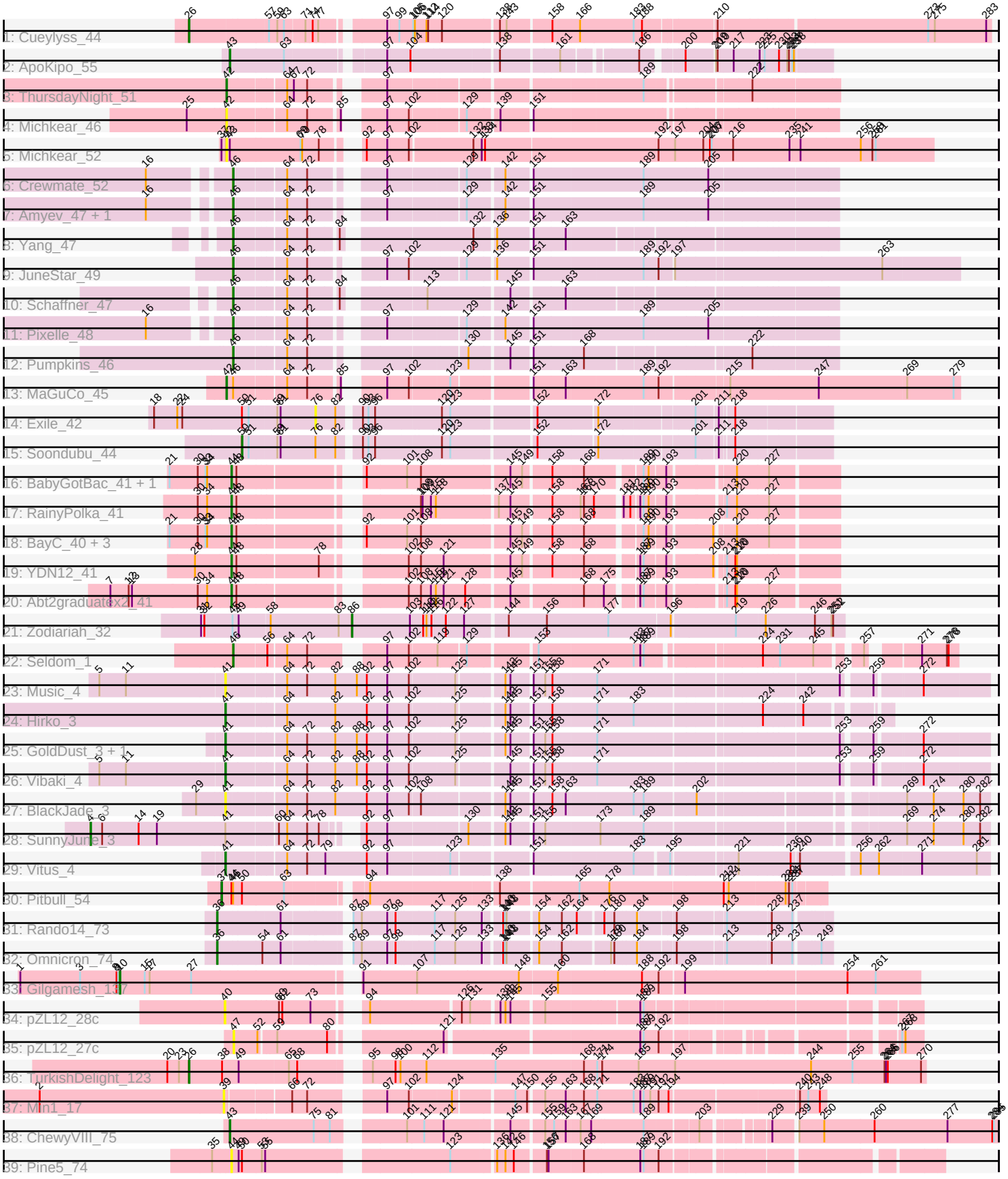
Pham 347761


1: Cueylyss_44
2: ApoKipo_55
3: ThursdayNight_51
4: Michkear_46
5: Michkear_52
6: Crewmate_52
7: Amyev_47 + 1
8: Yang_47
9: JuneStar_49
10: Schaffner_47
11: Pixelle_48
12: Pumpkins_46
13: MaGuCo_45
14: Exile_42
15: Soondubu_44
16: BabyGotBac_41 + 1
17: RainyPolka_41
18: BayC_40 + 3
19: YDN12_41
20: Abt2graduatex2_41
21: Zodiariah_32
22: Seldom_1
23: Music_4
24: Hirko_3
25: GoldDust_3 + 1
26: Vibaki_4
27: BlackJade_3
28: SunnyJune_3
29: Vitus_4
30: Pitbull_54
31: Rando14_73
32: Omnicron_74
33: Gilgamesh_137
34: pZL12_28c
35: pZL12_27c
36: TurkishDelight_123
37: Min1_17
38: ChewyVIII_75
39: Pine5_74

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 347761 Report

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

Pham number 347761 has 45 members, 10 are drafts.

Phages represented in each track:
- Track 1 : Cueylyss_44
- Track 2 : ApoKipo_55
- Track 3 : ThursdayNight_51
- Track 4 : Michkear_46
- Track 5 : Michkear_52
- Track 6 : Crewmate_52
- Track 7 : Amyev_47, Tian_46
- Track 8 : Yang_47
- Track 9 : JuneStar_49
- Track 10 : Schaffner_47
- Track 11 : Pixelle_48
- Track 12 : Pumpkins_46
- Track 13 : MaGuCo_45
- Track 14 : Exile_42
- Track 15 : Soondubu_44
- Track 16 : BabyGotBac_41, TP1604_40
- Track 17 : RainyPolka_41
- Track 18 : BayC_40, Asis_40, Salete_40, Maih_39
- Track 19 : YDN12_41
- Track 20 : Abt2graduatex2_41
- Track 21 : Zodiariah_32
- Track 22 : Seldom_1
- Track 23 : Music_4
- Track 24 : Hirko_3
- Track 25 : GoldDust_3, Gooberta_3
- Track 26 : Vibaki_4
- Track 27 : BlackJade_3
- Track 28 : SunnyJune_3
- Track 29 : Vitus_4
- Track 30 : Pitbull_54
- Track 31 : Rando14_73
- Track 32 : Omnicron_74
- Track 33 : Gilgamesh_137
- Track 34 : pZL12_28c
- Track 35 : pZL12_27c
- Track 36 : TurkishDelight_123
- Track 37 : Min1_17

• Track 38 : ChewyVIII_75
• Track 39 : Pine5_74

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

The start number called the most often in the published annotations is 44, it was called in 9 of the 35 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Abt2graduatex2_41, Asis_40, BabyGotBac_41, BayC_40, Maih_39, Pine5_74, RainyPolka_41, Salete_40, TP1604_40, YDN12_41,

Genes that have the "Most Annotated" start but do not call it:
• Pitbull_54,

Genes that do not have the "Most Annotated" start:
• Amyev_47, ApoKipo_55, BlackJade_3, ChewyVIII_75, Crewmate_52, Cueylyss_44, Exile_42, Gilgamesh_137, GoldDust_3, Gooberta_3, Hirko_3, JuneStar_49, MaGuCo_45, Michkear_46, Michkear_52, Min1_17, Music_4, Omnicron_74, Pixelle_48, Pumpkins_46, Rando14_73, Schaffner_47, Seldom_1, Soondubu_44, SunnyJune_3, ThursdayNight_51, Tian_46, TurkishDelight_123, Vibaki_4, Vitus_4, Yang_47, Zodiariah_32, pZL12_27c, pZL12_28c,

Summary by start number:

Start 4:
• Found in 1 of 45 (2.2%) of genes in pham
• Manual Annotations of this start: 1 of 35
• Called 100.0% of time when present
• Phage (with cluster) where this start called: SunnyJune_3 (FL),

Start 10:
• Found in 1 of 45 (2.2%) of genes in pham
• Manual Annotations of this start: 1 of 35
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Gilgamesh_137 (singleton),

Start 26:
• Found in 2 of 45 (4.4%) of genes in pham
• Manual Annotations of this start: 2 of 35
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Cueylyss_44 (A1), TurkishDelight_123 (singleton),

Start 36:
• Found in 2 of 45 (4.4%) of genes in pham
• Manual Annotations of this start: 2 of 35
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Omnicron_74 (K5), Rando14_73 (K5),

Start 37:
• Found in 2 of 45 (4.4%) of genes in pham
• Manual Annotations of this start: 1 of 35
• Called 50.0% of time when present
• Phage (with cluster) where this start called: Pitbull_54 (FQ1),

Start 39:
• Found in 1 of 45 (2.2%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Min1_17 (singleton),

Start 40:
• Found in 1 of 45 (2.2%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: pZL12_28c (singleton),

Start 41:
• Found in 8 of 45 (17.8%) of genes in pham
• Manual Annotations of this start: 5 of 35
• Called 87.5% of time when present
• Phage (with cluster) where this start called: BlackJade_3 (FL), GoldDust_3 (FL), Gooberta_3 (FL), Hirko_3 (FL), Music_4 (FL), Vibaki_4 (FL), Vitus_4 (FL),

Start 42:
• Found in 4 of 45 (8.9%) of genes in pham
• Manual Annotations of this start: 2 of 35
• Called 100.0% of time when present
• Phage (with cluster) where this start called: MaGuCo_45 (AZ2), Michkear_46 (AZ), Michkear_52 (AZ), ThursdayNight_51 (AZ),

Start 43:
• Found in 3 of 45 (6.7%) of genes in pham
• Manual Annotations of this start: 2 of 35
• Called 66.7% of time when present
• Phage (with cluster) where this start called: ApoKipo_55 (AL), ChewyVIII_75 (singleton),

Start 44:
• Found in 11 of 45 (24.4%) of genes in pham
• Manual Annotations of this start: 9 of 35
• Called 90.9% of time when present
• Phage (with cluster) where this start called: Abt2graduatex2_41 (BG), Asis_40 (BG), BabyGotBac_41 (BG), BayC_40 (BG), Maih_39 (BG), Pine5_74 (singleton), RainyPolka_41 (BG), Salete_40 (BG), TP1604_40 (BG), YDN12_41 (BG),

Start 46:
• Found in 11 of 45 (24.4%) of genes in pham
• Manual Annotations of this start: 8 of 35
• Called 81.8% of time when present
• Phage (with cluster) where this start called: Amyev_47 (AZ1), Crewmate_52 (AZ1), JuneStar_49 (AZ1), Pixelle_48 (AZ1), Pumpkins_46 (AZ1), Schaffner_47 (AZ1),

Seldom_1 (FD), Tian_46 (AZ1), Yang_47 (AZ1),

Start 47:
• Found in 1 of 45 (2.2%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: pZL12_27c (singleton),

Start 50:
• Found in 4 of 45 (8.9%) of genes in pham
• Manual Annotations of this start: 1 of 35
• Called 25.0% of time when present
• Phage (with cluster) where this start called: Soondubu_44 (AZ6),

Start 76:
• Found in 2 of 45 (4.4%) of genes in pham
• No Manual Annotations of this start.
• Called 50.0% of time when present
• Phage (with cluster) where this start called: Exile_42 (AZ6),

Start 86:
• Found in 1 of 45 (2.2%) of genes in pham
• Manual Annotations of this start: 1 of 35
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Zodiariah_32 (DW),

Summary by clusters:

There are 13 clusters represented in this pham: singleton, BG, AL, A1, FD, K5, DW, AZ1, AZ2, AZ, FL, AZ6, FQ1,

Info for manual annotations of cluster A1:
•Start number 26 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster AL:
•Start number 43 was manually annotated 1 time for cluster AL.

Info for manual annotations of cluster AZ:
•Start number 42 was manually annotated 1 time for cluster AZ.

Info for manual annotations of cluster AZ1:
•Start number 46 was manually annotated 7 times for cluster AZ1.

Info for manual annotations of cluster AZ2:
•Start number 42 was manually annotated 1 time for cluster AZ2.

Info for manual annotations of cluster AZ6:
•Start number 50 was manually annotated 1 time for cluster AZ6.

Info for manual annotations of cluster BG:
•Start number 44 was manually annotated 9 times for cluster BG.

Info for manual annotations of cluster DW:

•Start number 86 was manually annotated 1 time for cluster DW.

Info for manual annotations of cluster FD:
•Start number 46 was manually annotated 1 time for cluster FD.

Info for manual annotations of cluster FL:
•Start number 4 was manually annotated 1 time for cluster FL.
•Start number 41 was manually annotated 5 times for cluster FL.

Info for manual annotations of cluster FQ1:
•Start number 37 was manually annotated 1 time for cluster FQ1.

Info for manual annotations of cluster K5:
•Start number 36 was manually annotated 2 times for cluster K5.

Gene Information:

Gene: Abt2graduatex2_41 Start: 32795, Stop: 31851, Start Num: 44
Candidate Starts for Abt2graduatex2_41:
(7, 33008), (12, 32975), (13, 32969), (30, 32852), (34, 32837), (Start: 44 @32795 has 9 MA's), (48, 32786), (102, 32534), (108, 32513), (115, 32495), (118, 32486), (121, 32474), (128, 32438), (145, 32366), (168, 32246), (175, 32213), (187, 32168), (189, 32162), (193, 32126), (213, 32039), (218, 32024), (220, 32021), (227, 31967),

Gene: Amyev_47 Start: 35220, Stop: 36194, Start Num: 46
Candidate Starts for Amyev_47:
(16, 35097), (Start: 46 @35220 has 8 MA's), (64, 35304), (72, 35340), (97, 35439), (129, 35565), (142, 35625), (151, 35667), (189, 35862), (205, 35973),

Gene: ApoKipo_55 Start: 30521, Stop: 31468, Start Num: 43
Candidate Starts for ApoKipo_55:
(Start: 43 @30521 has 2 MA's), (63, 30617), (97, 30770), (104, 30812), (138, 30953), (161, 31052), (186, 31166), (200, 31226), (209, 31274), (210, 31277), (217, 31304), (223, 31346), (225, 31355), (230, 31376), (233, 31391), (234, 31394), (237, 31400), (238, 31403),

Gene: Asis_40 Start: 32623, Stop: 31679, Start Num: 44
Candidate Starts for Asis_40:
(21, 32728), (30, 32680), (33, 32668), (34, 32665), (Start: 44 @32623 has 9 MA's), (48, 32614), (92, 32437), (101, 32365), (108, 32341), (145, 32194), (149, 32173), (158, 32128), (168, 32074), (189, 31990), (190, 31981), (193, 31954), (208, 31879), (220, 31849), (227, 31795),

Gene: BabyGotBac_41 Start: 32623, Stop: 31679, Start Num: 44
Candidate Starts for BabyGotBac_41:
(21, 32728), (30, 32680), (33, 32668), (34, 32665), (Start: 44 @32623 has 9 MA's), (48, 32614), (92, 32437), (101, 32365), (108, 32341), (145, 32194), (149, 32173), (158, 32128), (168, 32074), (189, 31990), (190, 31981), (193, 31954), (220, 31849), (227, 31795),

Gene: BayC_40 Start: 32623, Stop: 31679, Start Num: 44
Candidate Starts for BayC_40:
(21, 32728), (30, 32680), (33, 32668), (34, 32665), (Start: 44 @32623 has 9 MA's), (48, 32614), (92, 32437), (101, 32365), (108, 32341), (145, 32194), (149, 32173), (158, 32128), (168, 32074), (189,

31990), (190, 31981), (193, 31954), (208, 31879), (220, 31849), (227, 31795),

Gene: BlackJade_3 Start: 2028, Stop: 3266, Start Num: 41
Candidate Starts for BlackJade_3:
(29, 1980), (Start: 41 @2028 has 5 MA's), (64, 2121), (72, 2157), (82, 2208), (92, 2265), (97, 2301), (102, 2340), (108, 2358), (142, 2487), (145, 2496), (151, 2529), (158, 2562), (163, 2586), (183, 2703), (189, 2721), (202, 2802), (269, 3120), (274, 3168), (280, 3222), (282, 3252),

Gene: ChewyVIII_75 Start: 55068, Stop: 53818, Start Num: 43
Candidate Starts for ChewyVIII_75:
(Start: 43 @55068 has 2 MA's), (75, 54921), (81, 54894), (101, 54792), (111, 54762), (121, 54729), (145, 54624), (155, 54570), (159, 54555), (163, 54534), (167, 54510), (169, 54492), (189, 54399), (203, 54312), (229, 54213), (239, 54177), (250, 54132), (260, 54042), (277, 53910), (284, 53829), (285, 53826),

Gene: Crewmate_52 Start: 34132, Stop: 35106, Start Num: 46
Candidate Starts for Crewmate_52:
(16, 34009), (Start: 46 @34132 has 8 MA's), (64, 34216), (72, 34252), (97, 34351), (129, 34477), (142, 34537), (151, 34579), (189, 34774), (205, 34885),

Gene: Cueylyss_44 Start: 34031, Stop: 32712, Start Num: 26
Candidate Starts for Cueylyss_44:
(Start: 26 @34031 has 2 MA's), (57, 33896), (59, 33881), (63, 33869), (71, 33836), (74, 33824), (77, 33815), (97, 33725), (99, 33707), (105, 33686), (106, 33683), (112, 33662), (114, 33659), (120, 33635), (138, 33542), (143, 33530), (158, 33458), (166, 33413), (183, 33317), (188, 33302), (210, 33185), (273, 32825), (275, 32813), (283, 32720),

Gene: Exile_42 Start: 36122, Stop: 36952, Start Num: 76
Candidate Starts for Exile_42:
(18, 35837), (22, 35879), (24, 35888), (Start: 50 @35993 has 1 MA's), (51, 36005), (59, 36053), (61, 36059), (76, 36122), (82, 36158), (90, 36191), (93, 36200), (96, 36212), (120, 36323), (123, 36335), (152, 36473), (172, 36572), (201, 36731), (211, 36767), (218, 36788),

Gene: Gilgamesh_137 Start: 118223, Stop: 119593, Start Num: 10
Candidate Starts for Gilgamesh_137:
(1, 118043), (3, 118151), (8, 118217), (9, 118220), (Start: 10 @118223 has 1 MA's), (15, 118268), (17, 118277), (27, 118352), (91, 118619), (107, 118715), (148, 118898), (160, 118964), (188, 119111), (192, 119138), (199, 119180), (254, 119462), (261, 119513),

Gene: GoldDust_3 Start: 1973, Stop: 3220, Start Num: 41
Candidate Starts for GoldDust_3:
(Start: 41 @1973 has 5 MA's), (64, 2069), (72, 2105), (82, 2156), (88, 2195), (92, 2213), (97, 2249), (102, 2288), (125, 2360), (142, 2435), (145, 2444), (151, 2477), (155, 2498), (158, 2510), (171, 2585), (253, 2984), (259, 3029), (272, 3104),

Gene: Gooberta_3 Start: 1973, Stop: 3220, Start Num: 41
Candidate Starts for Gooberta_3:
(Start: 41 @1973 has 5 MA's), (64, 2069), (72, 2105), (82, 2156), (88, 2195), (92, 2213), (97, 2249), (102, 2288), (125, 2360), (142, 2435), (145, 2444), (151, 2477), (155, 2498), (158, 2510), (171, 2585), (253, 2984), (259, 3029), (272, 3104),

Gene: Hirko_3 Start: 1965, Stop: 3029, Start Num: 41
Candidate Starts for Hirko_3:

(Start: 41 @1965 has 5 MA's), (64, 2058), (82, 2145), (92, 2202), (97, 2238), (102, 2277), (125, 2349), (142, 2424), (145, 2433), (151, 2466), (158, 2499), (171, 2574), (183, 2640), (224, 2847), (242, 2907),

Gene: JuneStar_49 Start: 36072, Stop: 37253, Start Num: 46
Candidate Starts for JuneStar_49:
(Start: 46 @36072 has 8 MA's), (64, 36156), (72, 36192), (97, 36288), (102, 36327), (129, 36414), (136, 36459), (151, 36516), (189, 36708), (192, 36732), (197, 36756), (263, 37116),

Gene: MaGuCo_45 Start: 34507, Stop: 35697, Start Num: 42
Candidate Starts for MaGuCo_45:
(Start: 42 @34507 has 2 MA's), (Start: 46 @34516 has 8 MA's), (64, 34600), (72, 34636), (85, 34687), (97, 34732), (102, 34771), (123, 34834), (151, 34960), (163, 35017), (189, 35152), (192, 35176), (215, 35287), (247, 35446), (269, 35602), (279, 35686),

Gene: Maih_39 Start: 32622, Stop: 31678, Start Num: 44
Candidate Starts for Maih_39:
(21, 32727), (30, 32679), (33, 32667), (34, 32664), (Start: 44 @32622 has 9 MA's), (48, 32613), (92, 32436), (101, 32364), (108, 32340), (145, 32193), (149, 32172), (158, 32127), (168, 32073), (189, 31989), (190, 31980), (193, 31953), (208, 31878), (220, 31848), (227, 31794),

Gene: Michkear_46 Start: 34363, Stop: 35316, Start Num: 42
Candidate Starts for Michkear_46:
(25, 34297), (Start: 42 @34363 has 2 MA's), (64, 34456), (72, 34492), (85, 34543), (97, 34588), (102, 34627), (129, 34714), (139, 34765), (151, 34816),

Gene: Michkear_52 Start: 38917, Stop: 37712, Start Num: 42
Candidate Starts for Michkear_52:
(Start: 37 @38926 has 1 MA's), (Start: 42 @38917 has 2 MA's), (Start: 43 @38911 has 2 MA's), (69, 38785), (70, 38782), (78, 38752), (92, 38710), (97, 38674), (102, 38635), (132, 38530), (133, 38515), (134, 38509), (192, 38203), (197, 38173), (204, 38125), (206, 38113), (207, 38110), (216, 38071), (235, 37969), (241, 37951), (256, 37843), (258, 37822), (261, 37816),

Gene: Min1_17 Start: 7577, Stop: 8530, Start Num: 39
Candidate Starts for Min1_17:
(2, 7247), (39, 7577), (66, 7682), (72, 7709), (97, 7811), (102, 7850), (124, 7916), (147, 8015), (150, 8036), (155, 8060), (163, 8096), (168, 8126), (171, 8147), (183, 8213), (187, 8225), (189, 8231), (191, 8243), (192, 8255), (194, 8273), (240, 8483), (243, 8498), (248, 8519),

Gene: Music_4 Start: 2201, Stop: 3448, Start Num: 41
Candidate Starts for Music_4:
(5, 1982), (11, 2030), (Start: 41 @2201 has 5 MA's), (64, 2297), (72, 2333), (82, 2384), (88, 2423), (92, 2441), (97, 2477), (102, 2516), (125, 2588), (142, 2663), (145, 2672), (151, 2705), (155, 2726), (158, 2738), (171, 2813), (253, 3212), (259, 3257), (272, 3332),

Gene: Omnicron_74 Start: 50751, Stop: 51713, Start Num: 36
Candidate Starts for Omnicron_74:
(Start: 36 @50751 has 2 MA's), (54, 50829), (61, 50859), (87, 50958), (89, 50973), (97, 51018), (98, 51027), (117, 51090), (125, 51123), (133, 51171), (140, 51198), (141, 51201), (143, 51204), (154, 51255), (162, 51288), (179, 51366), (180, 51372), (184, 51408), (198, 51465), (213, 51543), (228, 51618), (237, 51654), (249, 51696),

Gene: Pine5_74 Start: 54534, Stop: 55667, Start Num: 44
Candidate Starts for Pine5_74:

(35, 54501), (Start: 44 @54534 has 9 MA's), (49, 54546), (Start: 50 @54552 has 1 MA's), (53, 54585), (55, 54591), (123, 54882), (136, 54954), (142, 54966), (146, 54981), (156, 55032), (157, 55035), (168, 55095), (187, 55194), (189, 55200), (192, 55224),

Gene: Pitbull_54 Start: 30102, Stop: 31100, Start Num: 37
Candidate Starts for Pitbull_54:
(Start: 37 @30102 has 1 MA's), (Start: 44 @30120 has 9 MA's), (Start: 46 @30123 has 8 MA's), (Start: 50 @30138 has 1 MA's), (63, 30213), (94, 30333), (138, 30546), (165, 30678), (178, 30732), (212, 30933), (214, 30942), (232, 31035), (234, 31041), (237, 31047),

Gene: Pixelle_48 Start: 35564, Stop: 36538, Start Num: 46
Candidate Starts for Pixelle_48:
(16, 35441), (Start: 46 @35564 has 8 MA's), (64, 35648), (72, 35684), (97, 35783), (129, 35909), (142, 35969), (151, 36011), (189, 36206), (205, 36317),

Gene: Pumpkins_46 Start: 33990, Stop: 34940, Start Num: 46
Candidate Starts for Pumpkins_46:
(Start: 46 @33990 has 8 MA's), (64, 34074), (72, 34110), (130, 34338), (145, 34404), (151, 34437), (168, 34524), (222, 34794),

Gene: RainyPolka_41 Start: 32578, Stop: 31634, Start Num: 44
Candidate Starts for RainyPolka_41:
(30, 32635), (34, 32620), (Start: 44 @32578 has 9 MA's), (48, 32569), (108, 32296), (109, 32293), (115, 32278), (118, 32269), (137, 32170), (145, 32149), (158, 32083), (167, 32035), (168, 32029), (170, 32011), (181, 31975), (182, 31963), (187, 31951), (189, 31945), (190, 31936), (193, 31909), (213, 31822), (220, 31804), (227, 31750),

Gene: Rando14_73 Start: 49427, Stop: 50389, Start Num: 36
Candidate Starts for Rando14_73:
(Start: 36 @49427 has 2 MA's), (61, 49535), (87, 49634), (89, 49649), (97, 49694), (98, 49703), (117, 49766), (125, 49799), (133, 49847), (140, 49874), (141, 49877), (143, 49880), (154, 49931), (162, 49964), (164, 49988), (176, 50030), (180, 50048), (184, 50084), (198, 50141), (213, 50219), (228, 50294), (237, 50330),

Gene: Salete_40 Start: 32623, Stop: 31679, Start Num: 44
Candidate Starts for Salete_40:
(21, 32728), (30, 32680), (33, 32668), (34, 32665), (Start: 44 @32623 has 9 MA's), (48, 32614), (92, 32437), (101, 32365), (108, 32341), (145, 32194), (149, 32173), (158, 32128), (168, 32074), (189, 31990), (190, 31981), (193, 31954), (208, 31879), (220, 31849), (227, 31795),

Gene: Schaffner_47 Start: 33959, Stop: 34921, Start Num: 46
Candidate Starts for Schaffner_47:
(Start: 46 @33959 has 8 MA's), (64, 34043), (72, 34079), (84, 34127), (113, 34250), (145, 34385), (163, 34475),

Gene: Seldom_1 Start: 1247, Stop: 138, Start Num: 46
Candidate Starts for Seldom_1:
(Start: 46 @1247 has 8 MA's), (56, 1193), (64, 1163), (72, 1127), (97, 1025), (102, 986), (119, 941), (129, 899), (153, 788), (183, 620), (187, 608), (189, 602), (224, 425), (231, 398), (245, 341), (257, 275), (271, 203), (276, 158), (278, 155),

Gene: Soondubu_44 Start: 36476, Stop: 37435, Start Num: 50
Candidate Starts for Soondubu_44:

(Start: 50 @36476 has 1 MA's), (51, 36488), (59, 36536), (61, 36542), (76, 36605), (82, 36641), (90, 36674), (93, 36683), (96, 36695), (120, 36806), (123, 36818), (152, 36956), (172, 37055), (201, 37214), (211, 37250), (218, 37271),

Gene: SunnyJune_3 Start: 2021, Stop: 3454, Start Num: 4
Candidate Starts for SunnyJune_3:
(Start: 4 @2021 has 1 MA's), (6, 2042), (14, 2108), (19, 2141), (Start: 41 @2261 has 5 MA's), (60, 2342), (64, 2357), (72, 2393), (78, 2414), (92, 2453), (97, 2489), (130, 2618), (142, 2675), (145, 2684), (151, 2717), (155, 2738), (173, 2831), (189, 2909), (269, 3308), (274, 3356), (280, 3410), (282, 3440),

Gene: TP1604_40 Start: 32623, Stop: 31679, Start Num: 44
Candidate Starts for TP1604_40:
(21, 32728), (30, 32680), (33, 32668), (34, 32665), (Start: 44 @32623 has 9 MA's), (48, 32614), (92, 32437), (101, 32365), (108, 32341), (145, 32194), (149, 32173), (158, 32128), (168, 32074), (189, 31990), (190, 31981), (193, 31954), (220, 31849), (227, 31795),

Gene: ThursdayNight_51 Start: 35166, Stop: 36119, Start Num: 42
Candidate Starts for ThursdayNight_51:
(Start: 42 @35166 has 2 MA's), (64, 35259), (67, 35271), (72, 35295), (97, 35391), (189, 35811), (222, 35973),

Gene: Tian_46 Start: 35220, Stop: 36194, Start Num: 46
Candidate Starts for Tian_46:
(16, 35097), (Start: 46 @35220 has 8 MA's), (64, 35304), (72, 35340), (97, 35439), (129, 35565), (142, 35625), (151, 35667), (189, 35862), (205, 35973),

Gene: TurkishDelight_123 Start: 90090, Stop: 91361, Start Num: 26
Candidate Starts for TurkishDelight_123:
(20, 90051), (23, 90072), (Start: 26 @90090 has 2 MA's), (38, 90150), (49, 90180), (65, 90267), (68, 90282), (95, 90378), (98, 90417), (100, 90426), (112, 90471), (135, 90591), (168, 90747), (171, 90771), (174, 90780), (185, 90846), (197, 90912), (244, 91155), (255, 91230), (264, 91287), (265, 91290), (266, 91293), (270, 91353),

Gene: Vibaki_4 Start: 2231, Stop: 3478, Start Num: 41
Candidate Starts for Vibaki_4:
(5, 2012), (11, 2060), (Start: 41 @2231 has 5 MA's), (64, 2327), (72, 2363), (82, 2414), (88, 2453), (92, 2471), (97, 2507), (102, 2546), (125, 2618), (145, 2702), (151, 2735), (155, 2756), (158, 2768), (171, 2843), (253, 3242), (259, 3287), (272, 3362),

Gene: Vitus_4 Start: 2116, Stop: 3375, Start Num: 41
Candidate Starts for Vitus_4:
(Start: 41 @2116 has 5 MA's), (64, 2212), (72, 2248), (79, 2281), (92, 2356), (97, 2392), (123, 2494), (151, 2620), (183, 2794), (195, 2851), (221, 2953), (236, 3037), (240, 3049), (256, 3145), (262, 3178), (271, 3253), (281, 3352),

Gene: YDN12_41 Start: 32025, Stop: 31081, Start Num: 44
Candidate Starts for YDN12_41:
(28, 32088), (Start: 44 @32025 has 9 MA's), (48, 32016), (78, 31878), (102, 31764), (108, 31743), (121, 31704), (145, 31596), (149, 31575), (158, 31530), (168, 31476), (187, 31398), (189, 31392), (193, 31356), (208, 31281), (213, 31269), (218, 31254), (220, 31251),

Gene: Yang_47 Start: 33687, Stop: 34649, Start Num: 46
Candidate Starts for Yang_47:

(Start: 46 @33687 has 8 MA's), (64, 33771), (72, 33807), (84, 33855), (132, 34056), (136, 34089), (151, 34146), (163, 34203),

Gene: Zodiariah_32 Start: 30136, Stop: 29276, Start Num: 86
Candidate Starts for Zodiariah_32:
(31, 30400), (32, 30394), (45, 30343), (49, 30334), (58, 30280), (83, 30160), (Start: 86 @30136 has 1 MA's), (103, 30031), (110, 30007), (112, 30001), (116, 29992), (122, 29968), (127, 29935), (144, 29866), (156, 29797), (177, 29686), (196, 29578), (219, 29467), (226, 29416), (246, 29329), (251, 29299), (252, 29296),

Gene: pZL12_28c Start: 19291, Stop: 18185, Start Num: 40
Candidate Starts for pZL12_28c:
(40, 19291), (60, 19198), (62, 19192), (73, 19141), (94, 19078), (126, 18925), (131, 18910), (139, 18871), (142, 18862), (145, 18853), (155, 18799), (187, 18640), (189, 18634),

Gene: pZL12_27c Start: 18188, Stop: 17142, Start Num: 47
Candidate Starts for pZL12_27c:
(47, 18188), (52, 18149), (59, 18122), (80, 18032), (121, 17873), (187, 17546), (189, 17540), (192, 17516), (267, 17180), (268, 17174),