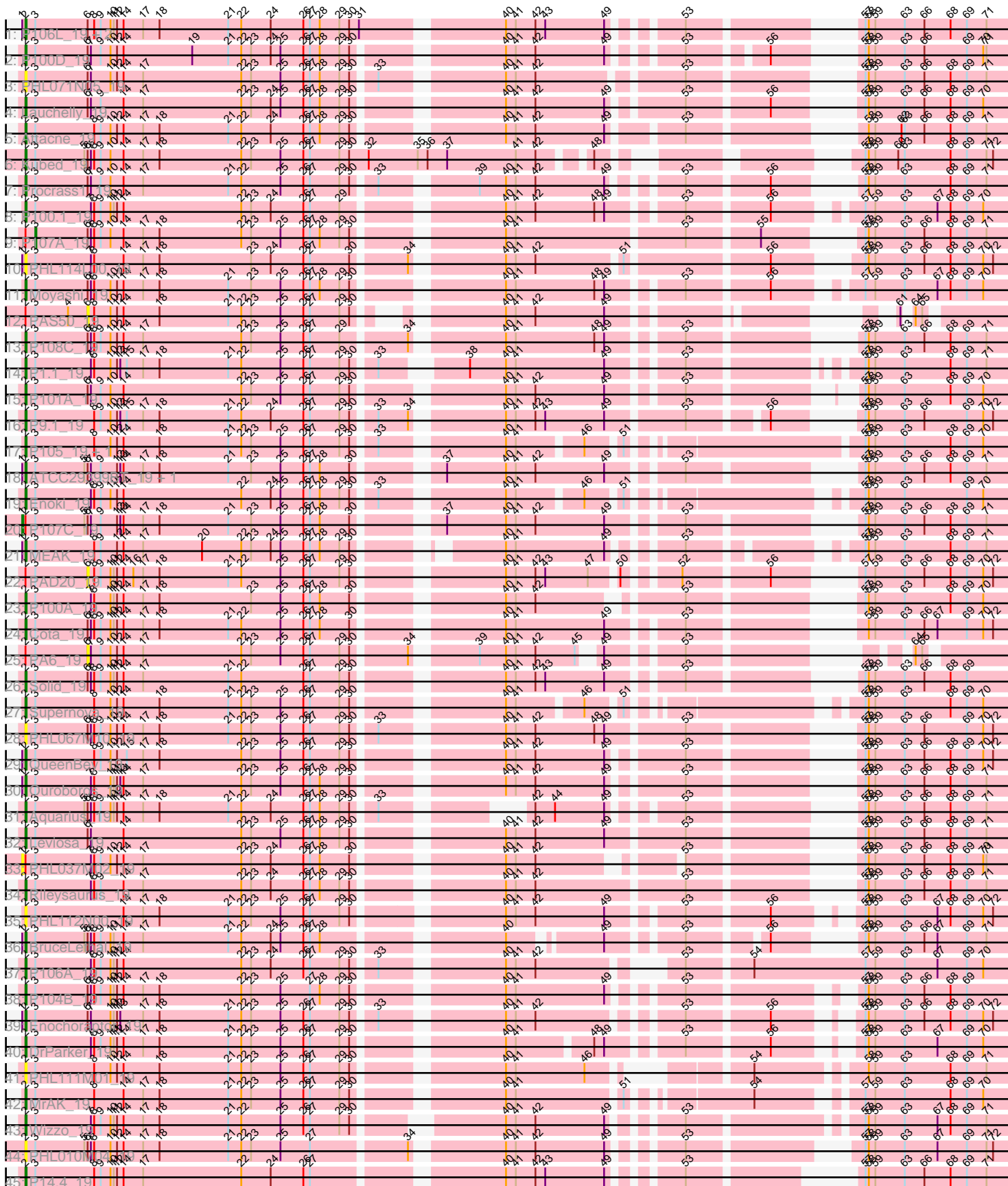


Pham 311707



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 311707 Report

This analysis was run 06/27/26 on database version 652.

Pham number 311707 has 49 members, 11 are drafts.

Phages represented in each track:

- Track 1 : P106L_19, P106M_19, P106C_19
- Track 2 : P100D_19
- Track 3 : PHL071N05_19
- Track 4 : Lauchelly_19
- Track 5 : Attacne_19
- Track 6 : Kubed_19
- Track 7 : Procrass1_19
- Track 8 : P100.1_19
- Track 9 : P107A_19
- Track 10 : PHL114L00_19
- Track 11 : Moyashi_19
- Track 12 : PAS50_19
- Track 13 : P108C_19
- Track 14 : P1.1_19
- Track 15 : P101A_19
- Track 16 : P9.1_19
- Track 17 : P105_19, PHL113M01_19
- Track 18 : ATCC29399BT_19, ATCC29399BC_19
- Track 19 : Enoki_19
- Track 20 : P107C_19
- Track 21 : MEAK_19
- Track 22 : PAD20_19
- Track 23 : P100A_19
- Track 24 : Cota_19
- Track 25 : PA6_19
- Track 26 : Solid_19
- Track 27 : Supernova_19
- Track 28 : PHL067M10_19
- Track 29 : QueenBey_19
- Track 30 : Ouroboros_19
- Track 31 : Aquarius_19
- Track 32 : Leviosa_19
- Track 33 : PHL037M02_19
- Track 34 : Rileysaurus_19
- Track 35 : PHL112N00_19
- Track 36 : BruceLethal_19
- Track 37 : P106A_19

- Track 38 : P104B_19
- Track 39 : Enochoraptor_19
- Track 40 : DrParker_19
- Track 41 : PHL111M01_19
- Track 42 : MrAK_19
- Track 43 : Wizzo_19
- Track 44 : PHL010M04_19
- Track 45 : P14.4_19

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

The start number called the most often in the published annotations is 2, it was called in 36 of the 38 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ATCC29399BC_19, ATCC29399BT_19, Aquarius_19, Attacne_19, BruceLethal_19, Cota_19, DrParker_19, Enochoraptor_19, Enoki_19, Kubed_19, Lauchelly_19, Leviosa_19, MEAK_19, Moyashi_19, MrAK_19, Ouroboros_19, P1.1_19, P100.1_19, P100A_19, P100D_19, P101A_19, P104B_19, P105_19, P106A_19, P106C_19, P106L_19, P106M_19, P108C_19, P14.4_19, P9.1_19, PHL010M04_19, PHL067M10_19, PHL071N05_19, PHL111M01_19, PHL112N00_19, PHL113M01_19, PHL114L00_19, Procrass1_19, QueenBey_19, Rileysaurus_19, Solid_19, Supernova_19, Wizzo_19,

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

- P107A_19, P107C_19, PA6_19, PAD20_19, PAS50_19, PHL037M02_19,

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

-

Summary by start number:

Start 1:

- Found in 13 of 49 (26.5%) of genes in pham
- Manual Annotations of this start: 1 of 38
- Called 15.4% of time when present
- Phage (with cluster) where this start called: P107C_19 (BU), PHL037M02_19 (BU),

Start 2:

- Found in 49 of 49 (100.0%) of genes in pham
- Manual Annotations of this start: 36 of 38
- Called 87.8% of time when present
- Phage (with cluster) where this start called: ATCC29399BC_19 (BU), ATCC29399BT_19 (BU), Aquarius_19 (BU), Attacne_19 (BU), BruceLethal_19 (BU), Cota_19 (BU), DrParker_19 (BU), Enochoraptor_19 (BU), Enoki_19 (BU), Kubed_19 (BU), Lauchelly_19 (BU), Leviosa_19 (BU), MEAK_19 (BU), Moyashi_19 (BU), MrAK_19 (BU), Ouroboros_19 (BU), P1.1_19 (BU), P100.1_19 (BU), P100A_19 (BU), P100D_19 (BU), P101A_19 (BU), P104B_19 (BU), P105_19 (BU), P106A_19 (BU), P106C_19 (BU), P106L_19 (BU), P106M_19 (BU), P108C_19 (BU), P14.4_19 (BU), P9.1_19 (BU), PHL010M04_19 (BU), PHL067M10_19 (BU), PHL071N05_19 (BU),

PHL111M01_19 (BU), PHL112N00_19 (BU), PHL113M01_19 (BU), PHL114L00_19 (BU), Procrass1_19 (BU), QueenBey_19 (BU), Rileysaurus_19 (BU), Solid_19 (BU), Supernova_19 (BU), Wizzo_19 (BU),

Start 3:

- Found in 49 of 49 (100.0%) of genes in pham
- Manual Annotations of this start: 1 of 38
- Called 2.0% of time when present
- Phage (with cluster) where this start called: P107A_19 (BU),

Start 6:

- Found in 27 of 49 (55.1%) of genes in pham
- No Manual Annotations of this start.
- Called 11.1% of time when present
- Phage (with cluster) where this start called: PA6_19 (BU), PAD20_19 (BU), PAS50_19 (BU),

Summary by clusters:

There is one cluster represented in this pham: BU

Info for manual annotations of cluster BU:

- Start number 1 was manually annotated 1 time for cluster BU.
- Start number 2 was manually annotated 36 times for cluster BU.
- Start number 3 was manually annotated 1 time for cluster BU.

Gene Information:

Gene: ATCC29399BC_19 Start: 14535, Stop: 15341, Start Num: 2

Candidate Starts for ATCC29399BC_19:

(Start: 1 @14532 has 1 MA's), (Start: 2 @14535 has 36 MA's), (Start: 3 @14544 has 1 MA's), (5, 14589), (6, 14592), (7, 14595), (9, 14604), (12, 14619), (13, 14622), (14, 14625), (17, 14643), (18, 14658), (21, 14721), (23, 14742), (25, 14769), (26, 14790), (27, 14796), (28, 14805), (30, 14832), (37, 14895), (40, 14949), (41, 14958), (42, 14976), (49, 15039), (53, 15096), (57, 15207), (58, 15210), (59, 15216), (63, 15243), (66, 15261), (68, 15285), (69, 15300), (71, 15318),

Gene: ATCC29399BT_19 Start: 14535, Stop: 15341, Start Num: 2

Candidate Starts for ATCC29399BT_19:

(Start: 1 @14532 has 1 MA's), (Start: 2 @14535 has 36 MA's), (Start: 3 @14544 has 1 MA's), (5, 14589), (6, 14592), (7, 14595), (9, 14604), (12, 14619), (13, 14622), (14, 14625), (17, 14643), (18, 14658), (21, 14721), (23, 14742), (25, 14769), (26, 14790), (27, 14796), (28, 14805), (30, 14832), (37, 14895), (40, 14949), (41, 14958), (42, 14976), (49, 15039), (53, 15096), (57, 15207), (58, 15210), (59, 15216), (63, 15243), (66, 15261), (68, 15285), (69, 15300), (71, 15318),

Gene: Aquarius_19 Start: 14558, Stop: 15319, Start Num: 2

Candidate Starts for Aquarius_19:

(Start: 2 @14558 has 36 MA's), (Start: 3 @14567 has 1 MA's), (5, 14612), (6, 14615), (7, 14618), (8, 14621), (9, 14627), (10, 14636), (11, 14639), (12, 14642), (14, 14648), (17, 14666), (18, 14681), (21, 14744), (22, 14756), (24, 14783), (26, 14813), (27, 14819), (28, 14828), (29, 14846), (30, 14855), (33, 14873), (42, 14963), (44, 14981), (49, 15026), (53, 15074), (57, 15185), (58, 15188), (59, 15194), (63, 15221), (66, 15239), (68, 15263), (69, 15278), (71, 15296),

Gene: Attacne_19 Start: 14541, Stop: 15347, Start Num: 2

Candidate Starts for Attacne_19:

(Start: 2 @14541 has 36 MA's), (Start: 3 @14550 has 1 MA's), (8, 14604), (9, 14610), (10, 14619), (12, 14625), (14, 14631), (17, 14649), (18, 14664), (21, 14727), (22, 14739), (24, 14766), (26, 14796), (27, 14802), (28, 14811), (29, 14829), (30, 14838), (40, 14955), (41, 14964), (42, 14982), (49, 15045), (53, 15102), (58, 15216), (59, 15222), (62, 15246), (63, 15249), (66, 15267), (68, 15291), (69, 15306), (71, 15324),

Gene: BruceLethal_19 Start: 14542, Stop: 15321, Start Num: 2

Candidate Starts for BruceLethal_19:

(Start: 1 @14539 has 1 MA's), (Start: 2 @14542 has 36 MA's), (Start: 3 @14551 has 1 MA's), (5, 14596), (6, 14599), (7, 14602), (8, 14605), (9, 14611), (10, 14620), (11, 14623), (14, 14632), (17, 14650), (21, 14728), (22, 14740), (24, 14767), (25, 14776), (26, 14797), (27, 14803), (28, 14812), (40, 14956), (49, 15028), (53, 15085), (56, 15145), (57, 15187), (58, 15190), (59, 15196), (63, 15223), (66, 15241), (67, 15253), (69, 15280), (71, 15298),

Gene: Cota_19 Start: 14559, Stop: 15365, Start Num: 2

Candidate Starts for Cota_19:

(Start: 2 @14559 has 36 MA's), (Start: 3 @14568 has 1 MA's), (6, 14616), (7, 14619), (8, 14622), (9, 14628), (10, 14637), (11, 14640), (12, 14643), (14, 14649), (17, 14667), (18, 14682), (21, 14745), (22, 14757), (25, 14793), (26, 14814), (27, 14820), (28, 14829), (30, 14856), (40, 14973), (41, 14982), (49, 15063), (53, 15120), (58, 15234), (59, 15240), (63, 15267), (66, 15285), (67, 15297), (69, 15324), (70, 15339), (72, 15348),

Gene: DrParker_19 Start: 14592, Stop: 15398, Start Num: 2

Candidate Starts for DrParker_19:

(Start: 2 @14592 has 36 MA's), (Start: 3 @14601 has 1 MA's), (7, 14652), (8, 14655), (9, 14661), (10, 14670), (11, 14673), (12, 14676), (14, 14682), (17, 14700), (18, 14715), (21, 14778), (22, 14790), (23, 14799), (25, 14826), (26, 14847), (27, 14853), (29, 14880), (30, 14889), (40, 15006), (41, 15015), (48, 15078), (49, 15087), (53, 15144), (56, 15213), (57, 15264), (58, 15267), (59, 15273), (63, 15300), (67, 15330), (69, 15357), (70, 15372),

Gene: Enochoraptor_19 Start: 14537, Stop: 15343, Start Num: 2

Candidate Starts for Enochoraptor_19:

(Start: 1 @14534 has 1 MA's), (Start: 2 @14537 has 36 MA's), (Start: 3 @14546 has 1 MA's), (6, 14594), (7, 14597), (10, 14615), (11, 14618), (12, 14621), (13, 14624), (17, 14645), (18, 14660), (21, 14723), (22, 14735), (23, 14744), (25, 14771), (26, 14792), (27, 14798), (29, 14825), (30, 14834), (33, 14852), (40, 14951), (41, 14960), (42, 14978), (53, 15089), (56, 15158), (57, 15209), (58, 15212), (59, 15218), (63, 15245), (66, 15263), (68, 15287), (69, 15302), (70, 15317), (72, 15326),

Gene: Enoki_19 Start: 14535, Stop: 15341, Start Num: 2

Candidate Starts for Enoki_19:

(Start: 2 @14535 has 36 MA's), (Start: 3 @14544 has 1 MA's), (7, 14595), (8, 14598), (9, 14604), (10, 14613), (12, 14619), (14, 14625), (22, 14733), (24, 14760), (25, 14769), (26, 14790), (27, 14796), (28, 14805), (29, 14823), (30, 14832), (33, 14850), (40, 14949), (41, 14958), (46, 15012), (51, 15039), (57, 15207), (58, 15210), (59, 15216), (63, 15243), (69, 15300), (70, 15315),

Gene: Kubed_19 Start: 14536, Stop: 15333, Start Num: 2

Candidate Starts for Kubed_19:

(Start: 2 @14536 has 36 MA's), (Start: 3 @14545 has 1 MA's), (5, 14590), (6, 14593), (7, 14596), (8, 14599), (9, 14605), (10, 14614), (14, 14626), (17, 14644), (18, 14659), (22, 14734), (23, 14743), (25, 14770), (26, 14791), (27, 14797), (29, 14824), (30, 14833), (32, 14851), (35, 14896), (36, 14905), (37,

14923), (41, 14986), (42, 15004), (48, 15040), (57, 15199), (58, 15202), (59, 15208), (60, 15229), (63, 15235), (68, 15277), (69, 15292), (71, 15310), (72, 15316),

Gene: Lauchelly_19 Start: 14562, Stop: 15368, Start Num: 2

Candidate Starts for Lauchelly_19:

(Start: 2 @14562 has 36 MA's), (Start: 3 @14571 has 1 MA's), (6, 14619), (7, 14622), (9, 14631), (14, 14652), (17, 14670), (22, 14760), (23, 14769), (24, 14787), (25, 14796), (26, 14817), (27, 14823), (28, 14832), (29, 14850), (30, 14859), (40, 14976), (41, 14985), (42, 15003), (49, 15066), (53, 15123), (56, 15192), (57, 15234), (58, 15237), (59, 15243), (63, 15270), (66, 15288), (68, 15312), (69, 15327), (70, 15342),

Gene: Leviosa_19 Start: 14567, Stop: 15382, Start Num: 2

Candidate Starts for Leviosa_19:

(Start: 2 @14567 has 36 MA's), (Start: 3 @14576 has 1 MA's), (6, 14624), (7, 14627), (14, 14657), (22, 14765), (23, 14774), (25, 14801), (26, 14822), (27, 14828), (28, 14837), (29, 14855), (30, 14864), (40, 14981), (41, 14990), (42, 15008), (49, 15071), (53, 15137), (57, 15248), (58, 15251), (59, 15257), (63, 15284), (66, 15302), (68, 15326), (69, 15341), (71, 15359),

Gene: MEAK_19 Start: 14535, Stop: 15323, Start Num: 2

Candidate Starts for MEAK_19:

(Start: 1 @14532 has 1 MA's), (Start: 2 @14535 has 36 MA's), (Start: 3 @14544 has 1 MA's), (8, 14598), (9, 14604), (12, 14619), (14, 14625), (17, 14643), (20, 14697), (22, 14733), (23, 14742), (24, 14760), (25, 14769), (26, 14790), (27, 14796), (28, 14805), (29, 14823), (30, 14832), (40, 14931), (41, 14940), (49, 15021), (53, 15069), (57, 15189), (58, 15192), (59, 15198), (63, 15225), (68, 15267), (69, 15282), (71, 15300),

Gene: Moyashi_19 Start: 14593, Stop: 15417, Start Num: 2

Candidate Starts for Moyashi_19:

(Start: 2 @14593 has 36 MA's), (Start: 3 @14602 has 1 MA's), (6, 14650), (7, 14653), (8, 14656), (10, 14671), (12, 14677), (14, 14683), (17, 14701), (18, 14716), (21, 14779), (23, 14800), (25, 14827), (26, 14848), (27, 14854), (28, 14863), (29, 14881), (30, 14890), (40, 15007), (41, 15016), (48, 15088), (49, 15097), (53, 15154), (56, 15223), (57, 15283), (59, 15292), (63, 15319), (67, 15349), (68, 15361), (69, 15376), (70, 15391),

Gene: MrAK_19 Start: 14604, Stop: 15419, Start Num: 2

Candidate Starts for MrAK_19:

(Start: 2 @14604 has 36 MA's), (Start: 3 @14613 has 1 MA's), (8, 14667), (14, 14694), (17, 14712), (18, 14727), (21, 14790), (22, 14802), (23, 14811), (25, 14838), (26, 14859), (27, 14865), (29, 14892), (30, 14901), (40, 15018), (41, 15027), (51, 15117), (54, 15210), (57, 15285), (59, 15294), (63, 15321), (68, 15363), (69, 15378), (70, 15393),

Gene: Ouroboros_19 Start: 14536, Stop: 15342, Start Num: 2

Candidate Starts for Ouroboros_19:

(Start: 1 @14533 has 1 MA's), (Start: 2 @14536 has 36 MA's), (Start: 3 @14545 has 1 MA's), (7, 14596), (8, 14599), (10, 14614), (11, 14617), (12, 14620), (13, 14623), (14, 14626), (17, 14644), (22, 14734), (23, 14743), (25, 14770), (26, 14791), (27, 14797), (28, 14806), (29, 14824), (30, 14833), (40, 14950), (41, 14959), (42, 14977), (49, 15040), (53, 15097), (57, 15208), (58, 15211), (59, 15217), (63, 15244), (66, 15262), (68, 15286), (69, 15301), (71, 15319),

Gene: P1.1_19 Start: 14561, Stop: 15376, Start Num: 2

Candidate Starts for P1.1_19:

(Start: 2 @14561 has 36 MA's), (Start: 3 @14570 has 1 MA's), (7, 14621), (8, 14624), (10, 14639), (12, 14645), (13, 14648), (15, 14654), (17, 14669), (18, 14684), (21, 14747), (22, 14759), (25, 14795), (26,

14816), (27, 14822), (29, 14849), (30, 14858), (33, 14876), (38, 14933), (40, 14966), (41, 14975), (49, 15056), (53, 15113), (57, 15242), (58, 15245), (59, 15251), (63, 15278), (68, 15320), (69, 15335), (71, 15353),

Gene: P100.1_19 Start: 14565, Stop: 15389, Start Num: 2

Candidate Starts for P100.1_19:

(Start: 2 @14565 has 36 MA's), (Start: 3 @14574 has 1 MA's), (7, 14625), (8, 14628), (9, 14634), (10, 14643), (11, 14646), (12, 14649), (14, 14655), (22, 14763), (23, 14772), (24, 14790), (26, 14820), (27, 14826), (29, 14853), (40, 14979), (41, 14988), (42, 15006), (48, 15060), (49, 15069), (53, 15126), (56, 15195), (57, 15255), (59, 15264), (63, 15291), (67, 15321), (68, 15333), (69, 15348), (70, 15363),

Gene: P100A_19 Start: 14565, Stop: 15362, Start Num: 2

Candidate Starts for P100A_19:

(Start: 2 @14565 has 36 MA's), (Start: 3 @14574 has 1 MA's), (7, 14625), (8, 14628), (10, 14643), (11, 14646), (12, 14649), (14, 14655), (17, 14673), (18, 14688), (23, 14772), (25, 14799), (26, 14820), (27, 14826), (28, 14835), (30, 14862), (40, 14979), (41, 14988), (42, 15006), (53, 15117), (57, 15228), (58, 15231), (59, 15237), (63, 15264), (68, 15306), (69, 15321), (70, 15336),

Gene: P100D_19 Start: 14551, Stop: 15339, Start Num: 2

Candidate Starts for P100D_19:

(Start: 2 @14551 has 36 MA's), (Start: 3 @14560 has 1 MA's), (6, 14608), (7, 14611), (9, 14620), (10, 14629), (12, 14635), (14, 14641), (19, 14704), (21, 14737), (22, 14749), (23, 14758), (24, 14776), (25, 14785), (26, 14806), (27, 14812), (28, 14821), (29, 14839), (30, 14848), (40, 14965), (41, 14974), (42, 14992), (49, 15055), (53, 15103), (56, 15163), (57, 15205), (58, 15208), (59, 15214), (63, 15241), (66, 15259), (69, 15298), (70, 15313), (71, 15316),

Gene: P101A_19 Start: 14557, Stop: 15363, Start Num: 2

Candidate Starts for P101A_19:

(Start: 2 @14557 has 36 MA's), (Start: 3 @14566 has 1 MA's), (6, 14614), (7, 14617), (9, 14626), (10, 14635), (14, 14647), (22, 14755), (23, 14764), (25, 14791), (26, 14812), (27, 14818), (29, 14845), (30, 14854), (40, 14971), (41, 14980), (42, 14998), (49, 15061), (53, 15118), (57, 15229), (58, 15232), (59, 15238), (63, 15265), (68, 15307), (69, 15322), (70, 15337),

Gene: P104B_19 Start: 14554, Stop: 15360, Start Num: 2

Candidate Starts for P104B_19:

(Start: 2 @14554 has 36 MA's), (Start: 3 @14563 has 1 MA's), (6, 14611), (7, 14614), (8, 14617), (9, 14623), (10, 14632), (11, 14635), (12, 14638), (14, 14644), (17, 14662), (18, 14677), (22, 14752), (23, 14761), (25, 14788), (27, 14815), (28, 14824), (29, 14842), (30, 14851), (40, 14968), (41, 14977), (49, 15058), (53, 15106), (57, 15226), (58, 15229), (59, 15235), (63, 15262), (66, 15280), (68, 15304), (69, 15319),

Gene: P105_19 Start: 14475, Stop: 15299, Start Num: 2

Candidate Starts for P105_19:

(Start: 2 @14475 has 36 MA's), (Start: 3 @14484 has 1 MA's), (8, 14538), (10, 14553), (12, 14559), (14, 14565), (18, 14598), (21, 14661), (22, 14673), (23, 14682), (25, 14709), (26, 14730), (27, 14736), (29, 14763), (30, 14772), (33, 14790), (40, 14889), (41, 14898), (46, 14952), (51, 14979), (57, 15165), (58, 15168), (59, 15174), (63, 15201), (68, 15243), (69, 15258), (70, 15273),

Gene: P106A_19 Start: 14582, Stop: 15406, Start Num: 2

Candidate Starts for P106A_19:

(Start: 2 @14582 has 36 MA's), (Start: 3 @14591 has 1 MA's), (7, 14642), (8, 14645), (9, 14651), (10, 14660), (11, 14663), (12, 14666), (14, 14672), (22, 14780), (23, 14789), (24, 14807), (26, 14837), (27, 14843), (29, 14870), (30, 14879), (33, 14897), (40, 14996), (41, 15005), (42, 15023), (53, 15116), (54,

15170), (57, 15272), (59, 15281), (63, 15308), (67, 15338), (69, 15365), (70, 15380),

Gene: P106C_19 Start: 14576, Stop: 15382, Start Num: 2

Candidate Starts for P106C_19:

(Start: 1 @14573 has 1 MA's), (Start: 2 @14576 has 36 MA's), (Start: 3 @14585 has 1 MA's), (6, 14633), (8, 14639), (9, 14645), (10, 14654), (11, 14657), (12, 14660), (14, 14666), (17, 14684), (18, 14699), (21, 14762), (22, 14774), (24, 14801), (26, 14831), (27, 14837), (28, 14846), (29, 14864), (30, 14873), (31, 14882), (40, 14999), (41, 15008), (42, 15026), (43, 15035), (49, 15089), (53, 15137), (57, 15248), (58, 15251), (59, 15257), (63, 15284), (66, 15302), (68, 15326), (69, 15341), (71, 15359),

Gene: P106L_19 Start: 14576, Stop: 15382, Start Num: 2

Candidate Starts for P106L_19:

(Start: 1 @14573 has 1 MA's), (Start: 2 @14576 has 36 MA's), (Start: 3 @14585 has 1 MA's), (6, 14633), (8, 14639), (9, 14645), (10, 14654), (11, 14657), (12, 14660), (14, 14666), (17, 14684), (18, 14699), (21, 14762), (22, 14774), (24, 14801), (26, 14831), (27, 14837), (28, 14846), (29, 14864), (30, 14873), (31, 14882), (40, 14999), (41, 15008), (42, 15026), (43, 15035), (49, 15089), (53, 15137), (57, 15248), (58, 15251), (59, 15257), (63, 15284), (66, 15302), (68, 15326), (69, 15341), (71, 15359),

Gene: P106M_19 Start: 14576, Stop: 15382, Start Num: 2

Candidate Starts for P106M_19:

(Start: 1 @14573 has 1 MA's), (Start: 2 @14576 has 36 MA's), (Start: 3 @14585 has 1 MA's), (6, 14633), (8, 14639), (9, 14645), (10, 14654), (11, 14657), (12, 14660), (14, 14666), (17, 14684), (18, 14699), (21, 14762), (22, 14774), (24, 14801), (26, 14831), (27, 14837), (28, 14846), (29, 14864), (30, 14873), (31, 14882), (40, 14999), (41, 15008), (42, 15026), (43, 15035), (49, 15089), (53, 15137), (57, 15248), (58, 15251), (59, 15257), (63, 15284), (66, 15302), (68, 15326), (69, 15341), (71, 15359),

Gene: P107A_19 Start: 14571, Stop: 15377, Start Num: 3

Candidate Starts for P107A_19:

(Start: 2 @14562 has 36 MA's), (Start: 3 @14571 has 1 MA's), (6, 14619), (7, 14622), (8, 14625), (9, 14631), (10, 14640), (14, 14652), (17, 14670), (18, 14685), (22, 14760), (23, 14769), (25, 14796), (26, 14817), (27, 14823), (28, 14832), (29, 14850), (30, 14859), (40, 14976), (41, 14985), (53, 15132), (55, 15192), (57, 15243), (58, 15246), (59, 15252), (63, 15279), (66, 15297), (68, 15321), (69, 15336), (71, 15354),

Gene: P107C_19 Start: 14532, Stop: 15341, Start Num: 1

Candidate Starts for P107C_19:

(Start: 1 @14532 has 1 MA's), (Start: 2 @14535 has 36 MA's), (Start: 3 @14544 has 1 MA's), (5, 14589), (6, 14592), (7, 14595), (9, 14604), (12, 14619), (13, 14622), (14, 14625), (17, 14643), (18, 14658), (21, 14721), (23, 14742), (25, 14769), (26, 14790), (27, 14796), (28, 14805), (30, 14832), (37, 14895), (40, 14949), (41, 14958), (42, 14976), (49, 15039), (53, 15096), (57, 15207), (58, 15210), (59, 15216), (63, 15243), (66, 15261), (68, 15285), (69, 15300), (71, 15318),

Gene: P108C_19 Start: 14559, Stop: 15365, Start Num: 2

Candidate Starts for P108C_19:

(Start: 2 @14559 has 36 MA's), (Start: 3 @14568 has 1 MA's), (6, 14616), (7, 14619), (8, 14622), (9, 14628), (10, 14637), (12, 14643), (14, 14649), (17, 14667), (22, 14757), (23, 14766), (25, 14793), (26, 14814), (27, 14820), (29, 14847), (34, 14901), (40, 14973), (41, 14982), (48, 15054), (49, 15063), (53, 15120), (57, 15231), (58, 15234), (59, 15240), (63, 15267), (66, 15285), (68, 15309), (69, 15324), (71, 15342),

Gene: P14.4_19 Start: 14550, Stop: 15338, Start Num: 2

Candidate Starts for P14.4_19:

(Start: 2 @14550 has 36 MA's), (Start: 3 @14559 has 1 MA's), (8, 14613), (9, 14619), (10, 14628), (11, 14631), (12, 14634), (14, 14640), (17, 14658), (22, 14748), (24, 14775), (26, 14805), (27, 14811), (40, 14964), (41, 14973), (42, 14991), (43, 15000), (49, 15054), (53, 15102), (57, 15204), (58, 15207), (59, 15213), (63, 15240), (66, 15258), (68, 15282), (69, 15297), (71, 15315),

Gene: P9.1_19 Start: 14545, Stop: 15351, Start Num: 2

Candidate Starts for P9.1_19:

(Start: 2 @14545 has 36 MA's), (Start: 3 @14554 has 1 MA's), (8, 14608), (9, 14614), (10, 14623), (12, 14629), (13, 14632), (15, 14638), (17, 14653), (18, 14668), (21, 14731), (22, 14743), (24, 14770), (26, 14800), (27, 14806), (29, 14833), (30, 14842), (33, 14860), (34, 14887), (40, 14959), (41, 14968), (42, 14986), (43, 14995), (49, 15049), (53, 15115), (56, 15175), (57, 15217), (58, 15220), (59, 15226), (63, 15253), (66, 15271), (69, 15310), (70, 15325), (72, 15334),

Gene: PA6_19 Start: 14630, Stop: 15319, Start Num: 6

Candidate Starts for PA6_19:

(Start: 2 @14573 has 36 MA's), (Start: 3 @14582 has 1 MA's), (6, 14630), (7, 14633), (9, 14642), (10, 14651), (12, 14657), (14, 14663), (17, 14681), (22, 14771), (23, 14780), (25, 14807), (26, 14828), (27, 14834), (29, 14861), (30, 14870), (34, 14915), (39, 14963), (40, 14987), (41, 14996), (42, 15014), (45, 15050), (49, 15059), (53, 15116), (64, 15248), (65, 15254),

Gene: PAD20_19 Start: 14599, Stop: 15339, Start Num: 6

Candidate Starts for PAD20_19:

(Start: 2 @14542 has 36 MA's), (Start: 3 @14551 has 1 MA's), (6, 14599), (8, 14605), (9, 14611), (10, 14620), (11, 14623), (12, 14626), (14, 14632), (16, 14641), (17, 14650), (18, 14665), (21, 14728), (22, 14740), (25, 14776), (26, 14797), (27, 14803), (29, 14830), (30, 14839), (40, 14956), (41, 14965), (42, 14983), (43, 14992), (47, 15031), (50, 15052), (52, 15091), (56, 15163), (57, 15205), (59, 15214), (63, 15241), (66, 15259), (68, 15283), (69, 15298), (70, 15313), (72, 15322),

Gene: PAS50_19 Start: 14607, Stop: 15269, Start Num: 6

Candidate Starts for PAS50_19:

(Start: 2 @14550 has 36 MA's), (Start: 3 @14559 has 1 MA's), (4, 14589), (6, 14607), (8, 14613), (10, 14628), (12, 14634), (14, 14640), (18, 14673), (21, 14736), (22, 14748), (23, 14757), (25, 14784), (26, 14805), (27, 14811), (29, 14838), (30, 14847), (40, 14937), (41, 14946), (42, 14964), (49, 15027), (61, 15195), (64, 15198), (65, 15204),

Gene: PHL010M04_19 Start: 14541, Stop: 15347, Start Num: 2

Candidate Starts for PHL010M04_19:

(Start: 2 @14541 has 36 MA's), (Start: 3 @14550 has 1 MA's), (5, 14595), (6, 14598), (7, 14601), (8, 14604), (10, 14619), (12, 14625), (14, 14631), (17, 14649), (18, 14664), (21, 14727), (22, 14739), (23, 14748), (25, 14775), (27, 14802), (34, 14883), (40, 14955), (41, 14964), (42, 14982), (49, 15045), (53, 15093), (57, 15213), (58, 15216), (59, 15222), (63, 15249), (67, 15279), (69, 15306), (71, 15324), (72, 15330),

Gene: PHL037M02_19 Start: 14540, Stop: 15331, Start Num: 1

Candidate Starts for PHL037M02_19:

(Start: 1 @14540 has 1 MA's), (Start: 2 @14543 has 36 MA's), (Start: 3 @14552 has 1 MA's), (7, 14603), (8, 14606), (9, 14612), (10, 14621), (12, 14627), (14, 14633), (17, 14651), (22, 14741), (23, 14750), (24, 14768), (26, 14798), (27, 14804), (28, 14813), (30, 14840), (40, 14957), (41, 14966), (42, 14984), (53, 15086), (57, 15197), (58, 15200), (59, 15206), (63, 15233), (66, 15251), (68, 15275), (69, 15290), (70, 15305), (71, 15308),

Gene: PHL067M10_19 Start: 14524, Stop: 15339, Start Num: 2

Candidate Starts for PHL067M10_19:

(Start: 2 @14524 has 36 MA's), (Start: 3 @14533 has 1 MA's), (6, 14581), (7, 14584), (8, 14587), (9, 14593), (10, 14602), (12, 14608), (14, 14614), (17, 14632), (18, 14647), (21, 14710), (22, 14722), (23, 14731), (25, 14758), (26, 14779), (27, 14785), (29, 14812), (30, 14821), (33, 14839), (40, 14938), (41, 14947), (42, 14965), (48, 15019), (49, 15028), (53, 15094), (57, 15205), (58, 15208), (59, 15214), (63, 15241), (66, 15259), (69, 15298), (70, 15313), (72, 15322),

Gene: PHL071N05_19 Start: 14549, Stop: 15355, Start Num: 2

Candidate Starts for PHL071N05_19:

(Start: 2 @14549 has 36 MA's), (Start: 3 @14558 has 1 MA's), (6, 14606), (7, 14609), (10, 14627), (12, 14633), (14, 14639), (17, 14657), (22, 14747), (23, 14756), (25, 14783), (26, 14804), (27, 14810), (28, 14819), (29, 14837), (30, 14846), (33, 14864), (40, 14963), (41, 14972), (42, 14990), (53, 15110), (57, 15221), (58, 15224), (59, 15230), (63, 15257), (66, 15275), (68, 15299), (69, 15314), (71, 15332),

Gene: PHL111M01_19 Start: 14544, Stop: 15341, Start Num: 2

Candidate Starts for PHL111M01_19:

(Start: 2 @14544 has 36 MA's), (Start: 3 @14553 has 1 MA's), (8, 14607), (10, 14622), (12, 14628), (14, 14634), (18, 14667), (21, 14730), (22, 14742), (23, 14751), (25, 14778), (26, 14799), (27, 14805), (29, 14832), (30, 14841), (40, 14958), (41, 14967), (46, 15030), (54, 15123), (58, 15210), (59, 15216), (63, 15243), (68, 15285), (69, 15300), (71, 15318),

Gene: PHL112N00_19 Start: 14546, Stop: 15361, Start Num: 2

Candidate Starts for PHL112N00_19:

(Start: 2 @14546 has 36 MA's), (Start: 3 @14555 has 1 MA's), (14, 14636), (17, 14654), (18, 14669), (21, 14732), (22, 14744), (23, 14753), (25, 14780), (26, 14801), (27, 14807), (29, 14834), (30, 14843), (40, 14960), (41, 14969), (42, 14987), (49, 15050), (53, 15107), (56, 15176), (57, 15227), (58, 15230), (59, 15236), (63, 15263), (67, 15293), (68, 15305), (69, 15320), (70, 15335), (72, 15344),

Gene: PHL113M01_19 Start: 14579, Stop: 15385, Start Num: 2

Candidate Starts for PHL113M01_19:

(Start: 2 @14579 has 36 MA's), (Start: 3 @14588 has 1 MA's), (8, 14642), (10, 14657), (12, 14663), (14, 14669), (18, 14702), (21, 14765), (22, 14777), (23, 14786), (25, 14813), (26, 14834), (27, 14840), (29, 14867), (30, 14876), (33, 14894), (40, 14993), (41, 15002), (46, 15056), (51, 15083), (57, 15251), (58, 15254), (59, 15260), (63, 15287), (68, 15329), (69, 15344), (70, 15359),

Gene: PHL114L00_19 Start: 14540, Stop: 15355, Start Num: 2

Candidate Starts for PHL114L00_19:

(Start: 1 @14537 has 1 MA's), (Start: 2 @14540 has 36 MA's), (Start: 3 @14549 has 1 MA's), (7, 14600), (8, 14603), (14, 14630), (17, 14648), (18, 14663), (23, 14747), (24, 14765), (26, 14795), (27, 14801), (30, 14837), (34, 14882), (40, 14954), (41, 14963), (42, 14981), (51, 15053), (56, 15170), (57, 15221), (58, 15224), (59, 15230), (63, 15257), (66, 15275), (68, 15299), (69, 15314), (70, 15329), (72, 15338),

Gene: Procrass1_19 Start: 14547, Stop: 15344, Start Num: 2

Candidate Starts for Procrass1_19:

(Start: 2 @14547 has 36 MA's), (Start: 3 @14556 has 1 MA's), (6, 14604), (7, 14607), (9, 14616), (10, 14625), (14, 14637), (17, 14655), (21, 14733), (22, 14745), (25, 14781), (26, 14802), (27, 14808), (29, 14835), (30, 14844), (33, 14862), (39, 14937), (40, 14961), (41, 14970), (42, 14988), (49, 15051), (53, 15099), (56, 15168), (57, 15210), (58, 15213), (59, 15219), (63, 15246), (68, 15288), (69, 15303), (71, 15321),

Gene: QueenBey_19 Start: 14541, Stop: 15347, Start Num: 2

Candidate Starts for QueenBey_19:

(Start: 1 @14538 has 1 MA's), (Start: 2 @14541 has 36 MA's), (Start: 3 @14550 has 1 MA's), (8, 14604), (9, 14610), (10, 14619), (12, 14625), (15, 14634), (17, 14649), (18, 14664), (22, 14739), (23, 14748), (25, 14775), (26, 14796), (27, 14802), (29, 14829), (30, 14838), (40, 14955), (41, 14964), (42, 14982), (49, 15045), (53, 15102), (57, 15213), (58, 15216), (59, 15222), (63, 15249), (66, 15267), (68, 15291), (69, 15306), (70, 15321), (72, 15330),

Gene: Rileysaurus_19 Start: 14544, Stop: 15359, Start Num: 2

Candidate Starts for Rileysaurus_19:

(Start: 2 @14544 has 36 MA's), (Start: 3 @14553 has 1 MA's), (7, 14604), (8, 14607), (9, 14613), (14, 14634), (17, 14652), (22, 14742), (23, 14751), (24, 14769), (26, 14799), (27, 14805), (28, 14814), (29, 14832), (30, 14841), (40, 14958), (41, 14967), (42, 14985), (53, 15114), (57, 15225), (58, 15228), (59, 15234), (63, 15261), (66, 15279), (68, 15303), (69, 15318), (71, 15336),

Gene: Solid_19 Start: 14535, Stop: 15341, Start Num: 2

Candidate Starts for Solid_19:

(Start: 2 @14535 has 36 MA's), (Start: 3 @14544 has 1 MA's), (6, 14592), (7, 14595), (8, 14598), (9, 14604), (10, 14613), (11, 14616), (12, 14619), (14, 14625), (17, 14643), (21, 14721), (22, 14733), (26, 14790), (27, 14796), (29, 14823), (30, 14832), (40, 14949), (41, 14958), (42, 14976), (43, 14985), (49, 15039), (53, 15096), (57, 15207), (58, 15210), (59, 15216), (63, 15243), (66, 15261), (68, 15285), (69, 15300),

Gene: Supernova_19 Start: 14570, Stop: 15376, Start Num: 2

Candidate Starts for Supernova_19:

(Start: 2 @14570 has 36 MA's), (Start: 3 @14579 has 1 MA's), (8, 14633), (10, 14648), (12, 14654), (14, 14660), (18, 14693), (21, 14756), (22, 14768), (23, 14777), (25, 14804), (26, 14825), (27, 14831), (29, 14858), (30, 14867), (40, 14984), (41, 14993), (46, 15047), (51, 15074), (57, 15242), (58, 15245), (59, 15251), (63, 15278), (68, 15320), (69, 15335), (70, 15350),

Gene: Wizzo_19 Start: 14571, Stop: 15386, Start Num: 2

Candidate Starts for Wizzo_19:

(Start: 2 @14571 has 36 MA's), (Start: 3 @14580 has 1 MA's), (7, 14631), (8, 14634), (9, 14640), (10, 14649), (11, 14652), (12, 14655), (14, 14661), (17, 14679), (18, 14694), (21, 14757), (22, 14769), (25, 14805), (26, 14826), (27, 14832), (29, 14859), (30, 14868), (40, 14976), (41, 14985), (42, 15003), (49, 15066), (53, 15114), (57, 15252), (58, 15255), (59, 15261), (63, 15288), (67, 15318), (68, 15330), (69, 15345), (71, 15363),