



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 196538 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196538 has 64 members, 2 are drafts.

Phages represented in each track:

- Track 1 : JC27\_39, Fajezeel\_40, Acme\_41, Greg\_40, Ashballer\_40
- Track 2 : Kugel\_40, Scowl\_38
- Track 3 : Treddle\_41, BeesKnees\_39, Petruchio\_39, Edtherson\_40, Zephyr\_39, DreamCatcher\_41, PinkPlastic\_37, Aeneas\_41, Mule\_37, Seabiscuit\_40
- Track 4 : Sanya\_37, Ciao\_38, Pippin\_40
- Track 5 : Euphoria\_38, Marcell\_38, SpikeBT\_40, BillKnuckles\_39, Pari\_39, GageAP\_40, U2\_38
- Track 6 : Jerm2\_39, HermioneGrange\_38, Rohr\_39
- Track 7 : Carlyle\_39, Chanagan\_37, PherrisBueller\_39, Dreamboat\_39, Jasper\_39
- Track 8 : Watermelon\_40
- Track 9 : BigMau\_40, Burton\_39, Museum\_40, Molly\_40, Petp2012\_40, TwoPeat\_39, Bob3\_37
- Track 10 : Forsytheast\_38, SwissCheese\_40, Marchy\_33, Corvo\_39, HanShotFirst\_37, ShortQueendom\_33, Moose\_38, Altman\_40, Payneful\_38, Kanely\_39
- Track 11 : Trouble\_39
- Track 12 : Dulcie\_37, Rutherford\_40
- Track 13 : Monet\_41, Pepe\_34
- Track 14 : JackSparrow\_40
- Track 15 : Cueyllyss\_38
- Track 16 : Sibs6\_39
- Track 17 : Gyzlar\_36
- Track 18 : Seanderson\_39
- Track 19 : LilBib\_38

### ***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 43 of the 62 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acme\_41, Aeneas\_41, Ashballer\_40, BeesKnees\_39, BigMau\_40, BillKnuckles\_39, Bob3\_37, Burton\_39, Ciao\_38, Cueyllyss\_38, DreamCatcher\_41, Dulcie\_37, Edtherson\_40, Euphoria\_38, Fajezeel\_40, GageAP\_40, Greg\_40,

HermioneGrange\_38, JC27\_39, Jerm2\_39, Kugel\_40, Marcell\_38, Molly\_40, Monet\_41, Mule\_37, Museum\_40, Pari\_39, Pepe\_34, Petp2012\_40, Petruccio\_39, PinkPlastic\_37, Pippin\_40, Rohr\_39, Rutherford\_40, Sanya\_37, Scowl\_38, Seabiscuit\_40, Seanderson\_39, SpikeBT\_40, Treddle\_41, Trouble\_39, TwoPeat\_39, U2\_38, Zephyr\_39,

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

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

- Altman\_40, Carlyle\_39, Chanagan\_37, Corvo\_39, Dreamboat\_39, Forsytheast\_38, Gyzlar\_36, HanShotFirst\_37, JackSparrow\_40, Jasper\_39, Kanely\_39, LilBib\_38, Marchy\_33, Moose\_38, Payneful\_38, PherrisBueller\_39, ShortQueendom\_33, Sibs6\_39, SwissCheese\_40, Watermelon\_40,

### Summary by start number:

Start 14:

- Found in 1 of 64 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 62
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gyzlar\_36 (A1),

Start 15:

- Found in 5 of 64 ( 7.8% ) of genes in pham
- Manual Annotations of this start: 5 of 62
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Carlyle\_39 (A1), Chanagan\_37 (A1), Dreamboat\_39 (A1), Jasper\_39 (A1), PherrisBueller\_39 (A1),

Start 16:

- Found in 17 of 64 ( 26.6% ) of genes in pham
- Manual Annotations of this start: 13 of 62
- Called 82.4% of time when present
- Phage (with cluster) where this start called: Altman\_40 (A1), Corvo\_39 (A1), Forsytheast\_38 (A1), HanShotFirst\_37 (A1), JackSparrow\_40 (A1), Kanely\_39 (A1), LilBib\_38 (A1), Marchy\_33 (A1), Moose\_38 (A1), Payneful\_38 (A1), ShortQueendom\_33 (A1), Sibs6\_39 (A1), SwissCheese\_40 (A1), Watermelon\_40 (A1),

Start 19:

- Found in 44 of 64 ( 68.8% ) of genes in pham
- Manual Annotations of this start: 43 of 62
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acme\_41 (A1), Aeneas\_41 (A1), Ashballer\_40 (A1), BeesKnees\_39 (A1), BigMau\_40 (A1), BillKnuckles\_39 (A1), Bob3\_37 (A1), Burton\_39 (A1), Ciao\_38 (A1), Cueyllyss\_38 (A1), DreamCatcher\_41 (A1), Dulcie\_37 (A1), Edtherson\_40 (A1), Euphoria\_38 (A1), Fajezeel\_40 (A1), GageAP\_40 (A1), Greg\_40 (A1), HermioneGrange\_38 (A1), JC27\_39 (A1), Jerm2\_39 (A1), Kugel\_40 (A1), Marcell\_38 (A1), Molly\_40 (A1), Monet\_41 (A1), Mule\_37 (A1), Museum\_40 (A1), Pari\_39 (A1), Pepe\_34 (A1), Petp2012\_40 (A1), Petruccio\_39 (A1), PinkPlastic\_37 (A1), Pippin\_40 (A1), Rohr\_39 (A1), Rutherford\_40 (A1), Sanya\_37 (A1), Scowl\_38 (A1), Seabiscuit\_40 (A1),

Seanderson\_39 (A1), SpikeBT\_40 (A1), Treddle\_41 (A1), Trouble\_39 (A1),  
TwoPeat\_39 (A1), U2\_38 (A1), Zephyr\_39 (A1),

### **Summary by clusters:**

There is one cluster represented in this pham: A1

Info for manual annotations of cluster A1:

- Start number 14 was manually annotated 1 time for cluster A1.
- Start number 15 was manually annotated 5 times for cluster A1.
- Start number 16 was manually annotated 13 times for cluster A1.
- Start number 19 was manually annotated 43 times for cluster A1.

### **Gene Information:**

Gene: Acme\_41 Start: 31739, Stop: 31467, Start Num: 19

Candidate Starts for Acme\_41:

(1, 31919), (8, 31853), (10, 31829), (12, 31817), (13, 31814), (Start: 19 @31739 has 43 MA's), (25, 31697), (27, 31670), (28, 31625), (29, 31616), (30, 31577), (31, 31490),

Gene: Aeneas\_41 Start: 31799, Stop: 31530, Start Num: 19

Candidate Starts for Aeneas\_41:

(6, 31934), (9, 31901), (Start: 19 @31799 has 43 MA's), (25, 31760), (27, 31733), (28, 31688), (29, 31679), (30, 31640),

Gene: Altman\_40 Start: 32259, Stop: 31951, Start Num: 16

Candidate Starts for Altman\_40:

(7, 32346), (Start: 16 @32259 has 13 MA's), (18, 32226), (23, 32190), (25, 32181), (28, 32109), (29, 32100), (30, 32061), (31, 31974),

Gene: Ashballer\_40 Start: 32195, Stop: 31923, Start Num: 19

Candidate Starts for Ashballer\_40:

(1, 32375), (8, 32309), (10, 32285), (12, 32273), (13, 32270), (Start: 19 @32195 has 43 MA's), (25, 32153), (27, 32126), (28, 32081), (29, 32072), (30, 32033), (31, 31946),

Gene: BeesKnees\_39 Start: 31359, Stop: 31087, Start Num: 19

Candidate Starts for BeesKnees\_39:

(6, 31494), (9, 31461), (Start: 19 @31359 has 43 MA's), (25, 31317), (27, 31290), (28, 31245), (29, 31236), (30, 31197),

Gene: BigMau\_40 Start: 31436, Stop: 31206, Start Num: 19

Candidate Starts for BigMau\_40:

(6, 31571), (9, 31538), (Start: 19 @31436 has 43 MA's), (25, 31394), (27, 31367), (30, 31316), (31, 31229),

Gene: BillKnuckles\_39 Start: 32162, Stop: 31890, Start Num: 19

Candidate Starts for BillKnuckles\_39:

(6, 32297), (9, 32264), (Start: 19 @32162 has 43 MA's), (25, 32120), (27, 32093), (28, 32048), (29, 32039), (30, 32000), (31, 31913),

Gene: Bob3\_37 Start: 30786, Stop: 30556, Start Num: 19

Candidate Starts for Bob3\_37:

(6, 30921), (9, 30888), (Start: 19 @30786 has 43 MA's), (25, 30744), (27, 30717), (30, 30666), (31, 30579),

Gene: Burton\_39 Start: 31356, Stop: 31126, Start Num: 19

Candidate Starts for Burton\_39:

(6, 31491), (9, 31458), (Start: 19 @31356 has 43 MA's), (25, 31314), (27, 31287), (30, 31236), (31, 31149),

Gene: Carlyle\_39 Start: 30068, Stop: 29760, Start Num: 15

Candidate Starts for Carlyle\_39:

(3, 30203), (5, 30170), (Start: 15 @30068 has 5 MA's), (21, 30017), (24, 29996), (28, 29918), (29, 29909), (30, 29870), (31, 29783),

Gene: Chanagan\_37 Start: 30908, Stop: 30600, Start Num: 15

Candidate Starts for Chanagan\_37:

(3, 31043), (5, 31010), (Start: 15 @30908 has 5 MA's), (21, 30857), (24, 30836), (28, 30758), (29, 30749), (30, 30710), (31, 30623),

Gene: Ciao\_38 Start: 31210, Stop: 30938, Start Num: 19

Candidate Starts for Ciao\_38:

(Start: 19 @31210 has 43 MA's), (25, 31168), (27, 31141), (28, 31096), (29, 31087), (30, 31048), (31, 30961),

Gene: Corvo\_39 Start: 32273, Stop: 31965, Start Num: 16

Candidate Starts for Corvo\_39:

(7, 32360), (Start: 16 @32273 has 13 MA's), (18, 32240), (23, 32204), (25, 32195), (28, 32123), (29, 32114), (30, 32075), (31, 31988),

Gene: Cueyllyss\_38 Start: 31412, Stop: 31140, Start Num: 19

Candidate Starts for Cueyllyss\_38:

(8, 31526), (10, 31502), (12, 31490), (13, 31487), (Start: 19 @31412 has 43 MA's), (25, 31370), (27, 31343), (28, 31298), (30, 31250), (31, 31163),

Gene: DreamCatcher\_41 Start: 32660, Stop: 32388, Start Num: 19

Candidate Starts for DreamCatcher\_41:

(6, 32795), (9, 32762), (Start: 19 @32660 has 43 MA's), (25, 32618), (27, 32591), (28, 32546), (29, 32537), (30, 32498),

Gene: Dreamboat\_39 Start: 31286, Stop: 30978, Start Num: 15

Candidate Starts for Dreamboat\_39:

(3, 31421), (5, 31388), (Start: 15 @31286 has 5 MA's), (21, 31235), (24, 31214), (28, 31136), (29, 31127), (30, 31088), (31, 31001),

Gene: Dulcie\_37 Start: 30943, Stop: 30671, Start Num: 19

Candidate Starts for Dulcie\_37:

(Start: 19 @30943 has 43 MA's), (25, 30901), (27, 30874), (28, 30829), (29, 30820), (30, 30781),

Gene: Edtherson\_40 Start: 32538, Stop: 32272, Start Num: 19

Candidate Starts for Edtherson\_40:

(6, 32673), (9, 32640), (Start: 19 @32538 has 43 MA's), (25, 32496), (27, 32469), (28, 32424), (29, 32415), (30, 32376),

Gene: Euphoria\_38 Start: 31379, Stop: 31107, Start Num: 19

Candidate Starts for Euphoria\_38:

(6, 31514), (9, 31481), (Start: 19 @31379 has 43 MA's), (25, 31337), (27, 31310), (28, 31265), (29, 31256), (30, 31217), (31, 31130),

Gene: Fajezeel\_40 Start: 31568, Stop: 31296, Start Num: 19

Candidate Starts for Fajezeel\_40:

(1, 31748), (8, 31682), (10, 31658), (12, 31646), (13, 31643), (Start: 19 @31568 has 43 MA's), (25, 31526), (27, 31499), (28, 31454), (29, 31445), (30, 31406), (31, 31319),

Gene: Forsytheast\_38 Start: 31551, Stop: 31243, Start Num: 16

Candidate Starts for Forsytheast\_38:

(7, 31638), (Start: 16 @31551 has 13 MA's), (18, 31518), (23, 31482), (25, 31473), (28, 31401), (29, 31392), (30, 31353), (31, 31266),

Gene: GageAP\_40 Start: 31664, Stop: 31392, Start Num: 19

Candidate Starts for GageAP\_40:

(6, 31799), (9, 31766), (Start: 19 @31664 has 43 MA's), (25, 31622), (27, 31595), (28, 31550), (29, 31541), (30, 31502), (31, 31415),

Gene: Greg\_40 Start: 31568, Stop: 31296, Start Num: 19

Candidate Starts for Greg\_40:

(1, 31748), (8, 31682), (10, 31658), (12, 31646), (13, 31643), (Start: 19 @31568 has 43 MA's), (25, 31526), (27, 31499), (28, 31454), (29, 31445), (30, 31406), (31, 31319),

Gene: Gyzlar\_36 Start: 30052, Stop: 29726, Start Num: 14

Candidate Starts for Gyzlar\_36:

(2, 30190), (4, 30157), (Start: 14 @30052 has 1 MA's), (17, 30013), (20, 29995), (22, 29971), (26, 29953), (27, 29929), (28, 29884), (29, 29875), (30, 29836), (31, 29749),

Gene: HanShotFirst\_37 Start: 30903, Stop: 30595, Start Num: 16

Candidate Starts for HanShotFirst\_37:

(7, 30990), (Start: 16 @30903 has 13 MA's), (18, 30870), (23, 30834), (25, 30825), (28, 30753), (29, 30744), (30, 30705), (31, 30618),

Gene: HermioneGrange\_38 Start: 31174, Stop: 30944, Start Num: 19

Candidate Starts for HermioneGrange\_38:

(11, 31258), (Start: 19 @31174 has 43 MA's), (25, 31132), (27, 31105), (30, 31054), (31, 30967),

Gene: JC27\_39 Start: 31765, Stop: 31493, Start Num: 19

Candidate Starts for JC27\_39:

(1, 31945), (8, 31879), (10, 31855), (12, 31843), (13, 31840), (Start: 19 @31765 has 43 MA's), (25, 31723), (27, 31696), (28, 31651), (29, 31642), (30, 31603), (31, 31516),

Gene: JackSparrow\_40 Start: 32093, Stop: 31791, Start Num: 16

Candidate Starts for JackSparrow\_40:

(Start: 16 @32093 has 13 MA's), (21, 32042), (24, 32021), (28, 31943), (29, 31934), (30, 31895),

Gene: Jasper\_39 Start: 31172, Stop: 30864, Start Num: 15

Candidate Starts for Jasper\_39:

(3, 31307), (5, 31274), (Start: 15 @31172 has 5 MA's), (21, 31121), (24, 31100), (28, 31022), (29, 31013), (30, 30974), (31, 30887),

Gene: Jerm2\_39 Start: 31429, Stop: 31199, Start Num: 19  
Candidate Starts for Jerm2\_39:  
(11, 31513), (Start: 19 @31429 has 43 MA's), (25, 31387), (27, 31360), (30, 31309), (31, 31222),

Gene: Kanely\_39 Start: 32035, Stop: 31727, Start Num: 16  
Candidate Starts for Kanely\_39:  
(7, 32122), (Start: 16 @32035 has 13 MA's), (18, 32002), (23, 31966), (25, 31957), (28, 31885), (29, 31876), (30, 31837), (31, 31750),

Gene: Kugel\_40 Start: 31983, Stop: 31717, Start Num: 19  
Candidate Starts for Kugel\_40:  
(8, 32097), (10, 32073), (12, 32061), (13, 32058), (Start: 19 @31983 has 43 MA's), (25, 31941), (27, 31914), (28, 31869), (29, 31860), (30, 31821),

Gene: LilBib\_38 Start: 32107, Stop: 31799, Start Num: 16  
Candidate Starts for LilBib\_38:  
(7, 32194), (Start: 16 @32107 has 13 MA's), (21, 32056), (24, 32035), (28, 31957), (29, 31948), (30, 31909),

Gene: Marcell\_38 Start: 31685, Stop: 31413, Start Num: 19  
Candidate Starts for Marcell\_38:  
(6, 31820), (9, 31787), (Start: 19 @31685 has 43 MA's), (25, 31643), (27, 31616), (28, 31571), (29, 31562), (30, 31523), (31, 31436),

Gene: Marchy\_33 Start: 28275, Stop: 27967, Start Num: 16  
Candidate Starts for Marchy\_33:  
(7, 28362), (Start: 16 @28275 has 13 MA's), (18, 28242), (23, 28206), (25, 28197), (28, 28125), (29, 28116), (30, 28077), (31, 27990),

Gene: Molly\_40 Start: 31229, Stop: 30999, Start Num: 19  
Candidate Starts for Molly\_40:  
(6, 31364), (9, 31331), (Start: 19 @31229 has 43 MA's), (25, 31187), (27, 31160), (30, 31109), (31, 31022),

Gene: Monet\_41 Start: 33055, Stop: 32789, Start Num: 19  
Candidate Starts for Monet\_41:  
(Start: 16 @33091 has 13 MA's), (Start: 19 @33055 has 43 MA's), (25, 33013), (27, 32986), (28, 32941), (29, 32932), (30, 32893),

Gene: Moose\_38 Start: 31551, Stop: 31243, Start Num: 16  
Candidate Starts for Moose\_38:  
(7, 31638), (Start: 16 @31551 has 13 MA's), (18, 31518), (23, 31482), (25, 31473), (28, 31401), (29, 31392), (30, 31353), (31, 31266),

Gene: Mule\_37 Start: 29541, Stop: 29269, Start Num: 19  
Candidate Starts for Mule\_37:  
(6, 29676), (9, 29643), (Start: 19 @29541 has 43 MA's), (25, 29499), (27, 29472), (28, 29427), (29, 29418), (30, 29379),

Gene: Museum\_40 Start: 31295, Stop: 31065, Start Num: 19  
Candidate Starts for Museum\_40:  
(6, 31430), (9, 31397), (Start: 19 @31295 has 43 MA's), (25, 31253), (27, 31226), (30, 31175), (31, 31088),

Gene: Pari\_39 Start: 31087, Stop: 30815, Start Num: 19

Candidate Starts for Pari\_39:

(6, 31222), (9, 31189), (Start: 19 @31087 has 43 MA's), (25, 31045), (27, 31018), (28, 30973), (29, 30964), (30, 30925), (31, 30838),

Gene: Payneful\_38 Start: 30992, Stop: 30684, Start Num: 16

Candidate Starts for Payneful\_38:

(7, 31079), (Start: 16 @30992 has 13 MA's), (18, 30959), (23, 30923), (25, 30914), (28, 30842), (29, 30833), (30, 30794), (31, 30707),

Gene: Pepe\_34 Start: 29170, Stop: 28904, Start Num: 19

Candidate Starts for Pepe\_34:

(Start: 16 @29206 has 13 MA's), (Start: 19 @29170 has 43 MA's), (25, 29128), (27, 29101), (28, 29056), (29, 29047), (30, 29008),

Gene: Petp2012\_40 Start: 32213, Stop: 31983, Start Num: 19

Candidate Starts for Petp2012\_40:

(6, 32348), (9, 32315), (Start: 19 @32213 has 43 MA's), (25, 32171), (27, 32144), (30, 32093), (31, 32006),

Gene: Petruccio\_39 Start: 31567, Stop: 31298, Start Num: 19

Candidate Starts for Petruccio\_39:

(6, 31702), (9, 31669), (Start: 19 @31567 has 43 MA's), (25, 31528), (27, 31501), (28, 31456), (29, 31447), (30, 31408),

Gene: PherrisBueller\_39 Start: 31183, Stop: 30875, Start Num: 15

Candidate Starts for PherrisBueller\_39:

(3, 31318), (5, 31285), (Start: 15 @31183 has 5 MA's), (21, 31132), (24, 31111), (28, 31033), (29, 31024), (30, 30985), (31, 30898),

Gene: PinkPlastic\_37 Start: 31097, Stop: 30825, Start Num: 19

Candidate Starts for PinkPlastic\_37:

(6, 31232), (9, 31199), (Start: 19 @31097 has 43 MA's), (25, 31055), (27, 31028), (28, 30983), (29, 30974), (30, 30935),

Gene: Pippin\_40 Start: 31627, Stop: 31355, Start Num: 19

Candidate Starts for Pippin\_40:

(Start: 19 @31627 has 43 MA's), (25, 31585), (27, 31558), (28, 31513), (29, 31504), (30, 31465), (31, 31378),

Gene: Rohr\_39 Start: 31475, Stop: 31245, Start Num: 19

Candidate Starts for Rohr\_39:

(11, 31559), (Start: 19 @31475 has 43 MA's), (25, 31433), (27, 31406), (30, 31355), (31, 31268),

Gene: Rutherferd\_40 Start: 32367, Stop: 32101, Start Num: 19

Candidate Starts for Rutherferd\_40:

(Start: 19 @32367 has 43 MA's), (25, 32325), (27, 32298), (28, 32253), (29, 32244), (30, 32205),

Gene: Sanya\_37 Start: 32063, Stop: 31791, Start Num: 19

Candidate Starts for Sanya\_37:

(Start: 19 @32063 has 43 MA's), (25, 32021), (27, 31994), (28, 31949), (29, 31940), (30, 31901), (31, 31814),



Gene: Scowl\_38 Start: 31823, Stop: 31551, Start Num: 19

Candidate Starts for Scowl\_38:

(8, 31937), (10, 31913), (12, 31901), (13, 31898), (Start: 19 @31823 has 43 MA's), (25, 31781), (27, 31754), (28, 31709), (29, 31700), (30, 31661),

Gene: Seabiscuit\_40 Start: 31328, Stop: 31056, Start Num: 19

Candidate Starts for Seabiscuit\_40:

(6, 31463), (9, 31430), (Start: 19 @31328 has 43 MA's), (25, 31286), (27, 31259), (28, 31214), (29, 31205), (30, 31166),

Gene: Seanderson\_39 Start: 31957, Stop: 31685, Start Num: 19

Candidate Starts for Seanderson\_39:

(Start: 16 @31993 has 13 MA's), (Start: 19 @31957 has 43 MA's), (25, 31915), (27, 31888), (28, 31843), (29, 31834), (30, 31795), (31, 31708),

Gene: ShortQueendom\_33 Start: 28032, Stop: 27724, Start Num: 16

Candidate Starts for ShortQueendom\_33:

(7, 28119), (Start: 16 @28032 has 13 MA's), (18, 27999), (23, 27963), (25, 27954), (28, 27882), (29, 27873), (30, 27834), (31, 27747),

Gene: Sibs6\_39 Start: 30489, Stop: 30181, Start Num: 16

Candidate Starts for Sibs6\_39:

(Start: 16 @30489 has 13 MA's), (21, 30438), (24, 30417), (28, 30339), (29, 30330), (30, 30291),

Gene: SpikeBT\_40 Start: 32361, Stop: 32089, Start Num: 19

Candidate Starts for SpikeBT\_40:

(6, 32496), (9, 32463), (Start: 19 @32361 has 43 MA's), (25, 32319), (27, 32292), (28, 32247), (29, 32238), (30, 32199), (31, 32112),

Gene: SwissCheese\_40 Start: 32051, Stop: 31743, Start Num: 16

Candidate Starts for SwissCheese\_40:

(7, 32138), (Start: 16 @32051 has 13 MA's), (18, 32018), (23, 31982), (25, 31973), (28, 31901), (29, 31892), (30, 31853), (31, 31766),

Gene: Treddle\_41 Start: 33009, Stop: 32743, Start Num: 19

Candidate Starts for Treddle\_41:

(6, 33144), (9, 33111), (Start: 19 @33009 has 43 MA's), (25, 32967), (27, 32940), (28, 32895), (29, 32886), (30, 32847),

Gene: Trouble\_39 Start: 32267, Stop: 31995, Start Num: 19

Candidate Starts for Trouble\_39:

(1, 32447), (8, 32381), (10, 32357), (12, 32345), (13, 32342), (Start: 19 @32267 has 43 MA's), (25, 32225), (27, 32198), (28, 32153), (29, 32144), (30, 32105),

Gene: TwoPeat\_39 Start: 31714, Stop: 31484, Start Num: 19

Candidate Starts for TwoPeat\_39:

(6, 31849), (9, 31816), (Start: 19 @31714 has 43 MA's), (25, 31672), (27, 31645), (30, 31594), (31, 31507),

Gene: U2\_38 Start: 31407, Stop: 31135, Start Num: 19

Candidate Starts for U2\_38:

(6, 31542), (9, 31509), (Start: 19 @31407 has 43 MA's), (25, 31365), (27, 31338), (28, 31293), (29, 31284), (30, 31245), (31, 31158),

Gene: Watermelon\_40 Start: 32252, Stop: 31944, Start Num: 16

Candidate Starts for Watermelon\_40:

(7, 32339), (Start: 16 @32252 has 13 MA's), (21, 32201), (24, 32180), (28, 32102), (29, 32093), (30, 32054), (31, 31967),

Gene: Zephyr\_39 Start: 31816, Stop: 31544, Start Num: 19

Candidate Starts for Zephyr\_39:

(6, 31951), (9, 31918), (Start: 19 @31816 has 43 MA's), (25, 31774), (27, 31747), (28, 31702), (29, 31693), (30, 31654),