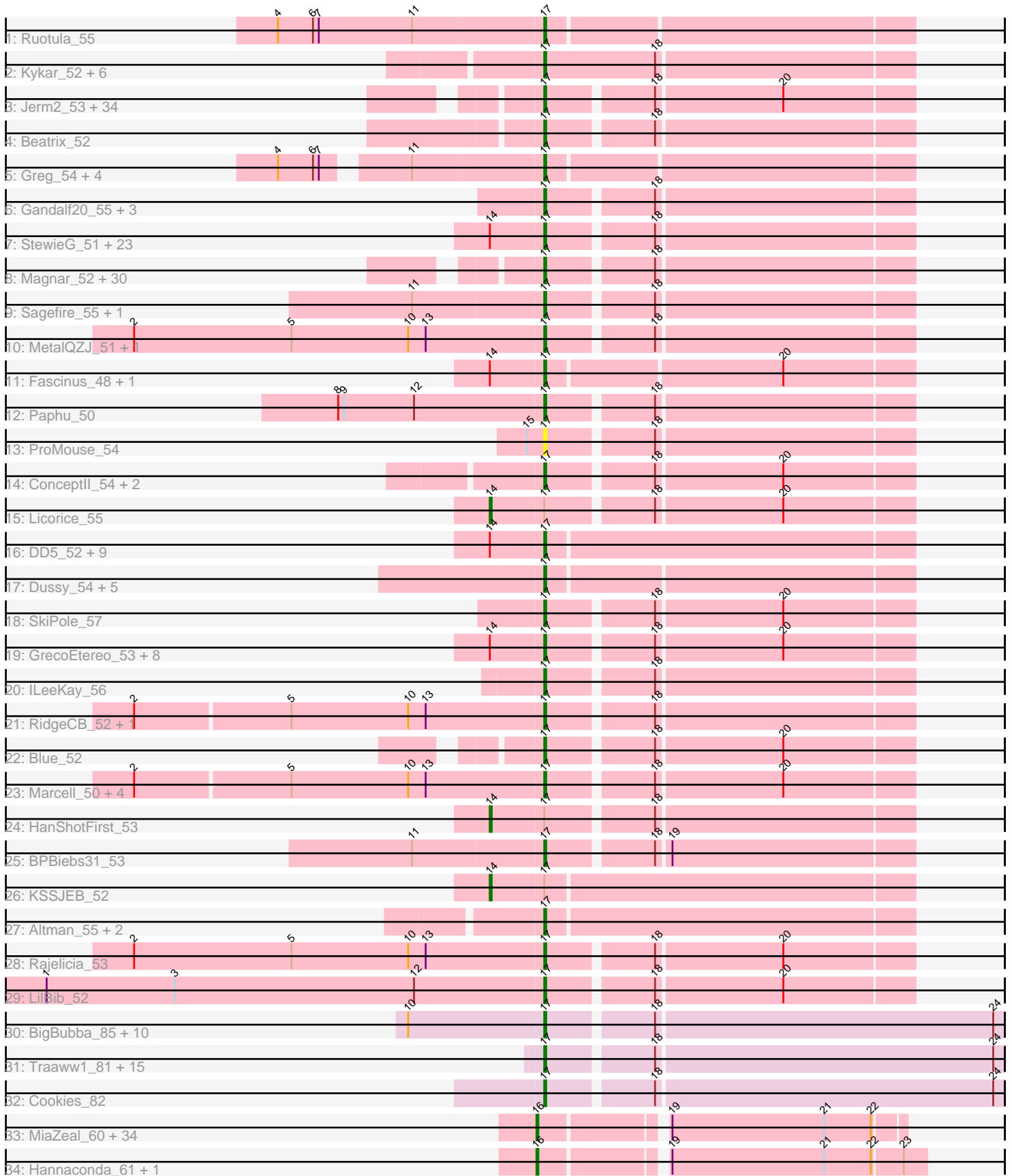


# Pham 193720



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 193720 Report

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

Pham number 193720 has 228 members, 12 are drafts.

Phages represented in each track:

- Track 1 : Ruotula\_55
- Track 2 : Kykar\_52, Mryolo\_50, NEHalo\_50, Dexes\_53, Peterson\_57, KyMonks1A\_54, Marsha\_52
- Track 3 : Jerm2\_53, Fushigi\_51, Rohr\_53, Bob3\_50, PSullivan\_52, AFIS\_50, Lesedi\_49, BigMau\_53, Rufus\_53, Monet\_55, Bones\_53, Cueylyss\_54, Niza\_55, Graduation\_56, Eyeball\_54, SpikeBT\_52, Pita2\_55, Arlo\_50, Edtherson\_52, MPlant7149\_51, Payneful\_52, Crispicous1\_50, Makemake\_52, Applejack\_47, Espresso\_52, Marchy\_47, Ashballer\_54, Treddle\_53, JC27\_54, Michley\_52, Zeuska\_51, GageAP\_53, HermioneGrange\_52, Sibs6\_54, TwoPeat\_53
- Track 4 : Beatrix\_52
- Track 5 : Greg\_54, Hermia\_53, Fajezeel\_54, Pippin\_54, Ciao\_52
- Track 6 : Gandalf20\_55, STLscum\_55, Lamina13\_53, Tasp14\_54
- Track 7 : StewieG\_51, Homines\_45, Solon\_51, Sanya\_50, Bethlehem\_53, Sumter\_49, JackSparrow\_54, Sandaddy\_51, PinkPlastic\_53, Pinto\_52, Magnito\_51, Parliament\_52, Atkinbua\_55, Target\_53, Watermelon\_53, Bigfoot\_48, Turj99\_51, Ringer\_53, U2\_52, Rubeus\_52, Sorpresa\_51, Oogway\_51, Switzer\_54, Ichabod\_55
- Track 8 : Magnar\_52, Smairt\_54, Bircsak\_51, Carlyle\_51, Mkhusei\_51, Rhynn\_51, BigPaolini\_52, Rutherford\_54, Hami1\_46, Manatee\_54, BluSpix\_51, Inyanga\_49, PacerPaul\_52, Perseus\_52, IgnatiusPatJac\_53, Aeneas\_54, Petruccio\_52, Chanagan\_49, Ajay\_54, Francis47\_51, Anglerfish\_54, Gompeii16\_51, Abrogate\_510, Wheeler\_53, Pelly\_52, Froghopper\_50, Agaliana\_48, Mule\_49, Violet\_50, PhrostyMug\_51, Euphoria\_50
- Track 9 : Sagefire\_55, Gwendoluna\_56
- Track 10 : MetalQZJ\_51, MaryBeth\_52
- Track 11 : Fascinus\_48, Maroc7\_50
- Track 12 : Paphu\_50
- Track 13 : ProMouse\_54
- Track 14 : ConceptII\_54, TheloniousMonk\_53, Paraselene\_50
- Track 15 : Licorice\_55
- Track 16 : DD5\_52, Museum\_53, Fenn\_55, Burton\_52, Squee\_53, Lockley\_51, Thor\_50, Briton15\_56, Naira\_55, SarFire\_50
- Track 17 : Dussy\_54, Kenmech\_56, Pepe\_49, Abbysshoes\_55, Tripl3t\_52, Teodoridan\_51
- Track 18 : SkiPole\_57
- Track 19 : GrecoEtereo\_53, BK1\_48, Gyzlar\_48, PascalRango\_53, Snazzy\_51, Norz\_53, A6\_48, ShortQueendom\_46, HarryOW\_51
- Track 20 : ILeeKay\_56

- Track 21 : RidgeCB\_52, Kugel\_53
- Track 22 : Blue\_52
- Track 23 : Marcell\_50, Molly\_53, Arcanine\_53, Petp2012\_53, Slagathor\_54
- Track 24 : HanShotFirst\_53
- Track 25 : BPBiEbs31\_53
- Track 26 : KSSJEB\_52
- Track 27 : Altman\_55, Kanely\_54, Traft412\_55
- Track 28 : Rajelicia\_53
- Track 29 : LilBib\_52
- Track 30 : BigBubba\_85, Rakim\_86, Kimchi\_89, Myrale\_85, Bask21\_85, ChotaBhai\_85, Gage\_87, DoctorDiddles\_84, StolenFromERC\_88, Goldilocks\_88, Pat3\_83
- Track 31 : Traaww1\_81, Glexan\_84, Icee\_86, Balomoji\_85, Gator\_83, Sotrice96\_86, Cactus\_88, Hoonter\_88, Daikon\_87, Harella\_85, Asriel\_84, Barbarian\_84, Moldemort\_88, Flypotenuse\_81, Wiggin\_87, Adnama\_89
- Track 32 : Cookies\_82
- Track 33 : MiaZeal\_60, Wanda\_69, Halley\_64, Redno2\_60, Hughesyang\_62, Ariel\_60, Ejimix\_63, DmpstrDiver\_62, Dove\_56, Bagrid\_62, EricMillard\_63, Squint\_60, Kalah2\_59, Klein\_64, HokkenD\_56, Phoebus\_62, Schatzie\_58, Bombitas\_60, Beem\_63, Minerva\_69, Thibault\_56, BAKA\_67, Bobby\_63, Pound\_63, Yeet\_61, Lucky2013\_61, Odette\_61, Courthouse\_60, JuicyJay\_62, Superphikiman\_61, Duke13\_66, Constella\_51, NihilNomen\_63, Optimus\_68, Porcelain\_59
- Track 34 : Hannaconda\_61, KashFlow\_58

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

The start number called the most often in the published annotations is 17, it was called in 178 of the 216 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- A6\_48, AFIS\_50, Abbyshoes\_55, Abrogate\_510, Adnama\_89, Aeneas\_54, Agaliana\_48, Ajay\_54, Altman\_55, Anglerfish\_54, Applejack\_47, Arcanine\_53, Arlo\_50, Ashballer\_54, Asriel\_84, Atkinbua\_55, BK1\_48, BPBiEbs31\_53, Balomoji\_85, Barbarian\_84, Bask21\_85, Beatrix\_52, Bethlehem\_53, BigBubba\_85, BigMau\_53, BigPaolini\_52, Bigfoot\_48, Bircsak\_51, BluSpix\_51, Blue\_52, Bob3\_50, Bones\_53, Briton15\_56, Burton\_52, Cactus\_88, Carlyle\_51, Chanagan\_49, ChotaBhai\_85, Ciao\_52, ConceptII\_54, Cookies\_82, Crispicous1\_50, Cueyllyss\_54, DD5\_52, Daikon\_87, Dexes\_53, DoctorDiddles\_84, Dussy\_54, Edtherson\_52, Espresso\_52, Euphoria\_50, Eyeball\_54, Fajezeel\_54, Fascinus\_48, Fenn\_55, Flypotenuse\_81, Francis47\_51, Froghopper\_50, Fushigi\_51, GageAP\_53, Gage\_87, Gandalf20\_55, Gator\_83, Glexan\_84, Goldilocks\_88, Gompeii16\_51, Graduation\_56, GrecoEtereo\_53, Greg\_54, Gwendoluna\_56, Gyzzlar\_48, Hami1\_46, Harella\_85, HarryOW\_51, Hermia\_53, HermioneGrange\_52, Homines\_45, Hoonter\_88, ILeeKay\_56, Icee\_86, Ichabod\_55, IgnatiusPatJac\_53, Inyanga\_49, JC27\_54, JackSparrow\_54, Jerm2\_53, Kanely\_54, Kenmech\_56, Kimchi\_89, Kugel\_53, KyMonks1A\_54, Kykar\_52, Lamina13\_53, Lesedi\_49, LilBib\_52, Lockley\_51, MPlant7149\_51, Magnar\_52, Magnito\_51, Makemake\_52, Manatee\_54, Marcell\_50, Marchy\_47, Maroc7\_50, Marsha\_52, MaryBeth\_52, MetalQZJ\_51, Michley\_52, Mkhusei\_51, Moldemort\_88, Molly\_53, Monet\_55, Mryolo\_50, Mule\_49,

Museum\_53, Myrale\_85, NEHalo\_50, Naira\_55, Niza\_55, Norz\_53, Oogway\_51, PSullivan\_52, PacerPaul\_52, Paphu\_50, Paraselene\_50, Parliament\_52, PascalRango\_53, Pat3\_83, Payneful\_52, Pelly\_52, Pepe\_49, Perseus\_52, Peterson\_57, Petp2012\_53, Petruchio\_52, PhrostyMug\_51, PinkPlastic\_53, Pinto\_52, Pippin\_54, Pita2\_55, ProMouse\_54, Rajelicia\_53, Rakim\_86, Rhynn\_51, RidgeCB\_52, Ringer\_53, Rohr\_53, Rubeus\_52, Rufus\_53, Ruotula\_55, Rutherford\_54, STLscum\_55, Sagefire\_55, Sandaddy\_51, Sanya\_50, SarFire\_50, ShortQueendom\_46, Sibs6\_54, SkiPole\_57, Slagathor\_54, Smairt\_54, Snazzy\_51, Solon\_51, Sorpresa\_51, Sotrice96\_86, SpikeBT\_52, Squee\_53, StewieG\_51, StolenFromERC\_88, Sumter\_49, Switzer\_54, Target\_53, Tasp14\_54, Teodoridan\_51, TheloniousMonk\_53, Thor\_50, Traaww1\_81, Traft412\_55, Treddle\_53, Tripl3t\_52, Turj99\_51, TwoPeat\_53, U2\_52, Violet\_50, Watermelon\_53, Wheeler\_53, Wiggin\_87, Zeuska\_51,

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

- HanShotFirst\_53, KSSJEB\_52, Licorice\_55,

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

- Ariel\_60, BAKA\_67, Bagrid\_62, Beem\_63, Bobby\_63, Bombitas\_60, Constella\_51, Courthouse\_60, DmpstrDiver\_62, Dove\_56, Duke13\_66, Ejimix\_63, EricMillard\_63, Halley\_64, Hannaconda\_61, HokkenD\_56, Hughesyang\_62, JuicyJay\_62, Kalah2\_59, KashFlow\_58, Klein\_64, Lucky2013\_61, MiaZeal\_60, Minerva\_69, NihilNomen\_63, Odette\_61, Optimus\_68, Phoebus\_62, Porcelain\_59, Pound\_63, Redno2\_60, Schatzie\_58, Squint\_60, Superphikiman\_61, Thibault\_56, Wanda\_69, Yeet\_61,

### Summary by start number:

Start 14:

- Found in 48 of 228 ( 21.1% ) of genes in pham
- Manual Annotations of this start: 3 of 216
- Called 6.2% of time when present
- Phage (with cluster) where this start called: HanShotFirst\_53 (A1), KSSJEB\_52 (A1), Licorice\_55 (A1),

Start 16:

- Found in 37 of 228 ( 16.2% ) of genes in pham
- Manual Annotations of this start: 35 of 216
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ariel\_60 (J), BAKA\_67 (J), Bagrid\_62 (J), Beem\_63 (J), Bobby\_63 (J), Bombitas\_60 (J), Constella\_51 (J), Courthouse\_60 (J), DmpstrDiver\_62 (J), Dove\_56 (J), Duke13\_66 (J), Ejimix\_63 (J), EricMillard\_63 (J), Halley\_64 (J), Hannaconda\_61 (J), HokkenD\_56 (J), Hughesyang\_62 (J), JuicyJay\_62 (J), Kalah2\_59 (J), KashFlow\_58 (J), Klein\_64 (J), Lucky2013\_61 (J), MiaZeal\_60 (J), Minerva\_69 (J), NihilNomen\_63 (J), Odette\_61 (J), Optimus\_68 (J), Phoebus\_62 (J), Porcelain\_59 (J), Pound\_63 (J), Redno2\_60 (J), Schatzie\_58 (J), Squint\_60 (J), Superphikiman\_61 (J), Thibault\_56 (J), Wanda\_69 (J), Yeet\_61 (J),

Start 17:

- Found in 191 of 228 ( 83.8% ) of genes in pham
- Manual Annotations of this start: 178 of 216
- Called 98.4% of time when present

- Phage (with cluster) where this start called: A6\_48 (A1), AFIS\_50 (A1), Abbysshoes\_55 (A1), Abrogate\_510 (A1), Adnama\_89 (E), Aeneas\_54 (A1), Agaliana\_48 (A1), Ajay\_54 (A1), Altman\_55 (A1), Anglerfish\_54 (A1), Applejack\_47 (A1), Arcanine\_53 (A1), Arlo\_50 (A1), Ashballer\_54 (A1), Asriel\_84 (E), Atkinbua\_55 (A1), BK1\_48 (A1), BPBiebs31\_53 (A1), Balomoji\_85 (E), Barbarian\_84 (E), Bask21\_85 (E), Beatrix\_52 (A1), Bethlehem\_53 (A1), BigBubba\_85 (E), BigMau\_53 (A1), BigPaolini\_52 (A1), Bigfoot\_48 (A1), Bircsak\_51 (A1), BluSpix\_51 (A1), Blue\_52 (A1), Bob3\_50 (A1), Bones\_53 (A1), Briton15\_56 (A1), Burton\_52 (A1), Cactus\_88 (E), Carlyle\_51 (A1), Chanagan\_49 (A1), ChotaBhai\_85 (E), Ciao\_52 (A1), ConceptII\_54 (A1), Cookies\_82 (E), Crispicous1\_50 (A1), Cueylyss\_54 (A1), DD5\_52 (A1), Daikon\_87 (E), Dexes\_53 (A1), DoctorDiddles\_84 (E), Dussy\_54 (A1), Edtherson\_52 (A1), Espresso\_52 (A1), Euphoria\_50 (A1), Eyeball\_54 (A1), Fajezeel\_54 (A1), Fascinus\_48 (A1), Fenn\_55 (A1), Flypotenuse\_81 (E), Francis47\_51 (A1), Froghopper\_50 (A1), Fushigi\_51 (A1), GageAP\_53 (A1), Gage\_87 (E), Gandalf20\_55 (A1), Gator\_83 (E), Glexan\_84 (E), Goldilocks\_88 (E), Gompeii16\_51 (A1), Graduation\_56 (A1), GrecoEtereo\_53 (A1), Greg\_54 (A1), Gwendoluna\_56 (A1), Gyzlar\_48 (A1), Hami1\_46 (A1), Harella\_85 (E), HarryOW\_51 (A1), Hermia\_53 (A1), HermioneGrange\_52 (A1), Homines\_45 (A1), Hoonter\_88 (E), ILeeKay\_56 (A1), Icee\_86 (E), Ichabod\_55 (A1), IgnatiusPatJac\_53 (A1), Inyanga\_49 (A1), JC27\_54 (A1), JackSparrow\_54 (A1), Jerm2\_53 (A1), Kanely\_54 (A1), Kenmech\_56 (A1), Kimchi\_89 (E), Kugel\_53 (A1), KyMonks1A\_54 (A1), Kykar\_52 (A1), Lamina13\_53 (A1), Lesedi\_49 (A1), LilBib\_52 (A1), Lockley\_51 (A1), MPlant7149\_51 (A1), Magnar\_52 (A1), Magnito\_51 (A1), Makemake\_52 (A1), Manatee\_54 (A1), Marcell\_50 (A1), Marchy\_47 (A1), Maroc7\_50 (A1), Marsha\_52 (A1), MaryBeth\_52 (A1), MetalQZJ\_51 (A1), Michley\_52 (A1), Mkhusei\_51 (A1), Moldemort\_88 (E), Molly\_53 (A1), Monet\_55 (A1), Mryolo\_50 (A1), Mule\_49 (A1), Museum\_53 (A1), Myrale\_85 (E), NEHalo\_50 (A1), Naira\_55 (A1), Niza\_55 (A1), Norz\_53 (A1), Oogway\_51 (A1), PSullivan\_52 (A1), PacerPaul\_52 (A1), Paphu\_50 (A1), Paraselene\_50 (A1), Parliament\_52 (A1), PascalRango\_53 (A1), Pat3\_83 (E), Payneful\_52 (A1), Pelly\_52 (A1), Pepe\_49 (A1), Perseus\_52 (A1), Peterson\_57 (A1), Petp2012\_53 (A1), Petruchio\_52 (A1), PhrostyMug\_51 (A1), PinkPlastic\_53 (A1), Pinto\_52 (A1), Pippin\_54 (A1), Pita2\_55 (A1), ProMouse\_54 (A1), Rajelicia\_53 (A1), Rakim\_86 (E), Rhynn\_51 (A1), RidgeCB\_52 (A1), Ringer\_53 (A1), Rohr\_53 (A1), Rubeus\_52 (A1), Rufus\_53 (A1), Ruotula\_55 (A1), Rutherford\_54 (A1), STLscum\_55 (A1), Sagefire\_55 (A1), Sandaddy\_51 (A1), Sanya\_50 (A1), SarFire\_50 (A1), ShortQueendom\_46 (A1), Sibs6\_54 (A1), SkiPole\_57 (A1), Slagathor\_54 (A1), Smairt\_54 (A1), Snazzy\_51 (A1), Solon\_51 (A1), Sorpresa\_51 (A1), Sotrice96\_86 (E), SpikeBT\_52 (A1), Squee\_53 (A1), StewieG\_51 (A1), StolenFromERC\_88 (E), Sumter\_49 (A1), Switzer\_54 (A1), Target\_53 (A1), Tasp14\_54 (A1), Teodoridan\_51 (A1), TheloniousMonk\_53 (A1), Thor\_50 (A1), Traaww1\_81 (E), Trافت412\_55 (A1), Treddle\_53 (A1), Tripl3t\_52 (A1), Turj99\_51 (A1), TwoPeat\_53 (A1), U2\_52 (A1), Violet\_50 (A1), Watermelon\_53 (A1), Wheeler\_53 (A1), Wiggin\_87 (E), Zeuska\_51 (A1),

### Summary by clusters:

There are 3 clusters represented in this pham: A1, J, E,

Info for manual annotations of cluster A1:

- Start number 14 was manually annotated 3 times for cluster A1.
- Start number 17 was manually annotated 151 times for cluster A1.

Info for manual annotations of cluster E:

•Start number 17 was manually annotated 27 times for cluster E.

Info for manual annotations of cluster J:

•Start number 16 was manually annotated 35 times for cluster J.

**Gene Information:**

Gene: A6\_48 Start: 36382, Stop: 36203, Start Num: 17

Candidate Starts for A6\_48:

(Start: 14 @36409 has 3 MA's), (Start: 17 @36382 has 178 MA's), (18, 36331), (20, 36268),

Gene: AFIS\_50 Start: 37186, Stop: 37007, Start Num: 17

Candidate Starts for AFIS\_50:

(Start: 17 @37186 has 178 MA's), (18, 37135), (20, 37072),

Gene: Abbysshoes\_55 Start: 38782, Stop: 38600, Start Num: 17

Candidate Starts for Abbysshoes\_55:

(Start: 17 @38782 has 178 MA's),

Gene: Abrogate\_510 Start: 38794, Stop: 38615, Start Num: 17

Candidate Starts for Abrogate\_510:

(Start: 17 @38794 has 178 MA's), (18, 38743),

Gene: Adnama\_89 Start: 52394, Stop: 52621, Start Num: 17

Candidate Starts for Adnama\_89:

(Start: 17 @52394 has 178 MA's), (18, 52445), (24, 52616),

Gene: Aeneas\_54 Start: 38741, Stop: 38562, Start Num: 17

Candidate Starts for Aeneas\_54:

(Start: 17 @38741 has 178 MA's), (18, 38690),

Gene: Agaliana\_48 Start: 35388, Stop: 35209, Start Num: 17

Candidate Starts for Agaliana\_48:

(Start: 17 @35388 has 178 MA's), (18, 35337),

Gene: Ajay\_54 Start: 38848, Stop: 38669, Start Num: 17

Candidate Starts for Ajay\_54:

(Start: 17 @38848 has 178 MA's), (18, 38797),

Gene: Altman\_55 Start: 38501, Stop: 38316, Start Num: 17

Candidate Starts for Altman\_55:

(Start: 17 @38501 has 178 MA's),

Gene: Anglerfish\_54 Start: 39002, Stop: 38823, Start Num: 17

Candidate Starts for Anglerfish\_54:

(Start: 17 @39002 has 178 MA's), (18, 38951),

Gene: Applejack\_47 Start: 35010, Stop: 34831, Start Num: 17

Candidate Starts for Applejack\_47:

(Start: 17 @35010 has 178 MA's), (18, 34959), (20, 34896),

Gene: Arcanine\_53 Start: 38326, Stop: 38147, Start Num: 17  
Candidate Starts for Arcanine\_53:  
(2, 38533), (5, 38455), (10, 38395), (13, 38386), (Start: 17 @38326 has 178 MA's), (18, 38275), (20, 38212),

Gene: Ariel\_60 Start: 43241, Stop: 43068, Start Num: 16  
Candidate Starts for Ariel\_60:  
(Start: 16 @43241 has 35 MA's), (19, 43184), (21, 43106), (22, 43082),

Gene: Arlo\_50 Start: 37032, Stop: 36853, Start Num: 17  
Candidate Starts for Arlo\_50:  
(Start: 17 @37032 has 178 MA's), (18, 36981), (20, 36918),

Gene: Ashballer\_54 Start: 38523, Stop: 38344, Start Num: 17  
Candidate Starts for Ashballer\_54:  
(Start: 17 @38523 has 178 MA's), (18, 38472), (20, 38409),

Gene: Asriel\_84 Start: 50731, Stop: 50958, Start Num: 17  
Candidate Starts for Asriel\_84:  
(Start: 17 @50731 has 178 MA's), (18, 50782), (24, 50953),

Gene: Atkinbua\_55 Start: 38155, Stop: 37976, Start Num: 17  
Candidate Starts for Atkinbua\_55:  
(Start: 14 @38182 has 3 MA's), (Start: 17 @38155 has 178 MA's), (18, 38104),

Gene: BAKA\_67 Start: 48144, Stop: 47971, Start Num: 16  
Candidate Starts for BAKA\_67:  
(Start: 16 @48144 has 35 MA's), (19, 48087), (21, 48009), (22, 47985),

Gene: BK1\_48 Start: 36382, Stop: 36203, Start Num: 17  
Candidate Starts for BK1\_48:  
(Start: 14 @36409 has 3 MA's), (Start: 17 @36382 has 178 MA's), (18, 36331), (20, 36268),

Gene: BPBiebs31\_53 Start: 38698, Stop: 38519, Start Num: 17  
Candidate Starts for BPBiebs31\_53:  
(11, 38764), (Start: 17 @38698 has 178 MA's), (18, 38647), (19, 38641),

Gene: Bagrid\_62 Start: 47476, Stop: 47303, Start Num: 16  
Candidate Starts for Bagrid\_62:  
(Start: 16 @47476 has 35 MA's), (19, 47419), (21, 47341), (22, 47317),

Gene: Balomoji\_85 Start: 52501, Stop: 52728, Start Num: 17  
Candidate Starts for Balomoji\_85:  
(Start: 17 @52501 has 178 MA's), (18, 52552), (24, 52723),

Gene: Barbarian\_84 Start: 50731, Stop: 50958, Start Num: 17  
Candidate Starts for Barbarian\_84:  
(Start: 17 @50731 has 178 MA's), (18, 50782), (24, 50953),

Gene: Bask21\_85 Start: 51354, Stop: 51581, Start Num: 17  
Candidate Starts for Bask21\_85:  
(10, 51285), (Start: 17 @51354 has 178 MA's), (18, 51405), (24, 51576),

Gene: Beatrix\_52 Start: 39003, Stop: 38824, Start Num: 17

Candidate Starts for Beatrix\_52:

(Start: 17 @39003 has 178 MA's), (18, 38952),

Gene: Beem\_63 Start: 48042, Stop: 47869, Start Num: 16

Candidate Starts for Beem\_63:

(Start: 16 @48042 has 35 MA's), (19, 47985), (21, 47907), (22, 47883),

Gene: Bethlehem\_53 Start: 39471, Stop: 39292, Start Num: 17

Candidate Starts for Bethlehem\_53:

(Start: 14 @39498 has 3 MA's), (Start: 17 @39471 has 178 MA's), (18, 39420),

Gene: BigBubba\_85 Start: 51747, Stop: 51974, Start Num: 17

Candidate Starts for BigBubba\_85:

(10, 51678), (Start: 17 @51747 has 178 MA's), (18, 51798), (24, 51969),

Gene: BigMau\_53 Start: 37286, Stop: 37107, Start Num: 17

Candidate Starts for BigMau\_53:

(Start: 17 @37286 has 178 MA's), (18, 37235), (20, 37172),

Gene: BigPaolini\_52 Start: 36445, Stop: 36266, Start Num: 17

Candidate Starts for BigPaolini\_52:

(Start: 17 @36445 has 178 MA's), (18, 36394),

Gene: Bigfoot\_48 Start: 36666, Stop: 36487, Start Num: 17

Candidate Starts for Bigfoot\_48:

(Start: 14 @36693 has 3 MA's), (Start: 17 @36666 has 178 MA's), (18, 36615),

Gene: Bircsak\_51 Start: 38964, Stop: 38785, Start Num: 17

Candidate Starts for Bircsak\_51:

(Start: 17 @38964 has 178 MA's), (18, 38913),

Gene: BluSpix\_51 Start: 34226, Stop: 34047, Start Num: 17

Candidate Starts for BluSpix\_51:

(Start: 17 @34226 has 178 MA's), (18, 34175),

Gene: Blue\_52 Start: 38883, Stop: 38704, Start Num: 17

Candidate Starts for Blue\_52:

(Start: 17 @38883 has 178 MA's), (18, 38832), (20, 38769),

Gene: Bob3\_50 Start: 36636, Stop: 36457, Start Num: 17

Candidate Starts for Bob3\_50:

(Start: 17 @36636 has 178 MA's), (18, 36585), (20, 36522),

Gene: Bobby\_63 Start: 47403, Stop: 47230, Start Num: 16

Candidate Starts for Bobby\_63:

(Start: 16 @47403 has 35 MA's), (19, 47346), (21, 47268), (22, 47244),

Gene: Bombitas\_60 Start: 47638, Stop: 47465, Start Num: 16

Candidate Starts for Bombitas\_60:

(Start: 16 @47638 has 35 MA's), (19, 47581), (21, 47503), (22, 47479),

Gene: Bones\_53 Start: 38327, Stop: 38148, Start Num: 17



Candidate Starts for Bones\_53:

(Start: 17 @38327 has 178 MA's), (18, 38276), (20, 38213),

Gene: Briton15\_56 Start: 38292, Stop: 38107, Start Num: 17

Candidate Starts for Briton15\_56:

(Start: 14 @38319 has 3 MA's), (Start: 17 @38292 has 178 MA's),

Gene: Burton\_52 Start: 38141, Stop: 37956, Start Num: 17

Candidate Starts for Burton\_52:

(Start: 14 @38168 has 3 MA's), (Start: 17 @38141 has 178 MA's),

Gene: Cactus\_88 Start: 51395, Stop: 51622, Start Num: 17

Candidate Starts for Cactus\_88:

(Start: 17 @51395 has 178 MA's), (18, 51446), (24, 51617),

Gene: Carlyle\_51 Start: 35658, Stop: 35479, Start Num: 17

Candidate Starts for Carlyle\_51:

(Start: 17 @35658 has 178 MA's), (18, 35607),

Gene: Chanagan\_49 Start: 36456, Stop: 36277, Start Num: 17

Candidate Starts for Chanagan\_49:

(Start: 17 @36456 has 178 MA's), (18, 36405),

Gene: ChotaBhai\_85 Start: 51719, Stop: 51946, Start Num: 17

Candidate Starts for ChotaBhai\_85:

(10, 51650), (Start: 17 @51719 has 178 MA's), (18, 51770), (24, 51941),

Gene: Ciao\_52 Start: 37610, Stop: 37428, Start Num: 17

Candidate Starts for Ciao\_52:

(4, 37733), (6, 37715), (7, 37712), (11, 37676), (Start: 17 @37610 has 178 MA's),

Gene: ConceptII\_54 Start: 39279, Stop: 39100, Start Num: 17

Candidate Starts for ConceptII\_54:

(Start: 17 @39279 has 178 MA's), (18, 39228), (20, 39165),

Gene: Constella\_51 Start: 42980, Stop: 42807, Start Num: 16

Candidate Starts for Constella\_51:

(Start: 16 @42980 has 35 MA's), (19, 42923), (21, 42845), (22, 42821),

Gene: Cookies\_82 Start: 51576, Stop: 51803, Start Num: 17

Candidate Starts for Cookies\_82:

(Start: 17 @51576 has 178 MA's), (18, 51627), (24, 51798),

Gene: Courthouse\_60 Start: 43645, Stop: 43472, Start Num: 16

Candidate Starts for Courthouse\_60:

(Start: 16 @43645 has 35 MA's), (19, 43588), (21, 43510), (22, 43486),

Gene: Crispicous1\_50 Start: 36781, Stop: 36602, Start Num: 17

Candidate Starts for Crispicous1\_50:

(Start: 17 @36781 has 178 MA's), (18, 36730), (20, 36667),

Gene: Cueylyss\_54 Start: 39460, Stop: 39281, Start Num: 17

Candidate Starts for Cueylyss\_54:

(Start: 17 @39460 has 178 MA's), (18, 39409), (20, 39346),

Gene: DD5\_52 Start: 38373, Stop: 38188, Start Num: 17

Candidate Starts for DD5\_52:

(Start: 14 @38400 has 3 MA's), (Start: 17 @38373 has 178 MA's),

Gene: Daikon\_87 Start: 52522, Stop: 52749, Start Num: 17

Candidate Starts for Daikon\_87:

(Start: 17 @52522 has 178 MA's), (18, 52573), (24, 52744),

Gene: Dexes\_53 Start: 38517, Stop: 38338, Start Num: 17

Candidate Starts for Dexes\_53:

(Start: 17 @38517 has 178 MA's), (18, 38466),

Gene: DmpstrDiver\_62 Start: 47390, Stop: 47217, Start Num: 16

Candidate Starts for DmpstrDiver\_62:

(Start: 16 @47390 has 35 MA's), (19, 47333), (21, 47255), (22, 47231),

Gene: DoctorDiddles\_84 Start: 51763, Stop: 51990, Start Num: 17

Candidate Starts for DoctorDiddles\_84:

(10, 51694), (Start: 17 @51763 has 178 MA's), (18, 51814), (24, 51985),

Gene: Dove\_56 Start: 45904, Stop: 45731, Start Num: 16

Candidate Starts for Dove\_56:

(Start: 16 @45904 has 35 MA's), (19, 45847), (21, 45769), (22, 45745),

Gene: Duke13\_66 Start: 47910, Stop: 47737, Start Num: 16

Candidate Starts for Duke13\_66:

(Start: 16 @47910 has 35 MA's), (19, 47853), (21, 47775), (22, 47751),

Gene: Dussy\_54 Start: 38802, Stop: 38620, Start Num: 17

Candidate Starts for Dussy\_54:

(Start: 17 @38802 has 178 MA's),

Gene: Edtherson\_52 Start: 38112, Stop: 37933, Start Num: 17

Candidate Starts for Edtherson\_52:

(Start: 17 @38112 has 178 MA's), (18, 38061), (20, 37998),

Gene: Ejimix\_63 Start: 48828, Stop: 48655, Start Num: 16

Candidate Starts for Ejimix\_63:

(Start: 16 @48828 has 35 MA's), (19, 48771), (21, 48693), (22, 48669),

Gene: EricMillard\_63 Start: 48329, Stop: 48156, Start Num: 16

Candidate Starts for EricMillard\_63:

(Start: 16 @48329 has 35 MA's), (19, 48272), (21, 48194), (22, 48170),

Gene: Espresso\_52 Start: 38668, Stop: 38489, Start Num: 17

Candidate Starts for Espresso\_52:

(Start: 17 @38668 has 178 MA's), (18, 38617), (20, 38554),

Gene: Euphoria\_50 Start: 37919, Stop: 37740, Start Num: 17

Candidate Starts for Euphoria\_50:

(Start: 17 @37919 has 178 MA's), (18, 37868),

Gene: Eyeball\_54 Start: 38207, Stop: 38028, Start Num: 17

Candidate Starts for Eyeball\_54:

(Start: 17 @38207 has 178 MA's), (18, 38156), (20, 38093),

Gene: Fajezeel\_54 Start: 37959, Stop: 37777, Start Num: 17

Candidate Starts for Fajezeel\_54:

(4, 38082), (6, 38064), (7, 38061), (11, 38025), (Start: 17 @37959 has 178 MA's),

Gene: Fascinus\_48 Start: 36890, Stop: 36708, Start Num: 17

Candidate Starts for Fascinus\_48:

(Start: 14 @36917 has 3 MA's), (Start: 17 @36890 has 178 MA's), (20, 36773),

Gene: Fenn\_55 Start: 39795, Stop: 39610, Start Num: 17

Candidate Starts for Fenn\_55:

(Start: 14 @39822 has 3 MA's), (Start: 17 @39795 has 178 MA's),

Gene: Flypotenuse\_81 Start: 51385, Stop: 51612, Start Num: 17

Candidate Starts for Flypotenuse\_81:

(Start: 17 @51385 has 178 MA's), (18, 51436), (24, 51607),

Gene: Francis47\_51 Start: 39232, Stop: 39053, Start Num: 17

Candidate Starts for Francis47\_51:

(Start: 17 @39232 has 178 MA's), (18, 39181),

Gene: Froghopper\_50 Start: 36957, Stop: 36778, Start Num: 17

Candidate Starts for Froghopper\_50:

(Start: 17 @36957 has 178 MA's), (18, 36906),

Gene: Fushigi\_51 Start: 35918, Stop: 35739, Start Num: 17

Candidate Starts for Fushigi\_51:

(Start: 17 @35918 has 178 MA's), (18, 35867), (20, 35804),

Gene: Gage\_87 Start: 52178, Stop: 52405, Start Num: 17

Candidate Starts for Gage\_87:

(10, 52109), (Start: 17 @52178 has 178 MA's), (18, 52229), (24, 52400),

Gene: GageAP\_53 Start: 38708, Stop: 38529, Start Num: 17

Candidate Starts for GageAP\_53:

(Start: 17 @38708 has 178 MA's), (18, 38657), (20, 38594),

Gene: Gandalf20\_55 Start: 39761, Stop: 39582, Start Num: 17

Candidate Starts for Gandalf20\_55:

(Start: 17 @39761 has 178 MA's), (18, 39710),

Gene: Gator\_83 Start: 52228, Stop: 52455, Start Num: 17

Candidate Starts for Gator\_83:

(Start: 17 @52228 has 178 MA's), (18, 52279), (24, 52450),

Gene: Glexan\_84 Start: 52515, Stop: 52742, Start Num: 17

Candidate Starts for Glexan\_84:

(Start: 17 @52515 has 178 MA's), (18, 52566), (24, 52737),

Gene: Goldilocks\_88 Start: 51673, Stop: 51900, Start Num: 17  
Candidate Starts for Goldilocks\_88:  
(10, 51604), (Start: 17 @51673 has 178 MA's), (18, 51724), (24, 51895),

Gene: Gompeii16\_51 Start: 38965, Stop: 38786, Start Num: 17  
Candidate Starts for Gompeii16\_51:  
(Start: 17 @38965 has 178 MA's), (18, 38914),

Gene: Graduation\_56 Start: 39532, Stop: 39353, Start Num: 17  
Candidate Starts for Graduation\_56:  
(Start: 17 @39532 has 178 MA's), (18, 39481), (20, 39418),

Gene: GrecoEtereo\_53 Start: 37769, Stop: 37590, Start Num: 17  
Candidate Starts for GrecoEtereo\_53:  
(Start: 14 @37796 has 3 MA's), (Start: 17 @37769 has 178 MA's), (18, 37718), (20, 37655),

Gene: Greg\_54 Start: 37959, Stop: 37777, Start Num: 17  
Candidate Starts for Greg\_54:  
(4, 38082), (6, 38064), (7, 38061), (11, 38025), (Start: 17 @37959 has 178 MA's),

Gene: Gwendoluna\_56 Start: 39968, Stop: 39789, Start Num: 17  
Candidate Starts for Gwendoluna\_56:  
(11, 40034), (Start: 17 @39968 has 178 MA's), (18, 39917),

Gene: Gyzlar\_48 Start: 35683, Stop: 35504, Start Num: 17  
Candidate Starts for Gyzlar\_48:  
(Start: 14 @35710 has 3 MA's), (Start: 17 @35683 has 178 MA's), (18, 35632), (20, 35569),

Gene: Halley\_64 Start: 48042, Stop: 47869, Start Num: 16  
Candidate Starts for Halley\_64:  
(Start: 16 @48042 has 35 MA's), (19, 47985), (21, 47907), (22, 47883),

Gene: Hami1\_46 Start: 33015, Stop: 32836, Start Num: 17  
Candidate Starts for Hami1\_46:  
(Start: 17 @33015 has 178 MA's), (18, 32964),

Gene: HanShotFirst\_53 Start: 38336, Stop: 38130, Start Num: 14  
Candidate Starts for HanShotFirst\_53:  
(Start: 14 @38336 has 3 MA's), (Start: 17 @38309 has 178 MA's), (18, 38258),

Gene: Hannaconda\_61 Start: 43234, Stop: 43049, Start Num: 16  
Candidate Starts for Hannaconda\_61:  
(Start: 16 @43234 has 35 MA's), (19, 43177), (21, 43099), (22, 43075), (23, 43060),

Gene: Harella\_85 Start: 53031, Stop: 53258, Start Num: 17  
Candidate Starts for Harella\_85:  
(Start: 17 @53031 has 178 MA's), (18, 53082), (24, 53253),

Gene: HarryOW\_51 Start: 36941, Stop: 36762, Start Num: 17  
Candidate Starts for HarryOW\_51:  
(Start: 14 @36968 has 3 MA's), (Start: 17 @36941 has 178 MA's), (18, 36890), (20, 36827),

Gene: Hermia\_53 Start: 38391, Stop: 38209, Start Num: 17

Candidate Starts for Hermia\_53:  
(4, 38514), (6, 38496), (7, 38493), (11, 38457), (Start: 17 @38391 has 178 MA's),

Gene: HermioneGrange\_52 Start: 37780, Stop: 37601, Start Num: 17  
Candidate Starts for HermioneGrange\_52:  
(Start: 17 @37780 has 178 MA's), (18, 37729), (20, 37666),

Gene: HokkenD\_56 Start: 46311, Stop: 46138, Start Num: 16  
Candidate Starts for HokkenD\_56:  
(Start: 16 @46311 has 35 MA's), (19, 46254), (21, 46176), (22, 46152),

Gene: Homines\_45 Start: 33954, Stop: 33775, Start Num: 17  
Candidate Starts for Homines\_45:  
(Start: 14 @33981 has 3 MA's), (Start: 17 @33954 has 178 MA's), (18, 33903),

Gene: Hoonter\_88 Start: 52175, Stop: 52402, Start Num: 17  
Candidate Starts for Hoonter\_88:  
(Start: 17 @52175 has 178 MA's), (18, 52226), (24, 52397),

Gene: Hughesyang\_62 Start: 47971, Stop: 47798, Start Num: 16  
Candidate Starts for Hughesyang\_62:  
(Start: 16 @47971 has 35 MA's), (19, 47914), (21, 47836), (22, 47812),

Gene: ILeeKay\_56 Start: 38550, Stop: 38371, Start Num: 17  
Candidate Starts for ILeeKay\_56:  
(Start: 17 @38550 has 178 MA's), (18, 38499),

Gene: Icee\_86 Start: 51842, Stop: 52069, Start Num: 17  
Candidate Starts for Icee\_86:  
(Start: 17 @51842 has 178 MA's), (18, 51893), (24, 52064),

Gene: Ichabod\_55 Start: 39130, Stop: 38951, Start Num: 17  
Candidate Starts for Ichabod\_55:  
(Start: 14 @39157 has 3 MA's), (Start: 17 @39130 has 178 MA's), (18, 39079),

Gene: IgnatiusPatJac\_53 Start: 38171, Stop: 37992, Start Num: 17  
Candidate Starts for IgnatiusPatJac\_53:  
(Start: 17 @38171 has 178 MA's), (18, 38120),

Gene: Inyanga\_49 Start: 36405, Stop: 36226, Start Num: 17  
Candidate Starts for Inyanga\_49:  
(Start: 17 @36405 has 178 MA's), (18, 36354),

Gene: JC27\_54 Start: 38212, Stop: 38033, Start Num: 17  
Candidate Starts for JC27\_54:  
(Start: 17 @38212 has 178 MA's), (18, 38161), (20, 38098),

Gene: JackSparrow\_54 Start: 38189, Stop: 38010, Start Num: 17  
Candidate Starts for JackSparrow\_54:  
(Start: 14 @38216 has 3 MA's), (Start: 17 @38189 has 178 MA's), (18, 38138),

Gene: Jerm2\_53 Start: 38035, Stop: 37856, Start Num: 17  
Candidate Starts for Jerm2\_53:

(Start: 17 @38035 has 178 MA's), (18, 37984), (20, 37921),

Gene: JuicyJay\_62 Start: 49176, Stop: 49003, Start Num: 16

Candidate Starts for JuicyJay\_62:

(Start: 16 @49176 has 35 MA's), (19, 49119), (21, 49041), (22, 49017),

Gene: KSSJEB\_52 Start: 37656, Stop: 37444, Start Num: 14

Candidate Starts for KSSJEB\_52:

(Start: 14 @37656 has 3 MA's), (Start: 17 @37629 has 178 MA's),

Gene: Kalah2\_59 Start: 47585, Stop: 47412, Start Num: 16

Candidate Starts for Kalah2\_59:

(Start: 16 @47585 has 35 MA's), (19, 47528), (21, 47450), (22, 47426),

Gene: Kanely\_54 Start: 38278, Stop: 38093, Start Num: 17

Candidate Starts for Kanely\_54:

(Start: 17 @38278 has 178 MA's),

Gene: KashFlow\_58 Start: 42855, Stop: 42670, Start Num: 16

Candidate Starts for KashFlow\_58:

(Start: 16 @42855 has 35 MA's), (19, 42798), (21, 42720), (22, 42696), (23, 42681),

Gene: Kenmech\_56 Start: 39928, Stop: 39746, Start Num: 17

Candidate Starts for Kenmech\_56:

(Start: 17 @39928 has 178 MA's),

Gene: Kimchi\_89 Start: 52181, Stop: 52408, Start Num: 17

Candidate Starts for Kimchi\_89:

(10, 52112), (Start: 17 @52181 has 178 MA's), (18, 52232), (24, 52403),

Gene: Klein\_64 Start: 47608, Stop: 47435, Start Num: 16

Candidate Starts for Klein\_64:

(Start: 16 @47608 has 35 MA's), (19, 47551), (21, 47473), (22, 47449),

Gene: Kugel\_53 Start: 38906, Stop: 38727, Start Num: 17

Candidate Starts for Kugel\_53:

(2, 39113), (5, 39035), (10, 38975), (13, 38966), (Start: 17 @38906 has 178 MA's), (18, 38855),

Gene: KyMonks1A\_54 Start: 37836, Stop: 37651, Start Num: 17

Candidate Starts for KyMonks1A\_54:

(Start: 17 @37836 has 178 MA's), (18, 37779),

Gene: Kykar\_52 Start: 37608, Stop: 37423, Start Num: 17

Candidate Starts for Kykar\_52:

(Start: 17 @37608 has 178 MA's), (18, 37551),

Gene: Lamina13\_53 Start: 37579, Stop: 37400, Start Num: 17

Candidate Starts for Lamina13\_53:

(Start: 17 @37579 has 178 MA's), (18, 37528),

Gene: Lesedi\_49 Start: 36802, Stop: 36623, Start Num: 17

Candidate Starts for Lesedi\_49:

(Start: 17 @36802 has 178 MA's), (18, 36751), (20, 36688),

Gene: Licorice\_55 Start: 40025, Stop: 39819, Start Num: 14

Candidate Starts for Licorice\_55:

(Start: 14 @40025 has 3 MA's), (Start: 17 @39998 has 178 MA's), (18, 39947), (20, 39884),

Gene: LilBib\_52 Start: 39056, Stop: 38877, Start Num: 17

Candidate Starts for LilBib\_52:

(1, 39311), (3, 39245), (12, 39122), (Start: 17 @39056 has 178 MA's), (18, 39005), (20, 38942),

Gene: Lockley\_51 Start: 37535, Stop: 37350, Start Num: 17

Candidate Starts for Lockley\_51:

(Start: 14 @37562 has 3 MA's), (Start: 17 @37535 has 178 MA's),

Gene: Lucky2013\_61 Start: 43781, Stop: 43608, Start Num: 16

Candidate Starts for Lucky2013\_61:

(Start: 16 @43781 has 35 MA's), (19, 43724), (21, 43646), (22, 43622),

Gene: MPlant7149\_51 Start: 36898, Stop: 36719, Start Num: 17

Candidate Starts for MPlant7149\_51:

(Start: 17 @36898 has 178 MA's), (18, 36847), (20, 36784),

Gene: Magnar\_52 Start: 38343, Stop: 38164, Start Num: 17

Candidate Starts for Magnar\_52:

(Start: 17 @38343 has 178 MA's), (18, 38292),

Gene: Magnito\_51 Start: 37903, Stop: 37724, Start Num: 17

Candidate Starts for Magnito\_51:

(Start: 14 @37930 has 3 MA's), (Start: 17 @37903 has 178 MA's), (18, 37852),

Gene: Makemake\_52 Start: 38402, Stop: 38223, Start Num: 17

Candidate Starts for Makemake\_52:

(Start: 17 @38402 has 178 MA's), (18, 38351), (20, 38288),

Gene: Manatee\_54 Start: 38429, Stop: 38250, Start Num: 17

Candidate Starts for Manatee\_54:

(Start: 17 @38429 has 178 MA's), (18, 38378),

Gene: Marcell\_50 Start: 37268, Stop: 37089, Start Num: 17

Candidate Starts for Marcell\_50:

(2, 37475), (5, 37397), (10, 37337), (13, 37328), (Start: 17 @37268 has 178 MA's), (18, 37217), (20, 37154),

Gene: Marchy\_47 Start: 35333, Stop: 35154, Start Num: 17

Candidate Starts for Marchy\_47:

(Start: 17 @35333 has 178 MA's), (18, 35282), (20, 35219),

Gene: Maroc7\_50 Start: 37199, Stop: 37017, Start Num: 17

Candidate Starts for Maroc7\_50:

(Start: 14 @37226 has 3 MA's), (Start: 17 @37199 has 178 MA's), (20, 37082),

Gene: Marsha\_52 Start: 38641, Stop: 38456, Start Num: 17

Candidate Starts for Marsha\_52:

(Start: 17 @38641 has 178 MA's), (18, 38584),

Gene: MaryBeth\_52 Start: 38492, Stop: 38313, Start Num: 17  
Candidate Starts for MaryBeth\_52:  
(2, 38702), (5, 38621), (10, 38561), (13, 38552), (Start: 17 @38492 has 178 MA's), (18, 38441),

Gene: MetalQZJ\_51 Start: 38492, Stop: 38313, Start Num: 17  
Candidate Starts for MetalQZJ\_51:  
(2, 38702), (5, 38621), (10, 38561), (13, 38552), (Start: 17 @38492 has 178 MA's), (18, 38441),

Gene: MiaZeal\_60 Start: 43456, Stop: 43283, Start Num: 16  
Candidate Starts for MiaZeal\_60:  
(Start: 16 @43456 has 35 MA's), (19, 43399), (21, 43321), (22, 43297),

Gene: Michley\_52 Start: 37372, Stop: 37193, Start Num: 17  
Candidate Starts for Michley\_52:  
(Start: 17 @37372 has 178 MA's), (18, 37321), (20, 37258),

Gene: Minerva\_69 Start: 49458, Stop: 49285, Start Num: 16  
Candidate Starts for Minerva\_69:  
(Start: 16 @49458 has 35 MA's), (19, 49401), (21, 49323), (22, 49299),

Gene: Mkhuseleli\_51 Start: 36939, Stop: 36760, Start Num: 17  
Candidate Starts for Mkhuseleli\_51:  
(Start: 17 @36939 has 178 MA's), (18, 36888),

Gene: Moldemort\_88 Start: 51994, Stop: 52221, Start Num: 17  
Candidate Starts for Moldemort\_88:  
(Start: 17 @51994 has 178 MA's), (18, 52045), (24, 52216),

Gene: Molly\_53 Start: 36942, Stop: 36763, Start Num: 17  
Candidate Starts for Molly\_53:  
(2, 37149), (5, 37071), (10, 37011), (13, 37002), (Start: 17 @36942 has 178 MA's), (18, 36891), (20, 36828),

Gene: Monet\_55 Start: 39071, Stop: 38892, Start Num: 17  
Candidate Starts for Monet\_55:  
(Start: 17 @39071 has 178 MA's), (18, 39020), (20, 38957),

Gene: Mryolo\_50 Start: 37901, Stop: 37716, Start Num: 17  
Candidate Starts for Mryolo\_50:  
(Start: 17 @37901 has 178 MA's), (18, 37844),

Gene: Mule\_49 Start: 36036, Stop: 35857, Start Num: 17  
Candidate Starts for Mule\_49:  
(Start: 17 @36036 has 178 MA's), (18, 35985),

Gene: Museum\_53 Start: 38080, Stop: 37895, Start Num: 17  
Candidate Starts for Museum\_53:  
(Start: 14 @38107 has 3 MA's), (Start: 17 @38080 has 178 MA's),

Gene: Myrale\_85 Start: 52538, Stop: 52765, Start Num: 17  
Candidate Starts for Myrale\_85:  
(10, 52469), (Start: 17 @52538 has 178 MA's), (18, 52589), (24, 52760),



Gene: NEHalo\_50 Start: 37817, Stop: 37632, Start Num: 17

Candidate Starts for NEHalo\_50:

(Start: 17 @37817 has 178 MA's), (18, 37760),

Gene: Naira\_55 Start: 39842, Stop: 39657, Start Num: 17

Candidate Starts for Naira\_55:

(Start: 14 @39869 has 3 MA's), (Start: 17 @39842 has 178 MA's),

Gene: NihilNomen\_63 Start: 48129, Stop: 47956, Start Num: 16

Candidate Starts for NihilNomen\_63:

(Start: 16 @48129 has 35 MA's), (19, 48072), (21, 47994), (22, 47970),

Gene: Niza\_55 Start: 39894, Stop: 39715, Start Num: 17

Candidate Starts for Niza\_55:

(Start: 17 @39894 has 178 MA's), (18, 39843), (20, 39780),

Gene: Norz\_53 Start: 39069, Stop: 38890, Start Num: 17

Candidate Starts for Norz\_53:

(Start: 14 @39096 has 3 MA's), (Start: 17 @39069 has 178 MA's), (18, 39018), (20, 38955),

Gene: Odette\_61 Start: 47172, Stop: 46999, Start Num: 16

Candidate Starts for Odette\_61:

(Start: 16 @47172 has 35 MA's), (19, 47115), (21, 47037), (22, 47013),

Gene: Oogway\_51 Start: 37739, Stop: 37560, Start Num: 17

Candidate Starts for Oogway\_51:

(Start: 14 @37766 has 3 MA's), (Start: 17 @37739 has 178 MA's), (18, 37688),

Gene: Optimus\_68 Start: 49044, Stop: 48871, Start Num: 16

Candidate Starts for Optimus\_68:

(Start: 16 @49044 has 35 MA's), (19, 48987), (21, 48909), (22, 48885),

Gene: PSullivan\_52 Start: 36904, Stop: 36725, Start Num: 17

Candidate Starts for PSullivan\_52:

(Start: 17 @36904 has 178 MA's), (18, 36853), (20, 36790),

Gene: PacerPaul\_52 Start: 38599, Stop: 38420, Start Num: 17

Candidate Starts for PacerPaul\_52:

(Start: 17 @38599 has 178 MA's), (18, 38548),

Gene: Paphu\_50 Start: 37163, Stop: 36984, Start Num: 17

Candidate Starts for Paphu\_50:

(8, 37268), (9, 37265), (12, 37229), (Start: 17 @37163 has 178 MA's), (18, 37112),

Gene: Paraselene\_50 Start: 38489, Stop: 38304, Start Num: 17

Candidate Starts for Paraselene\_50:

(Start: 17 @38489 has 178 MA's), (18, 38432), (20, 38369),

Gene: Parliament\_52 Start: 38082, Stop: 37903, Start Num: 17

Candidate Starts for Parliament\_52:

(Start: 14 @38109 has 3 MA's), (Start: 17 @38082 has 178 MA's), (18, 38031),

Gene: PascalRango\_53 Start: 38378, Stop: 38199, Start Num: 17  
Candidate Starts for PascalRango\_53:  
(Start: 14 @38405 has 3 MA's), (Start: 17 @38378 has 178 MA's), (18, 38327), (20, 38264),

Gene: Pat3\_83 Start: 50648, Stop: 50875, Start Num: 17  
Candidate Starts for Pat3\_83:  
(10, 50579), (Start: 17 @50648 has 178 MA's), (18, 50699), (24, 50870),

Gene: Payneful\_52 Start: 38050, Stop: 37871, Start Num: 17  
Candidate Starts for Payneful\_52:  
(Start: 17 @38050 has 178 MA's), (18, 37999), (20, 37936),

Gene: Pelly\_52 Start: 38001, Stop: 37822, Start Num: 17  
Candidate Starts for Pelly\_52:  
(Start: 17 @38001 has 178 MA's), (18, 37950),

Gene: Pepe\_49 Start: 36807, Stop: 36625, Start Num: 17  
Candidate Starts for Pepe\_49:  
(Start: 17 @36807 has 178 MA's),

Gene: Perseus\_52 Start: 38922, Stop: 38743, Start Num: 17  
Candidate Starts for Perseus\_52:  
(Start: 17 @38922 has 178 MA's), (18, 38871),

Gene: Peterson\_57 Start: 40276, Stop: 40091, Start Num: 17  
Candidate Starts for Peterson\_57:  
(Start: 17 @40276 has 178 MA's), (18, 40219),

Gene: Petp2012\_53 Start: 37901, Stop: 37722, Start Num: 17  
Candidate Starts for Petp2012\_53:  
(2, 38108), (5, 38030), (10, 37970), (13, 37961), (Start: 17 @37901 has 178 MA's), (18, 37850), (20, 37787),

Gene: Petruccio\_52 Start: 37638, Stop: 37459, Start Num: 17  
Candidate Starts for Petruccio\_52:  
(Start: 17 @37638 has 178 MA's), (18, 37587),

Gene: Phoebus\_62 Start: 48330, Stop: 48157, Start Num: 16  
Candidate Starts for Phoebus\_62:  
(Start: 16 @48330 has 35 MA's), (19, 48273), (21, 48195), (22, 48171),

Gene: PhrostyMug\_51 Start: 38201, Stop: 38022, Start Num: 17  
Candidate Starts for PhrostyMug\_51:  
(Start: 17 @38201 has 178 MA's), (18, 38150),

Gene: PinkPlastic\_53 Start: 37678, Stop: 37499, Start Num: 17  
Candidate Starts for PinkPlastic\_53:  
(Start: 14 @37705 has 3 MA's), (Start: 17 @37678 has 178 MA's), (18, 37627),

Gene: Pinto\_52 Start: 38070, Stop: 37891, Start Num: 17  
Candidate Starts for Pinto\_52:  
(Start: 14 @38097 has 3 MA's), (Start: 17 @38070 has 178 MA's), (18, 38019),

Gene: Pippin\_54 Start: 38003, Stop: 37821, Start Num: 17  
Candidate Starts for Pippin\_54:  
(4, 38126), (6, 38108), (7, 38105), (11, 38069), (Start: 17 @38003 has 178 MA's),

Gene: Pita2\_55 Start: 38401, Stop: 38222, Start Num: 17  
Candidate Starts for Pita2\_55:  
(Start: 17 @38401 has 178 MA's), (18, 38350), (20, 38287),

Gene: Porcelain\_59 Start: 43456, Stop: 43283, Start Num: 16  
Candidate Starts for Porcelain\_59:  
(Start: 16 @43456 has 35 MA's), (19, 43399), (21, 43321), (22, 43297),

Gene: Pound\_63 Start: 49463, Stop: 49290, Start Num: 16  
Candidate Starts for Pound\_63:  
(Start: 16 @49463 has 35 MA's), (19, 49406), (21, 49328), (22, 49304),

Gene: ProMouse\_54 Start: 38315, Stop: 38136, Start Num: 17  
Candidate Starts for ProMouse\_54:  
(15, 38324), (Start: 17 @38315 has 178 MA's), (18, 38264),

Gene: Rajelicia\_53 Start: 39012, Stop: 38833, Start Num: 17  
Candidate Starts for Rajelicia\_53:  
(2, 39222), (5, 39141), (10, 39081), (13, 39072), (Start: 17 @39012 has 178 MA's), (18, 38961), (20, 38898),

Gene: Rakim\_86 Start: 51990, Stop: 52217, Start Num: 17  
Candidate Starts for Rakim\_86:  
(10, 51921), (Start: 17 @51990 has 178 MA's), (18, 52041), (24, 52212),

Gene: Redno2\_60 Start: 44925, Stop: 44752, Start Num: 16  
Candidate Starts for Redno2\_60:  
(Start: 16 @44925 has 35 MA's), (19, 44868), (21, 44790), (22, 44766),

Gene: Rhynn\_51 Start: 37338, Stop: 37159, Start Num: 17  
Candidate Starts for Rhynn\_51:  
(Start: 17 @37338 has 178 MA's), (18, 37287),

Gene: RidgeCB\_52 Start: 38198, Stop: 38019, Start Num: 17  
Candidate Starts for RidgeCB\_52:  
(2, 38405), (5, 38327), (10, 38267), (13, 38258), (Start: 17 @38198 has 178 MA's), (18, 38147),

Gene: Ringer\_53 Start: 39320, Stop: 39141, Start Num: 17  
Candidate Starts for Ringer\_53:  
(Start: 14 @39347 has 3 MA's), (Start: 17 @39320 has 178 MA's), (18, 39269),

Gene: Rohr\_53 Start: 38081, Stop: 37902, Start Num: 17  
Candidate Starts for Rohr\_53:  
(Start: 17 @38081 has 178 MA's), (18, 38030), (20, 37967),

Gene: Rubeus\_52 Start: 35938, Stop: 35759, Start Num: 17  
Candidate Starts for Rubeus\_52:  
(Start: 14 @35965 has 3 MA's), (Start: 17 @35938 has 178 MA's), (18, 35887),

Gene: Rufus\_53 Start: 37708, Stop: 37529, Start Num: 17  
Candidate Starts for Rufus\_53:  
(Start: 17 @37708 has 178 MA's), (18, 37657), (20, 37594),

Gene: Ruotula\_55 Start: 39177, Stop: 38995, Start Num: 17  
Candidate Starts for Ruotula\_55:  
(4, 39312), (6, 39294), (7, 39291), (11, 39243), (Start: 17 @39177 has 178 MA's),

Gene: Rutherferd\_54 Start: 38554, Stop: 38375, Start Num: 17  
Candidate Starts for Rutherferd\_54:  
(Start: 17 @38554 has 178 MA's), (18, 38503),

Gene: STLscum\_55 Start: 38950, Stop: 38771, Start Num: 17  
Candidate Starts for STLscum\_55:  
(Start: 17 @38950 has 178 MA's), (18, 38899),

Gene: Sagefire\_55 Start: 38918, Stop: 38739, Start Num: 17  
Candidate Starts for Sagefire\_55:  
(11, 38984), (Start: 17 @38918 has 178 MA's), (18, 38867),

Gene: Sandaddy\_51 Start: 37719, Stop: 37540, Start Num: 17  
Candidate Starts for Sandaddy\_51:  
(Start: 14 @37746 has 3 MA's), (Start: 17 @37719 has 178 MA's), (18, 37668),

Gene: Sanya\_50 Start: 38012, Stop: 37833, Start Num: 17  
Candidate Starts for Sanya\_50:  
(Start: 14 @38039 has 3 MA's), (Start: 17 @38012 has 178 MA's), (18, 37961),

Gene: SarFire\_50 Start: 37281, Stop: 37096, Start Num: 17  
Candidate Starts for SarFire\_50:  
(Start: 14 @37308 has 3 MA's), (Start: 17 @37281 has 178 MA's),

Gene: Schatzie\_58 Start: 46919, Stop: 46746, Start Num: 16  
Candidate Starts for Schatzie\_58:  
(Start: 16 @46919 has 35 MA's), (19, 46862), (21, 46784), (22, 46760),

Gene: ShortQueendom\_46 Start: 34739, Stop: 34560, Start Num: 17  
Candidate Starts for ShortQueendom\_46:  
(Start: 14 @34766 has 3 MA's), (Start: 17 @34739 has 178 MA's), (18, 34688), (20, 34625),

Gene: Sibs6\_54 Start: 36742, Stop: 36563, Start Num: 17  
Candidate Starts for Sibs6\_54:  
(Start: 17 @36742 has 178 MA's), (18, 36691), (20, 36628),

Gene: SkiPole\_57 Start: 38671, Stop: 38492, Start Num: 17  
Candidate Starts for SkiPole\_57:  
(Start: 17 @38671 has 178 MA's), (18, 38620), (20, 38557),

Gene: Slagathor\_54 Start: 38913, Stop: 38734, Start Num: 17  
Candidate Starts for Slagathor\_54:  
(2, 39120), (5, 39042), (10, 38982), (13, 38973), (Start: 17 @38913 has 178 MA's), (18, 38862), (20, 38799),

Gene: Smairt\_54 Start: 39194, Stop: 39015, Start Num: 17

Candidate Starts for Smairt\_54:

(Start: 17 @39194 has 178 MA's), (18, 39143),

Gene: Snazzy\_51 Start: 37348, Stop: 37169, Start Num: 17

Candidate Starts for Snazzy\_51:

(Start: 14 @37375 has 3 MA's), (Start: 17 @37348 has 178 MA's), (18, 37297), (20, 37234),

Gene: Solon\_51 Start: 37606, Stop: 37427, Start Num: 17

Candidate Starts for Solon\_51:

(Start: 14 @37633 has 3 MA's), (Start: 17 @37606 has 178 MA's), (18, 37555),

Gene: Sorpresa\_51 Start: 37721, Stop: 37542, Start Num: 17

Candidate Starts for Sorpresa\_51:

(Start: 14 @37748 has 3 MA's), (Start: 17 @37721 has 178 MA's), (18, 37670),

Gene: Sotrice96\_86 Start: 52138, Stop: 52365, Start Num: 17

Candidate Starts for Sotrice96\_86:

(Start: 17 @52138 has 178 MA's), (18, 52189), (24, 52360),

Gene: SpikeBT\_52 Start: 37966, Stop: 37787, Start Num: 17

Candidate Starts for SpikeBT\_52:

(Start: 17 @37966 has 178 MA's), (18, 37915), (20, 37852),

Gene: Squee\_53 Start: 38309, Stop: 38124, Start Num: 17

Candidate Starts for Squee\_53:

(Start: 14 @38336 has 3 MA's), (Start: 17 @38309 has 178 MA's),

Gene: Squint\_60 Start: 43575, Stop: 43402, Start Num: 16

Candidate Starts for Squint\_60:

(Start: 16 @43575 has 35 MA's), (19, 43518), (21, 43440), (22, 43416),

Gene: StewieG\_51 Start: 35126, Stop: 34947, Start Num: 17

Candidate Starts for StewieG\_51:

(Start: 14 @35153 has 3 MA's), (Start: 17 @35126 has 178 MA's), (18, 35075),

Gene: StolenFromERC\_88 Start: 52178, Stop: 52405, Start Num: 17

Candidate Starts for StolenFromERC\_88:

(10, 52109), (Start: 17 @52178 has 178 MA's), (18, 52229), (24, 52400),

Gene: Sumter\_49 Start: 38262, Stop: 38083, Start Num: 17

Candidate Starts for Sumter\_49:

(Start: 14 @38289 has 3 MA's), (Start: 17 @38262 has 178 MA's), (18, 38211),

Gene: Superphikiman\_61 Start: 43647, Stop: 43474, Start Num: 16

Candidate Starts for Superphikiman\_61:

(Start: 16 @43647 has 35 MA's), (19, 43590), (21, 43512), (22, 43488),

Gene: Switzer\_54 Start: 38834, Stop: 38655, Start Num: 17

Candidate Starts for Switzer\_54:

(Start: 14 @38861 has 3 MA's), (Start: 17 @38834 has 178 MA's), (18, 38783),

Gene: Target\_53 Start: 36510, Stop: 36331, Start Num: 17

Candidate Starts for Target\_53:

(Start: 14 @36537 has 3 MA's), (Start: 17 @36510 has 178 MA's), (18, 36459),

Gene: Tasp14\_54 Start: 38203, Stop: 38024, Start Num: 17

Candidate Starts for Tasp14\_54:

(Start: 17 @38203 has 178 MA's), (18, 38152),

Gene: Teodoridan\_51 Start: 37403, Stop: 37218, Start Num: 17

Candidate Starts for Teodoridan\_51:

(Start: 17 @37403 has 178 MA's),

Gene: TheloniousMonk\_53 Start: 39927, Stop: 39742, Start Num: 17

Candidate Starts for TheloniousMonk\_53:

(Start: 17 @39927 has 178 MA's), (18, 39870), (20, 39807),

Gene: Thibault\_56 Start: 44634, Stop: 44461, Start Num: 16

Candidate Starts for Thibault\_56:

(Start: 16 @44634 has 35 MA's), (19, 44577), (21, 44499), (22, 44475),

Gene: Thor\_50 Start: 36639, Stop: 36454, Start Num: 17

Candidate Starts for Thor\_50:

(Start: 14 @36666 has 3 MA's), (Start: 17 @36639 has 178 MA's),

Gene: Traaww1\_81 Start: 51560, Stop: 51787, Start Num: 17

Candidate Starts for Traaww1\_81:

(Start: 17 @51560 has 178 MA's), (18, 51611), (24, 51782),

Gene: Traft412\_55 Start: 38835, Stop: 38650, Start Num: 17

Candidate Starts for Traft412\_55:

(Start: 17 @38835 has 178 MA's),

Gene: Treddle\_53 Start: 38583, Stop: 38404, Start Num: 17

Candidate Starts for Treddle\_53:

(Start: 17 @38583 has 178 MA's), (18, 38532), (20, 38469),

Gene: Tripl3t\_52 Start: 39208, Stop: 39026, Start Num: 17

Candidate Starts for Tripl3t\_52:

(Start: 17 @39208 has 178 MA's),

Gene: Turj99\_51 Start: 38173, Stop: 37994, Start Num: 17

Candidate Starts for Turj99\_51:

(Start: 14 @38200 has 3 MA's), (Start: 17 @38173 has 178 MA's), (18, 38122),

Gene: TwoPeat\_53 Start: 37696, Stop: 37517, Start Num: 17

Candidate Starts for TwoPeat\_53:

(Start: 17 @37696 has 178 MA's), (18, 37645), (20, 37582),

Gene: U2\_52 Start: 38814, Stop: 38635, Start Num: 17

Candidate Starts for U2\_52:

(Start: 14 @38841 has 3 MA's), (Start: 17 @38814 has 178 MA's), (18, 38763),

Gene: Violet\_50 Start: 38591, Stop: 38412, Start Num: 17

Candidate Starts for Violet\_50:

(Start: 17 @38591 has 178 MA's), (18, 38540),

Gene: Wanda\_69 Start: 47917, Stop: 47744, Start Num: 16

Candidate Starts for Wanda\_69:

(Start: 16 @47917 has 35 MA's), (19, 47860), (21, 47782), (22, 47758),

Gene: Watermelon\_53 Start: 38032, Stop: 37853, Start Num: 17

Candidate Starts for Watermelon\_53:

(Start: 14 @38059 has 3 MA's), (Start: 17 @38032 has 178 MA's), (18, 37981),

Gene: Wheeler\_53 Start: 38076, Stop: 37897, Start Num: 17

Candidate Starts for Wheeler\_53:

(Start: 17 @38076 has 178 MA's), (18, 38025),

Gene: Wiggin\_87 Start: 51961, Stop: 52188, Start Num: 17

Candidate Starts for Wiggin\_87:

(Start: 17 @51961 has 178 MA's), (18, 52012), (24, 52183),

Gene: Yeet\_61 Start: 47030, Stop: 46857, Start Num: 16

Candidate Starts for Yeet\_61:

(Start: 16 @47030 has 35 MA's), (19, 46973), (21, 46895), (22, 46871),

Gene: Zeuska\_51 Start: 38567, Stop: 38388, Start Num: 17

Candidate Starts for Zeuska\_51:

(Start: 17 @38567 has 178 MA's), (18, 38516), (20, 38453),