

# Pham 193929



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 193929 Report

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

Pham number 193929 has 84 members, 0 are drafts.

Phages represented in each track:

- Track 1 : Cornie\_14
- Track 2 : DmpstrDiver\_32, Ejimix\_34, Zelink\_34, NihilNomen\_32, Constella\_28, Dallas\_33, Klein\_33, Yeet\_31, Beem\_33, Optimus\_31, HokkenD\_28, Phoebus\_33, EricMillard\_33, ThreeRngTarjay\_32, Thibault\_29
- Track 3 : Lucky2013\_31, Dove\_31, Ariel\_31, Hughesyang\_32, Bobby\_34
- Track 4 : Schatzie\_31, Squint\_30, Bombitas\_30
- Track 5 : LittleE\_30, Hannaconda\_28
- Track 6 : Duke13\_30, Kalah2\_34, Minerva\_33, BAKA\_29, Wanda\_34, Halley\_33, JuicyJay\_34, Redno2\_32
- Track 7 : Superphikiman\_31, Porcelain\_30
- Track 8 : KashFlow\_25
- Track 9 : MiaZeal\_30, Courthouse\_31
- Track 10 : Jebeks\_16, Brusacoram\_16, Langerak\_16, Zilizebeth\_16, Bartholomew\_16, Fishburne\_16, GreaseLightnin\_16, Necropolis\_16, Xavia\_16, Willsammy\_16, Venti\_16, Ksquared\_15, Phineas\_16, Thespis\_16, Atcoo\_16, Bunnies\_16, Juniormint\_16, StevieRay\_16
- Track 11 : Bogie\_15, Pygmy\_15, Shipwreck\_15
- Track 12 : KilKor\_16, Megiddo\_16, Donovan\_16, Phalm\_16, Mangethe\_16, Techage\_16, Sonah\_16, Majeke\_16, Malithi\_16, StressBall\_16, Phegasus\_16, Glaske\_16, Arib1\_16, CactusJack\_16
- Track 13 : Camster\_16
- Track 14 : Jung\_16
- Track 15 : HUHilltop\_16, Dynamo\_16, FirstPlacePfu\_16
- Track 16 : Tortellini\_15
- Track 17 : Nazo\_15
- Track 18 : Phayonce\_15, ThulaThula\_15
- Track 19 : Purky\_15

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

The start number called the most often in the published annotations is 5, it was called in 40 of the 84 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Arib1\_16, Atcoo\_16, Bartholomew\_16, Bogie\_15, Brusacoram\_16, Bunnies\_16, CactusJack\_16, Camster\_16, Donovan\_16, Fishburne\_16, Glaske\_16, GreaseLightnin\_16, Jebeks\_16, Jung\_16, Juniormint\_16, KilKor\_16, Ksquared\_15, Langerak\_16, Majeke\_16, Malithi\_16, Mangethe\_16, Megiddo\_16, Nazo\_15, Necropolis\_16, Phalm\_16, Phegasus\_16, Phineas\_16, Purky\_15, Pygmy\_15, Shipwreck\_15, Sonah\_16, StevieRay\_16, StressBall\_16, Techage\_16, Thespis\_16, Tortellini\_15, Venti\_16, Willsammy\_16, Xavia\_16, Zilizebeth\_16,

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

- Dynamo\_16, FirstPlacePfu\_16, HUHilltop\_16,

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

- Ariel\_31, BAKA\_29, Beem\_33, Bobby\_34, Bombitas\_30, Constella\_28, Cornie\_14, Courthouse\_31, Dallas\_33, DmpstrDiver\_32, Dove\_31, Duke13\_30, Ejimix\_34, EricMillard\_33, Halley\_33, Hannaconda\_28, HokkenD\_28, Hughesyang\_32, JuicyJay\_34, Kalah2\_34, KashFlow\_25, Klein\_33, LittleE\_30, Lucky2013\_31, MiaZeal\_30, Minerva\_33, NihilNomen\_32, Optimus\_31, Phayonce\_15, Phoebus\_33, Porcelain\_30, Redno2\_32, Schatzie\_31, Squint\_30, Superphikiman\_31, Thibault\_29, ThreeRngTarjay\_32, ThulaThula\_15, Wanda\_34, Yeet\_31, Zelink\_34,

### Summary by start number:

Start 1:

- Found in 21 of 84 ( 25.0% ) of genes in pham
- Manual Annotations of this start: 3 of 84
- Called 14.3% of time when present
- Phage (with cluster) where this start called: Dynamo\_16 (P1), FirstPlacePfu\_16 (P1), HUHilltop\_16 (P1),

Start 4:

- Found in 2 of 84 ( 2.4% ) of genes in pham
- Manual Annotations of this start: 2 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Phayonce\_15 (P5), ThulaThula\_15 (P5),

Start 5:

- Found in 43 of 84 ( 51.2% ) of genes in pham
- Manual Annotations of this start: 40 of 84
- Called 93.0% of time when present
- Phage (with cluster) where this start called: Arib1\_16 (P1), Atcoo\_16 (P1), Bartholomew\_16 (P1), Bogie\_15 (P1), Brusacoram\_16 (P1), Bunnies\_16 (P1), CactusJack\_16 (P1), Camster\_16 (P1), Donovan\_16 (P1), Fishburne\_16 (P1), Glaske\_16 (P1), GreaseLightnin\_16 (P1), Jebeks\_16 (P1), Jung\_16 (P1), Juniormint\_16 (P1), KilKor\_16 (P1), Ksquared\_15 (P1), Langerak\_16 (P1), Majeke\_16 (P1), Malithi\_16 (P1), Mangethe\_16 (P1), Megiddo\_16 (P1), Nazo\_15 (P4), Necropolis\_16 (P1), Phalm\_16 (P1), Phegasus\_16 (P1), Phineas\_16 (P1), Purky\_15 (P6), Pygmy\_15 (P1), Shipwreck\_15 (P1), Sonah\_16 (P1), StevieRay\_16 (P1), StressBall\_16 (P1), Techage\_16 (P1), Thespis\_16 (P1), Tortellini\_15 (P2), Venti\_16 (P1), Willsammy\_16 (P1), Xavia\_16 (P3), Zilizebeth\_16 (P1),

Start 7:

- Found in 23 of 84 ( 27.4% ) of genes in pham
- Manual Annotations of this start: 8 of 84

- Called 34.8% of time when present
- Phage (with cluster) where this start called: BAKA\_29 (J), Duke13\_30 (J), Halley\_33 (J), JuicyJay\_34 (J), Kalah2\_34 (J), Minerva\_33 (J), Redno2\_32 (J), Wanda\_34 (J),

Start 8:

- Found in 12 of 84 ( 14.3% ) of genes in pham
- Manual Annotations of this start: 7 of 84
- Called 58.3% of time when present
- Phage (with cluster) where this start called: Ariel\_31 (J), Bobby\_34 (J), Courthouse\_31 (J), Dove\_31 (J), Hughesyang\_32 (J), Lucky2013\_31 (J), MiaZeal\_30 (J),

Start 9:

- Found in 1 of 84 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 84
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cornie\_14 (F5),

Start 13:

- Found in 38 of 84 ( 45.2% ) of genes in pham
- Manual Annotations of this start: 23 of 84
- Called 60.5% of time when present
- Phage (with cluster) where this start called: Beem\_33 (J), Bombitas\_30 (J), Constella\_28 (J), Dallas\_33 (J), DmpstrDiver\_32 (J), Ejimix\_34 (J), EricMillard\_33 (J), Hannaconda\_28 (J), HokkenD\_28 (J), KashFlow\_25 (J), Klein\_33 (J), LittleE\_30 (J), NihilNomen\_32 (J), Optimus\_31 (J), Phoebus\_33 (J), Porcelain\_30 (J), Schatzie\_31 (J), Squint\_30 (J), Superphikiman\_31 (J), Thibault\_29 (J), ThreeRngTarjay\_32 (J), Yeet\_31 (J), Zelink\_34 (J),

### Summary by clusters:

There are 8 clusters represented in this pham: P2, P3, P1, P6, F5, P4, P5, J,

Info for manual annotations of cluster F5:

- Start number 9 was manually annotated 1 time for cluster F5.

Info for manual annotations of cluster J:

- Start number 7 was manually annotated 8 times for cluster J.
- Start number 8 was manually annotated 7 times for cluster J.
- Start number 13 was manually annotated 23 times for cluster J.

Info for manual annotations of cluster P1:

- Start number 1 was manually annotated 3 times for cluster P1.
- Start number 5 was manually annotated 36 times for cluster P1.

Info for manual annotations of cluster P2:

- Start number 5 was manually annotated 1 time for cluster P2.

Info for manual annotations of cluster P3:

- Start number 5 was manually annotated 1 time for cluster P3.

Info for manual annotations of cluster P4:

- Start number 5 was manually annotated 1 time for cluster P4.

Info for manual annotations of cluster P5:

- Start number 4 was manually annotated 2 times for cluster P5.

Info for manual annotations of cluster P6:

- Start number 5 was manually annotated 1 time for cluster P6.

### **Gene Information:**

Gene: Arib1\_16 Start: 9932, Stop: 10850, Start Num: 5

Candidate Starts for Arib1\_16:

(Start: 5 @9932 has 40 MA's), (12, 10052), (20, 10268), (24, 10310), (26, 10370), (31, 10484), (36, 10616), (37, 10682),

Gene: Ariel\_31 Start: 16959, Stop: 17742, Start Num: 8

Candidate Starts for Ariel\_31:

(Start: 8 @16959 has 7 MA's), (Start: 13 @17010 has 23 MA's), (18, 17142), (23, 17229), (26, 17313), (31, 17427), (34, 17490), (35, 17517), (36, 17556),

Gene: Atcoo\_16 Start: 9945, Stop: 10863, Start Num: 5

Candidate Starts for Atcoo\_16:

(Start: 1 @9864 has 3 MA's), (2, 9867), (Start: 5 @9945 has 40 MA's), (20, 10281), (24, 10323), (26, 10383), (31, 10497), (36, 10629), (37, 10695),

Gene: BAKA\_29 Start: 19034, Stop: 19829, Start Num: 7

Candidate Starts for BAKA\_29:

(Start: 7 @19034 has 8 MA's), (Start: 13 @19097 has 23 MA's), (18, 19229), (23, 19316), (26, 19400), (31, 19514), (34, 19577), (35, 19604), (36, 19643),

Gene: Bartholomew\_16 Start: 9941, Stop: 10859, Start Num: 5

Candidate Starts for Bartholomew\_16:

(Start: 1 @9860 has 3 MA's), (2, 9863), (Start: 5 @9941 has 40 MA's), (20, 10277), (24, 10319), (26, 10379), (31, 10493), (36, 10625), (37, 10691),

Gene: Beem\_33 Start: 19452, Stop: 20184, Start Num: 13

Candidate Starts for Beem\_33:

(Start: 7 @19389 has 8 MA's), (Start: 13 @19452 has 23 MA's), (18, 19584), (23, 19671), (26, 19755), (31, 19869), (34, 19932), (35, 19959), (36, 19998),

Gene: Bobby\_34 Start: 19353, Stop: 20136, Start Num: 8

Candidate Starts for Bobby\_34:

(Start: 8 @19353 has 7 MA's), (Start: 13 @19404 has 23 MA's), (18, 19536), (23, 19623), (26, 19707), (31, 19821), (34, 19884), (35, 19911), (36, 19950),

Gene: Bogie\_15 Start: 9664, Stop: 10582, Start Num: 5

Candidate Starts for Bogie\_15:

(Start: 5 @9664 has 40 MA's), (20, 10000), (24, 10042), (26, 10102), (31, 10216), (36, 10348), (37, 10414),

Gene: Bombitas\_30 Start: 18761, Stop: 19493, Start Num: 13

Candidate Starts for Bombitas\_30:

(Start: 8 @18710 has 7 MA's), (Start: 13 @18761 has 23 MA's), (18, 18893), (23, 18980), (26, 19064), (31, 19178), (34, 19241), (35, 19268), (36, 19307),

Gene: Brusacoram\_16 Start: 9944, Stop: 10862, Start Num: 5

Candidate Starts for Brusacoram\_16:

(Start: 1 @9863 has 3 MA's), (2, 9866), (Start: 5 @9944 has 40 MA's), (20, 10280), (24, 10322), (26, 10382), (31, 10496), (36, 10628), (37, 10694),

Gene: Bunnies\_16 Start: 9957, Stop: 10875, Start Num: 5

Candidate Starts for Bunnies\_16:

(Start: 1 @9876 has 3 MA's), (2, 9879), (Start: 5 @9957 has 40 MA's), (20, 10293), (24, 10335), (26, 10395), (31, 10509), (36, 10641), (37, 10707),

Gene: CactusJack\_16 Start: 9949, Stop: 10867, Start Num: 5

Candidate Starts for CactusJack\_16:

(Start: 5 @9949 has 40 MA's), (12, 10069), (20, 10285), (24, 10327), (26, 10387), (31, 10501), (36, 10633), (37, 10699),

Gene: Camster\_16 Start: 9942, Stop: 10860, Start Num: 5

Candidate Starts for Camster\_16:

(Start: 5 @9942 has 40 MA's), (20, 10278), (24, 10320), (26, 10380), (31, 10494), (36, 10626), (37, 10692),

Gene: Constella\_28 Start: 18275, Stop: 19007, Start Num: 13

Candidate Starts for Constella\_28:

(Start: 7 @18212 has 8 MA's), (Start: 13 @18275 has 23 MA's), (18, 18407), (23, 18494), (26, 18578), (31, 18692), (34, 18755), (35, 18782), (36, 18821),

Gene: Cornie\_14 Start: 8819, Stop: 9710, Start Num: 9

Candidate Starts for Cornie\_14:

(Start: 9 @8819 has 1 MA's), (10, 8828), (15, 8909), (17, 8963), (21, 9062), (22, 9065), (24, 9101), (25, 9104), (29, 9257), (30, 9260), (32, 9284), (33, 9296), (34, 9335), (38, 9500),

Gene: Courthouse\_31 Start: 17362, Stop: 18145, Start Num: 8

Candidate Starts for Courthouse\_31:

(6, 17320), (Start: 8 @17362 has 7 MA's), (Start: 13 @17413 has 23 MA's), (18, 17545), (23, 17632), (26, 17716), (31, 17830), (34, 17893), (35, 17920), (36, 17959),

Gene: Dallas\_33 Start: 18992, Stop: 19724, Start Num: 13

Candidate Starts for Dallas\_33:

(Start: 7 @18929 has 8 MA's), (Start: 13 @18992 has 23 MA's), (18, 19124), (23, 19211), (26, 19295), (31, 19409), (34, 19472), (35, 19499), (36, 19538),

Gene: DmpstrDiver\_32 Start: 19628, Stop: 20360, Start Num: 13

Candidate Starts for DmpstrDiver\_32:

(Start: 7 @19565 has 8 MA's), (Start: 13 @19628 has 23 MA's), (18, 19760), (23, 19847), (26, 19931), (31, 20045), (34, 20108), (35, 20135), (36, 20174),

Gene: Donovan\_16 Start: 9933, Stop: 10851, Start Num: 5

Candidate Starts for Donovan\_16:

(Start: 5 @9933 has 40 MA's), (12, 10053), (20, 10269), (24, 10311), (26, 10371), (31, 10485), (36, 10617), (37, 10683),

Gene: Dove\_31 Start: 18709, Stop: 19492, Start Num: 8

Candidate Starts for Dove\_31:

(Start: 8 @18709 has 7 MA's), (Start: 13 @18760 has 23 MA's), (18, 18892), (23, 18979), (26, 19063), (31, 19177), (34, 19240), (35, 19267), (36, 19306),

Gene: Duke13\_30 Start: 18963, Stop: 19758, Start Num: 7

Candidate Starts for Duke13\_30:

(Start: 7 @18963 has 8 MA's), (Start: 13 @19026 has 23 MA's), (18, 19158), (23, 19245), (26, 19329), (31, 19443), (34, 19506), (35, 19533), (36, 19572),

Gene: Dynamo\_16 Start: 9860, Stop: 10859, Start Num: 1

Candidate Starts for Dynamo\_16:

(Start: 1 @9860 has 3 MA's), (2, 9863), (Start: 5 @9941 has 40 MA's), (20, 10277), (24, 10319), (26, 10379), (31, 10493), (36, 10625), (37, 10691),

Gene: Ejimix\_34 Start: 20202, Stop: 20934, Start Num: 13

Candidate Starts for Ejimix\_34:

(Start: 7 @20139 has 8 MA's), (Start: 13 @20202 has 23 MA's), (18, 20334), (23, 20421), (26, 20505), (31, 20619), (34, 20682), (35, 20709), (36, 20748),

Gene: EricMillard\_33 Start: 19738, Stop: 20470, Start Num: 13

Candidate Starts for EricMillard\_33:

(Start: 7 @19675 has 8 MA's), (Start: 13 @19738 has 23 MA's), (18, 19870), (23, 19957), (26, 20041), (31, 20155), (34, 20218), (35, 20245), (36, 20284),

Gene: FirstPlacePfu\_16 Start: 9860, Stop: 10859, Start Num: 1

Candidate Starts for FirstPlacePfu\_16:

(Start: 1 @9860 has 3 MA's), (2, 9863), (Start: 5 @9941 has 40 MA's), (20, 10277), (24, 10319), (26, 10379), (31, 10493), (36, 10625), (37, 10691),

Gene: Fishburne\_16 Start: 9941, Stop: 10859, Start Num: 5

Candidate Starts for Fishburne\_16:

(Start: 1 @9860 has 3 MA's), (2, 9863), (Start: 5 @9941 has 40 MA's), (20, 10277), (24, 10319), (26, 10379), (31, 10493), (36, 10625), (37, 10691),

Gene: Glaske\_16 Start: 9949, Stop: 10867, Start Num: 5

Candidate Starts for Glaske\_16:

(Start: 5 @9949 has 40 MA's), (12, 10069), (20, 10285), (24, 10327), (26, 10387), (31, 10501), (36, 10633), (37, 10699),

Gene: GreaseLightnin\_16 Start: 9941, Stop: 10859, Start Num: 5

Candidate Starts for GreaseLightnin\_16:

(Start: 1 @9860 has 3 MA's), (2, 9863), (Start: 5 @9941 has 40 MA's), (20, 10277), (24, 10319), (26, 10379), (31, 10493), (36, 10625), (37, 10691),

Gene: HUHilltop\_16 Start: 9860, Stop: 10859, Start Num: 1

Candidate Starts for HUHilltop\_16:

(Start: 1 @9860 has 3 MA's), (2, 9863), (Start: 5 @9941 has 40 MA's), (20, 10277), (24, 10319), (26, 10379), (31, 10493), (36, 10625), (37, 10691),

Gene: Halley\_33 Start: 19388, Stop: 20183, Start Num: 7

Candidate Starts for Halley\_33:

(Start: 7 @19388 has 8 MA's), (Start: 13 @19451 has 23 MA's), (18, 19583), (23, 19670), (26, 19754), (31, 19868), (34, 19931), (35, 19958), (36, 19997),

Gene: Hannaconda\_28 Start: 16092, Stop: 16824, Start Num: 13

Candidate Starts for Hannaconda\_28:

(Start: 13 @16092 has 23 MA's), (18, 16224), (23, 16311), (26, 16395), (31, 16509), (34, 16572), (35, 16599), (36, 16638),

Gene: HokkenD\_28 Start: 19021, Stop: 19753, Start Num: 13

Candidate Starts for HokkenD\_28:

(Start: 7 @18958 has 8 MA's), (Start: 13 @19021 has 23 MA's), (18, 19153), (23, 19240), (26, 19324), (31, 19438), (34, 19501), (35, 19528), (36, 19567),

Gene: Hughesyang\_32 Start: 19582, Stop: 20365, Start Num: 8

Candidate Starts for Hughesyang\_32:

(Start: 8 @19582 has 7 MA's), (Start: 13 @19633 has 23 MA's), (18, 19765), (23, 19852), (26, 19936), (31, 20050), (34, 20113), (35, 20140), (36, 20179),

Gene: Jebeks\_16 Start: 9926, Stop: 10844, Start Num: 5

Candidate Starts for Jebeks\_16:

(Start: 1 @9845 has 3 MA's), (2, 9848), (Start: 5 @9926 has 40 MA's), (20, 10262), (24, 10304), (26, 10364), (31, 10478), (36, 10610), (37, 10676),

Gene: JuicyJay\_34 Start: 20222, Stop: 21017, Start Num: 7

Candidate Starts for JuicyJay\_34:

(Start: 7 @20222 has 8 MA's), (Start: 13 @20285 has 23 MA's), (18, 20417), (23, 20504), (26, 20588), (31, 20702), (34, 20765), (35, 20792), (36, 20831),

Gene: Jung\_16 Start: 9987, Stop: 10905, Start Num: 5

Candidate Starts for Jung\_16:

(3, 9894), (Start: 5 @9987 has 40 MA's), (20, 10323), (24, 10365), (26, 10425), (31, 10539), (36, 10671), (37, 10737),

Gene: Juniormint\_16 Start: 9961, Stop: 10879, Start Num: 5

Candidate Starts for Juniormint\_16:

(Start: 1 @9880 has 3 MA's), (2, 9883), (Start: 5 @9961 has 40 MA's), (20, 10297), (24, 10339), (26, 10399), (31, 10513), (36, 10645), (37, 10711),

Gene: Kalah2\_34 Start: 19990, Stop: 20785, Start Num: 7

Candidate Starts for Kalah2\_34:

(Start: 7 @19990 has 8 MA's), (Start: 13 @20053 has 23 MA's), (18, 20185), (23, 20272), (26, 20356), (31, 20470), (34, 20533), (35, 20560), (36, 20599),

Gene: KashFlow\_25 Start: 15658, Stop: 16390, Start Num: 13

Candidate Starts for KashFlow\_25:

(Start: 13 @15658 has 23 MA's), (26, 15961), (27, 15979), (31, 16075), (34, 16138), (35, 16165), (36, 16204),

Gene: KilKor\_16 Start: 9949, Stop: 10867, Start Num: 5

Candidate Starts for KilKor\_16:

(Start: 5 @9949 has 40 MA's), (12, 10069), (20, 10285), (24, 10327), (26, 10387), (31, 10501), (36, 10633), (37, 10699),



Gene: Klein\_33 Start: 19031, Stop: 19763, Start Num: 13

Candidate Starts for Klein\_33:

(Start: 7 @18968 has 8 MA's), (Start: 13 @19031 has 23 MA's), (18, 19163), (23, 19250), (26, 19334), (31, 19448), (34, 19511), (35, 19538), (36, 19577),

Gene: Ksquared\_15 Start: 9957, Stop: 10875, Start Num: 5

Candidate Starts for Ksquared\_15:

(Start: 1 @9876 has 3 MA's), (2, 9879), (Start: 5 @9957 has 40 MA's), (20, 10293), (24, 10335), (26, 10395), (31, 10509), (36, 10641), (37, 10707),

Gene: Langerak\_16 Start: 9925, Stop: 10843, Start Num: 5

Candidate Starts for Langerak\_16:

(Start: 1 @9844 has 3 MA's), (2, 9847), (Start: 5 @9925 has 40 MA's), (20, 10261), (24, 10303), (26, 10363), (31, 10477), (36, 10609), (37, 10675),

Gene: LittleE\_30 Start: 18797, Stop: 19529, Start Num: 13

Candidate Starts for LittleE\_30:

(Start: 13 @18797 has 23 MA's), (18, 18929), (23, 19016), (26, 19100), (31, 19214), (34, 19277), (35, 19304), (36, 19343),

Gene: Lucky2013\_31 Start: 17489, Stop: 18272, Start Num: 8

Candidate Starts for Lucky2013\_31:

(Start: 8 @17489 has 7 MA's), (Start: 13 @17540 has 23 MA's), (18, 17672), (23, 17759), (26, 17843), (31, 17957), (34, 18020), (35, 18047), (36, 18086),

Gene: Majeke\_16 Start: 9932, Stop: 10850, Start Num: 5

Candidate Starts for Majeke\_16:

(Start: 5 @9932 has 40 MA's), (12, 10052), (20, 10268), (24, 10310), (26, 10370), (31, 10484), (36, 10616), (37, 10682),

Gene: Malithi\_16 Start: 9986, Stop: 10904, Start Num: 5

Candidate Starts for Malithi\_16:

(Start: 5 @9986 has 40 MA's), (12, 10106), (20, 10322), (24, 10364), (26, 10424), (31, 10538), (36, 10670), (37, 10736),

Gene: Mangethe\_16 Start: 9932, Stop: 10850, Start Num: 5

Candidate Starts for Mangethe\_16:

(Start: 5 @9932 has 40 MA's), (12, 10052), (20, 10268), (24, 10310), (26, 10370), (31, 10484), (36, 10616), (37, 10682),

Gene: Megiddo\_16 Start: 9949, Stop: 10867, Start Num: 5

Candidate Starts for Megiddo\_16:

(Start: 5 @9949 has 40 MA's), (12, 10069), (20, 10285), (24, 10327), (26, 10387), (31, 10501), (36, 10633), (37, 10699),

Gene: MiaZeal\_30 Start: 17180, Stop: 17963, Start Num: 8

Candidate Starts for MiaZeal\_30:

(6, 17138), (Start: 8 @17180 has 7 MA's), (Start: 13 @17231 has 23 MA's), (18, 17363), (23, 17450), (26, 17534), (31, 17648), (34, 17711), (35, 17738), (36, 17777),

Gene: Minerva\_33 Start: 19453, Stop: 20248, Start Num: 7

Candidate Starts for Minerva\_33:

(Start: 7 @19453 has 8 MA's), (Start: 13 @19516 has 23 MA's), (18, 19648), (23, 19735), (26, 19819), (31, 19933), (34, 19996), (35, 20023), (36, 20062),

Gene: Nazo\_15 Start: 9666, Stop: 10584, Start Num: 5

Candidate Starts for Nazo\_15:

(Start: 5 @9666 has 40 MA's), (19, 9963), (26, 10104), (31, 10218), (36, 10350), (37, 10416),

Gene: Necropolis\_16 Start: 9941, Stop: 10859, Start Num: 5

Candidate Starts for Necropolis\_16:

(Start: 1 @9860 has 3 MA's), (2, 9863), (Start: 5 @9941 has 40 MA's), (20, 10277), (24, 10319), (26, 10379), (31, 10493), (36, 10625), (37, 10691),

Gene: NihilNomen\_32 Start: 19513, Stop: 20245, Start Num: 13

Candidate Starts for NihilNomen\_32:

(Start: 7 @19450 has 8 MA's), (Start: 13 @19513 has 23 MA's), (18, 19645), (23, 19732), (26, 19816), (31, 19930), (34, 19993), (35, 20020), (36, 20059),

Gene: Optimus\_31 Start: 19091, Stop: 19823, Start Num: 13

Candidate Starts for Optimus\_31:

(Start: 7 @19028 has 8 MA's), (Start: 13 @19091 has 23 MA's), (18, 19223), (23, 19310), (26, 19394), (31, 19508), (34, 19571), (35, 19598), (36, 19637),

Gene: Phalm\_16 Start: 9949, Stop: 10867, Start Num: 5

Candidate Starts for Phalm\_16:

(Start: 5 @9949 has 40 MA's), (12, 10069), (20, 10285), (24, 10327), (26, 10387), (31, 10501), (36, 10633), (37, 10699),

Gene: Phayonce\_15 Start: 9613, Stop: 10519, Start Num: 4

Candidate Starts for Phayonce\_15:

(3, 9529), (Start: 4 @9613 has 2 MA's), (11, 9718), (14, 9754), (20, 9937), (24, 9979), (26, 10039), (28, 10072), (31, 10153), (36, 10285), (37, 10351), (39, 10516),

Gene: Phegasus\_16 Start: 9932, Stop: 10850, Start Num: 5

Candidate Starts for Phegasus\_16:

(Start: 5 @9932 has 40 MA's), (12, 10052), (20, 10268), (24, 10310), (26, 10370), (31, 10484), (36, 10616), (37, 10682),

Gene: Phineas\_16 Start: 9929, Stop: 10847, Start Num: 5

Candidate Starts for Phineas\_16:

(Start: 1 @9848 has 3 MA's), (2, 9851), (Start: 5 @9929 has 40 MA's), (20, 10265), (24, 10307), (26, 10367), (31, 10481), (36, 10613), (37, 10679),

Gene: Phoebus\_33 Start: 19738, Stop: 20470, Start Num: 13

Candidate Starts for Phoebus\_33:

(Start: 7 @19675 has 8 MA's), (Start: 13 @19738 has 23 MA's), (18, 19870), (23, 19957), (26, 20041), (31, 20155), (34, 20218), (35, 20245), (36, 20284),

Gene: Porcelain\_30 Start: 17231, Stop: 17963, Start Num: 13

Candidate Starts for Porcelain\_30:

(6, 17138), (Start: 8 @17180 has 7 MA's), (Start: 13 @17231 has 23 MA's), (18, 17363), (23, 17450), (26, 17534), (31, 17648), (34, 17711), (35, 17738), (36, 17777),

Gene: Purky\_15 Start: 9624, Stop: 10536, Start Num: 5

Candidate Starts for Purky\_15:

(3, 9543), (Start: 5 @9624 has 40 MA's), (14, 9768), (24, 9996), (26, 10056), (31, 10170), (36, 10302), (39, 10533),

Gene: Pygmy\_15 Start: 9664, Stop: 10582, Start Num: 5

Candidate Starts for Pygmy\_15:

(Start: 5 @9664 has 40 MA's), (20, 10000), (24, 10042), (26, 10102), (31, 10216), (36, 10348), (37, 10414),

Gene: Redno2\_32 Start: 19159, Stop: 19954, Start Num: 7

Candidate Starts for Redno2\_32:

(Start: 7 @19159 has 8 MA's), (Start: 13 @19222 has 23 MA's), (18, 19354), (23, 19441), (26, 19525), (31, 19639), (34, 19702), (35, 19729), (36, 19768),

Gene: Schatzie\_31 Start: 18762, Stop: 19494, Start Num: 13

Candidate Starts for Schatzie\_31:

(Start: 8 @18711 has 7 MA's), (Start: 13 @18762 has 23 MA's), (18, 18894), (23, 18981), (26, 19065), (31, 19179), (34, 19242), (35, 19269), (36, 19308),

Gene: Shipwreck\_15 Start: 9642, Stop: 10560, Start Num: 5

Candidate Starts for Shipwreck\_15:

(Start: 5 @9642 has 40 MA's), (20, 9978), (24, 10020), (26, 10080), (31, 10194), (36, 10326), (37, 10392),

Gene: Sonah\_16 Start: 9934, Stop: 10852, Start Num: 5

Candidate Starts for Sonah\_16:

(Start: 5 @9934 has 40 MA's), (12, 10054), (20, 10270), (24, 10312), (26, 10372), (31, 10486), (36, 10618), (37, 10684),

Gene: Squint\_30 Start: 17358, Stop: 18090, Start Num: 13

Candidate Starts for Squint\_30:

(Start: 8 @17307 has 7 MA's), (Start: 13 @17358 has 23 MA's), (18, 17490), (23, 17577), (26, 17661), (31, 17775), (34, 17838), (35, 17865), (36, 17904),

Gene: StevieRay\_16 Start: 9932, Stop: 10850, Start Num: 5

Candidate Starts for StevieRay\_16:

(Start: 1 @9851 has 3 MA's), (2, 9854), (Start: 5 @9932 has 40 MA's), (20, 10268), (24, 10310), (26, 10370), (31, 10484), (36, 10616), (37, 10682),

Gene: StressBall\_16 Start: 9949, Stop: 10867, Start Num: 5

Candidate Starts for StressBall\_16:

(Start: 5 @9949 has 40 MA's), (12, 10069), (20, 10285), (24, 10327), (26, 10387), (31, 10501), (36, 10633), (37, 10699),

Gene: Superphikiman\_31 Start: 17413, Stop: 18145, Start Num: 13

Candidate Starts for Superphikiman\_31:

(6, 17320), (Start: 8 @17362 has 7 MA's), (Start: 13 @17413 has 23 MA's), (18, 17545), (23, 17632), (26, 17716), (31, 17830), (34, 17893), (35, 17920), (36, 17959),

Gene: Techage\_16 Start: 9935, Stop: 10853, Start Num: 5

Candidate Starts for Techage\_16:

(Start: 5 @9935 has 40 MA's), (12, 10055), (20, 10271), (24, 10313), (26, 10373), (31, 10487), (36, 10619), (37, 10685),

Gene: Thespis\_16 Start: 9944, Stop: 10862, Start Num: 5

Candidate Starts for Thespis\_16:

(Start: 1 @9863 has 3 MA's), (2, 9866), (Start: 5 @9944 has 40 MA's), (20, 10280), (24, 10322), (26, 10382), (31, 10496), (36, 10628), (37, 10694),

Gene: Thibault\_29 Start: 19022, Stop: 19754, Start Num: 13

Candidate Starts for Thibault\_29:

(Start: 7 @18959 has 8 MA's), (Start: 13 @19022 has 23 MA's), (18, 19154), (23, 19241), (26, 19325), (31, 19439), (34, 19502), (35, 19529), (36, 19568),

Gene: ThreeRngTarjay\_32 Start: 19588, Stop: 20320, Start Num: 13

Candidate Starts for ThreeRngTarjay\_32:

(Start: 7 @19525 has 8 MA's), (Start: 13 @19588 has 23 MA's), (18, 19720), (23, 19807), (26, 19891), (31, 20005), (34, 20068), (35, 20095), (36, 20134),

Gene: ThulaThula\_15 Start: 9619, Stop: 10525, Start Num: 4

Candidate Starts for ThulaThula\_15:

(3, 9535), (Start: 4 @9619 has 2 MA's), (11, 9724), (14, 9760), (20, 9943), (24, 9985), (26, 10045), (28, 10078), (31, 10159), (36, 10291), (37, 10357), (39, 10522),

Gene: Tortellini\_15 Start: 9632, Stop: 10544, Start Num: 5

Candidate Starts for Tortellini\_15:

(Start: 5 @9632 has 40 MA's), (14, 9776), (16, 9857), (20, 9962), (24, 10004), (26, 10064), (31, 10178), (36, 10310), (39, 10541),

Gene: Venti\_16 Start: 9941, Stop: 10859, Start Num: 5

Candidate Starts for Venti\_16:

(Start: 1 @9860 has 3 MA's), (2, 9863), (Start: 5 @9941 has 40 MA's), (20, 10277), (24, 10319), (26, 10379), (31, 10493), (36, 10625), (37, 10691),

Gene: Wanda\_34 Start: 18968, Stop: 19763, Start Num: 7

Candidate Starts for Wanda\_34:

(Start: 7 @18968 has 8 MA's), (Start: 13 @19031 has 23 MA's), (18, 19163), (23, 19250), (26, 19334), (31, 19448), (34, 19511), (35, 19538), (36, 19577),

Gene: Willsammy\_16 Start: 9947, Stop: 10865, Start Num: 5

Candidate Starts for Willsammy\_16:

(Start: 1 @9866 has 3 MA's), (2, 9869), (Start: 5 @9947 has 40 MA's), (20, 10283), (24, 10325), (26, 10385), (31, 10499), (36, 10631), (37, 10697),

Gene: Xavia\_16 Start: 9945, Stop: 10863, Start Num: 5

Candidate Starts for Xavia\_16:

(Start: 1 @9864 has 3 MA's), (2, 9867), (Start: 5 @9945 has 40 MA's), (20, 10281), (24, 10323), (26, 10383), (31, 10497), (36, 10629), (37, 10695),

Gene: Yeet\_31 Start: 18764, Stop: 19496, Start Num: 13

Candidate Starts for Yeet\_31:

(Start: 7 @18701 has 8 MA's), (Start: 13 @18764 has 23 MA's), (18, 18896), (23, 18983), (26, 19067), (31, 19181), (34, 19244), (35, 19271), (36, 19310),

Gene: Zelink\_34 Start: 19616, Stop: 20348, Start Num: 13

Candidate Starts for Zelink\_34:

(Start: 7 @19553 has 8 MA's), (Start: 13 @19616 has 23 MA's), (18, 19748), (23, 19835), (26, 19919), (31, 20033), (34, 20096), (35, 20123), (36, 20162),

Gene: Zilizebeth\_16 Start: 9941, Stop: 10859, Start Num: 5

Candidate Starts for Zilizebeth\_16:

(Start: 1 @9860 has 3 MA's), (2, 9863), (Start: 5 @9941 has 40 MA's), (20, 10277), (24, 10319), (26, 10379), (31, 10493), (36, 10625), (37, 10691),