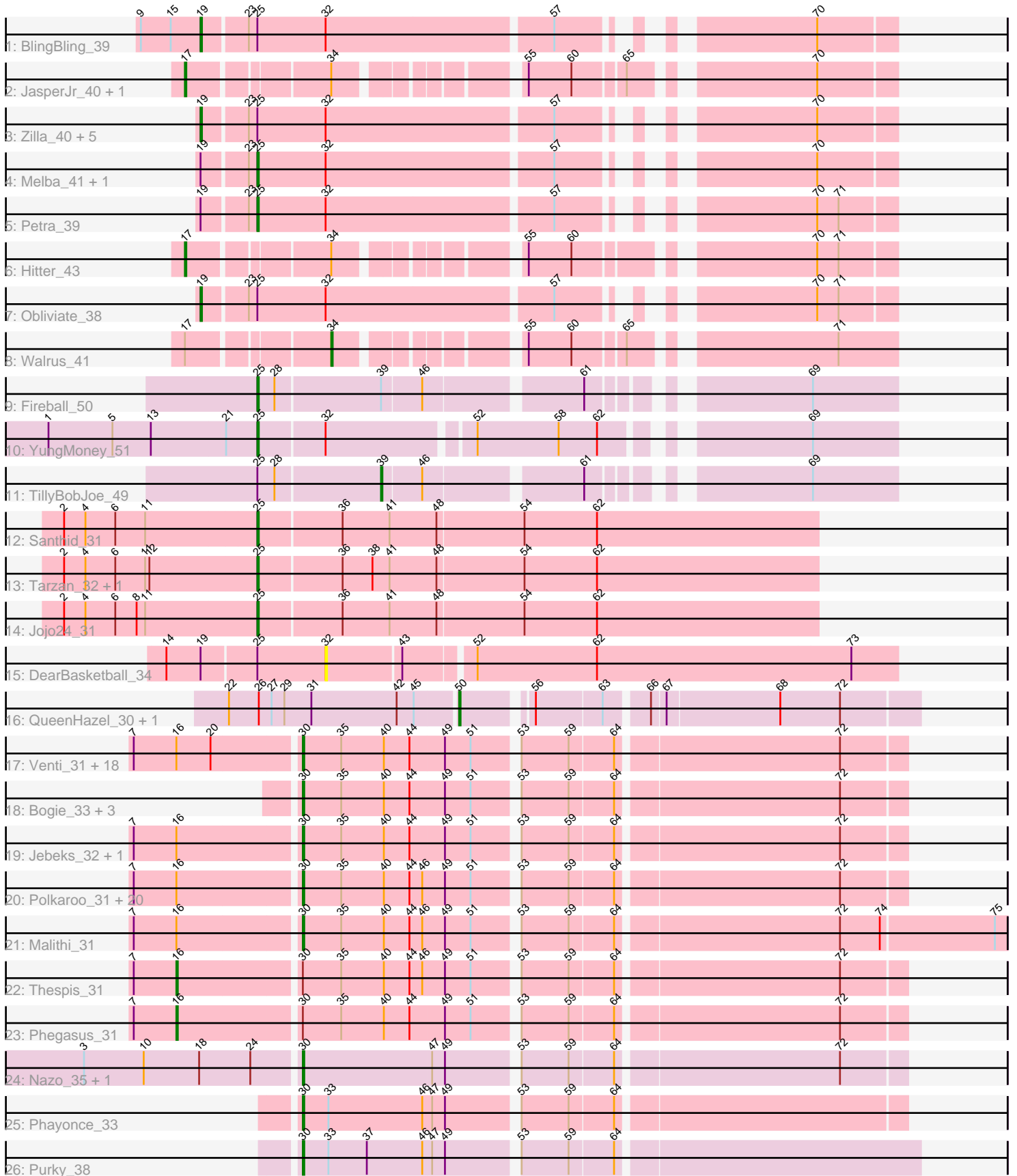


Pham 304959



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 304959 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304959 has 78 members, 7 are drafts.

Phages represented in each track:

- Track 1 : BlingBling\_39
- Track 2 : JasperJr\_40, Guacamole\_40
- Track 3 : Zilla\_40, CaptainKirk2\_42, Delian\_45, Archis\_45, Zarbodnamra\_41, MintFen\_42
- Track 4 : Melba\_41, Barco\_40
- Track 5 : Petra\_39
- Track 6 : Hitter\_43
- Track 7 : Obliviate\_38
- Track 8 : Walrus\_41
- Track 9 : Fireball\_50
- Track 10 : YungMoney\_51
- Track 11 : TillyBobJoe\_49
- Track 12 : Santhid\_31
- Track 13 : Tarzan\_32, DonkeyMan\_32
- Track 14 : Jojo24\_31
- Track 15 : DearBasketball\_34
- Track 16 : QueenHazel\_30, Xula\_29
- Track 17 : Venti\_31, Necropolis\_31, Fishburne\_31, Techage\_31, Kari\_31, Phineas\_31, Dynamo\_31, Langerak\_31, Majeke\_31, GaloreK\_31, Donovan\_31, Mangethe\_31, BronnyJr\_31, HUHilltop\_31, Chubbello\_31, Zilizebeth\_31, Vidya\_31, Bartholomew\_30, Etoile\_31
- Track 18 : Bogie\_33, Arib1\_31, Shipwreck\_33, Pygmy\_33
- Track 19 : Jebeks\_32, FirstPlacePfu\_31
- Track 20 : Polkaroo\_31, Bhagsy\_31, KilKor\_31, Brusacoram\_31, Juniormint\_31, Phalm\_31, GreaseLightnin\_31, PeanutPie\_31, StressBall\_31, Willsammy\_30, Ksquared\_31, StevieRay\_31, Camster\_31, Sonah\_31, Jung\_30, Bunnies\_31, Atcoo\_31, Glaske\_31, Gavriela\_31, Megiddo\_31, CactusJack\_31
- Track 21 : Malithi\_31
- Track 22 : Thespis\_31
- Track 23 : Phegasus\_31
- Track 24 : Nazo\_35, BigNuz\_34
- Track 25 : Phayonce\_33
- Track 26 : Purky\_38

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

The start number called the most often in the published annotations is 30, it was called in 45 of the 71 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Arib1\_31, Atcoo\_31, Bartholomew\_30, Bhagsy\_31, BigNuz\_34, Bogie\_33, BronnyJr\_31, Brusacoram\_31, Bunnies\_31, CactusJack\_31, Camster\_31, Chubbello\_31, Donovan\_31, Dynamo\_31, Etoile\_31, FirstPlacePfu\_31, Fishburne\_31, GaloreK\_31, Gavriela\_31, Glaske\_31, GreaseLightnin\_31, HUHilltop\_31, Jebeks\_32, Jung\_30, Juniormint\_31, Kari\_31, KilKor\_31, Ksquared\_31, Langerak\_31, Majeke\_31, Malithi\_31, Mangethe\_31, Megiddo\_31, Nazo\_35, Necropolis\_31, PeanutPie\_31, Phalm\_31, Phayonce\_33, Phineas\_31, Polkaroo\_31, Purky\_38, Pygmy\_33, Shipwreck\_33, Sonah\_31, StevieRay\_31, StressBall\_31, Techage\_31, Venti\_31, Vidya\_31, Willsammy\_30, Zilizebeth\_31,

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

- Phegasus\_31, Thespis\_31,

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

- Archis\_45, Barco\_40, BlingBling\_39, CaptainKirk2\_42, DearBasketball\_34, Delian\_45, DonkeyMan\_32, Fireball\_50, Guacamole\_40, Hitter\_43, JasperJr\_40, Jojo24\_31, Melba\_41, MintFen\_42, Obliviate\_38, Petra\_39, QueenHazel\_30, Santhid\_31, Tarzan\_32, TillyBobJoe\_49, Walrus\_41, Xula\_29, YungMoney\_51, Zarbodnamra\_41, Zilla\_40,

### Summary by start number:

Start 16:

- Found in 45 of 78 ( 57.7% ) of genes in pham
- Manual Annotations of this start: 2 of 71
- Called 4.4% of time when present
- Phage (with cluster) where this start called: Phegasus\_31 (P1), Thespis\_31 (P1),

Start 17:

- Found in 4 of 78 ( 5.1% ) of genes in pham
- Manual Annotations of this start: 3 of 71
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Guacamole\_40 (CV), Hitter\_43 (CV), JasperJr\_40 (CV),

Start 19:

- Found in 12 of 78 ( 15.4% ) of genes in pham
- Manual Annotations of this start: 8 of 71
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Archis\_45 (CV), BlingBling\_39 (CV), CaptainKirk2\_42 (CV), Delian\_45 (CV), MintFen\_42 (CV), Obliviate\_38 (CV), Zarbodnamra\_41 (CV), Zilla\_40 (CV),

Start 25:

- Found in 19 of 78 ( 24.4% ) of genes in pham
- Manual Annotations of this start: 9 of 71
- Called 47.4% of time when present

- Phage (with cluster) where this start called: Barco\_40 (CV), DonkeyMan\_32 (DY), Fireball\_50 (DC1), Jojo24\_31 (DY), Melba\_41 (CV), Petra\_39 (CV), Santhid\_31 (DY), Tarzan\_32 (DY), YungMoney\_51 (DC1),

#### Start 30:

- Found in 53 of 78 ( 67.9% ) of genes in pham
- Manual Annotations of this start: 45 of 71
- Called 96.2% of time when present
- Phage (with cluster) where this start called: Arib1\_31 (P1), Atcoo\_31 (P1), Bartholomew\_30 (P1), Bhagsy\_31 (P1), BigNuz\_34 (P4), Bogie\_33 (P1), BronnyJr\_31 (P1), Brusacoram\_31 (P1), Bunnies\_31 (P1), CactusJack\_31 (P1), Camster\_31 (P1), Chubbello\_31 (P1), Donovan\_31 (P1), Dynamo\_31 (P1), Etoile\_31 (P1), FirstPlacePfu\_31 (P1), Fishburne\_31 (P1), GaloreK\_31 (P1), Gavriela\_31 (P1), Glaske\_31 (P1), GreaseLightnin\_31 (P1), HUHilltop\_31 (P1), Jebeks\_32 (P1), Jung\_30 (P1), Juniormint\_31 (P1), Kari\_31 (P1), KilKor\_31 (P1), Kssquared\_31 (P1), Langerak\_31 (P1), Majeke\_31 (P1), Malithi\_31 (P1), Mangethe\_31 (P1), Megiddo\_31 (P1), Nazo\_35 (P4), Necropolis\_31 (P1), PeanutPie\_31 (P1), Phalm\_31 (P1), Phayonce\_33 (P5), Phineas\_31 (P1), Polkaroo\_31 (P1), Purky\_38 (P6), Pygmy\_33 (P1), Shipwreck\_33 (P1), Sonah\_31 (P1), StevieRay\_31 (P1), StressBall\_31 (P1), Techage\_31 (P1), Venti\_31 (P1), Vidya\_31 (P1), Willsammy\_30 (P1), Zilizebeth\_31 (P1),

#### Start 32:

- Found in 13 of 78 ( 16.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 7.7% of time when present
- Phage (with cluster) where this start called: DearBasketball\_34 (DY),

#### Start 34:

- Found in 4 of 78 ( 5.1% ) of genes in pham
- Manual Annotations of this start: 1 of 71
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Walrus\_41 (CV),

#### Start 39:

- Found in 2 of 78 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 1 of 71
- Called 50.0% of time when present
- Phage (with cluster) where this start called: TillyBobJoe\_49 (DC1),

#### Start 50:

- Found in 2 of 78 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 2 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: QueenHazel\_30 (I1), Xula\_29 (I1),

### Summary by clusters:

There are 8 clusters represented in this pham: P1, P6, P4, P5, I1, DY, CV, DC1,

Info for manual annotations of cluster CV:

- Start number 17 was manually annotated 3 times for cluster CV.
- Start number 19 was manually annotated 8 times for cluster CV.

- Start number 25 was manually annotated 3 times for cluster CV.
- Start number 34 was manually annotated 1 time for cluster CV.

Info for manual annotations of cluster DC1:

- Start number 25 was manually annotated 2 times for cluster DC1.
- Start number 39 was manually annotated 1 time for cluster DC1.

Info for manual annotations of cluster DY:

- Start number 25 was manually annotated 4 times for cluster DY.

Info for manual annotations of cluster I1:

- Start number 50 was manually annotated 2 times for cluster I1.

Info for manual annotations of cluster P1:

- Start number 16 was manually annotated 2 times for cluster P1.
- Start number 30 was manually annotated 41 times for cluster P1.

Info for manual annotations of cluster P4:

- Start number 30 was manually annotated 2 times for cluster P4.

Info for manual annotations of cluster P5:

- Start number 30 was manually annotated 1 time for cluster P5.

Info for manual annotations of cluster P6:

- Start number 30 was manually annotated 1 time for cluster P6.

### ***Gene Information:***

Gene: Archis\_45 Start: 33058, Stop: 32636, Start Num: 19

Candidate Starts for Archis\_45:

(Start: 19 @33058 has 8 MA's), (23, 33028), (Start: 25 @33022 has 9 MA's), (32, 32974), (57, 32821), (70, 32689),

Gene: Arib1\_31 Start: 27353, Stop: 26952, Start Num: 30

Candidate Starts for Arib1\_31:

(Start: 30 @27353 has 45 MA's), (35, 27326), (40, 27296), (44, 27278), (49, 27254), (51, 27236), (53, 27209), (59, 27176), (64, 27146), (72, 26996),

Gene: Atcoo\_31 Start: 27834, Stop: 27433, Start Num: 30

Candidate Starts for Atcoo\_31:

(7, 27945), (Start: 16 @27915 has 2 MA's), (Start: 30 @27834 has 45 MA's), (35, 27807), (40, 27777), (44, 27759), (46, 27750), (49, 27735), (51, 27717), (53, 27690), (59, 27657), (64, 27627), (72, 27477),

Gene: Barco\_40 Start: 32072, Stop: 31686, Start Num: 25

Candidate Starts for Barco\_40:

(Start: 19 @32108 has 8 MA's), (23, 32078), (Start: 25 @32072 has 9 MA's), (32, 32024), (57, 31871), (70, 31739),

Gene: Bartholomew\_30 Start: 27347, Stop: 26946, Start Num: 30

Candidate Starts for Bartholomew\_30:

(7, 27458), (Start: 16 @27428 has 2 MA's), (20, 27404), (Start: 30 @27347 has 45 MA's), (35, 27320), (40, 27290), (44, 27272), (49, 27248), (51, 27230), (53, 27203), (59, 27170), (64, 27140), (72, 26990),

Gene: Bhagsy\_31 Start: 27343, Stop: 26942, Start Num: 30

Candidate Starts for Bhagsy\_31:

(7, 27454), (Start: 16 @27424 has 2 MA's), (Start: 30 @27343 has 45 MA's), (35, 27316), (40, 27286), (44, 27268), (46, 27259), (49, 27244), (51, 27226), (53, 27199), (59, 27166), (64, 27136), (72, 26986),

Gene: BigNuz\_34 Start: 29474, Stop: 29073, Start Num: 30

Candidate Starts for BigNuz\_34:

(3, 29621), (10, 29579), (18, 29540), (24, 29504), (Start: 30 @29474 has 45 MA's), (47, 29384), (49, 29375), (53, 29330), (59, 29297), (64, 29267), (72, 29117),

Gene: BlingBling\_39 Start: 33071, Stop: 32649, Start Num: 19

Candidate Starts for BlingBling\_39:

(9, 33113), (15, 33092), (Start: 19 @33071 has 8 MA's), (23, 33041), (Start: 25 @33035 has 9 MA's), (32, 32987), (57, 32834), (70, 32702),

Gene: Bogie\_33 Start: 29130, Stop: 28729, Start Num: 30

Candidate Starts for Bogie\_33:

(Start: 30 @29130 has 45 MA's), (35, 29103), (40, 29073), (44, 29055), (49, 29031), (51, 29013), (53, 28986), (59, 28953), (64, 28923), (72, 28773),

Gene: BronnyJr\_31 Start: 27844, Stop: 27443, Start Num: 30

Candidate Starts for BronnyJr\_31:

(7, 27955), (Start: 16 @27925 has 2 MA's), (20, 27901), (Start: 30 @27844 has 45 MA's), (35, 27817), (40, 27787), (44, 27769), (49, 27745), (51, 27727), (53, 27700), (59, 27667), (64, 27637), (72, 27487),

Gene: Brusacoram\_31 Start: 27340, Stop: 26939, Start Num: 30

Candidate Starts for Brusacoram\_31:

(7, 27451), (Start: 16 @27421 has 2 MA's), (Start: 30 @27340 has 45 MA's), (35, 27313), (40, 27283), (44, 27265), (46, 27256), (49, 27241), (51, 27223), (53, 27196), (59, 27163), (64, 27133), (72, 26983),

Gene: Bunnies\_31 Start: 27361, Stop: 26960, Start Num: 30

Candidate Starts for Bunnies\_31:

(7, 27472), (Start: 16 @27442 has 2 MA's), (Start: 30 @27361 has 45 MA's), (35, 27334), (40, 27304), (44, 27286), (46, 27277), (49, 27262), (51, 27244), (53, 27217), (59, 27184), (64, 27154), (72, 27004),

Gene: CactusJack\_31 Start: 27604, Stop: 27203, Start Num: 30

Candidate Starts for CactusJack\_31:

(7, 27715), (Start: 16 @27685 has 2 MA's), (Start: 30 @27604 has 45 MA's), (35, 27577), (40, 27547), (44, 27529), (46, 27520), (49, 27505), (51, 27487), (53, 27460), (59, 27427), (64, 27397), (72, 27247),

Gene: Camster\_31 Start: 27377, Stop: 26976, Start Num: 30

Candidate Starts for Camster\_31:

(7, 27488), (Start: 16 @27458 has 2 MA's), (Start: 30 @27377 has 45 MA's), (35, 27350), (40, 27320), (44, 27302), (46, 27293), (49, 27278), (51, 27260), (53, 27233), (59, 27200), (64, 27170), (72, 27020),

Gene: CaptainKirk2\_42 Start: 32356, Stop: 31934, Start Num: 19

Candidate Starts for CaptainKirk2\_42:

(Start: 19 @32356 has 8 MA's), (23, 32326), (Start: 25 @32320 has 9 MA's), (32, 32272), (57, 32119), (70, 31987),

Gene: Chubbello\_31 Start: 27346, Stop: 26945, Start Num: 30

Candidate Starts for Chubbello\_31:

(7, 27457), (Start: 16 @27427 has 2 MA's), (20, 27403), (Start: 30 @27346 has 45 MA's), (35, 27319), (40, 27289), (44, 27271), (49, 27247), (51, 27229), (53, 27202), (59, 27169), (64, 27139), (72, 26989),

Gene: DearBasketball\_34 Start: 26807, Stop: 26418, Start Num: 32

Candidate Starts for DearBasketball\_34:

(14, 26915), (Start: 19 @26891 has 8 MA's), (Start: 25 @26855 has 9 MA's), (32, 26807), (43, 26756), (52, 26711), (62, 26627), (73, 26450),

Gene: Delian\_45 Start: 32354, Stop: 31932, Start Num: 19

Candidate Starts for Delian\_45:

(Start: 19 @32354 has 8 MA's), (23, 32324), (Start: 25 @32318 has 9 MA's), (32, 32270), (57, 32117), (70, 31985),

Gene: DonkeyMan\_32 Start: 27574, Stop: 27185, Start Num: 25

Candidate Starts for DonkeyMan\_32:

(2, 27706), (4, 27691), (6, 27670), (11, 27649), (12, 27646), (Start: 25 @27574 has 9 MA's), (36, 27517), (38, 27496), (41, 27484), (48, 27451), (54, 27391), (62, 27340),

Gene: Donovan\_31 Start: 27369, Stop: 26968, Start Num: 30

Candidate Starts for Donovan\_31:

(7, 27480), (Start: 16 @27450 has 2 MA's), (20, 27426), (Start: 30 @27369 has 45 MA's), (35, 27342), (40, 27312), (44, 27294), (49, 27270), (51, 27252), (53, 27225), (59, 27192), (64, 27162), (72, 27012),

Gene: Dynamo\_31 Start: 27758, Stop: 27357, Start Num: 30

Candidate Starts for Dynamo\_31:

(7, 27869), (Start: 16 @27839 has 2 MA's), (20, 27815), (Start: 30 @27758 has 45 MA's), (35, 27731), (40, 27701), (44, 27683), (49, 27659), (51, 27641), (53, 27614), (59, 27581), (64, 27551), (72, 27401),

Gene: Etoile\_31 Start: 27347, Stop: 26946, Start Num: 30

Candidate Starts for Etoile\_31:

(7, 27458), (Start: 16 @27428 has 2 MA's), (20, 27404), (Start: 30 @27347 has 45 MA's), (35, 27320), (40, 27290), (44, 27272), (49, 27248), (51, 27230), (53, 27203), (59, 27170), (64, 27140), (72, 26990),

Gene: Fireball\_50 Start: 40315, Stop: 39920, Start Num: 25

Candidate Starts for Fireball\_50:

(Start: 25 @40315 has 9 MA's), (28, 40303), (Start: 39 @40231 has 1 MA's), (46, 40204), (61, 40102), (69, 39979),

Gene: FirstPlacePfu\_31 Start: 27379, Stop: 26978, Start Num: 30

Candidate Starts for FirstPlacePfu\_31:

(7, 27490), (Start: 16 @27460 has 2 MA's), (Start: 30 @27379 has 45 MA's), (35, 27352), (40, 27322), (44, 27304), (49, 27280), (51, 27262), (53, 27235), (59, 27202), (64, 27172), (72, 27022),

Gene: Fishburne\_31 Start: 27347, Stop: 26946, Start Num: 30

Candidate Starts for Fishburne\_31:

(7, 27458), (Start: 16 @27428 has 2 MA's), (20, 27404), (Start: 30 @27347 has 45 MA's), (35, 27320), (40, 27290), (44, 27272), (49, 27248), (51, 27230), (53, 27203), (59, 27170), (64, 27140), (72, 26990),

Gene: GaloreK\_31 Start: 27343, Stop: 26942, Start Num: 30

Candidate Starts for GaloreK\_31:

(7, 27454), (Start: 16 @27424 has 2 MA's), (20, 27400), (Start: 30 @27343 has 45 MA's), (35, 27316), (40, 27286), (44, 27268), (49, 27244), (51, 27226), (53, 27199), (59, 27166), (64, 27136), (72, 26986),

Gene: Gavriela\_31 Start: 27604, Stop: 27203, Start Num: 30

Candidate Starts for Gavriela\_31:

(7, 27715), (Start: 16 @27685 has 2 MA's), (Start: 30 @27604 has 45 MA's), (35, 27577), (40, 27547), (44, 27529), (46, 27520), (49, 27505), (51, 27487), (53, 27460), (59, 27427), (64, 27397), (72, 27247),

Gene: Glaske\_31 Start: 27604, Stop: 27203, Start Num: 30

Candidate Starts for Glaske\_31:

(7, 27715), (Start: 16 @27685 has 2 MA's), (Start: 30 @27604 has 45 MA's), (35, 27577), (40, 27547), (44, 27529), (46, 27520), (49, 27505), (51, 27487), (53, 27460), (59, 27427), (64, 27397), (72, 27247),

Gene: GreaseLightnin\_31 Start: 27596, Stop: 27195, Start Num: 30

Candidate Starts for GreaseLightnin\_31:

(7, 27707), (Start: 16 @27677 has 2 MA's), (Start: 30 @27596 has 45 MA's), (35, 27569), (40, 27539), (44, 27521), (46, 27512), (49, 27497), (51, 27479), (53, 27452), (59, 27419), (64, 27389), (72, 27239),

Gene: Guacamole\_40 Start: 32920, Stop: 32501, Start Num: 17

Candidate Starts for Guacamole\_40:

(Start: 17 @32920 has 3 MA's), (Start: 34 @32830 has 1 MA's), (55, 32725), (60, 32695), (65, 32662), (70, 32554),

Gene: HUHilltop\_31 Start: 27380, Stop: 26979, Start Num: 30

Candidate Starts for HUHilltop\_31:

(7, 27491), (Start: 16 @27461 has 2 MA's), (20, 27437), (Start: 30 @27380 has 45 MA's), (35, 27353), (40, 27323), (44, 27305), (49, 27281), (51, 27263), (53, 27236), (59, 27203), (64, 27173), (72, 27023),

Gene: Hitter\_43 Start: 32564, Stop: 32145, Start Num: 17

Candidate Starts for Hitter\_43:

(Start: 17 @32564 has 3 MA's), (Start: 34 @32474 has 1 MA's), (55, 32369), (60, 32339), (70, 32198), (71, 32183),

Gene: JasperJr\_40 Start: 32920, Stop: 32501, Start Num: 17

Candidate Starts for JasperJr\_40:

(Start: 17 @32920 has 3 MA's), (Start: 34 @32830 has 1 MA's), (55, 32725), (60, 32695), (65, 32662), (70, 32554),

Gene: Jebeks\_32 Start: 27332, Stop: 26931, Start Num: 30

Candidate Starts for Jebeks\_32:

(7, 27443), (Start: 16 @27413 has 2 MA's), (Start: 30 @27332 has 45 MA's), (35, 27305), (40, 27275), (44, 27257), (49, 27233), (51, 27215), (53, 27188), (59, 27155), (64, 27125), (72, 26975),

Gene: Jojo24\_31 Start: 26167, Stop: 25778, Start Num: 25

Candidate Starts for Jojo24\_31:

(2, 26299), (4, 26284), (6, 26263), (8, 26248), (11, 26242), (Start: 25 @26167 has 9 MA's), (36, 26110), (41, 26077), (48, 26044), (54, 25984), (62, 25933),

Gene: Jung\_30 Start: 27311, Stop: 26910, Start Num: 30

Candidate Starts for Jung\_30:

(7, 27422), (Start: 16 @27392 has 2 MA's), (Start: 30 @27311 has 45 MA's), (35, 27284), (40, 27254), (44, 27236), (46, 27227), (49, 27212), (51, 27194), (53, 27167), (59, 27134), (64, 27104), (72, 26954),

Gene: Juniormint\_31 Start: 27383, Stop: 26982, Start Num: 30

Candidate Starts for Juniormint\_31:

(7, 27494), (Start: 16 @27464 has 2 MA's), (Start: 30 @27383 has 45 MA's), (35, 27356), (40, 27326), (44, 27308), (46, 27299), (49, 27284), (51, 27266), (53, 27239), (59, 27206), (64, 27176), (72, 27026),

Gene: Kari\_31 Start: 27344, Stop: 26943, Start Num: 30

Candidate Starts for Kari\_31:

(7, 27455), (Start: 16 @27425 has 2 MA's), (20, 27401), (Start: 30 @27344 has 45 MA's), (35, 27317), (40, 27287), (44, 27269), (49, 27245), (51, 27227), (53, 27200), (59, 27167), (64, 27137), (72, 26987),

Gene: KilKor\_31 Start: 27604, Stop: 27203, Start Num: 30

Candidate Starts for KilKor\_31:

(7, 27715), (Start: 16 @27685 has 2 MA's), (Start: 30 @27604 has 45 MA's), (35, 27577), (40, 27547), (44, 27529), (46, 27520), (49, 27505), (51, 27487), (53, 27460), (59, 27427), (64, 27397), (72, 27247),

Gene: Ksquared\_31 Start: 27361, Stop: 26960, Start Num: 30

Candidate Starts for Ksquared\_31:

(7, 27472), (Start: 16 @27442 has 2 MA's), (Start: 30 @27361 has 45 MA's), (35, 27334), (40, 27304), (44, 27286), (46, 27277), (49, 27262), (51, 27244), (53, 27217), (59, 27184), (64, 27154), (72, 27004),

Gene: Langerak\_31 Start: 27363, Stop: 26962, Start Num: 30

Candidate Starts for Langerak\_31:

(7, 27474), (Start: 16 @27444 has 2 MA's), (20, 27420), (Start: 30 @27363 has 45 MA's), (35, 27336), (40, 27306), (44, 27288), (49, 27264), (51, 27246), (53, 27219), (59, 27186), (64, 27156), (72, 27006),

Gene: Majeke\_31 Start: 27385, Stop: 26984, Start Num: 30

Candidate Starts for Majeke\_31:

(7, 27496), (Start: 16 @27466 has 2 MA's), (20, 27442), (Start: 30 @27385 has 45 MA's), (35, 27358), (40, 27328), (44, 27310), (49, 27286), (51, 27268), (53, 27241), (59, 27208), (64, 27178), (72, 27028),

Gene: Malithi\_31 Start: 27270, Stop: 26800, Start Num: 30

Candidate Starts for Malithi\_31:

(7, 27381), (Start: 16 @27351 has 2 MA's), (Start: 30 @27270 has 45 MA's), (35, 27243), (40, 27213), (44, 27195), (46, 27186), (49, 27171), (51, 27153), (53, 27126), (59, 27093), (64, 27063), (72, 26913), (74, 26886), (75, 26808),

Gene: Mangethe\_31 Start: 27385, Stop: 26984, Start Num: 30

Candidate Starts for Mangethe\_31:

(7, 27496), (Start: 16 @27466 has 2 MA's), (20, 27442), (Start: 30 @27385 has 45 MA's), (35, 27358), (40, 27328), (44, 27310), (49, 27286), (51, 27268), (53, 27241), (59, 27208), (64, 27178), (72, 27028),

Gene: Megiddo\_31 Start: 27604, Stop: 27203, Start Num: 30

Candidate Starts for Megiddo\_31:

(7, 27715), (Start: 16 @27685 has 2 MA's), (Start: 30 @27604 has 45 MA's), (35, 27577), (40, 27547), (44, 27529), (46, 27520), (49, 27505), (51, 27487), (53, 27460), (59, 27427), (64, 27397), (72, 27247),

Gene: Melba\_41 Start: 32860, Stop: 32474, Start Num: 25

Candidate Starts for Melba\_41:

(Start: 19 @32896 has 8 MA's), (23, 32866), (Start: 25 @32860 has 9 MA's), (32, 32812), (57, 32659), (70, 32527),

Gene: MintFen\_42 Start: 32970, Stop: 32548, Start Num: 19

Candidate Starts for MintFen\_42:

(Start: 19 @32970 has 8 MA's), (23, 32940), (Start: 25 @32934 has 9 MA's), (32, 32886), (57, 32733), (70, 32601),

Gene: Nazo\_35 Start: 29476, Stop: 29075, Start Num: 30

Candidate Starts for Nazo\_35:

(3, 29623), (10, 29581), (18, 29542), (24, 29506), (Start: 30 @29476 has 45 MA's), (47, 29386), (49, 29377), (53, 29332), (59, 29299), (64, 29269), (72, 29119),

Gene: Necropolis\_31 Start: 27344, Stop: 26943, Start Num: 30

Candidate Starts for Necropolis\_31:

(7, 27455), (Start: 16 @27425 has 2 MA's), (20, 27401), (Start: 30 @27344 has 45 MA's), (35, 27317), (40, 27287), (44, 27269), (49, 27245), (51, 27227), (53, 27200), (59, 27167), (64, 27137), (72, 26987),

Gene: Obliviate\_38 Start: 31257, Stop: 30835, Start Num: 19

Candidate Starts for Obliviate\_38:

(Start: 19 @31257 has 8 MA's), (23, 31227), (Start: 25 @31221 has 9 MA's), (32, 31173), (57, 31020), (70, 30888), (71, 30873),

Gene: PeanutPie\_31 Start: 27343, Stop: 26942, Start Num: 30

Candidate Starts for PeanutPie\_31:

(7, 27454), (Start: 16 @27424 has 2 MA's), (Start: 30 @27343 has 45 MA's), (35, 27316), (40, 27286), (44, 27268), (46, 27259), (49, 27244), (51, 27226), (53, 27199), (59, 27166), (64, 27136), (72, 26986),

Gene: Petra\_39 Start: 31580, Stop: 31194, Start Num: 25

Candidate Starts for Petra\_39:

(Start: 19 @31616 has 8 MA's), (23, 31586), (Start: 25 @31580 has 9 MA's), (32, 31532), (57, 31379), (70, 31247), (71, 31232),

Gene: Phalm\_31 Start: 27604, Stop: 27203, Start Num: 30

Candidate Starts for Phalm\_31:

(7, 27715), (Start: 16 @27685 has 2 MA's), (Start: 30 @27604 has 45 MA's), (35, 27577), (40, 27547), (44, 27529), (46, 27520), (49, 27505), (51, 27487), (53, 27460), (59, 27427), (64, 27397), (72, 27247),

Gene: Phayonce\_33 Start: 29388, Stop: 28987, Start Num: 30

Candidate Starts for Phayonce\_33:

(Start: 30 @29388 has 45 MA's), (33, 29370), (46, 29304), (47, 29298), (49, 29289), (53, 29244), (59, 29211), (64, 29181),

Gene: Phegasus\_31 Start: 27433, Stop: 26951, Start Num: 16

Candidate Starts for Phegasus\_31:

(7, 27463), (Start: 16 @27433 has 2 MA's), (Start: 30 @27352 has 45 MA's), (35, 27325), (40, 27295), (44, 27277), (49, 27253), (51, 27235), (53, 27208), (59, 27175), (64, 27145), (72, 26995),

Gene: Phineas\_31 Start: 27718, Stop: 27317, Start Num: 30

Candidate Starts for Phineas\_31:

(7, 27829), (Start: 16 @27799 has 2 MA's), (20, 27775), (Start: 30 @27718 has 45 MA's), (35, 27691), (40, 27661), (44, 27643), (49, 27619), (51, 27601), (53, 27574), (59, 27541), (64, 27511), (72, 27361),

Gene: Polkaroo\_31 Start: 27361, Stop: 26960, Start Num: 30

Candidate Starts for Polkaroo\_31:

(7, 27472), (Start: 16 @27442 has 2 MA's), (Start: 30 @27361 has 45 MA's), (35, 27334), (40, 27304), (44, 27286), (46, 27277), (49, 27262), (51, 27244), (53, 27217), (59, 27184), (64, 27154), (72, 27004),

Gene: Purky\_38 Start: 30118, Stop: 29705, Start Num: 30

Candidate Starts for Purky\_38:

(Start: 30 @30118 has 45 MA's), (33, 30100), (37, 30073), (46, 30034), (47, 30028), (49, 30019), (53, 29974), (59, 29941), (64, 29911),

Gene: Pygmy\_33 Start: 29186, Stop: 28785, Start Num: 30

Candidate Starts for Pygmy\_33:

(Start: 30 @29186 has 45 MA's), (35, 29159), (40, 29129), (44, 29111), (49, 29087), (51, 29069), (53, 29042), (59, 29009), (64, 28979), (72, 28829),

Gene: QueenHazel\_30 Start: 27405, Stop: 27109, Start Num: 50

Candidate Starts for QueenHazel\_30:

(22, 27561), (26, 27540), (27, 27531), (29, 27522), (31, 27504), (42, 27444), (45, 27432), (Start: 50 @27405 has 2 MA's), (56, 27363), (63, 27318), (66, 27291), (67, 27282), (68, 27204), (72, 27162),

Gene: Santhid\_31 Start: 24886, Stop: 24497, Start Num: 25

Candidate Starts for Santhid\_31:

(2, 25018), (4, 25003), (6, 24982), (11, 24961), (Start: 25 @24886 has 9 MA's), (36, 24829), (41, 24796), (48, 24763), (54, 24703), (62, 24652),

Gene: Shipwreck\_33 Start: 29161, Stop: 28760, Start Num: 30

Candidate Starts for Shipwreck\_33:

(Start: 30 @29161 has 45 MA's), (35, 29134), (40, 29104), (44, 29086), (49, 29062), (51, 29044), (53, 29017), (59, 28984), (64, 28954), (72, 28804),

Gene: Sonah\_31 Start: 27333, Stop: 26932, Start Num: 30

Candidate Starts for Sonah\_31:

(7, 27444), (Start: 16 @27414 has 2 MA's), (Start: 30 @27333 has 45 MA's), (35, 27306), (40, 27276), (44, 27258), (46, 27249), (49, 27234), (51, 27216), (53, 27189), (59, 27156), (64, 27126), (72, 26976),

Gene: StevieRay\_31 Start: 27312, Stop: 26911, Start Num: 30

Candidate Starts for StevieRay\_31:

(7, 27423), (Start: 16 @27393 has 2 MA's), (Start: 30 @27312 has 45 MA's), (35, 27285), (40, 27255), (44, 27237), (46, 27228), (49, 27213), (51, 27195), (53, 27168), (59, 27135), (64, 27105), (72, 26955),

Gene: StressBall\_31 Start: 27604, Stop: 27203, Start Num: 30

Candidate Starts for StressBall\_31:

(7, 27715), (Start: 16 @27685 has 2 MA's), (Start: 30 @27604 has 45 MA's), (35, 27577), (40, 27547), (44, 27529), (46, 27520), (49, 27505), (51, 27487), (53, 27460), (59, 27427), (64, 27397), (72, 27247),

Gene: Tarzan\_32 Start: 26056, Stop: 25667, Start Num: 25

Candidate Starts for Tarzan\_32:

(2, 26188), (4, 26173), (6, 26152), (11, 26131), (12, 26128), (Start: 25 @26056 has 9 MA's), (36, 25999), (38, 25978), (41, 25966), (48, 25933), (54, 25873), (62, 25822),

Gene: Techage\_31 Start: 27370, Stop: 26969, Start Num: 30

Candidate Starts for Techage\_31:

(7, 27481), (Start: 16 @27451 has 2 MA's), (20, 27427), (Start: 30 @27370 has 45 MA's), (35, 27343), (40, 27313), (44, 27295), (49, 27271), (51, 27253), (53, 27226), (59, 27193), (64, 27163), (72, 27013),

Gene: Thespis\_31 Start: 27421, Stop: 26939, Start Num: 16

Candidate Starts for Thespis\_31:

(7, 27451), (Start: 16 @27421 has 2 MA's), (Start: 30 @27340 has 45 MA's), (35, 27313), (40, 27283), (44, 27265), (46, 27256), (49, 27241), (51, 27223), (53, 27196), (59, 27163), (64, 27133), (72, 26983),

Gene: TillyBobJoe\_49 Start: 39897, Stop: 39586, Start Num: 39

Candidate Starts for TillyBobJoe\_49:

(Start: 25 @39981 has 9 MA's), (28, 39969), (Start: 39 @39897 has 1 MA's), (46, 39870), (61, 39768), (69, 39645),

Gene: Venti\_31 Start: 27347, Stop: 26946, Start Num: 30

Candidate Starts for Venti\_31:

(7, 27458), (Start: 16 @27428 has 2 MA's), (20, 27404), (Start: 30 @27347 has 45 MA's), (35, 27320), (40, 27290), (44, 27272), (49, 27248), (51, 27230), (53, 27203), (59, 27170), (64, 27140), (72, 26990),

Gene: Vidya\_31 Start: 27380, Stop: 26979, Start Num: 30

Candidate Starts for Vidya\_31:

(7, 27491), (Start: 16 @27461 has 2 MA's), (20, 27437), (Start: 30 @27380 has 45 MA's), (35, 27353), (40, 27323), (44, 27305), (49, 27281), (51, 27263), (53, 27236), (59, 27203), (64, 27173), (72, 27023),

Gene: Walrus\_41 Start: 32609, Stop: 32277, Start Num: 34

Candidate Starts for Walrus\_41:

(Start: 17 @32699 has 3 MA's), (Start: 34 @32609 has 1 MA's), (55, 32504), (60, 32474), (65, 32441), (71, 32318),

Gene: Willsammy\_30 Start: 27087, Stop: 26686, Start Num: 30

Candidate Starts for Willsammy\_30:

(7, 27198), (Start: 16 @27168 has 2 MA's), (Start: 30 @27087 has 45 MA's), (35, 27060), (40, 27030), (44, 27012), (46, 27003), (49, 26988), (51, 26970), (53, 26943), (59, 26910), (64, 26880), (72, 26730),

Gene: Xula\_29 Start: 26929, Stop: 26633, Start Num: 50

Candidate Starts for Xula\_29:

(22, 27085), (26, 27064), (27, 27055), (29, 27046), (31, 27028), (42, 26968), (45, 26956), (Start: 50 @26929 has 2 MA's), (56, 26887), (63, 26842), (66, 26815), (67, 26806), (68, 26728), (72, 26686),

Gene: YungMoney\_51 Start: 42233, Stop: 41832, Start Num: 25

Candidate Starts for YungMoney\_51:

(1, 42377), (5, 42332), (13, 42305), (21, 42254), (Start: 25 @42233 has 9 MA's), (32, 42188), (52, 42092), (58, 42035), (62, 42008), (69, 41891),

Gene: Zarbodnamra\_41 Start: 32378, Stop: 31956, Start Num: 19

Candidate Starts for Zarbodnamra\_41:

(Start: 19 @32378 has 8 MA's), (23, 32348), (Start: 25 @32342 has 9 MA's), (32, 32294), (57, 32141), (70, 32009),

Gene: Zilizebeth\_31 Start: 27379, Stop: 26978, Start Num: 30

Candidate Starts for Zilizebeth\_31:

(7, 27490), (Start: 16 @27460 has 2 MA's), (20, 27436), (Start: 30 @27379 has 45 MA's), (35, 27352), (40, 27322), (44, 27304), (49, 27280), (51, 27262), (53, 27235), (59, 27202), (64, 27172), (72, 27022),

Gene: Zilla\_40 Start: 32125, Stop: 31703, Start Num: 19

Candidate Starts for Zilla\_40:

(Start: 19 @32125 has 8 MA's), (23, 32095), (Start: 25 @32089 has 9 MA's), (32, 32041), (57, 31888), (70, 31756),