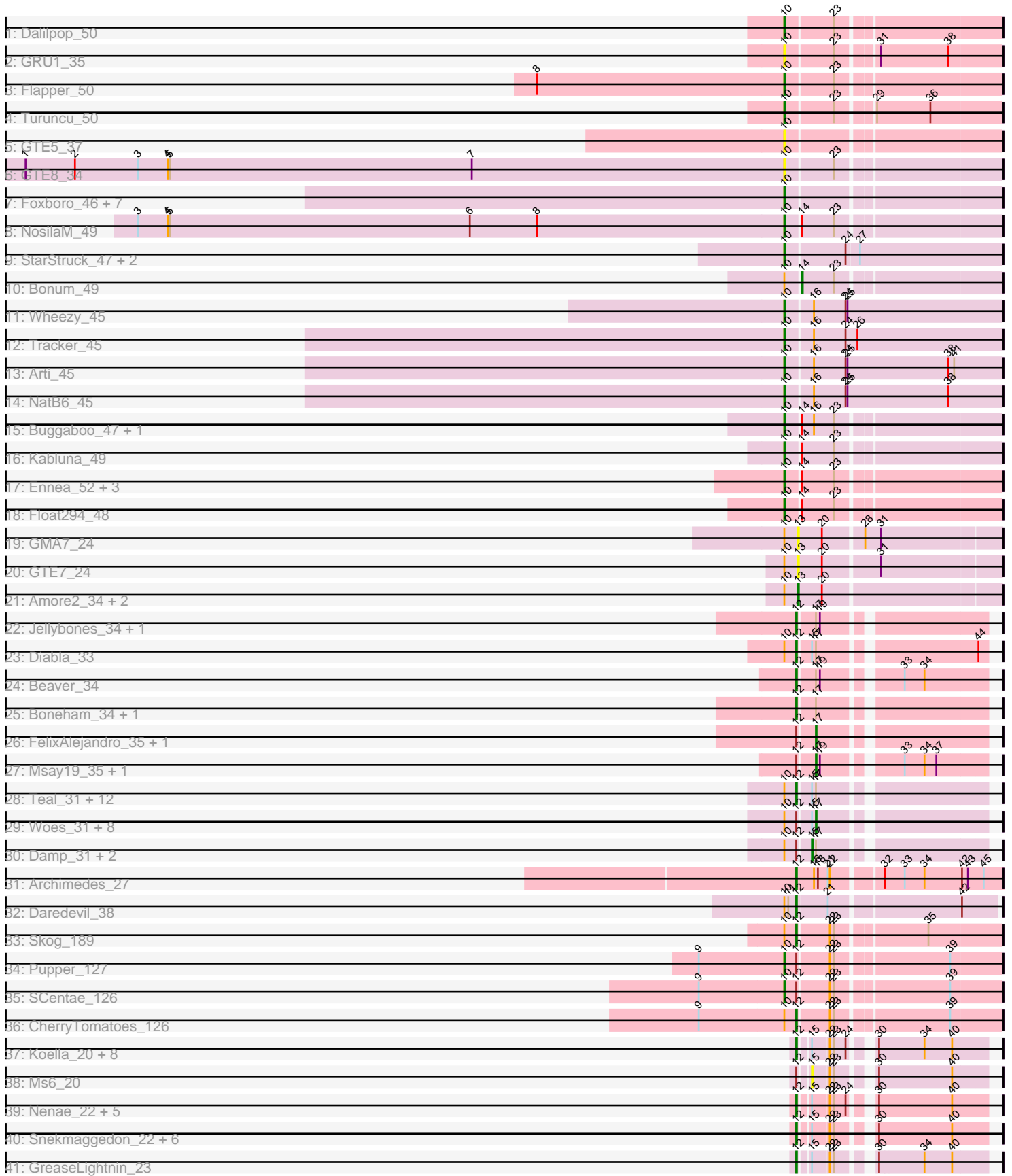


Pham 166611



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 166611 Report

This analysis was run 07/09/24 on database version 566.

Pham number 166611 has 101 members, 10 are drafts.

Phages represented in each track:

- Track 1 : Dalilpop\_50
- Track 2 : GRU1\_35
- Track 3 : Flapper\_50
- Track 4 : Turuncu\_50
- Track 5 : GTE5\_37
- Track 6 : GTE8\_34
- Track 7 : Foxboro\_46, Kurt\_45, GrootJr\_47, KidneyBean\_45, NovumRegina\_45, Jifall16\_44, Phomeo\_44, Emianna\_45
- Track 8 : NosilaM\_49
- Track 9 : StarStruck\_47, MerCougar\_47, Outis\_47
- Track 10 : Bonum\_49
- Track 11 : Wheezy\_45
- Track 12 : Tracker\_45
- Track 13 : Arti\_45
- Track 14 : NatB6\_45
- Track 15 : Buggaboo\_47, SuperSulley\_47
- Track 16 : Kabluna\_49
- Track 17 : Ennea\_52, Patio\_49, Skysand\_48, Lollipop1437\_51
- Track 18 : Float294\_48
- Track 19 : GMA7\_24
- Track 20 : GTE7\_24
- Track 21 : Amore2\_34, Austin\_34, HayZem\_33
- Track 22 : Jellybones\_34, John316\_34
- Track 23 : Diabla\_33
- Track 24 : Beaver\_34
- Track 25 : Boneham\_34, BirksAndSocks\_34
- Track 26 : FelixAlejandro\_35, Butterball\_34
- Track 27 : Msay19\_35, Poland\_37
- Track 28 : Teal\_31, Jams\_31, Luker\_32, Sticker17\_31, Minos\_32, Shelley\_31, Berries\_31, GalacticEye\_31, Hello\_31, Charianelly\_31, Bianmat\_31, MrWormie\_31, Lidong\_31
- Track 29 : Woes\_31, Nimi13\_31, Jormungandr\_31, Harambe\_31, Lahirium\_31, Anamika\_31, Hail2Pitt\_31, Neoevie\_31, Guillaume\_31
- Track 30 : Damp\_31, Kaseim\_32, Newt\_32
- Track 31 : Archimedes\_27
- Track 32 : Daredevil\_38
- Track 33 : Skog\_189

- Track 34 : Pupper\_127
- Track 35 : SCentae\_126
- Track 36 : CherryTomatoes\_126
- Track 37 : Koella\_20, Phloss\_22, LastJedi\_20, Brocalys\_21, Crumble\_20, Fulbright\_22, Pippy\_20, Squirty\_21, Clifton\_20
- Track 38 : Ms6\_20
- Track 39 : Nenae\_22, PhancyPhin\_22, Redi\_22, ShrimpFriedEgg\_22, BabeRuth\_22, Purgamenstris\_22
- Track 40 : Snekmaggedon\_22, BigPhil\_21, Cerasum\_21, Velveteen\_21, Sarma624\_21, SpongeBob\_22, Jamie19\_22
- Track 41 : GreaseLightnin\_23

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

The start number called the most often in the published annotations is 12, it was called in 46 of the 91 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Archimedes\_27, BabeRuth\_22, Beaver\_34, Berries\_31, Bianmat\_31, BigPhil\_21, BirksAndSocks\_34, Boneham\_34, Brocalys\_21, Cerasum\_21, Charianelly\_31, CherryTomatoes\_126, Clifton\_20, Crumble\_20, Daredevil\_38, Diabla\_33, Fulbright\_22, GalacticEye\_31, GreaseLightnin\_23, Hello\_31, Jamie19\_22, Jams\_31, Jellybones\_34, John316\_34, Koella\_20, LastJedi\_20, Lidong\_31, Luker\_32, Minos\_32, MrWormie\_31, Nenae\_22, PhancyPhin\_22, Phloss\_22, Pippy\_20, Purgamenstris\_22, Redi\_22, Sarma624\_21, Shelley\_31, ShrimpFriedEgg\_22, Skog\_189, Snekmaggedon\_22, SpongeBob\_22, Squirty\_21, Sticker17\_31, Teal\_31, Velveteen\_21,

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

- Anamika\_31, Butterball\_34, Damp\_31, FelixAlejandro\_35, Guillaume\_31, Hail2Pitt\_31, Harambe\_31, Jormungandr\_31, Kaseim\_32, Lahirium\_31, Ms6\_20, Msay19\_35, Neoevie\_31, Newt\_32, Nimi13\_31, Poland\_37, Pupper\_127, SCentae\_126, Woes\_31,

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

- Amore2\_34, Arti\_45, Austin\_34, Bonum\_49, Buggaboo\_47, Dalilpop\_50, Emianna\_45, Ennea\_52, Flapper\_50, Float294\_48, Foxboro\_46, GMA7\_24, GRU1\_35, GTE5\_37, GTE7\_24, GTE8\_34, GrootJr\_47, HayZem\_33, Jifall16\_44, Kabluna\_49, KidneyBean\_45, Kurt\_45, Lollipop1437\_51, MerCougar\_47, NatB6\_45, NosilaM\_49, NovumRegina\_45, Outis\_47, Patio\_49, Phomeo\_44, Skysand\_48, StarStruck\_47, SuperSulley\_47, Tracker\_45, Turuncu\_50, Wheezy\_45,

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

Start 10:

- Found in 67 of 101 ( 66.3% ) of genes in pham
- Manual Annotations of this start: 28 of 91
- Called 47.8% of time when present
- Phage (with cluster) where this start called: Arti\_45 (CR2), Buggaboo\_47 (CR2), Dalilpop\_50 (CR1), Emianna\_45 (CR2), Ennea\_52 (CR3), Flapper\_50 (CR1),

Float294\_48 (CR3), Foxboro\_46 (CR2), GRU1\_35 (CR1), GTE5\_37 (CR1), GTE8\_34 (CR2), GrootJr\_47 (CR2), Jifall16\_44 (CR2), Kabluna\_49 (CR2), KidneyBean\_45 (CR2), Kurt\_45 (CR2), Lollipop1437\_51 (CR3), MerCougar\_47 (CR2), NatB6\_45 (CR2), NosilaM\_49 (CR2), NovumRegina\_45 (CR2), Outis\_47 (CR2), Patio\_49 (CR3), Phomeo\_44 (CR2), Pupper\_127 (DO), SCentae\_126 (DO), Skysand\_48 (CR3), StarStruck\_47 (CR2), SuperSulley\_47 (CR2), Tracker\_45 (CR2), Turuncu\_50 (CR1), Wheezy\_45 (CR2),

#### Start 12:

- Found in 65 of 101 ( 64.4% ) of genes in pham
- Manual Annotations of this start: 46 of 91
- Called 70.8% of time when present
- Phage (with cluster) where this start called: Archimedes\_27 (DA), BabeRuth\_22 (N), Beaver\_34 (CS2), Berries\_31 (CS3), Bianmat\_31 (CS3), BigPhil\_21 (F1), BirksAndSocks\_34 (CS2), Boneham\_34 (CS2), Brocalys\_21 (F1), Cerasum\_21 (F1), Charianelly\_31 (CS3), CherryTomatoes\_126 (DO), Clifton\_20 (F1), Crumble\_20 (F1), Daredevil\_38 (DL), Diabla\_33 (CS2), Fulbright\_22 (N), GalacticEye\_31 (CS3), GreaseLightnin\_23 (P1), Hello\_31 (CS3), Jamie19\_22 (N), Jams\_31 (CS3), Jellybones\_34 (CS2), John316\_34 (CS2), Koella\_20 (F1), LastJedi\_20 (F1), Lidong\_31 (CS3), Luker\_32 (CS3), Minos\_32 (CS3), MrWormie\_31 (CS3), Nenae\_22 (N), PhancyPhin\_22 (N), Phloss\_22 (N), Pippy\_20 (F1), Purgamenstris\_22 (N), Redi\_22 (N), Sarma624\_21 (F1), Shelley\_31 (CS3), ShrimpFriedEgg\_22 (N), Skog\_189 (DO), Snekmaggon\_22 (N), SpongeBob\_22 (N), Squirty\_21 (F3), Sticker17\_31 (CS3), Teal\_31 (CS3), Velveteen\_21 (F1),

#### Start 13:

- Found in 5 of 101 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 3 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amore2\_34 (CS1), Austin\_34 (CS1), GMA7\_24 (CS1), GTE7\_24 (CS1), HayZem\_33 (CS1),

#### Start 14:

- Found in 10 of 101 ( 9.9% ) of genes in pham
- Manual Annotations of this start: 1 of 91
- Called 10.0% of time when present
- Phage (with cluster) where this start called: Bonum\_49 (CR2),

#### Start 15:

- Found in 50 of 101 ( 49.5% ) of genes in pham
- Manual Annotations of this start: 1 of 91
- Called 8.0% of time when present
- Phage (with cluster) where this start called: Damp\_31 (CS3), Kaseim\_32 (CS3), Ms6\_20 (F1), Newt\_32 (CS3),

#### Start 17:

- Found in 35 of 101 ( 34.7% ) of genes in pham
- Manual Annotations of this start: 12 of 91
- Called 37.1% of time when present
- Phage (with cluster) where this start called: Anamika\_31 (CS3), Butterball\_34 (CS2), FelixAlejandro\_35 (CS2), Guillaume\_31 (CS3), Hail2Pitt\_31 (CS3), Harambe\_31 (CS3), Jormungandr\_31 (CS3), Lahirium\_31 (CS3), Msay19\_35 (CS2), Neevie\_31 (CS3), Nimi13\_31 (CS3), Poland\_37 (CS2), Woes\_31 (CS3),

### **Summary by clusters:**

There are 13 clusters represented in this pham: CR2, F1, DL, P1, CR3, CR1, F3, N, DO, DA, CS1, CS3, CS2,

Info for manual annotations of cluster CR1:

- Start number 10 was manually annotated 3 times for cluster CR1.

Info for manual annotations of cluster CR2:

- Start number 10 was manually annotated 18 times for cluster CR2.
- Start number 14 was manually annotated 1 time for cluster CR2.

Info for manual annotations of cluster CR3:

- Start number 10 was manually annotated 5 times for cluster CR3.

Info for manual annotations of cluster CS1:

- Start number 13 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 12 was manually annotated 6 times for cluster CS2.
- Start number 17 was manually annotated 3 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 12 was manually annotated 13 times for cluster CS3.
- Start number 15 was manually annotated 1 time for cluster CS3.
- Start number 17 was manually annotated 9 times for cluster CS3.

Info for manual annotations of cluster DA:

- Start number 12 was manually annotated 1 time for cluster DA.

Info for manual annotations of cluster DL:

- Start number 12 was manually annotated 1 time for cluster DL.

Info for manual annotations of cluster DO:

- Start number 10 was manually annotated 2 times for cluster DO.
- Start number 12 was manually annotated 2 times for cluster DO.

Info for manual annotations of cluster F1:

- Start number 12 was manually annotated 10 times for cluster F1.

Info for manual annotations of cluster F3:

- Start number 12 was manually annotated 1 time for cluster F3.

Info for manual annotations of cluster N:

- Start number 12 was manually annotated 11 times for cluster N.

Info for manual annotations of cluster P1:

- Start number 12 was manually annotated 1 time for cluster P1.

### **Gene Information:**

Gene: Amore2\_34 Start: 37457, Stop: 37750, Start Num: 13  
Candidate Starts for Amore2\_34:  
(Start: 10 @37436 has 28 MA's), (Start: 13 @37457 has 3 MA's), (20, 37493),

Gene: Anamika\_31 Start: 39309, Stop: 39533, Start Num: 17  
Candidate Starts for Anamika\_31:  
(Start: 10 @39267 has 28 MA's), (Start: 12 @39285 has 46 MA's), (Start: 15 @39303 has 1 MA's),  
(Start: 17 @39309 has 12 MA's),

Gene: Archimedes\_27 Start: 24365, Stop: 24658, Start Num: 12  
Candidate Starts for Archimedes\_27:  
(Start: 12 @24365 has 46 MA's), (16, 24392), (18, 24398), (21, 24413), (22, 24416), (32, 24482), (33,  
24512), (34, 24542), (42, 24596), (43, 24605), (45, 24629),

Gene: Arti\_45 Start: 35995, Stop: 36318, Start Num: 10  
Candidate Starts for Arti\_45:  
(Start: 10 @35995 has 28 MA's), (16, 36034), (24, 36082), (25, 36085), (38, 36238), (41, 36247),

Gene: Austin\_34 Start: 37457, Stop: 37750, Start Num: 13  
Candidate Starts for Austin\_34:  
(Start: 10 @37436 has 28 MA's), (Start: 13 @37457 has 3 MA's), (20, 37493),

Gene: BabeRuth\_22 Start: 21028, Stop: 21267, Start Num: 12  
Candidate Starts for BabeRuth\_22:  
(Start: 12 @21028 has 46 MA's), (Start: 15 @21040 has 1 MA's), (22, 21064), (23, 21070), (24,  
21088), (30, 21109), (40, 21217),

Gene: Beaver\_34 Start: 38765, Stop: 39013, Start Num: 12  
Candidate Starts for Beaver\_34:  
(Start: 12 @38765 has 46 MA's), (Start: 17 @38789 has 12 MA's), (19, 38795), (33, 38894), (34,  
38924),

Gene: Berries\_31 Start: 39255, Stop: 39503, Start Num: 12  
Candidate Starts for Berries\_31:  
(Start: 10 @39237 has 28 MA's), (Start: 12 @39255 has 46 MA's), (Start: 15 @39273 has 1 MA's),  
(Start: 17 @39279 has 12 MA's),

Gene: Bianmat\_31 Start: 39295, Stop: 39543, Start Num: 12  
Candidate Starts for Bianmat\_31:  
(Start: 10 @39277 has 28 MA's), (Start: 12 @39295 has 46 MA's), (Start: 15 @39313 has 1 MA's),  
(Start: 17 @39319 has 12 MA's),

Gene: BigPhil\_21 Start: 21241, Stop: 21480, Start Num: 12  
Candidate Starts for BigPhil\_21:  
(Start: 12 @21241 has 46 MA's), (Start: 15 @21253 has 1 MA's), (22, 21277), (23, 21283), (30,  
21322), (40, 21430),

Gene: BirksAndSocks\_34 Start: 38739, Stop: 38987, Start Num: 12  
Candidate Starts for BirksAndSocks\_34:  
(Start: 12 @38739 has 46 MA's), (Start: 17 @38763 has 12 MA's),

Gene: Boneham\_34 Start: 38738, Stop: 38986, Start Num: 12  
Candidate Starts for Boneham\_34:

(Start: 12 @38738 has 46 MA's), (Start: 17 @38762 has 12 MA's),

Gene: Bonum\_49 Start: 36691, Stop: 36969, Start Num: 14

Candidate Starts for Bonum\_49:

(Start: 10 @36670 has 28 MA's), (Start: 14 @36691 has 1 MA's), (23, 36739),

Gene: Brocalys\_21 Start: 21055, Stop: 21294, Start Num: 12

Candidate Starts for Brocalys\_21:

(Start: 12 @21055 has 46 MA's), (Start: 15 @21067 has 1 MA's), (22, 21091), (23, 21097), (24, 21115), (30, 21136), (34, 21202), (40, 21244),

Gene: Buggaboo\_47 Start: 37149, Stop: 37448, Start Num: 10

Candidate Starts for Buggaboo\_47:

(Start: 10 @37149 has 28 MA's), (Start: 14 @37170 has 1 MA's), (16, 37188), (23, 37218),

Gene: Butterball\_34 Start: 38762, Stop: 38986, Start Num: 17

Candidate Starts for Butterball\_34:

(Start: 12 @38738 has 46 MA's), (Start: 17 @38762 has 12 MA's),

Gene: Cerasum\_21 Start: 21241, Stop: 21480, Start Num: 12

Candidate Starts for Cerasum\_21:

(Start: 12 @21241 has 46 MA's), (Start: 15 @21253 has 1 MA's), (22, 21277), (23, 21283), (30, 21322), (40, 21430),

Gene: Charianelly\_31 Start: 39005, Stop: 39253, Start Num: 12

Candidate Starts for Charianelly\_31:

(Start: 10 @38987 has 28 MA's), (Start: 12 @39005 has 46 MA's), (Start: 15 @39023 has 1 MA's), (Start: 17 @39029 has 12 MA's),

Gene: CherryTomatoes\_126 Start: 83238, Stop: 83522, Start Num: 12

Candidate Starts for CherryTomatoes\_126:

(9, 83091), (Start: 10 @83220 has 28 MA's), (Start: 12 @83238 has 46 MA's), (22, 83283), (23, 83289), (39, 83448),

Gene: Clifton\_20 Start: 21368, Stop: 21607, Start Num: 12

Candidate Starts for Clifton\_20:

(Start: 12 @21368 has 46 MA's), (Start: 15 @21380 has 1 MA's), (22, 21404), (23, 21410), (24, 21428), (30, 21449), (34, 21515), (40, 21557),

Gene: Crumble\_20 Start: 21415, Stop: 21654, Start Num: 12

Candidate Starts for Crumble\_20:

(Start: 12 @21415 has 46 MA's), (Start: 15 @21427 has 1 MA's), (22, 21451), (23, 21457), (24, 21475), (30, 21496), (34, 21562), (40, 21604),

Gene: Dalilpop\_50 Start: 38287, Stop: 38589, Start Num: 10

Candidate Starts for Dalilpop\_50:

(Start: 10 @38287 has 28 MA's), (23, 38356),

Gene: Damp\_31 Start: 38187, Stop: 38417, Start Num: 15

Candidate Starts for Damp\_31:

(Start: 10 @38151 has 28 MA's), (Start: 12 @38169 has 46 MA's), (Start: 15 @38187 has 1 MA's), (Start: 17 @38193 has 12 MA's),

Gene: Daredevil\_38 Start: 35667, Stop: 35945, Start Num: 12

Candidate Starts for Daredevil\_38:

(Start: 10 @35649 has 28 MA's), (11, 35655), (Start: 12 @35667 has 46 MA's), (21, 35712), (42, 35895),

Gene: Diabla\_33 Start: 38595, Stop: 38843, Start Num: 12

Candidate Starts for Diabla\_33:

(Start: 10 @38577 has 28 MA's), (Start: 12 @38595 has 46 MA's), (Start: 15 @38613 has 1 MA's), (Start: 17 @38619 has 12 MA's), (44, 38832),

Gene: Emianna\_45 Start: 37008, Stop: 37310, Start Num: 10

Candidate Starts for Emianna\_45:

(Start: 10 @37008 has 28 MA's),

Gene: Ennea\_52 Start: 38011, Stop: 38310, Start Num: 10

Candidate Starts for Ennea\_52:

(Start: 10 @38011 has 28 MA's), (Start: 14 @38032 has 1 MA's), (23, 38080),

Gene: FelixAlejandro\_35 Start: 38960, Stop: 39184, Start Num: 17

Candidate Starts for FelixAlejandro\_35:

(Start: 12 @38936 has 46 MA's), (Start: 17 @38960 has 12 MA's),

Gene: Flapper\_50 Start: 37719, Stop: 38021, Start Num: 10

Candidate Starts for Flapper\_50:

(8, 37344), (Start: 10 @37719 has 28 MA's), (23, 37788),

Gene: Float294\_48 Start: 37453, Stop: 37752, Start Num: 10

Candidate Starts for Float294\_48:

(Start: 10 @37453 has 28 MA's), (Start: 14 @37474 has 1 MA's), (23, 37522),

Gene: Foxboro\_46 Start: 37514, Stop: 37816, Start Num: 10

Candidate Starts for Foxboro\_46:

(Start: 10 @37514 has 28 MA's),

Gene: Fulbright\_22 Start: 21354, Stop: 21593, Start Num: 12

Candidate Starts for Fulbright\_22:

(Start: 12 @21354 has 46 MA's), (Start: 15 @21366 has 1 MA's), (22, 21390), (23, 21396), (24, 21414), (30, 21435), (34, 21501), (40, 21543),

Gene: GMA7\_24 Start: 31671, Stop: 31964, Start Num: 13

Candidate Starts for GMA7\_24:

(Start: 10 @31650 has 28 MA's), (Start: 13 @31671 has 3 MA's), (20, 31707), (28, 31764), (31, 31788),

Gene: GRU1\_35 Start: 29266, Stop: 29568, Start Num: 10

Candidate Starts for GRU1\_35:

(Start: 10 @29266 has 28 MA's), (23, 29335), (31, 29389), (38, 29491),

Gene: GTE5\_37 Start: 30576, Stop: 30878, Start Num: 10

Candidate Starts for GTE5\_37:

(Start: 10 @30576 has 28 MA's),

Gene: GTE7\_24 Start: 31702, Stop: 31995, Start Num: 13



Candidate Starts for GTE7\_24:

(Start: 10 @31681 has 28 MA's), (Start: 13 @31702 has 3 MA's), (20, 31738), (31, 31819),

Gene: GTE8\_34 Start: 30263, Stop: 30565, Start Num: 10

Candidate Starts for GTE8\_34:

(1, 29111), (2, 29186), (3, 29282), (4, 29327), (5, 29330), (7, 29789), (Start: 10 @30263 has 28 MA's), (23, 30332),

Gene: GalacticEye\_31 Start: 38967, Stop: 39215, Start Num: 12

Candidate Starts for GalacticEye\_31:

(Start: 10 @38949 has 28 MA's), (Start: 12 @38967 has 46 MA's), (Start: 15 @38985 has 1 MA's), (Start: 17 @38991 has 12 MA's),

Gene: GreaseLightnin\_23 Start: 22506, Stop: 22745, Start Num: 12

Candidate Starts for GreaseLightnin\_23:

(Start: 12 @22506 has 46 MA's), (Start: 15 @22518 has 1 MA's), (22, 22542), (23, 22548), (30, 22587), (34, 22653), (40, 22695),

Gene: GrootJr\_47 Start: 36390, Stop: 36692, Start Num: 10

Candidate Starts for GrootJr\_47:

(Start: 10 @36390 has 28 MA's),

Gene: Guillaume\_31 Start: 39041, Stop: 39265, Start Num: 17

Candidate Starts for Guillaume\_31:

(Start: 10 @38999 has 28 MA's), (Start: 12 @39017 has 46 MA's), (Start: 15 @39035 has 1 MA's), (Start: 17 @39041 has 12 MA's),

Gene: Hail2Pitt\_31 Start: 39518, Stop: 39742, Start Num: 17

Candidate Starts for Hail2Pitt\_31:

(Start: 10 @39476 has 28 MA's), (Start: 12 @39494 has 46 MA's), (Start: 15 @39512 has 1 MA's), (Start: 17 @39518 has 12 MA's),

Gene: Harambe\_31 Start: 39308, Stop: 39532, Start Num: 17

Candidate Starts for Harambe\_31:

(Start: 10 @39266 has 28 MA's), (Start: 12 @39284 has 46 MA's), (Start: 15 @39302 has 1 MA's), (Start: 17 @39308 has 12 MA's),

Gene: HayZem\_33 Start: 37454, Stop: 37747, Start Num: 13

Candidate Starts for HayZem\_33:

(Start: 10 @37433 has 28 MA's), (Start: 13 @37454 has 3 MA's), (20, 37490),

Gene: Hello\_31 Start: 39246, Stop: 39494, Start Num: 12

Candidate Starts for Hello\_31:

(Start: 10 @39228 has 28 MA's), (Start: 12 @39246 has 46 MA's), (Start: 15 @39264 has 1 MA's), (Start: 17 @39270 has 12 MA's),

Gene: Jamie19\_22 Start: 21028, Stop: 21267, Start Num: 12

Candidate Starts for Jamie19\_22:

(Start: 12 @21028 has 46 MA's), (Start: 15 @21040 has 1 MA's), (22, 21064), (23, 21070), (30, 21109), (40, 21217),

Gene: Jams\_31 Start: 38455, Stop: 38703, Start Num: 12

Candidate Starts for Jams\_31:

(Start: 10 @38437 has 28 MA's), (Start: 12 @38455 has 46 MA's), (Start: 15 @38473 has 1 MA's),  
(Start: 17 @38479 has 12 MA's),

Gene: Jellybones\_34 Start: 38797, Stop: 39045, Start Num: 12

Candidate Starts for Jellybones\_34:

(Start: 12 @38797 has 46 MA's), (Start: 17 @38821 has 12 MA's), (19, 38827),

Gene: Jifall16\_44 Start: 36662, Stop: 36964, Start Num: 10

Candidate Starts for Jifall16\_44:

(Start: 10 @36662 has 28 MA's),

Gene: John316\_34 Start: 38750, Stop: 38998, Start Num: 12

Candidate Starts for John316\_34:

(Start: 12 @38750 has 46 MA's), (Start: 17 @38774 has 12 MA's), (19, 38780),

Gene: Jormungandr\_31 Start: 39023, Stop: 39247, Start Num: 17

Candidate Starts for Jormungandr\_31:

(Start: 10 @38981 has 28 MA's), (Start: 12 @38999 has 46 MA's), (Start: 15 @39017 has 1 MA's),

(Start: 17 @39023 has 12 MA's),

Gene: Kabluna\_49 Start: 36085, Stop: 36384, Start Num: 10

Candidate Starts for Kabluna\_49:

(Start: 10 @36085 has 28 MA's), (Start: 14 @36106 has 1 MA's), (23, 36154),

Gene: Kaseim\_32 Start: 38458, Stop: 38688, Start Num: 15

Candidate Starts for Kaseim\_32:

(Start: 10 @38422 has 28 MA's), (Start: 12 @38440 has 46 MA's), (Start: 15 @38458 has 1 MA's),

(Start: 17 @38464 has 12 MA's),

Gene: KidneyBean\_45 Start: 36786, Stop: 37088, Start Num: 10

Candidate Starts for KidneyBean\_45:

(Start: 10 @36786 has 28 MA's),

Gene: Koella\_20 Start: 21380, Stop: 21619, Start Num: 12

Candidate Starts for Koella\_20:

(Start: 12 @21380 has 46 MA's), (Start: 15 @21392 has 1 MA's), (22, 21416), (23, 21422), (24,

21440), (30, 21461), (34, 21527), (40, 21569),

Gene: Kurt\_45 Start: 37023, Stop: 37325, Start Num: 10

Candidate Starts for Kurt\_45:

(Start: 10 @37023 has 28 MA's),

Gene: Lahirium\_31 Start: 39545, Stop: 39769, Start Num: 17

Candidate Starts for Lahirium\_31:

(Start: 10 @39503 has 28 MA's), (Start: 12 @39521 has 46 MA's), (Start: 15 @39539 has 1 MA's),

(Start: 17 @39545 has 12 MA's),

Gene: LastJedi\_20 Start: 21411, Stop: 21650, Start Num: 12

Candidate Starts for LastJedi\_20:

(Start: 12 @21411 has 46 MA's), (Start: 15 @21423 has 1 MA's), (22, 21447), (23, 21453), (24,

21471), (30, 21492), (34, 21558), (40, 21600),

Gene: Lidong\_31 Start: 39255, Stop: 39503, Start Num: 12

Candidate Starts for Lidong\_31:

(Start: 10 @39237 has 28 MA's), (Start: 12 @39255 has 46 MA's), (Start: 15 @39273 has 1 MA's),  
(Start: 17 @39279 has 12 MA's),

Gene: Lollipop1437\_51 Start: 37999, Stop: 38298, Start Num: 10

Candidate Starts for Lollipop1437\_51:

(Start: 10 @37999 has 28 MA's), (Start: 14 @38020 has 1 MA's), (23, 38068),

Gene: Luker\_32 Start: 39474, Stop: 39722, Start Num: 12

Candidate Starts for Luker\_32:

(Start: 10 @39456 has 28 MA's), (Start: 12 @39474 has 46 MA's), (Start: 15 @39492 has 1 MA's),  
(Start: 17 @39498 has 12 MA's),

Gene: MerCougar\_47 Start: 37269, Stop: 37586, Start Num: 10

Candidate Starts for MerCougar\_47:

(Start: 10 @37269 has 28 MA's), (24, 37356), (27, 37374),

Gene: Minos\_32 Start: 38997, Stop: 39245, Start Num: 12

Candidate Starts for Minos\_32:

(Start: 10 @38979 has 28 MA's), (Start: 12 @38997 has 46 MA's), (Start: 15 @39015 has 1 MA's),  
(Start: 17 @39021 has 12 MA's),

Gene: MrWormie\_31 Start: 38158, Stop: 38406, Start Num: 12

Candidate Starts for MrWormie\_31:

(Start: 10 @38140 has 28 MA's), (Start: 12 @38158 has 46 MA's), (Start: 15 @38176 has 1 MA's),  
(Start: 17 @38182 has 12 MA's),

Gene: Ms6\_20 Start: 20893, Stop: 21120, Start Num: 15

Candidate Starts for Ms6\_20:

(Start: 12 @20881 has 46 MA's), (Start: 15 @20893 has 1 MA's), (22, 20917), (23, 20923), (30,  
20962), (40, 21070),

Gene: Msay19\_35 Start: 38955, Stop: 39179, Start Num: 17

Candidate Starts for Msay19\_35:

(Start: 12 @38931 has 46 MA's), (Start: 17 @38955 has 12 MA's), (19, 38961), (33, 39060), (34,  
39090), (37, 39108),

Gene: NatB6\_45 Start: 36059, Stop: 36382, Start Num: 10

Candidate Starts for NatB6\_45:

(Start: 10 @36059 has 28 MA's), (16, 36098), (24, 36146), (25, 36149), (38, 36302),

Gene: Nenae\_22 Start: 21028, Stop: 21267, Start Num: 12

Candidate Starts for Nenae\_22:

(Start: 12 @21028 has 46 MA's), (Start: 15 @21040 has 1 MA's), (22, 21064), (23, 21070), (24,  
21088), (30, 21109), (40, 21217),

Gene: Neoevie\_31 Start: 39285, Stop: 39509, Start Num: 17

Candidate Starts for Neoevie\_31:

(Start: 10 @39243 has 28 MA's), (Start: 12 @39261 has 46 MA's), (Start: 15 @39279 has 1 MA's),  
(Start: 17 @39285 has 12 MA's),

Gene: Newt\_32 Start: 39506, Stop: 39736, Start Num: 15

Candidate Starts for Newt\_32:

(Start: 10 @39470 has 28 MA's), (Start: 12 @39488 has 46 MA's), (Start: 15 @39506 has 1 MA's),  
(Start: 17 @39512 has 12 MA's),

Gene: Nimi13\_31 Start: 39030, Stop: 39254, Start Num: 17

Candidate Starts for Nimi13\_31:

(Start: 10 @38988 has 28 MA's), (Start: 12 @39006 has 46 MA's), (Start: 15 @39024 has 1 MA's),  
(Start: 17 @39030 has 12 MA's),

Gene: NosilaM\_49 Start: 36982, Stop: 37281, Start Num: 10

Candidate Starts for NosilaM\_49:

(3, 36001), (4, 36046), (5, 36049), (6, 36505), (8, 36607), (Start: 10 @36982 has 28 MA's), (Start: 14  
@37003 has 1 MA's), (23, 37051),

Gene: NovumRegina\_45 Start: 36389, Stop: 36691, Start Num: 10

Candidate Starts for NovumRegina\_45:

(Start: 10 @36389 has 28 MA's),

Gene: Outis\_47 Start: 36963, Stop: 37280, Start Num: 10

Candidate Starts for Outis\_47:

(Start: 10 @36963 has 28 MA's), (24, 37050), (27, 37068),

Gene: Patio\_49 Start: 37235, Stop: 37534, Start Num: 10

Candidate Starts for Patio\_49:

(Start: 10 @37235 has 28 MA's), (Start: 14 @37256 has 1 MA's), (23, 37304),

Gene: PhancyPhin\_22 Start: 21025, Stop: 21264, Start Num: 12

Candidate Starts for PhancyPhin\_22:

(Start: 12 @21025 has 46 MA's), (Start: 15 @21037 has 1 MA's), (22, 21061), (23, 21067), (24,  
21085), (30, 21106), (40, 21214),

Gene: Phloss\_22 Start: 21357, Stop: 21596, Start Num: 12

Candidate Starts for Phloss\_22:

(Start: 12 @21357 has 46 MA's), (Start: 15 @21369 has 1 MA's), (22, 21393), (23, 21399), (24,  
21417), (30, 21438), (34, 21504), (40, 21546),

Gene: Phomeo\_44 Start: 36658, Stop: 36960, Start Num: 10

Candidate Starts for Phomeo\_44:

(Start: 10 @36658 has 28 MA's),

Gene: Pippy\_20 Start: 21407, Stop: 21646, Start Num: 12

Candidate Starts for Pippy\_20:

(Start: 12 @21407 has 46 MA's), (Start: 15 @21419 has 1 MA's), (22, 21443), (23, 21449), (24,  
21467), (30, 21488), (34, 21554), (40, 21596),

Gene: Poland\_37 Start: 38934, Stop: 39158, Start Num: 17

Candidate Starts for Poland\_37:

(Start: 12 @38910 has 46 MA's), (Start: 17 @38934 has 12 MA's), (19, 38940), (33, 39039), (34,  
39069), (37, 39087),

Gene: Pupper\_127 Start: 84069, Stop: 84371, Start Num: 10

Candidate Starts for Pupper\_127:

(9, 83940), (Start: 10 @84069 has 28 MA's), (Start: 12 @84087 has 46 MA's), (22, 84132), (23,  
84138), (39, 84297),

Gene: Purgamenstris\_22 Start: 21028, Stop: 21267, Start Num: 12

Candidate Starts for Purgamenstris\_22:

(Start: 12 @21028 has 46 MA's), (Start: 15 @21040 has 1 MA's), (22, 21064), (23, 21070), (24, 21088), (30, 21109), (40, 21217),

Gene: Redi\_22 Start: 21028, Stop: 21267, Start Num: 12

Candidate Starts for Redi\_22:

(Start: 12 @21028 has 46 MA's), (Start: 15 @21040 has 1 MA's), (22, 21064), (23, 21070), (24, 21088), (30, 21109), (40, 21217),

Gene: SCentae\_126 Start: 84222, Stop: 84524, Start Num: 10

Candidate Starts for SCentae\_126:

(9, 84093), (Start: 10 @84222 has 28 MA's), (Start: 12 @84240 has 46 MA's), (22, 84285), (23, 84291), (39, 84450),

Gene: Sarma624\_21 Start: 21241, Stop: 21480, Start Num: 12

Candidate Starts for Sarma624\_21:

(Start: 12 @21241 has 46 MA's), (Start: 15 @21253 has 1 MA's), (22, 21277), (23, 21283), (30, 21322), (40, 21430),

Gene: Shelley\_31 Start: 38482, Stop: 38730, Start Num: 12

Candidate Starts for Shelley\_31:

(Start: 10 @38464 has 28 MA's), (Start: 12 @38482 has 46 MA's), (Start: 15 @38500 has 1 MA's), (Start: 17 @38506 has 12 MA's),

Gene: ShrimpFriedEgg\_22 Start: 21028, Stop: 21267, Start Num: 12

Candidate Starts for ShrimpFriedEgg\_22:

(Start: 12 @21028 has 46 MA's), (Start: 15 @21040 has 1 MA's), (22, 21064), (23, 21070), (24, 21088), (30, 21109), (40, 21217),

Gene: Skog\_189 Start: 113970, Stop: 114254, Start Num: 12

Candidate Starts for Skog\_189:

(Start: 10 @113952 has 28 MA's), (Start: 12 @113970 has 46 MA's), (22, 114015), (23, 114021), (35, 114147),

Gene: Skysand\_48 Start: 37455, Stop: 37754, Start Num: 10

Candidate Starts for Skysand\_48:

(Start: 10 @37455 has 28 MA's), (Start: 14 @37476 has 1 MA's), (23, 37524),

Gene: Snekmaggedon\_22 Start: 21028, Stop: 21267, Start Num: 12

Candidate Starts for Snekmaggedon\_22:

(Start: 12 @21028 has 46 MA's), (Start: 15 @21040 has 1 MA's), (22, 21064), (23, 21070), (30, 21109), (40, 21217),

Gene: SpongeBob\_22 Start: 21028, Stop: 21267, Start Num: 12

Candidate Starts for SpongeBob\_22:

(Start: 12 @21028 has 46 MA's), (Start: 15 @21040 has 1 MA's), (22, 21064), (23, 21070), (30, 21109), (40, 21217),

Gene: Squirty\_21 Start: 21076, Stop: 21315, Start Num: 12

Candidate Starts for Squirty\_21:

(Start: 12 @21076 has 46 MA's), (Start: 15 @21088 has 1 MA's), (22, 21112), (23, 21118), (24, 21136), (30, 21157), (34, 21223), (40, 21265),

Gene: StarStruck\_47 Start: 36963, Stop: 37280, Start Num: 10

Candidate Starts for StarStruck\_47:

(Start: 10 @36963 has 28 MA's), (24, 37050), (27, 37068),

Gene: Sticker17\_31 Start: 38997, Stop: 39245, Start Num: 12

Candidate Starts for Sticker17\_31:

(Start: 10 @38979 has 28 MA's), (Start: 12 @38997 has 46 MA's), (Start: 15 @39015 has 1 MA's), (Start: 17 @39021 has 12 MA's),

Gene: SuperSulley\_47 Start: 37149, Stop: 37448, Start Num: 10

Candidate Starts for SuperSulley\_47:

(Start: 10 @37149 has 28 MA's), (Start: 14 @37170 has 1 MA's), (16, 37188), (23, 37218),

Gene: Teal\_31 Start: 39465, Stop: 39713, Start Num: 12

Candidate Starts for Teal\_31:

(Start: 10 @39447 has 28 MA's), (Start: 12 @39465 has 46 MA's), (Start: 15 @39483 has 1 MA's), (Start: 17 @39489 has 12 MA's),

Gene: Tracker\_45 Start: 35786, Stop: 36109, Start Num: 10

Candidate Starts for Tracker\_45:

(Start: 10 @35786 has 28 MA's), (16, 35825), (24, 35873), (26, 35891),

Gene: Turuncu\_50 Start: 37381, Stop: 37683, Start Num: 10

Candidate Starts for Turuncu\_50:

(Start: 10 @37381 has 28 MA's), (23, 37450), (29, 37498), (36, 37579),

Gene: Velveteen\_21 Start: 21241, Stop: 21480, Start Num: 12

Candidate Starts for Velveteen\_21:

(Start: 12 @21241 has 46 MA's), (Start: 15 @21253 has 1 MA's), (22, 21277), (23, 21283), (30, 21322), (40, 21430),

Gene: Wheezy\_45 Start: 35991, Stop: 36314, Start Num: 10

Candidate Starts for Wheezy\_45:

(Start: 10 @35991 has 28 MA's), (16, 36030), (24, 36078), (25, 36081),

Gene: Woes\_31 Start: 39540, Stop: 39764, Start Num: 17

Candidate Starts for Woes\_31:

(Start: 10 @39498 has 28 MA's), (Start: 12 @39516 has 46 MA's), (Start: 15 @39534 has 1 MA's), (Start: 17 @39540 has 12 MA's),