



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 289234 Report

This analysis was run 03/28/26 on database version 641.

Pham number 289234 has 114 members, 32 are drafts.

Phages represented in each track:

- Track 1 : BlacksBerry\_15, Sigman\_16, Maskar\_15, Puhltonio\_16, Pops\_16, MelsMeow\_15, TallGrassMM\_16, Longacauda\_15, OneBrain\_16, FremontTroll\_16, Fang\_16, BatteryCK\_15, BoogieWoogie\_15, Olive\_16, Swish\_16, Happabalu\_16, Flake\_17, Gwennie1\_16, Oosterbaan\_16, Numberten\_16, PhatLouie\_16, Anderson\_16, Phipps\_16, Harvey\_16, Andre\_16, DuchessDung\_15, Doddsville\_16, Nyala\_15, Larson\_17, OSmaximus\_16, Mesmerelda\_15, Chah\_16, Yoshand\_16, Triad\_16, SilverBell\_16, Virgeve\_15, Inverness\_16, Etaye\_16, Caspiboi\_15, Pinkman\_15, Chute\_15, Banjo\_15, JDog\_15, Eugenia\_16, GreenChile\_16, KLucky39\_16, Newman\_16, Badfish\_16, SirBeauregard\_15, Kikipoo\_16, UncleHowie\_16, Khan1\_16, MrPhizzler\_16, Scoot17C\_16, Thora\_16, Lasso\_16, Ashraf\_15, Lopsy\_15, Chuni\_15, Daffy\_16, Hekos\_15, Eremos\_16, Apizium\_15, Cornbread\_15, DelRivs\_15, Katniss\_16, Orwigg\_15, ABU\_16, SallyH\_16, Hamish\_16, ShadowBud\_16, Suffolk\_16, Orion\_16, Colbert\_16, Rimu\_16, Aleia\_16, Gophee\_16, ThreeOh3D2\_16, TooFast2Furius\_17, IsaacEli\_16, Vortex\_16, PG1\_16, RedRaider89\_16, PallasAthena\_16, Megatron\_16, Coletti\_16, Mana\_15, ImtiyazSitla\_15, Swiphy\_16, Morgushi\_16, LeiMonet\_16, FluffyNinja\_16, FleetyMac\_15, Murdoc\_16, Megamind20\_16, Vaishali24\_15, DolOn\_17, Aonishiki\_16, Lehmann\_16, HogWash\_15, Iridoclysis\_16, Nathan\_16, ElvisPhasley\_16, Serendipity\_16, Potter\_15
- Track 2 : Chipette\_17, OliverWalter\_16, Riverton\_15, Basato\_17, Prickles\_16, Manad\_15, Thunderbird\_15
- Track 3 : Karn\_15, Plata\_16

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

The start number called the most often in the published annotations is 2, it was called in 82 of the 82 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ABU\_16, Aleia\_16, Anderson\_16, Andre\_16, Aonishiki\_16, Apizium\_15, Ashraf\_15, Badfish\_16, Banjo\_15, Basato\_17, BatteryCK\_15, BlacksBerry\_15, BoogieWoogie\_15, Caspiboi\_15, Chah\_16, Chipette\_17, Chuni\_15, Chute\_15, Colbert\_16, Coletti\_16, Cornbread\_15, Daffy\_16, DelRivs\_15, Doddsville\_16, DolOn\_17, DuchessDung\_15, ElvisPhasley\_16, Eremos\_16, Etaye\_16, Eugenia\_16,

Fang\_16, Flake\_17, FleetyMac\_15, FluffyNinja\_16, FremontTroll\_16, Gophee\_16, GreenChile\_16, Gwennie1\_16, Hamish\_16, Happabalu\_16, Harvey\_16, Hekos\_15, HogWash\_15, ImtiyazSitla\_15, Inverness\_16, Iridoclysis\_16, IsaacEli\_16, JDog\_15, KLucky39\_16, Karn\_15, Katniss\_16, Khan1\_16, Kikipoo\_16, Larson\_17, Lasso\_16, Lehmann\_16, LeiMonet\_16, Longacauda\_15, Lopsy\_15, Mana\_15, Manad\_15, Maskar\_15, Megamind20\_16, Megatron\_16, MelsMeow\_15, Mesmerelda\_15, Morgushi\_16, MrPhizzler\_16, Murdoc\_16, Nathan\_16, Newman\_16, Numberben\_16, Nyala\_15, OSmaximus\_16, Olive\_16, OliverWalter\_16, OneBrain\_16, Oosterbaan\_16, Orion\_16, Orwigg\_15, PG1\_16, PallasAthena\_16, PhatLouie\_16, Phipps\_16, Pinkman\_15, Plata\_16, Pops\_16, Potter\_15, Prickles\_16, Puhltonio\_16, RedRaider89\_16, Rimu\_16, Riverton\_15, SallyH\_16, Scoot17C\_16, Serendipity\_16, ShadowBud\_16, Sigman\_16, SilverBell\_16, SirBeauregard\_15, Suffolk\_16, Swiphy\_16, Swish\_16, TallGrassMM\_16, Thora\_16, ThreeOh3D2\_16, Thunderbird\_15, TooFast2Furius\_17, Triad\_16, UncleHowie\_16, Vaishali24\_15, Virgeve\_15, Vortex\_16, Yoshand\_16,

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

- 

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

- 

### Summary by start number:

Start 2:

- Found in 114 of 114 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 82 of 82
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ABU\_16 (B1), Aleia\_16 (B1), Anderson\_16 (B1), Andre\_16 (B1), Aonishiki\_16 (B1), Apizium\_15 (B1), Ashraf\_15 (B1), Badfish\_16 (B1), Banjo\_15 (B1), Basato\_17 (B1), BatteryCK\_15 (B1), BlacksBerry\_15 (B1), BoogieWoogie\_15 (B1), Caspiboi\_15 (B1), Chah\_16 (B1), Chipette\_17 (B1), Chuni\_15 (B1), Chute\_15 (B1), Colbert\_16 (B1), Coletti\_16 (B1), Cornbread\_15 (B1), Daffy\_16 (B1), DelRivs\_15 (B1), Doddsville\_16 (B1), DolOn\_17 (B1), DuchessDung\_15 (B1), ElvisPhasley\_16 (B1), Eremos\_16 (B1), Etaye\_16 (B1), Eugenia\_16 (B1), Fang\_16 (B1), Flake\_17 (B1), FleetyMac\_15 (B1), FluffyNinja\_16 (B1), FremontTroll\_16 (B1), Gophee\_16 (B1), GreenChile\_16 (B1), Gwennie1\_16 (B1), Hamish\_16 (B1), Happabalu\_16 (B1), Harvey\_16 (B1), Hekos\_15 (B1), HogWash\_15 (B1), ImtiyazSitla\_15 (B1), Inverness\_16 (B1), Iridoclysis\_16 (B1), IsaacEli\_16 (B1), JDog\_15 (B1), KLucky39\_16 (B1), Karn\_15 (B1), Katniss\_16 (B1), Khan1\_16 (B1), Kikipoo\_16 (B1), Larson\_17 (B1), Lasso\_16 (B1), Lehmann\_16 (B1), LeiMonet\_16 (B1), Longacauda\_15 (B1), Lopsy\_15 (B1), Mana\_15 (B1), Manad\_15 (B1), Maskar\_15 (B1), Megamind20\_16 (B1), Megatron\_16 (B1), MelsMeow\_15 (B1), Mesmerelda\_15 (B1), Morgushi\_16 (B1), MrPhizzler\_16 (B1), Murdoc\_16 (B1), Nathan\_16 (B1), Newman\_16 (B1), Numberben\_16 (B1), Nyala\_15 (B1), OSmaximus\_16 (B1), Olive\_16 (B1), OliverWalter\_16 (B1), OneBrain\_16 (B1), Oosterbaan\_16 (B1), Orion\_16 (B1), Orwigg\_15 (B1), PG1\_16 (B1), PallasAthena\_16 (B1), PhatLouie\_16 (B1), Phipps\_16 (B1), Pinkman\_15 (B1), Plata\_16 (B1), Pops\_16 (B1), Potter\_15 (B1), Prickles\_16 (B1), Puhltonio\_16 (B1), RedRaider89\_16 (B1), Rimu\_16 (B1), Riverton\_15 (B1), SallyH\_16 (B1), Scoot17C\_16 (B1), Serendipity\_16 (B1), ShadowBud\_16 (B1), Sigman\_16 (B1), SilverBell\_16 (B1), SirBeauregard\_15 (B1), Suffolk\_16 (B1), Swiphy\_16 (B1), Swish\_16 (B1), TallGrassMM\_16 (B1), Thora\_16 (B1), ThreeOh3D2\_16 (B1), Thunderbird\_15 (B1), TooFast2Furius\_17 (B1),

Triad\_16 (B1), UncleHowie\_16 (B1), Vaishali24\_15 (B1), Virgeve\_15 (B1), Vortex\_16 (B1), Yoshand\_16 (B1),

### **Summary by clusters:**

There is one cluster represented in this pham: B1

Info for manual annotations of cluster B1:

•Start number 2 was manually annotated 82 times for cluster B1.

### **Gene Information:**

Gene: ABU\_16 Start: 13693, Stop: 13992, Start Num: 2

Candidate Starts for ABU\_16:

(1, 13642), (Start: 2 @13693 has 82 MA's), (3, 13705), (4, 13708), (5, 13717), (6, 13738), (7, 13933),

Gene: Aleia\_16 Start: 13274, Stop: 13573, Start Num: 2

Candidate Starts for Aleia\_16:

(1, 13223), (Start: 2 @13274 has 82 MA's), (3, 13286), (4, 13289), (5, 13298), (6, 13319), (7, 13514),

Gene: Anderson\_16 Start: 13686, Stop: 13985, Start Num: 2

Candidate Starts for Anderson\_16:

(1, 13635), (Start: 2 @13686 has 82 MA's), (3, 13698), (4, 13701), (5, 13710), (6, 13731), (7, 13926),

Gene: Andre\_16 Start: 13684, Stop: 13983, Start Num: 2

Candidate Starts for Andre\_16:

(1, 13633), (Start: 2 @13684 has 82 MA's), (3, 13696), (4, 13699), (5, 13708), (6, 13729), (7, 13924),

Gene: Aonishiki\_16 Start: 13716, Stop: 14015, Start Num: 2

Candidate Starts for Aonishiki\_16:

(1, 13665), (Start: 2 @13716 has 82 MA's), (3, 13728), (4, 13731), (5, 13740), (6, 13761), (7, 13956),

Gene: Apizium\_15 Start: 13430, Stop: 13729, Start Num: 2

Candidate Starts for Apizium\_15:

(1, 13379), (Start: 2 @13430 has 82 MA's), (3, 13442), (4, 13445), (5, 13454), (6, 13475), (7, 13670),

Gene: Ashraf\_15 Start: 13248, Stop: 13547, Start Num: 2

Candidate Starts for Ashraf\_15:

(1, 13197), (Start: 2 @13248 has 82 MA's), (3, 13260), (4, 13263), (5, 13272), (6, 13293), (7, 13488),

Gene: Badfish\_16 Start: 13719, Stop: 14018, Start Num: 2

Candidate Starts for Badfish\_16:

(1, 13668), (Start: 2 @13719 has 82 MA's), (3, 13731), (4, 13734), (5, 13743), (6, 13764), (7, 13959),

Gene: Banjo\_15 Start: 13397, Stop: 13696, Start Num: 2

Candidate Starts for Banjo\_15:

(1, 13346), (Start: 2 @13397 has 82 MA's), (3, 13409), (4, 13412), (5, 13421), (6, 13442), (7, 13637),

Gene: Basato\_17 Start: 13923, Stop: 14222, Start Num: 2

Candidate Starts for Basato\_17:

(1, 13872), (Start: 2 @13923 has 82 MA's), (4, 13938), (5, 13947), (6, 13968), (7, 14163),

Gene: BatteryCK\_15 Start: 13254, Stop: 13553, Start Num: 2  
Candidate Starts for BatteryCK\_15:  
(1, 13203), (Start: 2 @13254 has 82 MA's), (3, 13266), (4, 13269), (5, 13278), (6, 13299), (7, 13494),

Gene: BlacksBerry\_15 Start: 13408, Stop: 13707, Start Num: 2  
Candidate Starts for BlacksBerry\_15:  
(1, 13357), (Start: 2 @13408 has 82 MA's), (3, 13420), (4, 13423), (5, 13432), (6, 13453), (7, 13648),

Gene: BoogieWoogie\_15 Start: 13390, Stop: 13689, Start Num: 2  
Candidate Starts for BoogieWoogie\_15:  
(1, 13339), (Start: 2 @13390 has 82 MA's), (3, 13402), (4, 13405), (5, 13414), (6, 13435), (7, 13630),

Gene: Caspiboi\_15 Start: 13408, Stop: 13707, Start Num: 2  
Candidate Starts for Caspiboi\_15:  
(1, 13357), (Start: 2 @13408 has 82 MA's), (3, 13420), (4, 13423), (5, 13432), (6, 13453), (7, 13648),

Gene: Chah\_16 Start: 13720, Stop: 14019, Start Num: 2  
Candidate Starts for Chah\_16:  
(1, 13669), (Start: 2 @13720 has 82 MA's), (3, 13732), (4, 13735), (5, 13744), (6, 13765), (7, 13960),

Gene: Chipette\_17 Start: 13924, Stop: 14223, Start Num: 2  
Candidate Starts for Chipette\_17:  
(1, 13873), (Start: 2 @13924 has 82 MA's), (4, 13939), (5, 13948), (6, 13969), (7, 14164),

Gene: Chuni\_15 Start: 13717, Stop: 14016, Start Num: 2  
Candidate Starts for Chuni\_15:  
(1, 13666), (Start: 2 @13717 has 82 MA's), (3, 13729), (4, 13732), (5, 13741), (6, 13762), (7, 13957),

Gene: Chute\_15 Start: 13716, Stop: 14015, Start Num: 2  
Candidate Starts for Chute\_15:  
(1, 13665), (Start: 2 @13716 has 82 MA's), (3, 13728), (4, 13731), (5, 13740), (6, 13761), (7, 13956),

Gene: Colbert\_16 Start: 13704, Stop: 14003, Start Num: 2  
Candidate Starts for Colbert\_16:  
(1, 13653), (Start: 2 @13704 has 82 MA's), (3, 13716), (4, 13719), (5, 13728), (6, 13749), (7, 13944),

Gene: Coletti\_16 Start: 13716, Stop: 14015, Start Num: 2  
Candidate Starts for Coletti\_16:  
(1, 13665), (Start: 2 @13716 has 82 MA's), (3, 13728), (4, 13731), (5, 13740), (6, 13761), (7, 13956),

Gene: Cornbread\_15 Start: 13417, Stop: 13716, Start Num: 2  
Candidate Starts for Cornbread\_15:  
(1, 13366), (Start: 2 @13417 has 82 MA's), (3, 13429), (4, 13432), (5, 13441), (6, 13462), (7, 13657),

Gene: Daffy\_16 Start: 13426, Stop: 13725, Start Num: 2  
Candidate Starts for Daffy\_16:  
(1, 13375), (Start: 2 @13426 has 82 MA's), (3, 13438), (4, 13441), (5, 13450), (6, 13471), (7, 13666),

Gene: DelRivs\_15 Start: 13413, Stop: 13712, Start Num: 2  
Candidate Starts for DelRivs\_15:  
(1, 13362), (Start: 2 @13413 has 82 MA's), (3, 13425), (4, 13428), (5, 13437), (6, 13458), (7, 13653),

Gene: Doddsville\_16 Start: 13414, Stop: 13713, Start Num: 2  
Candidate Starts for Doddsville\_16:  
(1, 13363), (Start: 2 @13414 has 82 MA's), (3, 13426), (4, 13429), (5, 13438), (6, 13459), (7, 13654),

Gene: DolOn\_17 Start: 13936, Stop: 14235, Start Num: 2  
Candidate Starts for DolOn\_17:  
(1, 13885), (Start: 2 @13936 has 82 MA's), (3, 13948), (4, 13951), (5, 13960), (6, 13981), (7, 14176),

Gene: DuchessDung\_15 Start: 13254, Stop: 13553, Start Num: 2  
Candidate Starts for DuchessDung\_15:  
(1, 13203), (Start: 2 @13254 has 82 MA's), (3, 13266), (4, 13269), (5, 13278), (6, 13299), (7, 13494),

Gene: ElvisPhasley\_16 Start: 13714, Stop: 14013, Start Num: 2  
Candidate Starts for ElvisPhasley\_16:  
(1, 13663), (Start: 2 @13714 has 82 MA's), (3, 13726), (4, 13729), (5, 13738), (6, 13759), (7, 13954),

Gene: Eremos\_16 Start: 13701, Stop: 14000, Start Num: 2  
Candidate Starts for Eremos\_16:  
(1, 13650), (Start: 2 @13701 has 82 MA's), (3, 13713), (4, 13716), (5, 13725), (6, 13746), (7, 13941),

Gene: Etaye\_16 Start: 13686, Stop: 13985, Start Num: 2  
Candidate Starts for Etaye\_16:  
(1, 13635), (Start: 2 @13686 has 82 MA's), (3, 13698), (4, 13701), (5, 13710), (6, 13731), (7, 13926),

Gene: Eugenia\_16 Start: 13714, Stop: 14013, Start Num: 2  
Candidate Starts for Eugenia\_16:  
(1, 13663), (Start: 2 @13714 has 82 MA's), (3, 13726), (4, 13729), (5, 13738), (6, 13759), (7, 13954),

Gene: Fang\_16 Start: 13717, Stop: 14016, Start Num: 2  
Candidate Starts for Fang\_16:  
(1, 13666), (Start: 2 @13717 has 82 MA's), (3, 13729), (4, 13732), (5, 13741), (6, 13762), (7, 13957),

Gene: Flake\_17 Start: 13718, Stop: 14017, Start Num: 2  
Candidate Starts for Flake\_17:  
(1, 13667), (Start: 2 @13718 has 82 MA's), (3, 13730), (4, 13733), (5, 13742), (6, 13763), (7, 13958),

Gene: FleetyMac\_15 Start: 13699, Stop: 13998, Start Num: 2  
Candidate Starts for FleetyMac\_15:  
(1, 13648), (Start: 2 @13699 has 82 MA's), (3, 13711), (4, 13714), (5, 13723), (6, 13744), (7, 13939),

Gene: FluffyNinja\_16 Start: 13705, Stop: 14004, Start Num: 2  
Candidate Starts for FluffyNinja\_16:  
(1, 13654), (Start: 2 @13705 has 82 MA's), (3, 13717), (4, 13720), (5, 13729), (6, 13750), (7, 13945),

Gene: FremontTroll\_16 Start: 13400, Stop: 13699, Start Num: 2  
Candidate Starts for FremontTroll\_16:  
(1, 13349), (Start: 2 @13400 has 82 MA's), (3, 13412), (4, 13415), (5, 13424), (6, 13445), (7, 13640),

Gene: Gophee\_16 Start: 13686, Stop: 13985, Start Num: 2  
Candidate Starts for Gophee\_16:  
(1, 13635), (Start: 2 @13686 has 82 MA's), (3, 13698), (4, 13701), (5, 13710), (6, 13731), (7, 13926),

Gene: GreenChile\_16 Start: 13703, Stop: 14002, Start Num: 2

Candidate Starts for GreenChile\_16:

(1, 13652), (Start: 2 @13703 has 82 MA's), (3, 13715), (4, 13718), (5, 13727), (6, 13748), (7, 13943),

Gene: Gwennie1\_16 Start: 13725, Stop: 14024, Start Num: 2

Candidate Starts for Gwennie1\_16:

(1, 13674), (Start: 2 @13725 has 82 MA's), (3, 13737), (4, 13740), (5, 13749), (6, 13770), (7, 13965),

Gene: Hamish\_16 Start: 13695, Stop: 13994, Start Num: 2

Candidate Starts for Hamish\_16:

(1, 13644), (Start: 2 @13695 has 82 MA's), (3, 13707), (4, 13710), (5, 13719), (6, 13740), (7, 13935),

Gene: Happabalu\_16 Start: 13395, Stop: 13694, Start Num: 2

Candidate Starts for Happabalu\_16:

(1, 13344), (Start: 2 @13395 has 82 MA's), (3, 13407), (4, 13410), (5, 13419), (6, 13440), (7, 13635),

Gene: Harvey\_16 Start: 13723, Stop: 14022, Start Num: 2

Candidate Starts for Harvey\_16:

(1, 13672), (Start: 2 @13723 has 82 MA's), (3, 13735), (4, 13738), (5, 13747), (6, 13768), (7, 13963),

Gene: Hekos\_15 Start: 13425, Stop: 13724, Start Num: 2

Candidate Starts for Hekos\_15:

(1, 13374), (Start: 2 @13425 has 82 MA's), (3, 13437), (4, 13440), (5, 13449), (6, 13470), (7, 13665),

Gene: HogWash\_15 Start: 13704, Stop: 14003, Start Num: 2

Candidate Starts for HogWash\_15:

(1, 13653), (Start: 2 @13704 has 82 MA's), (3, 13716), (4, 13719), (5, 13728), (6, 13749), (7, 13944),

Gene: ImtiyazSitla\_15 Start: 13248, Stop: 13547, Start Num: 2

Candidate Starts for ImtiyazSitla\_15:

(1, 13197), (Start: 2 @13248 has 82 MA's), (3, 13260), (4, 13263), (5, 13272), (6, 13293), (7, 13488),

Gene: Inverness\_16 Start: 13709, Stop: 14008, Start Num: 2

Candidate Starts for Inverness\_16:

(1, 13658), (Start: 2 @13709 has 82 MA's), (3, 13721), (4, 13724), (5, 13733), (6, 13754), (7, 13949),

Gene: Iridoclysis\_16 Start: 13681, Stop: 13980, Start Num: 2

Candidate Starts for Iridoclysis\_16:

(1, 13630), (Start: 2 @13681 has 82 MA's), (3, 13693), (4, 13696), (5, 13705), (6, 13726), (7, 13921),

Gene: IsaacEli\_16 Start: 13713, Stop: 14012, Start Num: 2

Candidate Starts for IsaacEli\_16:

(1, 13662), (Start: 2 @13713 has 82 MA's), (3, 13725), (4, 13728), (5, 13737), (6, 13758), (7, 13953),

Gene: JDog\_15 Start: 13416, Stop: 13715, Start Num: 2

Candidate Starts for JDog\_15:

(1, 13365), (Start: 2 @13416 has 82 MA's), (3, 13428), (4, 13431), (5, 13440), (6, 13461), (7, 13656),

Gene: KLucky39\_16 Start: 13701, Stop: 14000, Start Num: 2

Candidate Starts for KLucky39\_16:

(1, 13650), (Start: 2 @13701 has 82 MA's), (3, 13713), (4, 13716), (5, 13725), (6, 13746), (7, 13941),

Gene: Karn\_15 Start: 13416, Stop: 13715, Start Num: 2

Candidate Starts for Karn\_15:

(1, 13365), (Start: 2 @13416 has 82 MA's), (3, 13428), (4, 13431), (5, 13440), (6, 13461),

Gene: Katniss\_16 Start: 13720, Stop: 14019, Start Num: 2

Candidate Starts for Katniss\_16:

(1, 13669), (Start: 2 @13720 has 82 MA's), (3, 13732), (4, 13735), (5, 13744), (6, 13765), (7, 13960),

Gene: Khan1\_16 Start: 13416, Stop: 13715, Start Num: 2

Candidate Starts for Khan1\_16:

(1, 13365), (Start: 2 @13416 has 82 MA's), (3, 13428), (4, 13431), (5, 13440), (6, 13461), (7, 13656),

Gene: Kikipoo\_16 Start: 13713, Stop: 14012, Start Num: 2

Candidate Starts for Kikipoo\_16:

(1, 13662), (Start: 2 @13713 has 82 MA's), (3, 13725), (4, 13728), (5, 13737), (6, 13758), (7, 13953),

Gene: Larson\_17 Start: 13718, Stop: 14017, Start Num: 2

Candidate Starts for Larson\_17:

(1, 13667), (Start: 2 @13718 has 82 MA's), (3, 13730), (4, 13733), (5, 13742), (6, 13763), (7, 13958),

Gene: Lasso\_16 Start: 13680, Stop: 13979, Start Num: 2

Candidate Starts for Lasso\_16:

(1, 13629), (Start: 2 @13680 has 82 MA's), (3, 13692), (4, 13695), (5, 13704), (6, 13725), (7, 13920),

Gene: Lehmann\_16 Start: 13245, Stop: 13544, Start Num: 2

Candidate Starts for Lehmann\_16:

(1, 13194), (Start: 2 @13245 has 82 MA's), (3, 13257), (4, 13260), (5, 13269), (6, 13290), (7, 13485),

Gene: LeiMonet\_16 Start: 13410, Stop: 13709, Start Num: 2

Candidate Starts for LeiMonet\_16:

(1, 13359), (Start: 2 @13410 has 82 MA's), (3, 13422), (4, 13425), (5, 13434), (6, 13455), (7, 13650),

Gene: Longacauda\_15 Start: 13404, Stop: 13703, Start Num: 2

Candidate Starts for Longacauda\_15:

(1, 13353), (Start: 2 @13404 has 82 MA's), (3, 13416), (4, 13419), (5, 13428), (6, 13449), (7, 13644),

Gene: Lopsy\_15 Start: 13260, Stop: 13559, Start Num: 2

Candidate Starts for Lopsy\_15:

(1, 13209), (Start: 2 @13260 has 82 MA's), (3, 13272), (4, 13275), (5, 13284), (6, 13305), (7, 13500),

Gene: Mana\_15 Start: 13408, Stop: 13707, Start Num: 2

Candidate Starts for Mana\_15:

(1, 13357), (Start: 2 @13408 has 82 MA's), (3, 13420), (4, 13423), (5, 13432), (6, 13453), (7, 13648),

Gene: Manad\_15 Start: 13258, Stop: 13557, Start Num: 2

Candidate Starts for Manad\_15:

(1, 13207), (Start: 2 @13258 has 82 MA's), (4, 13273), (5, 13282), (6, 13303), (7, 13498),

Gene: Maskar\_15 Start: 13248, Stop: 13547, Start Num: 2

Candidate Starts for Maskar\_15:

(1, 13197), (Start: 2 @13248 has 82 MA's), (3, 13260), (4, 13263), (5, 13272), (6, 13293), (7, 13488),

Gene: Megamind20\_16 Start: 13421, Stop: 13720, Start Num: 2

Candidate Starts for Megamind20\_16:

(1, 13370), (Start: 2 @13421 has 82 MA's), (3, 13433), (4, 13436), (5, 13445), (6, 13466), (7, 13661),

Gene: Megatron\_16 Start: 13701, Stop: 14000, Start Num: 2  
Candidate Starts for Megatron\_16:  
(1, 13650), (Start: 2 @13701 has 82 MA's), (3, 13713), (4, 13716), (5, 13725), (6, 13746), (7, 13941),

Gene: MelsMeow\_15 Start: 13260, Stop: 13559, Start Num: 2  
Candidate Starts for MelsMeow\_15:  
(1, 13209), (Start: 2 @13260 has 82 MA's), (3, 13272), (4, 13275), (5, 13284), (6, 13305), (7, 13500),

Gene: Mesmerelda\_15 Start: 13402, Stop: 13701, Start Num: 2  
Candidate Starts for Mesmerelda\_15:  
(1, 13351), (Start: 2 @13402 has 82 MA's), (3, 13414), (4, 13417), (5, 13426), (6, 13447), (7, 13642),

Gene: Morgushi\_16 Start: 13412, Stop: 13711, Start Num: 2  
Candidate Starts for Morgushi\_16:  
(1, 13361), (Start: 2 @13412 has 82 MA's), (3, 13424), (4, 13427), (5, 13436), (6, 13457), (7, 13652),

Gene: MrPhizzler\_16 Start: 13413, Stop: 13712, Start Num: 2  
Candidate Starts for MrPhizzler\_16:  
(1, 13362), (Start: 2 @13413 has 82 MA's), (3, 13425), (4, 13428), (5, 13437), (6, 13458), (7, 13653),

Gene: Murdoc\_16 Start: 13701, Stop: 14000, Start Num: 2  
Candidate Starts for Murdoc\_16:  
(1, 13650), (Start: 2 @13701 has 82 MA's), (3, 13713), (4, 13716), (5, 13725), (6, 13746), (7, 13941),

Gene: Nathan\_16 Start: 13711, Stop: 14010, Start Num: 2  
Candidate Starts for Nathan\_16:  
(1, 13660), (Start: 2 @13711 has 82 MA's), (3, 13723), (4, 13726), (5, 13735), (6, 13756), (7, 13951),

Gene: Newman\_16 Start: 13701, Stop: 14000, Start Num: 2  
Candidate Starts for Newman\_16:  
(1, 13650), (Start: 2 @13701 has 82 MA's), (3, 13713), (4, 13716), (5, 13725), (6, 13746), (7, 13941),

Gene: Numberten\_16 Start: 13704, Stop: 14003, Start Num: 2  
Candidate Starts for Numberten\_16:  
(1, 13653), (Start: 2 @13704 has 82 MA's), (3, 13716), (4, 13719), (5, 13728), (6, 13749), (7, 13944),

Gene: Nyala\_15 Start: 13403, Stop: 13702, Start Num: 2  
Candidate Starts for Nyala\_15:  
(1, 13352), (Start: 2 @13403 has 82 MA's), (3, 13415), (4, 13418), (5, 13427), (6, 13448), (7, 13643),

Gene: OSmaximus\_16 Start: 13711, Stop: 14010, Start Num: 2  
Candidate Starts for OSmaximus\_16:  
(1, 13660), (Start: 2 @13711 has 82 MA's), (3, 13723), (4, 13726), (5, 13735), (6, 13756), (7, 13951),

Gene: Olive\_16 Start: 13692, Stop: 13991, Start Num: 2  
Candidate Starts for Olive\_16:  
(1, 13641), (Start: 2 @13692 has 82 MA's), (3, 13704), (4, 13707), (5, 13716), (6, 13737), (7, 13932),

Gene: OliverWalter\_16 Start: 13709, Stop: 14008, Start Num: 2  
Candidate Starts for OliverWalter\_16:  
(1, 13658), (Start: 2 @13709 has 82 MA's), (4, 13724), (5, 13733), (6, 13754), (7, 13949),

Gene: OneBrain\_16 Start: 13404, Stop: 13703, Start Num: 2  
Candidate Starts for OneBrain\_16:  
(1, 13353), (Start: 2 @13404 has 82 MA's), (3, 13416), (4, 13419), (5, 13428), (6, 13449), (7, 13644),

Gene: Oosterbaan\_16 Start: 13702, Stop: 14001, Start Num: 2  
Candidate Starts for Oosterbaan\_16:  
(1, 13651), (Start: 2 @13702 has 82 MA's), (3, 13714), (4, 13717), (5, 13726), (6, 13747), (7, 13942),

Gene: Orion\_16 Start: 13702, Stop: 14001, Start Num: 2  
Candidate Starts for Orion\_16:  
(1, 13651), (Start: 2 @13702 has 82 MA's), (3, 13714), (4, 13717), (5, 13726), (6, 13747), (7, 13942),

Gene: Orwigg\_15 Start: 13394, Stop: 13693, Start Num: 2  
Candidate Starts for Orwigg\_15:  
(1, 13343), (Start: 2 @13394 has 82 MA's), (3, 13406), (4, 13409), (5, 13418), (6, 13439), (7, 13634),

Gene: PG1\_16 Start: 13714, Stop: 14013, Start Num: 2  
Candidate Starts for PG1\_16:  
(1, 13663), (Start: 2 @13714 has 82 MA's), (3, 13726), (4, 13729), (5, 13738), (6, 13759), (7, 13954),

Gene: PallasAthena\_16 Start: 13409, Stop: 13708, Start Num: 2  
Candidate Starts for PallasAthena\_16:  
(1, 13358), (Start: 2 @13409 has 82 MA's), (3, 13421), (4, 13424), (5, 13433), (6, 13454), (7, 13649),

Gene: PhatLouie\_16 Start: 13701, Stop: 14000, Start Num: 2  
Candidate Starts for PhatLouie\_16:  
(1, 13650), (Start: 2 @13701 has 82 MA's), (3, 13713), (4, 13716), (5, 13725), (6, 13746), (7, 13941),

Gene: Phipps\_16 Start: 13680, Stop: 13979, Start Num: 2  
Candidate Starts for Phipps\_16:  
(1, 13629), (Start: 2 @13680 has 82 MA's), (3, 13692), (4, 13695), (5, 13704), (6, 13725), (7, 13920),

Gene: Pinkman\_15 Start: 13260, Stop: 13559, Start Num: 2  
Candidate Starts for Pinkman\_15:  
(1, 13209), (Start: 2 @13260 has 82 MA's), (3, 13272), (4, 13275), (5, 13284), (6, 13305), (7, 13500),

Gene: Plata\_16 Start: 13416, Stop: 13715, Start Num: 2  
Candidate Starts for Plata\_16:  
(1, 13365), (Start: 2 @13416 has 82 MA's), (3, 13428), (4, 13431), (5, 13440), (6, 13461),

Gene: Pops\_16 Start: 13704, Stop: 14003, Start Num: 2  
Candidate Starts for Pops\_16:  
(1, 13653), (Start: 2 @13704 has 82 MA's), (3, 13716), (4, 13719), (5, 13728), (6, 13749), (7, 13944),

Gene: Potter\_15 Start: 13415, Stop: 13714, Start Num: 2  
Candidate Starts for Potter\_15:  
(1, 13364), (Start: 2 @13415 has 82 MA's), (3, 13427), (4, 13430), (5, 13439), (6, 13460), (7, 13655),

Gene: Prickles\_16 Start: 13695, Stop: 13994, Start Num: 2  
Candidate Starts for Prickles\_16:  
(1, 13644), (Start: 2 @13695 has 82 MA's), (4, 13710), (5, 13719), (6, 13740), (7, 13935),

Gene: Puhltonio\_16 Start: 13710, Stop: 14009, Start Num: 2

Candidate Starts for Puhltonio\_16:

(1, 13659), (Start: 2 @13710 has 82 MA's), (3, 13722), (4, 13725), (5, 13734), (6, 13755), (7, 13950),

Gene: RedRaider89\_16 Start: 13933, Stop: 14232, Start Num: 2

Candidate Starts for RedRaider89\_16:

(1, 13882), (Start: 2 @13933 has 82 MA's), (3, 13945), (4, 13948), (5, 13957), (6, 13978), (7, 14173),

Gene: Rimu\_16 Start: 13413, Stop: 13712, Start Num: 2

Candidate Starts for Rimu\_16:

(1, 13362), (Start: 2 @13413 has 82 MA's), (3, 13425), (4, 13428), (5, 13437), (6, 13458), (7, 13653),

Gene: Riverton\_15 Start: 13707, Stop: 14006, Start Num: 2

Candidate Starts for Riverton\_15:

(1, 13656), (Start: 2 @13707 has 82 MA's), (4, 13722), (5, 13731), (6, 13752), (7, 13947),

Gene: SallyH\_16 Start: 13711, Stop: 14010, Start Num: 2

Candidate Starts for SallyH\_16:

(1, 13660), (Start: 2 @13711 has 82 MA's), (3, 13723), (4, 13726), (5, 13735), (6, 13756), (7, 13951),

Gene: Scoot17C\_16 Start: 13702, Stop: 14001, Start Num: 2

Candidate Starts for Scoot17C\_16:

(1, 13651), (Start: 2 @13702 has 82 MA's), (3, 13714), (4, 13717), (5, 13726), (6, 13747), (7, 13942),

Gene: Serendipity\_16 Start: 13722, Stop: 14021, Start Num: 2

Candidate Starts for Serendipity\_16:

(1, 13671), (Start: 2 @13722 has 82 MA's), (3, 13734), (4, 13737), (5, 13746), (6, 13767), (7, 13962),

Gene: ShadowBud\_16 Start: 13716, Stop: 14015, Start Num: 2

Candidate Starts for ShadowBud\_16:

(1, 13665), (Start: 2 @13716 has 82 MA's), (3, 13728), (4, 13731), (5, 13740), (6, 13761), (7, 13956),

Gene: Sigman\_16 Start: 13692, Stop: 13991, Start Num: 2

Candidate Starts for Sigman\_16:

(1, 13641), (Start: 2 @13692 has 82 MA's), (3, 13704), (4, 13707), (5, 13716), (6, 13737), (7, 13932),

Gene: SilverBell\_16 Start: 13707, Stop: 14006, Start Num: 2

Candidate Starts for SilverBell\_16:

(1, 13656), (Start: 2 @13707 has 82 MA's), (3, 13719), (4, 13722), (5, 13731), (6, 13752), (7, 13947),

Gene: SirBeauregard\_15 Start: 13368, Stop: 13667, Start Num: 2

Candidate Starts for SirBeauregard\_15:

(1, 13317), (Start: 2 @13368 has 82 MA's), (3, 13380), (4, 13383), (5, 13392), (6, 13413), (7, 13608),

Gene: Suffolk\_16 Start: 13700, Stop: 13999, Start Num: 2

Candidate Starts for Suffolk\_16:

(1, 13649), (Start: 2 @13700 has 82 MA's), (3, 13712), (4, 13715), (5, 13724), (6, 13745), (7, 13940),

Gene: Swiphy\_16 Start: 13701, Stop: 14000, Start Num: 2

Candidate Starts for Swiphy\_16:

(1, 13650), (Start: 2 @13701 has 82 MA's), (3, 13713), (4, 13716), (5, 13725), (6, 13746), (7, 13941),

Gene: Swish\_16 Start: 13696, Stop: 13995, Start Num: 2

Candidate Starts for Swish\_16:

(1, 13645), (Start: 2 @13696 has 82 MA's), (3, 13708), (4, 13711), (5, 13720), (6, 13741), (7, 13936),

Gene: TallGrassMM\_16 Start: 13426, Stop: 13725, Start Num: 2

Candidate Starts for TallGrassMM\_16:

(1, 13375), (Start: 2 @13426 has 82 MA's), (3, 13438), (4, 13441), (5, 13450), (6, 13471), (7, 13666),

Gene: Thora\_16 Start: 13710, Stop: 14009, Start Num: 2

Candidate Starts for Thora\_16:

(1, 13659), (Start: 2 @13710 has 82 MA's), (3, 13722), (4, 13725), (5, 13734), (6, 13755), (7, 13950),

Gene: ThreeOh3D2\_16 Start: 13711, Stop: 14010, Start Num: 2

Candidate Starts for ThreeOh3D2\_16:

(1, 13660), (Start: 2 @13711 has 82 MA's), (3, 13723), (4, 13726), (5, 13735), (6, 13756), (7, 13951),

Gene: Thunderbird\_15 Start: 13410, Stop: 13709, Start Num: 2

Candidate Starts for Thunderbird\_15:

(1, 13359), (Start: 2 @13410 has 82 MA's), (4, 13425), (5, 13434), (6, 13455), (7, 13650),

Gene: TooFast2Furius\_17 Start: 13942, Stop: 14241, Start Num: 2

Candidate Starts for TooFast2Furius\_17:

(1, 13891), (Start: 2 @13942 has 82 MA's), (3, 13954), (4, 13957), (5, 13966), (6, 13987), (7, 14182),

Gene: Triad\_16 Start: 13245, Stop: 13544, Start Num: 2

Candidate Starts for Triad\_16:

(1, 13194), (Start: 2 @13245 has 82 MA's), (3, 13257), (4, 13260), (5, 13269), (6, 13290), (7, 13485),

Gene: UncleHowie\_16 Start: 13408, Stop: 13707, Start Num: 2

Candidate Starts for UncleHowie\_16:

(1, 13357), (Start: 2 @13408 has 82 MA's), (3, 13420), (4, 13423), (5, 13432), (6, 13453), (7, 13648),

Gene: Vaishali24\_15 Start: 13361, Stop: 13660, Start Num: 2

Candidate Starts for Vaishali24\_15:

(1, 13310), (Start: 2 @13361 has 82 MA's), (3, 13373), (4, 13376), (5, 13385), (6, 13406), (7, 13601),

Gene: Virgeve\_15 Start: 13414, Stop: 13713, Start Num: 2

Candidate Starts for Virgeve\_15:

(1, 13363), (Start: 2 @13414 has 82 MA's), (3, 13426), (4, 13429), (5, 13438), (6, 13459), (7, 13654),

Gene: Vortex\_16 Start: 13415, Stop: 13714, Start Num: 2

Candidate Starts for Vortex\_16:

(1, 13364), (Start: 2 @13415 has 82 MA's), (3, 13427), (4, 13430), (5, 13439), (6, 13460), (7, 13655),

Gene: Yoshand\_16 Start: 13705, Stop: 14004, Start Num: 2

Candidate Starts for Yoshand\_16:

(1, 13654), (Start: 2 @13705 has 82 MA's), (3, 13717), (4, 13720), (5, 13729), (6, 13750), (7, 13945),