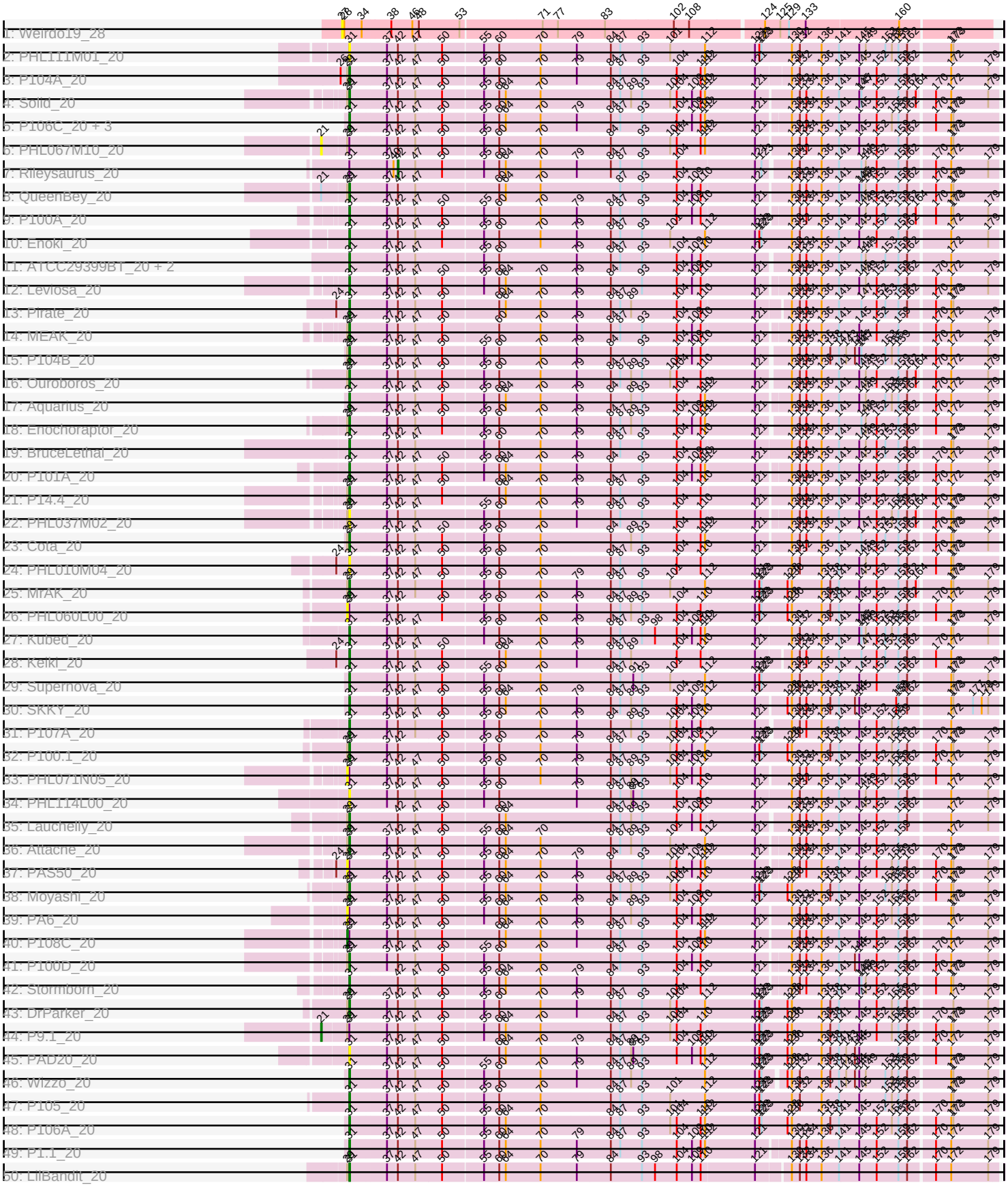
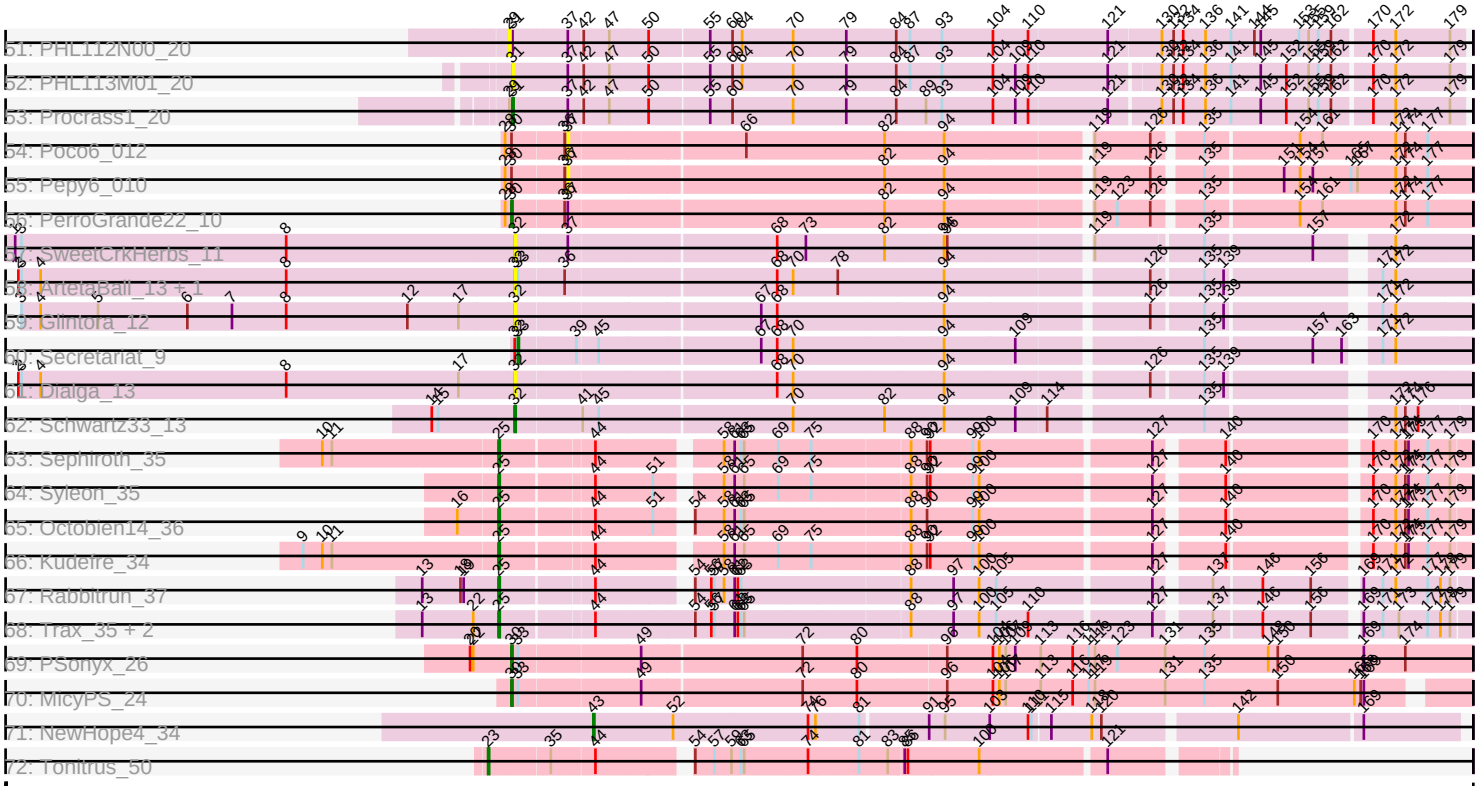
Pham 347530



Pham 347530


51: PHL112N00_20
52: PHL113M01_20
53: Procrass1_20
54: Poco6_012
55: Pepy6_010
56: PerroGrande22_10
57: SweetCrkHerbs_11
58: Antela8all_13 + 1
59: Glintora_12
60: Secretariat_9
61: Dialga_13
62: Schwartz33_13
63: Sephiroth_35
64: Syleon_35
65: Octobien14_36
66: Kudeire_34
67: Rabbitrun_37
68: Trax_35 + 2
69: PSonyx_26
70: MicyPS_24
71: NewHope4_34
72: Tonitrus_50

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 347530 Report

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

Pham number 347530 has 80 members, 20 are drafts.

Phages represented in each track:
- Track 1 : Weirdo19_28
- Track 2 : PHL111M01_20
- Track 3 : P104A_20
- Track 4 : Solid_20
- Track 5 : P106C_20, P106I_20, P106L_20, P106M_20
- Track 6 : PHL067M10_20
- Track 7 : Rileysaurus_20
- Track 8 : QueenBey_20
- Track 9 : P100A_20
- Track 10 : Enoki_20
- Track 11 : ATCC29399BT_20, ATCC29399BC_20, P107C_20
- Track 12 : Leviosa_20
- Track 13 : Pirate_20
- Track 14 : MEAK_20
- Track 15 : P104B_20
- Track 16 : Ouroboros_20
- Track 17 : Aquarius_20
- Track 18 : Enochoraptor_20
- Track 19 : BruceLethal_20
- Track 20 : P101A_20
- Track 21 : P14.4_20
- Track 22 : PHL037M02_20
- Track 23 : Cota_20
- Track 24 : PHL010M04_20
- Track 25 : MrAK_20
- Track 26 : PHL060L00_20
- Track 27 : Kubed_20
- Track 28 : Keiki_20
- Track 29 : Supernova_20
- Track 30 : SKKY_20
- Track 31 : P107A_20
- Track 32 : P100.1_20
- Track 33 : PHL071N05_20
- Track 34 : PHL114L00_20
- Track 35 : Lauchelly_20
- Track 36 : Attacne_20
- Track 37 : PAS50_20

• Track 38 : Moyashi_20
• Track 39 : PA6_20
• Track 40 : P108C_20
• Track 41 : P100D_20
• Track 42 : Stormborn_20
• Track 43 : DrParker_20
• Track 44 : P9.1_20
• Track 45 : PAD20_20
• Track 46 : Wizzo_20
• Track 47 : P105_20
• Track 48 : P106A_20
• Track 49 : P1.1_20
• Track 50 : LilBandit_20
• Track 51 : PHL112N00_20
• Track 52 : PHL113M01_20
• Track 53 : Procrass1_20
• Track 54 : Poco6_012
• Track 55 : Pepy6_010
• Track 56 : PerroGrande22_10
• Track 57 : SweetCrkHerbs_11
• Track 58 : ArtetaBall_13, CWormy_13
• Track 59 : Glintora_12
• Track 60 : Secretariat_9
• Track 61 : Dialga_13
• Track 62 : Schwartz33_13
• Track 63 : Sephiroth_35
• Track 64 : Syleon_35
• Track 65 : Octobien14_36
• Track 66 : Kudefre_34
• Track 67 : Rabbitrun_37
• Track 68 : Trax_35, Neville_35, LilJank_35
• Track 69 : PSonyx_26
• Track 70 : MicyPS_24
• Track 71 : NewHope4_34
• Track 72 : Tonitrus_50

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

The start number called the most often in the published annotations is 31, it was called in 42 of the 60 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• ATCC29399BC_20, ATCC29399BT_20, Aquarius_20, Attacne_20, BruceLethal_20, Cota_20, DrParker_20, Enochoraptor_20, Enoki_20, Keiki_20, Kubed_20, Lauchelly_20, Leviosa_20, LilBandit_20, MEAK_20, Moyashi_20, MrAK_20, Ouroboros_20, P1.1_20, P100.1_20, P100A_20, P100D_20, P101A_20, P104A_20, P104B_20, P105_20, P106A_20, P106C_20, P106I_20, P106L_20, P106M_20, P107A_20, P107C_20, P14.4_20, PAD20_20, PHL010M04_20, PHL037M02_20, PHL111M01_20, PHL113M01_20, PHL114L00_20, Pirate_20, Procrass1_20, QueenBey_20, SKKY_20, Solid_20, Stormborn_20, Supernova_20, Wizzo_20,

Genes that have the "Most Annotated" start but do not call it:
• P108C_20, P9.1_20, PA6_20, PAS50_20, PHL060L00_20, PHL067M10_20, PHL071N05_20, PHL112N00_20, Rileysaurus_20,

Genes that do not have the "Most Annotated" start:
• ArtetaBall_13, CWormy_13, Dialga_13, Glintora_12, Kudefre_34, LilJank_35, MicyPS_24, Neville_35, NewHope4_34, Octobien14_36, PSonyx_26, Pepy6_010, PerroGrande22_10, Poco6_012, Rabbitrun_37, Schwartz33_13, Secretariat_9, Sephiroth_35, SweetCrkHerbs_11, Syleon_35, Tonitrus_50, Trax_35, Weirdo19_28,

Summary by start number:

Start 21:
• Found in 3 of 80 (3.8%) of genes in pham
• Manual Annotations of this start: 1 of 60
• Called 66.7% of time when present
• Phage (with cluster) where this start called: P9.1_20 (BU), PHL067M10_20 (BU),

Start 23:
• Found in 1 of 80 (1.2%) of genes in pham
• Manual Annotations of this start: 1 of 60
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Tonitrus_50 (singleton),

Start 25:
• Found in 8 of 80 (10.0%) of genes in pham
• Manual Annotations of this start: 8 of 60
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Kudefre_34 (DU1), LilJank_35 (DU2), Neville_35 (DU2), Octobien14_36 (DU1), Rabbitrun_37 (DU2), Sephiroth_35 (DU1), Syleon_35 (DU1), Trax_35 (DU2),

Start 27:
• Found in 1 of 80 (1.2%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Weirdo19_28 (AH),

Start 29:
• Found in 27 of 80 (33.8%) of genes in pham
• Manual Annotations of this start: 1 of 60
• Called 22.2% of time when present
• Phage (with cluster) where this start called: P108C_20 (BU), PA6_20 (BU), PAS50_20 (BU), PHL060L00_20 (BU), PHL071N05_20 (BU), PHL112N00_20 (BU),

Start 30:
• Found in 5 of 80 (6.2%) of genes in pham
• Manual Annotations of this start: 3 of 60
• Called 60.0% of time when present
• Phage (with cluster) where this start called: MicyPS_24 (EQ), PSonyx_26 (EQ), PerroGrande22_10 (CC),

Start 31:
• Found in 57 of 80 (71.2%) of genes in pham
• Manual Annotations of this start: 42 of 60
• Called 84.2% of time when present
• Phage (with cluster) where this start called: ATCC29399BC_20 (BU), ATCC29399BT_20 (BU), Aquarius_20 (BU), Attacne_20 (BU), BruceLethal_20 (BU), Cota_20 (BU), DrParker_20 (BU), Enochoraptor_20 (BU), Enoki_20 (BU), Keiki_20 (BU), Kubed_20 (BU), Lauchelly_20 (BU), Leviosa_20 (BU), LilBandit_20 (BU), MEAK_20 (BU), Moyashi_20 (BU), MrAK_20 (BU), Ouroboros_20 (BU), P1.1_20 (BU), P100.1_20 (BU), P100A_20 (BU), P100D_20 (BU), P101A_20 (BU), P104A_20 (BU), P104B_20 (BU), P105_20 (BU), P106A_20 (BU), P106C_20 (BU), P106I_20 (BU), P106L_20 (BU), P106M_20 (BU), P107A_20 (BU), P107C_20 (BU), P14.4_20 (BU), PAD20_20 (BU), PHL010M04_20 (BU), PHL037M02_20 (BU), PHL111M01_20 (BU), PHL113M01_20 (BU), PHL114L00_20 (BU), Pirate_20 (BU), Procrass1_20 (BU), QueenBey_20 (BU), SKKY_20 (BU), Solid_20 (BU), Stormborn_20 (BU), Supernova_20 (BU), Wizzo_20 (BU),

Start 32:
• Found in 7 of 80 (8.8%) of genes in pham
• Manual Annotations of this start: 1 of 60
• Called 85.7% of time when present
• Phage (with cluster) where this start called: ArtetaBall_13 (DJ), CWormy_13 (DJ), Dialga_13 (DJ), Glintora_12 (DJ), Schwartz33_13 (DJ), SweetCrkHerbs_11 (DJ),

Start 33:
• Found in 5 of 80 (6.2%) of genes in pham
• Manual Annotations of this start: 1 of 60
• Called 20.0% of time when present
• Phage (with cluster) where this start called: Secretariat_9 (DJ),

Start 37:
• Found in 59 of 80 (73.8%) of genes in pham
• No Manual Annotations of this start.
• Called 3.4% of time when present
• Phage (with cluster) where this start called: Pepy6_010 (CC), Poco6_012 (CC),

Start 42:
• Found in 57 of 80 (71.2%) of genes in pham
• Manual Annotations of this start: 1 of 60
• Called 1.8% of time when present
• Phage (with cluster) where this start called: Rileysaurus_20 (BU),

Start 43:
• Found in 1 of 80 (1.2%) of genes in pham
• Manual Annotations of this start: 1 of 60
• Called 100.0% of time when present
• Phage (with cluster) where this start called: NewHope4_34 (F1),

Summary by clusters:

There are 9 clusters represented in this pham: F1, singleton, DJ, CC, AH, BU, DU1, DU2, EQ,

Info for manual annotations of cluster BU:
•Start number 21 was manually annotated 1 time for cluster BU.
•Start number 29 was manually annotated 1 time for cluster BU.
•Start number 31 was manually annotated 42 times for cluster BU.
•Start number 42 was manually annotated 1 time for cluster BU.

Info for manual annotations of cluster CC:
•Start number 30 was manually annotated 1 time for cluster CC.

Info for manual annotations of cluster DJ:
•Start number 32 was manually annotated 1 time for cluster DJ.
•Start number 33 was manually annotated 1 time for cluster DJ.

Info for manual annotations of cluster DU1:
•Start number 25 was manually annotated 4 times for cluster DU1.

Info for manual annotations of cluster DU2:
•Start number 25 was manually annotated 4 times for cluster DU2.

Info for manual annotations of cluster EQ:
•Start number 30 was manually annotated 2 times for cluster EQ.

Info for manual annotations of cluster F1:
•Start number 43 was manually annotated 1 time for cluster F1.

Gene Information:

Gene: ATCC29399BC_20 Start: 15398, Stop: 16252, Start Num: 31
Candidate Starts for ATCC29399BC_20:
(Start: 31 @15398 has 42 MA's), (37, 15446), (Start: 42 @15458 has 1 MA's), (47, 15482), (55, 15572), (60, 15593), (79, 15698), (84, 15743), (87, 15755), (93, 15785), (104, 15833), (109, 15854), (110, 15866), (121, 15938), (130, 15980), (132, 15989), (134, 15998), (136, 16019), (141, 16043), (147, 16073), (149, 16079), (153, 16106), (159, 16124), (162, 16136), (172, 16190),

Gene: ATCC29399BT_20 Start: 15398, Stop: 16252, Start Num: 31
Candidate Starts for ATCC29399BT_20:
(Start: 31 @15398 has 42 MA's), (37, 15446), (Start: 42 @15458 has 1 MA's), (47, 15482), (55, 15572), (60, 15593), (79, 15698), (84, 15743), (87, 15755), (93, 15785), (104, 15833), (109, 15854), (110, 15866), (121, 15938), (130, 15980), (132, 15989), (134, 15998), (136, 16019), (141, 16043), (147, 16073), (149, 16079), (153, 16106), (159, 16124), (162, 16136), (172, 16190),

Gene: Aquarius_20 Start: 15361, Stop: 16215, Start Num: 31
Candidate Starts for Aquarius_20:
(Start: 31 @15361 has 42 MA's), (37, 15409), (Start: 42 @15421 has 1 MA's), (47, 15445), (50, 15481), (55, 15535), (60, 15556), (64, 15565), (70, 15613), (79, 15661), (84, 15706), (89, 15733), (93, 15748), (104, 15796), (110, 15829), (112, 15835), (121, 15901), (130, 15943), (132, 15952), (134, 15961), (136, 15982), (141, 16006), (145, 16033), (149, 16042), (153, 16069), (155, 16078), (159, 16087), (162, 16099), (170, 16132), (172, 16153), (179, 16204),

Gene: ArtetaBall_13 Start: 5833, Stop: 6657, Start Num: 32

Candidate Starts for ArtetaBall_13:
(2, 5368), (3, 5371), (4, 5389), (8, 5620), (Start: 32 @5833 has 1 MA's), (Start: 33 @5836 has 1 MA's), (36, 5875), (68, 6061), (70, 6076), (78, 6118), (94, 6214), (126, 6391), (135, 6436), (139, 6454), (171, 6577), (172, 6589),

Gene: Attacne_20 Start: 15389, Stop: 16243, Start Num: 31
Candidate Starts for Attacne_20:
(Start: 29 @15386 has 1 MA's), (Start: 31 @15389 has 42 MA's), (37, 15437), (Start: 42 @15449 has 1 MA's), (47, 15473), (50, 15509), (55, 15563), (60, 15584), (64, 15593), (70, 15641), (84, 15734), (87, 15746), (89, 15761), (93, 15776), (101, 15815), (112, 15863), (121, 15929), (130, 15971), (132, 15980), (134, 15989), (136, 16010), (141, 16034), (145, 16061), (152, 16085), (159, 16115), (172, 16181),

Gene: BruceLethal_20 Start: 15375, Stop: 16235, Start Num: 31
Candidate Starts for BruceLethal_20:
(Start: 31 @15375 has 42 MA's), (37, 15423), (Start: 42 @15435 has 1 MA's), (47, 15459), (55, 15549), (60, 15570), (70, 15627), (79, 15675), (84, 15720), (87, 15732), (93, 15762), (104, 15810), (110, 15843), (121, 15915), (130, 15963), (132, 15972), (134, 15981), (136, 16002), (141, 16026), (145, 16053), (149, 16062), (152, 16077), (153, 16089), (159, 16107), (162, 16119), (172, 16173), (173, 16176), (179, 16224),

Gene: CWormy_13 Start: 5833, Stop: 6657, Start Num: 32
Candidate Starts for CWormy_13:
(2, 5368), (3, 5371), (4, 5389), (8, 5620), (Start: 32 @5833 has 1 MA's), (Start: 33 @5836 has 1 MA's), (36, 5875), (68, 6061), (70, 6076), (78, 6118), (94, 6214), (126, 6391), (135, 6436), (139, 6454), (171, 6577), (172, 6589),

Gene: Cota_20 Start: 15416, Stop: 16273, Start Num: 31
Candidate Starts for Cota_20:
(Start: 29 @15413 has 1 MA's), (Start: 31 @15416 has 42 MA's), (37, 15464), (Start: 42 @15476 has 1 MA's), (47, 15500), (50, 15536), (55, 15590), (60, 15611), (70, 15668), (84, 15761), (89, 15788), (93, 15803), (104, 15851), (110, 15884), (112, 15890), (121, 15956), (130, 16001), (132, 16010), (134, 16019), (136, 16040), (141, 16064), (147, 16094), (152, 16115), (153, 16127), (159, 16145), (162, 16157), (170, 16190), (172, 16211), (173, 16214), (179, 16262),

Gene: Dialga_13 Start: 5833, Stop: 6657, Start Num: 32
Candidate Starts for Dialga_13:
(2, 5368), (3, 5371), (4, 5389), (8, 5620), (17, 5782), (Start: 32 @5833 has 1 MA's), (68, 6061), (70, 6076), (94, 6214), (126, 6391), (135, 6436), (139, 6454),

Gene: DrParker_20 Start: 15456, Stop: 16319, Start Num: 31
Candidate Starts for DrParker_20:
(Start: 29 @15453 has 1 MA's), (Start: 31 @15456 has 42 MA's), (37, 15504), (Start: 42 @15516 has 1 MA's), (47, 15540), (50, 15576), (55, 15630), (60, 15651), (70, 15708), (79, 15756), (84, 15801), (87, 15813), (93, 15843), (101, 15882), (104, 15891), (112, 15930), (121, 15996), (122, 16002), (123, 16005), (128, 16041), (130, 16047), (136, 16086), (138, 16098), (141, 16110), (145, 16137), (152, 16161), (155, 16182), (159, 16191), (162, 16203), (173, 16260), (179, 16308),

Gene: Enochoraptor_20 Start: 15392, Stop: 16246, Start Num: 31
Candidate Starts for Enochoraptor_20:
(Start: 29 @15389 has 1 MA's), (Start: 31 @15392 has 42 MA's), (37, 15440), (Start: 42 @15452 has 1 MA's), (47, 15476), (50, 15512), (55, 15566), (60, 15587), (70, 15644), (79, 15692), (84, 15737), (87, 15749), (89, 15764), (93, 15779), (104, 15827), (109, 15848), (110, 15860), (112, 15866), (121,

15932), (130, 15974), (132, 15983), (134, 15992), (136, 16013), (141, 16037), (147, 16067), (149, 16073), (152, 16088), (159, 16118), (162, 16130), (170, 16163), (172, 16184), (179, 16235),

Gene: Enoki_20 Start: 15383, Stop: 16246, Start Num: 31
Candidate Starts for Enoki_20:
(Start: 31 @15383 has 42 MA's), (37, 15431), (Start: 42 @15443 has 1 MA's), (47, 15467), (50, 15503), (55, 15557), (60, 15578), (70, 15635), (79, 15683), (84, 15728), (87, 15740), (93, 15770), (101, 15809), (112, 15857), (121, 15923), (122, 15929), (123, 15932), (130, 15974), (132, 15983), (136, 16013), (141, 16037), (145, 16064), (152, 16088), (159, 16118), (162, 16130), (172, 16184), (179, 16235),

Gene: Glintora_12 Start: 7105, Stop: 7929, Start Num: 32
Candidate Starts for Glintora_12:
(3, 6643), (4, 6661), (5, 6715), (6, 6799), (7, 6841), (8, 6892), (12, 7006), (17, 7054), (Start: 32 @7105 has 1 MA's), (67, 7318), (68, 7333), (94, 7486), (126, 7663), (135, 7708), (139, 7726), (171, 7849), (172, 7861),

Gene: Keiki_20 Start: 15344, Stop: 16198, Start Num: 31
Candidate Starts for Keiki_20:
(24, 15329), (Start: 31 @15344 has 42 MA's), (37, 15392), (Start: 42 @15404 has 1 MA's), (47, 15428), (50, 15464), (60, 15539), (64, 15548), (70, 15596), (79, 15644), (84, 15689), (87, 15701), (89, 15716), (104, 15779), (110, 15812), (121, 15884), (130, 15926), (132, 15935), (134, 15944), (136, 15965), (141, 15989), (147, 16019), (152, 16040), (153, 16052), (159, 16070), (162, 16082), (170, 16115), (172, 16136),

Gene: Kubed_20 Start: 15391, Stop: 16251, Start Num: 31
Candidate Starts for Kubed_20:
(Start: 31 @15391 has 42 MA's), (37, 15439), (Start: 42 @15451 has 1 MA's), (47, 15475), (55, 15565), (60, 15586), (70, 15643), (79, 15691), (84, 15736), (87, 15748), (93, 15778), (98, 15796), (104, 15826), (109, 15847), (110, 15859), (112, 15865), (121, 15931), (130, 15979), (132, 15988), (136, 16018), (141, 16042), (145, 16069), (147, 16072), (149, 16078), (152, 16093), (153, 16105), (155, 16114), (159, 16123), (162, 16135), (172, 16189), (173, 16192), (179, 16240),

Gene: Kudefre_34 Start: 28912, Stop: 29727, Start Num: 25
Candidate Starts for Kudefre_34:
(9, 28732), (10, 28750), (11, 28759), (Start: 25 @28912 has 8 MA's), (44, 28987), (58, 29086), (61, 29095), (65, 29104), (69, 29134), (75, 29164), (88, 29248), (90, 29263), (92, 29266), (99, 29305), (100, 29311), (127, 29464), (140, 29518), (170, 29638), (172, 29659), (174, 29668), (175, 29671), (177, 29689), (179, 29710),

Gene: Lauchelly_20 Start: 15418, Stop: 16272, Start Num: 31
Candidate Starts for Lauchelly_20:
(Start: 29 @15415 has 1 MA's), (Start: 31 @15418 has 42 MA's), (Start: 42 @15478 has 1 MA's), (47, 15502), (50, 15538), (60, 15613), (64, 15622), (84, 15763), (87, 15775), (89, 15790), (93, 15805), (104, 15853), (109, 15874), (110, 15886), (121, 15958), (130, 16000), (132, 16009), (134, 16018), (136, 16039), (141, 16063), (145, 16090), (152, 16114), (159, 16144), (162, 16156), (172, 16210), (179, 16261),

Gene: Leviosa_20 Start: 15424, Stop: 16278, Start Num: 31
Candidate Starts for Leviosa_20:
(Start: 31 @15424 has 42 MA's), (37, 15472), (Start: 42 @15484 has 1 MA's), (47, 15508), (50, 15544), (55, 15598), (60, 15619), (64, 15628), (70, 15676), (79, 15724), (84, 15769), (93, 15811), (104, 15859), (109, 15880), (110, 15892), (121, 15964), (130, 16006), (132, 16015), (134, 16024), (136, 16045), (141, 16069), (145, 16096), (149, 16105), (152, 16120), (159, 16150), (162, 16162), (170, 16195),

(172, 16216), (179, 16267),

Gene: LilBandit_20 Start: 15190, Stop: 16044, Start Num: 31
Candidate Starts for LilBandit_20:
(Start: 29 @15187 has 1 MA's), (Start: 31 @15190 has 42 MA's), (37, 15238), (Start: 42 @15250 has 1 MA's), (47, 15274), (50, 15310), (55, 15364), (60, 15385), (64, 15394), (70, 15442), (79, 15490), (84, 15535), (93, 15577), (98, 15595), (104, 15625), (109, 15646), (110, 15658), (121, 15730), (130, 15772), (132, 15781), (134, 15790), (136, 15811), (141, 15835), (145, 15862), (152, 15886), (159, 15916), (162, 15928), (170, 15961), (172, 15982), (179, 16033),

Gene: LilJank_35 Start: 30561, Stop: 31391, Start Num: 25
Candidate Starts for LilJank_35:
(13, 30489), (22, 30537), (Start: 25 @30561 has 8 MA's), (44, 30636), (54, 30726), (56, 30741), (57, 30744), (61, 30762), (62, 30765), (63, 30768), (65, 30771), (88, 30915), (97, 30954), (100, 30978), (105, 30993), (110, 31023), (127, 31131), (137, 31173), (146, 31215), (156, 31260), (169, 31296), (171, 31314), (173, 31329), (177, 31356), (178, 31368), (179, 31377),

Gene: MEAK_20 Start: 15365, Stop: 16219, Start Num: 31
Candidate Starts for MEAK_20:
(Start: 29 @15362 has 1 MA's), (Start: 31 @15365 has 42 MA's), (37, 15413), (Start: 42 @15425 has 1 MA's), (47, 15449), (50, 15485), (60, 15560), (70, 15617), (79, 15665), (84, 15710), (87, 15722), (93, 15752), (104, 15800), (109, 15821), (110, 15833), (121, 15905), (130, 15947), (132, 15956), (134, 15965), (136, 15986), (141, 16010), (145, 16037), (152, 16061), (159, 16091), (170, 16136), (172, 16157), (179, 16208),

Gene: MicyPS_24 Start: 26783, Stop: 27637, Start Num: 30
Candidate Starts for MicyPS_24:
(Start: 30 @26783 has 3 MA's), (Start: 33 @26789 has 1 MA's), (49, 26894), (72, 27038), (80, 27089), (96, 27167), (104, 27209), (106, 27215), (107, 27221), (113, 27254), (116, 27284), (117, 27299), (119, 27305), (131, 27371), (135, 27407), (150, 27476), (166, 27548), (168, 27554), (169, 27557),

Gene: Moyashi_20 Start: 15466, Stop: 16329, Start Num: 31
Candidate Starts for Moyashi_20:
(Start: 29 @15463 has 1 MA's), (Start: 31 @15466 has 42 MA's), (37, 15514), (Start: 42 @15526 has 1 MA's), (47, 15550), (50, 15586), (55, 15640), (60, 15661), (64, 15670), (70, 15718), (79, 15766), (84, 15811), (87, 15823), (89, 15838), (93, 15853), (101, 15892), (104, 15901), (110, 15934), (121, 16006), (122, 16012), (123, 16015), (128, 16051), (130, 16057), (136, 16096), (138, 16108), (141, 16120), (145, 16147), (153, 16183), (155, 16192), (159, 16201), (162, 16213), (170, 16246), (172, 16267), (173, 16270), (179, 16318),

Gene: MrAK_20 Start: 15477, Stop: 16340, Start Num: 31
Candidate Starts for MrAK_20:
(Start: 29 @15474 has 1 MA's), (Start: 31 @15477 has 42 MA's), (37, 15525), (Start: 42 @15537 has 1 MA's), (47, 15561), (50, 15597), (55, 15651), (60, 15672), (70, 15729), (79, 15777), (84, 15822), (87, 15834), (93, 15864), (101, 15903), (112, 15951), (121, 16017), (122, 16023), (123, 16026), (128, 16062), (130, 16068), (136, 16107), (138, 16119), (141, 16131), (145, 16158), (152, 16182), (159, 16212), (162, 16224), (164, 16236), (172, 16278), (173, 16281), (179, 16329),

Gene: Neville_35 Start: 30201, Stop: 31031, Start Num: 25
Candidate Starts for Neville_35:
(13, 30129), (22, 30177), (Start: 25 @30201 has 8 MA's), (44, 30276), (54, 30366), (56, 30381), (57, 30384), (61, 30402), (62, 30405), (63, 30408), (65, 30411), (88, 30555), (97, 30594), (100, 30618), (105, 30633), (110, 30663), (127, 30771), (137, 30813), (146, 30855), (156, 30900), (169, 30936),

(171, 30954), (173, 30969), (177, 30996), (178, 31008), (179, 31017),

Gene: NewHope4_34 Start: 27564, Stop: 28340, Start Num: 43
Candidate Starts for NewHope4_34:
(Start: 43 @27564 has 1 MA's), (52, 27639), (74, 27765), (76, 27771), (81, 27810), (91, 27870), (95, 27885), (103, 27927), (110, 27963), (111, 27966), (115, 27981), (118, 28017), (120, 28026), (142, 28140), (169, 28251),

Gene: Octobien14_36 Start: 29599, Stop: 30414, Start Num: 25
Candidate Starts for Octobien14_36:
(16, 29563), (Start: 25 @29599 has 8 MA's), (44, 29674), (51, 29725), (54, 29746), (58, 29773), (61, 29782), (63, 29788), (65, 29791), (88, 29935), (90, 29950), (99, 29992), (100, 29998), (127, 30151), (140, 30205), (170, 30325), (172, 30346), (174, 30355), (175, 30358), (177, 30376), (179, 30397),

Gene: Ouroboros_20 Start: 15394, Stop: 16248, Start Num: 31
Candidate Starts for Ouroboros_20:
(Start: 29 @15391 has 1 MA's), (Start: 31 @15394 has 42 MA's), (37, 15442), (Start: 42 @15454 has 1 MA's), (47, 15478), (50, 15514), (55, 15568), (60, 15589), (70, 15646), (79, 15694), (84, 15739), (87, 15751), (89, 15766), (93, 15781), (101, 15820), (104, 15829), (110, 15862), (121, 15934), (130, 15976), (132, 15985), (134, 15994), (136, 16015), (141, 16039), (145, 16066), (149, 16075), (152, 16090), (159, 16120), (162, 16132), (164, 16144), (170, 16165), (172, 16186), (179, 16237),

Gene: P1.1_20 Start: 15418, Stop: 16272, Start Num: 31
Candidate Starts for P1.1_20:
(Start: 31 @15418 has 42 MA's), (37, 15466), (Start: 42 @15478 has 1 MA's), (47, 15502), (50, 15538), (55, 15592), (60, 15613), (64, 15622), (70, 15670), (79, 15718), (84, 15763), (87, 15775), (93, 15805), (104, 15853), (109, 15874), (110, 15886), (112, 15892), (121, 15958), (130, 16000), (132, 16009), (134, 16018), (136, 16039), (141, 16063), (145, 16090), (152, 16114), (159, 16144), (162, 16156), (170, 16189), (172, 16210), (179, 16261),

Gene: P100.1_20 Start: 15447, Stop: 16310, Start Num: 31
Candidate Starts for P100.1_20:
(Start: 29 @15444 has 1 MA's), (Start: 31 @15447 has 42 MA's), (37, 15495), (Start: 42 @15507 has 1 MA's), (50, 15567), (55, 15621), (60, 15642), (70, 15699), (79, 15747), (84, 15792), (87, 15804), (93, 15834), (101, 15873), (104, 15882), (109, 15903), (112, 15921), (121, 15987), (122, 15993), (123, 15996), (128, 16032), (130, 16038), (136, 16077), (138, 16089), (141, 16101), (145, 16128), (152, 16152), (155, 16173), (159, 16182), (162, 16194), (170, 16227), (172, 16248), (173, 16251), (179, 16299),

Gene: P100A_20 Start: 15417, Stop: 16271, Start Num: 31
Candidate Starts for P100A_20:
(Start: 31 @15417 has 42 MA's), (37, 15465), (Start: 42 @15477 has 1 MA's), (47, 15501), (50, 15537), (55, 15591), (60, 15612), (70, 15669), (79, 15717), (84, 15762), (87, 15774), (93, 15804), (104, 15852), (109, 15873), (110, 15885), (121, 15957), (130, 15999), (132, 16008), (134, 16017), (136, 16038), (141, 16062), (145, 16089), (149, 16098), (152, 16113), (153, 16125), (159, 16143), (162, 16155), (164, 16167), (170, 16188), (172, 16209), (173, 16212), (179, 16260),

Gene: P100D_20 Start: 15381, Stop: 16235, Start Num: 31
Candidate Starts for P100D_20:
(Start: 29 @15378 has 1 MA's), (Start: 31 @15381 has 42 MA's), (37, 15429), (Start: 42 @15441 has 1 MA's), (47, 15465), (50, 15501), (55, 15555), (60, 15576), (70, 15633), (84, 15726), (87, 15738), (93, 15768), (104, 15816), (109, 15837), (110, 15849), (121, 15921), (130, 15963), (132, 15972), (134, 15981), (136, 16002), (141, 16026), (144, 16047), (145, 16053), (152, 16077), (159, 16107), (162,

16119), (170, 16152), (172, 16173), (179, 16224),

Gene: P101A_20 Start: 15424, Stop: 16278, Start Num: 31
Candidate Starts for P101A_20:
(Start: 31 @15424 has 42 MA's), (37, 15472), (Start: 42 @15484 has 1 MA's), (47, 15508), (50, 15544), (55, 15598), (60, 15619), (64, 15628), (70, 15676), (79, 15724), (84, 15769), (93, 15811), (104, 15859), (109, 15880), (110, 15892), (112, 15898), (121, 15964), (130, 16006), (132, 16015), (134, 16024), (136, 16045), (141, 16069), (145, 16096), (152, 16120), (159, 16150), (162, 16162), (170, 16195), (172, 16216), (179, 16267),

Gene: P104A_20 Start: 15184, Stop: 16041, Start Num: 31
Candidate Starts for P104A_20:
(26, 15172), (Start: 29 @15181 has 1 MA's), (Start: 31 @15184 has 42 MA's), (37, 15232), (Start: 42 @15244 has 1 MA's), (47, 15268), (50, 15304), (55, 15358), (60, 15379), (70, 15436), (79, 15484), (84, 15529), (87, 15541), (93, 15571), (104, 15619), (110, 15652), (112, 15658), (121, 15724), (130, 15769), (132, 15778), (136, 15808), (141, 15832), (145, 15859), (152, 15883), (159, 15913), (162, 15925), (172, 15979), (179, 16030),

Gene: P104B_20 Start: 15402, Stop: 16256, Start Num: 31
Candidate Starts for P104B_20:
(Start: 29 @15399 has 1 MA's), (Start: 31 @15402 has 42 MA's), (37, 15450), (Start: 42 @15462 has 1 MA's), (47, 15486), (50, 15522), (55, 15576), (60, 15597), (70, 15654), (79, 15702), (84, 15747), (93, 15789), (104, 15837), (109, 15858), (110, 15870), (121, 15942), (130, 15984), (132, 15993), (134, 16002), (136, 16023), (138, 16035), (141, 16047), (143, 16056), (144, 16068), (145, 16074), (147, 16077), (153, 16110), (155, 16119), (159, 16128), (170, 16173), (172, 16194), (179, 16245),

Gene: P105_20 Start: 15351, Stop: 16214, Start Num: 31
Candidate Starts for P105_20:
(Start: 31 @15351 has 42 MA's), (37, 15399), (Start: 42 @15411 has 1 MA's), (47, 15435), (50, 15471), (55, 15525), (60, 15546), (70, 15603), (84, 15696), (87, 15708), (93, 15738), (101, 15777), (112, 15825), (121, 15891), (122, 15897), (123, 15900), (130, 15942), (132, 15951), (136, 15981), (141, 16005), (145, 16032), (153, 16068), (155, 16077), (159, 16086), (162, 16098), (172, 16152), (173, 16155), (179, 16203),

Gene: P106A_20 Start: 15464, Stop: 16327, Start Num: 31
Candidate Starts for P106A_20:
(Start: 31 @15464 has 42 MA's), (37, 15512), (Start: 42 @15524 has 1 MA's), (47, 15548), (50, 15584), (55, 15638), (60, 15659), (64, 15668), (70, 15716), (84, 15809), (87, 15821), (93, 15851), (101, 15890), (104, 15899), (110, 15932), (112, 15938), (121, 16004), (122, 16010), (123, 16013), (128, 16049), (130, 16055), (136, 16094), (138, 16106), (141, 16118), (145, 16145), (152, 16169), (155, 16190), (159, 16199), (162, 16211), (170, 16244), (172, 16265), (173, 16268), (179, 16316),

Gene: P106C_20 Start: 15424, Stop: 16278, Start Num: 31
Candidate Starts for P106C_20:
(Start: 31 @15424 has 42 MA's), (37, 15472), (Start: 42 @15484 has 1 MA's), (47, 15508), (50, 15544), (55, 15598), (60, 15619), (64, 15628), (70, 15676), (79, 15724), (84, 15769), (87, 15781), (93, 15811), (104, 15859), (109, 15880), (110, 15892), (112, 15898), (121, 15964), (130, 16006), (132, 16015), (134, 16024), (136, 16045), (141, 16069), (145, 16096), (152, 16120), (155, 16141), (159, 16150), (162, 16162), (170, 16195), (172, 16216), (173, 16219),

Gene: P106I_20 Start: 15253, Stop: 16107, Start Num: 31
Candidate Starts for P106I_20:

(Start: 31 @15253 has 42 MA's), (37, 15301), (Start: 42 @15313 has 1 MA's), (47, 15337), (50, 15373), (55, 15427), (60, 15448), (64, 15457), (70, 15505), (79, 15553), (84, 15598), (87, 15610), (93, 15640), (104, 15688), (109, 15709), (110, 15721), (112, 15727), (121, 15793), (130, 15835), (132, 15844), (134, 15853), (136, 15874), (141, 15898), (145, 15925), (152, 15949), (155, 15970), (159, 15979), (162, 15991), (170, 16024), (172, 16045), (173, 16048),

Gene: P106L_20 Start: 15424, Stop: 16278, Start Num: 31
Candidate Starts for P106L_20:
(Start: 31 @15424 has 42 MA's), (37, 15472), (Start: 42 @15484 has 1 MA's), (47, 15508), (50, 15544), (55, 15598), (60, 15619), (64, 15628), (70, 15676), (79, 15724), (84, 15769), (87, 15781), (93, 15811), (104, 15859), (109, 15880), (110, 15892), (112, 15898), (121, 15964), (130, 16006), (132, 16015), (134, 16024), (136, 16045), (141, 16069), (145, 16096), (152, 16120), (155, 16141), (159, 16150), (162, 16162), (170, 16195), (172, 16216), (173, 16219),

Gene: P106M_20 Start: 15424, Stop: 16278, Start Num: 31
Candidate Starts for P106M_20:
(Start: 31 @15424 has 42 MA's), (37, 15472), (Start: 42 @15484 has 1 MA's), (47, 15508), (50, 15544), (55, 15598), (60, 15619), (64, 15628), (70, 15676), (79, 15724), (84, 15769), (87, 15781), (93, 15811), (104, 15859), (109, 15880), (110, 15892), (112, 15898), (121, 15964), (130, 16006), (132, 16015), (134, 16024), (136, 16045), (141, 16069), (145, 16096), (152, 16120), (155, 16141), (159, 16150), (162, 16162), (170, 16195), (172, 16216), (173, 16219),

Gene: P107A_20 Start: 15432, Stop: 16286, Start Num: 31
Candidate Starts for P107A_20:
(Start: 31 @15432 has 42 MA's), (37, 15480), (Start: 42 @15492 has 1 MA's), (47, 15516), (50, 15552), (55, 15606), (60, 15627), (70, 15684), (79, 15732), (84, 15777), (89, 15804), (93, 15819), (101, 15858), (104, 15867), (109, 15888), (110, 15900), (121, 15972), (130, 16014), (132, 16023), (134, 16032), (136, 16053), (141, 16077), (145, 16104), (152, 16128), (155, 16149), (159, 16158), (172, 16224),

Gene: P107C_20 Start: 15398, Stop: 16252, Start Num: 31
Candidate Starts for P107C_20:
(Start: 31 @15398 has 42 MA's), (37, 15446), (Start: 42 @15458 has 1 MA's), (47, 15482), (55, 15572), (60, 15593), (79, 15698), (84, 15743), (87, 15755), (93, 15785), (104, 15833), (109, 15854), (110, 15866), (121, 15938), (130, 15980), (132, 15989), (134, 15998), (136, 16019), (141, 16043), (147, 16073), (149, 16079), (153, 16106), (159, 16124), (162, 16136), (172, 16190),

Gene: P108C_20 Start: 15404, Stop: 16264, Start Num: 29
Candidate Starts for P108C_20:
(Start: 29 @15404 has 1 MA's), (Start: 31 @15407 has 42 MA's), (37, 15455), (Start: 42 @15467 has 1 MA's), (47, 15491), (50, 15527), (60, 15602), (64, 15611), (70, 15659), (79, 15707), (84, 15752), (87, 15764), (93, 15794), (104, 15842), (110, 15875), (112, 15881), (121, 15947), (130, 15992), (132, 16001), (134, 16010), (136, 16031), (141, 16055), (145, 16082), (152, 16106), (159, 16136), (162, 16148), (172, 16202), (179, 16253),

Gene: P14.4_20 Start: 15380, Stop: 16237, Start Num: 31
Candidate Starts for P14.4_20:
(Start: 29 @15377 has 1 MA's), (Start: 31 @15380 has 42 MA's), (37, 15428), (Start: 42 @15440 has 1 MA's), (47, 15464), (50, 15500), (60, 15575), (64, 15584), (70, 15632), (79, 15680), (84, 15725), (87, 15737), (93, 15767), (104, 15815), (110, 15848), (121, 15920), (130, 15965), (132, 15974), (134, 15983), (136, 16004), (141, 16028), (145, 16055), (152, 16079), (159, 16109), (162, 16121), (170, 16154), (172, 16175), (179, 16226),

Gene: P9.1_20 Start: 15366, Stop: 16265, Start Num: 21

Candidate Starts for P9.1_20:
(Start: 21 @15366 has 1 MA's), (Start: 29 @15399 has 1 MA's), (Start: 31 @15402 has 42 MA's), (37, 15450), (Start: 42 @15462 has 1 MA's), (47, 15486), (50, 15522), (55, 15576), (60, 15597), (64, 15606), (70, 15654), (84, 15747), (87, 15759), (93, 15789), (101, 15828), (104, 15837), (110, 15870), (121, 15942), (122, 15948), (123, 15951), (128, 15987), (130, 15993), (136, 16032), (138, 16044), (141, 16056), (145, 16083), (152, 16107), (155, 16128), (159, 16137), (162, 16149), (170, 16182), (172, 16203), (173, 16206), (179, 16254),

Gene: PA6_20 Start: 15376, Stop: 16236, Start Num: 29
Candidate Starts for PA6_20:
(Start: 29 @15376 has 1 MA's), (Start: 31 @15379 has 42 MA's), (37, 15427), (Start: 42 @15439 has 1 MA's), (47, 15463), (50, 15499), (55, 15553), (60, 15574), (64, 15583), (70, 15631), (79, 15679), (84, 15724), (89, 15751), (93, 15766), (104, 15814), (109, 15835), (110, 15847), (121, 15919), (130, 15964), (132, 15973), (134, 15982), (136, 16003), (141, 16027), (145, 16054), (152, 16078), (155, 16099), (159, 16108), (162, 16120), (172, 16174), (173, 16177), (179, 16225),

Gene: PAD20_20 Start: 15389, Stop: 16252, Start Num: 31
Candidate Starts for PAD20_20:
(Start: 31 @15389 has 42 MA's), (37, 15437), (Start: 42 @15449 has 1 MA's), (47, 15473), (50, 15509), (60, 15584), (64, 15593), (70, 15641), (79, 15689), (84, 15734), (87, 15746), (89, 15761), (91, 15764), (93, 15776), (104, 15824), (109, 15845), (110, 15857), (112, 15863), (121, 15929), (122, 15935), (123, 15938), (128, 15974), (130, 15980), (136, 16019), (138, 16031), (141, 16043), (143, 16052), (144, 16064), (145, 16070), (159, 16124), (162, 16136), (170, 16169), (172, 16190), (179, 16241),

Gene: PAS50_20 Start: 15318, Stop: 16175, Start Num: 29
Candidate Starts for PAS50_20:
(24, 15306), (Start: 29 @15318 has 1 MA's), (Start: 31 @15321 has 42 MA's), (37, 15369), (Start: 42 @15381 has 1 MA's), (47, 15405), (50, 15441), (55, 15495), (60, 15516), (64, 15525), (70, 15573), (79, 15621), (84, 15666), (93, 15708), (101, 15747), (104, 15756), (109, 15777), (110, 15789), (112, 15795), (121, 15861), (130, 15903), (132, 15912), (134, 15921), (136, 15942), (141, 15966), (145, 15993), (152, 16017), (155, 16038), (159, 16047), (162, 16059), (170, 16092), (172, 16113), (173, 16116), (179, 16164),

Gene: PHL010M04_20 Start: 15397, Stop: 16260, Start Num: 31
Candidate Starts for PHL010M04_20:
(24, 15382), (Start: 31 @15397 has 42 MA's), (37, 15445), (Start: 42 @15457 has 1 MA's), (47, 15481), (50, 15517), (55, 15571), (60, 15592), (70, 15649), (84, 15742), (87, 15754), (93, 15784), (104, 15832), (110, 15865), (121, 15937), (130, 15988), (132, 15997), (136, 16027), (141, 16051), (145, 16078), (149, 16087), (152, 16102), (159, 16132), (162, 16144), (170, 16177), (172, 16198), (173, 16201),

Gene: PHL037M02_20 Start: 15373, Stop: 16227, Start Num: 31
Candidate Starts for PHL037M02_20:
(Start: 29 @15370 has 1 MA's), (Start: 31 @15373 has 42 MA's), (37, 15421), (Start: 42 @15433 has 1 MA's), (47, 15457), (55, 15547), (60, 15568), (70, 15625), (79, 15673), (84, 15718), (87, 15730), (93, 15760), (104, 15808), (110, 15841), (121, 15913), (130, 15955), (132, 15964), (134, 15973), (136, 15994), (141, 16018), (145, 16045), (152, 16069), (155, 16090), (159, 16099), (162, 16111), (164, 16123), (170, 16144), (172, 16165), (173, 16168), (179, 16216),

Gene: PHL060L00_20 Start: 15206, Stop: 16072, Start Num: 29
Candidate Starts for PHL060L00_20:
(Start: 29 @15206 has 1 MA's), (Start: 31 @15209 has 42 MA's), (37, 15257), (Start: 42 @15269 has 1 MA's), (50, 15329), (55, 15383), (60, 15404), (70, 15461), (79, 15509), (84, 15554), (87, 15566), (89, 15581), (93, 15596), (104, 15644), (110, 15677), (121, 15749), (122, 15755), (123, 15758), (128,

15794), (130, 15800), (136, 15839), (138, 15851), (141, 15863), (145, 15890), (152, 15914), (159, 15944), (162, 15956), (170, 15989), (172, 16010), (179, 16061),

Gene: PHL067M10_20 Start: 15354, Stop: 16247, Start Num: 21
Candidate Starts for PHL067M10_20:
(Start: 21 @15354 has 1 MA's), (Start: 29 @15387 has 1 MA's), (Start: 31 @15390 has 42 MA's), (37, 15438), (Start: 42 @15450 has 1 MA's), (47, 15474), (50, 15510), (55, 15564), (60, 15585), (70, 15642), (84, 15735), (93, 15777), (101, 15816), (104, 15825), (110, 15858), (112, 15864), (121, 15930), (130, 15975), (132, 15984), (134, 15993), (136, 16014), (141, 16038), (145, 16065), (152, 16089), (159, 16119), (162, 16131), (172, 16185), (173, 16188),

Gene: PHL071N05_20 Start: 15394, Stop: 16254, Start Num: 29
Candidate Starts for PHL071N05_20:
(Start: 29 @15394 has 1 MA's), (Start: 31 @15397 has 42 MA's), (37, 15445), (Start: 42 @15457 has 1 MA's), (47, 15481), (50, 15517), (55, 15571), (60, 15592), (70, 15649), (79, 15697), (84, 15742), (87, 15754), (89, 15769), (93, 15784), (101, 15823), (104, 15832), (109, 15853), (110, 15865), (121, 15937), (130, 15982), (132, 15991), (134, 16000), (136, 16021), (141, 16045), (145, 16072), (152, 16096), (155, 16117), (159, 16126), (162, 16138), (170, 16171), (172, 16192), (179, 16243),

Gene: PHL111M01_20 Start: 15383, Stop: 16246, Start Num: 31
Candidate Starts for PHL111M01_20:
(Start: 31 @15383 has 42 MA's), (37, 15431), (Start: 42 @15443 has 1 MA's), (47, 15467), (50, 15503), (55, 15557), (60, 15578), (70, 15635), (79, 15683), (84, 15728), (87, 15740), (93, 15770), (101, 15809), (112, 15857), (121, 15923), (122, 15929), (123, 15932), (130, 15974), (132, 15983), (136, 16013), (141, 16037), (145, 16064), (149, 16073), (153, 16100), (155, 16109), (159, 16118), (162, 16130), (172, 16184), (173, 16187),

Gene: PHL112N00_20 Start: 15414, Stop: 16277, Start Num: 29
Candidate Starts for PHL112N00_20:
(Start: 29 @15414 has 1 MA's), (Start: 31 @15417 has 42 MA's), (37, 15465), (Start: 42 @15477 has 1 MA's), (47, 15501), (50, 15537), (55, 15591), (60, 15612), (64, 15621), (70, 15669), (79, 15717), (84, 15762), (87, 15774), (93, 15804), (104, 15852), (110, 15885), (121, 15957), (130, 16005), (132, 16014), (134, 16023), (136, 16044), (141, 16068), (144, 16089), (145, 16095), (153, 16131), (155, 16140), (159, 16149), (162, 16161), (170, 16194), (172, 16215), (179, 16266),

Gene: PHL113M01_20 Start: 15437, Stop: 16291, Start Num: 31
Candidate Starts for PHL113M01_20:
(Start: 31 @15437 has 42 MA's), (37, 15485), (Start: 42 @15497 has 1 MA's), (47, 15521), (50, 15557), (55, 15611), (60, 15632), (64, 15641), (70, 15689), (79, 15737), (84, 15782), (87, 15794), (93, 15824), (104, 15872), (109, 15893), (110, 15905), (121, 15977), (130, 16019), (132, 16028), (134, 16037), (136, 16058), (141, 16082), (145, 16109), (152, 16133), (155, 16154), (159, 16163), (162, 16175), (170, 16208), (172, 16229), (179, 16280),

Gene: PHL114L00_20 Start: 15408, Stop: 16268, Start Num: 31
Candidate Starts for PHL114L00_20:
(Start: 31 @15408 has 42 MA's), (37, 15456), (Start: 42 @15468 has 1 MA's), (47, 15492), (50, 15528), (55, 15582), (60, 15603), (79, 15708), (84, 15753), (87, 15765), (89, 15780), (91, 15783), (93, 15795), (104, 15843), (110, 15876), (121, 15948), (130, 15996), (132, 16005), (136, 16035), (141, 16059), (145, 16086), (149, 16095), (152, 16110), (159, 16140), (162, 16152), (172, 16206), (179, 16257),

Gene: PSonyx_26 Start: 26002, Stop: 26877, Start Num: 30
Candidate Starts for PSonyx_26:

(20, 25963), (22, 25966), (Start: 30 @26002 has 3 MA's), (Start: 33 @26008 has 1 MA's), (49, 26113), (72, 26257), (80, 26308), (96, 26386), (104, 26428), (106, 26434), (107, 26440), (109, 26449), (113, 26473), (116, 26503), (117, 26518), (119, 26524), (123, 26545), (131, 26590), (135, 26626), (148, 26686), (150, 26695), (169, 26776), (174, 26815),

Gene: Pepy6_010 Start: 9009, Stop: 9806, Start Num: 37
Candidate Starts for Pepy6_010:
(28, 8955), (Start: 30 @8961 has 3 MA's), (36, 9006), (37, 9009), (82, 9291), (94, 9345), (119, 9471), (126, 9522), (135, 9561), (151, 9630), (154, 9645), (157, 9657), (165, 9693), (167, 9699), (172, 9735), (174, 9744), (177, 9765),

Gene: PerroGrande22_10 Start: 9161, Stop: 10006, Start Num: 30
Candidate Starts for PerroGrande22_10:
(28, 9155), (Start: 30 @9161 has 3 MA's), (36, 9206), (37, 9209), (82, 9491), (94, 9545), (119, 9671), (123, 9692), (126, 9722), (135, 9761), (154, 9845), (161, 9866), (172, 9935), (174, 9944), (177, 9965),

Gene: Pirate_20 Start: 15329, Stop: 16183, Start Num: 31
Candidate Starts for Pirate_20:
(24, 15314), (Start: 31 @15329 has 42 MA's), (37, 15377), (Start: 42 @15389 has 1 MA's), (47, 15413), (50, 15449), (60, 15524), (64, 15533), (70, 15581), (79, 15629), (84, 15674), (87, 15686), (89, 15701), (104, 15764), (110, 15797), (121, 15869), (130, 15911), (132, 15920), (134, 15929), (136, 15950), (141, 15974), (147, 16004), (152, 16025), (153, 16037), (159, 16055), (162, 16067), (170, 16100), (172, 16121), (173, 16124),

Gene: Poco6_012 Start: 12440, Stop: 13237, Start Num: 37
Candidate Starts for Poco6_012:
(28, 12386), (Start: 30 @12392 has 3 MA's), (36, 12437), (37, 12440), (66, 12596), (82, 12722), (94, 12776), (119, 12902), (126, 12953), (135, 12992), (154, 13076), (161, 13097), (172, 13166), (174, 13175), (177, 13196),

Gene: Procrass1_20 Start: 15386, Stop: 16243, Start Num: 31
Candidate Starts for Procrass1_20:
(Start: 29 @15383 has 1 MA's), (Start: 31 @15386 has 42 MA's), (37, 15434), (Start: 42 @15446 has 1 MA's), (47, 15470), (50, 15506), (55, 15560), (60, 15581), (70, 15638), (79, 15686), (84, 15731), (89, 15758), (93, 15773), (104, 15821), (109, 15842), (110, 15854), (121, 15926), (130, 15971), (132, 15980), (134, 15989), (136, 16010), (141, 16034), (145, 16061), (152, 16085), (155, 16106), (159, 16115), (162, 16127), (170, 16160), (172, 16181), (179, 16232),

Gene: QueenBey_20 Start: 15398, Stop: 16255, Start Num: 31
Candidate Starts for QueenBey_20:
(Start: 21 @15362 has 1 MA's), (Start: 29 @15395 has 1 MA's), (Start: 31 @15398 has 42 MA's), (37, 15446), (Start: 42 @15458 has 1 MA's), (47, 15482), (60, 15593), (64, 15602), (70, 15650), (87, 15755), (93, 15785), (104, 15833), (109, 15854), (110, 15866), (121, 15938), (130, 15983), (132, 15992), (134, 16001), (136, 16022), (141, 16046), (145, 16073), (147, 16076), (149, 16082), (152, 16097), (159, 16127), (162, 16139), (170, 16172), (172, 16193), (173, 16196),

Gene: Rabbitrun_37 Start: 30662, Stop: 31474, Start Num: 25
Candidate Starts for Rabbitrun_37:
(13, 30590), (18, 30626), (19, 30629), (Start: 25 @30662 has 8 MA's), (44, 30737), (54, 30809), (56, 30824), (57, 30827), (58, 30836), (61, 30845), (62, 30848), (63, 30851), (88, 30998), (97, 31037), (100, 31061), (105, 31076), (127, 31214), (137, 31256), (146, 31298), (156, 31343), (169, 31379), (171, 31397), (172, 31409), (177, 31439), (178, 31451), (179, 31460),

Gene: Rileysaurus_20 Start: 15471, Stop: 16265, Start Num: 42
Candidate Starts for Rileysaurus_20:
(Start: 31 @15411 has 42 MA's), (37, 15459), (40, 15468), (Start: 42 @15471 has 1 MA's), (47, 15495), (50, 15531), (55, 15585), (60, 15606), (64, 15615), (70, 15663), (79, 15711), (84, 15756), (87, 15768), (93, 15798), (104, 15846), (121, 15951), (123, 15960), (130, 15993), (132, 16002), (136, 16032), (141, 16056), (147, 16086), (149, 16092), (152, 16107), (159, 16137), (162, 16149), (170, 16182), (172, 16203), (179, 16254),

Gene: SKKY_20 Start: 15460, Stop: 16317, Start Num: 31
Candidate Starts for SKKY_20:
(Start: 31 @15460 has 42 MA's), (37, 15508), (Start: 42 @15520 has 1 MA's), (47, 15544), (50, 15580), (55, 15634), (60, 15655), (64, 15664), (70, 15712), (79, 15760), (84, 15805), (87, 15817), (89, 15832), (93, 15847), (104, 15895), (109, 15916), (112, 15934), (121, 16000), (128, 16039), (130, 16045), (132, 16054), (134, 16063), (136, 16084), (138, 16096), (141, 16108), (144, 16129), (145, 16135), (158, 16186), (159, 16189), (162, 16201), (172, 16255), (173, 16258), (177, 16285), (178, 16297), (179, 16306),

Gene: Schwartz33_13 Start: 6686, Stop: 7513, Start Num: 32
Candidate Starts for Schwartz33_13:
(14, 6608), (15, 6614), (Start: 32 @6686 has 1 MA's), (41, 6740), (45, 6755), (70, 6929), (82, 7013), (94, 7067), (109, 7133), (114, 7160), (135, 7295), (172, 7448), (174, 7457), (176, 7469),

Gene: Secretariat_9 Start: 4290, Stop: 5117, Start Num: 33
Candidate Starts for Secretariat_9:
(Start: 32 @4287 has 1 MA's), (Start: 33 @4290 has 1 MA's), (39, 4338), (45, 4356), (67, 4500), (68, 4515), (70, 4530), (94, 4668), (109, 4734), (135, 4896), (157, 4992), (163, 5019), (171, 5037), (172, 5049),

Gene: Sephiroth_35 Start: 29083, Stop: 29898, Start Num: 25
Candidate Starts for Sephiroth_35:
(10, 28921), (11, 28930), (Start: 25 @29083 has 8 MA's), (44, 29158), (58, 29257), (61, 29266), (63, 29272), (65, 29275), (69, 29305), (75, 29335), (88, 29419), (90, 29434), (92, 29437), (99, 29476), (100, 29482), (127, 29635), (140, 29689), (170, 29809), (172, 29830), (174, 29839), (175, 29842), (177, 29860), (179, 29881),

Gene: Solid_20 Start: 15383, Stop: 16240, Start Num: 31
Candidate Starts for Solid_20:
(Start: 29 @15380 has 1 MA's), (Start: 31 @15383 has 42 MA's), (37, 15431), (Start: 42 @15443 has 1 MA's), (47, 15467), (50, 15503), (55, 15557), (60, 15578), (64, 15587), (70, 15635), (84, 15728), (87, 15740), (89, 15755), (93, 15770), (101, 15809), (104, 15818), (109, 15839), (110, 15851), (112, 15857), (121, 15923), (130, 15968), (132, 15977), (134, 15986), (136, 16007), (141, 16031), (145, 16058), (147, 16061), (152, 16082), (159, 16112), (162, 16124), (164, 16136), (170, 16157), (172, 16178), (179, 16229),

Gene: Stormborn_20 Start: 15298, Stop: 16152, Start Num: 31
Candidate Starts for Stormborn_20:
(Start: 31 @15298 has 42 MA's), (Start: 42 @15358 has 1 MA's), (47, 15382), (50, 15418), (55, 15472), (60, 15493), (64, 15502), (70, 15550), (79, 15598), (84, 15643), (93, 15685), (104, 15733), (110, 15766), (121, 15838), (130, 15880), (132, 15889), (134, 15898), (136, 15919), (141, 15943), (145, 15970), (147, 15973), (149, 15979), (152, 15994), (159, 16024), (162, 16036), (170, 16069), (172, 16090), (173, 16093), (179, 16141),

Gene: Supernova_20 Start: 15434, Stop: 16297, Start Num: 31

Candidate Starts for Supernova_20:
(Start: 31 @15434 has 42 MA's), (37, 15482), (Start: 42 @15494 has 1 MA's), (47, 15518), (50, 15554), (55, 15608), (60, 15629), (70, 15686), (84, 15779), (87, 15791), (91, 15809), (93, 15821), (101, 15860), (112, 15908), (121, 15974), (122, 15980), (123, 15983), (130, 16025), (132, 16034), (136, 16064), (141, 16088), (145, 16115), (152, 16139), (159, 16169), (162, 16181), (172, 16235), (173, 16238), (179, 16286),

Gene: SweetCrkHerbs_11 Start: 4468, Stop: 5289, Start Num: 32
Candidate Starts for SweetCrkHerbs_11:
(1, 4000), (3, 4006), (8, 4255), (Start: 32 @4468 has 1 MA's), (37, 4513), (68, 4696), (73, 4723), (82, 4795), (94, 4849), (96, 4852), (119, 4975), (135, 5068), (157, 5164), (172, 5221),

Gene: Syleon_35 Start: 29005, Stop: 29820, Start Num: 25
Candidate Starts for Syleon_35:
(Start: 25 @29005 has 8 MA's), (44, 29080), (51, 29131), (58, 29179), (61, 29188), (65, 29197), (69, 29227), (75, 29257), (88, 29341), (90, 29356), (92, 29359), (99, 29398), (100, 29404), (127, 29557), (140, 29611), (170, 29731), (172, 29752), (174, 29761), (175, 29764), (177, 29782), (179, 29803),

Gene: Tonitrus_50 Start: 38455, Stop: 39078, Start Num: 23
Candidate Starts for Tonitrus_50:
(Start: 23 @38455 has 1 MA's), (35, 38506), (44, 38542), (54, 38614), (57, 38632), (59, 38647), (63, 38656), (65, 38659), (74, 38716), (81, 38761), (83, 38788), (85, 38800), (86, 38803), (100, 38869), (121, 38980),

Gene: Trax_35 Start: 30507, Stop: 31337, Start Num: 25
Candidate Starts for Trax_35:
(13, 30435), (22, 30483), (Start: 25 @30507 has 8 MA's), (44, 30582), (54, 30672), (56, 30687), (57, 30690), (61, 30708), (62, 30711), (63, 30714), (65, 30717), (88, 30861), (97, 30900), (100, 30924), (105, 30939), (110, 30969), (127, 31077), (137, 31119), (146, 31161), (156, 31206), (169, 31242), (171, 31260), (173, 31275), (177, 31302), (178, 31314), (179, 31323),

Gene: Weirdo19_28 Start: 25821, Stop: 26675, Start Num: 27
Candidate Starts for Weirdo19_28:
(27, 25821), (28, 25824), (34, 25848), (38, 25884), (46, 25911), (48, 25920), (53, 25974), (71, 26082), (77, 26103), (83, 26166), (102, 26256), (108, 26277), (124, 26373), (125, 26394), (129, 26406), (133, 26427), (160, 26553),

Gene: Wizzo_20 Start: 15428, Stop: 16282, Start Num: 31
Candidate Starts for Wizzo_20:
(Start: 31 @15428 has 42 MA's), (37, 15476), (Start: 42 @15488 has 1 MA's), (47, 15512), (50, 15548), (55, 15602), (60, 15623), (70, 15680), (79, 15728), (84, 15773), (87, 15785), (89, 15800), (93, 15815), (112, 15902), (121, 15968), (122, 15974), (123, 15977), (128, 16004), (130, 16010), (132, 16019), (136, 16049), (138, 16061), (141, 16073), (143, 16082), (144, 16094), (145, 16100), (149, 16109), (153, 16136), (155, 16145), (159, 16154), (162, 16166), (172, 16220), (173, 16223), (179, 16271),