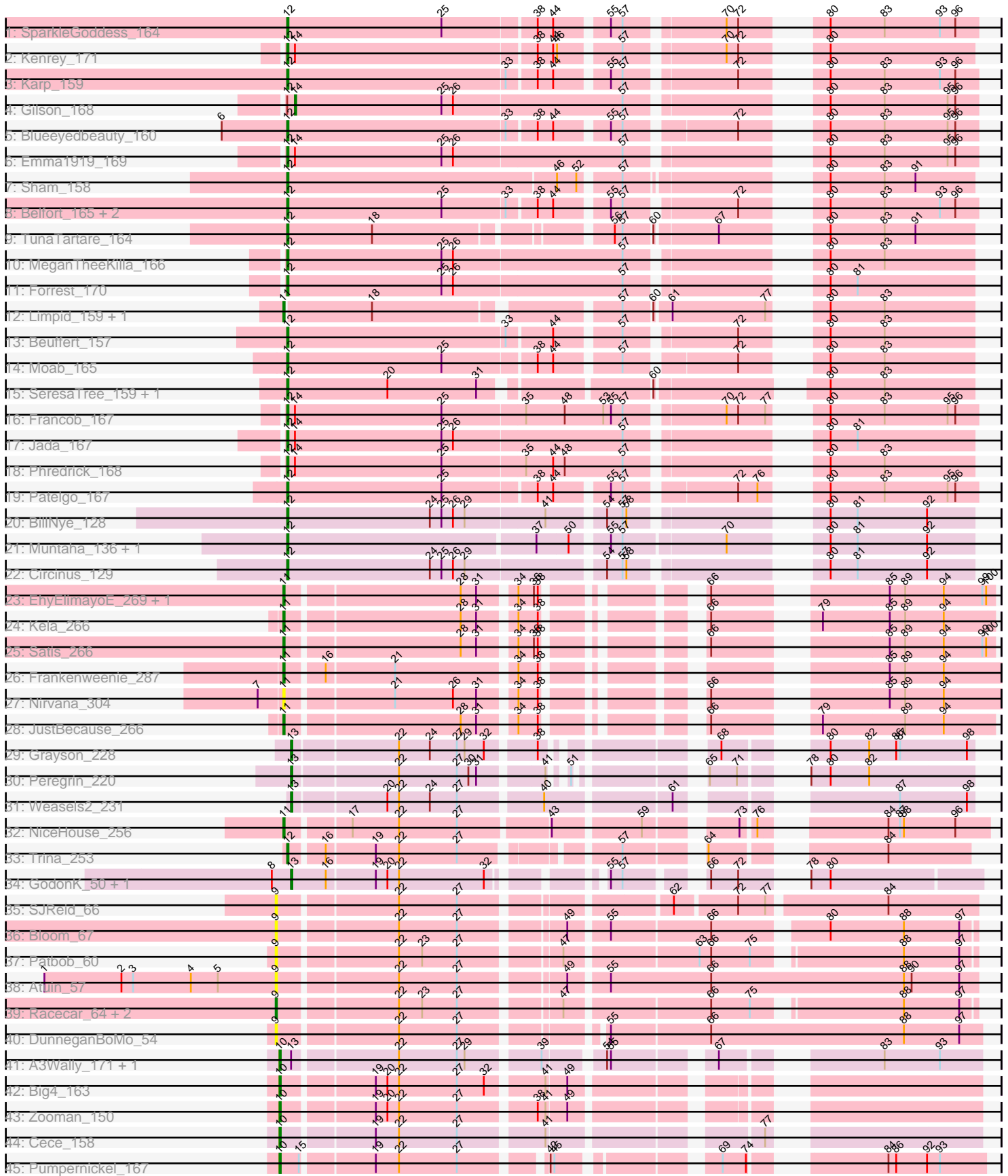


Pham 166751



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 166751 Report

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

Pham number 166751 has 55 members, 9 are drafts.

Phages represented in each track:

- Track 1 : SparkleGoddess\_164
- Track 2 : Kenrey\_171
- Track 3 : Karp\_159
- Track 4 : Gilson\_168
- Track 5 : Blueeyedbeauty\_160
- Track 6 : Emma1919\_169
- Track 7 : Sham\_158
- Track 8 : Belfort\_165, Comrade\_162, Stigma\_163
- Track 9 : TunaTartare\_164
- Track 10 : MeganTheeKilla\_166
- Track 11 : Forrest\_170
- Track 12 : Limpid\_159, Annadreamy\_152
- Track 13 : Beuffert\_157
- Track 14 : Moab\_165
- Track 15 : SeresaTree\_159, Faust\_157
- Track 16 : Francob\_167
- Track 17 : Jada\_167
- Track 18 : Phredrick\_168
- Track 19 : Patelgo\_167
- Track 20 : BillNye\_128
- Track 21 : Muntaha\_136, Wakanda\_135
- Track 22 : Circinus\_129
- Track 23 : EhyElimayoE\_269, Kradal\_266
- Track 24 : Kela\_266
- Track 25 : Satis\_266
- Track 26 : Frankenweenie\_287
- Track 27 : Nirvana\_304
- Track 28 : JustBecause\_266
- Track 29 : Grayson\_228
- Track 30 : Peregrin\_220
- Track 31 : Weasels2\_231
- Track 32 : NiceHouse\_256
- Track 33 : Trina\_253
- Track 34 : GodonK\_50, Phendrix\_50
- Track 35 : SJReid\_66
- Track 36 : Bloom\_67
- Track 37 : Patbob\_60

- Track 38 : Atuin\_57
- Track 39 : Racecar\_64, Talia1610\_67, Mimi\_69
- Track 40 : DunneganBoMo\_54
- Track 41 : A3Wally\_171, PauloDiaboli\_171
- Track 42 : Big4\_163
- Track 43 : Zooman\_150
- Track 44 : Cece\_158
- Track 45 : Pumpernickel\_167

**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 24 of the 46 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Belfort\_165, Beuffert\_157, BillNye\_128, Blueeyedbeauty\_160, Circinus\_129, Comrade\_162, Emma1919\_169, Faust\_157, Forrest\_170, Francob\_167, Jada\_167, Karp\_159, Kenrey\_171, MeganTheeKilla\_166, Moab\_165, Muntaha\_136, Patelgo\_167, Phredrick\_168, SeresaTree\_159, Sham\_158, SparkleGoddess\_164, Stigma\_163, Trina\_253, TunaTartare\_164, Wakanda\_135,

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

- Gilson\_168,

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

- A3Wally\_171, Annadreamy\_152, Atuin\_57, Big4\_163, Bloom\_67, Cece\_158, DunneganBoMo\_54, EhyElimayoE\_269, Frankenweenie\_287, GodonK\_50, Grayson\_228, JustBecause\_266, Kela\_266, Kradal\_266, Limpid\_159, Mimi\_69, NiceHouse\_256, Nirvana\_304, Patbob\_60, PauloDiaboli\_171, Peregrin\_220, Phendrix\_50, Pumpernickel\_167, Racecar\_64, SJReid\_66, Satis\_266, Talia1610\_67, Weasels2\_231, Zooman\_150,

**Summary by start number:**

Start 9:

- Found in 8 of 55 ( 14.5% ) of genes in pham
- Manual Annotations of this start: 1 of 46
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Atuin\_57 (FC), Bloom\_67 (FC), DunneganBoMo\_54 (FC), Mimi\_69 (FC), Patbob\_60 (FC), Racecar\_64 (FC), SJReid\_66 (FC), Talia1610\_67 (FC),

Start 10:

- Found in 6 of 55 ( 10.9% ) of genes in pham
- Manual Annotations of this start: 6 of 46
- Called 100.0% of time when present
- Phage (with cluster) where this start called: A3Wally\_171 (GD1), Big4\_163 (GD2), Cece\_158 (GD3), PauloDiaboli\_171 (GD1), Pumpernickel\_167 (GD4), Zooman\_150 (GD2),

#### Start 11:

- Found in 10 of 55 ( 18.2% ) of genes in pham
- Manual Annotations of this start: 9 of 46
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Annadreamy\_152 (BK1), EhyElimayoE\_269 (BM), Frankenweenie\_287 (BM), JustBecause\_266 (BM), Kela\_266 (BM), Kradal\_266 (BM), Limpid\_159 (BK1), NiceHouse\_256 (CE), Nirvana\_304 (BM), Satis\_266 (BM),

#### Start 12:

- Found in 26 of 55 ( 47.3% ) of genes in pham
- Manual Annotations of this start: 24 of 46
- Called 96.2% of time when present
- Phage (with cluster) where this start called: Belfort\_165 (BK1), Beuffert\_157 (BK1), BillNye\_128 (BK2), Blueeyedbeauty\_160 (BK1), Circinus\_129 (BK2), Comrade\_162 (BK1), Emma1919\_169 (BK1), Faust\_157 (BK1), Forrest\_170 (BK1), Francob\_167 (BK1), Jada\_167 (BK1), Karp\_159 (BK1), Kenrey\_171 (BK1), MeganTheeKilla\_166 (BK1), Moab\_165 (BK1), Muntaha\_136 (BK2), Patelgo\_167 (BK1), Phredrick\_168 (BK1), SeresaTree\_159 (BK1), Sham\_158 (BK1), SparkleGoddess\_164 (BK1), Stigma\_163 (BK1), Trina\_253 (CE), TunaTartare\_164 (BK1), Wakanda\_135 (BK2),

#### Start 13:

- Found in 7 of 55 ( 12.7% ) of genes in pham
- Manual Annotations of this start: 5 of 46
- Called 71.4% of time when present
- Phage (with cluster) where this start called: GodonK\_50 (DK), Grayson\_228 (CB), Peregrin\_220 (CB), Phendrix\_50 (DK), Weasels2\_231 (CB),

#### Start 14:

- Found in 6 of 55 ( 10.9% ) of genes in pham
- Manual Annotations of this start: 1 of 46
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Gilson\_168 (BK1),

### Summary by clusters:

There are 11 clusters represented in this pham: GD1, GD2, GD3, GD4, DK, BM, CE, FC, BK1, BK2, CB,

#### Info for manual annotations of cluster BK1:

- Start number 11 was manually annotated 2 times for cluster BK1.
- Start number 12 was manually annotated 19 times for cluster BK1.
- Start number 14 was manually annotated 1 time for cluster BK1.

#### Info for manual annotations of cluster BK2:

- Start number 12 was manually annotated 4 times for cluster BK2.

#### Info for manual annotations of cluster BM:

- Start number 11 was manually annotated 6 times for cluster BM.

#### Info for manual annotations of cluster CB:

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

Info for manual annotations of cluster CE:

- Start number 11 was manually annotated 1 time for cluster CE.
- Start number 12 was manually annotated 1 time for cluster CE.

Info for manual annotations of cluster DK:

- Start number 13 was manually annotated 2 times for cluster DK.

Info for manual annotations of cluster FC:

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

Info for manual annotations of cluster GD1:

- Start number 10 was manually annotated 2 times for cluster GD1.

Info for manual annotations of cluster GD2:

- Start number 10 was manually annotated 2 times for cluster GD2.

Info for manual annotations of cluster GD3:

- Start number 10 was manually annotated 1 time for cluster GD3.

Info for manual annotations of cluster GD4:

- Start number 10 was manually annotated 1 time for cluster GD4.

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

Gene: A3Wally\_171 Start: 96202, Stop: 96663, Start Num: 10

Candidate Starts for A3Wally\_171:

(Start: 10 @96202 has 6 MA's), (Start: 13 @96211 has 5 MA's), (22, 96286), (27, 96331), (29, 96337), (39, 96388), (54, 96427), (55, 96430), (67, 96496), (83, 96589), (93, 96631),

Gene: Annadreamy\_152 Start: 82558, Stop: 83025, Start Num: 11

Candidate Starts for Annadreamy\_152:

(Start: 11 @82558 has 9 MA's), (18, 82624), (57, 82795), (60, 82816), (61, 82825), (77, 82897), (80, 82915), (83, 82957),

Gene: Atuin\_57 Start: 22728, Stop: 23243, Start Num: 9

Candidate Starts for Atuin\_57:

(1, 22548), (2, 22608), (3, 22617), (4, 22662), (5, 22683), (Start: 9 @22728 has 1 MA's), (22, 22815), (27, 22860), (49, 22932), (55, 22959), (66, 23037), (88, 23187), (90, 23193), (97, 23229),

Gene: Belfort\_165 Start: 88488, Stop: 88964, Start Num: 12

Candidate Starts for Belfort\_165:

(Start: 12 @88488 has 24 MA's), (25, 88608), (33, 88656), (38, 88677), (44, 88689), (55, 88725), (57, 88734), (72, 88812), (80, 88851), (83, 88893), (93, 88935), (96, 88947),

Gene: Beuffert\_157 Start: 86417, Stop: 86890, Start Num: 12

Candidate Starts for Beuffert\_157:

(Start: 12 @86417 has 24 MA's), (33, 86585), (44, 86618), (57, 86663), (72, 86741), (80, 86780), (83, 86822),

Gene: Big4\_163 Start: 93329, Stop: 93793, Start Num: 10

Candidate Starts for Big4\_163:

(Start: 10 @93329 has 6 MA's), (19, 93395), (20, 93404), (22, 93413), (27, 93458), (32, 93479), (41, 93518), (49, 93533),

Gene: BillNye\_128 Start: 77977, Stop: 78453, Start Num: 12

Candidate Starts for BillNye\_128:

(Start: 12 @77977 has 24 MA's), (24, 78088), (25, 78097), (26, 78106), (29, 78115), (41, 78175), (54, 78214), (57, 78226), (58, 78229), (80, 78343), (81, 78364), (92, 78418),

Gene: Bloom\_67 Start: 26741, Stop: 27235, Start Num: 9

Candidate Starts for Bloom\_67:

(Start: 9 @26741 has 1 MA's), (22, 26828), (27, 26873), (49, 26945), (55, 26972), (66, 27047), (80, 27125), (88, 27182), (97, 27224),

Gene: Blueeyedbeauty\_160 Start: 86300, Stop: 86776, Start Num: 12

Candidate Starts for Blueeyedbeauty\_160:

(6, 86249), (Start: 12 @86300 has 24 MA's), (33, 86468), (38, 86489), (44, 86501), (55, 86537), (57, 86546), (72, 86624), (80, 86663), (83, 86705), (95, 86753), (96, 86759),

Gene: Cece\_158 Start: 98749, Stop: 99213, Start Num: 10

Candidate Starts for Cece\_158:

(Start: 10 @98749 has 6 MA's), (19, 98815), (22, 98833), (27, 98878), (41, 98938), (77, 99076),

Gene: Circinus\_129 Start: 77945, Stop: 78421, Start Num: 12

Candidate Starts for Circinus\_129:

(Start: 12 @77945 has 24 MA's), (24, 78056), (25, 78065), (26, 78074), (29, 78083), (54, 78182), (57, 78194), (58, 78197), (80, 78311), (81, 78332), (92, 78386),

Gene: Comrade\_162 Start: 88690, Stop: 89166, Start Num: 12

Candidate Starts for Comrade\_162:

(Start: 12 @88690 has 24 MA's), (25, 88810), (33, 88858), (38, 88879), (44, 88891), (55, 88927), (57, 88936), (72, 89014), (80, 89053), (83, 89095), (93, 89137), (96, 89149),

Gene: DunneganBoMo\_54 Start: 20816, Stop: 21325, Start Num: 9

Candidate Starts for DunneganBoMo\_54:

(Start: 9 @20816 has 1 MA's), (22, 20903), (27, 20948), (55, 21041), (66, 21116), (88, 21266), (97, 21308),

Gene: EhyElimayoE\_269 Start: 153102, Stop: 152647, Start Num: 11

Candidate Starts for EhyElimayoE\_269:

(Start: 11 @153102 has 9 MA's), (28, 152973), (31, 152961), (34, 152937), (36, 152925), (38, 152922), (66, 152835), (85, 152727), (89, 152715), (94, 152685), (99, 152655), (100, 152652),

Gene: Emma1919\_169 Start: 87379, Stop: 87867, Start Num: 12

Candidate Starts for Emma1919\_169:

(Start: 12 @87379 has 24 MA's), (Start: 14 @87385 has 1 MA's), (25, 87499), (26, 87508), (57, 87637), (80, 87754), (83, 87796), (95, 87844), (96, 87850),

Gene: Faust\_157 Start: 87675, Stop: 88151, Start Num: 12

Candidate Starts for Faust\_157:

(Start: 12 @87675 has 24 MA's), (20, 87753), (31, 87822), (60, 87936), (80, 88041), (83, 88083),

Gene: Forrest\_170 Start: 88362, Stop: 88847, Start Num: 12

Candidate Starts for Forrest\_170:

(Start: 12 @88362 has 24 MA's), (25, 88482), (26, 88491), (57, 88620), (80, 88737), (81, 88758),

Gene: Francob\_167 Start: 87884, Stop: 88372, Start Num: 12

Candidate Starts for Francob\_167:

(Start: 12 @87884 has 24 MA's), (Start: 14 @87890 has 1 MA's), (25, 88004), (35, 88067), (48, 88097), (53, 88127), (55, 88133), (57, 88142), (70, 88211), (72, 88220), (77, 88241), (80, 88259), (83, 88301), (95, 88349), (96, 88355),

Gene: Frankenweenie\_287 Start: 164243, Stop: 163782, Start Num: 11

Candidate Starts for Frankenweenie\_287:

(Start: 11 @164243 has 9 MA's), (16, 164216), (21, 164165), (34, 164078), (38, 164063), (85, 163868), (89, 163856), (94, 163826),

Gene: Gilson\_168 Start: 87347, Stop: 87829, Start Num: 14

Candidate Starts for Gilson\_168:

(Start: 12 @87341 has 24 MA's), (Start: 14 @87347 has 1 MA's), (25, 87461), (26, 87470), (57, 87599), (80, 87716), (83, 87758), (95, 87806), (96, 87812),

Gene: GodonK\_50 Start: 16803, Stop: 17243, Start Num: 13

Candidate Starts for GodonK\_50:

(8, 16788), (Start: 13 @16803 has 5 MA's), (16, 16830), (19, 16866), (20, 16875), (22, 16884), (32, 16950), (55, 17013), (57, 17022), (66, 17067), (72, 17088), (78, 17115), (80, 17130),

Gene: Grayson\_228 Start: 111586, Stop: 112026, Start Num: 13

Candidate Starts for Grayson\_228:

(Start: 13 @111586 has 5 MA's), (22, 111664), (24, 111688), (27, 111709), (29, 111715), (32, 111730), (38, 111763), (68, 111865), (80, 111916), (82, 111946), (86, 111967), (87, 111970), (98, 112021),

Gene: Jada\_167 Start: 87058, Stop: 87543, Start Num: 12

Candidate Starts for Jada\_167:

(Start: 12 @87058 has 24 MA's), (Start: 14 @87064 has 1 MA's), (25, 87178), (26, 87187), (57, 87316), (80, 87433), (81, 87454),

Gene: JustBecause\_266 Start: 149782, Stop: 149327, Start Num: 11

Candidate Starts for JustBecause\_266:

(Start: 11 @149782 has 9 MA's), (28, 149653), (31, 149641), (34, 149617), (38, 149602), (66, 149515), (79, 149458), (89, 149395), (94, 149365),

Gene: Karp\_159 Start: 87914, Stop: 88390, Start Num: 12

Candidate Starts for Karp\_159:

(Start: 12 @87914 has 24 MA's), (33, 88082), (38, 88103), (44, 88115), (55, 88151), (57, 88160), (72, 88238), (80, 88277), (83, 88319), (93, 88361), (96, 88373),

Gene: Kela\_266 Start: 151386, Stop: 150931, Start Num: 11

Candidate Starts for Kela\_266:

(Start: 11 @151386 has 9 MA's), (28, 151257), (31, 151245), (34, 151221), (38, 151206), (66, 151119), (79, 151062), (85, 151011), (89, 150999), (94, 150969),

Gene: Kenrey\_171 Start: 88511, Stop: 88984, Start Num: 12

Candidate Starts for Kenrey\_171:

(Start: 12 @88511 has 24 MA's), (Start: 14 @88517 has 1 MA's), (38, 88700), (44, 88712), (46, 88715), (57, 88757), (70, 88826), (72, 88835), (80, 88874),

Gene: Kradal\_266 Start: 153099, Stop: 152644, Start Num: 11

Candidate Starts for Kradal\_266:

(Start: 11 @153099 has 9 MA's), (28, 152970), (31, 152958), (34, 152934), (36, 152922), (38, 152919), (66, 152832), (85, 152724), (89, 152712), (94, 152682), (99, 152652), (100, 152649),

Gene: Limpid\_159 Start: 87871, Stop: 88338, Start Num: 11

Candidate Starts for Limpid\_159:

(Start: 11 @87871 has 9 MA's), (18, 87937), (57, 88108), (60, 88129), (61, 88138), (77, 88210), (80, 88228), (83, 88270),

Gene: MeganTheeKilla\_166 Start: 86965, Stop: 87450, Start Num: 12

Candidate Starts for MeganTheeKilla\_166:

(Start: 12 @86965 has 24 MA's), (25, 87085), (26, 87094), (57, 87223), (80, 87340), (83, 87382),

Gene: Mimi\_69 Start: 26091, Stop: 26582, Start Num: 9

Candidate Starts for Mimi\_69:

(Start: 9 @26091 has 1 MA's), (22, 26178), (23, 26196), (27, 26223), (47, 26292), (66, 26397), (75, 26427), (88, 26529), (97, 26571),

Gene: Moab\_165 Start: 89688, Stop: 90161, Start Num: 12

Candidate Starts for Moab\_165:

(Start: 12 @89688 has 24 MA's), (25, 89808), (38, 89877), (44, 89889), (57, 89934), (72, 90012), (80, 90051), (83, 90093),

Gene: Muntaha\_136 Start: 76880, Stop: 77359, Start Num: 12

Candidate Starts for Muntaha\_136:

(Start: 12 @76880 has 24 MA's), (37, 77069), (50, 77093), (55, 77117), (57, 77126), (70, 77201), (80, 77249), (81, 77270), (92, 77324),

Gene: NiceHouse\_256 Start: 128727, Stop: 129197, Start Num: 11

Candidate Starts for NiceHouse\_256:

(Start: 11 @128727 has 9 MA's), (17, 128772), (22, 128808), (27, 128853), (43, 128919), (59, 128982), (73, 129039), (76, 129048), (84, 129120), (87, 129129), (88, 129132), (96, 129171),

Gene: Nirvana\_304 Start: 164957, Stop: 164496, Start Num: 11

Candidate Starts for Nirvana\_304:

(7, 164975), (Start: 11 @164957 has 9 MA's), (21, 164879), (26, 164834), (31, 164816), (34, 164792), (38, 164777), (66, 164690), (85, 164582), (89, 164570), (94, 164540),

Gene: Patbob\_60 Start: 25547, Stop: 26038, Start Num: 9

Candidate Starts for Patbob\_60:

(Start: 9 @25547 has 1 MA's), (22, 25634), (23, 25652), (27, 25679), (47, 25748), (63, 25844), (66, 25853), (75, 25883), (88, 25985), (97, 26027),

Gene: Patelgo\_167 Start: 90380, Stop: 90856, Start Num: 12

Candidate Starts for Patelgo\_167:

(Start: 12 @90380 has 24 MA's), (25, 90500), (38, 90569), (44, 90581), (55, 90617), (57, 90626), (72, 90704), (76, 90719), (80, 90743), (83, 90785), (95, 90833), (96, 90839),

Gene: PauloDiaboli\_171 Start: 94249, Stop: 94710, Start Num: 10

Candidate Starts for PauloDiaboli\_171:



(Start: 10 @94249 has 6 MA's), (Start: 13 @94258 has 5 MA's), (22, 94333), (27, 94378), (29, 94384), (39, 94435), (54, 94474), (55, 94477), (67, 94543), (83, 94636), (93, 94678),

Gene: Peregrin\_220 Start: 110987, Stop: 111421, Start Num: 13

Candidate Starts for Peregrin\_220:

(Start: 13 @110987 has 5 MA's), (22, 111065), (27, 111110), (30, 111119), (31, 111125), (41, 111170), (51, 111176), (65, 111251), (71, 111272), (78, 111296), (80, 111311), (82, 111341),

Gene: Phendrix\_50 Start: 16816, Stop: 17256, Start Num: 13

Candidate Starts for Phendrix\_50:

(8, 16801), (Start: 13 @16816 has 5 MA's), (16, 16843), (19, 16879), (20, 16888), (22, 16897), (32, 16963), (55, 17026), (57, 17035), (66, 17080), (72, 17101), (78, 17128), (80, 17143),

Gene: Phredrick\_168 Start: 86854, Stop: 87339, Start Num: 12

Candidate Starts for Phredrick\_168:

(Start: 12 @86854 has 24 MA's), (Start: 14 @86860 has 1 MA's), (25, 86974), (35, 87037), (44, 87058), (48, 87067), (57, 87112), (80, 87229), (83, 87271),

Gene: Pumpernickel\_167 Start: 96347, Stop: 96799, Start Num: 10

Candidate Starts for Pumpernickel\_167:

(Start: 10 @96347 has 6 MA's), (15, 96362), (19, 96413), (22, 96431), (27, 96476), (42, 96530), (45, 96533), (69, 96632), (74, 96650), (84, 96725), (86, 96731), (92, 96755), (93, 96764),

Gene: Racecar\_64 Start: 26744, Stop: 27235, Start Num: 9

Candidate Starts for Racecar\_64:

(Start: 9 @26744 has 1 MA's), (22, 26831), (23, 26849), (27, 26876), (47, 26945), (66, 27050), (75, 27080), (88, 27182), (97, 27224),

Gene: SJReid\_66 Start: 26527, Stop: 27021, Start Num: 9

Candidate Starts for SJReid\_66:

(Start: 9 @26527 has 1 MA's), (22, 26614), (27, 26659), (62, 26800), (72, 26845), (77, 26866), (84, 26953),

Gene: Satis\_266 Start: 153436, Stop: 152981, Start Num: 11

Candidate Starts for Satis\_266:

(Start: 11 @153436 has 9 MA's), (28, 153307), (31, 153295), (34, 153271), (36, 153259), (38, 153256), (66, 153169), (85, 153061), (89, 153049), (94, 153019), (99, 152989), (100, 152986),

Gene: SeresaTree\_159 Start: 87057, Stop: 87533, Start Num: 12

Candidate Starts for SeresaTree\_159:

(Start: 12 @87057 has 24 MA's), (20, 87135), (31, 87204), (60, 87318), (80, 87423), (83, 87465),

Gene: Sham\_158 Start: 88846, Stop: 89325, Start Num: 12

Candidate Starts for Sham\_158:

(Start: 12 @88846 has 24 MA's), (46, 89053), (52, 89068), (57, 89095), (80, 89215), (83, 89257), (91, 89281),

Gene: SparkleGoddess\_164 Start: 88701, Stop: 89177, Start Num: 12

Candidate Starts for SparkleGoddess\_164:

(Start: 12 @88701 has 24 MA's), (25, 88821), (38, 88890), (44, 88902), (55, 88938), (57, 88947), (70, 89016), (72, 89025), (80, 89064), (83, 89106), (93, 89148), (96, 89160),

Gene: Stigma\_163 Start: 89135, Stop: 89611, Start Num: 12

Candidate Starts for Stigma\_163:

(Start: 12 @89135 has 24 MA's), (25, 89255), (33, 89303), (38, 89324), (44, 89336), (55, 89372), (57, 89381), (72, 89459), (80, 89498), (83, 89540), (93, 89582), (96, 89594),

Gene: Talia1610\_67 Start: 26109, Stop: 26600, Start Num: 9

Candidate Starts for Talia1610\_67:

(Start: 9 @26109 has 1 MA's), (22, 26196), (23, 26214), (27, 26241), (47, 26310), (66, 26415), (75, 26445), (88, 26547), (97, 26589),

Gene: Trina\_253 Start: 127069, Stop: 127509, Start Num: 12

Candidate Starts for Trina\_253:

(Start: 12 @127069 has 24 MA's), (16, 127093), (19, 127129), (22, 127147), (27, 127192), (57, 127294), (64, 127342), (84, 127447),

Gene: TunaTartare\_164 Start: 90092, Stop: 90559, Start Num: 12

Candidate Starts for TunaTartare\_164:

(Start: 12 @90092 has 24 MA's), (18, 90158), (56, 90323), (57, 90329), (60, 90350), (67, 90395), (80, 90449), (83, 90491), (91, 90515),

Gene: Wakanda\_135 Start: 76822, Stop: 77301, Start Num: 12

Candidate Starts for Wakanda\_135:

(Start: 12 @76822 has 24 MA's), (37, 77011), (50, 77035), (55, 77059), (57, 77068), (70, 77143), (80, 77191), (81, 77212), (92, 77266),

Gene: Weasels2\_231 Start: 113792, Stop: 114247, Start Num: 13

Candidate Starts for Weasels2\_231:

(Start: 13 @113792 has 5 MA's), (20, 113861), (22, 113870), (24, 113894), (27, 113915), (40, 113975), (61, 114065), (87, 114191), (98, 114242),

Gene: Zooman\_150 Start: 90927, Stop: 91391, Start Num: 10

Candidate Starts for Zooman\_150:

(Start: 10 @90927 has 6 MA's), (19, 90993), (20, 91002), (22, 91011), (27, 91056), (38, 91110), (41, 91116), (49, 91131),