	51	83	79
7. P9.1_16	13	21	21	30	2	50	51	83	79
8. MEAK_16	13	21	21	30	2	50	51	83	79
9. LiBandit_16	13	21	21	30	2	50	51	83	79
10. Solid_16	13	21	21	30	2	50	51	83	79
11. Ouroboros_16	13	21	21	30	2	50	51	83	79
12. Cota_16	13	21	21	30	2	50	51	83	79
13. P14.4_16	13	21	21	30	2	50	51	83	79
14. MiAK_16	13	21	21	30	2	50	51	83	79
15. Procrasti_16	13	21	21	30	2	50	51	83	79
16. PHL071N05_16	13	21	21	30	2	50	51	83	79
17. PA6_16	13	21	21	30	2	50	51	83	79
18. PHL114LU0_16	13	21	21	30	2	50	51	83	79
19. ATCC29399B1_16	13	21	21	30	2	50	51	83	79
20. SKKY_16	13	21	21	30	2	50	51	83	79
21. Rileysaurus_16	13	21	21	30	2	50	51	83	79
22. PHL037M02_16	13	21	21	30	2	50	51	83	79
23. Leviosa_16	13	21	21	30	2	50	51	83	79
24. ATCC29399BC_16 + 1	13	21	21	30	2	50	51	83	79
25. PI04B_16	13	21	21	30	2	50	51	83	79
26. Enoki_16	13	21	21	30	2	50	51	83	79
27. BruceLeMah_16	13	21	21	30	2	50	51	83	79
28. PHL060LU0_16	13	21	21	30	2	50	51	83	79
29. PHL111M01_16	13	21	21	30	2	50	51	83	79
30. PI00.1_16	13	21	21	30	2	50	51	83	79
31. Wizzo_16	13	21	21	30	2	50	51	83	79
32. Moyashi_16	13	21	21	30	2	50	51	83	79
33. PI08C_16	13	21	21	30	2	50	51	83	79
34. Supernova_16	13	21	21	30	2	50	51	83	79
35. QueenBey_16	13	21	21	30	2	50	51	83	79
36. Aquarius_16	13	21	21	30	2	50	51	83	79
37. PHL010M04_16	13	21	21	30	2	50	51	83	79
38. PHL112N00_16	13	21	21	30	2	50	51	83	79
39. PI05_16	13	21	21	30	2	50	51	83	79
40. PAS50_16	13	21	21	30	2	50	51	83	79
41. DrParker_16	13	21	21	30	2	50	51	83	79
42. PI07A_16	13	21	21	30	2	50	51	83	79
43. Lauchelly_16	13	21	21	30	2	50	51	83	79
44. PHL067M10_16	13	21	21	30	2	50	51	83	79
45. PI00D_16	13	21	21	30	2	50	51	83	79
46. PI01A_16	13	21	21	30	2	50	51	83	79
47. PI.1_16	13	21	21	30	2	50	51	83	79
48. PAD20_16	13	21	21	30	2	50	51	83	79
49. Stormborn_16	13	21	21	30	2	50	51	83	79
50. PHL113M01_16	13	21	21	30	2	50	51	83	79

Zoomed Pham 280322



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 280322 Report

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

Pham number 280322 has 88 members, 24 are drafts.

Phages represented in each track:

- Track 1 : AbbyDaisy_19
- Track 2 : Raqqa_19
- Track 3 : Keiki_16, Pirate_16
- Track 4 : Kubed_16
- Track 5 : Attacne_16
- Track 6 : P106M_16, P106I_16, P106C_16, P106L_16
- Track 7 : P9.1_16
- Track 8 : MEAK_16
- Track 9 : LilBandit_16
- Track 10 : Solid_16
- Track 11 : Ouroboros_16
- Track 12 : Cota_16
- Track 13 : P14.4_16
- Track 14 : MrAK_16
- Track 15 : Procrass1_16
- Track 16 : PHL071N05_16
- Track 17 : PA6_16
- Track 18 : PHL114L00_16
- Track 19 : ATCC29399BT_16
- Track 20 : SKKY_16
- Track 21 : Rileysaurus_16
- Track 22 : PHL037M02_16
- Track 23 : Leviosa_16
- Track 24 : ATCC29399BC_16, P107C_16
- Track 25 : P104B_16
- Track 26 : Enoki_16
- Track 27 : BruceLethal_16
- Track 28 : PHL060L00_16
- Track 29 : PHL111M01_16
- Track 30 : P100.1_16
- Track 31 : Wizzo_16
- Track 32 : Moyashi_16
- Track 33 : P108C_16
- Track 34 : Supernova_16
- Track 35 : QueenBey_16
- Track 36 : Aquarius_16
- Track 37 : PHL010M04_16

- Track 38 : PHL112N00_16
- Track 39 : P105_16
- Track 40 : PAS50_16
- Track 41 : DrParker_16
- Track 42 : P107A_16
- Track 43 : Lauchelly_16
- Track 44 : PHL067M10_16
- Track 45 : P100D_16
- Track 46 : P101A_16
- Track 47 : P1.1_16
- Track 48 : PAD20_16
- Track 49 : Stormborn_16
- Track 50 : PHL113M01_16
- Track 51 : P104A_16
- Track 52 : P100A_16
- Track 53 : P106A_16
- Track 54 : Enochoraptor_16
- Track 55 : RootBeer_17
- Track 56 : MargaretKali_19, Kumotta_19
- Track 57 : Rooter_18
- Track 58 : BrayBeast_18
- Track 59 : Sarge_18
- Track 60 : Pigu_18
- Track 61 : Shoya_17
- Track 62 : Alatato_17
- Track 63 : JeanClaude_18
- Track 64 : BellaJr_21
- Track 65 : Cassini_19
- Track 66 : Zucker_20, Bauer_21
- Track 67 : BlackSpider_19
- Track 68 : CocoCinnamon_22
- Track 69 : Maja_18
- Track 70 : Pitbull_18
- Track 71 : Skitty_18, MrSmee_18, Merpity_20
- Track 72 : Hum25_19
- Track 73 : Khuang_16
- Track 74 : Altostratus_16
- Track 75 : Parvarticeps_33
- Track 76 : ArV2_17
- Track 77 : Elener_20
- Track 78 : GMA4_18
- Track 79 : DillyDally_17

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 43 of the 64 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ATCC29399BC_16, ATCC29399BT_16, AbbyDaisy_19, Aquarius_16, ArV2_17, Attacne_16, BruceLethal_16, Cota_16, DrParker_16, Elener_20, Enochoraptor_16, Enoki_16, GMA4_18, Keiki_16, Kubed_16, Lauchelly_16, Leviosa_16, MEAK_16, Moyashi_16, MrAK_16, Ouroboros_16, P100.1_16, P100A_16, P100D_16, P101A_16, P104A_16, P104B_16, P105_16, P106A_16, P106C_16, P106I_16, P106L_16, P106M_16, P107A_16, P107C_16, P108C_16, PA6_16, PAD20_16, PAS50_16, PHL037M02_16, Parvaparticeps_33, Pirate_16, Procrass1_16, QueenBey_16, Raqqa_19, Rileysaurus_16, SKKY_16, Solid_16, Stormborn_16, Supernova_16, Wizzo_16,

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

- LilBandit_16, P1.1_16, P14.4_16, P9.1_16, PHL010M04_16, PHL060L00_16, PHL067M10_16, PHL071N05_16, PHL112N00_16, PHL113M01_16, PHL114L00_16,

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

- Alatato_17, Altostratus_16, Bauer_21, BellaJr_21, BlackSpider_19, BrayBeast_18, Cassini_19, CocoCinnamon_22, DillyDally_17, Hum25_19, JeanClaude_18, Khuang_16, Kumotta_19, Maja_18, MargaretKali_19, Merpity_20, MrSmee_18, PHL111M01_16, Pigu_18, Pitbull_18, RootBeer_17, Rooter_18, Sarge_18, Shoya_17, Skitty_18, Zucker_20,

Summary by start number:

Start 10:

- Found in 11 of 88 (12.5%) of genes in pham
- Manual Annotations of this start: 2 of 64
- Called 27.3% of time when present
- Phage (with cluster) where this start called: DillyDally_17 (singleton), Hum25_19 (FQ), Pitbull_18 (FQ),

Start 11:

- Found in 56 of 88 (63.6%) of genes in pham
- Manual Annotations of this start: 11 of 64
- Called 32.1% of time when present
- Phage (with cluster) where this start called: BlackSpider_19 (FN), CocoCinnamon_22 (FO), Kumotta_19 (FB), LilBandit_16 (BU), Maja_18 (FO), MargaretKali_19 (FB), P1.1_16 (BU), P14.4_16 (BU), P9.1_16 (BU), PHL010M04_16 (BU), PHL060L00_16 (BU), PHL067M10_16 (BU), PHL071N05_16 (BU), PHL112N00_16 (BU), PHL113M01_16 (BU), PHL114L00_16 (BU), Sarge_18 (FB), Shoya_17 (FB),

Start 12:

- Found in 1 of 88 (1.1%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: PHL111M01_16 (BU),

Start 13:

- Found in 62 of 88 (70.5%) of genes in pham
- Manual Annotations of this start: 43 of 64
- Called 82.3% of time when present

- Phage (with cluster) where this start called: ATCC29399BC_16 (BU), ATCC29399BT_16 (BU), AbbyDaisy_19 (AY), Aquarius_16 (BU), ArV2_17 (singleton), Attacne_16 (BU), BruceLethal_16 (BU), Cota_16 (BU), DrParker_16 (BU), Elener_20 (singleton), Enochoraptor_16 (BU), Enoki_16 (BU), GMA4_18 (singleton), Keiki_16 (BU), Kubed_16 (BU), Lauchelly_16 (BU), Leviosa_16 (BU), MEAK_16 (BU), Moyashi_16 (BU), MrAK_16 (BU), Ouroboros_16 (BU), P100.1_16 (BU), P100A_16 (BU), P100D_16 (BU), P101A_16 (BU), P104A_16 (BU), P104B_16 (BU), P105_16 (BU), P106A_16 (BU), P106C_16 (BU), P106I_16 (BU), P106L_16 (BU), P106M_16 (BU), P107A_16 (BU), P107C_16 (BU), P108C_16 (BU), PA6_16 (BU), PAD20_16 (BU), PAS50_16 (BU), PHL037M02_16 (BU), Parvapaticeps_33 (UNK), Pirate_16 (BU), Procrass1_16 (BU), QueenBey_16 (BU), Raqqa_19 (AY), Rileysaurus_16 (BU), SKKY_16 (BU), Solid_16 (BU), Stormborn_16 (BU), Supernova_16 (BU), Wizzo_16 (BU),

Start 16:

- Found in 17 of 88 (19.3%) of genes in pham
- Manual Annotations of this start: 6 of 64
- Called 70.6% of time when present
- Phage (with cluster) where this start called: Alatato_17 (FB), Bauer_21 (FN), BellaJr_21 (FN), BrayBeast_18 (FB), Cassini_19 (FN), JeanClaude_18 (FB), Merpity_20 (FQ), MrSmee_18 (FQ), Pigu_18 (FB), Rooter_18 (FB), Skitty_18 (FQ), Zucker_20 (FN),

Start 18:

- Found in 6 of 88 (6.8%) of genes in pham
- Manual Annotations of this start: 2 of 64
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Altostratus_16 (FS), Khuang_16 (FS), RootBeer_17 (FA),

Summary by clusters:

There are 10 clusters represented in this pham: FQ, singleton, FS, FA, BU, FB, AY, UNK, FN, FO,

Info for manual annotations of cluster AY:

- Start number 13 was manually annotated 1 time for cluster AY.

Info for manual annotations of cluster BU:

- Start number 11 was manually annotated 4 times for cluster BU.
- Start number 13 was manually annotated 41 times for cluster BU.

Info for manual annotations of cluster FA:

- Start number 18 was manually annotated 1 time for cluster FA.

Info for manual annotations of cluster FB:

- Start number 11 was manually annotated 4 times for cluster FB.
- Start number 16 was manually annotated 2 times for cluster FB.

Info for manual annotations of cluster FN:

- Start number 11 was manually annotated 1 time for cluster FN.
- Start number 16 was manually annotated 2 times for cluster FN.

Info for manual annotations of cluster FO:

- Start number 11 was manually annotated 2 times for cluster FO.

Info for manual annotations of cluster FQ:

- Start number 10 was manually annotated 2 times for cluster FQ.
- Start number 16 was manually annotated 2 times for cluster FQ.

Info for manual annotations of cluster FS:

- Start number 18 was manually annotated 1 time for cluster FS.

Gene Information:

Gene: ATCC29399BC_16 Start: 12232, Stop: 13389, Start Num: 13

Candidate Starts for ATCC29399BC_16:

(Start: 11 @12229 has 11 MA's), (Start: 13 @12232 has 43 MA's), (20, 12259), (23, 12283), (27, 12310), (29, 12316), (30, 12322), (33, 12337), (36, 12352), (37, 12355), (38, 12358), (44, 12388), (51, 12451), (57, 12493), (63, 12526), (64, 12535), (66, 12541), (68, 12550), (70, 12568), (71, 12571), (80, 12643), (81, 12646), (88, 12679), (90, 12685), (96, 12730), (98, 12742), (101, 12757), (104, 12766), (105, 12769), (106, 12784), (108, 12796), (114, 12838), (118, 12850), (120, 12859), (122, 12874), (123, 12877), (125, 12901), (128, 12916), (129, 12943), (130, 12946), (139, 13003), (143, 13036), (148, 13072), (151, 13099), (158, 13141), (160, 13156), (161, 13159), (166, 13183), (168, 13195), (171, 13204), (173, 13210), (179, 13252), (182, 13288), (187, 13333), (189, 13345), (192, 13354), (193, 13366), (195, 13375),

Gene: ATCC29399BT_16 Start: 12235, Stop: 13392, Start Num: 13

Candidate Starts for ATCC29399BT_16:

(Start: 13 @12235 has 43 MA's), (20, 12262), (23, 12286), (30, 12325), (33, 12340), (36, 12355), (37, 12358), (38, 12361), (44, 12391), (51, 12454), (57, 12496), (63, 12529), (64, 12538), (65, 12541), (66, 12544), (68, 12553), (70, 12571), (71, 12574), (77, 12634), (80, 12646), (81, 12649), (88, 12682), (90, 12688), (98, 12745), (101, 12760), (102, 12763), (104, 12769), (105, 12772), (106, 12787), (108, 12799), (111, 12820), (113, 12838), (114, 12841), (118, 12853), (120, 12862), (123, 12880), (125, 12904), (128, 12919), (129, 12946), (139, 13006), (143, 13039), (148, 13075), (151, 13102), (158, 13144), (160, 13159), (161, 13162), (166, 13186), (168, 13198), (173, 13213), (177, 13240), (179, 13255), (182, 13291), (187, 13336), (192, 13357), (193, 13369), (195, 13378),

Gene: AbbyDaisy_19 Start: 15422, Stop: 16528, Start Num: 13

Candidate Starts for AbbyDaisy_19:

(Start: 10 @15416 has 2 MA's), (Start: 13 @15422 has 43 MA's), (21, 15452), (27, 15500), (30, 15512), (32, 15524), (50, 15629), (57, 15680), (76, 15806), (79, 15818), (94, 15887), (107, 15959), (166, 16334), (178, 16394), (192, 16493),

Gene: Alatato_17 Start: 13394, Stop: 14512, Start Num: 16

Candidate Starts for Alatato_17:

(Start: 16 @13394 has 6 MA's), (36, 13508), (78, 13793), (79, 13796), (89, 13838), (97, 13892), (101, 13913), (105, 13925), (122, 14012), (137, 14117), (151, 14234), (157, 14270), (169, 14327), (171, 14333), (183, 14420), (195, 14498), (197, 14504),

Gene: Altostratus_16 Start: 13849, Stop: 14961, Start Num: 18

Candidate Starts for Altostratus_16:

(Start: 18 @13849 has 2 MA's), (23, 13888), (24, 13903), (38, 13963), (44, 13993), (48, 14020), (50, 14044), (52, 14059), (60, 14110), (76, 14227), (86, 14275), (87, 14278), (97, 14329), (115, 14416), (143, 14611), (156, 14701), (177, 14815), (178, 14824), (179, 14830), (188, 14905),

Gene: Aquarius_16 Start: 12255, Stop: 13412, Start Num: 13

Candidate Starts for Aquarius_16:

(Start: 11 @12252 has 11 MA's), (Start: 13 @12255 has 43 MA's), (20, 12282), (23, 12306), (27, 12333), (29, 12339), (30, 12345), (33, 12360), (36, 12375), (37, 12378), (38, 12381), (44, 12411), (51, 12474), (54, 12483), (56, 12492), (57, 12516), (63, 12549), (64, 12558), (65, 12561), (66, 12564), (68, 12573), (70, 12591), (72, 12600), (77, 12654), (80, 12666), (81, 12669), (88, 12702), (90, 12708), (96, 12753), (98, 12765), (101, 12780), (102, 12783), (104, 12789), (105, 12792), (106, 12807), (108, 12819), (113, 12858), (114, 12861), (118, 12873), (120, 12882), (122, 12897), (123, 12900), (125, 12924), (128, 12939), (129, 12966), (130, 12969), (139, 13026), (143, 13059), (148, 13095), (151, 13122), (158, 13164), (160, 13179), (161, 13182), (166, 13206), (168, 13218), (171, 13227), (173, 13233), (177, 13260), (179, 13275), (182, 13311), (186, 13353), (187, 13356), (189, 13368), (192, 13377), (193, 13389), (195, 13398),

Gene: ArV2_17 Start: 13763, Stop: 14869, Start Num: 13

Candidate Starts for ArV2_17:

(Start: 13 @13763 has 43 MA's), (25, 13835), (28, 13844), (29, 13847), (38, 13889), (44, 13919), (50, 13970), (54, 13991), (57, 14021), (69, 14093), (73, 14108), (76, 14147), (79, 14159), (86, 14192), (93, 14225), (97, 14246), (101, 14267), (105, 14279), (107, 14300), (108, 14306), (135, 14462), (148, 14564), (155, 14609), (157, 14624), (173, 14699), (185, 14807), (194, 14849), (196, 14858),

Gene: Attacne_16 Start: 12235, Stop: 13392, Start Num: 13

Candidate Starts for Attacne_16:

(Start: 13 @12235 has 43 MA's), (20, 12262), (23, 12286), (27, 12313), (29, 12319), (30, 12325), (33, 12340), (35, 12349), (36, 12355), (37, 12358), (38, 12361), (44, 12391), (51, 12454), (56, 12472), (57, 12496), (63, 12529), (64, 12538), (65, 12541), (66, 12544), (68, 12553), (70, 12571), (77, 12634), (80, 12646), (81, 12649), (88, 12682), (90, 12688), (98, 12745), (101, 12760), (102, 12763), (104, 12769), (105, 12772), (106, 12787), (108, 12799), (114, 12841), (118, 12853), (120, 12862), (122, 12877), (123, 12880), (125, 12904), (128, 12919), (129, 12946), (131, 12952), (139, 13006), (143, 13039), (148, 13075), (151, 13102), (158, 13144), (160, 13159), (161, 13162), (166, 13186), (168, 13198), (171, 13207), (173, 13213), (177, 13240), (179, 13255), (182, 13291), (186, 13333), (187, 13336), (192, 13357), (193, 13369), (195, 13378),

Gene: Bauer_21 Start: 16040, Stop: 17158, Start Num: 16

Candidate Starts for Bauer_21:

(Start: 16 @16040 has 6 MA's), (31, 16127), (47, 16214), (49, 16223), (50, 16247), (51, 16259), (54, 16268), (76, 16430), (78, 16439), (79, 16442), (95, 16526), (97, 16538), (105, 16571), (114, 16622), (121, 16652), (130, 16730), (151, 16880), (157, 16916), (158, 16922), (174, 16994), (175, 17003), (197, 17150),

Gene: BellaJr_21 Start: 16838, Stop: 17956, Start Num: 16

Candidate Starts for BellaJr_21:

(3, 16550), (4, 16559), (7, 16619), (8, 16685), (Start: 10 @16829 has 2 MA's), (Start: 11 @16832 has 11 MA's), (Start: 16 @16838 has 6 MA's), (19, 16847), (27, 16910), (31, 16925), (50, 17045), (54, 17066), (63, 17132), (68, 17156), (76, 17228), (78, 17237), (79, 17240), (89, 17282), (97, 17336), (101, 17357), (105, 17369), (107, 17390), (122, 17456), (151, 17678), (176, 17807), (182, 17855), (183, 17864), (188, 17903), (195, 17942),

Gene: BlackSpider_19 Start: 15678, Stop: 16802, Start Num: 11

Candidate Starts for BlackSpider_19:

(3, 15396), (4, 15405), (7, 15465), (8, 15531), (Start: 10 @15675 has 2 MA's), (Start: 11 @15678 has 11 MA's), (Start: 16 @15684 has 6 MA's), (19, 15693), (27, 15756), (31, 15771), (50, 15891), (54, 15912), (63, 15978), (68, 16002), (76, 16074), (78, 16083), (79, 16086), (89, 16128), (97, 16182), (101, 16203), (105, 16215), (107, 16236), (122, 16302), (151, 16524), (176, 16653), (182, 16701), (183, 16710), (188, 16749), (195, 16788),

Gene: BrayBeast_18 Start: 14080, Stop: 15198, Start Num: 16

Candidate Starts for BrayBeast_18:

(Start: 11 @14074 has 11 MA's), (Start: 16 @14080 has 6 MA's), (19, 14089), (47, 14254), (50, 14287), (54, 14308), (76, 14470), (78, 14479), (89, 14524), (95, 14566), (97, 14578), (105, 14611), (169, 15013), (176, 15049), (188, 15145), (195, 15184), (197, 15190),

Gene: BruceLethal_16 Start: 12244, Stop: 13401, Start Num: 13

Candidate Starts for BruceLethal_16:

(Start: 13 @12244 has 43 MA's), (20, 12271), (23, 12295), (29, 12328), (30, 12334), (33, 12349), (36, 12364), (37, 12367), (38, 12370), (44, 12400), (51, 12463), (54, 12472), (57, 12505), (63, 12538), (64, 12547), (65, 12550), (66, 12553), (70, 12580), (77, 12643), (80, 12655), (81, 12658), (88, 12691), (90, 12697), (96, 12742), (98, 12754), (101, 12769), (102, 12772), (104, 12778), (105, 12781), (106, 12796), (108, 12808), (111, 12829), (114, 12850), (118, 12862), (120, 12871), (122, 12886), (123, 12889), (125, 12913), (128, 12928), (129, 12955), (139, 13015), (143, 13048), (148, 13084), (151, 13111), (153, 13123), (158, 13153), (160, 13168), (161, 13171), (166, 13195), (168, 13207), (171, 13216), (173, 13222), (179, 13264), (182, 13300), (192, 13366), (193, 13378), (195, 13387),

Gene: Cassini_19 Start: 15921, Stop: 17039, Start Num: 16

Candidate Starts for Cassini_19:

(Start: 16 @15921 has 6 MA's), (19, 15930), (27, 15993), (31, 16008), (50, 16128), (54, 16149), (63, 16215), (68, 16239), (76, 16311), (78, 16320), (79, 16323), (84, 16347), (89, 16365), (97, 16419), (101, 16440), (105, 16452), (107, 16473), (122, 16539), (129, 16608), (151, 16761), (165, 16842), (176, 16890), (182, 16938), (183, 16947), (188, 16986), (195, 17025),

Gene: CocoCinnamon_22 Start: 15713, Stop: 16837, Start Num: 11

Candidate Starts for CocoCinnamon_22:

(Start: 11 @15713 has 11 MA's), (Start: 16 @15719 has 6 MA's), (50, 15926), (58, 15986), (78, 16118), (95, 16205), (97, 16217), (105, 16250), (107, 16271), (130, 16409), (151, 16559), (152, 16562), (157, 16595), (169, 16652), (171, 16658), (174, 16673), (197, 16829),

Gene: Cota_16 Start: 12250, Stop: 13407, Start Num: 13

Candidate Starts for Cota_16:

(Start: 11 @12247 has 11 MA's), (Start: 13 @12250 has 43 MA's), (20, 12277), (23, 12301), (27, 12328), (29, 12334), (30, 12340), (33, 12355), (36, 12370), (37, 12373), (38, 12376), (44, 12406), (51, 12469), (56, 12487), (57, 12511), (63, 12544), (64, 12553), (66, 12559), (68, 12568), (70, 12586), (72, 12595), (77, 12649), (81, 12664), (90, 12703), (91, 12706), (96, 12748), (98, 12760), (101, 12775), (102, 12778), (104, 12784), (105, 12787), (106, 12802), (108, 12814), (110, 12832), (118, 12868), (120, 12877), (122, 12892), (123, 12895), (125, 12919), (128, 12934), (129, 12961), (130, 12964), (139, 13021), (143, 13054), (148, 13090), (151, 13117), (158, 13159), (160, 13174), (161, 13177), (166, 13201), (171, 13222), (173, 13228), (179, 13270), (182, 13306), (186, 13348), (192, 13372), (193, 13384), (195, 13393),

Gene: DillyDally_17 Start: 14366, Stop: 15832, Start Num: 10

Candidate Starts for DillyDally_17:

(Start: 10 @14366 has 2 MA's), (Start: 11 @14369 has 11 MA's), (21, 14396), (36, 14489), (45, 14528), (76, 14759), (83, 14786), (97, 14870), (101, 14891), (105, 14903), (117, 14981), (127, 15047), (131, 15083), (142, 15158), (143, 15170), (144, 15176), (182, 15419), (200, 15524), (202, 15575), (212,

15710), (213, 15731), (214, 15743), (215, 15752),

Gene: DrParker_16 Start: 12276, Stop: 13433, Start Num: 13

Candidate Starts for DrParker_16:

(Start: 11 @12273 has 11 MA's), (Start: 13 @12276 has 43 MA's), (20, 12303), (23, 12327), (27, 12354), (30, 12366), (33, 12381), (35, 12390), (36, 12396), (37, 12399), (38, 12402), (44, 12432), (51, 12495), (56, 12513), (57, 12537), (63, 12570), (64, 12579), (65, 12582), (66, 12585), (68, 12594), (70, 12612), (72, 12621), (77, 12675), (80, 12687), (81, 12690), (88, 12723), (90, 12729), (98, 12786), (101, 12801), (102, 12804), (104, 12810), (105, 12813), (106, 12828), (108, 12840), (110, 12858), (113, 12879), (120, 12903), (122, 12918), (123, 12921), (125, 12945), (128, 12960), (129, 12987), (130, 12990), (143, 13080), (148, 13116), (151, 13143), (158, 13185), (160, 13200), (161, 13203), (166, 13227), (168, 13239), (171, 13248), (173, 13254), (179, 13296), (182, 13332), (186, 13374), (187, 13377), (189, 13389), (192, 13398), (193, 13410), (195, 13419),

Gene: Elener_20 Start: 16464, Stop: 17870, Start Num: 13

Candidate Starts for Elener_20:

(1, 15846), (2, 16167), (5, 16203), (Start: 13 @16464 has 43 MA's), (19, 16482), (22, 16503), (41, 16602), (50, 16668), (74, 16821), (75, 16830), (126, 17175), (159, 17415), (164, 17442), (179, 17529), (180, 17544), (181, 17559), (201, 17673), (205, 17766), (210, 17826),

Gene: Enochoraptor_16 Start: 12247, Stop: 13404, Start Num: 13

Candidate Starts for Enochoraptor_16:

(Start: 11 @12244 has 11 MA's), (Start: 13 @12247 has 43 MA's), (20, 12274), (23, 12298), (27, 12325), (30, 12337), (33, 12352), (36, 12367), (37, 12370), (44, 12403), (51, 12466), (54, 12475), (57, 12508), (63, 12541), (64, 12550), (65, 12553), (66, 12556), (68, 12565), (70, 12583), (71, 12586), (77, 12646), (80, 12658), (81, 12661), (88, 12694), (90, 12700), (96, 12745), (98, 12757), (102, 12775), (104, 12781), (105, 12784), (106, 12799), (108, 12811), (113, 12850), (118, 12865), (120, 12874), (122, 12889), (123, 12892), (125, 12916), (129, 12958), (130, 12961), (131, 12964), (139, 13018), (143, 13051), (148, 13087), (151, 13114), (152, 13117), (158, 13156), (160, 13171), (161, 13174), (166, 13198), (168, 13210), (171, 13219), (173, 13225), (177, 13252), (179, 13267), (182, 13303), (186, 13345), (187, 13348), (189, 13360), (192, 13369), (193, 13381), (195, 13390),

Gene: Enoki_16 Start: 12229, Stop: 13386, Start Num: 13

Candidate Starts for Enoki_16:

(Start: 11 @12226 has 11 MA's), (Start: 13 @12229 has 43 MA's), (20, 12256), (23, 12280), (27, 12307), (29, 12313), (30, 12319), (33, 12334), (36, 12349), (37, 12352), (38, 12355), (44, 12385), (51, 12448), (56, 12466), (57, 12490), (63, 12523), (64, 12532), (66, 12538), (68, 12547), (70, 12565), (72, 12574), (81, 12643), (88, 12676), (90, 12682), (98, 12739), (101, 12754), (102, 12757), (104, 12763), (105, 12766), (106, 12781), (108, 12793), (113, 12832), (114, 12835), (118, 12847), (120, 12856), (122, 12871), (123, 12874), (125, 12898), (128, 12913), (129, 12940), (130, 12943), (139, 13000), (143, 13033), (148, 13069), (151, 13096), (152, 13099), (158, 13138), (160, 13153), (161, 13156), (166, 13180), (168, 13192), (171, 13201), (173, 13207), (182, 13285), (186, 13327), (189, 13342), (192, 13351), (193, 13363), (195, 13372),

Gene: GMA4_18 Start: 16957, Stop: 18117, Start Num: 13

Candidate Starts for GMA4_18:

(Start: 13 @16957 has 43 MA's), (14, 16960), (15, 16963), (Start: 18 @16972 has 2 MA's), (26, 17032), (27, 17035), (34, 17068), (46, 17125), (53, 17179), (55, 17191), (57, 17218), (65, 17263), (95, 17452), (103, 17506), (105, 17512), (119, 17602), (134, 17713), (147, 17815), (158, 17887), (189, 18070),

Gene: Hum25_19 Start: 13554, Stop: 15002, Start Num: 10

Candidate Starts for Hum25_19:

(9, 13542), (Start: 10 @13554 has 2 MA's), (Start: 18 @13569 has 2 MA's), (21, 13584), (33, 13662), (36, 13677), (39, 13683), (40, 13689), (42, 13704), (45, 13716), (48, 13740), (58, 13824), (76, 13947), (83, 13974), (85, 13989), (95, 14046), (100, 14076), (105, 14091), (115, 14145), (117, 14151), (124, 14202), (127, 14217), (130, 14250), (141, 14316), (142, 14328), (154, 14415), (158, 14436), (162, 14457), (179, 14556), (184, 14610), (190, 14649), (191, 14652), (200, 14694), (208, 14820), (211, 14853), (213, 14901),

Gene: JeanClaude_18 Start: 13987, Stop: 15105, Start Num: 16

Candidate Starts for JeanClaude_18:

(Start: 11 @13981 has 11 MA's), (Start: 16 @13987 has 6 MA's), (19, 13996), (47, 14161), (50, 14194), (54, 14215), (68, 14305), (76, 14377), (78, 14386), (89, 14431), (95, 14473), (97, 14485), (105, 14518), (169, 14920), (188, 15052), (195, 15091), (197, 15097),

Gene: Keiki_16 Start: 12250, Stop: 13407, Start Num: 13

Candidate Starts for Keiki_16:

(Start: 13 @12250 has 43 MA's), (20, 12277), (23, 12301), (29, 12334), (30, 12340), (33, 12355), (36, 12370), (37, 12373), (38, 12376), (44, 12406), (51, 12469), (54, 12478), (57, 12511), (63, 12544), (64, 12553), (65, 12556), (66, 12559), (68, 12568), (70, 12586), (71, 12589), (77, 12649), (80, 12661), (81, 12664), (90, 12703), (91, 12706), (96, 12748), (98, 12760), (101, 12775), (102, 12778), (104, 12784), (105, 12787), (106, 12802), (108, 12814), (111, 12835), (114, 12856), (118, 12868), (120, 12877), (122, 12892), (123, 12895), (125, 12919), (128, 12934), (129, 12961), (139, 13021), (143, 13054), (148, 13090), (151, 13117), (158, 13159), (160, 13174), (161, 13177), (166, 13201), (168, 13213), (173, 13228), (179, 13270), (182, 13306), (186, 13348), (187, 13351), (192, 13372), (193, 13384), (195, 13393),

Gene: Khuang_16 Start: 13963, Stop: 15075, Start Num: 18

Candidate Starts for Khuang_16:

(6, 13687), (17, 13960), (Start: 18 @13963 has 2 MA's), (24, 14017), (33, 14056), (38, 14077), (50, 14158), (52, 14173), (57, 14212), (76, 14341), (86, 14389), (87, 14392), (97, 14443), (109, 14512), (115, 14530), (130, 14635), (156, 14815), (163, 14857), (177, 14929), (179, 14944), (195, 15058),

Gene: Kubed_16 Start: 12239, Stop: 13396, Start Num: 13

Candidate Starts for Kubed_16:

(Start: 13 @12239 has 43 MA's), (20, 12266), (23, 12290), (27, 12317), (30, 12329), (33, 12344), (36, 12359), (37, 12362), (38, 12365), (44, 12395), (48, 12422), (51, 12458), (54, 12467), (57, 12500), (63, 12533), (64, 12542), (65, 12545), (66, 12548), (68, 12557), (77, 12638), (80, 12650), (81, 12653), (88, 12686), (90, 12692), (98, 12749), (101, 12764), (102, 12767), (104, 12773), (105, 12776), (106, 12791), (113, 12842), (114, 12845), (118, 12857), (120, 12866), (122, 12881), (123, 12884), (125, 12908), (128, 12923), (129, 12950), (131, 12956), (138, 13001), (143, 13043), (148, 13079), (150, 13085), (151, 13106), (152, 13109), (158, 13148), (160, 13163), (161, 13166), (165, 13187), (166, 13190), (168, 13202), (173, 13217), (177, 13244), (179, 13259), (182, 13295), (186, 13337), (187, 13340), (192, 13361), (193, 13373), (195, 13382),

Gene: Kumotta_19 Start: 15048, Stop: 16172, Start Num: 11

Candidate Starts for Kumotta_19:

(Start: 10 @15045 has 2 MA's), (Start: 11 @15048 has 11 MA's), (36, 15162), (45, 15201), (48, 15225), (52, 15264), (89, 15489), (92, 15501), (95, 15531), (97, 15543), (99, 15555), (101, 15564), (142, 15813), (148, 15861), (149, 15864),

Gene: Lauchelly_16 Start: 12253, Stop: 13410, Start Num: 13

Candidate Starts for Lauchelly_16:

(Start: 11 @12250 has 11 MA's), (Start: 13 @12253 has 43 MA's), (20, 12280), (23, 12304), (29, 12337), (30, 12343), (33, 12358), (36, 12373), (37, 12376), (38, 12379), (44, 12409), (51, 12472), (54,

12481), (56, 12490), (57, 12514), (63, 12547), (64, 12556), (65, 12559), (66, 12562), (68, 12571), (70, 12589), (71, 12592), (80, 12664), (81, 12667), (88, 12700), (90, 12706), (102, 12781), (104, 12787), (105, 12790), (106, 12805), (108, 12817), (113, 12856), (114, 12859), (118, 12871), (120, 12880), (122, 12895), (123, 12898), (125, 12922), (128, 12937), (129, 12964), (139, 13024), (143, 13057), (148, 13093), (151, 13120), (152, 13123), (158, 13162), (160, 13177), (161, 13180), (166, 13204), (168, 13216), (173, 13231), (179, 13273), (182, 13309), (186, 13351), (187, 13354), (189, 13366), (192, 13375), (193, 13387), (195, 13396),

Gene: Leviosa_16 Start: 12267, Stop: 13424, Start Num: 13

Candidate Starts for Leviosa_16:

(Start: 13 @12267 has 43 MA's), (20, 12294), (23, 12318), (29, 12351), (30, 12357), (33, 12372), (36, 12387), (37, 12390), (38, 12393), (44, 12423), (51, 12486), (57, 12528), (63, 12561), (64, 12570), (65, 12573), (66, 12576), (70, 12603), (71, 12606), (80, 12678), (81, 12681), (88, 12714), (90, 12720), (96, 12765), (98, 12777), (102, 12795), (104, 12801), (105, 12804), (106, 12819), (108, 12831), (113, 12870), (114, 12873), (118, 12885), (120, 12894), (122, 12909), (123, 12912), (125, 12936), (128, 12951), (129, 12978), (130, 12981), (139, 13038), (143, 13071), (148, 13107), (151, 13134), (152, 13137), (158, 13176), (160, 13191), (161, 13194), (166, 13218), (168, 13230), (173, 13245), (177, 13272), (179, 13287), (182, 13323), (186, 13365), (187, 13368), (192, 13389), (193, 13401),

Gene: LilBandit_16 Start: 12248, Stop: 13408, Start Num: 11

Candidate Starts for LilBandit_16:

(Start: 11 @12248 has 11 MA's), (Start: 13 @12251 has 43 MA's), (20, 12278), (23, 12302), (27, 12329), (29, 12335), (30, 12341), (36, 12371), (37, 12374), (38, 12377), (44, 12407), (51, 12470), (54, 12479), (56, 12488), (57, 12512), (63, 12545), (64, 12554), (65, 12557), (66, 12560), (68, 12569), (70, 12587), (72, 12596), (77, 12650), (80, 12662), (81, 12665), (88, 12698), (90, 12704), (96, 12749), (98, 12761), (101, 12776), (102, 12779), (104, 12785), (105, 12788), (106, 12803), (108, 12815), (113, 12854), (114, 12857), (118, 12869), (120, 12878), (122, 12893), (123, 12896), (125, 12920), (128, 12935), (129, 12962), (130, 12965), (143, 13055), (148, 13091), (151, 13118), (158, 13160), (160, 13175), (161, 13178), (166, 13202), (168, 13214), (171, 13223), (173, 13229), (179, 13271), (186, 13349), (189, 13364), (192, 13373), (193, 13385), (195, 13394),

Gene: MEAK_16 Start: 12237, Stop: 13394, Start Num: 13

Candidate Starts for MEAK_16:

(Start: 11 @12234 has 11 MA's), (Start: 13 @12237 has 43 MA's), (20, 12264), (23, 12288), (27, 12315), (29, 12321), (30, 12327), (33, 12342), (36, 12357), (37, 12360), (38, 12363), (44, 12393), (51, 12456), (54, 12465), (57, 12498), (63, 12531), (64, 12540), (66, 12546), (68, 12555), (70, 12573), (71, 12576), (72, 12582), (77, 12636), (80, 12648), (81, 12651), (88, 12684), (90, 12690), (98, 12747), (101, 12762), (102, 12765), (104, 12771), (105, 12774), (106, 12789), (108, 12801), (111, 12822), (113, 12840), (114, 12843), (118, 12855), (120, 12864), (122, 12879), (123, 12882), (125, 12906), (128, 12921), (129, 12948), (130, 12951), (139, 13008), (143, 13041), (148, 13077), (151, 13104), (158, 13146), (160, 13161), (161, 13164), (166, 13188), (168, 13200), (171, 13209), (173, 13215), (179, 13257), (182, 13293), (187, 13338), (192, 13359), (195, 13380),

Gene: Maja_18 Start: 14689, Stop: 15813, Start Num: 11

Candidate Starts for Maja_18:

(Start: 10 @14686 has 2 MA's), (Start: 11 @14689 has 11 MA's), (Start: 16 @14695 has 6 MA's), (50, 14902), (58, 14962), (78, 15094), (84, 15121), (95, 15181), (97, 15193), (105, 15226), (107, 15247), (130, 15385), (151, 15535), (169, 15628), (171, 15634), (174, 15649), (197, 15805),

Gene: MargaretKali_19 Start: 14683, Stop: 15807, Start Num: 11

Candidate Starts for MargaretKali_19:

(Start: 10 @14680 has 2 MA's), (Start: 11 @14683 has 11 MA's), (36, 14797), (45, 14836), (48, 14860), (52, 14899), (89, 15124), (92, 15136), (95, 15166), (97, 15178), (99, 15190), (101, 15199), (142,

15448), (148, 15496), (149, 15499),

Gene: Merpity_20 Start: 13774, Stop: 14892, Start Num: 16

Candidate Starts for Merpity_20:

(Start: 16 @13774 has 6 MA's), (29, 13852), (31, 13861), (50, 13981), (51, 13993), (54, 14002), (68, 14092), (76, 14164), (78, 14173), (79, 14176), (89, 14218), (97, 14272), (105, 14305), (114, 14356), (140, 14524), (151, 14614), (165, 14695), (176, 14743), (182, 14791), (183, 14800), (188, 14839), (195, 14878),

Gene: Moyashi_16 Start: 12273, Stop: 13430, Start Num: 13

Candidate Starts for Moyashi_16:

(Start: 11 @12270 has 11 MA's), (Start: 13 @12273 has 43 MA's), (20, 12300), (23, 12324), (27, 12351), (30, 12363), (33, 12378), (35, 12387), (36, 12393), (37, 12396), (38, 12399), (44, 12429), (51, 12492), (56, 12510), (57, 12534), (63, 12567), (64, 12576), (66, 12582), (68, 12591), (72, 12618), (81, 12687), (90, 12726), (91, 12729), (98, 12783), (101, 12798), (102, 12801), (104, 12807), (105, 12810), (106, 12825), (108, 12837), (110, 12855), (118, 12891), (120, 12900), (122, 12915), (123, 12918), (125, 12942), (128, 12957), (129, 12984), (131, 12990), (139, 13044), (143, 13077), (148, 13113), (151, 13140), (152, 13143), (158, 13182), (160, 13197), (161, 13200), (166, 13224), (168, 13236), (171, 13245), (173, 13251), (179, 13293), (182, 13329), (187, 13374), (189, 13386), (192, 13395), (193, 13407), (195, 13416), (198, 13425),

Gene: MrAK_16 Start: 12284, Stop: 13441, Start Num: 13

Candidate Starts for MrAK_16:

(Start: 11 @12281 has 11 MA's), (Start: 13 @12284 has 43 MA's), (20, 12311), (23, 12335), (27, 12362), (29, 12368), (30, 12374), (33, 12389), (35, 12398), (36, 12404), (37, 12407), (38, 12410), (44, 12440), (51, 12503), (56, 12521), (57, 12545), (63, 12578), (64, 12587), (66, 12593), (68, 12602), (72, 12629), (81, 12698), (90, 12737), (91, 12740), (98, 12794), (101, 12809), (102, 12812), (104, 12818), (105, 12821), (106, 12836), (108, 12848), (110, 12866), (118, 12902), (120, 12911), (122, 12926), (123, 12929), (125, 12953), (128, 12968), (129, 12995), (131, 13001), (139, 13055), (143, 13088), (148, 13124), (151, 13151), (152, 13154), (158, 13193), (160, 13208), (161, 13211), (166, 13235), (168, 13247), (171, 13256), (173, 13262), (179, 13304), (182, 13340), (187, 13385), (189, 13397), (192, 13406), (193, 13418), (195, 13427),

Gene: MrSmee_18 Start: 13774, Stop: 14892, Start Num: 16

Candidate Starts for MrSmee_18:

(Start: 16 @13774 has 6 MA's), (29, 13852), (31, 13861), (50, 13981), (51, 13993), (54, 14002), (68, 14092), (76, 14164), (78, 14173), (79, 14176), (89, 14218), (97, 14272), (105, 14305), (114, 14356), (140, 14524), (151, 14614), (165, 14695), (176, 14743), (182, 14791), (183, 14800), (188, 14839), (195, 14878),

Gene: Ouroboros_16 Start: 12239, Stop: 13396, Start Num: 13

Candidate Starts for Ouroboros_16:

(Start: 13 @12239 has 43 MA's), (20, 12266), (23, 12290), (27, 12317), (29, 12323), (30, 12329), (33, 12344), (36, 12359), (37, 12362), (38, 12365), (44, 12395), (51, 12458), (54, 12467), (57, 12500), (63, 12533), (64, 12542), (65, 12545), (66, 12548), (68, 12557), (70, 12575), (71, 12578), (77, 12638), (80, 12650), (81, 12653), (88, 12686), (90, 12692), (91, 12695), (96, 12737), (98, 12749), (101, 12764), (102, 12767), (104, 12773), (105, 12776), (106, 12791), (108, 12803), (111, 12824), (114, 12845), (118, 12857), (120, 12866), (122, 12881), (123, 12884), (125, 12908), (128, 12923), (129, 12950), (139, 13010), (143, 13043), (148, 13079), (151, 13106), (158, 13148), (160, 13163), (166, 13190), (168, 13202), (173, 13217), (177, 13244), (179, 13259), (182, 13295), (186, 13337), (192, 13361), (193, 13373),

Gene: P1.1_16 Start: 12239, Stop: 13399, Start Num: 11

Candidate Starts for P1.1_16:

(Start: 11 @12239 has 11 MA's), (Start: 13 @12242 has 43 MA's), (20, 12269), (23, 12293), (27, 12320), (29, 12326), (30, 12332), (33, 12347), (36, 12362), (37, 12365), (38, 12368), (44, 12398), (51, 12461), (56, 12479), (57, 12503), (63, 12536), (64, 12545), (66, 12551), (68, 12560), (70, 12578), (72, 12587), (77, 12641), (80, 12653), (81, 12656), (88, 12689), (90, 12695), (96, 12740), (98, 12752), (101, 12767), (102, 12770), (104, 12776), (105, 12779), (106, 12794), (108, 12806), (113, 12845), (114, 12848), (118, 12860), (120, 12869), (122, 12884), (123, 12887), (125, 12911), (128, 12926), (129, 12953), (130, 12956), (139, 13013), (143, 13046), (148, 13082), (151, 13109), (152, 13112), (158, 13151), (160, 13166), (161, 13169), (166, 13193), (171, 13214), (173, 13220), (179, 13262), (182, 13298), (187, 13343), (189, 13355), (192, 13364), (195, 13385),

Gene: P100.1_16 Start: 12249, Stop: 13406, Start Num: 13

Candidate Starts for P100.1_16:

(Start: 11 @12246 has 11 MA's), (Start: 13 @12249 has 43 MA's), (20, 12276), (23, 12300), (27, 12327), (30, 12339), (33, 12354), (35, 12363), (36, 12369), (37, 12372), (38, 12375), (43, 12402), (44, 12405), (51, 12468), (56, 12486), (57, 12510), (63, 12543), (64, 12552), (65, 12555), (66, 12558), (68, 12567), (70, 12585), (72, 12594), (80, 12660), (81, 12663), (88, 12696), (90, 12702), (98, 12759), (102, 12777), (104, 12783), (105, 12786), (106, 12801), (108, 12813), (110, 12831), (113, 12852), (120, 12876), (122, 12891), (123, 12894), (125, 12918), (128, 12933), (129, 12960), (130, 12963), (139, 13020), (143, 13053), (148, 13089), (151, 13116), (158, 13158), (160, 13173), (161, 13176), (166, 13200), (168, 13212), (171, 13221), (173, 13227), (179, 13269), (182, 13305), (186, 13347), (187, 13350), (189, 13362), (192, 13371), (193, 13383), (195, 13392),

Gene: P100A_16 Start: 12249, Stop: 13406, Start Num: 13

Candidate Starts for P100A_16:

(Start: 13 @12249 has 43 MA's), (20, 12276), (23, 12300), (29, 12333), (30, 12339), (33, 12354), (36, 12369), (37, 12372), (38, 12375), (44, 12405), (47, 12429), (51, 12468), (54, 12477), (57, 12510), (63, 12543), (64, 12552), (66, 12558), (68, 12567), (70, 12585), (71, 12588), (77, 12648), (80, 12660), (81, 12663), (88, 12696), (90, 12702), (91, 12705), (96, 12747), (98, 12759), (102, 12777), (106, 12801), (108, 12813), (114, 12855), (120, 12876), (122, 12891), (123, 12894), (125, 12918), (128, 12933), (129, 12960), (139, 13020), (143, 13053), (148, 13089), (151, 13116), (152, 13119), (158, 13158), (160, 13173), (161, 13176), (166, 13200), (173, 13227), (177, 13254), (179, 13269), (182, 13305), (187, 13350), (192, 13371), (193, 13383), (195, 13392),

Gene: P100D_16 Start: 12245, Stop: 13402, Start Num: 13

Candidate Starts for P100D_16:

(Start: 11 @12242 has 11 MA's), (Start: 13 @12245 has 43 MA's), (20, 12272), (23, 12296), (27, 12323), (29, 12329), (30, 12335), (33, 12350), (36, 12365), (37, 12368), (38, 12371), (44, 12401), (51, 12464), (56, 12482), (57, 12506), (63, 12539), (64, 12548), (66, 12554), (68, 12563), (70, 12581), (72, 12590), (77, 12644), (80, 12656), (81, 12659), (88, 12692), (90, 12698), (96, 12743), (98, 12755), (102, 12773), (104, 12779), (105, 12782), (106, 12797), (108, 12809), (111, 12830), (113, 12848), (114, 12851), (118, 12863), (120, 12872), (122, 12887), (123, 12890), (125, 12914), (128, 12929), (129, 12956), (130, 12959), (139, 13016), (143, 13049), (148, 13085), (151, 13112), (158, 13154), (160, 13169), (161, 13172), (166, 13196), (168, 13208), (171, 13217), (173, 13223), (179, 13265), (182, 13301), (186, 13343), (192, 13367), (193, 13379), (195, 13388),

Gene: P101A_16 Start: 12257, Stop: 13414, Start Num: 13

Candidate Starts for P101A_16:

(Start: 11 @12254 has 11 MA's), (Start: 13 @12257 has 43 MA's), (20, 12284), (23, 12308), (27, 12335), (29, 12341), (30, 12347), (33, 12362), (36, 12377), (37, 12380), (38, 12383), (44, 12413), (51, 12476), (56, 12494), (57, 12518), (63, 12551), (64, 12560), (65, 12563), (66, 12566), (68, 12575), (70, 12593), (72, 12602), (80, 12668), (81, 12671), (88, 12704), (90, 12710), (98, 12767), (101, 12782), (102, 12785), (104, 12791), (105, 12794), (106, 12809), (108, 12821), (110, 12839), (113, 12860),

(120, 12884), (122, 12899), (123, 12902), (125, 12926), (128, 12941), (129, 12968), (130, 12971), (143, 13061), (148, 13097), (151, 13124), (158, 13166), (160, 13181), (161, 13184), (166, 13208), (168, 13220), (171, 13229), (173, 13235), (179, 13277), (182, 13313), (186, 13355), (187, 13358), (189, 13370), (192, 13379), (193, 13391), (195, 13400),

Gene: P104A_16 Start: 12234, Stop: 13391, Start Num: 13

Candidate Starts for P104A_16:

(Start: 13 @12234 has 43 MA's), (20, 12261), (23, 12285), (29, 12318), (30, 12324), (33, 12339), (36, 12354), (37, 12357), (38, 12360), (44, 12390), (51, 12453), (56, 12471), (57, 12495), (63, 12528), (64, 12537), (66, 12543), (68, 12552), (70, 12570), (72, 12579), (80, 12645), (81, 12648), (88, 12681), (90, 12687), (98, 12744), (101, 12759), (102, 12762), (104, 12768), (105, 12771), (106, 12786), (108, 12798), (113, 12837), (114, 12840), (118, 12852), (120, 12861), (122, 12876), (123, 12879), (125, 12903), (128, 12918), (129, 12945), (130, 12948), (139, 13005), (143, 13038), (148, 13074), (151, 13101), (152, 13104), (158, 13143), (160, 13158), (161, 13161), (166, 13185), (173, 13212), (177, 13239), (179, 13254), (182, 13290), (186, 13332), (192, 13356), (193, 13368), (195, 13377),

Gene: P104B_16 Start: 12251, Stop: 13408, Start Num: 13

Candidate Starts for P104B_16:

(Start: 11 @12248 has 11 MA's), (Start: 13 @12251 has 43 MA's), (20, 12278), (23, 12302), (27, 12329), (29, 12335), (30, 12341), (33, 12356), (36, 12371), (37, 12374), (38, 12377), (44, 12407), (51, 12470), (54, 12479), (56, 12488), (57, 12512), (63, 12545), (64, 12554), (66, 12560), (68, 12569), (70, 12587), (72, 12596), (80, 12662), (81, 12665), (88, 12698), (90, 12704), (96, 12749), (101, 12776), (102, 12779), (104, 12785), (105, 12788), (106, 12803), (108, 12815), (113, 12854), (118, 12869), (120, 12878), (122, 12893), (123, 12896), (125, 12920), (128, 12935), (129, 12962), (130, 12965), (139, 13022), (143, 13055), (151, 13118), (158, 13160), (160, 13175), (161, 13178), (166, 13202), (168, 13214), (171, 13223), (173, 13229), (177, 13256), (179, 13271), (182, 13307), (187, 13352), (192, 13373), (193, 13385), (195, 13394),

Gene: P105_16 Start: 12154, Stop: 13311, Start Num: 13

Candidate Starts for P105_16:

(Start: 11 @12151 has 11 MA's), (Start: 13 @12154 has 43 MA's), (20, 12181), (23, 12205), (27, 12232), (29, 12238), (30, 12244), (33, 12259), (36, 12274), (37, 12277), (38, 12280), (44, 12310), (51, 12373), (56, 12391), (57, 12415), (63, 12448), (64, 12457), (66, 12463), (68, 12472), (72, 12499), (81, 12568), (90, 12607), (91, 12610), (98, 12664), (101, 12679), (102, 12682), (104, 12688), (105, 12691), (106, 12706), (108, 12718), (110, 12736), (118, 12772), (120, 12781), (122, 12796), (123, 12799), (125, 12823), (128, 12838), (129, 12865), (131, 12871), (139, 12925), (143, 12958), (148, 12994), (151, 13021), (152, 13024), (158, 13063), (160, 13078), (161, 13081), (166, 13105), (168, 13117), (171, 13126), (173, 13132), (182, 13210), (187, 13255), (189, 13267), (192, 13276), (193, 13288), (195, 13297),

Gene: P106A_16 Start: 12279, Stop: 13436, Start Num: 13

Candidate Starts for P106A_16:

(Start: 11 @12276 has 11 MA's), (Start: 13 @12279 has 43 MA's), (20, 12306), (23, 12330), (27, 12357), (30, 12369), (33, 12384), (35, 12393), (36, 12399), (37, 12402), (38, 12405), (44, 12435), (51, 12498), (56, 12516), (57, 12540), (63, 12573), (64, 12582), (65, 12585), (66, 12588), (68, 12597), (70, 12615), (72, 12624), (77, 12678), (80, 12690), (81, 12693), (88, 12726), (90, 12732), (98, 12789), (101, 12804), (102, 12807), (104, 12813), (105, 12816), (106, 12831), (108, 12843), (110, 12861), (113, 12882), (118, 12897), (120, 12906), (122, 12921), (123, 12924), (125, 12948), (128, 12963), (129, 12990), (130, 12993), (143, 13083), (148, 13119), (151, 13146), (158, 13188), (160, 13203), (161, 13206), (166, 13230), (171, 13251), (173, 13257), (177, 13284), (179, 13299), (182, 13335), (187, 13380), (192, 13401), (193, 13413), (195, 13422),

Gene: P106C_16 Start: 12279, Stop: 13436, Start Num: 13

Candidate Starts for P106C_16:

(Start: 11 @12276 has 11 MA's), (Start: 13 @12279 has 43 MA's), (20, 12306), (23, 12330), (27, 12357), (30, 12369), (33, 12384), (35, 12393), (36, 12399), (37, 12402), (38, 12405), (44, 12435), (51, 12498), (56, 12516), (57, 12540), (63, 12573), (64, 12582), (65, 12585), (66, 12588), (68, 12597), (70, 12615), (72, 12624), (77, 12678), (80, 12690), (81, 12693), (88, 12726), (90, 12732), (98, 12789), (101, 12804), (102, 12807), (104, 12813), (105, 12816), (106, 12831), (108, 12843), (110, 12861), (113, 12882), (118, 12897), (120, 12906), (122, 12921), (123, 12924), (125, 12948), (128, 12963), (129, 12990), (130, 12993), (143, 13083), (148, 13119), (151, 13146), (158, 13188), (160, 13203), (161, 13206), (166, 13230), (171, 13251), (173, 13257), (177, 13284), (179, 13299), (182, 13335), (187, 13380), (189, 13392), (192, 13401), (193, 13413), (195, 13422),

Gene: P106I_16 Start: 12279, Stop: 13436, Start Num: 13

Candidate Starts for P106I_16:

(Start: 11 @12276 has 11 MA's), (Start: 13 @12279 has 43 MA's), (20, 12306), (23, 12330), (27, 12357), (30, 12369), (33, 12384), (35, 12393), (36, 12399), (37, 12402), (38, 12405), (44, 12435), (51, 12498), (56, 12516), (57, 12540), (63, 12573), (64, 12582), (65, 12585), (66, 12588), (68, 12597), (70, 12615), (72, 12624), (77, 12678), (80, 12690), (81, 12693), (88, 12726), (90, 12732), (98, 12789), (101, 12804), (102, 12807), (104, 12813), (105, 12816), (106, 12831), (108, 12843), (110, 12861), (113, 12882), (118, 12897), (120, 12906), (122, 12921), (123, 12924), (125, 12948), (128, 12963), (129, 12990), (130, 12993), (143, 13083), (148, 13119), (151, 13146), (158, 13188), (160, 13203), (161, 13206), (166, 13230), (171, 13251), (173, 13257), (177, 13284), (179, 13299), (182, 13335), (187, 13380), (189, 13392), (192, 13401), (193, 13413), (195, 13422),

Gene: P106L_16 Start: 12279, Stop: 13436, Start Num: 13

Candidate Starts for P106L_16:

(Start: 11 @12276 has 11 MA's), (Start: 13 @12279 has 43 MA's), (20, 12306), (23, 12330), (27, 12357), (30, 12369), (33, 12384), (35, 12393), (36, 12399), (37, 12402), (38, 12405), (44, 12435), (51, 12498), (56, 12516), (57, 12540), (63, 12573), (64, 12582), (65, 12585), (66, 12588), (68, 12597), (70, 12615), (72, 12624), (77, 12678), (80, 12690), (81, 12693), (88, 12726), (90, 12732), (98, 12789), (101, 12804), (102, 12807), (104, 12813), (105, 12816), (106, 12831), (108, 12843), (110, 12861), (113, 12882), (118, 12897), (120, 12906), (122, 12921), (123, 12924), (125, 12948), (128, 12963), (129, 12990), (130, 12993), (143, 13083), (148, 13119), (151, 13146), (158, 13188), (160, 13203), (161, 13206), (166, 13230), (171, 13251), (173, 13257), (177, 13284), (179, 13299), (182, 13335), (187, 13380), (189, 13392), (192, 13401), (193, 13413), (195, 13422),

Gene: P106M_16 Start: 12279, Stop: 13436, Start Num: 13

Candidate Starts for P106M_16:

(Start: 11 @12276 has 11 MA's), (Start: 13 @12279 has 43 MA's), (20, 12306), (23, 12330), (27, 12357), (30, 12369), (33, 12384), (35, 12393), (36, 12399), (37, 12402), (38, 12405), (44, 12435), (51, 12498), (56, 12516), (57, 12540), (63, 12573), (64, 12582), (65, 12585), (66, 12588), (68, 12597), (70, 12615), (72, 12624), (77, 12678), (80, 12690), (81, 12693), (88, 12726), (90, 12732), (98, 12789), (101, 12804), (102, 12807), (104, 12813), (105, 12816), (106, 12831), (108, 12843), (110, 12861), (113, 12882), (118, 12897), (120, 12906), (122, 12921), (123, 12924), (125, 12948), (128, 12963), (129, 12990), (130, 12993), (143, 13083), (148, 13119), (151, 13146), (158, 13188), (160, 13203), (161, 13206), (166, 13230), (171, 13251), (173, 13257), (177, 13284), (179, 13299), (182, 13335), (187, 13380), (189, 13392), (192, 13401), (193, 13413), (195, 13422),

Gene: P107A_16 Start: 12255, Stop: 13412, Start Num: 13

Candidate Starts for P107A_16:

(Start: 13 @12255 has 43 MA's), (20, 12282), (23, 12306), (27, 12333), (29, 12339), (30, 12345), (33, 12360), (36, 12375), (37, 12378), (38, 12381), (44, 12411), (51, 12474), (54, 12483), (56, 12492), (57, 12516), (63, 12549), (64, 12558), (65, 12561), (66, 12564), (68, 12573), (70, 12591), (71, 12594), (80, 12666), (81, 12669), (88, 12702), (90, 12708), (98, 12765), (102, 12783), (104, 12789), (105, 12792),

(106, 12807), (108, 12819), (111, 12840), (114, 12861), (118, 12873), (120, 12882), (122, 12897), (123, 12900), (125, 12924), (128, 12939), (129, 12966), (130, 12969), (139, 13026), (143, 13059), (148, 13095), (151, 13122), (152, 13125), (158, 13164), (160, 13179), (161, 13182), (166, 13206), (168, 13218), (173, 13233), (177, 13260), (179, 13275), (182, 13311), (187, 13356), (192, 13377), (193, 13389), (195, 13398),

Gene: P107C_16 Start: 12232, Stop: 13389, Start Num: 13

Candidate Starts for P107C_16:

(Start: 11 @12229 has 11 MA's), (Start: 13 @12232 has 43 MA's), (20, 12259), (23, 12283), (27, 12310), (29, 12316), (30, 12322), (33, 12337), (36, 12352), (37, 12355), (38, 12358), (44, 12388), (51, 12451), (57, 12493), (63, 12526), (64, 12535), (66, 12541), (68, 12550), (70, 12568), (71, 12571), (80, 12643), (81, 12646), (88, 12679), (90, 12685), (96, 12730), (98, 12742), (101, 12757), (104, 12766), (105, 12769), (106, 12784), (108, 12796), (114, 12838), (118, 12850), (120, 12859), (122, 12874), (123, 12877), (125, 12901), (128, 12916), (129, 12943), (130, 12946), (139, 13003), (143, 13036), (148, 13072), (151, 13099), (158, 13141), (160, 13156), (161, 13159), (166, 13183), (168, 13195), (171, 13204), (173, 13210), (179, 13252), (182, 13288), (187, 13333), (189, 13345), (192, 13354), (193, 13366), (195, 13375),

Gene: P108C_16 Start: 12240, Stop: 13397, Start Num: 13

Candidate Starts for P108C_16:

(Start: 11 @12237 has 11 MA's), (Start: 13 @12240 has 43 MA's), (20, 12267), (23, 12291), (29, 12324), (30, 12330), (33, 12345), (36, 12360), (37, 12363), (38, 12366), (44, 12396), (51, 12459), (56, 12477), (57, 12501), (63, 12534), (64, 12543), (65, 12546), (66, 12549), (68, 12558), (70, 12576), (72, 12585), (77, 12639), (80, 12651), (81, 12654), (88, 12687), (90, 12693), (98, 12750), (101, 12765), (102, 12768), (104, 12774), (106, 12792), (108, 12804), (110, 12822), (113, 12843), (118, 12858), (120, 12867), (122, 12882), (123, 12885), (125, 12909), (128, 12924), (129, 12951), (130, 12954), (143, 13044), (148, 13080), (151, 13107), (158, 13149), (160, 13164), (161, 13167), (166, 13191), (168, 13203), (173, 13218), (179, 13260), (182, 13296), (186, 13338), (187, 13341), (189, 13353), (192, 13362), (193, 13374), (195, 13383),

Gene: P14.4_16 Start: 12243, Stop: 13403, Start Num: 11

Candidate Starts for P14.4_16:

(Start: 11 @12243 has 11 MA's), (Start: 13 @12246 has 43 MA's), (20, 12273), (23, 12297), (27, 12324), (29, 12330), (30, 12336), (33, 12351), (36, 12366), (37, 12369), (38, 12372), (44, 12402), (51, 12465), (56, 12483), (57, 12507), (63, 12540), (64, 12549), (65, 12552), (66, 12555), (68, 12564), (70, 12582), (72, 12591), (77, 12645), (80, 12657), (81, 12660), (88, 12693), (90, 12699), (96, 12744), (98, 12756), (101, 12771), (102, 12774), (104, 12780), (105, 12783), (106, 12798), (108, 12810), (113, 12849), (114, 12852), (118, 12864), (120, 12873), (122, 12888), (123, 12891), (125, 12915), (128, 12930), (129, 12957), (130, 12960), (139, 13017), (148, 13086), (151, 13113), (152, 13116), (158, 13155), (160, 13170), (161, 13173), (166, 13197), (171, 13218), (173, 13224), (179, 13266), (182, 13302), (186, 13344), (189, 13359), (192, 13368), (193, 13380), (195, 13389),

Gene: P9.1_16 Start: 12238, Stop: 13398, Start Num: 11

Candidate Starts for P9.1_16:

(Start: 11 @12238 has 11 MA's), (Start: 13 @12241 has 43 MA's), (20, 12268), (23, 12292), (27, 12319), (30, 12331), (33, 12346), (35, 12355), (36, 12361), (37, 12364), (38, 12367), (44, 12397), (51, 12460), (56, 12478), (57, 12502), (63, 12535), (64, 12544), (66, 12550), (68, 12559), (70, 12577), (72, 12586), (80, 12652), (81, 12655), (82, 12658), (88, 12688), (90, 12694), (96, 12739), (98, 12751), (101, 12766), (102, 12769), (104, 12775), (105, 12778), (106, 12793), (108, 12805), (113, 12844), (118, 12859), (120, 12868), (122, 12883), (123, 12886), (125, 12910), (128, 12925), (129, 12952), (130, 12955), (143, 13045), (148, 13081), (151, 13108), (152, 13111), (158, 13150), (160, 13165), (161, 13168), (166, 13192), (173, 13219), (179, 13261), (182, 13297), (186, 13339), (189, 13354), (192, 13363), (193, 13375), (195, 13384),

Gene: PA6_16 Start: 12270, Stop: 13427, Start Num: 13

Candidate Starts for PA6_16:

(Start: 11 @12267 has 11 MA's), (Start: 13 @12270 has 43 MA's), (20, 12297), (23, 12321), (27, 12348), (29, 12354), (30, 12360), (33, 12375), (35, 12384), (36, 12390), (37, 12393), (38, 12396), (44, 12426), (51, 12489), (54, 12498), (56, 12507), (57, 12531), (63, 12564), (64, 12573), (65, 12576), (66, 12579), (68, 12588), (70, 12606), (72, 12615), (80, 12681), (81, 12684), (88, 12717), (90, 12723), (96, 12768), (98, 12780), (101, 12795), (102, 12798), (104, 12804), (105, 12807), (106, 12822), (108, 12834), (113, 12873), (114, 12876), (118, 12888), (120, 12897), (122, 12912), (123, 12915), (125, 12939), (128, 12954), (129, 12981), (130, 12984), (139, 13041), (143, 13074), (148, 13110), (151, 13137), (152, 13140), (158, 13179), (160, 13194), (161, 13197), (166, 13221), (171, 13242), (173, 13248), (177, 13275), (179, 13290), (182, 13326), (187, 13371), (189, 13383), (192, 13392), (193, 13404), (195, 13413),

Gene: PAD20_16 Start: 12238, Stop: 13395, Start Num: 13

Candidate Starts for PAD20_16:

(Start: 11 @12235 has 11 MA's), (Start: 13 @12238 has 43 MA's), (20, 12265), (23, 12289), (27, 12316), (29, 12322), (30, 12328), (33, 12343), (36, 12358), (37, 12361), (38, 12364), (44, 12394), (51, 12457), (56, 12475), (57, 12499), (63, 12532), (64, 12541), (65, 12544), (66, 12547), (68, 12556), (70, 12574), (72, 12583), (80, 12649), (88, 12685), (90, 12691), (96, 12736), (98, 12748), (101, 12763), (102, 12766), (104, 12772), (105, 12775), (106, 12790), (108, 12802), (113, 12841), (118, 12856), (120, 12865), (122, 12880), (123, 12883), (125, 12907), (128, 12922), (129, 12949), (130, 12952), (139, 13009), (143, 13042), (148, 13078), (151, 13105), (158, 13147), (160, 13162), (161, 13165), (166, 13189), (168, 13201), (171, 13210), (173, 13216), (179, 13258), (182, 13294), (187, 13339), (189, 13351), (192, 13360), (193, 13372), (195, 13381),

Gene: PAS50_16 Start: 12247, Stop: 13404, Start Num: 13

Candidate Starts for PAS50_16:

(Start: 11 @12244 has 11 MA's), (Start: 13 @12247 has 43 MA's), (20, 12274), (23, 12298), (27, 12325), (29, 12331), (30, 12337), (33, 12352), (36, 12367), (37, 12370), (38, 12373), (44, 12403), (51, 12466), (56, 12484), (57, 12508), (63, 12541), (64, 12550), (65, 12553), (66, 12556), (68, 12565), (70, 12583), (72, 12592), (80, 12658), (81, 12661), (90, 12700), (98, 12757), (101, 12772), (102, 12775), (104, 12781), (105, 12784), (106, 12799), (108, 12811), (110, 12829), (113, 12850), (120, 12874), (122, 12889), (123, 12892), (125, 12916), (128, 12931), (129, 12958), (130, 12961), (143, 13051), (148, 13087), (151, 13114), (158, 13156), (160, 13171), (161, 13174), (166, 13198), (168, 13210), (171, 13219), (173, 13225), (179, 13267), (182, 13303), (186, 13345), (187, 13348), (192, 13369), (193, 13381), (195, 13390),

Gene: PHL010M04_16 Start: 12238, Stop: 13398, Start Num: 11

Candidate Starts for PHL010M04_16:

(Start: 11 @12238 has 11 MA's), (Start: 13 @12241 has 43 MA's), (20, 12268), (23, 12292), (29, 12325), (30, 12331), (33, 12346), (36, 12361), (37, 12364), (38, 12367), (44, 12397), (51, 12460), (54, 12469), (56, 12478), (57, 12502), (63, 12535), (64, 12544), (65, 12547), (66, 12550), (68, 12559), (70, 12577), (71, 12580), (80, 12652), (81, 12655), (90, 12694), (96, 12739), (98, 12751), (101, 12766), (102, 12769), (104, 12775), (105, 12778), (106, 12793), (108, 12805), (111, 12826), (114, 12847), (118, 12859), (120, 12868), (122, 12883), (123, 12886), (125, 12910), (128, 12925), (129, 12952), (139, 13012), (143, 13045), (148, 13081), (151, 13108), (152, 13111), (158, 13150), (160, 13165), (161, 13168), (166, 13192), (168, 13204), (171, 13213), (173, 13219), (179, 13261), (182, 13297), (187, 13342), (189, 13354), (192, 13363), (193, 13375), (195, 13384),

Gene: PHL037M02_16 Start: 12249, Stop: 13406, Start Num: 13

Candidate Starts for PHL037M02_16:

(Start: 13 @12249 has 43 MA's), (20, 12276), (23, 12300), (29, 12333), (30, 12339), (33, 12354), (36, 12369), (37, 12372), (38, 12375), (44, 12405), (51, 12468), (54, 12477), (57, 12510), (63, 12543), (64, 12552), (65, 12555), (66, 12558), (70, 12585), (71, 12588), (80, 12660), (81, 12663), (88, 12696), (90, 12702), (96, 12747), (98, 12759), (101, 12774), (102, 12777), (106, 12801), (108, 12813), (114, 12855), (120, 12876), (122, 12891), (123, 12894), (125, 12918), (128, 12933), (129, 12960), (139, 13020), (143, 13053), (148, 13089), (151, 13116), (152, 13119), (158, 13158), (160, 13173), (161, 13176), (166, 13200), (168, 13212), (171, 13221), (173, 13227), (179, 13269), (182, 13305), (186, 13347), (187, 13350), (189, 13362), (192, 13371), (193, 13383), (195, 13392),

Gene: PHL060L00_16 Start: 12254, Stop: 13414, Start Num: 11

Candidate Starts for PHL060L00_16:

(Start: 11 @12254 has 11 MA's), (Start: 13 @12257 has 43 MA's), (20, 12284), (23, 12308), (27, 12335), (29, 12341), (30, 12347), (33, 12362), (35, 12371), (36, 12377), (37, 12380), (38, 12383), (43, 12410), (44, 12413), (51, 12476), (56, 12494), (57, 12518), (63, 12551), (64, 12560), (65, 12563), (66, 12566), (68, 12575), (70, 12593), (72, 12602), (80, 12668), (81, 12671), (88, 12704), (90, 12710), (96, 12755), (98, 12767), (102, 12785), (104, 12791), (105, 12794), (106, 12809), (108, 12821), (113, 12860), (114, 12863), (118, 12875), (120, 12884), (122, 12899), (123, 12902), (125, 12926), (128, 12941), (129, 12968), (130, 12971), (139, 13028), (143, 13061), (148, 13097), (151, 13124), (152, 13127), (153, 13136), (158, 13166), (160, 13181), (161, 13184), (166, 13208), (168, 13220), (171, 13229), (179, 13277), (182, 13313), (186, 13355), (187, 13358), (189, 13370), (192, 13379), (193, 13391), (195, 13400),

Gene: PHL067M10_16 Start: 12215, Stop: 13375, Start Num: 11

Candidate Starts for PHL067M10_16:

(Start: 11 @12215 has 11 MA's), (Start: 13 @12218 has 43 MA's), (20, 12245), (23, 12269), (27, 12296), (30, 12308), (33, 12323), (36, 12338), (37, 12341), (38, 12344), (44, 12374), (51, 12437), (56, 12455), (57, 12479), (63, 12512), (64, 12521), (65, 12524), (66, 12527), (68, 12536), (70, 12554), (71, 12557), (72, 12563), (80, 12629), (81, 12632), (88, 12665), (90, 12671), (98, 12728), (101, 12743), (102, 12746), (104, 12752), (105, 12755), (106, 12770), (108, 12782), (113, 12821), (118, 12836), (120, 12845), (122, 12860), (123, 12863), (125, 12887), (128, 12902), (129, 12929), (130, 12932), (143, 13022), (148, 13058), (151, 13085), (152, 13088), (158, 13127), (160, 13142), (161, 13145), (166, 13169), (168, 13181), (171, 13190), (173, 13196), (179, 13238), (182, 13274), (186, 13316), (187, 13319), (189, 13331), (192, 13340), (193, 13352), (195, 13361),

Gene: PHL071N05_16 Start: 12243, Stop: 13403, Start Num: 11

Candidate Starts for PHL071N05_16:

(Start: 11 @12243 has 11 MA's), (Start: 13 @12246 has 43 MA's), (20, 12273), (23, 12297), (27, 12324), (29, 12330), (30, 12336), (33, 12351), (36, 12366), (37, 12369), (38, 12372), (44, 12402), (51, 12465), (56, 12483), (57, 12507), (63, 12540), (64, 12549), (65, 12552), (66, 12555), (68, 12564), (70, 12582), (71, 12585), (77, 12645), (80, 12657), (81, 12660), (88, 12693), (90, 12699), (96, 12744), (98, 12756), (102, 12774), (104, 12780), (105, 12783), (106, 12798), (108, 12810), (110, 12828), (111, 12831), (113, 12849), (114, 12852), (118, 12864), (120, 12873), (122, 12888), (123, 12891), (125, 12915), (128, 12930), (129, 12957), (130, 12960), (139, 13017), (143, 13050), (148, 13086), (151, 13113), (152, 13116), (158, 13155), (160, 13170), (161, 13173), (166, 13197), (168, 13209), (171, 13218), (173, 13224), (179, 13266), (182, 13302), (186, 13344), (187, 13347), (189, 13359), (192, 13368), (193, 13380), (195, 13389),

Gene: PHL111M01_16 Start: 12241, Stop: 13398, Start Num: 12

Candidate Starts for PHL111M01_16:

(12, 12241), (20, 12268), (23, 12292), (27, 12319), (29, 12325), (30, 12331), (33, 12346), (35, 12355), (36, 12361), (37, 12364), (38, 12367), (44, 12397), (51, 12460), (56, 12478), (57, 12502), (63, 12535), (64, 12544), (65, 12547), (66, 12550), (68, 12559), (70, 12577), (72, 12586), (80, 12652), (81, 12655), (88, 12688), (90, 12694), (96, 12739), (98, 12751), (101, 12766), (102, 12769), (104, 12775), (105,

12778), (106, 12793), (108, 12805), (110, 12823), (113, 12844), (118, 12859), (120, 12868), (122, 12883), (123, 12886), (125, 12910), (128, 12925), (129, 12952), (131, 12958), (139, 13012), (143, 13045), (148, 13081), (151, 13108), (152, 13111), (158, 13150), (160, 13165), (161, 13168), (166, 13192), (168, 13204), (171, 13213), (173, 13219), (177, 13246), (179, 13261), (182, 13297), (187, 13342), (189, 13354), (192, 13363), (193, 13375), (195, 13384),

Gene: PHL112N00_16 Start: 12236, Stop: 13396, Start Num: 11

Candidate Starts for PHL112N00_16:

(Start: 11 @12236 has 11 MA's), (Start: 13 @12239 has 43 MA's), (20, 12266), (23, 12290), (27, 12317), (29, 12323), (30, 12329), (33, 12344), (36, 12359), (37, 12362), (38, 12365), (42, 12386), (44, 12395), (51, 12458), (56, 12476), (57, 12500), (63, 12533), (64, 12542), (65, 12545), (66, 12548), (68, 12557), (70, 12575), (71, 12578), (72, 12584), (77, 12638), (80, 12650), (81, 12653), (88, 12686), (90, 12692), (96, 12737), (98, 12749), (101, 12764), (102, 12767), (104, 12773), (105, 12776), (106, 12791), (108, 12803), (111, 12824), (113, 12842), (114, 12845), (118, 12857), (120, 12866), (122, 12881), (123, 12884), (125, 12908), (128, 12923), (129, 12950), (130, 12953), (139, 13010), (143, 13043), (148, 13079), (151, 13106), (158, 13148), (160, 13163), (161, 13166), (166, 13190), (168, 13202), (171, 13211), (173, 13217), (177, 13244), (179, 13259), (182, 13295), (187, 13340), (189, 13352), (192, 13361), (193, 13373), (195, 13382),

Gene: PHL113M01_16 Start: 12257, Stop: 13417, Start Num: 11

Candidate Starts for PHL113M01_16:

(Start: 11 @12257 has 11 MA's), (Start: 13 @12260 has 43 MA's), (20, 12287), (23, 12311), (27, 12338), (29, 12344), (30, 12350), (33, 12365), (36, 12380), (37, 12383), (38, 12386), (44, 12416), (51, 12479), (54, 12488), (56, 12497), (57, 12521), (63, 12554), (64, 12563), (66, 12569), (68, 12578), (70, 12596), (72, 12605), (80, 12671), (81, 12674), (88, 12707), (90, 12713), (96, 12758), (98, 12770), (101, 12785), (102, 12788), (104, 12794), (105, 12797), (106, 12812), (108, 12824), (113, 12863), (118, 12878), (120, 12887), (122, 12902), (123, 12905), (125, 12929), (128, 12944), (129, 12971), (130, 12974), (139, 13031), (143, 13064), (148, 13100), (151, 13127), (158, 13169), (160, 13184), (161, 13187), (166, 13211), (168, 13223), (171, 13232), (173, 13238), (179, 13280), (182, 13316), (187, 13361), (189, 13373), (192, 13382), (193, 13394), (195, 13403),

Gene: PHL114L00_16 Start: 12241, Stop: 13401, Start Num: 11

Candidate Starts for PHL114L00_16:

(Start: 11 @12241 has 11 MA's), (Start: 13 @12244 has 43 MA's), (20, 12271), (23, 12295), (27, 12322), (29, 12328), (30, 12334), (33, 12349), (37, 12367), (44, 12400), (51, 12463), (54, 12472), (57, 12505), (63, 12538), (64, 12547), (66, 12553), (68, 12562), (71, 12583), (80, 12655), (81, 12658), (88, 12691), (90, 12697), (91, 12700), (96, 12742), (98, 12754), (101, 12769), (102, 12772), (104, 12778), (105, 12781), (106, 12796), (108, 12808), (114, 12850), (118, 12862), (122, 12886), (123, 12889), (125, 12913), (128, 12928), (129, 12955), (131, 12961), (139, 13015), (143, 13048), (148, 13084), (151, 13111), (152, 13114), (158, 13153), (160, 13168), (161, 13171), (166, 13195), (171, 13216), (173, 13222), (179, 13264), (182, 13300), (186, 13342), (192, 13366), (193, 13378), (195, 13387),

Gene: Parvaparticeps_33 Start: 23477, Stop: 22143, Start Num: 13

Candidate Starts for Parvaparticeps_33:

(Start: 13 @23477 has 43 MA's), (22, 23438), (47, 23294), (48, 23291), (51, 23255), (56, 23237), (60, 23204), (61, 23201), (62, 23186), (65, 23171), (67, 23162), (75, 23105), (99, 22967), (102, 22955), (112, 22895), (116, 22874), (129, 22793), (132, 22784), (133, 22781), (136, 22763), (139, 22733), (145, 22688), (146, 22685), (159, 22592), (167, 22547), (170, 22535), (172, 22529), (179, 22478), (180, 22463), (185, 22406), (186, 22403), (197, 22352), (199, 22343), (201, 22334), (203, 22280), (204, 22250), (205, 22244), (206, 22241), (207, 22232), (209, 22190),

Gene: Pigu_18 Start: 13784, Stop: 14902, Start Num: 16

Candidate Starts for Pigu_18:

(Start: 10 @13775 has 2 MA's), (Start: 11 @13778 has 11 MA's), (Start: 16 @13784 has 6 MA's), (31, 13871), (50, 13991), (58, 14051), (76, 14174), (78, 14183), (79, 14186), (84, 14210), (95, 14270), (97, 14282), (101, 14303), (105, 14315), (108, 14342), (151, 14624), (169, 14717), (171, 14723), (174, 14738), (176, 14753), (182, 14801), (197, 14894),

Gene: Pirate_16 Start: 12235, Stop: 13392, Start Num: 13

Candidate Starts for Pirate_16:

(Start: 13 @12235 has 43 MA's), (20, 12262), (23, 12286), (29, 12319), (30, 12325), (33, 12340), (36, 12355), (37, 12358), (38, 12361), (44, 12391), (51, 12454), (54, 12463), (57, 12496), (63, 12529), (64, 12538), (65, 12541), (66, 12544), (68, 12553), (70, 12571), (71, 12574), (77, 12634), (80, 12646), (81, 12649), (90, 12688), (91, 12691), (96, 12733), (98, 12745), (101, 12760), (102, 12763), (104, 12769), (105, 12772), (106, 12787), (108, 12799), (111, 12820), (114, 12841), (118, 12853), (120, 12862), (122, 12877), (123, 12880), (125, 12904), (128, 12919), (129, 12946), (139, 13006), (143, 13039), (148, 13075), (151, 13102), (158, 13144), (160, 13159), (161, 13162), (166, 13186), (168, 13198), (173, 13213), (179, 13255), (182, 13291), (186, 13333), (187, 13336), (192, 13357), (193, 13369), (195, 13378),

Gene: Pitbull_18 Start: 13184, Stop: 14632, Start Num: 10

Candidate Starts for Pitbull_18:

(9, 13172), (Start: 10 @13184 has 2 MA's), (Start: 18 @13199 has 2 MA's), (21, 13214), (28, 13268), (33, 13292), (35, 13301), (36, 13307), (39, 13313), (40, 13319), (42, 13334), (45, 13346), (48, 13370), (58, 13454), (62, 13478), (76, 13577), (83, 13604), (85, 13619), (95, 13676), (100, 13706), (105, 13721), (115, 13775), (117, 13781), (124, 13832), (127, 13847), (130, 13880), (141, 13946), (142, 13958), (154, 14045), (158, 14066), (162, 14087), (179, 14186), (184, 14240), (190, 14279), (200, 14324), (208, 14450), (211, 14483), (213, 14531),

Gene: Procrass1_16 Start: 12243, Stop: 13400, Start Num: 13

Candidate Starts for Procrass1_16:

(Start: 11 @12240 has 11 MA's), (Start: 13 @12243 has 43 MA's), (20, 12270), (23, 12294), (27, 12321), (29, 12327), (30, 12333), (33, 12348), (35, 12357), (36, 12363), (37, 12366), (38, 12369), (44, 12399), (51, 12462), (54, 12471), (57, 12504), (63, 12537), (64, 12546), (66, 12552), (68, 12561), (70, 12579), (71, 12582), (72, 12588), (77, 12642), (80, 12654), (81, 12657), (88, 12690), (90, 12696), (98, 12753), (101, 12768), (102, 12771), (104, 12777), (105, 12780), (106, 12795), (108, 12807), (113, 12846), (118, 12861), (120, 12870), (122, 12885), (123, 12888), (125, 12912), (128, 12927), (129, 12954), (130, 12957), (139, 13014), (143, 13047), (148, 13083), (151, 13110), (152, 13113), (153, 13122), (158, 13152), (160, 13167), (161, 13170), (166, 13194), (171, 13215), (173, 13221), (179, 13263), (182, 13299), (186, 13341), (189, 13356), (192, 13365), (193, 13377), (195, 13386),

Gene: QueenBey_16 Start: 12243, Stop: 13400, Start Num: 13

Candidate Starts for QueenBey_16:

(Start: 11 @12240 has 11 MA's), (Start: 13 @12243 has 43 MA's), (20, 12270), (23, 12294), (29, 12327), (30, 12333), (33, 12348), (36, 12363), (37, 12366), (38, 12369), (44, 12399), (51, 12462), (54, 12471), (56, 12480), (57, 12504), (63, 12537), (64, 12546), (65, 12549), (66, 12552), (68, 12561), (70, 12579), (71, 12582), (77, 12642), (80, 12654), (81, 12657), (90, 12696), (91, 12699), (96, 12741), (98, 12753), (102, 12771), (104, 12777), (105, 12780), (106, 12795), (108, 12807), (111, 12828), (114, 12849), (118, 12861), (120, 12870), (122, 12885), (123, 12888), (125, 12912), (128, 12927), (129, 12954), (139, 13014), (143, 13047), (148, 13083), (151, 13110), (152, 13113), (158, 13152), (160, 13167), (161, 13170), (166, 13194), (171, 13215), (173, 13221), (179, 13263), (182, 13299), (186, 13341), (187, 13344), (189, 13356), (192, 13365), (193, 13377), (195, 13386),

Gene: Raqqa_19 Start: 15720, Stop: 16826, Start Num: 13

Candidate Starts for Raqqa_19:

(Start: 10 @15714 has 2 MA's), (Start: 13 @15720 has 43 MA's), (21, 15750), (27, 15798), (30, 15810), (32, 15822), (50, 15927), (57, 15978), (63, 16011), (76, 16104), (79, 16116), (94, 16185), (107, 16257), (148, 16521), (166, 16632), (192, 16791),

Gene: Rileysaurus_16 Start: 12238, Stop: 13395, Start Num: 13

Candidate Starts for Rileysaurus_16:

(Start: 13 @12238 has 43 MA's), (20, 12265), (23, 12289), (29, 12322), (30, 12328), (33, 12343), (36, 12358), (37, 12361), (38, 12364), (44, 12394), (51, 12457), (54, 12466), (57, 12499), (63, 12532), (64, 12541), (65, 12544), (66, 12547), (68, 12556), (70, 12574), (71, 12577), (77, 12637), (80, 12649), (81, 12652), (88, 12685), (90, 12691), (91, 12694), (96, 12736), (98, 12748), (102, 12766), (104, 12772), (105, 12775), (106, 12790), (108, 12802), (113, 12841), (114, 12844), (118, 12856), (120, 12865), (122, 12880), (123, 12883), (125, 12907), (128, 12922), (129, 12949), (139, 13009), (143, 13042), (148, 13078), (151, 13105), (152, 13108), (158, 13147), (160, 13162), (161, 13165), (166, 13189), (168, 13201), (173, 13216), (177, 13243), (179, 13258), (182, 13294), (187, 13339), (192, 13360), (193, 13372), (195, 13381),

Gene: RootBeer_17 Start: 14184, Stop: 15296, Start Num: 18

Candidate Starts for RootBeer_17:

(Start: 18 @14184 has 2 MA's), (23, 14223), (38, 14298), (48, 14355), (50, 14379), (57, 14433), (76, 14562), (79, 14574), (86, 14610), (97, 14664), (107, 14718), (179, 15165),

Gene: Rooter_18 Start: 13624, Stop: 14742, Start Num: 16

Candidate Starts for Rooter_18:

(Start: 11 @13618 has 11 MA's), (Start: 16 @13624 has 6 MA's), (19, 13633), (47, 13798), (50, 13831), (54, 13852), (68, 13942), (76, 14014), (78, 14023), (89, 14068), (95, 14110), (97, 14122), (105, 14155), (157, 14500), (169, 14557), (188, 14689), (195, 14728), (197, 14734),

Gene: SKKY_16 Start: 12278, Stop: 13435, Start Num: 13

Candidate Starts for SKKY_16:

(Start: 11 @12275 has 11 MA's), (Start: 13 @12278 has 43 MA's), (20, 12305), (23, 12329), (27, 12356), (30, 12368), (33, 12383), (35, 12392), (36, 12398), (37, 12401), (38, 12404), (44, 12434), (51, 12497), (56, 12515), (57, 12539), (63, 12572), (64, 12581), (66, 12587), (68, 12596), (72, 12623), (81, 12692), (90, 12731), (91, 12734), (98, 12788), (101, 12803), (102, 12806), (104, 12812), (105, 12815), (106, 12830), (108, 12842), (110, 12860), (118, 12896), (120, 12905), (122, 12920), (123, 12923), (125, 12947), (128, 12962), (129, 12989), (131, 12995), (139, 13049), (143, 13082), (148, 13118), (151, 13145), (152, 13148), (158, 13187), (160, 13202), (161, 13205), (166, 13229), (171, 13250), (173, 13256), (179, 13298), (182, 13334), (187, 13379), (189, 13391), (192, 13400), (193, 13412), (195, 13421),

Gene: Sarge_18 Start: 13985, Stop: 15109, Start Num: 11

Candidate Starts for Sarge_18:

(Start: 11 @13985 has 11 MA's), (Start: 16 @13991 has 6 MA's), (47, 14165), (50, 14198), (54, 14219), (68, 14309), (76, 14381), (78, 14390), (79, 14393), (97, 14489), (105, 14522), (157, 14867), (169, 14924), (174, 14945), (188, 15056), (195, 15095), (197, 15101),

Gene: Shoya_17 Start: 13621, Stop: 14745, Start Num: 11

Candidate Starts for Shoya_17:

(Start: 11 @13621 has 11 MA's), (Start: 16 @13627 has 6 MA's), (19, 13636), (47, 13801), (50, 13834), (54, 13855), (68, 13945), (76, 14017), (78, 14026), (89, 14071), (95, 14113), (97, 14125), (105, 14158), (169, 14560), (176, 14596), (188, 14692), (195, 14731), (197, 14737),

Gene: Skitty_18 Start: 13774, Stop: 14892, Start Num: 16

Candidate Starts for Skitty_18:

(Start: 16 @13774 has 6 MA's), (29, 13852), (31, 13861), (50, 13981), (51, 13993), (54, 14002), (68, 14092), (76, 14164), (78, 14173), (79, 14176), (89, 14218), (97, 14272), (105, 14305), (114, 14356), (140, 14524), (151, 14614), (165, 14695), (176, 14743), (182, 14791), (183, 14800), (188, 14839), (195, 14878),

Gene: Solid_16 Start: 12232, Stop: 13389, Start Num: 13

Candidate Starts for Solid_16:

(Start: 11 @12229 has 11 MA's), (Start: 13 @12232 has 43 MA's), (20, 12259), (23, 12283), (27, 12310), (29, 12316), (30, 12322), (33, 12337), (36, 12352), (37, 12355), (38, 12358), (44, 12388), (51, 12451), (57, 12493), (63, 12526), (64, 12535), (65, 12538), (66, 12541), (68, 12550), (70, 12568), (72, 12577), (77, 12631), (80, 12643), (81, 12646), (88, 12679), (90, 12685), (96, 12730), (98, 12742), (101, 12757), (102, 12760), (104, 12766), (105, 12769), (106, 12784), (108, 12796), (113, 12835), (114, 12838), (118, 12850), (120, 12859), (122, 12874), (123, 12877), (125, 12901), (128, 12916), (129, 12943), (130, 12946), (139, 13003), (143, 13036), (148, 13072), (151, 13099), (160, 13156), (161, 13159), (166, 13183), (171, 13204), (173, 13210), (177, 13237), (179, 13252), (182, 13288), (187, 13333), (189, 13345), (192, 13354), (193, 13366), (195, 13375),

Gene: Stormborn_16 Start: 12254, Stop: 13411, Start Num: 13

Candidate Starts for Stormborn_16:

(Start: 11 @12251 has 11 MA's), (Start: 13 @12254 has 43 MA's), (20, 12281), (23, 12305), (27, 12332), (29, 12338), (30, 12344), (33, 12359), (36, 12374), (37, 12377), (38, 12380), (44, 12410), (51, 12473), (54, 12482), (57, 12515), (63, 12548), (64, 12557), (65, 12560), (66, 12563), (68, 12572), (70, 12590), (80, 12665), (81, 12668), (88, 12701), (90, 12707), (96, 12752), (98, 12764), (101, 12779), (102, 12782), (106, 12806), (108, 12818), (114, 12860), (120, 12881), (122, 12896), (123, 12899), (125, 12923), (128, 12938), (129, 12965), (139, 13025), (143, 13058), (148, 13094), (151, 13121), (152, 13124), (158, 13163), (160, 13178), (161, 13181), (166, 13205), (168, 13217), (171, 13226), (173, 13232), (179, 13274), (182, 13310), (186, 13352), (192, 13376), (193, 13388), (195, 13397),

Gene: Supernova_16 Start: 12250, Stop: 13407, Start Num: 13

Candidate Starts for Supernova_16:

(Start: 11 @12247 has 11 MA's), (Start: 13 @12250 has 43 MA's), (20, 12277), (23, 12301), (27, 12328), (29, 12334), (30, 12340), (33, 12355), (35, 12364), (36, 12370), (37, 12373), (38, 12376), (44, 12406), (51, 12469), (57, 12511), (63, 12544), (64, 12553), (66, 12559), (68, 12568), (72, 12595), (81, 12664), (90, 12703), (91, 12706), (98, 12760), (101, 12775), (102, 12778), (104, 12784), (105, 12787), (106, 12802), (108, 12814), (110, 12832), (118, 12868), (120, 12877), (122, 12892), (123, 12895), (125, 12919), (128, 12934), (129, 12961), (131, 12967), (139, 13021), (143, 13054), (148, 13090), (151, 13117), (152, 13120), (158, 13159), (160, 13174), (166, 13201), (168, 13213), (171, 13222), (173, 13228), (177, 13255), (179, 13270), (182, 13306), (187, 13351), (189, 13363), (192, 13372), (193, 13384), (195, 13393),

Gene: Wizzo_16 Start: 12265, Stop: 13422, Start Num: 13

Candidate Starts for Wizzo_16:

(Start: 11 @12262 has 11 MA's), (Start: 13 @12265 has 43 MA's), (20, 12292), (23, 12316), (27, 12343), (29, 12349), (30, 12355), (33, 12370), (36, 12385), (37, 12388), (38, 12391), (44, 12421), (51, 12484), (56, 12502), (57, 12526), (59, 12535), (63, 12559), (64, 12568), (65, 12571), (66, 12574), (68, 12583), (70, 12601), (72, 12610), (77, 12664), (80, 12676), (81, 12679), (88, 12712), (90, 12718), (98, 12775), (101, 12790), (102, 12793), (104, 12799), (105, 12802), (106, 12817), (108, 12829), (113, 12868), (118, 12883), (120, 12892), (122, 12907), (123, 12910), (125, 12934), (128, 12949), (129, 12976), (130, 12979), (139, 13036), (143, 13069), (148, 13105), (151, 13132), (158, 13174), (160, 13189), (161, 13192), (166, 13216), (171, 13237), (173, 13243), (179, 13285), (182, 13321), (186, 13363), (189, 13378), (192, 13387), (193, 13399), (195, 13408),

Gene: Zucker_20 Start: 15353, Stop: 16471, Start Num: 16

Candidate Starts for Zucker_20:

(Start: 16 @15353 has 6 MA's), (31, 15440), (47, 15527), (49, 15536), (50, 15560), (51, 15572), (54, 15581), (76, 15743), (78, 15752), (79, 15755), (95, 15839), (97, 15851), (105, 15884), (114, 15935), (121, 15965), (130, 16043), (151, 16193), (157, 16229), (158, 16235), (174, 16307), (175, 16316), (197, 16463),