



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 311637 Report

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

Pham number 311637 has 57 members, 12 are drafts.

Phages represented in each track:

- Track 1 : P100D\_1
- Track 2 : P105\_1
- Track 3 : Attacne\_1, Wizzo\_1, Cota\_1, Keiki\_1
- Track 4 : PHL113M01\_01, P107C\_1, P1.1\_1, ATCC29399BC\_1, P101A\_1, P104B\_1, PHL060L00\_01
- Track 5 : LilBandit\_1
- Track 6 : BruceLethal\_1
- Track 7 : PHL112N00\_01
- Track 8 : P14.4\_1
- Track 9 : Stormborn\_1
- Track 10 : P108C\_1
- Track 11 : SKKY\_1
- Track 12 : P106C\_1, P106I\_1, P106L\_1, P106A\_1, P106M\_1
- Track 13 : ATCC29399BT\_1
- Track 14 : QueenBey\_1
- Track 15 : Kubed\_1, Moyashi\_1
- Track 16 : PA6\_1
- Track 17 : Enoki\_1
- Track 18 : PAS50\_1
- Track 19 : Leviosa\_1
- Track 20 : DrParker\_1
- Track 21 : P107A\_1
- Track 22 : MEAK\_1
- Track 23 : Pirate\_1
- Track 24 : Ouroboros\_1
- Track 25 : PHL111M01\_01
- Track 26 : Enochoraptor\_1
- Track 27 : Aquarius\_1
- Track 28 : PAD20\_1
- Track 29 : P9.1\_1
- Track 30 : Solid\_1
- Track 31 : PHL114L00\_01
- Track 32 : PHL067M10\_01
- Track 33 : P100.1\_1
- Track 34 : P104A\_1
- Track 35 : MrAK\_1
- Track 36 : PHL010M04\_01

- Track 37 : Rileysaurus\_1
- Track 38 : PHL071N05\_01
- Track 39 : Lauchelly\_1
- Track 40 : P100A\_1
- Track 41 : PHL037M02\_01
- Track 42 : Procrass1\_1
- Track 43 : Supernova\_1

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

The start number called the most often in the published annotations is 18, it was called in 25 of the 45 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aquarius\_1, Attacne\_1, BruceLethal\_1, Cota\_1, DrParker\_1, Enochoraptor\_1, Enoki\_1, Keiki\_1, Kubed\_1, Lauchelly\_1, Leviosa\_1, LilBandit\_1, MEAK\_1, Moyashi\_1, MrAK\_1, Ouroboros\_1, Pirate\_1, Procrass1\_1, QueenBey\_1, Rileysaurus\_1, SKKY\_1, Solid\_1, Stormborn\_1, Supernova\_1, Wizzo\_1,

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

- ATCC29399BC\_1, ATCC29399BT\_1, P1.1\_1, P100.1\_1, P100A\_1, P100D\_1, P101A\_1, P104A\_1, P104B\_1, P105\_1, P106A\_1, P106C\_1, P106I\_1, P106L\_1, P106M\_1, P107A\_1, P107C\_1, P108C\_1, P14.4\_1, P9.1\_1, PA6\_1, PAD20\_1, PAS50\_1, PHL010M04\_01, PHL037M02\_01, PHL060L00\_01, PHL067M10\_01, PHL071N05\_01, PHL111M01\_01, PHL112N00\_01, PHL113M01\_01, PHL114L00\_01,

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

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**Summary by start number:**

Start 1:

- Found in 47 of 57 ( 82.5% ) of genes in pham
- Manual Annotations of this start: 16 of 45
- Called 55.3% of time when present
- Phage (with cluster) where this start called: ATCC29399BC\_1 (BU), P1.1\_1 (BU), P100.1\_1 (BU), P100D\_1 (BU), P101A\_1 (BU), P104A\_1 (BU), P104B\_1 (BU), P105\_1 (BU), P106A\_1 (BU), P106C\_1 (BU), P106I\_1 (BU), P106L\_1 (BU), P106M\_1 (BU), P107C\_1 (BU), P14.4\_1 (BU), P9.1\_1 (BU), PA6\_1 (BU), PAD20\_1 (BU), PAS50\_1 (BU), PHL037M02\_01 (BU), PHL060L00\_01 (BU), PHL067M10\_01 (BU), PHL071N05\_01 (BU), PHL111M01\_01 (BU), PHL112N00\_01 (BU), PHL113M01\_01 (BU),

Start 6:

- Found in 5 of 57 ( 8.8% ) of genes in pham
- Manual Annotations of this start: 1 of 45
- Called 60.0% of time when present
- Phage (with cluster) where this start called: P107A\_1 (BU), PHL010M04\_01 (BU), PHL114L00\_01 (BU),

Start 10:

- Found in 49 of 57 ( 86.0% ) 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: P100A\_1 (BU),

Start 12:

- Found in 4 of 57 ( 7.0% ) of genes in pham
- Manual Annotations of this start: 1 of 45
- Called 25.0% of time when present
- Phage (with cluster) where this start called: ATCC29399BT\_1 (BU),

Start 13:

- Found in 56 of 57 ( 98.2% ) of genes in pham
- Manual Annotations of this start: 1 of 45
- Called 1.8% of time when present
- Phage (with cluster) where this start called: P108C\_1 (BU),

Start 18:

- Found in 57 of 57 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 25 of 45
- Called 43.9% of time when present
- Phage (with cluster) where this start called: Aquarius\_1 (BU), Attacne\_1 (BU), BruceLethal\_1 (BU), Cota\_1 (BU), DrParker\_1 (BU), Enochoraptor\_1 (BU), Enoki\_1 (BU), Keiki\_1 (BU), Kubed\_1 (BU), Lauchelly\_1 (BU), Leviosa\_1 (BU), LilBandit\_1 (BU), MEAK\_1 (BU), Moyashi\_1 (BU), MrAK\_1 (BU), Ouroboros\_1 (BU), Pirate\_1 (BU), Procrass1\_1 (BU), QueenBey\_1 (BU), Rileysaurus\_1 (BU), SKKY\_1 (BU), Solid\_1 (BU), Stormborn\_1 (BU), Supernova\_1 (BU), Wizzo\_1 (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 16 times for cluster BU.
- Start number 6 was manually annotated 1 time for cluster BU.
- Start number 10 was manually annotated 1 time for cluster BU.
- Start number 12 was manually annotated 1 time for cluster BU.
- Start number 13 was manually annotated 1 time for cluster BU.
- Start number 18 was manually annotated 25 times for cluster BU.

**Gene Information:**

Gene: ATCC29399BC\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for ATCC29399BC\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: ATCC29399BT\_1 Start: 57, Stop: 380, Start Num: 12

Candidate Starts for ATCC29399BT\_1:

(2, 18), (4, 21), (Start: 12 @57 has 1 MA's), (Start: 13 @60 has 1 MA's), (14, 63), (16, 66), (17, 69), (Start: 18 @72 has 25 MA's), (21, 132), (22, 162), (25, 189), (26, 201), (28, 213), (29, 216), (30, 240), (31, 243), (32, 252), (33, 264), (34, 276), (35, 282), (36, 285), (37, 300), (38, 306), (41, 339), (42, 345),

Gene: Aquarius\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Aquarius\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (40, 311), (41, 332), (42, 338),

Gene: Attacne\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Attacne\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: BruceLethal\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for BruceLethal\_1:

(Start: 1 @2 has 16 MA's), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (16, 59), (17, 62), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (28, 206), (29, 209), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: Cota\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Cota\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: DrParker\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for DrParker\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (28, 206), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: Enochoraptor\_1 Start: 72, Stop: 380, Start Num: 18

Candidate Starts for Enochoraptor\_1:

(2, 18), (9, 54), (11, 57), (Start: 13 @60 has 1 MA's), (14, 63), (17, 69), (Start: 18 @72 has 25 MA's), (21, 132), (22, 162), (23, 180), (26, 201), (29, 216), (30, 240), (31, 243), (33, 264), (34, 276), (35, 282), (36, 285), (38, 306), (41, 339), (42, 345),

Gene: Enoki\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Enoki\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (24, 179), (25, 182), (26, 194), (28, 206), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: Keiki\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Keiki\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: Kubed\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Kubed\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: Lauchelly\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Lauchelly\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: Leviosa\_1 Start: 72, Stop: 380, Start Num: 18

Candidate Starts for Leviosa\_1:

(2, 18), (8, 54), (Start: 10 @57 has 1 MA's), (Start: 13 @60 has 1 MA's), (14, 63), (17, 69), (Start: 18 @72 has 25 MA's), (21, 132), (22, 162), (24, 186), (25, 189), (26, 201), (28, 213), (29, 216), (31, 243), (32, 252), (33, 264), (34, 276), (35, 282), (36, 285), (38, 306), (39, 309), (41, 339), (42, 345),

Gene: LilBandit\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for LilBandit\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (24, 179), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: MEAK\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for MEAK\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: Moyashi\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Moyashi\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: MrAK\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for MrAK\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (26, 194), (28, 206), (29, 209), (31, 236), (32, 245), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: Ouroboros\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Ouroboros\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (17, 62), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (28, 206), (29, 209), (31, 236), (32, 245), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P1.1\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P1.1\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P100.1\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P100.1\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P100A\_1 Start: 55, Stop: 378, Start Num: 10

Candidate Starts for P100A\_1:

(Start: 6 @34 has 1 MA's), (8, 52), (Start: 10 @55 has 1 MA's), (Start: 13 @58 has 1 MA's), (14, 61), (17, 67), (Start: 18 @70 has 25 MA's), (21, 130), (22, 160), (26, 199), (28, 211), (29, 214), (30, 238), (31, 241), (33, 262), (34, 274), (35, 280), (36, 283), (38, 304), (41, 337), (42, 343),

Gene: P100D\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P100D\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: P101A\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P101A\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P104A\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P104A\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (17, 62), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: P104B\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P104B\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P105\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P105\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (32, 245), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: P106A\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P106A\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (25, 182), (26, 194), (27,

197), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P106C\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P106C\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (25, 182), (26, 194), (27, 197), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P106I\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P106I\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (25, 182), (26, 194), (27, 197), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P106L\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P106L\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (25, 182), (26, 194), (27, 197), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P106M\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P106M\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (25, 182), (26, 194), (27, 197), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P107A\_1 Start: 34, Stop: 381, Start Num: 6

Candidate Starts for P107A\_1:

(Start: 6 @34 has 1 MA's), (7, 52), (15, 64), (17, 70), (Start: 18 @73 has 25 MA's), (21, 133), (22, 163), (26, 202), (28, 214), (29, 217), (31, 244), (33, 265), (34, 277), (35, 283), (36, 286), (38, 307), (41, 340), (42, 346),

Gene: P107C\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P107C\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P108C\_1 Start: 53, Stop: 373, Start Num: 13

Candidate Starts for P108C\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (11, 50), (Start: 13 @53 has 1 MA's), (14, 56), (17, 62), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (26, 194), (28, 206), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P14.4\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P14.4\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (24, 179), (25, 182), (26, 194), (29, 209), (30,

233), (31, 236), (32, 245), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: P9.1\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for P9.1\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (25, 182), (26, 194), (29, 209), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: PA6\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PA6\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: PAD20\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PAD20\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (17, 62), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (32, 245), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: PAS50\_1 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PAS50\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (28, 206), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: PHL010M04\_01 Start: 34, Stop: 372, Start Num: 6

Candidate Starts for PHL010M04\_01:

(Start: 6 @34 has 1 MA's), (Start: 12 @49 has 1 MA's), (Start: 13 @52 has 1 MA's), (14, 55), (16, 58), (17, 61), (Start: 18 @64 has 25 MA's), (21, 124), (22, 154), (25, 181), (26, 193), (28, 205), (29, 208), (31, 235), (33, 256), (34, 268), (35, 274), (36, 277), (38, 298), (41, 331), (42, 337),

Gene: PHL037M02\_01 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PHL037M02\_01:

(Start: 1 @2 has 16 MA's), (3, 20), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: PHL060L00\_01 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PHL060L00\_01:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: PHL067M10\_01 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PHL067M10\_01:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (28, 206), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: PHL071N05\_01 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PHL071N05\_01:

(Start: 1 @2 has 16 MA's), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (17, 62), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (24, 179), (25, 182), (26, 194), (28, 206), (29, 209), (30, 233), (31, 236), (32, 245), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: PHL111M01\_01 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PHL111M01\_01:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (32, 245), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: PHL112N00\_01 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PHL112N00\_01:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (23, 173), (25, 182), (26, 194), (27, 197), (28, 206), (29, 209), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: PHL113M01\_01 Start: 2, Stop: 373, Start Num: 1

Candidate Starts for PHL113M01\_01:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: PHL114L00\_01 Start: 34, Stop: 381, Start Num: 6

Candidate Starts for PHL114L00\_01:

(Start: 6 @34 has 1 MA's), (Start: 12 @58 has 1 MA's), (Start: 13 @61 has 1 MA's), (14, 64), (16, 67), (17, 70), (Start: 18 @73 has 25 MA's), (21, 133), (22, 163), (26, 202), (28, 214), (29, 217), (31, 244), (33, 265), (34, 277), (35, 283), (36, 286), (38, 307), (41, 340), (42, 346),

Gene: Pirate\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Pirate\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (20, 110), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: Procrass1\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Procrass1\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (32, 245), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: QueenBey\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for QueenBey\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (28, 206), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),

Gene: Rileysaurus\_1 Start: 64, Stop: 372, Start Num: 18

Candidate Starts for Rileysaurus\_1:

(8, 46), (Start: 10 @49 has 1 MA's), (Start: 13 @52 has 1 MA's), (14, 55), (Start: 18 @64 has 25 MA's), (21, 124), (22, 154), (24, 178), (25, 181), (26, 193), (28, 205), (29, 208), (30, 232), (31, 235), (33, 256), (34, 268), (35, 274), (36, 277), (38, 298), (41, 331), (42, 337),

Gene: SKKY\_1 Start: 72, Stop: 380, Start Num: 18

Candidate Starts for SKKY\_1:

(2, 18), (8, 51), (Start: 12 @57 has 1 MA's), (Start: 13 @60 has 1 MA's), (14, 63), (17, 69), (Start: 18 @72 has 25 MA's), (21, 132), (22, 162), (25, 189), (26, 201), (29, 216), (30, 240), (31, 243), (33, 264), (34, 276), (35, 282), (36, 285), (38, 306), (41, 339), (42, 345),

Gene: Solid\_1 Start: 64, Stop: 372, Start Num: 18

Candidate Starts for Solid\_1:

(Start: 6 @34 has 1 MA's), (8, 46), (Start: 10 @49 has 1 MA's), (Start: 13 @52 has 1 MA's), (14, 55), (Start: 18 @64 has 25 MA's), (21, 124), (22, 154), (25, 181), (26, 193), (29, 208), (30, 232), (31, 235), (33, 256), (34, 268), (35, 274), (36, 277), (38, 298), (39, 301), (41, 331), (42, 337),

Gene: Stormborn\_1 Start: 71, Stop: 379, Start Num: 18

Candidate Starts for Stormborn\_1:

(Start: 1 @2 has 16 MA's), (8, 53), (Start: 10 @56 has 1 MA's), (Start: 13 @59 has 1 MA's), (14, 62), (17, 68), (Start: 18 @71 has 25 MA's), (19, 89), (21, 131), (22, 161), (26, 200), (28, 212), (29, 215), (30, 239), (31, 242), (32, 251), (33, 263), (34, 275), (35, 281), (36, 284), (38, 305), (41, 338), (42, 344),

Gene: Supernova\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Supernova\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (28, 206), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (39, 302), (41, 332), (42, 338),

Gene: Wizzo\_1 Start: 65, Stop: 373, Start Num: 18

Candidate Starts for Wizzo\_1:

(Start: 1 @2 has 16 MA's), (3, 20), (5, 26), (8, 47), (Start: 10 @50 has 1 MA's), (Start: 13 @53 has 1 MA's), (14, 56), (Start: 18 @65 has 25 MA's), (21, 125), (22, 155), (25, 182), (26, 194), (29, 209), (30, 233), (31, 236), (33, 257), (34, 269), (35, 275), (36, 278), (38, 299), (41, 332), (42, 338),