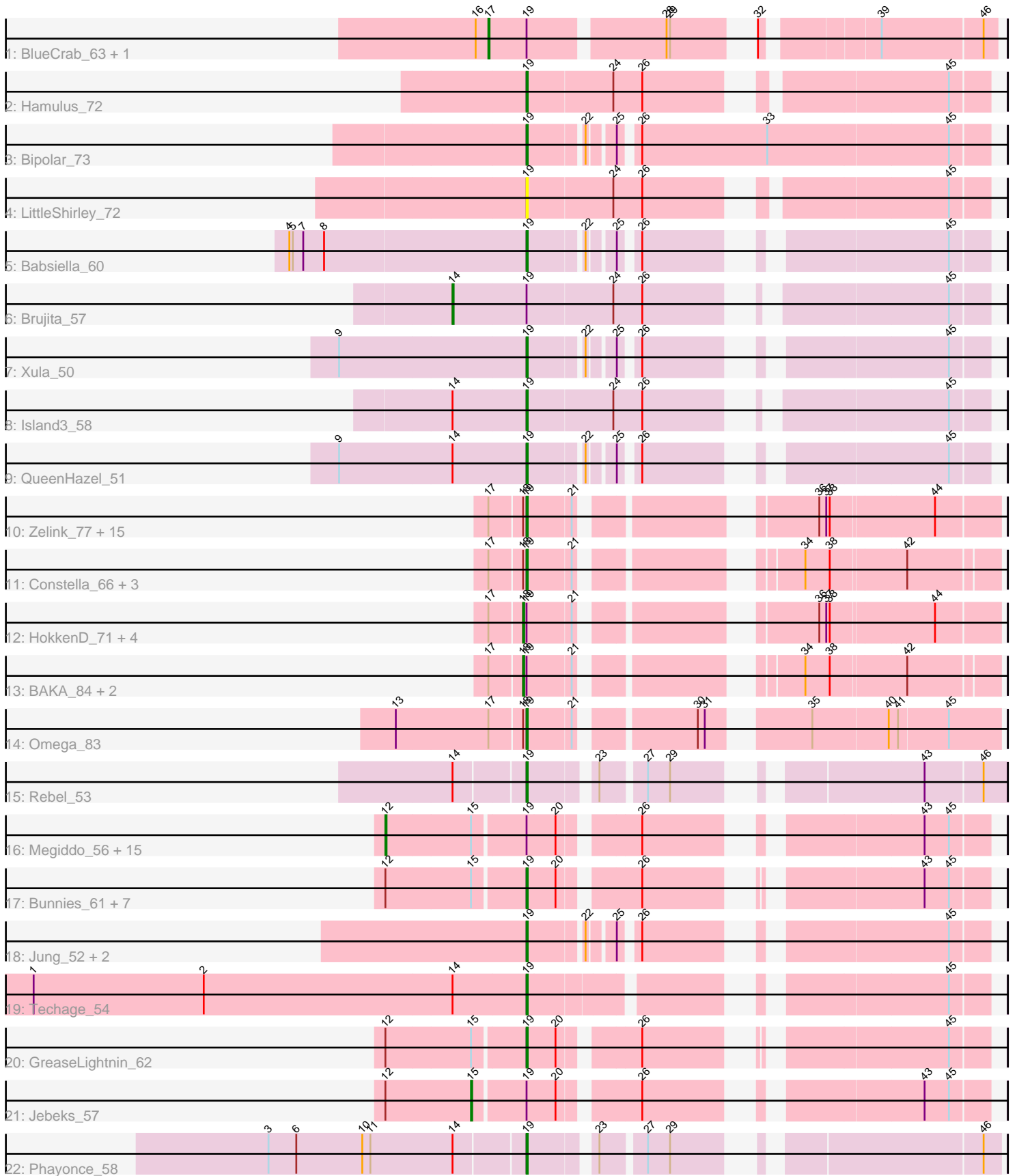


Pham 163579



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 163579 Report

This analysis was run 04/28/24 on database version 559.

Pham number 163579 has 71 members, 6 are drafts.

Phages represented in each track:

- Track 1 : BlueCrab\_63, ByChance\_55
- Track 2 : Hamulus\_72
- Track 3 : Bipolar\_73
- Track 4 : LittleShirley\_72
- Track 5 : Babsiella\_60
- Track 6 : Brujita\_57
- Track 7 : Xula\_50
- Track 8 : Island3\_58
- Track 9 : QueenHazel\_51
- Track 10 : Zelink\_77, Ejimix\_79, Dove\_67, Kalah2\_74, NihilNomen\_80, Bombitas\_69, JuicyJay\_77, Beem\_79, Phoebus\_82, EricMillard\_78, Bagrid\_80, Dallas\_78, Odette\_78, DmpstrDiver\_80, Hughesyang\_79, ThreeRngTarjay\_77
- Track 11 : Constella\_66, Duke13\_83, Thibault\_67, Pound\_80
- Track 12 : HokkenD\_71, Yeet\_74, Halley\_81, Redno2\_76, Schatzie\_75
- Track 13 : BAKA\_84, Minerva\_82, KashFlow\_74
- Track 14 : Omega\_83
- Track 15 : Rebel\_53
- Track 16 : Megiddo\_56, Brusacoram\_58, Necropolis\_55, Dynamo\_56, KilKor\_56, Glaske\_55, Atcoo\_58, Sonah\_57, StressBall\_56, Phalm\_56, Malithi\_57, Bogie\_60, HUHilltop\_59, StevieRay\_61, Bobi\_76, Willsammy\_56
- Track 17 : Bunnies\_61, Pygmy\_60, Ksquard\_59, Camster\_58, Phineas\_58, Thespis\_58, Vidya\_55, CactusJack\_56
- Track 18 : Jung\_52, Xeno\_56, HC\_52
- Track 19 : Techage\_54
- Track 20 : GreaseLightnin\_62
- Track 21 : Jebeks\_57
- Track 22 : Phayonce\_58

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

The start number called the most often in the published annotations is 19, it was called in 37 of the 65 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Babsiella\_60, Bagrid\_80, Beem\_79, Bipolar\_73, Bombitas\_69, Bunnies\_61, CactusJack\_56, Camster\_58, Constella\_66, Dallas\_78, DmpstrDiver\_80, Dove\_67, Duke13\_83, Ejimix\_79, EricMillard\_78, GreaseLightnin\_62, HC\_52, Hamulus\_72, Hughesyang\_79, Island3\_58, JuicyJay\_77, Jung\_52, Kalah2\_74, Ksquared\_59, LittleShirley\_72, NihilNomen\_80, Odette\_78, Omega\_83, Phayonce\_58, Phineas\_58, Phoebus\_82, Pound\_80, Pygmy\_60, QueenHazel\_51, Rebel\_53, Techage\_54, Thespis\_58, Thibault\_67, ThreeRngTarjay\_77, Vidya\_55, Xeno\_56, Xula\_50, Zelink\_77,

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

- Atcoo\_58, BAKA\_84, BlueCrab\_63, Bobi\_76, Bogie\_60, Brujita\_57, Brusacoram\_58, ByChance\_55, Dynamo\_56, Glaske\_55, HUHilltop\_59, Halley\_81, HokkenD\_71, Jebeks\_57, KashFlow\_74, KilKor\_56, Malithi\_57, Megiddo\_56, Minerva\_82, Necropolis\_55, Phalm\_56, Redno2\_76, Schatzie\_75, Sonah\_57, StevieRay\_61, StressBall\_56, Willsammy\_56, Yeet\_74,

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

- 

### Summary by start number:

Start 12:

- Found in 26 of 71 ( 36.6% ) of genes in pham
- Manual Annotations of this start: 16 of 65
- Called 61.5% of time when present
- Phage (with cluster) where this start called: Atcoo\_58 (P1), Bobi\_76 (F1), Bogie\_60 (P1), Brusacoram\_58 (P1), Dynamo\_56 (P1), Glaske\_55 (P1), HUHilltop\_59 (P1), KilKor\_56 (P1), Malithi\_57 (P1), Megiddo\_56 (P1), Necropolis\_55 (P1), Phalm\_56 (P1), Sonah\_57 (P1), StevieRay\_61 (P1), StressBall\_56 (P1), Willsammy\_56 (P1),

Start 14:

- Found in 6 of 71 ( 8.5% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Brujita\_57 (I1),

Start 15:

- Found in 26 of 71 ( 36.6% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 3.8% of time when present
- Phage (with cluster) where this start called: Jebeks\_57 (P1),

Start 17:

- Found in 31 of 71 ( 43.7% ) of genes in pham
- Manual Annotations of this start: 2 of 65
- Called 6.5% of time when present
- Phage (with cluster) where this start called: BlueCrab\_63 (F1), ByChance\_55 (F1),

Start 18:

- Found in 29 of 71 ( 40.8% ) of genes in pham
- Manual Annotations of this start: 8 of 65
- Called 27.6% of time when present

- Phage (with cluster) where this start called: BAKA\_84 (J), Halley\_81 (J), HokkenD\_71 (J), KashFlow\_74 (J), Minerva\_82 (J), Redno2\_76 (J), Schatzie\_75 (J), Yeet\_74 (J),

Start 19:

- Found in 71 of 71 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 37 of 65
- Called 60.6% of time when present
- Phage (with cluster) where this start called: Babsiella\_60 (I1), Bagrid\_80 (J), Beem\_79 (J), Bipolar\_73 (F1), Bombitas\_69 (J), Bunnies\_61 (P1), CactusJack\_56 (P1), Camster\_58 (P1), Constella\_66 (J), Dallas\_78 (J), DmpstrDiver\_80 (J), Dove\_67 (J), Duke13\_83 (J), Ejimix\_79 (J), EricMillard\_78 (J), GreaseLightnin\_62 (P1), HC\_52 (I1), Hamulus\_72 (F1), Hughesyang\_79 (J), Island3\_58 (I1), JuicyJay\_77 (J), Jung\_52 (P1), Kalah2\_74 (J), Ksquared\_59 (P1), LittleShirley\_72 (F1), NihilNomen\_80 (J), Odette\_78 (J), Omega\_83 (J), Phayonce\_58 (P5), Phineas\_58 (P1), Phoebus\_82 (J), Pound\_80 (J), Pygmy\_60 (P1), QueenHazel\_51 (I1), Rebel\_53 (N), Techage\_54 (P1), Thespis\_58 (P1), Thibault\_67 (J), ThreeRngTarjay\_77 (J), Vidya\_55 (P1), Xeno\_56 (N), Xula\_50 (I1), Zelink\_77 (J),

### Summary by clusters:

There are 6 clusters represented in this pham: F1, P1, P5, I1, J, N,

Info for manual annotations of cluster F1:

- Start number 12 was manually annotated 1 time for cluster F1.
- Start number 17 was manually annotated 2 times for cluster F1.
- Start number 19 was manually annotated 2 times for cluster F1.

Info for manual annotations of cluster I1:

- Start number 14 was manually annotated 1 time for cluster I1.
- Start number 19 was manually annotated 5 times for cluster I1.

Info for manual annotations of cluster J:

- Start number 18 was manually annotated 8 times for cluster J.
- Start number 19 was manually annotated 18 times for cluster J.

Info for manual annotations of cluster N:

- Start number 19 was manually annotated 2 times for cluster N.

Info for manual annotations of cluster P1:

- Start number 12 was manually annotated 15 times for cluster P1.
- Start number 15 was manually annotated 1 time for cluster P1.
- Start number 19 was manually annotated 9 times for cluster P1.

Info for manual annotations of cluster P5:

- Start number 19 was manually annotated 1 time for cluster P5.

### Gene Information:

Gene: Atcoo\_58 Start: 40217, Stop: 40654, Start Num: 12

Candidate Starts for Atcoo\_58:

(Start: 12 @40217 has 16 MA's), (Start: 15 @40289 has 1 MA's), (Start: 19 @40331 has 37 MA's), (20, 40355), (26, 40412), (43, 40601), (45, 40622),

Gene: BAKA\_84 Start: 53281, Stop: 52940, Start Num: 18

Candidate Starts for BAKA\_84:

(Start: 17 @53308 has 2 MA's), (Start: 18 @53281 has 8 MA's), (Start: 19 @53278 has 37 MA's), (21, 53242), (34, 53095), (38, 53074), (42, 53014),

Gene: Babsiella\_60 Start: 39552, Stop: 39869, Start Num: 19

Candidate Starts for Babsiella\_60:

(4, 39354), (5, 39357), (7, 39366), (8, 39384), (Start: 19 @39552 has 37 MA's), (22, 39594), (25, 39612), (26, 39624), (45, 39837),

Gene: Bagrid\_80 Start: 51928, Stop: 51584, Start Num: 19

Candidate Starts for Bagrid\_80:

(Start: 17 @51958 has 2 MA's), (Start: 18 @51931 has 8 MA's), (Start: 19 @51928 has 37 MA's), (21, 51892), (36, 51730), (37, 51724), (38, 51721), (44, 51637),

Gene: Beem\_79 Start: 52789, Stop: 52445, Start Num: 19

Candidate Starts for Beem\_79:

(Start: 17 @52819 has 2 MA's), (Start: 18 @52792 has 8 MA's), (Start: 19 @52789 has 37 MA's), (21, 52753), (36, 52591), (37, 52585), (38, 52582), (44, 52498),

Gene: Bipolar\_73 Start: 45463, Stop: 45828, Start Num: 19

Candidate Starts for Bipolar\_73:

(Start: 19 @45463 has 37 MA's), (22, 45505), (25, 45523), (26, 45535), (33, 45643), (45, 45796),

Gene: BlueCrab\_63 Start: 41722, Stop: 42096, Start Num: 17

Candidate Starts for BlueCrab\_63:

(16, 41713), (Start: 17 @41722 has 2 MA's), (Start: 19 @41755 has 37 MA's), (28, 41863), (29, 41866), (32, 41914), (39, 42001), (46, 42085),

Gene: Bobi\_76 Start: 47153, Stop: 47593, Start Num: 12

Candidate Starts for Bobi\_76:

(Start: 12 @47153 has 16 MA's), (Start: 15 @47225 has 1 MA's), (Start: 19 @47267 has 37 MA's), (20, 47291), (26, 47348), (43, 47540), (45, 47561),

Gene: Bogie\_60 Start: 39977, Stop: 40417, Start Num: 12

Candidate Starts for Bogie\_60:

(Start: 12 @39977 has 16 MA's), (Start: 15 @40049 has 1 MA's), (Start: 19 @40091 has 37 MA's), (20, 40115), (26, 40172), (43, 40364), (45, 40385),

Gene: Bombitas\_69 Start: 49952, Stop: 49608, Start Num: 19

Candidate Starts for Bombitas\_69:

(Start: 17 @49982 has 2 MA's), (Start: 18 @49955 has 8 MA's), (Start: 19 @49952 has 37 MA's), (21, 49916), (36, 49754), (37, 49748), (38, 49745), (44, 49661),

Gene: Brujita\_57 Start: 38345, Stop: 38749, Start Num: 14

Candidate Starts for Brujita\_57:

(Start: 14 @38345 has 1 MA's), (Start: 19 @38408 has 37 MA's), (24, 38480), (26, 38504), (45, 38717),

Gene: Brusacoram\_58 Start: 38760, Stop: 39197, Start Num: 12

Candidate Starts for Brusacoram\_58:

(Start: 12 @38760 has 16 MA's), (Start: 15 @38832 has 1 MA's), (Start: 19 @38874 has 37 MA's), (20, 38898), (26, 38955), (43, 39144), (45, 39165),

Gene: Bunnies\_61 Start: 40221, Stop: 40544, Start Num: 19

Candidate Starts for Bunnies\_61:

(Start: 12 @40107 has 16 MA's), (Start: 15 @40179 has 1 MA's), (Start: 19 @40221 has 37 MA's), (20, 40245), (26, 40302), (43, 40491), (45, 40512),

Gene: ByChance\_55 Start: 36650, Stop: 37024, Start Num: 17

Candidate Starts for ByChance\_55:

(16, 36641), (Start: 17 @36650 has 2 MA's), (Start: 19 @36683 has 37 MA's), (28, 36791), (29, 36794), (32, 36842), (39, 36929), (46, 37013),

Gene: CactusJack\_56 Start: 39089, Stop: 39412, Start Num: 19

Candidate Starts for CactusJack\_56:

(Start: 12 @38975 has 16 MA's), (Start: 15 @39047 has 1 MA's), (Start: 19 @39089 has 37 MA's), (20, 39113), (26, 39170), (43, 39359), (45, 39380),

Gene: Camster\_58 Start: 38552, Stop: 38878, Start Num: 19

Candidate Starts for Camster\_58:

(Start: 12 @38438 has 16 MA's), (Start: 15 @38510 has 1 MA's), (Start: 19 @38552 has 37 MA's), (20, 38576), (26, 38633), (43, 38825), (45, 38846),

Gene: Constella\_66 Start: 46926, Stop: 46588, Start Num: 19

Candidate Starts for Constella\_66:

(Start: 17 @46956 has 2 MA's), (Start: 18 @46929 has 8 MA's), (Start: 19 @46926 has 37 MA's), (21, 46890), (34, 46743), (38, 46722), (42, 46662),

Gene: Dallas\_78 Start: 51710, Stop: 51366, Start Num: 19

Candidate Starts for Dallas\_78:

(Start: 17 @51740 has 2 MA's), (Start: 18 @51713 has 8 MA's), (Start: 19 @51710 has 37 MA's), (21, 51674), (36, 51512), (37, 51506), (38, 51503), (44, 51419),

Gene: DmpstrDiver\_80 Start: 52136, Stop: 51792, Start Num: 19

Candidate Starts for DmpstrDiver\_80:

(Start: 17 @52166 has 2 MA's), (Start: 18 @52139 has 8 MA's), (Start: 19 @52136 has 37 MA's), (21, 52100), (36, 51938), (37, 51932), (38, 51929), (44, 51845),

Gene: Dove\_67 Start: 48218, Stop: 47874, Start Num: 19

Candidate Starts for Dove\_67:

(Start: 17 @48248 has 2 MA's), (Start: 18 @48221 has 8 MA's), (Start: 19 @48218 has 37 MA's), (21, 48182), (36, 48020), (37, 48014), (38, 48011), (44, 47927),

Gene: Duke13\_83 Start: 52490, Stop: 52152, Start Num: 19

Candidate Starts for Duke13\_83:

(Start: 17 @52520 has 2 MA's), (Start: 18 @52493 has 8 MA's), (Start: 19 @52490 has 37 MA's), (21, 52454), (34, 52307), (38, 52286), (42, 52226),

Gene: Dynamo\_56 Start: 38011, Stop: 38451, Start Num: 12

Candidate Starts for Dynamo\_56:

(Start: 12 @38011 has 16 MA's), (Start: 15 @38083 has 1 MA's), (Start: 19 @38125 has 37 MA's), (20, 38149), (26, 38206), (43, 38398), (45, 38419),

Gene: Ejimix\_79 Start: 53578, Stop: 53234, Start Num: 19

Candidate Starts for Ejimix\_79:

(Start: 17 @53608 has 2 MA's), (Start: 18 @53581 has 8 MA's), (Start: 19 @53578 has 37 MA's), (21, 53542), (36, 53380), (37, 53374), (38, 53371), (44, 53287),

Gene: EricMillard\_78 Start: 52781, Stop: 52437, Start Num: 19

Candidate Starts for EricMillard\_78:

(Start: 17 @52811 has 2 MA's), (Start: 18 @52784 has 8 MA's), (Start: 19 @52781 has 37 MA's), (21, 52745), (36, 52583), (37, 52577), (38, 52574), (44, 52490),

Gene: Glaske\_55 Start: 38975, Stop: 39412, Start Num: 12

Candidate Starts for Glaske\_55:

(Start: 12 @38975 has 16 MA's), (Start: 15 @39047 has 1 MA's), (Start: 19 @39089 has 37 MA's), (20, 39113), (26, 39170), (43, 39359), (45, 39380),

Gene: GreaseLightnin\_62 Start: 40455, Stop: 40778, Start Num: 19

Candidate Starts for GreaseLightnin\_62:

(Start: 12 @40341 has 16 MA's), (Start: 15 @40413 has 1 MA's), (Start: 19 @40455 has 37 MA's), (20, 40479), (26, 40536), (45, 40746),

Gene: HC\_52 Start: 35682, Stop: 35999, Start Num: 19

Candidate Starts for HC\_52:

(Start: 19 @35682 has 37 MA's), (22, 35724), (25, 35742), (26, 35754), (45, 35967),

Gene: HUHilltop\_59 Start: 38234, Stop: 38674, Start Num: 12

Candidate Starts for HUHilltop\_59:

(Start: 12 @38234 has 16 MA's), (Start: 15 @38306 has 1 MA's), (Start: 19 @38348 has 37 MA's), (20, 38372), (26, 38429), (43, 38621), (45, 38642),

Gene: Halley\_81 Start: 52792, Stop: 52445, Start Num: 18

Candidate Starts for Halley\_81:

(Start: 17 @52819 has 2 MA's), (Start: 18 @52792 has 8 MA's), (Start: 19 @52789 has 37 MA's), (21, 52753), (36, 52591), (37, 52585), (38, 52582), (44, 52498),

Gene: Hamulus\_72 Start: 45640, Stop: 45987, Start Num: 19

Candidate Starts for Hamulus\_72:

(Start: 19 @45640 has 37 MA's), (24, 45712), (26, 45736), (45, 45955),

Gene: HokkenD\_71 Start: 51061, Stop: 50714, Start Num: 18

Candidate Starts for HokkenD\_71:

(Start: 17 @51088 has 2 MA's), (Start: 18 @51061 has 8 MA's), (Start: 19 @51058 has 37 MA's), (21, 51022), (36, 50860), (37, 50854), (38, 50851), (44, 50767),

Gene: Hughesyang\_79 Start: 52747, Stop: 52403, Start Num: 19

Candidate Starts for Hughesyang\_79:

(Start: 17 @52777 has 2 MA's), (Start: 18 @52750 has 8 MA's), (Start: 19 @52747 has 37 MA's), (21, 52711), (36, 52549), (37, 52543), (38, 52540), (44, 52456),

Gene: Island3\_58 Start: 38408, Stop: 38749, Start Num: 19

Candidate Starts for Island3\_58:

(Start: 14 @38345 has 1 MA's), (Start: 19 @38408 has 37 MA's), (24, 38480), (26, 38504), (45, 38717),

Gene: Jebeks\_57 Start: 37603, Stop: 37971, Start Num: 15

Candidate Starts for Jebeks\_57:

(Start: 12 @37531 has 16 MA's), (Start: 15 @37603 has 1 MA's), (Start: 19 @37645 has 37 MA's), (20, 37669), (26, 37726), (43, 37918), (45, 37939),

Gene: JuicyJay\_77 Start: 53923, Stop: 53579, Start Num: 19

Candidate Starts for JuicyJay\_77:

(Start: 17 @53953 has 2 MA's), (Start: 18 @53926 has 8 MA's), (Start: 19 @53923 has 37 MA's), (21, 53887), (36, 53725), (37, 53719), (38, 53716), (44, 53632),

Gene: Jung\_52 Start: 35997, Stop: 36314, Start Num: 19

Candidate Starts for Jung\_52:

(Start: 19 @35997 has 37 MA's), (22, 36039), (25, 36057), (26, 36069), (45, 36282),

Gene: Kalah2\_74 Start: 52082, Stop: 51738, Start Num: 19

Candidate Starts for Kalah2\_74:

(Start: 17 @52112 has 2 MA's), (Start: 18 @52085 has 8 MA's), (Start: 19 @52082 has 37 MA's), (21, 52046), (36, 51884), (37, 51878), (38, 51875), (44, 51791),

Gene: KashFlow\_74 Start: 47820, Stop: 47479, Start Num: 18

Candidate Starts for KashFlow\_74:

(Start: 17 @47847 has 2 MA's), (Start: 18 @47820 has 8 MA's), (Start: 19 @47817 has 37 MA's), (21, 47781), (34, 47634), (38, 47613), (42, 47553),

Gene: KilKor\_56 Start: 39668, Stop: 40105, Start Num: 12

Candidate Starts for KilKor\_56:

(Start: 12 @39668 has 16 MA's), (Start: 15 @39740 has 1 MA's), (Start: 19 @39782 has 37 MA's), (20, 39806), (26, 39863), (43, 40052), (45, 40073),

Gene: Ksquared\_59 Start: 40221, Stop: 40544, Start Num: 19

Candidate Starts for Ksquared\_59:

(Start: 12 @40107 has 16 MA's), (Start: 15 @40179 has 1 MA's), (Start: 19 @40221 has 37 MA's), (20, 40245), (26, 40302), (43, 40491), (45, 40512),

Gene: LittleShirley\_72 Start: 44686, Stop: 45033, Start Num: 19

Candidate Starts for LittleShirley\_72:

(Start: 19 @44686 has 37 MA's), (24, 44758), (26, 44782), (45, 45001),

Gene: Malithi\_57 Start: 38149, Stop: 38589, Start Num: 12

Candidate Starts for Malithi\_57:

(Start: 12 @38149 has 16 MA's), (Start: 15 @38221 has 1 MA's), (Start: 19 @38263 has 37 MA's), (20, 38287), (26, 38344), (43, 38536), (45, 38557),

Gene: Megiddo\_56 Start: 38999, Stop: 39439, Start Num: 12

Candidate Starts for Megiddo\_56:

(Start: 12 @38999 has 16 MA's), (Start: 15 @39071 has 1 MA's), (Start: 19 @39113 has 37 MA's), (20, 39137), (26, 39194), (43, 39386), (45, 39407),

Gene: Minerva\_82 Start: 52925, Stop: 52584, Start Num: 18

Candidate Starts for Minerva\_82:

(Start: 17 @52952 has 2 MA's), (Start: 18 @52925 has 8 MA's), (Start: 19 @52922 has 37 MA's), (21, 52886), (34, 52739), (38, 52718), (42, 52658),



Gene: Necropolis\_55 Start: 37600, Stop: 38040, Start Num: 12

Candidate Starts for Necropolis\_55:

(Start: 12 @37600 has 16 MA's), (Start: 15 @37672 has 1 MA's), (Start: 19 @37714 has 37 MA's), (20, 37738), (26, 37795), (43, 37987), (45, 38008),

Gene: NihilNomen\_80 Start: 52876, Stop: 52532, Start Num: 19

Candidate Starts for NihilNomen\_80:

(Start: 17 @52906 has 2 MA's), (Start: 18 @52879 has 8 MA's), (Start: 19 @52876 has 37 MA's), (21, 52840), (36, 52678), (37, 52672), (38, 52669), (44, 52585),

Gene: Odette\_78 Start: 51918, Stop: 51574, Start Num: 19

Candidate Starts for Odette\_78:

(Start: 17 @51948 has 2 MA's), (Start: 18 @51921 has 8 MA's), (Start: 19 @51918 has 37 MA's), (21, 51882), (36, 51720), (37, 51714), (38, 51711), (44, 51627),

Gene: Omega\_83 Start: 53053, Stop: 52703, Start Num: 19

Candidate Starts for Omega\_83:

(13, 53161), (Start: 17 @53083 has 2 MA's), (Start: 18 @53056 has 8 MA's), (Start: 19 @53053 has 37 MA's), (21, 53017), (30, 52930), (31, 52924), (35, 52858), (40, 52795), (41, 52789), (45, 52747),

Gene: Phalm\_56 Start: 38975, Stop: 39412, Start Num: 12

Candidate Starts for Phalm\_56:

(Start: 12 @38975 has 16 MA's), (Start: 15 @39047 has 1 MA's), (Start: 19 @39089 has 37 MA's), (20, 39113), (26, 39170), (43, 39359), (45, 39380),

Gene: Phayonce\_58 Start: 40466, Stop: 40795, Start Num: 19

Candidate Starts for Phayonce\_58:

(3, 40253), (6, 40277), (10, 40334), (11, 40340), (Start: 14 @40409 has 1 MA's), (Start: 19 @40466 has 37 MA's), (23, 40514), (27, 40547), (29, 40565), (46, 40781),

Gene: Phineas\_58 Start: 38683, Stop: 39009, Start Num: 19

Candidate Starts for Phineas\_58:

(Start: 12 @38569 has 16 MA's), (Start: 15 @38641 has 1 MA's), (Start: 19 @38683 has 37 MA's), (20, 38707), (26, 38764), (43, 38956), (45, 38977),

Gene: Phoebus\_82 Start: 54058, Stop: 53714, Start Num: 19

Candidate Starts for Phoebus\_82:

(Start: 17 @54088 has 2 MA's), (Start: 18 @54061 has 8 MA's), (Start: 19 @54058 has 37 MA's), (21, 54022), (36, 53860), (37, 53854), (38, 53851), (44, 53767),

Gene: Pound\_80 Start: 54194, Stop: 53856, Start Num: 19

Candidate Starts for Pound\_80:

(Start: 17 @54224 has 2 MA's), (Start: 18 @54197 has 8 MA's), (Start: 19 @54194 has 37 MA's), (21, 54158), (34, 54011), (38, 53990), (42, 53930),

Gene: Pygmy\_60 Start: 40147, Stop: 40473, Start Num: 19

Candidate Starts for Pygmy\_60:

(Start: 12 @40033 has 16 MA's), (Start: 15 @40105 has 1 MA's), (Start: 19 @40147 has 37 MA's), (20, 40171), (26, 40228), (43, 40420), (45, 40441),

Gene: QueenHazel\_51 Start: 36206, Stop: 36523, Start Num: 19

Candidate Starts for QueenHazel\_51:

(9, 36047), (Start: 14 @36143 has 1 MA's), (Start: 19 @36206 has 37 MA's), (22, 36248), (25, 36266), (26, 36278), (45, 36491),

Gene: Rebel\_53 Start: 34876, Stop: 35211, Start Num: 19

Candidate Starts for Rebel\_53:

(Start: 14 @34819 has 1 MA's), (Start: 19 @34876 has 37 MA's), (23, 34924), (27, 34957), (29, 34975), (43, 35143), (46, 35191),

Gene: Redno2\_76 Start: 49675, Stop: 49328, Start Num: 18

Candidate Starts for Redno2\_76:

(Start: 17 @49702 has 2 MA's), (Start: 18 @49675 has 8 MA's), (Start: 19 @49672 has 37 MA's), (21, 49636), (36, 49474), (37, 49468), (38, 49465), (44, 49381),

Gene: Schatzie\_75 Start: 51668, Stop: 51321, Start Num: 18

Candidate Starts for Schatzie\_75:

(Start: 17 @51695 has 2 MA's), (Start: 18 @51668 has 8 MA's), (Start: 19 @51665 has 37 MA's), (21, 51629), (36, 51467), (37, 51461), (38, 51458), (44, 51374),

Gene: Sonah\_57 Start: 37705, Stop: 38145, Start Num: 12

Candidate Starts for Sonah\_57:

(Start: 12 @37705 has 16 MA's), (Start: 15 @37777 has 1 MA's), (Start: 19 @37819 has 37 MA's), (20, 37843), (26, 37900), (43, 38092), (45, 38113),

Gene: StevieRay\_61 Start: 40026, Stop: 40466, Start Num: 12

Candidate Starts for StevieRay\_61:

(Start: 12 @40026 has 16 MA's), (Start: 15 @40098 has 1 MA's), (Start: 19 @40140 has 37 MA's), (20, 40164), (26, 40221), (43, 40413), (45, 40434),

Gene: StressBall\_56 Start: 38975, Stop: 39412, Start Num: 12

Candidate Starts for StressBall\_56:

(Start: 12 @38975 has 16 MA's), (Start: 15 @39047 has 1 MA's), (Start: 19 @39089 has 37 MA's), (20, 39113), (26, 39170), (43, 39359), (45, 39380),

Gene: Techage\_54 Start: 36368, Stop: 36694, Start Num: 19

Candidate Starts for Techage\_54:

(1, 35945), (2, 36092), (Start: 14 @36305 has 1 MA's), (Start: 19 @36368 has 37 MA's), (45, 36662),

Gene: Thespis\_58 Start: 38874, Stop: 39197, Start Num: 19

Candidate Starts for Thespis\_58:

(Start: 12 @38760 has 16 MA's), (Start: 15 @38832 has 1 MA's), (Start: 19 @38874 has 37 MA's), (20, 38898), (26, 38955), (43, 39144), (45, 39165),

Gene: Thibault\_67 Start: 47871, Stop: 47533, Start Num: 19

Candidate Starts for Thibault\_67:

(Start: 17 @47901 has 2 MA's), (Start: 18 @47874 has 8 MA's), (Start: 19 @47871 has 37 MA's), (21, 47835), (34, 47688), (38, 47667), (42, 47607),

Gene: ThreeRngTarjay\_77 Start: 52950, Stop: 52606, Start Num: 19

Candidate Starts for ThreeRngTarjay\_77:

(Start: 17 @52980 has 2 MA's), (Start: 18 @52953 has 8 MA's), (Start: 19 @52950 has 37 MA's), (21, 52914), (36, 52752), (37, 52746), (38, 52743), (44, 52659),

Gene: Vidya\_55 Start: 37618, Stop: 37944, Start Num: 19

Candidate Starts for Vidya\_55:

(Start: 12 @37504 has 16 MA's), (Start: 15 @37576 has 1 MA's), (Start: 19 @37618 has 37 MA's),  
(20, 37642), (26, 37699), (43, 37891), (45, 37912),

Gene: Willsammy\_56 Start: 39151, Stop: 39588, Start Num: 12

Candidate Starts for Willsammy\_56:

(Start: 12 @39151 has 16 MA's), (Start: 15 @39223 has 1 MA's), (Start: 19 @39265 has 37 MA's),  
(20, 39289), (26, 39346), (43, 39535), (45, 39556),

Gene: Xeno\_56 Start: 35652, Stop: 35969, Start Num: 19

Candidate Starts for Xeno\_56:

(Start: 19 @35652 has 37 MA's), (22, 35694), (25, 35712), (26, 35724), (45, 35937),

Gene: Xula\_50 Start: 35808, Stop: 36125, Start Num: 19

Candidate Starts for Xula\_50:

(9, 35649), (Start: 19 @35808 has 37 MA's), (22, 35850), (25, 35868), (26, 35880), (45, 36093),

Gene: Yeet\_74 Start: 51170, Stop: 50823, Start Num: 18

Candidate Starts for Yeet\_74:

(Start: 17 @51197 has 2 MA's), (Start: 18 @51170 has 8 MA's), (Start: 19 @51167 has 37 MA's), (21,  
51131), (36, 50969), (37, 50963), (38, 50960), (44, 50876),

Gene: Zelink\_77 Start: 53262, Stop: 52918, Start Num: 19

Candidate Starts for Zelink\_77:

(Start: 17 @53292 has 2 MA's), (Start: 18 @53265 has 8 MA's), (Start: 19 @53262 has 37 MA's), (21,  
53226), (36, 53064), (37, 53058), (38, 53055), (44, 52971),