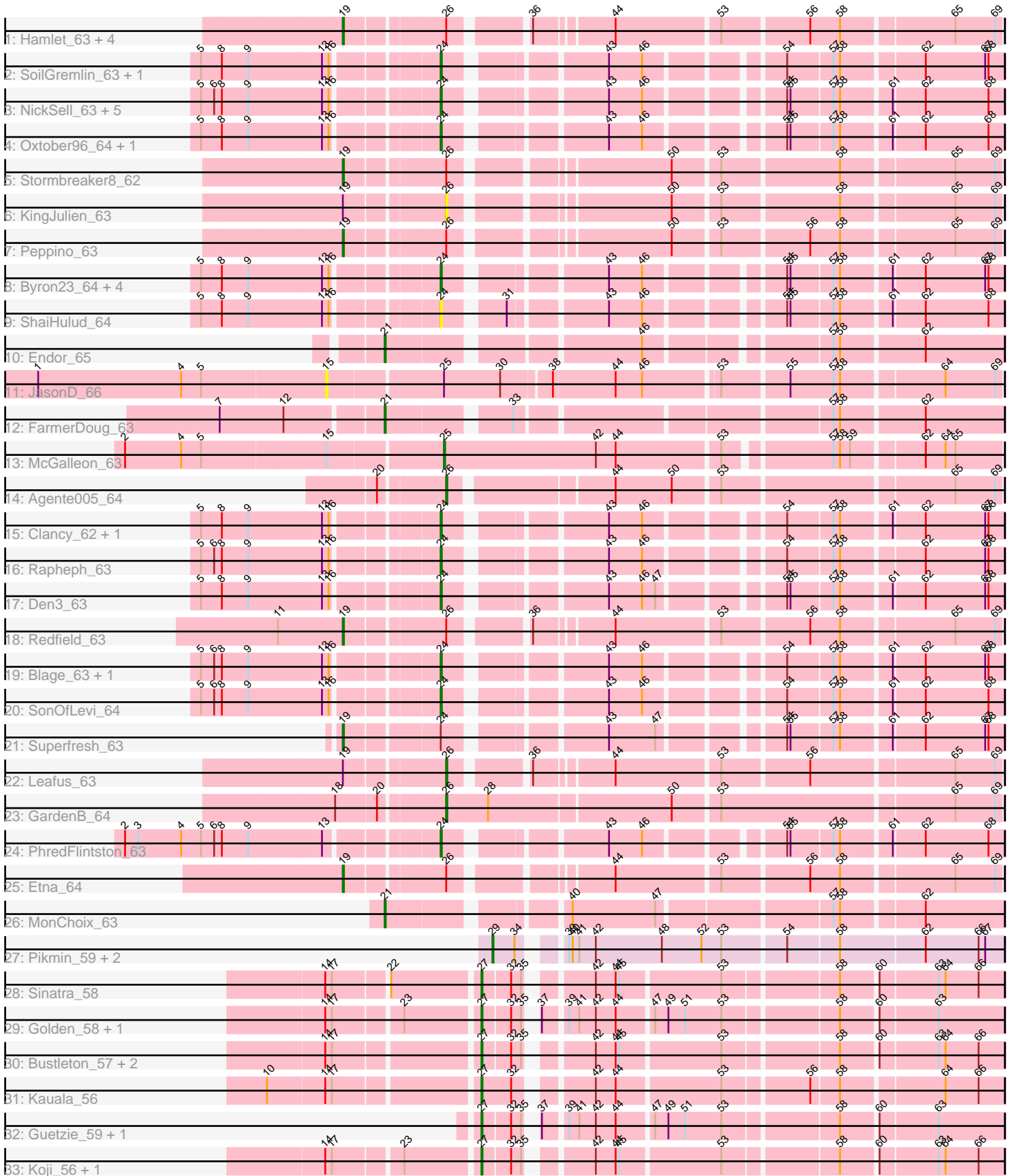


Pham 194034



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 194034 Report

This analysis was run 11/02/24 on database version 579.

Pham number 194034 has 57 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Hamlet\_63, Schnapsidee\_63, BeeBee8\_65, Balsa\_62, Raccoon\_63
- Track 2 : SoilGremlin\_63, OldNelly\_63
- Track 3 : NickSell\_63, Jerbirus\_64, Kurt1\_63, MrWorldwide\_63, JeriBeth\_64, Phiderman\_63
- Track 4 : Öxtober96\_64, Lovelyunicorn\_63
- Track 5 : Stormbreaker8\_62
- Track 6 : KingJulien\_63
- Track 7 : Peppino\_63
- Track 8 : Byron23\_64, Janus167\_62, Sedgewig\_62, HankSprout\_63, StirfryIV\_62
- Track 9 : ShaiHulud\_64
- Track 10 : Endor\_65
- Track 11 : JasonD\_66
- Track 12 : FarmerDoug\_63
- Track 13 : McGalleon\_63
- Track 14 : Agente005\_64
- Track 15 : Clancy\_62, Figueroism\_63
- Track 16 : Rapheph\_63
- Track 17 : Den3\_63
- Track 18 : Redfield\_63
- Track 19 : Blage\_63, Velene\_63
- Track 20 : SonOfLevi\_64
- Track 21 : Superfresh\_63
- Track 22 : Leafus\_63
- Track 23 : GardenB\_64
- Track 24 : PhredFlintston\_63
- Track 25 : Etna\_64
- Track 26 : MonChoix\_63
- Track 27 : Pikmin\_59, Casey\_59, Pajaza\_59
- Track 28 : Sinatra\_58
- Track 29 : Golden\_58, Lucky3\_58
- Track 30 : Bustleton\_57, BouleyBill\_56, Pherbot\_57
- Track 31 : Kauala\_56
- Track 32 : Guetzie\_59, SirVictor\_59
- Track 33 : Koji\_56, PrincePhergus\_57

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

The start number called the most often in the published annotations is 24, it was called in 20 of the 51 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Blage\_63, Byron23\_64, Clancy\_62, Den3\_63, Figueroism\_63, HankSprout\_63, Janus167\_62, Jerbirus\_64, JeriBeth\_64, Kurt1\_63, Lovelyunicorn\_63, MrWorldwide\_63, NickSell\_63, OldNelly\_63, Oxtober96\_64, Phiderman\_63, PhredFlintston\_63, Rapheph\_63, Sedgewig\_62, ShaiHulud\_64, SoilGremlin\_63, SonOfLevi\_64, StirfryIV\_62, Velene\_63,

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

- Superfresh\_63,

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

- Agente005\_64, Balsa\_62, BeeBee8\_65, BouleyBill\_56, Bustleton\_57, Casey\_59, Endor\_65, Etna\_64, FarmerDoug\_63, GardenB\_64, Golden\_58, Guetzie\_59, Hamlet\_63, JasonD\_66, Kauala\_56, KingJulien\_63, Koji\_56, Leafus\_63, Lucky3\_58, McGalleon\_63, MonChoix\_63, Pajaza\_59, Peppino\_63, Pherbot\_57, Pikmin\_59, PrincePhergus\_57, Raccoon\_63, Redfield\_63, Schnapsidee\_63, Sinatra\_58, SirVictor\_59, Stormbreaker8\_62,

### **Summary by start number:**

Start 15:

- Found in 2 of 57 ( 3.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: JasonD\_66 (EA1),

Start 19:

- Found in 12 of 57 ( 21.1% ) of genes in pham
- Manual Annotations of this start: 10 of 51
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Balsa\_62 (EA1), BeeBee8\_65 (EA1), Etna\_64 (EA1), Hamlet\_63 (EA1), Peppino\_63 (EA1), Raccoon\_63 (EA1), Redfield\_63 (EA1), Schnapsidee\_63 (EA1), Stormbreaker8\_62 (EA1), Superfresh\_63 (EA1),

Start 21:

- Found in 3 of 57 ( 5.3% ) of genes in pham
- Manual Annotations of this start: 3 of 51
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Endor\_65 (EA1), FarmerDoug\_63 (EA1), MonChoix\_63 (EA1),

Start 24:

- Found in 25 of 57 ( 43.9% ) of genes in pham
- Manual Annotations of this start: 20 of 51
- Called 96.0% of time when present

- Phage (with cluster) where this start called: Blage\_63 (EA1), Byron23\_64 (EA1), Clancy\_62 (EA1), Den3\_63 (EA1), Figueroism\_63 (EA1), HankSprout\_63 (EA1), Janus167\_62 (EA1), Jerbirus\_64 (EA1), JeriBeth\_64 (EA1), Kurt1\_63 (EA1), Lovelyunicorn\_63 (EA1), MrWorldwide\_63 (EA1), NickSell\_63 (EA1), OldNelly\_63 (EA1), Oxtober96\_64 (EA1), Phiderman\_63 (EA1), PhredFlintston\_63 (EA1), Rappheph\_63 (EA1), Sedgewig\_62 (EA1), ShaiHulud\_64 (EA1), SoilGremlin\_63 (EA1), SonOfLevi\_64 (EA1), StirfryIV\_62 (EA1), Velene\_63 (EA1),

#### Start 25:

- Found in 2 of 57 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 1 of 51
- Called 50.0% of time when present
- Phage (with cluster) where this start called: McGalleon\_63 (EA1),

#### Start 26:

- Found in 13 of 57 ( 22.8% ) of genes in pham
- Manual Annotations of this start: 3 of 51
- Called 30.8% of time when present
- Phage (with cluster) where this start called: Agente005\_64 (EA1), GardenB\_64 (EA1), KingJulien\_63 (EA1), Leafus\_63 (EA1),

#### Start 27:

- Found in 11 of 57 ( 19.3% ) of genes in pham
- Manual Annotations of this start: 11 of 51
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BouleyBill\_56 (EA4), Bustleton\_57 (EA4), Golden\_58 (EA4), Guetzie\_59 (EA4), Kauala\_56 (EA4), Koji\_56 (EA4), Lucky3\_58 (EA4), Pherbot\_57 (EA4), PrincePhergus\_57 (EA4), Sinatra\_58 (EA4), SirVictor\_59 (EA4),

#### Start 29:

- Found in 3 of 57 ( 5.3% ) of genes in pham
- Manual Annotations of this start: 3 of 51
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Casey\_59 (EA3), Pajaza\_59 (EA3), Pikmin\_59 (EA3),

### **Summary by clusters:**

There are 3 clusters represented in this pham: EA1, EA3, EA4,

#### Info for manual annotations of cluster EA1:

- Start number 19 was manually annotated 10 times for cluster EA1.
- Start number 21 was manually annotated 3 times for cluster EA1.
- Start number 24 was manually annotated 20 times for cluster EA1.
- Start number 25 was manually annotated 1 time for cluster EA1.
- Start number 26 was manually annotated 3 times for cluster EA1.

#### Info for manual annotations of cluster EA3:

- Start number 29 was manually annotated 3 times for cluster EA3.

#### Info for manual annotations of cluster EA4:

- Start number 27 was manually annotated 11 times for cluster EA4.

**Gene Information:**

Gene: Agente005\_64 Start: 41218, Stop: 41679, Start Num: 26

Candidate Starts for Agente005\_64:

(20, 41164), (Start: 26 @41218 has 3 MA's), (44, 41350), (50, 41401), (53, 41440), (65, 41638), (69, 41674),

Gene: Balsa\_62 Start: 41165, Stop: 41695, Start Num: 19

Candidate Starts for Balsa\_62:

(Start: 19 @41165 has 10 MA's), (Start: 26 @41246 has 3 MA's), (36, 41303), (44, 41366), (53, 41456), (56, 41531), (58, 41558), (65, 41654), (69, 41690),

Gene: BeeBee8\_65 Start: 41330, Stop: 41860, Start Num: 19

Candidate Starts for BeeBee8\_65:

(Start: 19 @41330 has 10 MA's), (Start: 26 @41411 has 3 MA's), (36, 41468), (44, 41531), (53, 41621), (56, 41696), (58, 41723), (65, 41819), (69, 41855),

Gene: Blage\_63 Start: 41170, Stop: 41613, Start Num: 24

Candidate Starts for Blage\_63:

(5, 40972), (6, 40984), (8, 40990), (9, 41014), (13, 41080), (16, 41086), (Start: 24 @41170 has 20 MA's), (43, 41293), (46, 41323), (54, 41428), (57, 41467), (58, 41473), (61, 41515), (62, 41542), (67, 41596), (68, 41599),

Gene: BouleyBill\_56 Start: 38730, Stop: 39152, Start Num: 27

Candidate Starts for BouleyBill\_56:

(14, 38604), (17, 38610), (Start: 27 @38730 has 11 MA's), (32, 38754), (35, 38763), (42, 38808), (44, 38826), (45, 38829), (53, 38916), (58, 39012), (60, 39042), (63, 39093), (64, 39099), (66, 39129),

Gene: Bustleton\_57 Start: 38699, Stop: 39121, Start Num: 27

Candidate Starts for Bustleton\_57:

(14, 38573), (17, 38579), (Start: 27 @38699 has 11 MA's), (32, 38723), (35, 38732), (42, 38777), (44, 38795), (45, 38798), (53, 38885), (58, 38981), (60, 39011), (63, 39062), (64, 39068), (66, 39098),

Gene: Byron23\_64 Start: 41180, Stop: 41623, Start Num: 24

Candidate Starts for Byron23\_64:

(5, 40982), (8, 41000), (9, 41024), (13, 41090), (16, 41096), (Start: 24 @41180 has 20 MA's), (43, 41303), (46, 41333), (54, 41438), (55, 41441), (57, 41477), (58, 41483), (61, 41525), (62, 41552), (67, 41606), (68, 41609),

Gene: Casey\_59 Start: 38795, Stop: 39223, Start Num: 29

Candidate Starts for Casey\_59:

(Start: 29 @38795 has 3 MA's), (34, 38813), (39, 38840), (40, 38843), (41, 38849), (42, 38864), (48, 38924), (52, 38960), (53, 38978), (54, 39032), (58, 39077), (62, 39152), (66, 39200), (67, 39206),

Gene: Clancy\_62 Start: 40928, Stop: 41371, Start Num: 24

Candidate Starts for Clancy\_62:

(5, 40730), (8, 40748), (9, 40772), (13, 40838), (16, 40844), (Start: 24 @40928 has 20 MA's), (43, 41051), (46, 41081), (54, 41186), (57, 41225), (58, 41231), (61, 41273), (62, 41300), (67, 41354), (68, 41357),

Gene: Den3\_63 Start: 41173, Stop: 41616, Start Num: 24

Candidate Starts for Den3\_63:

(5, 40975), (8, 40993), (9, 41017), (13, 41083), (16, 41089), (Start: 24 @41173 has 20 MA's), (43, 41296), (46, 41326), (47, 41338), (54, 41431), (55, 41434), (57, 41470), (58, 41476), (61, 41518), (62, 41545), (67, 41599), (68, 41602),

Gene: Endor\_65 Start: 41639, Stop: 42139, Start Num: 21

Candidate Starts for Endor\_65:

(Start: 21 @41639 has 3 MA's), (46, 41843), (57, 41990), (58, 41996), (62, 42068),

Gene: Etna\_64 Start: 41211, Stop: 41741, Start Num: 19

Candidate Starts for Etna\_64:

(Start: 19 @41211 has 10 MA's), (Start: 26 @41292 has 3 MA's), (44, 41412), (53, 41502), (56, 41577), (58, 41604), (65, 41700), (69, 41736),

Gene: FarmerDoug\_63 Start: 41088, Stop: 41597, Start Num: 21

Candidate Starts for FarmerDoug\_63:

(7, 40950), (12, 41007), (Start: 21 @41088 has 3 MA's), (33, 41187), (57, 41448), (58, 41454), (62, 41526),

Gene: Figueroism\_63 Start: 41220, Stop: 41663, Start Num: 24

Candidate Starts for Figueroism\_63:

(5, 41022), (8, 41040), (9, 41064), (13, 41130), (16, 41136), (Start: 24 @41220 has 20 MA's), (43, 41343), (46, 41373), (54, 41478), (57, 41517), (58, 41523), (61, 41565), (62, 41592), (67, 41646), (68, 41649),

Gene: GardenB\_64 Start: 41481, Stop: 41960, Start Num: 26

Candidate Starts for GardenB\_64:

(18, 41391), (20, 41427), (Start: 26 @41481 has 3 MA's), (28, 41517), (50, 41676), (53, 41715), (65, 41919), (69, 41955),

Gene: Golden\_58 Start: 39155, Stop: 39577, Start Num: 27

Candidate Starts for Golden\_58:

(14, 39029), (17, 39035), (23, 39092), (Start: 27 @39155 has 11 MA's), (32, 39179), (35, 39188), (37, 39191), (39, 39209), (41, 39218), (42, 39233), (44, 39251), (47, 39281), (49, 39293), (51, 39308), (53, 39341), (58, 39437), (60, 39467), (63, 39518),

Gene: Guetzie\_59 Start: 39273, Stop: 39695, Start Num: 27

Candidate Starts for Guetzie\_59:

(Start: 27 @39273 has 11 MA's), (32, 39297), (35, 39306), (37, 39309), (39, 39327), (41, 39336), (42, 39351), (44, 39369), (47, 39399), (49, 39411), (51, 39426), (53, 39459), (58, 39555), (60, 39585), (63, 39636),

Gene: Hamlet\_63 Start: 41237, Stop: 41767, Start Num: 19

Candidate Starts for Hamlet\_63:

(Start: 19 @41237 has 10 MA's), (Start: 26 @41318 has 3 MA's), (36, 41375), (44, 41438), (53, 41528), (56, 41603), (58, 41630), (65, 41726), (69, 41762),

Gene: HankSprout\_63 Start: 40794, Stop: 41237, Start Num: 24

Candidate Starts for HankSprout\_63:

(5, 40596), (8, 40614), (9, 40638), (13, 40704), (16, 40710), (Start: 24 @40794 has 20 MA's), (43, 40917), (46, 40947), (54, 41052), (55, 41055), (57, 41091), (58, 41097), (61, 41139), (62, 41166), (67, 41220), (68, 41223),

Gene: Janus167\_62 Start: 40903, Stop: 41346, Start Num: 24

Candidate Starts for Janus167\_62:

(5, 40705), (8, 40723), (9, 40747), (13, 40813), (16, 40819), (Start: 24 @40903 has 20 MA's), (43, 41026), (46, 41056), (54, 41161), (55, 41164), (57, 41200), (58, 41206), (61, 41248), (62, 41275), (67, 41329), (68, 41332),

Gene: JasonD\_66 Start: 41391, Stop: 41957, Start Num: 15

Candidate Starts for JasonD\_66:

(1, 41133), (4, 41262), (5, 41280), (15, 41391), (Start: 25 @41487 has 1 MA's), (30, 41538), (38, 41577), (44, 41631), (46, 41655), (53, 41718), (55, 41775), (57, 41814), (58, 41820), (64, 41907), (69, 41952),

Gene: Jerbirus\_64 Start: 40919, Stop: 41362, Start Num: 24

Candidate Starts for Jerbirus\_64:

(5, 40721), (6, 40733), (8, 40739), (9, 40763), (13, 40829), (16, 40835), (Start: 24 @40919 has 20 MA's), (43, 41042), (46, 41072), (54, 41177), (55, 41180), (57, 41216), (58, 41222), (61, 41264), (62, 41291), (68, 41348),

Gene: JeriBeth\_64 Start: 40807, Stop: 41250, Start Num: 24

Candidate Starts for JeriBeth\_64:

(5, 40609), (6, 40621), (8, 40627), (9, 40651), (13, 40717), (16, 40723), (Start: 24 @40807 has 20 MA's), (43, 40930), (46, 40960), (54, 41065), (55, 41068), (57, 41104), (58, 41110), (61, 41152), (62, 41179), (68, 41236),

Gene: Kauala\_56 Start: 38890, Stop: 39315, Start Num: 27

Candidate Starts for Kauala\_56:

(10, 38713), (14, 38764), (17, 38770), (Start: 27 @38890 has 11 MA's), (32, 38917), (42, 38971), (44, 38989), (53, 39079), (56, 39151), (58, 39175), (64, 39262), (66, 39292),

Gene: KingJulien\_63 Start: 41134, Stop: 41583, Start Num: 26

Candidate Starts for KingJulien\_63:

(Start: 19 @41053 has 10 MA's), (Start: 26 @41134 has 3 MA's), (50, 41305), (53, 41344), (58, 41446), (65, 41542), (69, 41578),

Gene: Koji\_56 Start: 38918, Stop: 39340, Start Num: 27

Candidate Starts for Koji\_56:

(14, 38792), (17, 38798), (23, 38855), (Start: 27 @38918 has 11 MA's), (32, 38942), (35, 38951), (42, 38996), (44, 39014), (45, 39017), (53, 39104), (58, 39200), (60, 39230), (63, 39281), (64, 39287), (66, 39317),

Gene: Kurt1\_63 Start: 41176, Stop: 41619, Start Num: 24

Candidate Starts for Kurt1\_63:

(5, 40978), (6, 40990), (8, 40996), (9, 41020), (13, 41086), (16, 41092), (Start: 24 @41176 has 20 MA's), (43, 41299), (46, 41329), (54, 41434), (55, 41437), (57, 41473), (58, 41479), (61, 41521), (62, 41548), (68, 41605),

Gene: Leafus\_63 Start: 41384, Stop: 41833, Start Num: 26

Candidate Starts for Leafus\_63:

(Start: 19 @41303 has 10 MA's), (Start: 26 @41384 has 3 MA's), (36, 41441), (44, 41504), (53, 41594), (56, 41669), (65, 41792), (69, 41828),

Gene: Lovelyunicorn\_63 Start: 41171, Stop: 41614, Start Num: 24

Candidate Starts for Lovelyunicorn\_63:

(5, 40973), (8, 40991), (9, 41015), (13, 41081), (16, 41087), (Start: 24 @41171 has 20 MA's), (43, 41294), (46, 41324), (54, 41429), (55, 41432), (57, 41468), (58, 41474), (61, 41516), (62, 41543), (68, 41600),

Gene: Lucky3\_58 Start: 39155, Stop: 39577, Start Num: 27

Candidate Starts for Lucky3\_58:

(14, 39029), (17, 39035), (23, 39092), (Start: 27 @39155 has 11 MA's), (32, 39179), (35, 39188), (37, 39191), (39, 39209), (41, 39218), (42, 39233), (44, 39251), (47, 39281), (49, 39293), (51, 39308), (53, 39341), (58, 39437), (60, 39467), (63, 39518),

Gene: McGalleon\_63 Start: 41920, Stop: 42396, Start Num: 25

Candidate Starts for McGalleon\_63:

(2, 41641), (4, 41692), (5, 41710), (15, 41821), (Start: 25 @41920 has 1 MA's), (42, 42058), (44, 42076), (53, 42166), (57, 42253), (58, 42259), (59, 42268), (62, 42328), (64, 42346), (65, 42355),

Gene: MonChoix\_63 Start: 41006, Stop: 41509, Start Num: 21

Candidate Starts for MonChoix\_63:

(Start: 21 @41006 has 3 MA's), (40, 41144), (47, 41219), (57, 41363), (58, 41369), (62, 41438),

Gene: MrWorldwide\_63 Start: 41183, Stop: 41626, Start Num: 24

Candidate Starts for MrWorldwide\_63:

(5, 40985), (6, 40997), (8, 41003), (9, 41027), (13, 41093), (16, 41099), (Start: 24 @41183 has 20 MA's), (43, 41306), (46, 41336), (54, 41441), (55, 41444), (57, 41480), (58, 41486), (61, 41528), (62, 41555), (68, 41612),

Gene: NickSell\_63 Start: 41186, Stop: 41629, Start Num: 24

Candidate Starts for NickSell\_63:

(5, 40988), (6, 41000), (8, 41006), (9, 41030), (13, 41096), (16, 41102), (Start: 24 @41186 has 20 MA's), (43, 41309), (46, 41339), (54, 41444), (55, 41447), (57, 41483), (58, 41489), (61, 41531), (62, 41558), (68, 41615),

Gene: OldNelly\_63 Start: 40973, Stop: 41416, Start Num: 24

Candidate Starts for OldNelly\_63:

(5, 40775), (8, 40793), (9, 40817), (13, 40883), (16, 40889), (Start: 24 @40973 has 20 MA's), (43, 41096), (46, 41126), (54, 41231), (57, 41270), (58, 41276), (62, 41345), (67, 41399), (68, 41402),

Gene: Oxtober96\_64 Start: 41171, Stop: 41614, Start Num: 24

Candidate Starts for Oxtober96\_64:

(5, 40973), (8, 40991), (9, 41015), (13, 41081), (16, 41087), (Start: 24 @41171 has 20 MA's), (43, 41294), (46, 41324), (54, 41429), (55, 41432), (57, 41468), (58, 41474), (61, 41516), (62, 41543), (68, 41600),

Gene: Pajaza\_59 Start: 38795, Stop: 39223, Start Num: 29

Candidate Starts for Pajaza\_59:

(Start: 29 @38795 has 3 MA's), (34, 38813), (39, 38840), (40, 38843), (41, 38849), (42, 38864), (48, 38924), (52, 38960), (53, 38978), (54, 39032), (58, 39077), (62, 39152), (66, 39200), (67, 39206),

Gene: Peppino\_63 Start: 41235, Stop: 41765, Start Num: 19

Candidate Starts for Peppino\_63:

(Start: 19 @41235 has 10 MA's), (Start: 26 @41316 has 3 MA's), (50, 41487), (53, 41526), (56, 41601), (58, 41628), (65, 41724), (69, 41760),



Gene: Pherbot\_57 Start: 38686, Stop: 39108, Start Num: 27

Candidate Starts for Pherbot\_57:

(14, 38560), (17, 38566), (Start: 27 @38686 has 11 MA's), (32, 38710), (35, 38719), (42, 38764), (44, 38782), (45, 38785), (53, 38872), (58, 38968), (60, 38998), (63, 39049), (64, 39055), (66, 39085),

Gene: Phiderman\_63 Start: 41172, Stop: 41615, Start Num: 24

Candidate Starts for Phiderman\_63:

(5, 40974), (6, 40986), (8, 40992), (9, 41016), (13, 41082), (16, 41088), (Start: 24 @41172 has 20 MA's), (43, 41295), (46, 41325), (54, 41430), (55, 41433), (57, 41469), (58, 41475), (61, 41517), (62, 41544), (68, 41601),

Gene: PhredFlintston\_63 Start: 41176, Stop: 41619, Start Num: 24

Candidate Starts for PhredFlintston\_63:

(2, 40909), (3, 40921), (4, 40960), (5, 40978), (6, 40990), (8, 40996), (9, 41020), (13, 41086), (Start: 24 @41176 has 20 MA's), (43, 41299), (46, 41329), (54, 41434), (55, 41437), (57, 41473), (58, 41479), (61, 41521), (62, 41548), (68, 41605),

Gene: Pikmin\_59 Start: 38795, Stop: 39223, Start Num: 29

Candidate Starts for Pikmin\_59:

(Start: 29 @38795 has 3 MA's), (34, 38813), (39, 38840), (40, 38843), (41, 38849), (42, 38864), (48, 38924), (52, 38960), (53, 38978), (54, 39032), (58, 39077), (62, 39152), (66, 39200), (67, 39206),

Gene: PrincePhergus\_57 Start: 38703, Stop: 39128, Start Num: 27

Candidate Starts for PrincePhergus\_57:

(14, 38577), (17, 38583), (23, 38640), (Start: 27 @38703 has 11 MA's), (32, 38730), (35, 38739), (42, 38784), (44, 38802), (45, 38805), (53, 38892), (58, 38988), (60, 39018), (63, 39069), (64, 39075), (66, 39105),

Gene: Raccoon\_63 Start: 41197, Stop: 41727, Start Num: 19

Candidate Starts for Raccoon\_63:

(Start: 19 @41197 has 10 MA's), (Start: 26 @41278 has 3 MA's), (36, 41335), (44, 41398), (53, 41488), (56, 41563), (58, 41590), (65, 41686), (69, 41722),

Gene: Rapheph\_63 Start: 41176, Stop: 41619, Start Num: 24

Candidate Starts for Rapheph\_63:

(5, 40978), (6, 40990), (8, 40996), (9, 41020), (13, 41086), (16, 41092), (Start: 24 @41176 has 20 MA's), (43, 41299), (46, 41329), (54, 41434), (57, 41473), (58, 41479), (62, 41548), (67, 41602), (68, 41605),

Gene: Redfield\_63 Start: 41233, Stop: 41763, Start Num: 19

Candidate Starts for Redfield\_63:

(11, 41176), (Start: 19 @41233 has 10 MA's), (Start: 26 @41314 has 3 MA's), (36, 41371), (44, 41434), (53, 41524), (56, 41599), (58, 41626), (65, 41722), (69, 41758),

Gene: Schnapsidee\_63 Start: 41175, Stop: 41705, Start Num: 19

Candidate Starts for Schnapsidee\_63:

(Start: 19 @41175 has 10 MA's), (Start: 26 @41256 has 3 MA's), (36, 41313), (44, 41376), (53, 41466), (56, 41541), (58, 41568), (65, 41664), (69, 41700),

Gene: Sedgewig\_62 Start: 40878, Stop: 41321, Start Num: 24

Candidate Starts for Sedgewig\_62:

(5, 40680), (8, 40698), (9, 40722), (13, 40788), (16, 40794), (Start: 24 @40878 has 20 MA's), (43, 41001), (46, 41031), (54, 41136), (55, 41139), (57, 41175), (58, 41181), (61, 41223), (62, 41250), (67,

41304), (68, 41307),

Gene: ShaiHulud\_64 Start: 41185, Stop: 41628, Start Num: 24

Candidate Starts for ShaiHulud\_64:

(5, 40987), (8, 41005), (9, 41029), (13, 41095), (16, 41101), (Start: 24 @41185 has 20 MA's), (31, 41230), (43, 41308), (46, 41338), (54, 41443), (55, 41446), (57, 41482), (58, 41488), (61, 41530), (62, 41557), (68, 41614),

Gene: Sinatra\_58 Start: 38698, Stop: 39120, Start Num: 27

Candidate Starts for Sinatra\_58:

(14, 38572), (17, 38578), (22, 38623), (Start: 27 @38698 has 11 MA's), (32, 38722), (35, 38731), (42, 38776), (44, 38794), (45, 38797), (53, 38884), (58, 38980), (60, 39010), (63, 39061), (64, 39067), (66, 39097),

Gene: SirVictor\_59 Start: 39273, Stop: 39695, Start Num: 27

Candidate Starts for SirVictor\_59:

(Start: 27 @39273 has 11 MA's), (32, 39297), (35, 39306), (37, 39309), (39, 39327), (41, 39336), (42, 39351), (44, 39369), (47, 39399), (49, 39411), (51, 39426), (53, 39459), (58, 39555), (60, 39585), (63, 39636),

Gene: SoilGremlin\_63 Start: 40969, Stop: 41412, Start Num: 24

Candidate Starts for SoilGremlin\_63:

(5, 40771), (8, 40789), (9, 40813), (13, 40879), (16, 40885), (Start: 24 @40969 has 20 MA's), (43, 41092), (46, 41122), (54, 41227), (57, 41266), (58, 41272), (62, 41341), (67, 41395), (68, 41398),

Gene: SonOfLevi\_64 Start: 40946, Stop: 41389, Start Num: 24

Candidate Starts for SonOfLevi\_64:

(5, 40748), (6, 40760), (8, 40766), (9, 40790), (13, 40856), (16, 40862), (Start: 24 @40946 has 20 MA's), (43, 41069), (46, 41099), (54, 41204), (57, 41243), (58, 41249), (61, 41291), (62, 41318), (68, 41375),

Gene: StirfryIV\_62 Start: 40892, Stop: 41335, Start Num: 24

Candidate Starts for StirfryIV\_62:

(5, 40694), (8, 40712), (9, 40736), (13, 40802), (16, 40808), (Start: 24 @40892 has 20 MA's), (43, 41015), (46, 41045), (54, 41150), (55, 41153), (57, 41189), (58, 41195), (61, 41237), (62, 41264), (67, 41318), (68, 41321),

Gene: Stormbreaker8\_62 Start: 41054, Stop: 41584, Start Num: 19

Candidate Starts for Stormbreaker8\_62:

(Start: 19 @41054 has 10 MA's), (Start: 26 @41135 has 3 MA's), (50, 41306), (53, 41345), (58, 41447), (65, 41543), (69, 41579),

Gene: Superfresh\_63 Start: 41155, Stop: 41676, Start Num: 19

Candidate Starts for Superfresh\_63:

(Start: 19 @41155 has 10 MA's), (Start: 24 @41233 has 20 MA's), (43, 41356), (47, 41398), (54, 41491), (55, 41494), (57, 41530), (58, 41536), (61, 41578), (62, 41605), (67, 41659), (68, 41662),

Gene: Velene\_63 Start: 41171, Stop: 41614, Start Num: 24

Candidate Starts for Velene\_63:

(5, 40973), (6, 40985), (8, 40991), (9, 41015), (13, 41081), (16, 41087), (Start: 24 @41171 has 20 MA's), (43, 41294), (46, 41324), (54, 41429), (57, 41468), (58, 41474), (61, 41516), (62, 41543), (67, 41597), (68, 41600),