

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 283845 Report

This analysis was run 02/23/26 on database version 636.

Pham number 283845 has 58 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Procrass1_15
- Track 2 : Keiki_15
- Track 3 : P107A_15
- Track 4 : Kubed_15
- Track 5 : P100.1_15
- Track 6 : Lauchelly_15
- Track 7 : Attacne_15
- Track 8 : PHL071N05_15
- Track 9 : P106L_15, P106M_15, P106I_15, P106C_15, P106A_15
- Track 10 : Aquarius_15
- Track 11 : PAS50_15
- Track 12 : Moyashi_15
- Track 13 : PHL114L00_15
- Track 14 : ATCC29399BC_15, P107C_15
- Track 15 : Enochoraptor_15
- Track 16 : P101A_15
- Track 17 : P100D_15
- Track 18 : PA6_15
- Track 19 : Cota_15
- Track 20 : P108C_15
- Track 21 : P1.1_15
- Track 22 : PAD20_15
- Track 23 : Stormborn_15
- Track 24 : MEAK_15
- Track 25 : P104A_15
- Track 26 : PHL113M01_15
- Track 27 : LilBandit_15
- Track 28 : ATCC29399BT_15
- Track 29 : PHL067M10_15
- Track 30 : QueenBey_15
- Track 31 : SKKY_15
- Track 32 : Solid_15
- Track 33 : P100A_15
- Track 34 : PHL037M02_15
- Track 35 : Pirate_15
- Track 36 : PHL060L00_15
- Track 37 : Wizzo_15

- Track 38 : Rileysaurus_15
- Track 39 : Leviosa_15
- Track 40 : Ouroboros_15
- Track 41 : P104B_15
- Track 42 : PHL010M04_15
- Track 43 : BruceLethal_15
- Track 44 : P9.1_15
- Track 45 : PHL112N00_15
- Track 46 : Enoki_15
- Track 47 : P105_15
- Track 48 : P14.4_15
- Track 49 : MrAK_15
- Track 50 : DrParker_15
- Track 51 : PHL111M01_15
- Track 52 : Supernova_15
- Track 53 : Parvarticeps_34

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

The start number called the most often in the published annotations is 9, it was called in 44 of the 45 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ATCC29399BC_15, ATCC29399BT_15, Aquarius_15, Attacne_15, BruceLethal_15, Cota_15, DrParker_15, Enochoraptor_15, Enoki_15, Keiki_15, Kubed_15, Lauchelly_15, Leviosa_15, LilBandit_15, MEAK_15, Moyashi_15, MrAK_15, Ouroboros_15, P1.1_15, P100.1_15, P100A_15, P100D_15, P101A_15, P104A_15, P104B_15, P105_15, P106A_15, P106C_15, P106I_15, P106L_15, P106M_15, P107A_15, P107C_15, P14.4_15, P9.1_15, PA6_15, PAD20_15, PAS50_15, PHL010M04_15, PHL037M02_15, PHL060L00_15, PHL067M10_15, PHL071N05_15, PHL111M01_15, PHL112N00_15, PHL113M01_15, PHL114L00_15, Pirate_15, Procrass1_15, QueenBey_15, Rileysaurus_15, SKKY_15, Solid_15, Stormborn_15, Supernova_15, Wizzo_15,

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

- P108C_15,

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

- Parvarticeps_34,

Summary by start number:

Start 7:

- Found in 50 of 58 (86.2%) of genes in pham
- Manual Annotations of this start: 1 of 45
- Called 2.0% of time when present
- Phage (with cluster) where this start called: P108C_15 (BU),

Start 9:

- Found in 57 of 58 (98.3%) of genes in pham

- Manual Annotations of this start: 44 of 45
- Called 98.2% of time when present
- Phage (with cluster) where this start called: ATCC29399BC_15 (BU), ATCC29399BT_15 (BU), Aquarius_15 (BU), Attacne_15 (BU), BruceLethal_15 (BU), Cota_15 (BU), DrParker_15 (BU), Enochoraptor_15 (BU), Enoki_15 (BU), Keiki_15 (BU), Kubed_15 (BU), Lauchelly_15 (BU), Leviosa_15 (BU), LilBandit_15 (BU), MEAK_15 (BU), Moyashi_15 (BU), MrAK_15 (BU), Ouroboros_15 (BU), P1.1_15 (BU), P100.1_15 (BU), P100A_15 (BU), P100D_15 (BU), P101A_15 (BU), P104A_15 (BU), P104B_15 (BU), P105_15 (BU), P106A_15 (BU), P106C_15 (BU), P106I_15 (BU), P106L_15 (BU), P106M_15 (BU), P107A_15 (BU), P107C_15 (BU), P14.4_15 (BU), P9.1_15 (BU), PA6_15 (BU), PAD20_15 (BU), PAS50_15 (BU), PHL010M04_15 (BU), PHL037M02_15 (BU), PHL060L00_15 (BU), PHL067M10_15 (BU), PHL071N05_15 (BU), PHL111M01_15 (BU), PHL112N00_15 (BU), PHL113M01_15 (BU), PHL114L00_15 (BU), Pirate_15 (BU), Procrass1_15 (BU), QueenBey_15 (BU), Rileysaurus_15 (BU), SKKY_15 (BU), Solid_15 (BU), Stormborn_15 (BU), Supernova_15 (BU), Wizzo_15 (BU),

Start 13:

- Found in 58 of 58 (100.0%) of genes in pham
- No Manual Annotations of this start.
- Called 1.7% of time when present
- Phage (with cluster) where this start called: Parvaparticeps_34 (UNK),

Summary by clusters:

There are 2 clusters represented in this pham: BU, UNK,

Info for manual annotations of cluster BU:

- Start number 7 was manually annotated 1 time for cluster BU.
- Start number 9 was manually annotated 44 times for cluster BU.

Gene Information:

Gene: ATCC29399BC_15 Start: 11283, Stop: 12224, Start Num: 9

Candidate Starts for ATCC29399BC_15:

(5, 11268), (Start: 7 @11274 has 1 MA's), (8, 11277), (Start: 9 @11283 has 44 MA's), (10, 11316), (11, 11322), (13, 11334), (18, 11361), (19, 11370), (21, 11400), (22, 11403), (23, 11406), (24, 11418), (25, 11427), (27, 11442), (29, 11472), (30, 11502), (31, 11517), (34, 11532), (35, 11535), (41, 11583), (43, 11601), (46, 11637), (47, 11643), (48, 11670), (49, 11673), (50, 11694), (52, 11712), (53, 11721), (55, 11745), (57, 11754), (59, 11817), (60, 11829), (62, 11871), (63, 11874), (64, 11877), (69, 11943), (71, 11964), (72, 11979), (75, 11994), (76, 12000), (82, 12072), (83, 12075), (84, 12093), (85, 12096), (86, 12105), (87, 12153), (88, 12165), (89, 12174), (90, 12183), (92, 12189), (93, 12195), (94, 12210),

Gene: ATCC29399BT_15 Start: 11281, Stop: 12228, Start Num: 9

Candidate Starts for ATCC29399BT_15:

(Start: 7 @11272 has 1 MA's), (Start: 9 @11281 has 44 MA's), (10, 11314), (11, 11320), (13, 11332), (15, 11341), (19, 11374), (21, 11404), (22, 11407), (23, 11410), (24, 11422), (26, 11437), (27, 11446), (29, 11476), (30, 11506), (31, 11521), (33, 11533), (34, 11536), (35, 11539), (43, 11605), (46, 11641), (47, 11647), (48, 11674), (49, 11677), (53, 11725), (55, 11749), (57, 11758), (60, 11833), (63, 11878), (64, 11881), (65, 11884), (69, 11947), (71, 11968), (72, 11983), (75, 11998), (76, 12004), (82, 12076),

(83, 12079), (84, 12097), (85, 12100), (87, 12157), (88, 12169), (89, 12178), (92, 12193), (93, 12199), (94, 12214),

Gene: Aquarius_15 Start: 11300, Stop: 12247, Start Num: 9

Candidate Starts for Aquarius_15:

(5, 11285), (Start: 7 @11291 has 1 MA's), (8, 11294), (Start: 9 @11300 has 44 MA's), (10, 11333), (13, 11351), (14, 11354), (15, 11360), (18, 11384), (19, 11393), (21, 11423), (22, 11426), (23, 11429), (24, 11441), (25, 11450), (29, 11495), (30, 11525), (31, 11540), (34, 11555), (35, 11558), (41, 11606), (43, 11624), (46, 11660), (47, 11666), (48, 11693), (49, 11696), (50, 11717), (53, 11744), (56, 11771), (57, 11777), (59, 11840), (60, 11852), (62, 11894), (63, 11897), (64, 11900), (67, 11933), (68, 11951), (69, 11966), (72, 12002), (75, 12017), (76, 12023), (81, 12092), (82, 12095), (83, 12098), (84, 12116), (85, 12119), (86, 12128), (87, 12176), (88, 12188), (89, 12197), (92, 12212), (93, 12218), (94, 12233),

Gene: Attacne_15 Start: 11286, Stop: 12227, Start Num: 9

Candidate Starts for Attacne_15:

(Start: 7 @11277 has 1 MA's), (8, 11280), (Start: 9 @11286 has 44 MA's), (10, 11319), (13, 11337), (18, 11364), (19, 11373), (21, 11403), (22, 11406), (23, 11409), (24, 11421), (29, 11475), (30, 11505), (31, 11520), (33, 11532), (34, 11535), (35, 11538), (41, 11586), (43, 11604), (46, 11640), (47, 11646), (48, 11673), (49, 11676), (52, 11715), (53, 11724), (55, 11748), (57, 11757), (59, 11820), (60, 11832), (62, 11874), (63, 11877), (64, 11880), (68, 11931), (69, 11946), (71, 11967), (72, 11982), (75, 11997), (76, 12003), (82, 12075), (83, 12078), (84, 12096), (85, 12099), (86, 12108), (87, 12156), (88, 12168), (89, 12177), (92, 12192), (93, 12198), (94, 12213),

Gene: BruceLethal_15 Start: 11290, Stop: 12237, Start Num: 9

Candidate Starts for BruceLethal_15:

(4, 11275), (Start: 7 @11281 has 1 MA's), (Start: 9 @11290 has 44 MA's), (10, 11323), (13, 11341), (14, 11344), (15, 11350), (18, 11374), (19, 11383), (21, 11413), (24, 11431), (25, 11440), (29, 11485), (30, 11515), (31, 11530), (33, 11542), (35, 11548), (41, 11596), (43, 11614), (44, 11641), (46, 11650), (47, 11656), (48, 11683), (50, 11707), (55, 11758), (57, 11767), (59, 11830), (60, 11842), (62, 11884), (63, 11887), (64, 11890), (68, 11941), (69, 11956), (71, 11977), (72, 11992), (75, 12007), (76, 12013), (82, 12085), (83, 12088), (84, 12106), (85, 12109), (86, 12118), (87, 12166), (88, 12178), (89, 12187), (92, 12202), (93, 12208), (94, 12223),

Gene: Cota_15 Start: 11295, Stop: 12242, Start Num: 9

Candidate Starts for Cota_15:

(5, 11280), (Start: 7 @11286 has 1 MA's), (Start: 9 @11295 has 44 MA's), (10, 11328), (13, 11346), (14, 11349), (15, 11355), (18, 11379), (19, 11388), (21, 11418), (22, 11421), (23, 11424), (24, 11436), (26, 11451), (27, 11460), (29, 11490), (30, 11520), (31, 11535), (33, 11547), (34, 11550), (35, 11553), (41, 11601), (43, 11619), (46, 11655), (47, 11661), (48, 11688), (50, 11712), (53, 11739), (55, 11763), (57, 11772), (59, 11835), (62, 11889), (63, 11892), (64, 11895), (66, 11907), (68, 11946), (69, 11961), (70, 11970), (71, 11982), (72, 11997), (75, 12012), (76, 12018), (82, 12090), (83, 12093), (84, 12111), (85, 12114), (86, 12123), (87, 12171), (88, 12183), (89, 12192), (92, 12207), (93, 12213), (94, 12228),

Gene: DrParker_15 Start: 11327, Stop: 12268, Start Num: 9

Candidate Starts for DrParker_15:

(1, 11306), (Start: 7 @11318 has 1 MA's), (8, 11321), (Start: 9 @11327 has 44 MA's), (10, 11360), (13, 11378), (18, 11405), (19, 11414), (20, 11441), (21, 11444), (22, 11447), (23, 11450), (24, 11462), (25, 11471), (27, 11486), (29, 11516), (30, 11546), (31, 11561), (32, 11567), (33, 11573), (34, 11576), (35, 11579), (41, 11627), (43, 11645), (47, 11687), (48, 11714), (52, 11756), (53, 11765), (56, 11792), (57, 11798), (59, 11861), (60, 11873), (62, 11915), (63, 11918), (68, 11972), (69, 11987), (71, 12008), (72, 12023), (75, 12038), (76, 12044), (77, 12062), (84, 12137), (85, 12140), (86, 12149), (87, 12197), (88, 12209), (89, 12218), (92, 12233), (93, 12239), (94, 12254),

Gene: Enochoraptor_15 Start: 11298, Stop: 12239, Start Num: 9

Candidate Starts for Enochoraptor_15:

(5, 11283), (Start: 7 @11289 has 1 MA's), (8, 11292), (Start: 9 @11298 has 44 MA's), (10, 11331), (13, 11349), (18, 11376), (19, 11385), (21, 11415), (22, 11418), (23, 11421), (24, 11433), (25, 11442), (29, 11487), (30, 11517), (31, 11532), (33, 11544), (34, 11547), (35, 11550), (41, 11598), (43, 11616), (46, 11652), (47, 11658), (48, 11685), (50, 11709), (53, 11736), (56, 11763), (57, 11769), (59, 11832), (60, 11844), (62, 11886), (63, 11889), (64, 11892), (68, 11943), (69, 11958), (71, 11979), (72, 11994), (75, 12009), (76, 12015), (82, 12087), (83, 12090), (84, 12108), (85, 12111), (86, 12120), (87, 12168), (88, 12180), (89, 12189), (92, 12204), (93, 12210), (94, 12225),

Gene: Enoki_15 Start: 11280, Stop: 12221, Start Num: 9

Candidate Starts for Enoki_15:

(3, 11262), (Start: 9 @11280 has 44 MA's), (10, 11313), (11, 11319), (13, 11331), (18, 11358), (19, 11367), (21, 11397), (22, 11400), (23, 11403), (24, 11415), (25, 11424), (27, 11439), (29, 11469), (30, 11499), (31, 11514), (33, 11526), (34, 11529), (35, 11532), (36, 11541), (38, 11556), (41, 11580), (43, 11598), (46, 11634), (47, 11640), (48, 11667), (49, 11670), (50, 11691), (53, 11718), (55, 11742), (57, 11751), (59, 11814), (60, 11826), (62, 11868), (63, 11871), (64, 11874), (66, 11886), (68, 11925), (69, 11940), (71, 11961), (72, 11976), (75, 11991), (76, 11997), (82, 12069), (83, 12072), (84, 12090), (85, 12093), (86, 12102), (87, 12150), (88, 12162), (89, 12171), (92, 12186), (93, 12192), (94, 12207),

Gene: Keiki_15 Start: 11295, Stop: 12242, Start Num: 9

Candidate Starts for Keiki_15:

(5, 11280), (Start: 7 @11286 has 1 MA's), (Start: 9 @11295 has 44 MA's), (10, 11328), (13, 11346), (14, 11349), (15, 11355), (18, 11379), (19, 11388), (21, 11418), (22, 11421), (23, 11424), (24, 11436), (26, 11451), (27, 11460), (29, 11490), (30, 11520), (31, 11535), (33, 11547), (34, 11550), (35, 11553), (39, 11586), (41, 11601), (43, 11619), (46, 11655), (47, 11661), (48, 11688), (50, 11712), (53, 11739), (56, 11766), (57, 11772), (59, 11835), (60, 11847), (62, 11889), (63, 11892), (64, 11895), (68, 11946), (69, 11961), (71, 11982), (72, 11997), (73, 12003), (75, 12012), (76, 12018), (82, 12090), (83, 12093), (84, 12111), (85, 12114), (86, 12123), (87, 12171), (88, 12183), (89, 12192), (92, 12207), (93, 12213), (94, 12228),

Gene: Kubed_15 Start: 11291, Stop: 12232, Start Num: 9

Candidate Starts for Kubed_15:

(Start: 7 @11282 has 1 MA's), (Start: 9 @11291 has 44 MA's), (10, 11324), (11, 11330), (13, 11342), (18, 11369), (19, 11378), (21, 11408), (22, 11411), (23, 11414), (24, 11426), (25, 11435), (27, 11450), (29, 11480), (30, 11510), (31, 11525), (34, 11540), (35, 11543), (43, 11609), (44, 11636), (46, 11645), (47, 11651), (48, 11678), (53, 11729), (55, 11753), (57, 11762), (59, 11825), (60, 11837), (63, 11882), (64, 11885), (68, 11936), (69, 11951), (71, 11972), (72, 11987), (75, 12002), (82, 12080), (83, 12083), (84, 12101), (85, 12104), (87, 12161), (88, 12173), (89, 12182), (92, 12197), (94, 12218),

Gene: Lauchelly_15 Start: 11298, Stop: 12245, Start Num: 9

Candidate Starts for Lauchelly_15:

(Start: 7 @11289 has 1 MA's), (8, 11292), (Start: 9 @11298 has 44 MA's), (10, 11331), (13, 11349), (14, 11352), (15, 11358), (18, 11382), (19, 11391), (21, 11421), (22, 11424), (23, 11427), (24, 11439), (25, 11448), (27, 11463), (29, 11493), (30, 11523), (31, 11538), (32, 11544), (35, 11556), (41, 11604), (43, 11622), (44, 11649), (46, 11658), (47, 11664), (48, 11691), (50, 11715), (53, 11742), (55, 11766), (57, 11775), (59, 11838), (60, 11850), (62, 11892), (63, 11895), (64, 11898), (68, 11949), (69, 11964), (71, 11985), (72, 12000), (75, 12015), (76, 12021), (82, 12093), (83, 12096), (84, 12114), (85, 12117), (87, 12174), (88, 12186), (89, 12195), (92, 12210), (93, 12216), (94, 12231),

Gene: Leviosa_15 Start: 11312, Stop: 12259, Start Num: 9

Candidate Starts for Leviosa_15:

(5, 11297), (Start: 7 @11303 has 1 MA's), (Start: 9 @11312 has 44 MA's), (10, 11345), (13, 11363), (14, 11366), (15, 11372), (18, 11396), (19, 11405), (21, 11435), (22, 11438), (23, 11441), (24, 11453), (25, 11462), (29, 11507), (30, 11537), (31, 11552), (33, 11564), (35, 11570), (41, 11618), (43, 11636), (44, 11663), (46, 11672), (47, 11678), (48, 11705), (53, 11756), (55, 11780), (57, 11789), (59, 11852), (60, 11864), (62, 11906), (63, 11909), (64, 11912), (68, 11963), (69, 11978), (71, 11999), (72, 12014), (75, 12029), (76, 12035), (82, 12107), (83, 12110), (84, 12128), (85, 12131), (86, 12140), (87, 12188), (88, 12200), (89, 12209), (92, 12224), (93, 12230), (94, 12245),

Gene: LilBandit_15 Start: 11296, Stop: 12243, Start Num: 9

Candidate Starts for LilBandit_15:

(5, 11281), (Start: 7 @11287 has 1 MA's), (Start: 9 @11296 has 44 MA's), (10, 11329), (13, 11347), (14, 11350), (15, 11356), (18, 11380), (19, 11389), (21, 11419), (22, 11422), (23, 11425), (24, 11437), (25, 11446), (29, 11491), (30, 11521), (31, 11536), (33, 11548), (35, 11554), (41, 11602), (43, 11620), (44, 11647), (46, 11656), (47, 11662), (48, 11689), (52, 11731), (53, 11740), (55, 11764), (57, 11773), (59, 11836), (60, 11848), (62, 11890), (63, 11893), (64, 11896), (67, 11929), (68, 11947), (69, 11962), (71, 11983), (72, 11998), (75, 12013), (76, 12019), (82, 12091), (83, 12094), (84, 12112), (85, 12115), (86, 12124), (87, 12172), (88, 12184), (89, 12193), (92, 12208), (93, 12214), (94, 12229),

Gene: MEAK_15 Start: 11282, Stop: 12229, Start Num: 9

Candidate Starts for MEAK_15:

(Start: 7 @11273 has 1 MA's), (8, 11276), (Start: 9 @11282 has 44 MA's), (10, 11315), (13, 11333), (14, 11336), (15, 11342), (18, 11366), (19, 11375), (21, 11405), (22, 11408), (23, 11411), (25, 11432), (29, 11477), (30, 11507), (31, 11522), (33, 11534), (34, 11537), (35, 11540), (41, 11588), (43, 11606), (46, 11642), (47, 11648), (48, 11675), (50, 11699), (53, 11726), (56, 11753), (57, 11759), (59, 11822), (60, 11834), (62, 11876), (63, 11879), (64, 11882), (67, 11915), (68, 11933), (69, 11948), (71, 11969), (72, 11984), (75, 11999), (76, 12005), (82, 12077), (83, 12080), (84, 12098), (85, 12101), (86, 12110), (87, 12158), (88, 12170), (89, 12179), (92, 12194), (93, 12200), (94, 12215),

Gene: Moyashi_15 Start: 11324, Stop: 12265, Start Num: 9

Candidate Starts for Moyashi_15:

(5, 11309), (Start: 7 @11315 has 1 MA's), (8, 11318), (Start: 9 @11324 has 44 MA's), (10, 11357), (11, 11363), (13, 11375), (18, 11402), (19, 11411), (20, 11438), (21, 11441), (22, 11444), (23, 11447), (24, 11459), (25, 11468), (29, 11513), (30, 11543), (31, 11558), (32, 11564), (33, 11570), (34, 11573), (35, 11576), (38, 11600), (41, 11624), (43, 11642), (46, 11678), (47, 11684), (48, 11711), (50, 11735), (53, 11762), (56, 11789), (57, 11795), (59, 11858), (60, 11870), (62, 11912), (63, 11915), (66, 11930), (68, 11969), (69, 11984), (71, 12005), (72, 12020), (75, 12035), (76, 12041), (82, 12113), (83, 12116), (84, 12134), (85, 12137), (86, 12146), (87, 12194), (88, 12206), (89, 12215), (92, 12230), (93, 12236), (94, 12251),

Gene: MrAK_15 Start: 11335, Stop: 12276, Start Num: 9

Candidate Starts for MrAK_15:

(3, 11317), (Start: 9 @11335 has 44 MA's), (10, 11368), (11, 11374), (13, 11386), (18, 11413), (19, 11422), (21, 11452), (22, 11455), (23, 11458), (24, 11470), (25, 11479), (27, 11494), (28, 11518), (29, 11524), (30, 11554), (31, 11569), (33, 11581), (35, 11587), (41, 11635), (43, 11653), (46, 11689), (47, 11695), (48, 11722), (49, 11725), (50, 11746), (53, 11773), (55, 11797), (57, 11806), (59, 11869), (62, 11923), (63, 11926), (68, 11980), (69, 11995), (71, 12016), (72, 12031), (75, 12046), (76, 12052), (82, 12124), (83, 12127), (84, 12145), (85, 12148), (86, 12157), (87, 12205), (88, 12217), (89, 12226), (92, 12241), (93, 12247), (94, 12262),

Gene: Ouroboros_15 Start: 11284, Stop: 12231, Start Num: 9

Candidate Starts for Ouroboros_15:

(2, 11266), (Start: 9 @11284 has 44 MA's), (13, 11335), (14, 11338), (15, 11344), (18, 11368), (19, 11377), (21, 11407), (22, 11410), (23, 11413), (24, 11425), (25, 11434), (29, 11479), (30, 11509), (31,

11524), (33, 11536), (35, 11542), (41, 11590), (43, 11608), (44, 11635), (46, 11644), (47, 11650), (48, 11677), (55, 11752), (57, 11761), (60, 11836), (62, 11878), (63, 11881), (64, 11884), (68, 11935), (69, 11950), (71, 11971), (72, 11986), (75, 12001), (76, 12007), (82, 12079), (83, 12082), (84, 12100), (85, 12103), (86, 12112), (87, 12160), (88, 12172), (89, 12181), (92, 12196), (93, 12202), (94, 12217),

Gene: P1.1_15 Start: 11293, Stop: 12234, Start Num: 9

Candidate Starts for P1.1_15:

(5, 11278), (Start: 7 @11284 has 1 MA's), (8, 11287), (Start: 9 @11293 has 44 MA's), (10, 11326), (11, 11332), (13, 11344), (18, 11371), (19, 11380), (21, 11410), (22, 11413), (23, 11416), (24, 11428), (25, 11437), (29, 11482), (30, 11512), (31, 11527), (33, 11539), (34, 11542), (35, 11545), (38, 11569), (41, 11593), (43, 11611), (46, 11647), (47, 11653), (48, 11680), (49, 11683), (52, 11722), (53, 11731), (56, 11758), (57, 11764), (59, 11827), (60, 11839), (62, 11881), (63, 11884), (64, 11887), (68, 11938), (69, 11953), (71, 11974), (72, 11989), (75, 12004), (76, 12010), (82, 12082), (83, 12085), (84, 12103), (85, 12106), (86, 12115), (87, 12163), (88, 12175), (89, 12184), (92, 12199), (93, 12205), (94, 12220),

Gene: P100.1_15 Start: 11300, Stop: 12241, Start Num: 9

Candidate Starts for P100.1_15:

(Start: 7 @11291 has 1 MA's), (Start: 9 @11300 has 44 MA's), (10, 11333), (13, 11351), (18, 11378), (19, 11387), (20, 11414), (21, 11417), (22, 11420), (23, 11423), (24, 11435), (25, 11444), (27, 11459), (29, 11489), (30, 11519), (31, 11534), (35, 11552), (37, 11567), (38, 11576), (41, 11600), (43, 11618), (47, 11660), (48, 11687), (52, 11729), (53, 11738), (56, 11765), (57, 11771), (59, 11834), (60, 11846), (62, 11888), (63, 11891), (66, 11906), (68, 11945), (69, 11960), (71, 11981), (72, 11996), (75, 12011), (76, 12017), (82, 12089), (83, 12092), (84, 12110), (85, 12113), (86, 12122), (87, 12170), (88, 12182), (89, 12191), (92, 12206), (93, 12212), (94, 12227),

Gene: P100A_15 Start: 11295, Stop: 12242, Start Num: 9

Candidate Starts for P100A_15:

(Start: 7 @11286 has 1 MA's), (8, 11289), (Start: 9 @11295 has 44 MA's), (10, 11328), (13, 11346), (14, 11349), (15, 11355), (18, 11379), (19, 11388), (21, 11418), (22, 11421), (23, 11424), (24, 11436), (25, 11445), (29, 11490), (30, 11520), (31, 11535), (32, 11541), (35, 11553), (41, 11601), (43, 11619), (46, 11655), (47, 11661), (48, 11688), (52, 11730), (55, 11763), (57, 11772), (59, 11835), (60, 11847), (62, 11889), (63, 11892), (64, 11895), (67, 11928), (68, 11946), (69, 11961), (71, 11982), (72, 11997), (75, 12012), (76, 12018), (82, 12090), (83, 12093), (84, 12111), (85, 12114), (87, 12171), (88, 12183), (89, 12192), (92, 12207), (93, 12213), (94, 12228),

Gene: P100D_15 Start: 11296, Stop: 12237, Start Num: 9

Candidate Starts for P100D_15:

(5, 11281), (Start: 7 @11287 has 1 MA's), (8, 11290), (Start: 9 @11296 has 44 MA's), (10, 11329), (11, 11335), (13, 11347), (18, 11374), (19, 11383), (21, 11413), (22, 11416), (23, 11419), (24, 11431), (25, 11440), (27, 11455), (29, 11485), (30, 11515), (31, 11530), (33, 11542), (34, 11545), (35, 11548), (41, 11596), (43, 11614), (44, 11641), (46, 11650), (47, 11656), (48, 11683), (49, 11686), (52, 11725), (53, 11734), (55, 11758), (57, 11767), (59, 11830), (60, 11842), (62, 11884), (63, 11887), (64, 11890), (68, 11941), (69, 11956), (71, 11977), (72, 11992), (75, 12007), (76, 12013), (82, 12085), (83, 12088), (84, 12106), (85, 12109), (86, 12118), (87, 12166), (88, 12178), (89, 12187), (92, 12202), (93, 12208), (94, 12223),

Gene: P101A_15 Start: 11308, Stop: 12249, Start Num: 9

Candidate Starts for P101A_15:

(6, 11296), (Start: 7 @11299 has 1 MA's), (Start: 9 @11308 has 44 MA's), (10, 11341), (13, 11359), (18, 11386), (19, 11395), (20, 11422), (21, 11425), (22, 11428), (23, 11431), (24, 11443), (25, 11452), (27, 11467), (29, 11497), (30, 11527), (31, 11542), (35, 11560), (37, 11575), (38, 11584), (41, 11608), (43, 11626), (47, 11668), (48, 11695), (52, 11737), (53, 11746), (56, 11773), (57, 11779), (59, 11842), (60, 11854), (62, 11896), (63, 11899), (66, 11914), (68, 11953), (69, 11968), (71, 11989), (72, 12004),

(75, 12019), (76, 12025), (82, 12097), (83, 12100), (84, 12118), (85, 12121), (86, 12130), (87, 12178), (88, 12190), (89, 12199), (92, 12214), (93, 12220), (94, 12235),

Gene: P104A_15 Start: 11279, Stop: 12226, Start Num: 9

Candidate Starts for P104A_15:

(5, 11264), (Start: 7 @11270 has 1 MA's), (Start: 9 @11279 has 44 MA's), (10, 11312), (13, 11330), (14, 11333), (15, 11339), (18, 11363), (19, 11372), (21, 11402), (22, 11405), (23, 11408), (24, 11420), (26, 11435), (27, 11444), (29, 11474), (30, 11504), (31, 11519), (32, 11525), (33, 11531), (34, 11534), (35, 11537), (38, 11561), (41, 11585), (43, 11603), (44, 11630), (46, 11639), (47, 11645), (48, 11672), (49, 11675), (50, 11696), (53, 11723), (56, 11750), (57, 11756), (59, 11819), (60, 11831), (62, 11873), (63, 11876), (64, 11879), (66, 11891), (68, 11930), (69, 11945), (71, 11966), (72, 11981), (75, 11996), (76, 12002), (82, 12074), (83, 12077), (84, 12095), (85, 12098), (86, 12107), (87, 12155), (88, 12167), (89, 12176), (92, 12191), (93, 12197), (94, 12212),

Gene: P104B_15 Start: 11296, Stop: 12243, Start Num: 9

Candidate Starts for P104B_15:

(5, 11281), (Start: 7 @11287 has 1 MA's), (8, 11290), (Start: 9 @11296 has 44 MA's), (10, 11329), (11, 11335), (13, 11347), (14, 11350), (15, 11356), (18, 11380), (19, 11389), (21, 11419), (22, 11422), (23, 11425), (24, 11437), (25, 11446), (26, 11452), (29, 11491), (30, 11521), (31, 11536), (33, 11548), (34, 11551), (35, 11554), (41, 11602), (43, 11620), (44, 11647), (46, 11656), (48, 11689), (50, 11713), (53, 11740), (55, 11764), (57, 11773), (59, 11836), (60, 11848), (62, 11890), (63, 11893), (64, 11896), (68, 11947), (69, 11962), (71, 11983), (72, 11998), (75, 12013), (76, 12019), (82, 12091), (83, 12094), (84, 12112), (85, 12115), (86, 12124), (87, 12172), (88, 12184), (89, 12193), (92, 12208), (93, 12214), (94, 12229),

Gene: P105_15 Start: 11205, Stop: 12146, Start Num: 9

Candidate Starts for P105_15:

(3, 11187), (Start: 9 @11205 has 44 MA's), (10, 11238), (11, 11244), (13, 11256), (18, 11283), (19, 11292), (21, 11322), (22, 11325), (23, 11328), (24, 11340), (25, 11349), (27, 11364), (29, 11394), (30, 11424), (31, 11439), (33, 11451), (34, 11454), (35, 11457), (38, 11481), (41, 11505), (43, 11523), (46, 11559), (47, 11565), (48, 11592), (49, 11595), (50, 11616), (52, 11634), (53, 11643), (56, 11670), (57, 11676), (59, 11739), (60, 11751), (62, 11793), (63, 11796), (64, 11799), (66, 11811), (68, 11850), (69, 11865), (71, 11886), (72, 11901), (75, 11916), (76, 11922), (82, 11994), (84, 12015), (85, 12018), (86, 12027), (87, 12075), (88, 12087), (89, 12096), (92, 12111), (93, 12117), (94, 12132),

Gene: P106A_15 Start: 11324, Stop: 12271, Start Num: 9

Candidate Starts for P106A_15:

(5, 11309), (Start: 7 @11315 has 1 MA's), (8, 11318), (Start: 9 @11324 has 44 MA's), (10, 11357), (13, 11375), (14, 11378), (18, 11408), (19, 11417), (20, 11444), (21, 11447), (22, 11450), (23, 11453), (24, 11465), (25, 11474), (29, 11519), (30, 11549), (31, 11564), (34, 11579), (35, 11582), (38, 11606), (41, 11630), (43, 11648), (47, 11690), (48, 11717), (52, 11759), (53, 11768), (56, 11795), (57, 11801), (59, 11864), (60, 11876), (62, 11918), (63, 11921), (64, 11924), (68, 11975), (69, 11990), (70, 11999), (72, 12026), (75, 12041), (76, 12047), (82, 12119), (83, 12122), (84, 12140), (85, 12143), (86, 12152), (87, 12200), (88, 12212), (89, 12221), (92, 12236), (93, 12242), (94, 12257),

Gene: P106C_15 Start: 11324, Stop: 12271, Start Num: 9

Candidate Starts for P106C_15:

(5, 11309), (Start: 7 @11315 has 1 MA's), (8, 11318), (Start: 9 @11324 has 44 MA's), (10, 11357), (13, 11375), (14, 11378), (18, 11408), (19, 11417), (20, 11444), (21, 11447), (22, 11450), (23, 11453), (24, 11465), (25, 11474), (29, 11519), (30, 11549), (31, 11564), (34, 11579), (35, 11582), (38, 11606), (41, 11630), (43, 11648), (47, 11690), (48, 11717), (52, 11759), (53, 11768), (56, 11795), (57, 11801), (59, 11864), (60, 11876), (62, 11918), (63, 11921), (64, 11924), (68, 11975), (69, 11990), (70, 11999), (72, 12026), (75, 12041), (76, 12047), (82, 12119), (83, 12122), (84, 12140), (85, 12143), (86, 12152), (87,

12200), (88, 12212), (89, 12221), (92, 12236), (93, 12242), (94, 12257),

Gene: P106I_15 Start: 11324, Stop: 12271, Start Num: 9

Candidate Starts for P106I_15:

(5, 11309), (Start: 7 @11315 has 1 MA's), (8, 11318), (Start: 9 @11324 has 44 MA's), (10, 11357), (13, 11375), (14, 11378), (18, 11408), (19, 11417), (20, 11444), (21, 11447), (22, 11450), (23, 11453), (24, 11465), (25, 11474), (29, 11519), (30, 11549), (31, 11564), (34, 11579), (35, 11582), (38, 11606), (41, 11630), (43, 11648), (47, 11690), (48, 11717), (52, 11759), (53, 11768), (56, 11795), (57, 11801), (59, 11864), (60, 11876), (62, 11918), (63, 11921), (64, 11924), (68, 11975), (69, 11990), (70, 11999), (72, 12026), (75, 12041), (76, 12047), (82, 12119), (83, 12122), (84, 12140), (85, 12143), (86, 12152), (87, 12200), (88, 12212), (89, 12221), (92, 12236), (93, 12242), (94, 12257),

Gene: P106L_15 Start: 11324, Stop: 12271, Start Num: 9

Candidate Starts for P106L_15:

(5, 11309), (Start: 7 @11315 has 1 MA's), (8, 11318), (Start: 9 @11324 has 44 MA's), (10, 11357), (13, 11375), (14, 11378), (18, 11408), (19, 11417), (20, 11444), (21, 11447), (22, 11450), (23, 11453), (24, 11465), (25, 11474), (29, 11519), (30, 11549), (31, 11564), (34, 11579), (35, 11582), (38, 11606), (41, 11630), (43, 11648), (47, 11690), (48, 11717), (52, 11759), (53, 11768), (56, 11795), (57, 11801), (59, 11864), (60, 11876), (62, 11918), (63, 11921), (64, 11924), (68, 11975), (69, 11990), (70, 11999), (72, 12026), (75, 12041), (76, 12047), (82, 12119), (83, 12122), (84, 12140), (85, 12143), (86, 12152), (87, 12200), (88, 12212), (89, 12221), (92, 12236), (93, 12242), (94, 12257),

Gene: P106M_15 Start: 11324, Stop: 12271, Start Num: 9

Candidate Starts for P106M_15:

(5, 11309), (Start: 7 @11315 has 1 MA's), (8, 11318), (Start: 9 @11324 has 44 MA's), (10, 11357), (13, 11375), (14, 11378), (18, 11408), (19, 11417), (20, 11444), (21, 11447), (22, 11450), (23, 11453), (24, 11465), (25, 11474), (29, 11519), (30, 11549), (31, 11564), (34, 11579), (35, 11582), (38, 11606), (41, 11630), (43, 11648), (47, 11690), (48, 11717), (52, 11759), (53, 11768), (56, 11795), (57, 11801), (59, 11864), (60, 11876), (62, 11918), (63, 11921), (64, 11924), (68, 11975), (69, 11990), (70, 11999), (72, 12026), (75, 12041), (76, 12047), (82, 12119), (83, 12122), (84, 12140), (85, 12143), (86, 12152), (87, 12200), (88, 12212), (89, 12221), (92, 12236), (93, 12242), (94, 12257),

Gene: P107A_15 Start: 11301, Stop: 12248, Start Num: 9

Candidate Starts for P107A_15:

(Start: 7 @11292 has 1 MA's), (Start: 9 @11301 has 44 MA's), (10, 11334), (13, 11352), (14, 11355), (15, 11361), (18, 11385), (19, 11394), (21, 11424), (22, 11427), (23, 11430), (24, 11442), (25, 11451), (30, 11526), (31, 11541), (32, 11547), (35, 11559), (41, 11607), (43, 11625), (44, 11652), (46, 11661), (47, 11667), (48, 11694), (55, 11769), (57, 11778), (59, 11841), (60, 11853), (62, 11895), (63, 11898), (64, 11901), (68, 11952), (69, 11967), (71, 11988), (72, 12003), (75, 12018), (76, 12024), (82, 12096), (83, 12099), (84, 12117), (85, 12120), (87, 12177), (88, 12189), (89, 12198), (92, 12213), (93, 12219), (94, 12234),

Gene: P107C_15 Start: 11283, Stop: 12224, Start Num: 9

Candidate Starts for P107C_15:

(5, 11268), (Start: 7 @11274 has 1 MA's), (8, 11277), (Start: 9 @11283 has 44 MA's), (10, 11316), (11, 11322), (13, 11334), (18, 11361), (19, 11370), (21, 11400), (22, 11403), (23, 11406), (24, 11418), (25, 11427), (27, 11442), (29, 11472), (30, 11502), (31, 11517), (34, 11532), (35, 11535), (41, 11583), (43, 11601), (46, 11637), (47, 11643), (48, 11670), (49, 11673), (50, 11694), (52, 11712), (53, 11721), (55, 11745), (57, 11754), (59, 11817), (60, 11829), (62, 11871), (63, 11874), (64, 11877), (69, 11943), (71, 11964), (72, 11979), (75, 11994), (76, 12000), (82, 12072), (83, 12075), (84, 12093), (85, 12096), (86, 12105), (87, 12153), (88, 12165), (89, 12174), (90, 12183), (92, 12189), (93, 12195), (94, 12210),

Gene: P108C_15 Start: 11282, Stop: 12232, Start Num: 7

Candidate Starts for P108C_15:

(5, 11276), (Start: 7 @11282 has 1 MA's), (8, 11285), (Start: 9 @11291 has 44 MA's), (10, 11324), (13, 11342), (18, 11369), (19, 11378), (21, 11408), (22, 11411), (23, 11414), (24, 11426), (25, 11435), (27, 11450), (29, 11480), (30, 11510), (31, 11525), (32, 11531), (35, 11543), (41, 11591), (43, 11609), (46, 11645), (47, 11651), (48, 11678), (52, 11720), (53, 11729), (56, 11756), (57, 11762), (59, 11825), (60, 11837), (62, 11879), (63, 11882), (64, 11885), (67, 11918), (68, 11936), (69, 11951), (70, 11960), (72, 11987), (75, 12002), (76, 12008), (82, 12080), (83, 12083), (84, 12101), (85, 12104), (86, 12113), (87, 12161), (88, 12173), (89, 12182), (92, 12197), (93, 12203), (94, 12218),

Gene: P14.4_15 Start: 11291, Stop: 12238, Start Num: 9

Candidate Starts for P14.4_15:

(5, 11276), (Start: 7 @11282 has 1 MA's), (Start: 9 @11291 has 44 MA's), (10, 11324), (13, 11342), (14, 11345), (15, 11351), (18, 11375), (19, 11384), (21, 11414), (22, 11417), (23, 11420), (24, 11432), (25, 11441), (29, 11486), (30, 11516), (31, 11531), (32, 11537), (33, 11543), (34, 11546), (41, 11597), (43, 11615), (44, 11642), (46, 11651), (47, 11657), (48, 11684), (49, 11687), (50, 11708), (53, 11735), (55, 11759), (57, 11768), (59, 11831), (60, 11843), (62, 11885), (63, 11888), (64, 11891), (68, 11942), (69, 11957), (71, 11978), (72, 11993), (75, 12008), (76, 12014), (82, 12086), (83, 12089), (84, 12107), (85, 12110), (86, 12119), (87, 12167), (88, 12179), (92, 12203), (93, 12209), (94, 12224),

Gene: P9.1_15 Start: 11286, Stop: 12233, Start Num: 9

Candidate Starts for P9.1_15:

(5, 11271), (Start: 7 @11277 has 1 MA's), (8, 11280), (Start: 9 @11286 has 44 MA's), (10, 11319), (11, 11325), (13, 11337), (14, 11340), (15, 11346), (18, 11370), (21, 11409), (22, 11412), (23, 11415), (24, 11427), (25, 11436), (29, 11481), (30, 11511), (31, 11526), (32, 11532), (33, 11538), (34, 11541), (35, 11544), (41, 11592), (43, 11610), (44, 11637), (46, 11646), (48, 11679), (49, 11682), (50, 11703), (53, 11730), (56, 11757), (57, 11763), (59, 11826), (60, 11838), (62, 11880), (63, 11883), (64, 11886), (68, 11937), (69, 11952), (70, 11961), (72, 11988), (75, 12003), (76, 12009), (82, 12081), (83, 12084), (84, 12102), (85, 12105), (86, 12114), (87, 12162), (88, 12174), (89, 12183), (92, 12198), (93, 12204), (94, 12219),

Gene: PA6_15 Start: 11315, Stop: 12262, Start Num: 9

Candidate Starts for PA6_15:

(2, 11294), (Start: 7 @11306 has 1 MA's), (8, 11309), (Start: 9 @11315 has 44 MA's), (10, 11348), (11, 11354), (13, 11366), (15, 11375), (16, 11378), (18, 11399), (19, 11408), (21, 11438), (22, 11441), (23, 11444), (24, 11456), (26, 11471), (27, 11480), (29, 11510), (30, 11540), (31, 11555), (32, 11561), (33, 11567), (34, 11570), (35, 11573), (38, 11597), (41, 11621), (43, 11639), (44, 11666), (46, 11675), (47, 11681), (48, 11708), (49, 11711), (53, 11759), (56, 11786), (57, 11792), (59, 11855), (60, 11867), (62, 11909), (63, 11912), (66, 11927), (68, 11966), (69, 11981), (71, 12002), (72, 12017), (75, 12032), (76, 12038), (82, 12110), (83, 12113), (84, 12131), (85, 12134), (86, 12143), (87, 12191), (88, 12203), (89, 12212), (92, 12227), (93, 12233), (94, 12248),

Gene: PAD20_15 Start: 11289, Stop: 12230, Start Num: 9

Candidate Starts for PAD20_15:

(5, 11274), (Start: 7 @11280 has 1 MA's), (8, 11283), (Start: 9 @11289 has 44 MA's), (10, 11322), (11, 11328), (13, 11340), (18, 11367), (19, 11376), (21, 11406), (22, 11409), (23, 11412), (24, 11424), (27, 11448), (29, 11478), (30, 11508), (31, 11523), (33, 11535), (34, 11538), (35, 11541), (38, 11565), (41, 11589), (43, 11607), (44, 11634), (46, 11643), (47, 11649), (48, 11676), (50, 11700), (53, 11727), (56, 11754), (57, 11760), (59, 11823), (60, 11835), (62, 11877), (63, 11880), (64, 11883), (68, 11934), (69, 11949), (71, 11970), (72, 11985), (76, 12006), (82, 12078), (83, 12081), (84, 12099), (85, 12102), (86, 12111), (87, 12159), (88, 12171), (92, 12195), (93, 12201), (94, 12216),

Gene: PAS50_15 Start: 11298, Stop: 12239, Start Num: 9

Candidate Starts for PAS50_15:

(Start: 7 @11289 has 1 MA's), (Start: 9 @11298 has 44 MA's), (10, 11331), (13, 11349), (18, 11376), (19, 11385), (20, 11412), (21, 11415), (22, 11418), (23, 11421), (24, 11433), (25, 11442), (27, 11457), (29, 11487), (30, 11517), (31, 11532), (35, 11550), (37, 11565), (38, 11574), (41, 11598), (43, 11616), (47, 11658), (48, 11685), (52, 11727), (53, 11736), (56, 11763), (57, 11769), (59, 11832), (60, 11844), (62, 11886), (63, 11889), (64, 11892), (67, 11925), (68, 11943), (69, 11958), (70, 11967), (72, 11994), (75, 12009), (76, 12015), (82, 12087), (83, 12090), (84, 12108), (85, 12111), (86, 12120), (87, 12168), (88, 12180), (89, 12189), (92, 12204), (93, 12210), (94, 12225),

Gene: PHL010M04_15 Start: 11286, Stop: 12233, Start Num: 9

Candidate Starts for PHL010M04_15:

(5, 11271), (Start: 7 @11277 has 1 MA's), (8, 11280), (Start: 9 @11286 has 44 MA's), (10, 11319), (13, 11337), (14, 11340), (15, 11346), (18, 11370), (19, 11379), (21, 11409), (22, 11412), (23, 11415), (24, 11427), (25, 11436), (27, 11451), (29, 11481), (30, 11511), (31, 11526), (32, 11532), (34, 11541), (41, 11592), (43, 11610), (44, 11637), (46, 11646), (47, 11652), (48, 11679), (50, 11703), (53, 11730), (55, 11754), (57, 11763), (59, 11826), (60, 11838), (62, 11880), (63, 11883), (64, 11886), (68, 11937), (69, 11952), (71, 11973), (72, 11988), (75, 12003), (76, 12009), (82, 12081), (83, 12084), (84, 12102), (85, 12105), (86, 12114), (87, 12162), (88, 12174), (89, 12183), (92, 12198), (93, 12204), (94, 12219),

Gene: PHL037M02_15 Start: 11301, Stop: 12242, Start Num: 9

Candidate Starts for PHL037M02_15:

(3, 11283), (Start: 9 @11301 has 44 MA's), (10, 11334), (11, 11340), (13, 11352), (18, 11379), (19, 11388), (20, 11415), (21, 11418), (22, 11421), (23, 11424), (24, 11436), (25, 11445), (29, 11490), (30, 11520), (31, 11535), (32, 11541), (33, 11547), (34, 11550), (35, 11553), (38, 11577), (41, 11601), (43, 11619), (47, 11661), (48, 11688), (49, 11691), (50, 11712), (55, 11763), (57, 11772), (59, 11835), (60, 11847), (62, 11889), (63, 11892), (64, 11895), (68, 11946), (69, 11961), (71, 11982), (72, 11997), (75, 12012), (76, 12018), (82, 12090), (83, 12093), (84, 12111), (85, 12114), (87, 12171), (88, 12183), (89, 12192), (92, 12207), (93, 12213), (94, 12228),

Gene: PHL060L00_15 Start: 11302, Stop: 12249, Start Num: 9

Candidate Starts for PHL060L00_15:

(5, 11287), (Start: 7 @11293 has 1 MA's), (Start: 9 @11302 has 44 MA's), (10, 11335), (13, 11353), (14, 11356), (15, 11362), (18, 11386), (19, 11395), (21, 11425), (22, 11428), (23, 11431), (24, 11443), (25, 11452), (26, 11458), (27, 11467), (29, 11497), (30, 11527), (31, 11542), (35, 11560), (41, 11608), (43, 11626), (47, 11668), (48, 11695), (50, 11719), (53, 11746), (56, 11773), (57, 11779), (59, 11842), (62, 11896), (63, 11899), (64, 11902), (67, 11935), (68, 11953), (69, 11968), (71, 11989), (72, 12004), (75, 12019), (76, 12025), (82, 12097), (83, 12100), (84, 12118), (85, 12121), (87, 12178), (88, 12190), (89, 12199), (92, 12214), (93, 12220), (94, 12235),

Gene: PHL067M10_15 Start: 11269, Stop: 12210, Start Num: 9

Candidate Starts for PHL067M10_15:

(5, 11254), (Start: 7 @11260 has 1 MA's), (8, 11263), (Start: 9 @11269 has 44 MA's), (10, 11302), (13, 11320), (17, 11338), (18, 11347), (19, 11356), (21, 11386), (22, 11389), (23, 11392), (24, 11404), (25, 11413), (27, 11428), (29, 11458), (30, 11488), (31, 11503), (33, 11515), (34, 11518), (35, 11521), (38, 11545), (41, 11569), (43, 11587), (46, 11623), (47, 11629), (48, 11656), (49, 11659), (50, 11680), (53, 11707), (56, 11734), (57, 11740), (59, 11803), (60, 11815), (62, 11857), (63, 11860), (64, 11863), (68, 11914), (69, 11929), (71, 11950), (72, 11965), (75, 11980), (76, 11986), (82, 12058), (83, 12061), (84, 12079), (85, 12082), (86, 12091), (87, 12139), (88, 12151), (89, 12160), (92, 12175), (93, 12181), (94, 12196),

Gene: PHL071N05_15 Start: 11297, Stop: 12238, Start Num: 9

Candidate Starts for PHL071N05_15:

(5, 11282), (Start: 7 @11288 has 1 MA's), (Start: 9 @11297 has 44 MA's), (10, 11330), (11, 11336), (13, 11348), (18, 11375), (19, 11384), (21, 11414), (22, 11417), (23, 11420), (24, 11432), (25, 11441),

(27, 11456), (29, 11486), (30, 11516), (31, 11531), (35, 11549), (41, 11597), (43, 11615), (46, 11651), (47, 11657), (48, 11684), (51, 11717), (56, 11762), (57, 11768), (59, 11831), (60, 11843), (62, 11885), (63, 11888), (64, 11891), (69, 11957), (71, 11978), (72, 11993), (75, 12008), (76, 12014), (82, 12086), (83, 12089), (84, 12107), (85, 12110), (86, 12119), (87, 12167), (88, 12179), (89, 12188), (92, 12203), (93, 12209), (94, 12224),

Gene: PHL111M01_15 Start: 11287, Stop: 12234, Start Num: 9

Candidate Starts for PHL111M01_15:

(Start: 7 @11278 has 1 MA's), (8, 11281), (Start: 9 @11287 has 44 MA's), (10, 11320), (13, 11338), (14, 11341), (15, 11347), (18, 11371), (19, 11380), (21, 11410), (22, 11413), (23, 11416), (24, 11428), (27, 11452), (29, 11482), (30, 11512), (31, 11527), (33, 11539), (34, 11542), (35, 11545), (41, 11593), (43, 11611), (46, 11647), (47, 11653), (48, 11680), (53, 11731), (55, 11755), (57, 11764), (59, 11827), (60, 11839), (62, 11881), (63, 11884), (64, 11887), (68, 11938), (69, 11953), (71, 11974), (72, 11989), (75, 12004), (76, 12010), (82, 12082), (83, 12085), (84, 12103), (85, 12106), (86, 12115), (87, 12163), (88, 12175), (89, 12184), (92, 12199), (93, 12205), (94, 12220),

Gene: PHL112N00_15 Start: 11284, Stop: 12231, Start Num: 9

Candidate Starts for PHL112N00_15:

(Start: 7 @11275 has 1 MA's), (Start: 9 @11284 has 44 MA's), (10, 11317), (11, 11323), (13, 11335), (15, 11344), (19, 11377), (21, 11407), (22, 11410), (23, 11413), (24, 11425), (25, 11434), (27, 11449), (29, 11479), (30, 11509), (31, 11524), (33, 11536), (34, 11539), (35, 11542), (41, 11590), (43, 11608), (46, 11644), (47, 11650), (48, 11677), (49, 11680), (53, 11728), (56, 11755), (57, 11761), (59, 11824), (62, 11878), (63, 11881), (64, 11884), (67, 11917), (68, 11935), (69, 11950), (71, 11971), (72, 11986), (75, 12001), (76, 12007), (82, 12079), (83, 12082), (84, 12100), (85, 12103), (86, 12112), (87, 12160), (88, 12172), (89, 12181), (92, 12196), (93, 12202), (94, 12217),

Gene: PHL113M01_15 Start: 11311, Stop: 12252, Start Num: 9

Candidate Starts for PHL113M01_15:

(5, 11296), (Start: 7 @11302 has 1 MA's), (Start: 9 @11311 has 44 MA's), (10, 11344), (13, 11362), (18, 11389), (19, 11398), (20, 11425), (21, 11428), (22, 11431), (23, 11434), (24, 11446), (25, 11455), (27, 11470), (29, 11500), (30, 11530), (31, 11545), (33, 11557), (37, 11578), (38, 11587), (41, 11611), (43, 11629), (46, 11665), (47, 11671), (48, 11698), (52, 11740), (53, 11749), (56, 11776), (57, 11782), (59, 11845), (60, 11857), (62, 11899), (63, 11902), (64, 11905), (68, 11956), (69, 11971), (71, 11992), (72, 12007), (75, 12022), (76, 12028), (82, 12100), (83, 12103), (84, 12121), (85, 12124), (86, 12133), (87, 12181), (88, 12193), (89, 12202), (92, 12217), (93, 12223), (94, 12238),

Gene: PHL114L00_15 Start: 11289, Stop: 12236, Start Num: 9

Candidate Starts for PHL114L00_15:

(Start: 7 @11280 has 1 MA's), (Start: 9 @11289 has 44 MA's), (10, 11322), (13, 11340), (14, 11343), (15, 11349), (18, 11373), (19, 11382), (21, 11412), (22, 11415), (23, 11418), (24, 11430), (27, 11454), (29, 11484), (30, 11514), (31, 11529), (33, 11541), (34, 11544), (35, 11547), (38, 11571), (41, 11595), (43, 11613), (44, 11640), (46, 11649), (48, 11682), (49, 11685), (50, 11706), (53, 11733), (56, 11760), (57, 11766), (59, 11829), (60, 11841), (62, 11883), (63, 11886), (64, 11889), (68, 11940), (69, 11955), (71, 11976), (72, 11991), (75, 12006), (76, 12012), (82, 12084), (83, 12087), (84, 12105), (85, 12108), (87, 12165), (88, 12177), (89, 12186), (92, 12201), (93, 12207), (94, 12222),

Gene: Parvaparticeps_34 Start: 24373, Stop: 23477, Start Num: 13

Candidate Starts for Parvaparticeps_34:

(13, 24373), (14, 24370), (20, 24310), (22, 24304), (26, 24274), (40, 24139), (45, 24079), (54, 23974), (58, 23911), (67, 23800), (69, 23767), (74, 23716), (78, 23680), (79, 23665), (80, 23632),

Gene: Pirate_15 Start: 11280, Stop: 12227, Start Num: 9

Candidate Starts for Pirate_15:

(5, 11265), (Start: 7 @11271 has 1 MA's), (8, 11274), (Start: 9 @11280 has 44 MA's), (10, 11313), (13, 11331), (14, 11334), (18, 11364), (19, 11373), (21, 11403), (22, 11406), (23, 11409), (24, 11421), (25, 11430), (29, 11475), (30, 11505), (31, 11520), (33, 11532), (34, 11535), (35, 11538), (39, 11571), (41, 11586), (43, 11604), (46, 11640), (47, 11646), (48, 11673), (50, 11697), (53, 11724), (56, 11751), (57, 11757), (59, 11820), (60, 11832), (62, 11874), (63, 11877), (64, 11880), (68, 11931), (69, 11946), (71, 11967), (72, 11982), (75, 11997), (76, 12003), (82, 12075), (83, 12078), (84, 12096), (85, 12099), (86, 12108), (87, 12156), (88, 12168), (89, 12177), (92, 12192), (93, 12198), (94, 12213),

Gene: Procrass1_15 Start: 11294, Stop: 12235, Start Num: 9

Candidate Starts for Procrass1_15:

(5, 11279), (Start: 7 @11285 has 1 MA's), (8, 11288), (Start: 9 @11294 has 44 MA's), (10, 11327), (13, 11345), (18, 11372), (19, 11381), (21, 11411), (22, 11414), (23, 11417), (24, 11429), (25, 11438), (27, 11453), (29, 11483), (30, 11513), (31, 11528), (33, 11540), (34, 11543), (35, 11546), (41, 11594), (43, 11612), (46, 11648), (47, 11654), (48, 11681), (50, 11705), (52, 11723), (53, 11732), (56, 11759), (57, 11765), (59, 11828), (60, 11840), (62, 11882), (63, 11885), (64, 11888), (67, 11921), (68, 11939), (69, 11954), (71, 11975), (72, 11990), (75, 12005), (76, 12011), (82, 12083), (83, 12086), (84, 12104), (85, 12107), (86, 12116), (87, 12164), (88, 12176), (89, 12185), (92, 12200), (93, 12206), (94, 12221),

Gene: QueenBey_15 Start: 11288, Stop: 12235, Start Num: 9

Candidate Starts for QueenBey_15:

(5, 11273), (Start: 7 @11279 has 1 MA's), (Start: 9 @11288 has 44 MA's), (10, 11321), (11, 11327), (13, 11339), (14, 11342), (15, 11348), (18, 11372), (19, 11381), (21, 11411), (22, 11414), (23, 11417), (24, 11429), (25, 11438), (29, 11483), (30, 11513), (31, 11528), (32, 11534), (34, 11543), (41, 11594), (43, 11612), (44, 11639), (46, 11648), (47, 11654), (48, 11681), (50, 11705), (53, 11732), (55, 11756), (57, 11765), (59, 11828), (62, 11882), (63, 11885), (64, 11888), (68, 11939), (69, 11954), (71, 11975), (72, 11990), (75, 12005), (76, 12011), (82, 12083), (83, 12086), (84, 12104), (85, 12107), (86, 12116), (87, 12164), (88, 12176), (89, 12185), (92, 12200), (93, 12206), (94, 12221),

Gene: Rileysaurus_15 Start: 11284, Stop: 12231, Start Num: 9

Candidate Starts for Rileysaurus_15:

(Start: 7 @11275 has 1 MA's), (8, 11278), (Start: 9 @11284 has 44 MA's), (10, 11317), (13, 11335), (14, 11338), (15, 11344), (18, 11368), (19, 11377), (21, 11407), (22, 11410), (23, 11413), (24, 11425), (25, 11434), (29, 11479), (30, 11509), (31, 11524), (32, 11530), (35, 11542), (43, 11608), (44, 11635), (46, 11644), (47, 11650), (48, 11677), (53, 11728), (55, 11752), (57, 11761), (59, 11824), (60, 11836), (62, 11878), (63, 11881), (64, 11884), (68, 11935), (69, 11950), (71, 11971), (72, 11986), (75, 12001), (76, 12007), (82, 12079), (83, 12082), (84, 12100), (85, 12103), (86, 12112), (87, 12160), (88, 12172), (89, 12181), (92, 12196), (93, 12202), (94, 12217),

Gene: SKKY_15 Start: 11329, Stop: 12270, Start Num: 9

Candidate Starts for SKKY_15:

(3, 11311), (Start: 9 @11329 has 44 MA's), (10, 11362), (11, 11368), (13, 11380), (18, 11407), (19, 11416), (21, 11446), (22, 11449), (23, 11452), (24, 11464), (25, 11473), (27, 11488), (29, 11518), (30, 11548), (31, 11563), (33, 11575), (35, 11581), (38, 11605), (41, 11629), (43, 11647), (46, 11683), (47, 11689), (48, 11716), (49, 11719), (50, 11740), (53, 11767), (55, 11791), (57, 11800), (59, 11863), (62, 11917), (63, 11920), (66, 11935), (68, 11974), (69, 11989), (71, 12010), (72, 12025), (75, 12040), (76, 12046), (82, 12118), (83, 12121), (84, 12139), (85, 12142), (86, 12151), (87, 12199), (88, 12211), (89, 12220), (92, 12235), (93, 12241), (94, 12256),

Gene: Solid_15 Start: 11283, Stop: 12224, Start Num: 9

Candidate Starts for Solid_15:

(5, 11268), (Start: 7 @11274 has 1 MA's), (8, 11277), (Start: 9 @11283 has 44 MA's), (10, 11316), (11, 11322), (12, 11331), (13, 11334), (18, 11361), (19, 11370), (21, 11400), (22, 11403), (23, 11406), (24, 11418), (25, 11427), (26, 11433), (29, 11472), (30, 11502), (31, 11517), (33, 11529), (34, 11532), (35,

11535), (41, 11583), (43, 11601), (46, 11637), (47, 11643), (48, 11670), (49, 11673), (50, 11694), (53, 11721), (55, 11745), (57, 11754), (60, 11829), (62, 11871), (63, 11874), (64, 11877), (66, 11889), (68, 11928), (69, 11943), (71, 11964), (72, 11979), (75, 11994), (76, 12000), (77, 12018), (82, 12072), (83, 12075), (84, 12093), (85, 12096), (87, 12153), (88, 12165), (89, 12174), (92, 12189), (93, 12195), (94, 12210),

Gene: Stormborn_15 Start: 11299, Stop: 12246, Start Num: 9

Candidate Starts for Stormborn_15:

(Start: 7 @11290 has 1 MA's), (8, 11293), (Start: 9 @11299 has 44 MA's), (10, 11332), (13, 11350), (14, 11353), (15, 11359), (18, 11383), (19, 11392), (21, 11422), (22, 11425), (23, 11428), (24, 11440), (25, 11449), (26, 11455), (29, 11494), (30, 11524), (31, 11539), (32, 11545), (35, 11557), (41, 11605), (43, 11623), (46, 11659), (47, 11665), (48, 11692), (50, 11716), (53, 11743), (56, 11770), (57, 11776), (59, 11839), (60, 11851), (62, 11893), (63, 11896), (64, 11899), (68, 11950), (69, 11965), (70, 11974), (71, 11986), (72, 12001), (76, 12022), (82, 12094), (83, 12097), (84, 12115), (85, 12118), (87, 12175), (88, 12187), (89, 12196), (92, 12211), (93, 12217), (94, 12232),

Gene: Supernova_15 Start: 11301, Stop: 12242, Start Num: 9

Candidate Starts for Supernova_15:

(3, 11283), (Start: 9 @11301 has 44 MA's), (10, 11334), (11, 11340), (13, 11352), (18, 11379), (19, 11388), (20, 11415), (21, 11418), (22, 11421), (23, 11424), (24, 11436), (25, 11445), (29, 11490), (30, 11520), (31, 11535), (33, 11547), (34, 11550), (35, 11553), (38, 11577), (41, 11601), (43, 11619), (46, 11655), (47, 11661), (48, 11688), (50, 11712), (52, 11730), (53, 11739), (56, 11766), (57, 11772), (59, 11835), (62, 11889), (63, 11892), (64, 11895), (66, 11907), (68, 11946), (69, 11961), (71, 11982), (72, 11997), (75, 12012), (76, 12018), (82, 12090), (83, 12093), (84, 12111), (85, 12114), (86, 12123), (87, 12171), (88, 12183), (89, 12192), (92, 12207), (93, 12213), (94, 12228),

Gene: Wizzo_15 Start: 11316, Stop: 12257, Start Num: 9

Candidate Starts for Wizzo_15:

(Start: 7 @11307 has 1 MA's), (8, 11310), (Start: 9 @11316 has 44 MA's), (10, 11349), (11, 11355), (13, 11367), (18, 11394), (19, 11403), (21, 11433), (22, 11436), (23, 11439), (29, 11505), (30, 11535), (31, 11550), (33, 11562), (34, 11565), (35, 11568), (38, 11592), (41, 11616), (42, 11631), (43, 11634), (46, 11670), (47, 11676), (48, 11703), (49, 11706), (53, 11754), (55, 11778), (56, 11781), (57, 11787), (59, 11850), (60, 11862), (61, 11892), (62, 11904), (63, 11907), (64, 11910), (68, 11961), (69, 11976), (71, 11997), (72, 12012), (75, 12027), (76, 12033), (82, 12105), (83, 12108), (84, 12126), (85, 12129), (86, 12138), (87, 12186), (88, 12198), (89, 12207), (91, 12219), (92, 12222), (93, 12228), (94, 12243),