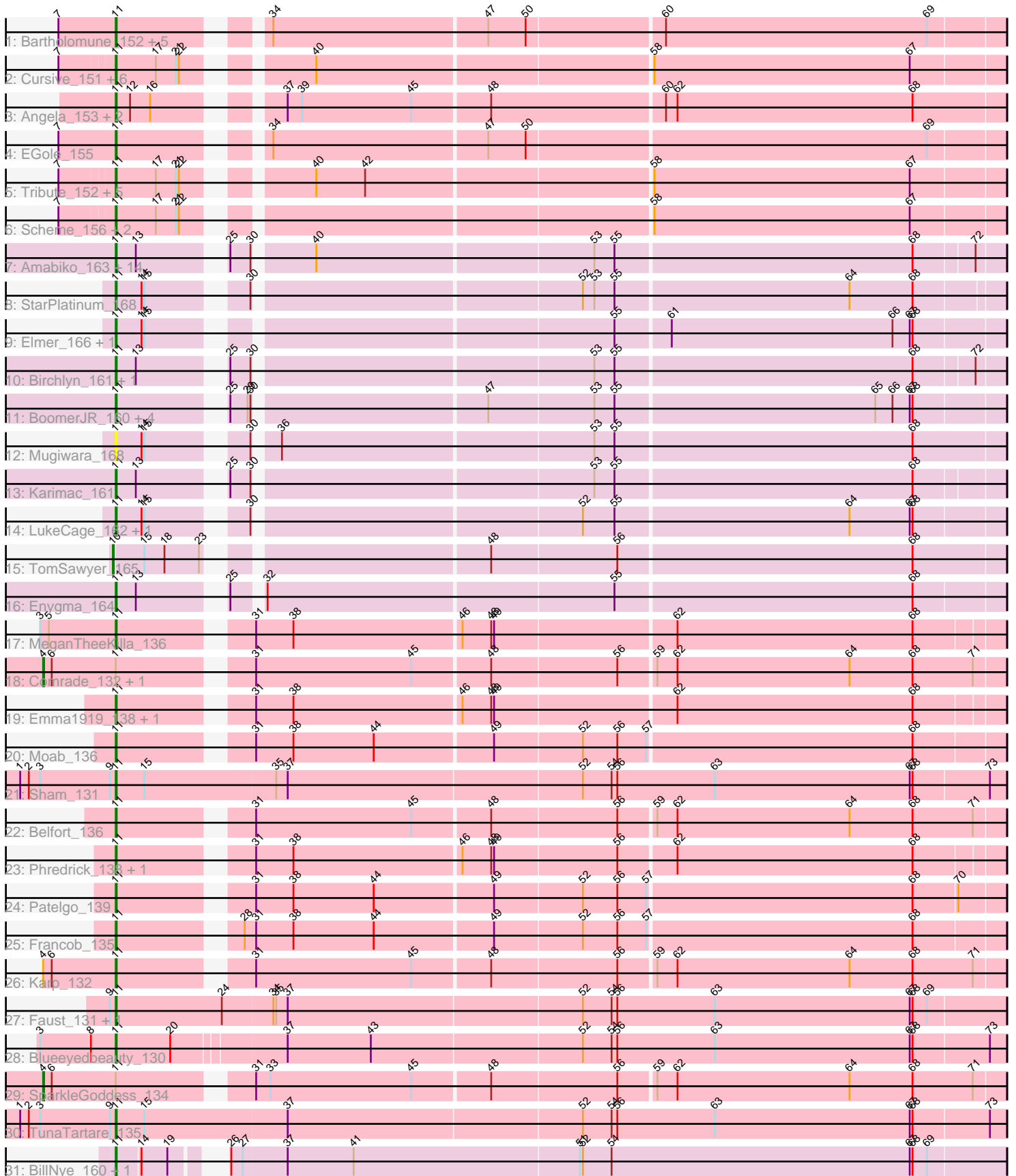


Pham 193956



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 193956 Report

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

Pham number 193956 has 77 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Bartholomune\_152, Squillium\_152, NootNoot\_149, Liandry\_152, Paradiddles\_148, PinkiePie\_149
- Track 2 : Cursive\_151, BlueOtter\_152, Lululemon\_152, PacManQ\_152, HangryHippo\_152, Cross\_153, Watermoore\_152
- Track 3 : Angela\_153, MulchMansion\_153, LilMartin\_151
- Track 4 : EGole\_155
- Track 5 : Tribute\_152, Teutsch\_152, Samisti12\_154, Sushi23\_152, Larnav\_153, Peebs\_150
- Track 6 : Scheme\_156, Leo04\_154, Pepperwood\_152
- Track 7 : Amabiko\_163, JimJam\_168, CeilingFan\_171, Bordeaux\_161, MindFlayer\_157, Quarant19\_163, Battuta\_162, IchabodCrane\_157, Spilled\_167, SaltySpittoon\_163, Jollison\_162, KentuckyRacer\_166, Starbow\_160, Gibbi\_170, PumpkinSpice\_165
- Track 8 : StarPlatinum\_168
- Track 9 : Elmer\_166, Wofford\_157
- Track 10 : Birchlyn\_161, Wipeout\_156
- Track 11 : BoomerJR\_160, Sollertia\_160, Stanimal\_158, Genie2\_160, Yaboi\_161
- Track 12 : Mugiwara\_168
- Track 13 : Karimac\_161
- Track 14 : LukeCage\_162, Spelly\_165
- Track 15 : TomSawyer\_165
- Track 16 : Enygma\_164
- Track 17 : MeganTheeKilla\_136
- Track 18 : Comrade\_132, Stigma\_133
- Track 19 : Emma1919\_138, Gilson\_138
- Track 20 : Moab\_136
- Track 21 : Sham\_131
- Track 22 : Belfort\_136
- Track 23 : Phredrick\_138, Kenrey\_141
- Track 24 : Patelgo\_139
- Track 25 : Francob\_135
- Track 26 : Karp\_132
- Track 27 : Faust\_131, SeresaTree\_132
- Track 28 : Blueeyedbeauty\_130
- Track 29 : SparkleGoddess\_134
- Track 30 : TunaTartare\_135
- Track 31 : BillNye\_160, Circinus\_161

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

The start number called the most often in the published annotations is 11, it was called in 68 of the 72 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Amabiko\_163, Angela\_153, Bartholomune\_152, Battuta\_162, Belfort\_136, BillNye\_160, Birchlyn\_161, BlueOtter\_152, Blueeyedbeauty\_130, BoomerJR\_160, Bordeaux\_161, CeilingFan\_171, Circinus\_161, Cross\_153, Cursive\_151, EGole\_155, Elmer\_166, Emma1919\_138, Enygma\_164, Faust\_131, Francob\_135, Genie2\_160, Gibbi\_170, Gilson\_138, HangryHippo\_152, IchabodCrane\_157, JimJam\_168, Jollison\_162, Karimac\_161, Karp\_132, Kenrey\_141, KentuckyRacer\_166, Larnav\_153, Leo04\_154, Liandry\_152, LilMartin\_151, LukeCage\_162, Lululemon\_152, MeganTheeKilla\_136, MindFlayer\_157, Moab\_136, Mugiwarara\_168, MulchMansion\_153, NootNoot\_149, PacManQ\_152, Paradiddles\_148, Patelgo\_139, Peebs\_150, Pepperwood\_152, Phredrick\_138, PinkiePie\_149, PumpkinSpice\_165, Quarant19\_163, SaltySpittoon\_163, Samisti12\_154, Scheme\_156, SeresaTree\_132, Sham\_131, Sollertia\_160, Spelly\_165, Spilled\_167, Squillium\_152, Stanimal\_158, StarPlatinum\_168, Starbow\_160, Sushi23\_152, Teutsch\_152, Tribute\_152, TunaTartare\_135, Watermoore\_152, Wipeout\_156, Wofford\_157, Yaboi\_161,

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

- Comrade\_132, SparkleGoddess\_134, Stigma\_133,

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

- TomSawyer\_165,

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

Start 4:

- Found in 4 of 77 ( 5.2% ) of genes in pham
- Manual Annotations of this start: 3 of 72
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Comrade\_132 (BK1), SparkleGoddess\_134 (BK1), Stigma\_133 (BK1),

Start 10:

- Found in 1 of 77 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TomSawyer\_165 (BE2),

Start 11:

- Found in 76 of 77 ( 98.7% ) of genes in pham
- Manual Annotations of this start: 68 of 72
- Called 96.1% of time when present
- Phage (with cluster) where this start called: Amabiko\_163 (BE2), Angela\_153 (BE1), Bartholomune\_152 (BE1), Battuta\_162 (BE2), Belfort\_136 (BK1), BillNye\_160 (BK2), Birchlyn\_161 (BE2), BlueOtter\_152 (BE1), Blueeyedbeauty\_130 (BK1),

BoomerJR\_160 (BE2), Bordeaux\_161 (BE2), CeilingFan\_171 (BE2), Circinus\_161 (BK2), Cross\_153 (BE1), Cursive\_151 (BE1), EGole\_155 (BE1), Elmer\_166 (BE2), Emma1919\_138 (BK1), Enygma\_164 (BE2), Faust\_131 (BK1), Francob\_135 (BK1), Genie2\_160 (BE2), Gibbi\_170 (BE2), Gilson\_138 (BK1), HangryHippo\_152 (BE1), IchabodCrane\_157 (BE2), JimJam\_168 (BE2), Jollison\_162 (BE2), Karimac\_161 (BE2), Karp\_132 (BK1), Kenrey\_141 (BK1), KentuckyRacer\_166 (BE2), Larnav\_153 (BE1), Leo04\_154 (BE1), Liandry\_152 (BE1), LilMartin\_151 (BE1), LukeCage\_162 (BE2), Lululemon\_152 (BE1), MeganTheeKilla\_136 (BK1), MindFlayer\_157 (BE2), Moab\_136 (BK1), Mugiwara\_168 (BE2), MulchMansion\_153 (BE1), NootNoot\_149 (BE1), PacManQ\_152 (BE1), Paradiddles\_148 (BE1), Patelgo\_139 (BK1), Peebs\_150 (BE1), Pepperwood\_152 (BE1), Phredrick\_138 (BK1), PinkiePie\_149 (BE1), PumpkinSpice\_165 (BE2), Quarant19\_163 (BE2), SaltySpittoon\_163 (BE2), Samisti12\_154 (BE1), Scheme\_156 (BE1), SeresaTree\_132 (BK1), Sham\_131 (BK1), Sollertia\_160 (BE2), Spelly\_165 (BE2), Spilled\_167 (BE2), Squillium\_152 (BE1), Stanimal\_158 (BE2), StarPlatinum\_168 (BE2), Starbow\_160 (BE2), Sushi23\_152 (BE1), Teutsch\_152 (BE1), Tribute\_152 (BE1), TunaTartare\_135 (BK1), Watermoore\_152 (BE1), Wipeout\_156 (BE2), Wofford\_157 (BE2), Yaboi\_161 (BE2),

### **Summary by clusters:**

There are 4 clusters represented in this pham: BE2, BE1, BK1, BK2,

Info for manual annotations of cluster BE1:

- Start number 11 was manually annotated 25 times for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 10 was manually annotated 1 time for cluster BE2.
- Start number 11 was manually annotated 27 times for cluster BE2.

Info for manual annotations of cluster BK1:

- Start number 4 was manually annotated 3 times for cluster BK1.
- Start number 11 was manually annotated 14 times for cluster BK1.

Info for manual annotations of cluster BK2:

- Start number 11 was manually annotated 2 times for cluster BK2.

### **Gene Information:**

Gene: Amabiko\_163 Start: 89405, Stop: 90271, Start Num: 11

Candidate Starts for Amabiko\_163:

(Start: 11 @89405 has 68 MA's), (13, 89426), (25, 89498), (30, 89519), (40, 89573), (53, 89855), (55, 89876), (68, 90182), (72, 90242),

Gene: Angela\_153 Start: 88640, Stop: 89515, Start Num: 11

Candidate Starts for Angela\_153:

(Start: 11 @88640 has 68 MA's), (12, 88655), (16, 88676), (37, 88778), (39, 88793), (45, 88907), (48, 88985), (60, 89162), (62, 89174), (68, 89420),

Gene: Bartholomune\_152 Start: 88365, Stop: 89234, Start Num: 11

Candidate Starts for Bartholomune\_152:

(7, 88305), (Start: 11 @88365 has 68 MA's), (34, 88488), (47, 88707), (50, 88746), (60, 88884), (69, 89157),

Gene: Battuta\_162 Start: 89378, Stop: 90244, Start Num: 11

Candidate Starts for Battuta\_162:

(Start: 11 @89378 has 68 MA's), (13, 89399), (25, 89471), (30, 89492), (40, 89546), (53, 89828), (55, 89849), (68, 90155), (72, 90215),

Gene: Belfort\_136 Start: 79194, Stop: 80081, Start Num: 11

Candidate Starts for Belfort\_136:

(Start: 11 @79194 has 68 MA's), (31, 79314), (45, 79476), (48, 79554), (56, 79683), (59, 79719), (62, 79740), (64, 79920), (68, 79986), (71, 80049),

Gene: BillNye\_160 Start: 91189, Stop: 92073, Start Num: 11

Candidate Starts for BillNye\_160:

(Start: 11 @91189 has 68 MA's), (14, 91213), (19, 91240), (26, 91270), (27, 91282), (37, 91327), (41, 91396), (51, 91630), (52, 91633), (54, 91663), (67, 91975), (68, 91978), (69, 91993),

Gene: Birchlyn\_161 Start: 87037, Stop: 87903, Start Num: 11

Candidate Starts for Birchlyn\_161:

(Start: 11 @87037 has 68 MA's), (13, 87058), (25, 87130), (30, 87151), (53, 87487), (55, 87508), (68, 87814), (72, 87874),

Gene: BlueOtter\_152 Start: 90426, Stop: 91295, Start Num: 11

Candidate Starts for BlueOtter\_152:

(7, 90372), (Start: 11 @90426 has 68 MA's), (17, 90468), (21, 90489), (22, 90492), (40, 90594), (58, 90933), (67, 91200),

Gene: Blueeyedbeauty\_130 Start: 76379, Stop: 77290, Start Num: 11

Candidate Starts for Blueeyedbeauty\_130:

(3, 76304), (8, 76355), (Start: 11 @76379 has 68 MA's), (20, 76436), (37, 76547), (43, 76634), (52, 76850), (54, 76880), (56, 76886), (63, 76988), (67, 77192), (68, 77195), (73, 77273),

Gene: BoomerJR\_160 Start: 89798, Stop: 90667, Start Num: 11

Candidate Starts for BoomerJR\_160:

(Start: 11 @89798 has 68 MA's), (25, 89891), (29, 89909), (30, 89912), (47, 90140), (53, 90248), (55, 90269), (65, 90536), (66, 90554), (67, 90572), (68, 90575),

Gene: Bordeaux\_161 Start: 89885, Stop: 90751, Start Num: 11

Candidate Starts for Bordeaux\_161:

(Start: 11 @89885 has 68 MA's), (13, 89906), (25, 89978), (30, 89999), (40, 90053), (53, 90335), (55, 90356), (68, 90662), (72, 90722),

Gene: CeilingFan\_171 Start: 89911, Stop: 90777, Start Num: 11

Candidate Starts for CeilingFan\_171:

(Start: 11 @89911 has 68 MA's), (13, 89932), (25, 90004), (30, 90025), (40, 90079), (53, 90361), (55, 90382), (68, 90688), (72, 90748),

Gene: Circinus\_161 Start: 91155, Stop: 92039, Start Num: 11

Candidate Starts for Circinus\_161:

(Start: 11 @91155 has 68 MA's), (14, 91179), (19, 91206), (26, 91236), (27, 91248), (37, 91293), (41, 91362), (51, 91596), (52, 91599), (54, 91629), (67, 91941), (68, 91944), (69, 91959),

Gene: Comrade\_132 Start: 78438, Stop: 79400, Start Num: 4

Candidate Starts for Comrade\_132:

(Start: 4 @78438 has 3 MA's), (6, 78447), (Start: 11 @78513 has 68 MA's), (31, 78633), (45, 78795), (48, 78873), (56, 79002), (59, 79038), (62, 79059), (64, 79239), (68, 79305), (71, 79368),

Gene: Cross\_153 Start: 90427, Stop: 91296, Start Num: 11

Candidate Starts for Cross\_153:

(7, 90373), (Start: 11 @90427 has 68 MA's), (17, 90469), (21, 90490), (22, 90493), (40, 90595), (58, 90934), (67, 91201),

Gene: Cursive\_151 Start: 88636, Stop: 89505, Start Num: 11

Candidate Starts for Cursive\_151:

(7, 88582), (Start: 11 @88636 has 68 MA's), (17, 88678), (21, 88699), (22, 88702), (40, 88804), (58, 89143), (67, 89410),

Gene: EGole\_155 Start: 91705, Stop: 92574, Start Num: 11

Candidate Starts for EGole\_155:

(7, 91645), (Start: 11 @91705 has 68 MA's), (34, 91828), (47, 92047), (50, 92086), (69, 92497),

Gene: Elmer\_166 Start: 92742, Stop: 93611, Start Num: 11

Candidate Starts for Elmer\_166:

(Start: 11 @92742 has 68 MA's), (14, 92769), (15, 92772), (55, 93213), (61, 93267), (66, 93498), (67, 93516), (68, 93519),

Gene: Emma1919\_138 Start: 78385, Stop: 79266, Start Num: 11

Candidate Starts for Emma1919\_138:

(Start: 11 @78385 has 68 MA's), (31, 78505), (38, 78544), (46, 78715), (48, 78745), (49, 78748), (62, 78931), (68, 79177),

Gene: Enygma\_164 Start: 91572, Stop: 92441, Start Num: 11

Candidate Starts for Enygma\_164:

(Start: 11 @91572 has 68 MA's), (13, 91593), (25, 91665), (32, 91689), (55, 92043), (68, 92349),

Gene: Faust\_131 Start: 79319, Stop: 80239, Start Num: 11

Candidate Starts for Faust\_131:

(9, 79313), (Start: 11 @79319 has 68 MA's), (24, 79430), (34, 79481), (35, 79484), (37, 79496), (52, 79799), (54, 79829), (56, 79835), (63, 79937), (67, 80141), (68, 80144), (69, 80159),

Gene: Francob\_135 Start: 78579, Stop: 79463, Start Num: 11

Candidate Starts for Francob\_135:

(Start: 11 @78579 has 68 MA's), (28, 78687), (31, 78699), (38, 78738), (44, 78822), (49, 78942), (52, 79032), (56, 79068), (57, 79098), (68, 79371),

Gene: Genie2\_160 Start: 89912, Stop: 90781, Start Num: 11

Candidate Starts for Genie2\_160:

(Start: 11 @89912 has 68 MA's), (25, 90005), (29, 90023), (30, 90026), (47, 90254), (53, 90362), (55, 90383), (65, 90650), (66, 90668), (67, 90686), (68, 90689),

Gene: Gibbi\_170 Start: 89975, Stop: 90841, Start Num: 11

Candidate Starts for Gibbi\_170:

(Start: 11 @89975 has 68 MA's), (13, 89996), (25, 90068), (30, 90089), (40, 90143), (53, 90425), (55, 90446), (68, 90752), (72, 90812),

Gene: Gilson\_138 Start: 78347, Stop: 79228, Start Num: 11

Candidate Starts for Gilson\_138:

(Start: 11 @78347 has 68 MA's), (31, 78467), (38, 78506), (46, 78677), (48, 78707), (49, 78710), (62, 78893), (68, 79139),

Gene: HangryHippo\_152 Start: 90426, Stop: 91295, Start Num: 11

Candidate Starts for HangryHippo\_152:

(7, 90372), (Start: 11 @90426 has 68 MA's), (17, 90468), (21, 90489), (22, 90492), (40, 90594), (58, 90933), (67, 91200),

Gene: IchabodCrane\_157 Start: 89106, Stop: 89972, Start Num: 11

Candidate Starts for IchabodCrane\_157:

(Start: 11 @89106 has 68 MA's), (13, 89127), (25, 89199), (30, 89220), (40, 89274), (53, 89556), (55, 89577), (68, 89883), (72, 89943),

Gene: JimJam\_168 Start: 90741, Stop: 91607, Start Num: 11

Candidate Starts for JimJam\_168:

(Start: 11 @90741 has 68 MA's), (13, 90762), (25, 90834), (30, 90855), (40, 90909), (53, 91191), (55, 91212), (68, 91518), (72, 91578),

Gene: Jollison\_162 Start: 89819, Stop: 90685, Start Num: 11

Candidate Starts for Jollison\_162:

(Start: 11 @89819 has 68 MA's), (13, 89840), (25, 89912), (30, 89933), (40, 89987), (53, 90269), (55, 90290), (68, 90596), (72, 90656),

Gene: Karimac\_161 Start: 89643, Stop: 90509, Start Num: 11

Candidate Starts for Karimac\_161:

(Start: 11 @89643 has 68 MA's), (13, 89664), (25, 89736), (30, 89757), (53, 90093), (55, 90114), (68, 90420),

Gene: Karp\_132 Start: 78621, Stop: 79508, Start Num: 11

Candidate Starts for Karp\_132:

(Start: 4 @78546 has 3 MA's), (6, 78555), (Start: 11 @78621 has 68 MA's), (31, 78741), (45, 78903), (48, 78981), (56, 79110), (59, 79146), (62, 79167), (64, 79347), (68, 79413), (71, 79476),

Gene: Kenrey\_141 Start: 79879, Stop: 80760, Start Num: 11

Candidate Starts for Kenrey\_141:

(Start: 11 @79879 has 68 MA's), (31, 79999), (38, 80038), (46, 80209), (48, 80239), (49, 80242), (56, 80368), (62, 80425), (68, 80671),

Gene: KentuckyRacer\_166 Start: 90756, Stop: 91622, Start Num: 11

Candidate Starts for KentuckyRacer\_166:

(Start: 11 @90756 has 68 MA's), (13, 90777), (25, 90849), (30, 90870), (40, 90924), (53, 91206), (55, 91227), (68, 91533), (72, 91593),

Gene: Larnav\_153 Start: 90401, Stop: 91270, Start Num: 11

Candidate Starts for Larnav\_153:

(7, 90347), (Start: 11 @90401 has 68 MA's), (17, 90443), (21, 90464), (22, 90467), (40, 90569), (42, 90620), (58, 90908), (67, 91175),

Gene: Leo04\_154 Start: 90926, Stop: 91795, Start Num: 11

Candidate Starts for Leo04\_154:

(7, 90872), (Start: 11 @90926 has 68 MA's), (17, 90968), (21, 90989), (22, 90992), (58, 91433), (67, 91700),

Gene: Liandry\_152 Start: 89108, Stop: 89977, Start Num: 11

Candidate Starts for Liandry\_152:

(7, 89048), (Start: 11 @89108 has 68 MA's), (34, 89231), (47, 89450), (50, 89489), (60, 89627), (69, 89900),

Gene: LilMartin\_151 Start: 88285, Stop: 89160, Start Num: 11

Candidate Starts for LilMartin\_151:

(Start: 11 @88285 has 68 MA's), (12, 88300), (16, 88321), (37, 88423), (39, 88438), (45, 88552), (48, 88630), (60, 88807), (62, 88819), (68, 89065),

Gene: LukeCage\_162 Start: 90692, Stop: 91561, Start Num: 11

Candidate Starts for LukeCage\_162:

(Start: 11 @90692 has 68 MA's), (14, 90719), (15, 90722), (30, 90806), (52, 91130), (55, 91163), (64, 91403), (67, 91466), (68, 91469),

Gene: Lululemon\_152 Start: 89807, Stop: 90676, Start Num: 11

Candidate Starts for Lululemon\_152:

(7, 89753), (Start: 11 @89807 has 68 MA's), (17, 89849), (21, 89870), (22, 89873), (40, 89975), (58, 90314), (67, 90581),

Gene: MeganTheeKilla\_136 Start: 78428, Stop: 79309, Start Num: 11

Candidate Starts for MeganTheeKilla\_136:

(3, 78350), (5, 78359), (Start: 11 @78428 has 68 MA's), (31, 78548), (38, 78587), (46, 78758), (48, 78788), (49, 78791), (62, 78974), (68, 79220),

Gene: MindFlayer\_157 Start: 89013, Stop: 89879, Start Num: 11

Candidate Starts for MindFlayer\_157:

(Start: 11 @89013 has 68 MA's), (13, 89034), (25, 89106), (30, 89127), (40, 89181), (53, 89463), (55, 89484), (68, 89790), (72, 89850),

Gene: Moab\_136 Start: 80717, Stop: 81601, Start Num: 11

Candidate Starts for Moab\_136:

(Start: 11 @80717 has 68 MA's), (31, 80837), (38, 80876), (44, 80960), (49, 81080), (52, 81170), (56, 81206), (57, 81236), (68, 81509),

Gene: Mugiwara\_168 Start: 90296, Stop: 91168, Start Num: 11

Candidate Starts for Mugiwara\_168:

(Start: 11 @90296 has 68 MA's), (14, 90323), (15, 90326), (30, 90410), (36, 90428), (53, 90746), (55, 90767), (68, 91073),

Gene: MulchMansion\_153 Start: 88902, Stop: 89777, Start Num: 11

Candidate Starts for MulchMansion\_153:

(Start: 11 @88902 has 68 MA's), (12, 88917), (16, 88938), (37, 89040), (39, 89055), (45, 89169), (48, 89247), (60, 89424), (62, 89436), (68, 89682),

Gene: NootNoot\_149 Start: 88007, Stop: 88876, Start Num: 11

Candidate Starts for NootNoot\_149:

(7, 87947), (Start: 11 @88007 has 68 MA's), (34, 88130), (47, 88349), (50, 88388), (60, 88526), (69, 88799),



Gene: PacManQ\_152 Start: 89807, Stop: 90676, Start Num: 11

Candidate Starts for PacManQ\_152:

(7, 89753), (Start: 11 @89807 has 68 MA's), (17, 89849), (21, 89870), (22, 89873), (40, 89975), (58, 90314), (67, 90581),

Gene: Paradiddles\_148 Start: 90305, Stop: 91174, Start Num: 11

Candidate Starts for Paradiddles\_148:

(7, 90245), (Start: 11 @90305 has 68 MA's), (34, 90428), (47, 90647), (50, 90686), (60, 90824), (69, 91097),

Gene: Patelgo\_139 Start: 81409, Stop: 82293, Start Num: 11

Candidate Starts for Patelgo\_139:

(Start: 11 @81409 has 68 MA's), (31, 81529), (38, 81568), (44, 81652), (49, 81772), (52, 81862), (56, 81898), (57, 81928), (68, 82201), (70, 82246),

Gene: Peebs\_150 Start: 90105, Stop: 90974, Start Num: 11

Candidate Starts for Peebs\_150:

(7, 90051), (Start: 11 @90105 has 68 MA's), (17, 90147), (21, 90168), (22, 90171), (40, 90273), (42, 90324), (58, 90612), (67, 90879),

Gene: Pepperwood\_152 Start: 90246, Stop: 91115, Start Num: 11

Candidate Starts for Pepperwood\_152:

(7, 90192), (Start: 11 @90246 has 68 MA's), (17, 90288), (21, 90309), (22, 90312), (58, 90753), (67, 91020),

Gene: Phredrick\_138 Start: 78191, Stop: 79072, Start Num: 11

Candidate Starts for Phredrick\_138:

(Start: 11 @78191 has 68 MA's), (31, 78311), (38, 78350), (46, 78521), (48, 78551), (49, 78554), (56, 78680), (62, 78737), (68, 78983),

Gene: PinkiePie\_149 Start: 89108, Stop: 89977, Start Num: 11

Candidate Starts for PinkiePie\_149:

(7, 89048), (Start: 11 @89108 has 68 MA's), (34, 89231), (47, 89450), (50, 89489), (60, 89627), (69, 89900),

Gene: PumpkinSpice\_165 Start: 90425, Stop: 91291, Start Num: 11

Candidate Starts for PumpkinSpice\_165:

(Start: 11 @90425 has 68 MA's), (13, 90446), (25, 90518), (30, 90539), (40, 90593), (53, 90875), (55, 90896), (68, 91202), (72, 91262),

Gene: Quaran19\_163 Start: 89395, Stop: 90261, Start Num: 11

Candidate Starts for Quaran19\_163:

(Start: 11 @89395 has 68 MA's), (13, 89416), (25, 89488), (30, 89509), (40, 89563), (53, 89845), (55, 89866), (68, 90172), (72, 90232),

Gene: SaltySpittoon\_163 Start: 89408, Stop: 90274, Start Num: 11

Candidate Starts for SaltySpittoon\_163:

(Start: 11 @89408 has 68 MA's), (13, 89429), (25, 89501), (30, 89522), (40, 89576), (53, 89858), (55, 89879), (68, 90185), (72, 90245),

Gene: Samisti12\_154 Start: 91489, Stop: 92358, Start Num: 11

Candidate Starts for Samisti12\_154:

(7, 91435), (Start: 11 @91489 has 68 MA's), (17, 91531), (21, 91552), (22, 91555), (40, 91657), (42, 91708), (58, 91996), (67, 92263),

Gene: Scheme\_156 Start: 91669, Stop: 92538, Start Num: 11

Candidate Starts for Scheme\_156:

(7, 91615), (Start: 11 @91669 has 68 MA's), (17, 91711), (21, 91732), (22, 91735), (58, 92176), (67, 92443),

Gene: SeresaTree\_132 Start: 78701, Stop: 79621, Start Num: 11

Candidate Starts for SeresaTree\_132:

(9, 78695), (Start: 11 @78701 has 68 MA's), (24, 78812), (34, 78863), (35, 78866), (37, 78878), (52, 79181), (54, 79211), (56, 79217), (63, 79319), (67, 79523), (68, 79526), (69, 79541),

Gene: Sham\_131 Start: 79253, Stop: 80173, Start Num: 11

Candidate Starts for Sham\_131:

(1, 79154), (2, 79163), (3, 79175), (9, 79247), (Start: 11 @79253 has 68 MA's), (15, 79283), (35, 79418), (37, 79430), (52, 79733), (54, 79763), (56, 79769), (63, 79871), (67, 80075), (68, 80078), (73, 80156),

Gene: Sollertia\_160 Start: 89912, Stop: 90781, Start Num: 11

Candidate Starts for Sollertia\_160:

(Start: 11 @89912 has 68 MA's), (25, 90005), (29, 90023), (30, 90026), (47, 90254), (53, 90362), (55, 90383), (65, 90650), (66, 90668), (67, 90686), (68, 90689),

Gene: SparkleGoddess\_134 Start: 78738, Stop: 79700, Start Num: 4

Candidate Starts for SparkleGoddess\_134:

(Start: 4 @78738 has 3 MA's), (6, 78747), (Start: 11 @78813 has 68 MA's), (31, 78933), (33, 78948), (45, 79095), (48, 79173), (56, 79302), (59, 79338), (62, 79359), (64, 79539), (68, 79605), (71, 79668),

Gene: Spelly\_165 Start: 89357, Stop: 90226, Start Num: 11

Candidate Starts for Spelly\_165:

(Start: 11 @89357 has 68 MA's), (14, 89384), (15, 89387), (30, 89471), (52, 89795), (55, 89828), (64, 90068), (67, 90131), (68, 90134),

Gene: Spilled\_167 Start: 89936, Stop: 90802, Start Num: 11

Candidate Starts for Spilled\_167:

(Start: 11 @89936 has 68 MA's), (13, 89957), (25, 90029), (30, 90050), (40, 90104), (53, 90386), (55, 90407), (68, 90713), (72, 90773),

Gene: Squillium\_152 Start: 89110, Stop: 89979, Start Num: 11

Candidate Starts for Squillium\_152:

(7, 89050), (Start: 11 @89110 has 68 MA's), (34, 89233), (47, 89452), (50, 89491), (60, 89629), (69, 89902),

Gene: Stanimal\_158 Start: 89801, Stop: 90670, Start Num: 11

Candidate Starts for Stanimal\_158:

(Start: 11 @89801 has 68 MA's), (25, 89894), (29, 89912), (30, 89915), (47, 90143), (53, 90251), (55, 90272), (65, 90539), (66, 90557), (67, 90575), (68, 90578),

Gene: StarPlatinum\_168 Start: 91879, Stop: 92745, Start Num: 11

Candidate Starts for StarPlatinum\_168:

(Start: 11 @91879 has 68 MA's), (14, 91906), (15, 91909), (30, 91993), (52, 92317), (53, 92329), (55, 92350), (64, 92590), (68, 92656),

Gene: Starbow\_160 Start: 89381, Stop: 90247, Start Num: 11

Candidate Starts for Starbow\_160:

(Start: 11 @89381 has 68 MA's), (13, 89402), (25, 89474), (30, 89495), (40, 89549), (53, 89831), (55, 89852), (68, 90158), (72, 90218),

Gene: Stigma\_133 Start: 78883, Stop: 79845, Start Num: 4

Candidate Starts for Stigma\_133:

(Start: 4 @78883 has 3 MA's), (6, 78892), (Start: 11 @78958 has 68 MA's), (31, 79078), (45, 79240), (48, 79318), (56, 79447), (59, 79483), (62, 79504), (64, 79684), (68, 79750), (71, 79813),

Gene: Sushi23\_152 Start: 90462, Stop: 91331, Start Num: 11

Candidate Starts for Sushi23\_152:

(7, 90408), (Start: 11 @90462 has 68 MA's), (17, 90504), (21, 90525), (22, 90528), (40, 90630), (42, 90681), (58, 90969), (67, 91236),

Gene: Teutsch\_152 Start: 90785, Stop: 91654, Start Num: 11

Candidate Starts for Teutsch\_152:

(7, 90731), (Start: 11 @90785 has 68 MA's), (17, 90827), (21, 90848), (22, 90851), (40, 90953), (42, 91004), (58, 91292), (67, 91559),

Gene: TomSawyer\_165 Start: 90399, Stop: 91271, Start Num: 10

Candidate Starts for TomSawyer\_165:

(Start: 10 @90399 has 1 MA's), (15, 90429), (18, 90450), (23, 90486), (48, 90744), (56, 90873), (68, 91176),

Gene: Tribute\_152 Start: 90632, Stop: 91501, Start Num: 11

Candidate Starts for Tribute\_152:

(7, 90578), (Start: 11 @90632 has 68 MA's), (17, 90674), (21, 90695), (22, 90698), (40, 90800), (42, 90851), (58, 91139), (67, 91406),

Gene: TunaTartare\_135 Start: 81618, Stop: 82538, Start Num: 11

Candidate Starts for TunaTartare\_135:

(1, 81519), (2, 81528), (3, 81540), (9, 81612), (Start: 11 @81618 has 68 MA's), (15, 81648), (37, 81795), (52, 82098), (54, 82128), (56, 82134), (63, 82236), (67, 82440), (68, 82443), (73, 82521),

Gene: Watermoore\_152 Start: 90998, Stop: 91867, Start Num: 11

Candidate Starts for Watermoore\_152:

(7, 90944), (Start: 11 @90998 has 68 MA's), (17, 91040), (21, 91061), (22, 91064), (40, 91166), (58, 91505), (67, 91772),

Gene: Wipeout\_156 Start: 90208, Stop: 91074, Start Num: 11

Candidate Starts for Wipeout\_156:

(Start: 11 @90208 has 68 MA's), (13, 90229), (25, 90301), (30, 90322), (53, 90658), (55, 90679), (68, 90985), (72, 91045),

Gene: Wofford\_157 Start: 91902, Stop: 92771, Start Num: 11

Candidate Starts for Wofford\_157:

(Start: 11 @91902 has 68 MA's), (14, 91929), (15, 91932), (55, 92373), (61, 92427), (66, 92658), (67, 92676), (68, 92679),

Gene: Yaboi\_161 Start: 89375, Stop: 90244, Start Num: 11

Candidate Starts for Yaboi\_161:

(Start: 11 @89375 has 68 MA's), (25, 89468), (29, 89486), (30, 89489), (47, 89717), (53, 89825), (55, 89846), (65, 90113), (66, 90131), (67, 90149), (68, 90152),