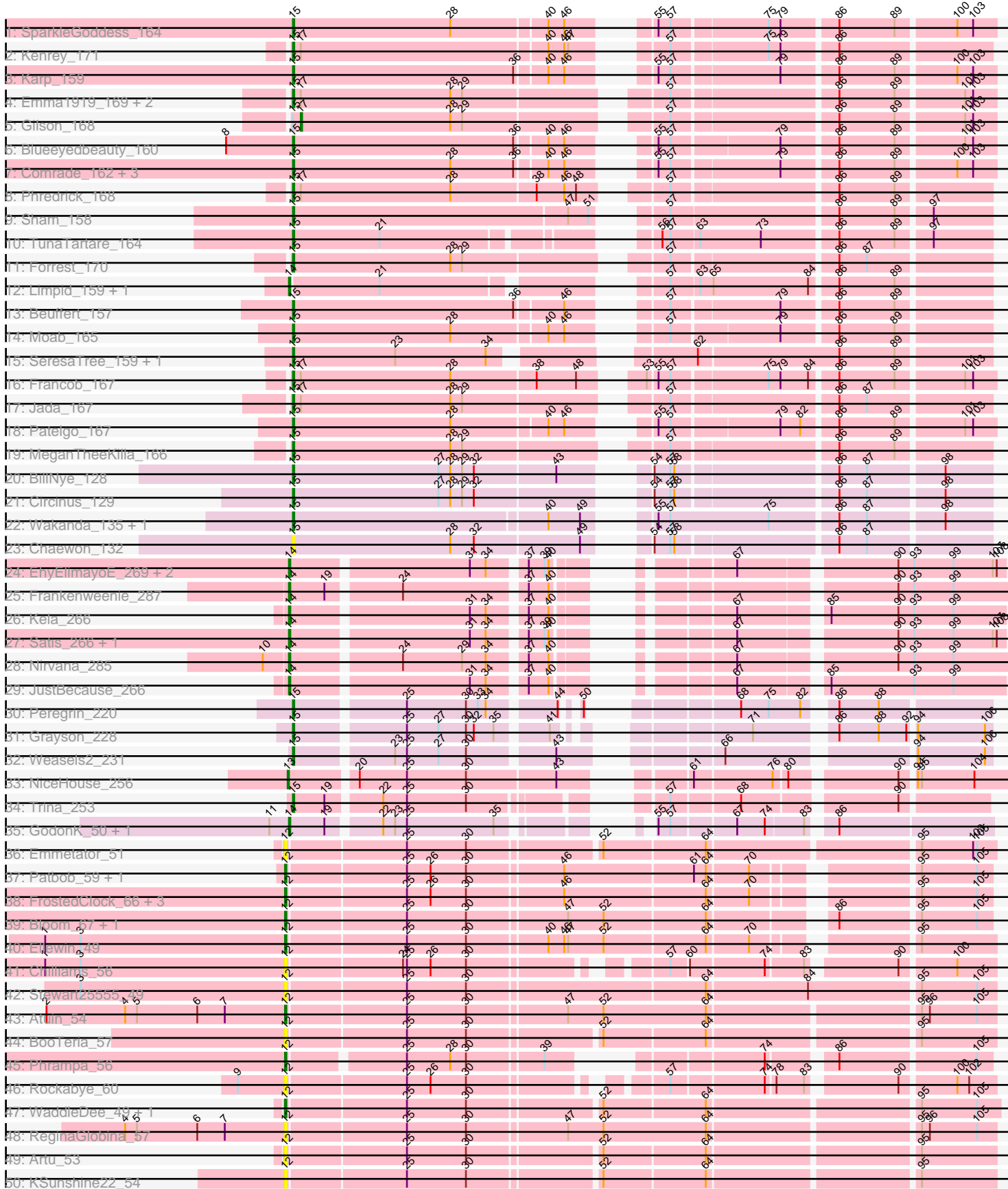
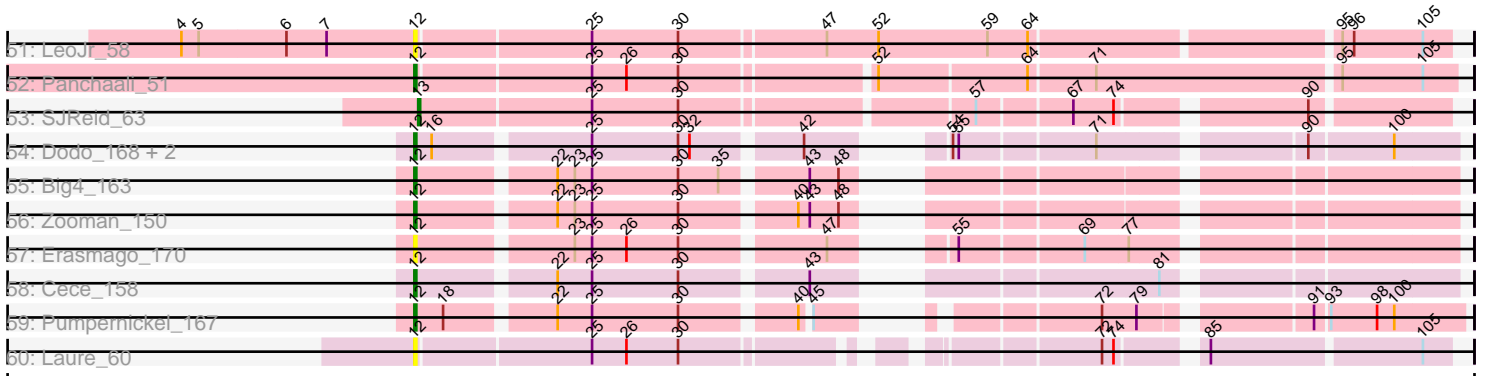


Pham 304950



# Pham 304950



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 304950 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304950 has 80 members, 18 are drafts.

Phages represented in each track:

- Track 1 : SparkleGoddess\_164
- Track 2 : Kenrey\_171
- Track 3 : Karp\_159
- Track 4 : Emma1919\_169, Maupel\_169, DeluluLabubu\_172
- Track 5 : Gilson\_168
- Track 6 : Blueeyedbeauty\_160
- Track 7 : Comrade\_162, Belfort\_165, Westy\_167, Stigma\_163
- Track 8 : Phredrick\_168
- Track 9 : Sham\_158
- Track 10 : TunaTartare\_164
- 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 : Patelgo\_167
- Track 19 : MeganTheeKilla\_166
- Track 20 : BillNye\_128
- Track 21 : Circinus\_129
- Track 22 : Wakanda\_135, Muntaha\_136
- Track 23 : Chaewon\_132
- Track 24 : EhyElimayoE\_269, Kradal\_266, Quantum\_264
- Track 25 : Frankenweenie\_287
- Track 26 : Kela\_266
- Track 27 : Satis\_266, Sarkar\_277
- Track 28 : Nirvana\_285
- Track 29 : JustBecause\_266
- Track 30 : Peregrin\_220
- Track 31 : Grayson\_228
- Track 32 : Weasels2\_231
- Track 33 : NiceHouse\_256
- Track 34 : Trina\_253
- Track 35 : GodonK\_50, Phendrix\_50
- Track 36 : Emmetator\_51
- Track 37 : Patbob\_59, FloraSnap32\_60

- Track 38 : FrostedClock\_66, Mimi\_63, Racecar\_64, Talia1610\_63
- Track 39 : Bloom\_67, GoldenEssence\_47
- Track 40 : Ellewin\_49
- Track 41 : Chilliams\_56
- Track 42 : Stewart25555\_49
- Track 43 : Atuin\_54
- Track 44 : BooTeria\_57
- Track 45 : Phrampa\_56
- Track 46 : Rockabye\_60
- Track 47 : WaddleDee\_49, DunneganBoMo\_50
- Track 48 : ReginaGlobina\_57
- Track 49 : Artu\_53
- Track 50 : KSunshine22\_54
- Track 51 : LeoJr\_58
- Track 52 : Panchaali\_51
- Track 53 : SJReid\_63
- Track 54 : Dodo\_168, A3Wally\_171, PauloDiaboli\_171
- Track 55 : Big4\_163
- Track 56 : Zooman\_150
- Track 57 : Erasmago\_170
- Track 58 : Cece\_158
- Track 59 : Pumpernickel\_167
- Track 60 : Laure\_60

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

The start number called the most often in the published annotations is 15, it was called in 29 of the 62 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Belfort\_165, Beuffert\_157, BillNye\_128, Blueeyedbeauty\_160, Chaewon\_132, Circinus\_129, Comrade\_162, DeluluLabubu\_172, Emma1919\_169, Faust\_157, Forrest\_170, Francob\_167, Grayson\_228, Jada\_167, Karp\_159, Kenrey\_171, Maupel\_169, MeganTheeKilla\_166, Moab\_165, Muntaha\_136, Patelgo\_167, Peregrin\_220, Phredrick\_168, SeresaTree\_159, Sham\_158, SparkleGoddess\_164, Stigma\_163, Trina\_253, TunaTartare\_164, Wakanda\_135, Weasels2\_231, Westy\_167,

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, Artu\_53, Atuin\_54, Big4\_163, Bloom\_67, BooTeria\_57, Cece\_158, Chilliams\_56, Dodo\_168, DunneganBoMo\_50, EhyElimayoE\_269, Ellewin\_49, Emmetator\_51, Erasmago\_170, FloraSnap32\_60, Frankenweenie\_287, FrostedClock\_66, GodonK\_50, GoldenEssence\_47, JustBecause\_266, KSunshine22\_54, Kela\_266, Kradal\_266, Laure\_60, LeoJr\_58, Limpid\_159, Mimi\_63, NiceHouse\_256, Nirvana\_285, Panchaali\_51, Patbob\_59, PauloDiaboli\_171, Phendrix\_50, Phrampa\_56, Pumpernickel\_167, Quantum\_264, Racecar\_64, ReginaGlobina\_57, Rockabye\_60, SJReid\_63, Sarkar\_277, Satis\_266,

Stewart25555\_49, Talia1610\_63, WaddleDee\_49, Zooman\_150,

### Summary by start number:

#### Start 12:

- Found in 32 of 80 ( 40.0% ) of genes in pham
- Manual Annotations of this start: 18 of 62
- Called 100.0% of time when present
- Phage (with cluster) where this start called: A3Wally\_171 (GD1), Artu\_53 (FC), Atuin\_54 (FC), Big4\_163 (GD2), Bloom\_67 (FC), BooTeria\_57 (FC), Cece\_158 (GD3), Chilliamps\_56 (FC), Dodo\_168 (GD1), DunneganBoMo\_50 (FC), Ellewin\_49 (FC), Emmetator\_51 (FC), Erasmago\_170 (GD2), FloraSnap32\_60 (FC), FrostedClock\_66 (FC), GoldenEssence\_47 (FC), KSunshine22\_54 (FC), Laure\_60 (UNK), LeoJr\_58 (FC), Mimi\_63 (FC), Panchaali\_51 (FC), Patbob\_59 (FC), PauloDiaboli\_171 (GD1), Phrampa\_56 (FC), Pumpernickel\_167 (GD4), Racecar\_64 (FC), ReginaGlobina\_57 (FC), Rockabye\_60 (FC), Stewart25555\_49 (FC), Talia1610\_63 (FC), WaddleDee\_49 (FC), Zooman\_150 (GD2),

#### Start 13:

- Found in 2 of 80 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 2 of 62
- Called 100.0% of time when present
- Phage (with cluster) where this start called: NiceHouse\_256 (CE), SJReid\_63 (FC),

#### Start 14:

- Found in 13 of 80 ( 16.2% ) of genes in pham
- Manual Annotations of this start: 12 of 62
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Annadreamy\_152 (BK1), EhyElimayoE\_269 (BM), Frankenweenie\_287 (BM), GodonK\_50 (DK), JustBecause\_266 (BM), Kela\_266 (BM), Kradal\_266 (BM), Limpid\_159 (BK1), Nirvana\_285 (BM), Phendrix\_50 (DK), Quantum\_264 (BM), Sarkar\_277 (BM), Satis\_266 (BM),

#### Start 15:

- Found in 33 of 80 ( 41.2% ) of genes in pham
- Manual Annotations of this start: 29 of 62
- Called 97.0% of time when present
- Phage (with cluster) where this start called: Belfort\_165 (BK1), Beuffert\_157 (BK1), BillNye\_128 (BK2), Blueeyedbeauty\_160 (BK1), Chaewon\_132 (BK2), Circinus\_129 (BK2), Comrade\_162 (BK1), DeluluLabubu\_172 (BK1), Emma1919\_169 (BK1), Faust\_157 (BK1), Forrest\_170 (BK1), Francob\_167 (BK1), Grayson\_228 (CB), Jada\_167 (BK1), Karp\_159 (BK1), Kenrey\_171 (BK1), Maupel\_169 (BK1), MeganTheeKilla\_166 (BK1), Moab\_165 (BK1), Muntaha\_136 (BK2), Patelgo\_167 (BK1), Peregrin\_220 (CB), Phredrick\_168 (BK1), SeresaTree\_159 (BK1), Sham\_158 (BK1), SparkleGoddess\_164 (BK1), Stigma\_163 (BK1), Trina\_253 (CE), TunaTartare\_164 (BK1), Wakanda\_135 (BK2), Weasels2\_231 (CB), Westy\_167 (BK1),

#### Start 17:

- Found in 8 of 80 ( 10.0% ) of genes in pham
- Manual Annotations of this start: 1 of 62
- Called 12.5% of time when present

- Phage (with cluster) where this start called: Gilson\_168 (BK1),

### **Summary by clusters:**

There are 12 clusters represented in this pham: GD1, GD2, GD3, GD4, DK, CB, CE, FC, BK1, BK2, BM, UNK,

Info for manual annotations of cluster BK1:

- Start number 14 was manually annotated 2 times for cluster BK1.
- Start number 15 was manually annotated 21 times for cluster BK1.
- Start number 17 was manually annotated 1 time for cluster BK1.

Info for manual annotations of cluster BK2:

- Start number 15 was manually annotated 4 times for cluster BK2.

Info for manual annotations of cluster BM:

- Start number 14 was manually annotated 8 times for cluster BM.

Info for manual annotations of cluster CB:

- Start number 15 was manually annotated 3 times for cluster CB.

Info for manual annotations of cluster CE:

- Start number 13 was manually annotated 1 time for cluster CE.
- Start number 15 was manually annotated 1 time for cluster CE.

Info for manual annotations of cluster DK:

- Start number 14 was manually annotated 2 times for cluster DK.

Info for manual annotations of cluster FC:

- Start number 12 was manually annotated 11 times for cluster FC.
- Start number 13 was manually annotated 1 time for cluster FC.

Info for manual annotations of cluster GD1:

- Start number 12 was manually annotated 3 times for cluster GD1.

Info for manual annotations of cluster GD2:

- Start number 12 was manually annotated 2 times for cluster GD2.

Info for manual annotations of cluster GD3:

- Start number 12 was manually annotated 1 time for cluster GD3.

Info for manual annotations of cluster GD4:

- Start number 12 was manually annotated 1 time for cluster GD4.

### **Gene Information:**

Gene: A3Wally\_171 Start: 96202, Stop: 96663, Start Num: 12

Candidate Starts for A3Wally\_171:

(Start: 12 @96202 has 18 MA's), (16, 96211), (25, 96286), (30, 96331), (32, 96337), (42, 96388), (54, 96427), (55, 96430), (71, 96496), (90, 96589), (100, 96631),

Gene: Annadreamy\_152 Start: 82558, Stop: 83025, Start Num: 14

Candidate Starts for Annadreamy\_152:

(Start: 14 @82558 has 12 MA's), (21, 82624), (57, 82795), (63, 82816), (65, 82825), (84, 82897), (86, 82915), (89, 82957),

Gene: Artu\_53 Start: 20477, Stop: 20983, Start Num: 12

Candidate Starts for Artu\_53:

(Start: 12 @20477 has 18 MA's), (25, 20564), (30, 20609), (52, 20702), (64, 20777), (95, 20927),

Gene: Atuin\_54 Start: 22728, Stop: 23243, Start Num: 12

Candidate Starts for Atuin\_54:

(2, 22548), (4, 22608), (5, 22617), (6, 22662), (7, 22683), (Start: 12 @22728 has 18 MA's), (25, 22815), (30, 22860), (47, 22932), (52, 22959), (64, 23037), (95, 23187), (96, 23193), (105, 23229),

Gene: Belfort\_165 Start: 88488, Stop: 88964, Start Num: 15

Candidate Starts for Belfort\_165:

(Start: 15 @88488 has 29 MA's), (28, 88608), (36, 88656), (40, 88677), (46, 88689), (55, 88725), (57, 88734), (79, 88812), (86, 88851), (89, 88893), (100, 88935), (103, 88947),

Gene: Beuffert\_157 Start: 86417, Stop: 86890, Start Num: 15

Candidate Starts for Beuffert\_157:

(Start: 15 @86417 has 29 MA's), (36, 86585), (46, 86618), (57, 86663), (79, 86741), (86, 86780), (89, 86822),

Gene: Big4\_163 Start: 93329, Stop: 93793, Start Num: 12

Candidate Starts for Big4\_163:

(Start: 12 @93329 has 18 MA's), (22, 93395), (23, 93404), (25, 93413), (30, 93458), (35, 93479), (43, 93518), (48, 93533),

Gene: BillNye\_128 Start: 77977, Stop: 78453, Start Num: 15

Candidate Starts for BillNye\_128:

(Start: 15 @77977 has 29 MA's), (27, 78088), (28, 78097), (29, 78106), (32, 78115), (43, 78175), (54, 78214), (57, 78226), (58, 78229), (86, 78343), (87, 78364), (98, 78418),

Gene: Bloom\_67 Start: 26741, Stop: 27235, Start Num: 12

Candidate Starts for Bloom\_67:

(Start: 12 @26741 has 18 MA's), (25, 26828), (30, 26873), (47, 26945), (52, 26972), (64, 27047), (86, 27125), (95, 27182), (105, 27224),

Gene: Blueeyedbeauty\_160 Start: 86300, Stop: 86776, Start Num: 15

Candidate Starts for Blueeyedbeauty\_160:

(8, 86249), (Start: 15 @86300 has 29 MA's), (36, 86468), (40, 86489), (46, 86501), (55, 86537), (57, 86546), (79, 86624), (86, 86663), (89, 86705), (101, 86753), (103, 86759),

Gene: BooTeria\_57 Start: 20901, Stop: 21407, Start Num: 12

Candidate Starts for BooTeria\_57:

(Start: 12 @20901 has 18 MA's), (25, 20988), (30, 21033), (52, 21126), (64, 21201), (95, 21351),

Gene: Cece\_158 Start: 98749, Stop: 99213, Start Num: 12

Candidate Starts for Cece\_158:

(Start: 12 @98749 has 18 MA's), (22, 98815), (25, 98833), (30, 98878), (43, 98938), (81, 99076),

Gene: Chaewon\_132 Start: 77909, Stop: 78385, Start Num: 15

Candidate Starts for Chaewon\_132:

(Start: 15 @77909 has 29 MA's), (28, 78029), (32, 78047), (49, 78125), (54, 78146), (57, 78158), (58, 78161), (86, 78275), (87, 78296),

Gene: Chilliams\_56 Start: 24656, Stop: 25129, Start Num: 12

Candidate Starts for Chilliams\_56:

(1, 24473), (3, 24500), (Start: 12 @24656 has 18 MA's), (24, 24740), (25, 24743), (26, 24761), (30, 24788), (57, 24908), (60, 24920), (74, 24974), (83, 25001), (90, 25061), (100, 25100),

Gene: Circinus\_129 Start: 77945, Stop: 78421, Start Num: 15

Candidate Starts for Circinus\_129:

(Start: 15 @77945 has 29 MA's), (27, 78056), (28, 78065), (29, 78074), (32, 78083), (54, 78182), (57, 78194), (58, 78197), (86, 78311), (87, 78332), (98, 78386),

Gene: Comrade\_162 Start: 88690, Stop: 89166, Start Num: 15

Candidate Starts for Comrade\_162:

(Start: 15 @88690 has 29 MA's), (28, 88810), (36, 88858), (40, 88879), (46, 88891), (55, 88927), (57, 88936), (79, 89014), (86, 89053), (89, 89095), (100, 89137), (103, 89149),

Gene: DeluluLabubu\_172 Start: 89320, Stop: 89808, Start Num: 15

Candidate Starts for DeluluLabubu\_172:

(Start: 15 @89320 has 29 MA's), (Start: 17 @89326 has 1 MA's), (28, 89440), (29, 89449), (57, 89578), (86, 89695), (89, 89737), (101, 89785), (103, 89791),

Gene: Dodo\_168 Start: 95808, Stop: 96269, Start Num: 12

Candidate Starts for Dodo\_168:

(Start: 12 @95808 has 18 MA's), (16, 95817), (25, 95892), (30, 95937), (32, 95943), (42, 95994), (54, 96033), (55, 96036), (71, 96102), (90, 96195), (100, 96237),

Gene: DunneganBoMo\_50 Start: 20816, Stop: 21325, Start Num: 12

Candidate Starts for DunneganBoMo\_50:

(Start: 12 @20816 has 18 MA's), (25, 20903), (30, 20948), (52, 21041), (64, 21116), (95, 21266), (105, 21308),

Gene: EhyElimayoE\_269 Start: 153102, Stop: 152647, Start Num: 14

Candidate Starts for EhyElimayoE\_269:

(Start: 14 @153102 has 12 MA's), (31, 152973), (34, 152961), (37, 152937), (39, 152925), (40, 152922), (67, 152835), (90, 152727), (93, 152715), (99, 152685), (107, 152655), (108, 152652),

Gene: Ellewin\_49 Start: 20408, Stop: 20902, Start Num: 12

Candidate Starts for Ellewin\_49:

(1, 20225), (3, 20252), (Start: 12 @20408 has 18 MA's), (25, 20495), (30, 20540), (40, 20597), (46, 20609), (47, 20612), (52, 20639), (64, 20714), (70, 20744), (95, 20846),

Gene: Emma1919\_169 Start: 87379, Stop: 87867, Start Num: 15

Candidate Starts for Emma1919\_169:

(Start: 15 @87379 has 29 MA's), (Start: 17 @87385 has 1 MA's), (28, 87499), (29, 87508), (57, 87637), (86, 87754), (89, 87796), (101, 87844), (103, 87850),

Gene: Emmetator\_51 Start: 20726, Stop: 21232, Start Num: 12

Candidate Starts for Emmetator\_51:

(Start: 12 @20726 has 18 MA's), (25, 20813), (30, 20858), (52, 20951), (64, 21026), (95, 21176), (103, 21215), (105, 21218),

Gene: Erasmago\_170 Start: 93706, Stop: 94167, Start Num: 12

Candidate Starts for Erasmago\_170:

(Start: 12 @93706 has 18 MA's), (23, 93781), (25, 93790), (26, 93808), (30, 93835), (47, 93904), (55, 93934), (69, 93994), (77, 94015),

Gene: Faust\_157 Start: 87675, Stop: 88151, Start Num: 15

Candidate Starts for Faust\_157:

(Start: 15 @87675 has 29 MA's), (23, 87753), (34, 87822), (62, 87936), (86, 88041), (89, 88083),

Gene: FloraSnap32\_60 Start: 24362, Stop: 24853, Start Num: 12

Candidate Starts for FloraSnap32\_60:

(Start: 12 @24362 has 18 MA's), (25, 24449), (26, 24467), (30, 24494), (46, 24563), (61, 24659), (64, 24668), (70, 24698), (95, 24800), (105, 24842),

Gene: Forrest\_170 Start: 88362, Stop: 88847, Start Num: 15

Candidate Starts for Forrest\_170:

(Start: 15 @88362 has 29 MA's), (28, 88482), (29, 88491), (57, 88620), (86, 88737), (87, 88758),

Gene: Francob\_167 Start: 87884, Stop: 88372, Start Num: 15

Candidate Starts for Francob\_167:

(Start: 15 @87884 has 29 MA's), (Start: 17 @87890 has 1 MA's), (28, 88004), (38, 88067), (48, 88097), (53, 88127), (55, 88133), (57, 88142), (75, 88211), (79, 88220), (84, 88241), (86, 88259), (89, 88301), (101, 88349), (103, 88355),

Gene: Frankenweenie\_287 Start: 164243, Stop: 163782, Start Num: 14

Candidate Starts for Frankenweenie\_287:

(Start: 14 @164243 has 12 MA's), (19, 164216), (24, 164165), (37, 164078), (40, 164063), (90, 163868), (93, 163856), (99, 163826),

Gene: FrostedClock\_66 Start: 26232, Stop: 26723, Start Num: 12

Candidate Starts for FrostedClock\_66:

(Start: 12 @26232 has 18 MA's), (25, 26319), (26, 26337), (30, 26364), (46, 26433), (64, 26538), (70, 26568), (95, 26670), (105, 26712),

Gene: Gilson\_168 Start: 87347, Stop: 87829, Start Num: 17

Candidate Starts for Gilson\_168:

(Start: 15 @87341 has 29 MA's), (Start: 17 @87347 has 1 MA's), (28, 87461), (29, 87470), (57, 87599), (86, 87716), (89, 87758), (101, 87806), (103, 87812),

Gene: GodonK\_50 Start: 16803, Stop: 17243, Start Num: 14

Candidate Starts for GodonK\_50:

(11, 16788), (Start: 14 @16803 has 12 MA's), (19, 16830), (22, 16866), (23, 16875), (25, 16884), (35, 16950), (55, 17013), (57, 17022), (67, 17067), (74, 17088), (83, 17115), (86, 17130),

Gene: GoldenEssence\_47 Start: 19822, Stop: 20316, Start Num: 12

Candidate Starts for GoldenEssence\_47:

(Start: 12 @19822 has 18 MA's), (25, 19909), (30, 19954), (47, 20026), (52, 20053), (64, 20128), (86, 20206), (95, 20263), (105, 20305),

Gene: Grayson\_228 Start: 111586, Stop: 112026, Start Num: 15

Candidate Starts for Grayson\_228:

(Start: 15 @111586 has 29 MA's), (25, 111664), (27, 111688), (30, 111709), (32, 111715), (35, 111730), (41, 111763), (71, 111865), (86, 111916), (88, 111946), (92, 111967), (94, 111970), (106, 112021),

Gene: Jada\_167 Start: 87058, Stop: 87543, Start Num: 15

Candidate Starts for Jada\_167:

(Start: 15 @87058 has 29 MA's), (Start: 17 @87064 has 1 MA's), (28, 87178), (29, 87187), (57, 87316), (86, 87433), (87, 87454),

Gene: JustBecause\_266 Start: 149782, Stop: 149327, Start Num: 14

Candidate Starts for JustBecause\_266:

(Start: 14 @149782 has 12 MA's), (31, 149653), (34, 149641), (37, 149617), (40, 149602), (67, 149515), (85, 149458), (93, 149395), (99, 149365),

Gene: KSunshine22\_54 Start: 21439, Stop: 21945, Start Num: 12

Candidate Starts for KSunshine22\_54:

(Start: 12 @21439 has 18 MA's), (25, 21526), (30, 21571), (52, 21664), (64, 21739), (95, 21889),

Gene: Karp\_159 Start: 87914, Stop: 88390, Start Num: 15

Candidate Starts for Karp\_159:

(Start: 15 @87914 has 29 MA's), (36, 88082), (40, 88103), (46, 88115), (55, 88151), (57, 88160), (79, 88238), (86, 88277), (89, 88319), (100, 88361), (103, 88373),

Gene: Kela\_266 Start: 151386, Stop: 150931, Start Num: 14

Candidate Starts for Kela\_266:

(Start: 14 @151386 has 12 MA's), (31, 151257), (34, 151245), (37, 151221), (40, 151206), (67, 151119), (85, 151062), (90, 151011), (93, 150999), (99, 150969),

Gene: Kenrey\_171 Start: 88511, Stop: 88984, Start Num: 15

Candidate Starts for Kenrey\_171:

(Start: 15 @88511 has 29 MA's), (Start: 17 @88517 has 1 MA's), (40, 88700), (46, 88712), (47, 88715), (57, 88757), (75, 88826), (79, 88835), (86, 88874),

Gene: Kradal\_266 Start: 153099, Stop: 152644, Start Num: 14

Candidate Starts for Kradal\_266:

(Start: 14 @153099 has 12 MA's), (31, 152970), (34, 152958), (37, 152934), (39, 152922), (40, 152919), (67, 152832), (90, 152724), (93, 152712), (99, 152682), (107, 152652), (108, 152649),

Gene: Laure\_60 Start: 25030, Stop: 25500, Start Num: 12

Candidate Starts for Laure\_60:

(Start: 12 @25030 has 18 MA's), (25, 25117), (26, 25135), (30, 25162), (72, 25339), (74, 25345), (85, 25381), (105, 25486),

Gene: LeoJr\_58 Start: 22928, Stop: 23443, Start Num: 12

Candidate Starts for LeoJr\_58:

(4, 22808), (5, 22817), (6, 22862), (7, 22883), (Start: 12 @22928 has 18 MA's), (25, 23015), (30, 23060), (47, 23132), (52, 23159), (59, 23216), (64, 23237), (95, 23387), (96, 23393), (105, 23429),

Gene: Limpid\_159 Start: 87871, Stop: 88338, Start Num: 14

Candidate Starts for Limpid\_159:

(Start: 14 @87871 has 12 MA's), (21, 87937), (57, 88108), (63, 88129), (65, 88138), (84, 88210), (86, 88228), (89, 88270),

Gene: Maupel\_169 Start: 87341, Stop: 87829, Start Num: 15

Candidate Starts for Maupel\_169:

(Start: 15 @87341 has 29 MA's), (Start: 17 @87347 has 1 MA's), (28, 87461), (29, 87470), (57, 87599), (86, 87716), (89, 87758), (101, 87806), (103, 87812),

Gene: MeganTheeKilla\_166 Start: 86965, Stop: 87450, Start Num: 15

Candidate Starts for MeganTheeKilla\_166:

(Start: 15 @86965 has 29 MA's), (28, 87085), (29, 87094), (57, 87223), (86, 87340), (89, 87382),

Gene: Mimi\_63 Start: 26091, Stop: 26582, Start Num: 12

Candidate Starts for Mimi\_63:

(Start: 12 @26091 has 18 MA's), (25, 26178), (26, 26196), (30, 26223), (46, 26292), (64, 26397), (70, 26427), (95, 26529), (105, 26571),

Gene: Moab\_165 Start: 89688, Stop: 90161, Start Num: 15

Candidate Starts for Moab\_165:

(Start: 15 @89688 has 29 MA's), (28, 89808), (40, 89877), (46, 89889), (57, 89934), (79, 90012), (86, 90051), (89, 90093),

Gene: Muntaha\_136 Start: 76880, Stop: 77359, Start Num: 15

Candidate Starts for Muntaha\_136:

(Start: 15 @76880 has 29 MA's), (40, 77069), (49, 77093), (55, 77117), (57, 77126), (75, 77201), (86, 77249), (87, 77270), (98, 77324),

Gene: NiceHouse\_256 Start: 128727, Stop: 129197, Start Num: 13

Candidate Starts for NiceHouse\_256:

(Start: 13 @128727 has 2 MA's), (20, 128772), (25, 128808), (30, 128853), (43, 128919), (61, 128982), (76, 129039), (80, 129048), (90, 129120), (94, 129129), (95, 129132), (104, 129171),

Gene: Nirvana\_285 Start: 164957, Stop: 164496, Start Num: 14

Candidate Starts for Nirvana\_285:

(10, 164975), (Start: 14 @164957 has 12 MA's), (24, 164879), (29, 164834), (34, 164816), (37, 164792), (40, 164777), (67, 164690), (90, 164582), (93, 164570), (99, 164540),

Gene: Panchaali\_51 Start: 20358, Stop: 20873, Start Num: 12

Candidate Starts for Panchaali\_51:

(Start: 12 @20358 has 18 MA's), (25, 20445), (26, 20463), (30, 20490), (52, 20583), (64, 20658), (71, 20691), (95, 20814), (105, 20856),

Gene: Patbob\_59 Start: 25547, Stop: 26038, Start Num: 12

Candidate Starts for Patbob\_59:

(Start: 12 @25547 has 18 MA's), (25, 25634), (26, 25652), (30, 25679), (46, 25748), (61, 25844), (64, 25853), (70, 25883), (95, 25985), (105, 26027),

Gene: Patelgo\_167 Start: 90380, Stop: 90856, Start Num: 15

Candidate Starts for Patelgo\_167:

(Start: 15 @90380 has 29 MA's), (28, 90500), (40, 90569), (46, 90581), (55, 90617), (57, 90626), (79, 90704), (82, 90719), (86, 90743), (89, 90785), (101, 90833), (103, 90839),

Gene: PauloDiaboli\_171 Start: 94249, Stop: 94710, Start Num: 12

Candidate Starts for PauloDiaboli\_171:

(Start: 12 @94249 has 18 MA's), (16, 94258), (25, 94333), (30, 94378), (32, 94384), (42, 94435), (54, 94474), (55, 94477), (71, 94543), (90, 94636), (100, 94678),

Gene: Peregrin\_220 Start: 110987, Stop: 111421, Start Num: 15

Candidate Starts for Peregrin\_220:

(Start: 15 @110987 has 29 MA's), (25, 111065), (30, 111110), (33, 111119), (34, 111125), (44, 111170), (50, 111176), (68, 111251), (75, 111272), (82, 111296), (86, 111311), (88, 111341),

Gene: Phendrix\_50 Start: 16816, Stop: 17256, Start Num: 14

Candidate Starts for Phendrix\_50:

(11, 16801), (Start: 14 @16816 has 12 MA's), (19, 16843), (22, 16879), (23, 16888), (25, 16897), (35, 16963), (55, 17026), (57, 17035), (67, 17080), (74, 17101), (83, 17128), (86, 17143),

Gene: Phrampa\_56 Start: 23330, Stop: 23773, Start Num: 12

Candidate Starts for Phrampa\_56:

(Start: 12 @23330 has 18 MA's), (25, 23411), (28, 23444), (30, 23456), (39, 23510), (74, 23621), (86, 23663), (105, 23762),

Gene: Phredrick\_168 Start: 86854, Stop: 87339, Start Num: 15

Candidate Starts for Phredrick\_168:

(Start: 15 @86854 has 29 MA's), (Start: 17 @86860 has 1 MA's), (28, 86974), (38, 87037), (46, 87058), (48, 87067), (57, 87112), (86, 87229), (89, 87271),

Gene: Pumpernickel\_167 Start: 96347, Stop: 96799, Start Num: 12

Candidate Starts for Pumpernickel\_167:

(Start: 12 @96347 has 18 MA's), (18, 96362), (22, 96413), (25, 96431), (30, 96476), (40, 96530), (45, 96533), (72, 96632), (79, 96650), (91, 96725), (93, 96731), (98, 96755), (100, 96764),

Gene: Quantum\_264 Start: 153093, Stop: 152638, Start Num: 14

Candidate Starts for Quantum\_264:

(Start: 14 @153093 has 12 MA's), (31, 152964), (34, 152952), (37, 152928), (39, 152916), (40, 152913), (67, 152826), (90, 152718), (93, 152706), (99, 152676), (107, 152646), (108, 152643),

Gene: Racecar\_64 Start: 26744, Stop: 27235, Start Num: 12

Candidate Starts for Racecar\_64:

(Start: 12 @26744 has 18 MA's), (25, 26831), (26, 26849), (30, 26876), (46, 26945), (64, 27050), (70, 27080), (95, 27182), (105, 27224),

Gene: ReginaGlobina\_57 Start: 23125, Stop: 23640, Start Num: 12

Candidate Starts for ReginaGlobina\_57:

(4, 23005), (5, 23014), (6, 23059), (7, 23080), (Start: 12 @23125 has 18 MA's), (25, 23212), (30, 23257), (47, 23329), (52, 23356), (64, 23434), (95, 23584), (96, 23590), (105, 23626),

Gene: Rockabye\_60 Start: 25473, Stop: 25946, Start Num: 12

Candidate Starts for Rockabye\_60:

(9, 25437), (Start: 12 @25473 has 18 MA's), (25, 25560), (26, 25578), (30, 25605), (57, 25725), (74, 25791), (78, 25797), (83, 25818), (90, 25878), (100, 25917), (102, 25926),

Gene: SJReid\_63 Start: 26527, Stop: 27021, Start Num: 13

Candidate Starts for SJReid\_63:

(Start: 13 @26527 has 2 MA's), (25, 26614), (30, 26659), (57, 26800), (67, 26845), (74, 26866), (90, 26953),

Gene: Sarkar\_277 Start: 153144, Stop: 152689, Start Num: 14

Candidate Starts for Sarkar\_277:

(Start: 14 @153144 has 12 MA's), (31, 153015), (34, 153003), (37, 152979), (39, 152967), (40, 152964), (67, 152877), (90, 152769), (93, 152757), (99, 152727), (107, 152697), (108, 152694),

Gene: Satis\_266 Start: 153436, Stop: 152981, Start Num: 14

Candidate Starts for Satis\_266:

(Start: 14 @153436 has 12 MA's), (31, 153307), (34, 153295), (37, 153271), (39, 153259), (40, 153256), (67, 153169), (90, 153061), (93, 153049), (99, 153019), (107, 152989), (108, 152986),

Gene: SeresaTree\_159 Start: 87057, Stop: 87533, Start Num: 15

Candidate Starts for SeresaTree\_159:

(Start: 15 @87057 has 29 MA's), (23, 87135), (34, 87204), (62, 87318), (86, 87423), (89, 87465),

Gene: Sham\_158 Start: 88846, Stop: 89325, Start Num: 15

Candidate Starts for Sham\_158:

(Start: 15 @88846 has 29 MA's), (47, 89053), (51, 89068), (57, 89095), (86, 89215), (89, 89257), (97, 89281),

Gene: SparkleGoddess\_164 Start: 88701, Stop: 89177, Start Num: 15

Candidate Starts for SparkleGoddess\_164:

(Start: 15 @88701 has 29 MA's), (28, 88821), (40, 88890), (46, 88902), (55, 88938), (57, 88947), (75, 89016), (79, 89025), (86, 89064), (89, 89106), (100, 89148), (103, 89160),

Gene: Stewart25555\_49 Start: 20428, Stop: 20946, Start Num: 12

Candidate Starts for Stewart25555\_49:

(3, 20272), (Start: 12 @20428 has 18 MA's), (25, 20515), (30, 20560), (64, 20734), (84, 20809), (95, 20890), (105, 20932),

Gene: Stigma\_163 Start: 89135, Stop: 89611, Start Num: 15

Candidate Starts for Stigma\_163:

(Start: 15 @89135 has 29 MA's), (28, 89255), (36, 89303), (40, 89324), (46, 89336), (55, 89372), (57, 89381), (79, 89459), (86, 89498), (89, 89540), (100, 89582), (103, 89594),

Gene: Talia1610\_63 Start: 26109, Stop: 26600, Start Num: 12

Candidate Starts for Talia1610\_63:

(Start: 12 @26109 has 18 MA's), (25, 26196), (26, 26214), (30, 26241), (46, 26310), (64, 26415), (70, 26445), (95, 26547), (105, 26589),

Gene: Trina\_253 Start: 127069, Stop: 127509, Start Num: 15

Candidate Starts for Trina\_253:

(Start: 15 @127069 has 29 MA's), (19, 127093), (22, 127129), (25, 127147), (30, 127192), (57, 127294), (68, 127342), (90, 127447),

Gene: TunaTartare\_164 Start: 90092, Stop: 90559, Start Num: 15

Candidate Starts for TunaTartare\_164:

(Start: 15 @90092 has 29 MA's), (21, 90158), (56, 90323), (57, 90329), (63, 90350), (73, 90395), (86, 90449), (89, 90491), (97, 90515),

Gene: WaddleDee\_49 Start: 20852, Stop: 21361, Start Num: 12

Candidate Starts for WaddleDee\_49:

(Start: 12 @20852 has 18 MA's), (25, 20939), (30, 20984), (52, 21077), (64, 21152), (95, 21302), (105, 21344),

Gene: Wakanda\_135 Start: 76822, Stop: 77301, Start Num: 15

Candidate Starts for Wakanda\_135:

(Start: 15 @76822 has 29 MA's), (40, 77011), (49, 77035), (55, 77059), (57, 77068), (75, 77143), (86, 77191), (87, 77212), (98, 77266),

Gene: Weasels2\_231 Start: 113792, Stop: 114247, Start Num: 15

Candidate Starts for Weasels2\_231:

(Start: 15 @113792 has 29 MA's), (23, 113861), (25, 113870), (27, 113894), (30, 113915), (43, 113975), (66, 114065), (94, 114191), (106, 114242),

Gene: Westy\_167 Start: 89450, Stop: 89926, Start Num: 15

Candidate Starts for Westy\_167:

(Start: 15 @89450 has 29 MA's), (28, 89570), (36, 89618), (40, 89639), (46, 89651), (55, 89687), (57, 89696), (79, 89774), (86, 89813), (89, 89855), (100, 89897), (103, 89909),

Gene: Zooman\_150 Start: 90927, Stop: 91391, Start Num: 12

Candidate Starts for Zooman\_150:

(Start: 12 @90927 has 18 MA's), (22, 90993), (23, 91002), (25, 91011), (30, 91056), (40, 91110), (43, 91116), (48, 91131),