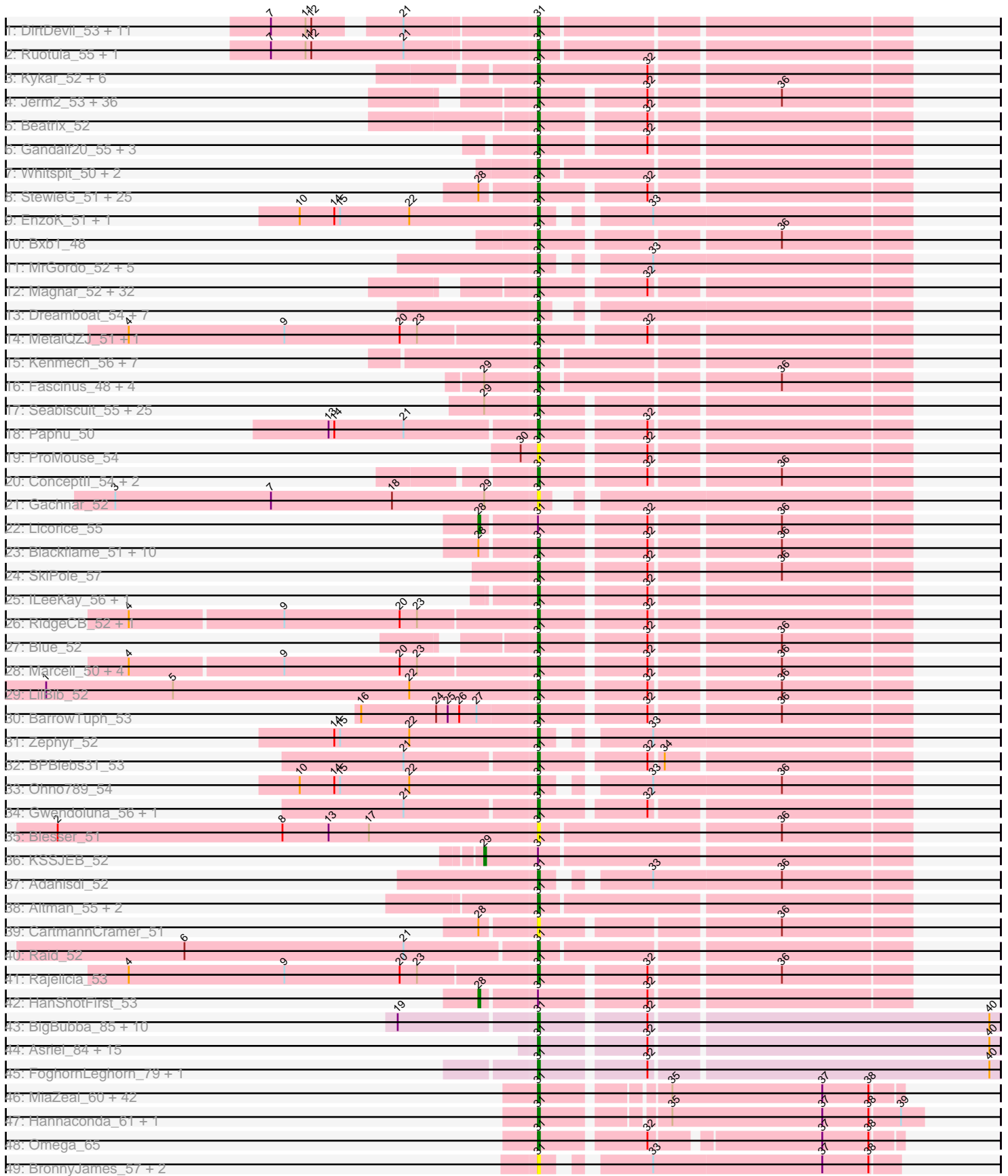


Pham 307958



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 307958 Report

This analysis was run 06/27/26 on database version 652.

Pham number 307958 has 307 members, 31 are drafts.

Phages represented in each track:

- Track 1 : DirtDevil\_53, Greg\_54, Hermia\_53, Buttons\_51, Ciao\_52, Fajezeel\_54, KikiBouba\_53, Pippin\_54, GroundGoblin\_52, Noxious\_53, Aldrich\_52, CatBus\_52
- Track 2 : Ruotula\_55, Marge\_52
- Track 3 : Kykar\_52, Mryolo\_50, Dexes\_53, NEHalo\_50, Peterson\_57, KyMonks1A\_54, Marsha\_52
- Track 4 : Jerm2\_53, Fushigi\_51, Bob3\_50, PSullivan\_52, AFIS\_50, Lesedi\_49, Rohr\_53, LunarLander\_54, Rufus\_53, Monet\_55, Bones\_53, Niza\_55, Eyeball\_54, SpikeBT\_52, Graduation\_56, Pita2\_55, Arlo\_50, Cueylyss\_54, Edtherson\_52, MPlant7149\_51, Payneful\_52, Crispicous1\_50, Makemake\_52, Applejack\_47, Marchy\_47, Ashballer\_54, Treddle\_53, JC27\_54, Espresso\_52, Michley\_52, Marco3\_55, Zeuska\_51, GageAP\_53, HermioneGrange\_52, BigMau\_53, TwoPeat\_53, Sibs6\_54
- Track 5 : Beatrix\_52
- Track 6 : Gandalf20\_55, STLscum\_55, Lamina13\_53, Tasp14\_54
- Track 7 : Whitspit\_50, Alsfro\_56, Sunshine924\_54
- Track 8 : StewieG\_51, Homines\_45, McSinger\_53, Solon\_51, Bethlehem\_53, Sumter\_49, JackSparrow\_54, Sandaddy\_51, PinkPlastic\_53, Pinto\_52, Magnito\_51, Parliament\_52, MilleFeuille\_52, Sanya\_50, Atkinbua\_55, Target\_53, Watermelon\_53, Bigfoot\_48, Turj99\_51, U2\_52, Rubeus\_52, Sorpresa\_51, Oogway\_51, Ringer\_53, Switzer\_54, Ichabod\_55
- Track 9 : EnzoK\_51, Dulcie\_53
- Track 10 : Bxb1\_48
- Track 11 : MrGordo\_52, Alvin\_52, DrFeelGood\_50, Big3\_52, Zeeculate\_50, Trouble\_55
- Track 12 : Magnar\_52, Smairt\_54, Carlyle\_51, Mkhuseleli\_51, Rhynn\_51, BigPaolini\_52, Hami1\_46, Manatee\_54, BluSpix\_51, Inyanga\_49, PacerPaul\_52, Perseus\_52, IgnatiusPatJac\_53, Aeneas\_54, Petruccio\_52, Chanagan\_49, Ajay\_54, Francis47\_51, Bircsak\_51, Anglerfish\_54, Rutherferd\_54, Gompeii16\_51, Abrogate\_510, ChristmasHams\_48, Pelly\_52, Froghopper\_50, Agaliana\_48, Mule\_49, Violet\_50, Iqorha\_49, Wheeler\_53, PhrostyMug\_51, Euphoria\_50
- Track 13 : Dreamboat\_54, PherrisBueller\_52, Jasper\_54, Seanderson\_54, Scowl\_53, Barriga\_53, Bruns\_51, Acme\_54
- Track 14 : MetalQZJ\_51, MaryBeth\_52
- Track 15 : Kenmech\_56, Dussy\_54, Levia\_50, Pepe\_49, Abbyshoes\_55, PhineBark\_52, Tripl3t\_52, Teodoridan\_51
- Track 16 : Fascinus\_48, Phlippers\_51, Maroc7\_50, Wilkins\_52, Topgun\_52

- Track 17 : Seabiscuit\_55, Corvo\_53, Swole\_53, DD5\_52, SwissCheese\_54, DreamCatcher\_56, Museum\_53, JuliaChild\_53, Fenn\_55, Burton\_52, McGuire\_54, Squee\_53, Tote\_48, SarFire\_50, Papez\_55, BeesKnees\_55, Dynamix\_54, Killigrew\_53, Lockley\_51, Forsytheast\_52, Moose\_52, Smeagol\_54, Thor\_50, Briton15\_56, Naira\_55, Pari\_54
- Track 18 : Paphu\_50
- Track 19 : ProMouse\_54
- Track 20 : ConceptII\_54, TheloniousMonk\_53, Paraselene\_50
- Track 21 : Gachnar\_52
- Track 22 : Licorice\_55
- Track 23 : Blackflame\_51, GrecoEtereo\_53, BK1\_48, Bigchungji\_52, Gyzlar\_48, PascalRango\_53, Norz\_53, A6\_48, Snazzy\_51, ShortQueendom\_47, HarryOW\_51
- Track 24 : SkiPole\_57
- Track 25 : ILeeKay\_56, GMonster\_49
- Track 26 : RidgeCB\_52, Kugel\_53
- Track 27 : Blue\_52
- Track 28 : Marcell\_50, Molly\_53, Arcanine\_53, Petp2012\_53, Slagathor\_54
- Track 29 : LilBib\_52
- Track 30 : BarrowTuph\_53
- Track 31 : Zephyr\_52
- Track 32 : BPBiebs31\_53
- Track 33 : Ohno789\_54
- Track 34 : Gwendoluna\_56, Sagefire\_55
- Track 35 : Blesser\_51
- Track 36 : KSSJEB\_52
- Track 37 : Adahisdi\_52
- Track 38 : Altman\_55, Kanely\_54, Traft412\_55
- Track 39 : CartmannCramer\_51
- Track 40 : Raid\_52
- Track 41 : Rajelicia\_53
- Track 42 : HanShotFirst\_53
- Track 43 : BigBubba\_85, Rakim\_86, Kimchi\_89, Gage\_87, Myrale\_85, Bask21\_85, ChotaBhai\_85, DoctorDiddles\_84, StolenFromERC\_88, Goldilocks\_88, Pat3\_83
- Track 44 : Asriel\_84, Flypotenuse\_81, Traaww1\_81, Glexan\_84, lcee\_86, Balomoji\_85, Gator\_83, Sotrice96\_86, Cactus\_88, Hoonter\_88, Daikon\_87, Harella\_85, Barbarian\_84, Moldemort\_88, Wiggin\_87, Adnama\_89
- Track 45 : FoghornLeghorn\_79, Cookies\_82
- Track 46 : MiaZeal\_60, Wanda\_69, Dallas\_62, Halley\_64, Redno2\_60, Hughesyang\_62, Ariel\_60, Ejimix\_63, DmpstrDiver\_62, Dove\_56, Nekros\_61, Bagrid\_62, EricMillard\_63, ThreeRngTarjay\_61, Squint\_60, Kalah2\_59, Rearden\_58, Klein\_64, Phoebus\_62, Schatzie\_58, Bombitas\_60, Beem\_63, Minerva\_69, Marleymoo\_60, Xiaokay\_56, HokkenD\_56, BAKA\_67, Thibault\_56, Bobby\_63, Pound\_63, Yeet\_61, Hidrated\_61, Zelink\_61, Lucky2013\_61, Odette\_61, Courthouse\_60, JuicyJay\_62, Superphikiman\_61, Duke13\_66, Constella\_51, NihilNomen\_63, Optimus\_68, Porcelain\_59
- Track 47 : Hannaconda\_61, KashFlow\_58
- Track 48 : Omega\_65
- Track 49 : BronnyJames\_57, Gonephishing\_63, Shaboozey\_56

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

The start number called the most often in the published annotations is 31, it was called in 273 of the 276 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- A6\_48, AFIS\_50, Abbyshoes\_55, Abrogate\_510, Acme\_54, Adahisdi\_52, Adnama\_89, Aeneas\_54, Agaliana\_48, Ajay\_54, Aldrich\_52, Alsfro\_56, Altman\_55, Alvin\_52, Anglerfish\_54, Applejack\_47, Arcanine\_53, Ariel\_60, Arlo\_50, Ashballer\_54, Asriel\_84, Atkinbua\_55, BAKA\_67, BK1\_48, BPBiabs31\_53, Bagrid\_62, Balomoji\_85, Barbarian\_84, Barriga\_53, BarrowTuph\_53, Bask21\_85, Beatrix\_52, Beem\_63, BeesKnees\_55, Bethlehem\_53, Big3\_52, BigBubba\_85, BigMau\_53, BigPaolini\_52, Bigchungi\_52, Bigfoot\_48, Bircsak\_51, Blackflame\_51, Blesser\_51, BluSpix\_51, Blue\_52, Bob3\_50, Bobby\_63, Bombitas\_60, Bones\_53, Briton15\_56, BronnyJames\_57, Bruns\_51, Burton\_52, Buttons\_51, Bxb1\_48, Cactus\_88, Carlyle\_51, CartmannCramer\_51, CatBus\_52, Chanagan\_49, ChotaBhai\_85, ChristmasHams\_48, Ciao\_52, Conceptll\_54, Constella\_51, Cookies\_82, Corvo\_53, Courthouse\_60, Crispicous1\_50, Cueyllyss\_54, DD5\_52, Daikon\_87, Dallas\_62, Dexes\_53, DirtDevil\_53, DmpstrDiver\_62, DoctorDiddles\_84, Dove\_56, DrFeelGood\_50, DreamCatcher\_56, Dreamboat\_54, Duke13\_66, Dulcie\_53, Dussy\_54, Dynamix\_54, Edtherson\_52, Ejimix\_63, EnzoK\_51, EricMillard\_63, Espresso\_52, Euphoria\_50, Eyeball\_54, Fajezeel\_54, Fascinus\_48, Fenn\_55, Flypotenuse\_81, FoghornLeghorn\_79, Forsytheast\_52, Francis47\_51, Froghopper\_50, Fushigi\_51, GMonster\_49, Gachnar\_52, GageAP\_53, Gage\_87, Gandalf20\_55, Gator\_83, Glexan\_84, Goldilocks\_88, Gompeii16\_51, Gonephishing\_63, Graduation\_56, GrecoEtereo\_53, Greg\_54, GroundGoblin\_52, Gwendoluna\_56, Gyzlar\_48, Halley\_64, Hami1\_46, Hannaconda\_61, Harella\_85, HarryOW\_51, Hermia\_53, HermioneGrange\_52, Hidrated\_61, HokkenD\_56, Homines\_45, Hoonter\_88, Hughesyang\_62, ILeeKay\_56, Icee\_86, Ichabod\_55, IgnatiusPatJac\_53, Inyanga\_49, Iqorha\_49, JC27\_54, JackSparrow\_54, Jasper\_54, Jerm2\_53, JuicyJay\_62, JuliaChild\_53, Kalah2\_59, Kanely\_54, KashFlow\_58, Kenmech\_56, KikiBouba\_53, Killigrew\_53, Kimchi\_89, Klein\_64, Kugel\_53, KyMonks1A\_54, Kykar\_52, Lamina13\_53, Lesedi\_49, Levia\_50, LilBib\_52, Lockley\_51, Lucky2013\_61, LunarLander\_54, MPlant7149\_51, Magnar\_52, Magnito\_51, Makemake\_52, Manatee\_54, Marcell\_50, Marchy\_47, Marco3\_55, Marge\_52, Marleymoo\_60, Maroc7\_50, Marsha\_52, MaryBeth\_52, McGuire\_54, McSinger\_53, MetalQZJ\_51, MiaZeal\_60, Michley\_52, MilleFeuille\_52, Minerva\_69, Mkhusei\_51, Moldemort\_88, Molly\_53, Monet\_55, Moose\_52, MrGordo\_52, Mryolo\_50, Mule\_49, Museum\_53, Myrale\_85, NEHalo\_50, Naira\_55, Nekros\_61, NihilNomen\_63, Niza\_55, Norz\_53, Noxious\_53, Odette\_61, Ohno789\_54, Omega\_65, Oogway\_51, Optimus\_68, PSullivan\_52, PacerPaul\_52, Papez\_55, Paphu\_50, Paraselene\_50, Pari\_54, Parliament\_52, PascalRango\_53, Pat3\_83, Payneful\_52, Pelly\_52, Pepe\_49, Perseus\_52, Peterson\_57, Petp2012\_53, Petruccio\_52, PherrisBueller\_52, PhineBark\_52, Phlippers\_51, Phoebus\_62, PhrostyMug\_51, PinkPlastic\_53, Pinto\_52, Pippin\_54, Pita2\_55, Porcelain\_59, Pound\_63, ProMouse\_54, Raid\_52, Rajelicia\_53, Rakim\_86, Rearden\_58, Redno2\_60, 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, Schatzie\_58, Scowl\_53, Seabiscuit\_55, Seanderson\_54, Shaboozey\_56, ShortQueendom\_47, Sibs6\_54, SkiPole\_57, Slagathor\_54, Smairt\_54, Smeagol\_54, Snazzy\_51, Solon\_51, Sorpresa\_51, Sotrice96\_86, SpikeBT\_52, Squee\_53, Squint\_60, StewieG\_51, StolenFromERC\_88, Sumter\_49, Sunshine924\_54, Superphikiman\_61, SwissCheese\_54, Switzer\_54, Swole\_53, Target\_53, Tasp14\_54, Teodoridan\_51, TheloniousMonk\_53, Thibault\_56, Thor\_50, ThreeRngTarjay\_61,

Topgun\_52, Tote\_48, Traaww1\_81, Traft412\_55, Treddle\_53, Tripl3t\_52, Trouble\_55, Turj99\_51, TwoPeat\_53, U2\_52, Violet\_50, Wanda\_69, Watermelon\_53, Wheeler\_53, Whitspit\_50, Wiggin\_87, Wilkins\_52, Xiaokay\_56, Yeet\_61, Zeeculate\_50, Zelink\_61, Zephyr\_52, 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:

- 

### Summary by start number:

Start 28:

- Found in 40 of 307 ( 13.0% ) of genes in pham
- Manual Annotations of this start: 2 of 276
- Called 5.0% of time when present
- Phage (with cluster) where this start called: HanShotFirst\_53 (A1), Licorice\_55 (A1),

Start 29:

- Found in 33 of 307 ( 10.7% ) of genes in pham
- Manual Annotations of this start: 1 of 276
- Called 3.0% of time when present
- Phage (with cluster) where this start called: KSSJEB\_52 (A1),

Start 31:

- Found in 307 of 307 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 273 of 276
- Called 99.0% of time when present
- Phage (with cluster) where this start called: A6\_48 (A1), AFIS\_50 (A1), Abbyshoes\_55 (A1), Abrogate\_510 (A1), Acme\_54 (A1), Adahisdi\_52 (A1), Adnama\_89 (E), Aeneas\_54 (A1), Agaliana\_48 (A1), Ajay\_54 (A1), Aldrich\_52 (A1), Alsfro\_56 (A1), Altman\_55 (A1), Alvin\_52 (A1), Anglerfish\_54 (A1), Applejack\_47 (A1), Arcanine\_53 (A1), Ariel\_60 (J), Arlo\_50 (A1), Ashballer\_54 (A1), Asriel\_84 (E), Atkinbua\_55 (A1), BAKA\_67 (J), BK1\_48 (A1), BPBiabs31\_53 (A1), Bagrid\_62 (J), Balomoji\_85 (E), Barbarian\_84 (E), Barriga\_53 (A1), BarrowTuph\_53 (A1), Bask21\_85 (E), Beatrix\_52 (A1), Beem\_63 (J), BeesKnees\_55 (A1), Bethlehem\_53 (A1), Big3\_52 (A1), BigBubba\_85 (E), BigMau\_53 (A1), BigPaolini\_52 (A1), Bigchung\_52 (A1), Bigfoot\_48 (A1), Bircsak\_51 (A1), Blackflame\_51 (A1), Blesser\_51 (A1), BluSpix\_51 (A1), Blue\_52 (A1), Bob3\_50 (A1), Bobby\_63 (J), Bombitas\_60 (J), Bones\_53 (A1), Briton15\_56 (A1), BronnyJames\_57 (J), Bruns\_51 (A1), Burton\_52 (A1), Buttons\_51 (A1), Bxb1\_48 (A1), Cactus\_88 (E), Carlyle\_51 (A1), CartmannCramer\_51 (A1), CatBus\_52 (A1), Chanagan\_49 (A1), ChotaBhai\_85 (E), ChristmasHams\_48 (A1), Ciao\_52 (A1), Conceptll\_54 (A1), Constella\_51 (J), Cookies\_82 (E), Corvo\_53 (A1), Courthouse\_60 (J), Crispicous1\_50 (A1), Cueyllyss\_54 (A1), DD5\_52 (A1), Daikon\_87 (E), Dallas\_62 (J), Dexes\_53 (A1), DirtDevil\_53 (A1), DmpstrDiver\_62 (J), DoctorDiddles\_84 (E), Dove\_56 (J), DrFeelGood\_50 (A1), DreamCatcher\_56 (A1), Dreamboat\_54 (A1), Duke13\_66 (J), Dulcie\_53 (A1), Dussy\_54 (A1), Dynamix\_54 (A1), Edtherson\_52 (A1), Ejimix\_63 (J), EnzoK\_51 (A1), EricMillard\_63 (J), Espresso\_52 (A1), Euphoria\_50 (A1), Eyeball\_54 (A1), Fajezeel\_54 (A1), Fascinus\_48 (A1), Fenn\_55 (A1), Flypotenuse\_81 (E), FoghornLeghorn\_79 (E), Forsytheast\_52 (A1), Francis47\_51 (A1), Froghopper\_50 (A1), Fushigi\_51 (A1), GMonster\_49 (A1), Gachnar\_52 (A1), GageAP\_53 (A1),

Gage\_87 (E), Gandalf20\_55 (A1), Gator\_83 (E), Glexan\_84 (E), Goldilocks\_88 (E), Gompeii16\_51 (A1), Gonephishing\_63 (J), Graduation\_56 (A1), GrecoEtereo\_53 (A1), Greg\_54 (A1), GroundGoblin\_52 (A1), Gwendoluna\_56 (A1), Gyzlar\_48 (A1), Halley\_64 (J), Hami1\_46 (A1), Hannaconda\_61 (J), Harella\_85 (E), HarryOW\_51 (A1), Hermia\_53 (A1), HermioneGrange\_52 (A1), Hidrated\_61 (J), HokkenD\_56 (J), Homines\_45 (A1), Hoonter\_88 (E), Hughesyang\_62 (J), ILeeKay\_56 (A1), Icee\_86 (E), Ichabod\_55 (A1), IgnatiusPatJac\_53 (A1), Inyanga\_49 (A1), Iqorha\_49 (A1), JC27\_54 (A1), JackSparrow\_54 (A1), Jasper\_54 (A1), Jerm2\_53 (A1), JuicyJay\_62 (J), JuliaChild\_53 (A1), Kalah2\_59 (J), Kanely\_54 (A1), KashFlow\_58 (J), Kenmech\_56 (A1), KikiBouba\_53 (A1), Killigrew\_53 (A1), Kimchi\_89 (E), Klein\_64 (J), Kugel\_53 (A1), KyMonks1A\_54 (A1), Kykar\_52 (A1), Lamina13\_53 (A1), Lesedi\_49 (A1), Levia\_50 (A1), LilBib\_52 (A1), Lockley\_51 (A1), Lucky2013\_61 (J), LunarLander\_54 (A1), MPlant7149\_51 (A1), Magnar\_52 (A1), Magnito\_51 (A1), Makemake\_52 (A1), Manatee\_54 (A1), Marcell\_50 (A1), Marchy\_47 (A1), Marco3\_55 (A1), Marge\_52 (A1), Marleymoo\_60 (J), Maroc7\_50 (A1), Marsha\_52 (A1), MaryBeth\_52 (A1), McGuire\_54 (A1), McSinger\_53 (A1), MetalQZJ\_51 (A1), MiaZeal\_60 (J), Michley\_52 (A1), MilleFeuille\_52 (A1), Minerva\_69 (J), Mkhuseleli\_51 (A1), Moldemort\_88 (E), Molly\_53 (A1), Monet\_55 (A1), Moose\_52 (A1), MrGordo\_52 (A1), Mryolo\_50 (A1), Mule\_49 (A1), Museum\_53 (A1), Myrale\_85 (E), NEHalo\_50 (A1), Naira\_55 (A1), Nekros\_61 (J), NihilNomen\_63 (J), Niza\_55 (A1), Norz\_53 (A1), Noxious\_53 (A1), Odette\_61 (J), Ohno789\_54 (A1), Omega\_65 (J), Oogway\_51 (A1), Optimus\_68 (J), PSullivan\_52 (A1), PacerPaul\_52 (A1), Papez\_55 (A1), Paphu\_50 (A1), Paraselene\_50 (A1), Pari\_54 (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), Petruccio\_52 (A1), PherrisBueller\_52 (A1), PhineBark\_52 (A1), Phlippers\_51 (A1), Phoebus\_62 (J), PhrostyMug\_51 (A1), PinkPlastic\_53 (A1), Pinto\_52 (A1), Pippin\_54 (A1), Pita2\_55 (A1), Porcelain\_59 (J), Pound\_63 (J), ProMouse\_54 (A1), Raid\_52 (A1), Rajelicia\_53 (A1), Rakim\_86 (E), Rearden\_58 (J), Redno2\_60 (J), 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), Schatzie\_58 (J), Scowl\_53 (A1), Seabiscuit\_55 (A1), Seanderson\_54 (A1), Shaboozey\_56 (J), ShortQueendom\_47 (A1), Sibs6\_54 (A1), SkiPole\_57 (A1), Slagathor\_54 (A1), Smairt\_54 (A1), Smeagol\_54 (A1), Snazzy\_51 (A1), Solon\_51 (A1), Sorpresa\_51 (A1), Sotrice96\_86 (E), SpikeBT\_52 (A1), Squee\_53 (A1), Squint\_60 (J), StewieG\_51 (A1), StolenFromERC\_88 (E), Sumter\_49 (A1), Sunshine924\_54 (A1), Superphikiman\_61 (J), SwissCheese\_54 (A1), Switzer\_54 (A1), Swole\_53 (A1), Target\_53 (A1), Tasp14\_54 (A1), Teodoridan\_51 (A1), TheloniousMonk\_53 (A1), Thibault\_56 (J), Thor\_50 (A1), ThreeRngTarjay\_61 (J), Topgun\_52 (A1), Tote\_48 (A1), Traaww1\_81 (E), Traft412\_55 (A1), Treddle\_53 (A1), Tripi3t\_52 (A1), Trouble\_55 (A1), Turj99\_51 (A1), TwoPeat\_53 (A1), U2\_52 (A1), Violet\_50 (A1), Wanda\_69 (J), Watermelon\_53 (A1), Wheeler\_53 (A1), Whitspit\_50 (A1), Wiggin\_87 (E), Wilkins\_52 (A1), Xiaokay\_56 (J), Yeet\_61 (J), Zeeculate\_50 (A1), Zelink\_61 (J), Zephyr\_52 (A1), 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 28 was manually annotated 2 times for cluster A1.
- Start number 29 was manually annotated 1 time for cluster A1.
- Start number 31 was manually annotated 207 times for cluster A1.

Info for manual annotations of cluster E:

- Start number 31 was manually annotated 27 times for cluster E.

Info for manual annotations of cluster J:

- Start number 31 was manually annotated 39 times for cluster J.

**Gene Information:**

Gene: A6\_48 Start: 36382, Stop: 36203, Start Num: 31

Candidate Starts for A6\_48:

(Start: 28 @36409 has 2 MA's), (Start: 31 @36382 has 273 MA's), (32, 36331), (36, 36268),

Gene: AFIS\_50 Start: 37186, Stop: 37007, Start Num: 31

Candidate Starts for AFIS\_50:

(Start: 31 @37186 has 273 MA's), (32, 37135), (36, 37072),

Gene: Abbysshoes\_55 Start: 38782, Stop: 38600, Start Num: 31

Candidate Starts for Abbysshoes\_55:

(Start: 31 @38782 has 273 MA's),

Gene: Abrogate\_510 Start: 38794, Stop: 38615, Start Num: 31

Candidate Starts for Abrogate\_510:

(Start: 31 @38794 has 273 MA's), (32, 38743),

Gene: Acme\_54 Start: 37720, Stop: 37550, Start Num: 31

Candidate Starts for Acme\_54:

(Start: 31 @37720 has 273 MA's),

Gene: Adahisdi\_52 Start: 38524, Stop: 38351, Start Num: 31

Candidate Starts for Adahisdi\_52:

(Start: 31 @38524 has 273 MA's), (33, 38482), (36, 38416),

Gene: Adnama\_89 Start: 52394, Stop: 52621, Start Num: 31

Candidate Starts for Adnama\_89:

(Start: 31 @52394 has 273 MA's), (32, 52445), (40, 52616),

Gene: Aeneas\_54 Start: 38741, Stop: 38562, Start Num: 31

Candidate Starts for Aeneas\_54:

(Start: 31 @38741 has 273 MA's), (32, 38690),

Gene: Agaliana\_48 Start: 35388, Stop: 35209, Start Num: 31

Candidate Starts for Agaliana\_48:

(Start: 31 @35388 has 273 MA's), (32, 35337),

Gene: Ajay\_54 Start: 38848, Stop: 38669, Start Num: 31

Candidate Starts for Ajay\_54:

(Start: 31 @38848 has 273 MA's), (32, 38797),

Gene: Aldrich\_52 Start: 38199, Stop: 38017, Start Num: 31

Candidate Starts for Aldrich\_52:

(7, 38322), (11, 38304), (12, 38301), (21, 38265), (Start: 31 @38199 has 273 MA's),

Gene: Alsfro\_56 Start: 37894, Stop: 37724, Start Num: 31  
Candidate Starts for Alsfro\_56:  
(Start: 31 @37894 has 273 MA's),

Gene: Altman\_55 Start: 38501, Stop: 38316, Start Num: 31  
Candidate Starts for Altman\_55:  
(Start: 31 @38501 has 273 MA's),

Gene: Alvin\_52 Start: 38173, Stop: 38000, Start Num: 31  
Candidate Starts for Alvin\_52:  
(Start: 31 @38173 has 273 MA's), (33, 38131),

Gene: Anglerfish\_54 Start: 39002, Stop: 38823, Start Num: 31  
Candidate Starts for Anglerfish\_54:  
(Start: 31 @39002 has 273 MA's), (32, 38951),

Gene: Applejack\_47 Start: 35010, Stop: 34831, Start Num: 31  
Candidate Starts for Applejack\_47:  
(Start: 31 @35010 has 273 MA's), (32, 34959), (36, 34896),

Gene: Arcanine\_53 Start: 38326, Stop: 38147, Start Num: 31  
Candidate Starts for Arcanine\_53:  
(4, 38533), (9, 38455), (20, 38395), (23, 38386), (Start: 31 @38326 has 273 MA's), (32, 38275), (36, 38212),

Gene: Ariel\_60 Start: 43241, Stop: 43068, Start Num: 31  
Candidate Starts for Ariel\_60:  
(Start: 31 @43241 has 273 MA's), (35, 43184), (37, 43106), (38, 43082),

Gene: Arlo\_50 Start: 37032, Stop: 36853, Start Num: 31  
Candidate Starts for Arlo\_50:  
(Start: 31 @37032 has 273 MA's), (32, 36981), (36, 36918),

Gene: Ashballe\_54 Start: 38523, Stop: 38344, Start Num: 31  
Candidate Starts for Ashballe\_54:  
(Start: 31 @38523 has 273 MA's), (32, 38472), (36, 38409),

Gene: Asriel\_84 Start: 50731, Stop: 50958, Start Num: 31  
Candidate Starts for Asriel\_84:  
(Start: 31 @50731 has 273 MA's), (32, 50782), (40, 50953),

Gene: Atkinbua\_55 Start: 38155, Stop: 37976, Start Num: 31  
Candidate Starts for Atkinbua\_55:  
(Start: 28 @38182 has 2 MA's), (Start: 31 @38155 has 273 MA's), (32, 38104),

Gene: BAKA\_67 Start: 48144, Stop: 47971, Start Num: 31  
Candidate Starts for BAKA\_67:  
(Start: 31 @48144 has 273 MA's), (35, 48087), (37, 48009), (38, 47985),

Gene: BK1\_48 Start: 36382, Stop: 36203, Start Num: 31  
Candidate Starts for BK1\_48:

(Start: 28 @36409 has 2 MA's), (Start: 31 @36382 has 273 MA's), (32, 36331), (36, 36268),

Gene: BPBiebs31\_53 Start: 38698, Stop: 38519, Start Num: 31

Candidate Starts for BPBiebs31\_53:

(21, 38764), (Start: 31 @38698 has 273 MA's), (32, 38647), (34, 38641),

Gene: Bagrid\_62 Start: 47476, Stop: 47303, Start Num: 31

Candidate Starts for Bagrid\_62:

(Start: 31 @47476 has 273 MA's), (35, 47419), (37, 47341), (38, 47317),

Gene: Balomoji\_85 Start: 52501, Stop: 52728, Start Num: 31

Candidate Starts for Balomoji\_85:

(Start: 31 @52501 has 273 MA's), (32, 52552), (40, 52723),

Gene: Barbarian\_84 Start: 50731, Stop: 50958, Start Num: 31

Candidate Starts for Barbarian\_84:

(Start: 31 @50731 has 273 MA's), (32, 50782), (40, 50953),

Gene: Barriga\_53 Start: 37279, Stop: 37109, Start Num: 31

Candidate Starts for Barriga\_53:

(Start: 31 @37279 has 273 MA's),

Gene: BarrowTuph\_53 Start: 38018, Stop: 37839, Start Num: 31

Candidate Starts for BarrowTuph\_53:

(16, 38108), (24, 38069), (25, 38063), (26, 38057), (27, 38048), (Start: 31 @38018 has 273 MA's), (32, 37967), (36, 37904),

Gene: Bask21\_85 Start: 51354, Stop: 51581, Start Num: 31

Candidate Starts for Bask21\_85:

(19, 51285), (Start: 31 @51354 has 273 MA's), (32, 51405), (40, 51576),

Gene: Beatrix\_52 Start: 39003, Stop: 38824, Start Num: 31

Candidate Starts for Beatrix\_52:

(Start: 31 @39003 has 273 MA's), (32, 38952),

Gene: Beem\_63 Start: 48042, Stop: 47869, Start Num: 31

Candidate Starts for Beem\_63:

(Start: 31 @48042 has 273 MA's), (35, 47985), (37, 47907), (38, 47883),

Gene: BeesKnees\_55 Start: 38051, Stop: 37881, Start Num: 31

Candidate Starts for BeesKnees\_55:

(Start: 29 @38078 has 1 MA's), (Start: 31 @38051 has 273 MA's),

Gene: Bethlehem\_53 Start: 39471, Stop: 39292, Start Num: 31

Candidate Starts for Bethlehem\_53:

(Start: 28 @39498 has 2 MA's), (Start: 31 @39471 has 273 MA's), (32, 39420),

Gene: Big3\_52 Start: 38865, Stop: 38692, Start Num: 31

Candidate Starts for Big3\_52:

(Start: 31 @38865 has 273 MA's), (33, 38823),

Gene: BigBubba\_85 Start: 51747, Stop: 51974, Start Num: 31

Candidate Starts for BigBubba\_85:

(19, 51678), (Start: 31 @51747 has 273 MA's), (32, 51798), (40, 51969),

Gene: BigMau\_53 Start: 37286, Stop: 37107, Start Num: 31

Candidate Starts for BigMau\_53:

(Start: 31 @37286 has 273 MA's), (32, 37235), (36, 37172),

Gene: BigPaolini\_52 Start: 36445, Stop: 36266, Start Num: 31

Candidate Starts for BigPaolini\_52:

(Start: 31 @36445 has 273 MA's), (32, 36394),

Gene: Bigchungi\_52 Start: 37116, Stop: 36937, Start Num: 31

Candidate Starts for Bigchungi\_52:

(Start: 28 @37143 has 2 MA's), (Start: 31 @37116 has 273 MA's), (32, 37065), (36, 37002),

Gene: Bigfoot\_48 Start: 36666, Stop: 36487, Start Num: 31

Candidate Starts for Bigfoot\_48:

(Start: 28 @36693 has 2 MA's), (Start: 31 @36666 has 273 MA's), (32, 36615),

Gene: Bircsak\_51 Start: 38964, Stop: 38785, Start Num: 31

Candidate Starts for Bircsak\_51:

(Start: 31 @38964 has 273 MA's), (32, 38913),

Gene: Blackflame\_51 Start: 37677, Stop: 37498, Start Num: 31

Candidate Starts for Blackflame\_51:

(Start: 28 @37704 has 2 MA's), (Start: 31 @37677 has 273 MA's), (32, 37626), (36, 37563),

Gene: Blesser\_51 Start: 37633, Stop: 37448, Start Num: 31

Candidate Starts for Blesser\_51:

(2, 37882), (8, 37765), (13, 37741), (17, 37720), (Start: 31 @37633 has 273 MA's), (36, 37513),

Gene: BluSpix\_51 Start: 34226, Stop: 34047, Start Num: 31

Candidate Starts for BluSpix\_51:

(Start: 31 @34226 has 273 MA's), (32, 34175),

Gene: Blue\_52 Start: 38883, Stop: 38704, Start Num: 31

Candidate Starts for Blue\_52:

(Start: 31 @38883 has 273 MA's), (32, 38832), (36, 38769),

Gene: Bob3\_50 Start: 36636, Stop: 36457, Start Num: 31

Candidate Starts for Bob3\_50:

(Start: 31 @36636 has 273 MA's), (32, 36585), (36, 36522),

Gene: Bobby\_63 Start: 47403, Stop: 47230, Start Num: 31

Candidate Starts for Bobby\_63:

(Start: 31 @47403 has 273 MA's), (35, 47346), (37, 47268), (38, 47244),

Gene: Bombitas\_60 Start: 47638, Stop: 47465, Start Num: 31

Candidate Starts for Bombitas\_60:

(Start: 31 @47638 has 273 MA's), (35, 47581), (37, 47503), (38, 47479),

Gene: Bones\_53 Start: 38327, Stop: 38148, Start Num: 31

Candidate Starts for Bones\_53:

(Start: 31 @38327 has 273 MA's), (32, 38276), (36, 38213),

Gene: Briton15\_56 Start: 38292, Stop: 38107, Start Num: 31  
Candidate Starts for Briton15\_56:  
(Start: 29 @38319 has 1 MA's), (Start: 31 @38292 has 273 MA's),

Gene: BronnyJames\_57 Start: 41950, Stop: 41783, Start Num: 31  
Candidate Starts for BronnyJames\_57:  
(Start: 31 @41950 has 273 MA's), (33, 41908), (37, 41821), (38, 41797),

Gene: Bruns\_51 Start: 37204, Stop: 37034, Start Num: 31  
Candidate Starts for Bruns\_51:  
(Start: 31 @37204 has 273 MA's),

Gene: Burton\_52 Start: 38141, Stop: 37956, Start Num: 31  
Candidate Starts for Burton\_52:  
(Start: 29 @38168 has 1 MA's), (Start: 31 @38141 has 273 MA's),

Gene: Buttons\_51 Start: 36152, Stop: 35970, Start Num: 31  
Candidate Starts for Buttons\_51:  
(7, 36275), (11, 36257), (12, 36254), (21, 36218), (Start: 31 @36152 has 273 MA's),

Gene: Bxb1\_48 Start: 36963, Stop: 36784, Start Num: 31  
Candidate Starts for Bxb1\_48:  
(Start: 31 @36963 has 273 MA's), (36, 36849),

Gene: Cactus\_88 Start: 51395, Stop: 51622, Start Num: 31  
Candidate Starts for Cactus\_88:  
(Start: 31 @51395 has 273 MA's), (32, 51446), (40, 51617),

Gene: Carlyle\_51 Start: 35658, Stop: 35479, Start Num: 31  
Candidate Starts for Carlyle\_51:  
(Start: 31 @35658 has 273 MA's), (32, 35607),

Gene: CartmannCramer\_51 Start: 39512, Stop: 39333, Start Num: 31  
Candidate Starts for CartmannCramer\_51:  
(Start: 28 @39539 has 2 MA's), (Start: 31 @39512 has 273 MA's), (36, 39398),

Gene: CatBus\_52 Start: 38391, Stop: 38209, Start Num: 31  
Candidate Starts for CatBus\_52:  
(7, 38514), (11, 38496), (12, 38493), (21, 38457), (Start: 31 @38391 has 273 MA's),

Gene: Chanagan\_49 Start: 36456, Stop: 36277, Start Num: 31  
Candidate Starts for Chanagan\_49:  
(Start: 31 @36456 has 273 MA's), (32, 36405),

Gene: ChotaBhai\_85 Start: 51719, Stop: 51946, Start Num: 31  
Candidate Starts for ChotaBhai\_85:  
(19, 51650), (Start: 31 @51719 has 273 MA's), (32, 51770), (40, 51941),

Gene: ChristmasHams\_48 Start: 35862, Stop: 35683, Start Num: 31  
Candidate Starts for ChristmasHams\_48:  
(Start: 31 @35862 has 273 MA's), (32, 35811),

Gene: Ciao\_52 Start: 37610, Stop: 37428, Start Num: 31  
Candidate Starts for Ciao\_52:  
(7, 37733), (11, 37715), (12, 37712), (21, 37676), (Start: 31 @37610 has 273 MA's),

Gene: ConceptII\_54 Start: 39279, Stop: 39100, Start Num: 31  
Candidate Starts for ConceptII\_54:  
(Start: 31 @39279 has 273 MA's), (32, 39228), (36, 39165),

Gene: Constella\_51 Start: 42980, Stop: 42807, Start Num: 31  
Candidate Starts for Constella\_51:  
(Start: 31 @42980 has 273 MA's), (35, 42923), (37, 42845), (38, 42821),

Gene: Cookies\_82 Start: 51576, Stop: 51803, Start Num: 31  
Candidate Starts for Cookies\_82:  
(Start: 31 @51576 has 273 MA's), (32, 51627), (40, 51798),

Gene: Corvo\_53 Start: 39106, Stop: 38936, Start Num: 31  
Candidate Starts for Corvo\_53:  
(Start: 29 @39133 has 1 MA's), (Start: 31 @39106 has 273 MA's),

Gene: Courthouse\_60 Start: 43645, Stop: 43472, Start Num: 31  
Candidate Starts for Courthouse\_60:  
(Start: 31 @43645 has 273 MA's), (35, 43588), (37, 43510), (38, 43486),

Gene: Crispicious1\_50 Start: 36781, Stop: 36602, Start Num: 31  
Candidate Starts for Crispicious1\_50:  
(Start: 31 @36781 has 273 MA's), (32, 36730), (36, 36667),

Gene: Cueylyss\_54 Start: 39460, Stop: 39281, Start Num: 31  
Candidate Starts for Cueylyss\_54:  
(Start: 31 @39460 has 273 MA's), (32, 39409), (36, 39346),

Gene: DD5\_52 Start: 38373, Stop: 38188, Start Num: 31  
Candidate Starts for DD5\_52:  
(Start: 29 @38400 has 1 MA's), (Start: 31 @38373 has 273 MA's),

Gene: Daikon\_87 Start: 52522, Stop: 52749, Start Num: 31  
Candidate Starts for Daikon\_87:  
(Start: 31 @52522 has 273 MA's), (32, 52573), (40, 52744),

Gene: Dallas\_62 Start: 46963, Stop: 46790, Start Num: 31  
Candidate Starts for Dallas\_62:  
(Start: 31 @46963 has 273 MA's), (35, 46906), (37, 46828), (38, 46804),

Gene: Dexes\_53 Start: 38517, Stop: 38338, Start Num: 31  
Candidate Starts for Dexes\_53:  
(Start: 31 @38517 has 273 MA's), (32, 38466),

Gene: DirtDevil\_53 Start: 38199, Stop: 38017, Start Num: 31  
Candidate Starts for DirtDevil\_53:  
(7, 38322), (11, 38304), (12, 38301), (21, 38265), (Start: 31 @38199 has 273 MA's),

Gene: DmpstrDiver\_62 Start: 47390, Stop: 47217, Start Num: 31

Candidate Starts for DmpstrDiver\_62:  
(Start: 31 @47390 has 273 MA's), (35, 47333), (37, 47255), (38, 47231),

Gene: DoctorDiddles\_84 Start: 51763, Stop: 51990, Start Num: 31  
Candidate Starts for DoctorDiddles\_84:  
(19, 51694), (Start: 31 @51763 has 273 MA's), (32, 51814), (40, 51985),

Gene: Dove\_56 Start: 45904, Stop: 45731, Start Num: 31  
Candidate Starts for Dove\_56:  
(Start: 31 @45904 has 273 MA's), (35, 45847), (37, 45769), (38, 45745),

Gene: DrFeelGood\_50 Start: 37621, Stop: 37448, Start Num: 31  
Candidate Starts for DrFeelGood\_50:  
(Start: 31 @37621 has 273 MA's), (33, 37579),

Gene: DreamCatcher\_56 Start: 39029, Stop: 38859, Start Num: 31  
Candidate Starts for DreamCatcher\_56:  
(Start: 29 @39056 has 1 MA's), (Start: 31 @39029 has 273 MA's),

Gene: Dreamboat\_54 Start: 37374, Stop: 37204, Start Num: 31  
Candidate Starts for Dreamboat\_54:  
(Start: 31 @37374 has 273 MA's),

Gene: Duke13\_66 Start: 47910, Stop: 47737, Start Num: 31  
Candidate Starts for Duke13\_66:  
(Start: 31 @47910 has 273 MA's), (35, 47853), (37, 47775), (38, 47751),

Gene: Dulcie\_53 Start: 37830, Stop: 37657, Start Num: 31  
Candidate Starts for Dulcie\_53:  
(10, 37953), (14, 37935), (15, 37932), (22, 37896), (Start: 31 @37830 has 273 MA's), (33, 37788),

Gene: Dussy\_54 Start: 38802, Stop: 38620, Start Num: 31  
Candidate Starts for Dussy\_54:  
(Start: 31 @38802 has 273 MA's),

Gene: Dynamix\_54 Start: 37849, Stop: 37679, Start Num: 31  
Candidate Starts for Dynamix\_54:  
(Start: 29 @37876 has 1 MA's), (Start: 31 @37849 has 273 MA's),

Gene: Edtherson\_52 Start: 38112, Stop: 37933, Start Num: 31  
Candidate Starts for Edtherson\_52:  
(Start: 31 @38112 has 273 MA's), (32, 38061), (36, 37998),

Gene: Ejimix\_63 Start: 48828, Stop: 48655, Start Num: 31  
Candidate Starts for Ejimix\_63:  
(Start: 31 @48828 has 273 MA's), (35, 48771), (37, 48693), (38, 48669),

Gene: EnzoK\_51 Start: 35427, Stop: 35254, Start Num: 31  
Candidate Starts for EnzoK\_51:  
(10, 35550), (14, 35532), (15, 35529), (22, 35493), (Start: 31 @35427 has 273 MA's), (33, 35385),

Gene: EricMillard\_63 Start: 48329, Stop: 48156, Start Num: 31  
Candidate Starts for EricMillard\_63:

(Start: 31 @48329 has 273 MA's), (35, 48272), (37, 48194), (38, 48170),

Gene: Espresso\_52 Start: 38668, Stop: 38489, Start Num: 31

Candidate Starts for Espresso\_52:

(Start: 31 @38668 has 273 MA's), (32, 38617), (36, 38554),

Gene: Euphoria\_50 Start: 37919, Stop: 37740, Start Num: 31

Candidate Starts for Euphoria\_50:

(Start: 31 @37919 has 273 MA's), (32, 37868),

Gene: Eyeball\_54 Start: 38207, Stop: 38028, Start Num: 31

Candidate Starts for Eyeball\_54:

(Start: 31 @38207 has 273 MA's), (32, 38156), (36, 38093),

Gene: Fajezeel\_54 Start: 37959, Stop: 37777, Start Num: 31

Candidate Starts for Fajezeel\_54:

(7, 38082), (11, 38064), (12, 38061), (21, 38025), (Start: 31 @37959 has 273 MA's),

Gene: Fascinus\_48 Start: 36890, Stop: 36708, Start Num: 31

Candidate Starts for Fascinus\_48:

(Start: 29 @36917 has 1 MA's), (Start: 31 @36890 has 273 MA's), (36, 36773),

Gene: Fenn\_55 Start: 39795, Stop: 39610, Start Num: 31

Candidate Starts for Fenn\_55:

(Start: 29 @39822 has 1 MA's), (Start: 31 @39795 has 273 MA's),

Gene: Flypotenuse\_81 Start: 51385, Stop: 51612, Start Num: 31

Candidate Starts for Flypotenuse\_81:

(Start: 31 @51385 has 273 MA's), (32, 51436), (40, 51607),

Gene: FoghornLeghorn\_79 Start: 50398, Stop: 50625, Start Num: 31

Candidate Starts for FoghornLeghorn\_79:

(Start: 31 @50398 has 273 MA's), (32, 50449), (40, 50620),

Gene: Forsytheast\_52 Start: 37422, Stop: 37252, Start Num: 31

Candidate Starts for Forsytheast\_52:

(Start: 29 @37449 has 1 MA's), (Start: 31 @37422 has 273 MA's),

Gene: Francis47\_51 Start: 39232, Stop: 39053, Start Num: 31

Candidate Starts for Francis47\_51:

(Start: 31 @39232 has 273 MA's), (32, 39181),

Gene: Froghopper\_50 Start: 36957, Stop: 36778, Start Num: 31

Candidate Starts for Froghopper\_50:

(Start: 31 @36957 has 273 MA's), (32, 36906),

Gene: Fushigi\_51 Start: 35918, Stop: 35739, Start Num: 31

Candidate Starts for Fushigi\_51:

(Start: 31 @35918 has 273 MA's), (32, 35867), (36, 35804),

Gene: GMonster\_49 Start: 36275, Stop: 36096, Start Num: 31

Candidate Starts for GMonster\_49:

(Start: 31 @36275 has 273 MA's), (32, 36224),

Gene: Gachnar\_52 Start: 37034, Stop: 36864, Start Num: 31  
Candidate Starts for Gachnar\_52:  
(3, 37253), (7, 37172), (18, 37109), (Start: 29 @37061 has 1 MA's), (Start: 31 @37034 has 273 MA's),

Gene: Gage\_87 Start: 52178, Stop: 52405, Start Num: 31  
Candidate Starts for Gage\_87:  
(19, 52109), (Start: 31 @52178 has 273 MA's), (32, 52229), (40, 52400),

Gene: GageAP\_53 Start: 38708, Stop: 38529, Start Num: 31  
Candidate Starts for GageAP\_53:  
(Start: 31 @38708 has 273 MA's), (32, 38657), (36, 38594),

Gene: Gandalf20\_55 Start: 39761, Stop: 39582, Start Num: 31  
Candidate Starts for Gandalf20\_55:  
(Start: 31 @39761 has 273 MA's), (32, 39710),

Gene: Gator\_83 Start: 52228, Stop: 52455, Start Num: 31  
Candidate Starts for Gator\_83:  
(Start: 31 @52228 has 273 MA's), (32, 52279), (40, 52450),

Gene: Glexan\_84 Start: 52515, Stop: 52742, Start Num: 31  
Candidate Starts for Glexan\_84:  
(Start: 31 @52515 has 273 MA's), (32, 52566), (40, 52737),

Gene: Goldilocks\_88 Start: 51673, Stop: 51900, Start Num: 31  
Candidate Starts for Goldilocks\_88:  
(19, 51604), (Start: 31 @51673 has 273 MA's), (32, 51724), (40, 51895),

Gene: Gompeii16\_51 Start: 38965, Stop: 38786, Start Num: 31  
Candidate Starts for Gompeii16\_51:  
(Start: 31 @38965 has 273 MA's), (32, 38914),

Gene: Gonephishing\_63 Start: 44987, Stop: 44820, Start Num: 31  
Candidate Starts for Gonephishing\_63:  
(Start: 31 @44987 has 273 MA's), (33, 44945), (37, 44858), (38, 44834),

Gene: Graduation\_56 Start: 39532, Stop: 39353, Start Num: 31  
Candidate Starts for Graduation\_56:  
(Start: 31 @39532 has 273 MA's), (32, 39481), (36, 39418),

Gene: GrecoEtereo\_53 Start: 37769, Stop: 37590, Start Num: 31  
Candidate Starts for GrecoEtereo\_53:  
(Start: 28 @37796 has 2 MA's), (Start: 31 @37769 has 273 MA's), (32, 37718), (36, 37655),

Gene: Greg\_54 Start: 37959, Stop: 37777, Start Num: 31  
Candidate Starts for Greg\_54:  
(7, 38082), (11, 38064), (12, 38061), (21, 38025), (Start: 31 @37959 has 273 MA's),

Gene: GroundGoblin\_52 Start: 38341, Stop: 38159, Start Num: 31  
Candidate Starts for GroundGoblin\_52:  
(7, 38464), (11, 38446), (12, 38443), (21, 38407), (Start: 31 @38341 has 273 MA's),

Gene: Gwendoluna\_56 Start: 39968, Stop: 39789, Start Num: 31

Candidate Starts for Gwendoluna\_56:

(21, 40034), (Start: 31 @39968 has 273 MA's), (32, 39917),

Gene: Gyzlar\_48 Start: 35683, Stop: 35504, Start Num: 31

Candidate Starts for Gyzlar\_48:

(Start: 28 @35710 has 2 MA's), (Start: 31 @35683 has 273 MA's), (32, 35632), (36, 35569),

Gene: Halley\_64 Start: 48042, Stop: 47869, Start Num: 31

Candidate Starts for Halley\_64:

(Start: 31 @48042 has 273 MA's), (35, 47985), (37, 47907), (38, 47883),

Gene: Hami1\_46 Start: 33015, Stop: 32836, Start Num: 31

Candidate Starts for Hami1\_46:

(Start: 31 @33015 has 273 MA's), (32, 32964),

Gene: HanShotFirst\_53 Start: 38336, Stop: 38130, Start Num: 28

Candidate Starts for HanShotFirst\_53:

(Start: 28 @38336 has 2 MA's), (Start: 31 @38309 has 273 MA's), (32, 38258),

Gene: Hannaconda\_61 Start: 43234, Stop: 43049, Start Num: 31

Candidate Starts for Hannaconda\_61:

(Start: 31 @43234 has 273 MA's), (35, 43177), (37, 43099), (38, 43075), (39, 43060),

Gene: Harella\_85 Start: 53031, Stop: 53258, Start Num: 31

Candidate Starts for Harella\_85:

(Start: 31 @53031 has 273 MA's), (32, 53082), (40, 53253),

Gene: HarryOW\_51 Start: 36941, Stop: 36762, Start Num: 31

Candidate Starts for HarryOW\_51:

(Start: 28 @36968 has 2 MA's), (Start: 31 @36941 has 273 MA's), (32, 36890), (36, 36827),

Gene: Hermia\_53 Start: 38391, Stop: 38209, Start Num: 31

Candidate Starts for Hermia\_53:

(7, 38514), (11, 38496), (12, 38493), (21, 38457), (Start: 31 @38391 has 273 MA's),

Gene: HermioneGrange\_52 Start: 37780, Stop: 37601, Start Num: 31

Candidate Starts for HermioneGrange\_52:

(Start: 31 @37780 has 273 MA's), (32, 37729), (36, 37666),

Gene: Hidrated\_61 Start: 47727, Stop: 47554, Start Num: 31

Candidate Starts for Hidrated\_61:

(Start: 31 @47727 has 273 MA's), (35, 47670), (37, 47592), (38, 47568),

Gene: HokkenD\_56 Start: 46311, Stop: 46138, Start Num: 31

Candidate Starts for HokkenD\_56:

(Start: 31 @46311 has 273 MA's), (35, 46254), (37, 46176), (38, 46152),

Gene: Homines\_45 Start: 33954, Stop: 33775, Start Num: 31

Candidate Starts for Homines\_45:

(Start: 28 @33981 has 2 MA's), (Start: 31 @33954 has 273 MA's), (32, 33903),

Gene: Hoonter\_88 Start: 52175, Stop: 52402, Start Num: 31

Candidate Starts for Hoonter\_88:  
(Start: 31 @52175 has 273 MA's), (32, 52226), (40, 52397),

Gene: Hughesyang\_62 Start: 47971, Stop: 47798, Start Num: 31  
Candidate Starts for Hughesyang\_62:  
(Start: 31 @47971 has 273 MA's), (35, 47914), (37, 47836), (38, 47812),

Gene: ILeeKay\_56 Start: 38550, Stop: 38371, Start Num: 31  
Candidate Starts for ILeeKay\_56:  
(Start: 31 @38550 has 273 MA's), (32, 38499),

Gene: Icee\_86 Start: 51842, Stop: 52069, Start Num: 31  
Candidate Starts for Icee\_86:  
(Start: 31 @51842 has 273 MA's), (32, 51893), (40, 52064),

Gene: Ichabod\_55 Start: 39130, Stop: 38951, Start Num: 31  
Candidate Starts for Ichabod\_55:  
(Start: 28 @39157 has 2 MA's), (Start: 31 @39130 has 273 MA's), (32, 39079),

Gene: IgnatiusPatJac\_53 Start: 38171, Stop: 37992, Start Num: 31  
Candidate Starts for IgnatiusPatJac\_53:  
(Start: 31 @38171 has 273 MA's), (32, 38120),

Gene: Inyanga\_49 Start: 36405, Stop: 36226, Start Num: 31  
Candidate Starts for Inyanga\_49:  
(Start: 31 @36405 has 273 MA's), (32, 36354),

Gene: Iqorha\_49 Start: 36404, Stop: 36225, Start Num: 31  
Candidate Starts for Iqorha\_49:  
(Start: 31 @36404 has 273 MA's), (32, 36353),

Gene: JC27\_54 Start: 38212, Stop: 38033, Start Num: 31  
Candidate Starts for JC27\_54:  
(Start: 31 @38212 has 273 MA's), (32, 38161), (36, 38098),

Gene: JackSparrow\_54 Start: 38189, Stop: 38010, Start Num: 31  
Candidate Starts for JackSparrow\_54:  
(Start: 28 @38216 has 2 MA's), (Start: 31 @38189 has 273 MA's), (32, 38138),

Gene: Jasper\_54 Start: 37260, Stop: 37090, Start Num: 31  
Candidate Starts for Jasper\_54:  
(Start: 31 @37260 has 273 MA's),

Gene: Jerm2\_53 Start: 38035, Stop: 37856, Start Num: 31  
Candidate Starts for Jerm2\_53:  
(Start: 31 @38035 has 273 MA's), (32, 37984), (36, 37921),

Gene: JuicyJay\_62 Start: 49176, Stop: 49003, Start Num: 31  
Candidate Starts for JuicyJay\_62:  
(Start: 31 @49176 has 273 MA's), (35, 49119), (37, 49041), (38, 49017),

Gene: JuliaChild\_53 Start: 37630, Stop: 37451, Start Num: 31  
Candidate Starts for JuliaChild\_53:

(Start: 29 @37657 has 1 MA's), (Start: 31 @37630 has 273 MA's),

Gene: KSSJEB\_52 Start: 37656, Stop: 37444, Start Num: 29

Candidate Starts for KSSJEB\_52:

(Start: 29 @37656 has 1 MA's), (Start: 31 @37629 has 273 MA's),

Gene: Kalah2\_59 Start: 47585, Stop: 47412, Start Num: 31

Candidate Starts for Kalah2\_59:

(Start: 31 @47585 has 273 MA's), (35, 47528), (37, 47450), (38, 47426),

Gene: Kanely\_54 Start: 38278, Stop: 38093, Start Num: 31

Candidate Starts for Kanely\_54:

(Start: 31 @38278 has 273 MA's),

Gene: KashFlow\_58 Start: 42855, Stop: 42670, Start Num: 31

Candidate Starts for KashFlow\_58:

(Start: 31 @42855 has 273 MA's), (35, 42798), (37, 42720), (38, 42696), (39, 42681),

Gene: Kenmech\_56 Start: 39928, Stop: 39746, Start Num: 31

Candidate Starts for Kenmech\_56:

(Start: 31 @39928 has 273 MA's),

Gene: KikiBouba\_53 Start: 38200, Stop: 38018, Start Num: 31

Candidate Starts for KikiBouba\_53:

(7, 38323), (11, 38305), (12, 38302), (21, 38266), (Start: 31 @38200 has 273 MA's),

Gene: Killigrew\_53 Start: 38829, Stop: 38659, Start Num: 31

Candidate Starts for Killigrew\_53:

(Start: 29 @38856 has 1 MA's), (Start: 31 @38829 has 273 MA's),

Gene: Kimchi\_89 Start: 52181, Stop: 52408, Start Num: 31

Candidate Starts for Kimchi\_89:

(19, 52112), (Start: 31 @52181 has 273 MA's), (32, 52232), (40, 52403),

Gene: Klein\_64 Start: 47608, Stop: 47435, Start Num: 31

Candidate Starts for Klein\_64:

(Start: 31 @47608 has 273 MA's), (35, 47551), (37, 47473), (38, 47449),

Gene: Kugel\_53 Start: 38906, Stop: 38727, Start Num: 31

Candidate Starts for Kugel\_53:

(4, 39113), (9, 39035), (20, 38975), (23, 38966), (Start: 31 @38906 has 273 MA's), (32, 38855),

Gene: KyMonks1A\_54 Start: 37836, Stop: 37651, Start Num: 31

Candidate Starts for KyMonks1A\_54:

(Start: 31 @37836 has 273 MA's), (32, 37779),

Gene: Kykar\_52 Start: 37608, Stop: 37423, Start Num: 31

Candidate Starts for Kykar\_52:

(Start: 31 @37608 has 273 MA's), (32, 37551),

Gene: Lamina13\_53 Start: 37579, Stop: 37400, Start Num: 31

Candidate Starts for Lamina13\_53:

(Start: 31 @37579 has 273 MA's), (32, 37528),

Gene: Lesedi\_49 Start: 36802, Stop: 36623, Start Num: 31  
Candidate Starts for Lesedi\_49:  
(Start: 31 @36802 has 273 MA's), (32, 36751), (36, 36688),

Gene: Levia\_50 Start: 37628, Stop: 37443, Start Num: 31  
Candidate Starts for Levia\_50:  
(Start: 31 @37628 has 273 MA's),

Gene: Licorice\_55 Start: 40025, Stop: 39819, Start Num: 28  
Candidate Starts for Licorice\_55:  
(Start: 28 @40025 has 2 MA's), (Start: 31 @39998 has 273 MA's), (32, 39947), (36, 39884),

Gene: LilBib\_52 Start: 39056, Stop: 38877, Start Num: 31  
Candidate Starts for LilBib\_52:  
(1, 39311), (5, 39245), (22, 39122), (Start: 31 @39056 has 273 MA's), (32, 39005), (36, 38942),

Gene: Lockley\_51 Start: 37535, Stop: 37350, Start Num: 31  
Candidate Starts for Lockley\_51:  
(Start: 29 @37562 has 1 MA's), (Start: 31 @37535 has 273 MA's),

Gene: Lucky2013\_61 Start: 43781, Stop: 43608, Start Num: 31  
Candidate Starts for Lucky2013\_61:  
(Start: 31 @43781 has 273 MA's), (35, 43724), (37, 43646), (38, 43622),

Gene: LunarLander\_54 Start: 38099, Stop: 37920, Start Num: 31  
Candidate Starts for LunarLander\_54:  
(Start: 31 @38099 has 273 MA's), (32, 38048), (36, 37985),

Gene: MPlant7149\_51 Start: 36898, Stop: 36719, Start Num: 31  
Candidate Starts for MPlant7149\_51:  
(Start: 31 @36898 has 273 MA's), (32, 36847), (36, 36784),

Gene: Magnar\_52 Start: 38343, Stop: 38164, Start Num: 31  
Candidate Starts for Magnar\_52:  
(Start: 31 @38343 has 273 MA's), (32, 38292),

Gene: Magnito\_51 Start: 37903, Stop: 37724, Start Num: 31  
Candidate Starts for Magnito\_51:  
(Start: 28 @37930 has 2 MA's), (Start: 31 @37903 has 273 MA's), (32, 37852),

Gene: Makemake\_52 Start: 38402, Stop: 38223, Start Num: 31  
Candidate Starts for Makemake\_52:  
(Start: 31 @38402 has 273 MA's), (32, 38351), (36, 38288),

Gene: Manatee\_54 Start: 38429, Stop: 38250, Start Num: 31  
Candidate Starts for Manatee\_54:  
(Start: 31 @38429 has 273 MA's), (32, 38378),

Gene: Marcell\_50 Start: 37268, Stop: 37089, Start Num: 31  
Candidate Starts for Marcell\_50:  
(4, 37475), (9, 37397), (20, 37337), (23, 37328), (Start: 31 @37268 has 273 MA's), (32, 37217), (36, 37154),

Gene: Marchy\_47 Start: 35333, Stop: 35154, Start Num: 31

Candidate Starts for Marchy\_47:

(Start: 31 @35333 has 273 MA's), (32, 35282), (36, 35219),

Gene: Marco3\_55 Start: 39688, Stop: 39509, Start Num: 31

Candidate Starts for Marco3\_55:

(Start: 31 @39688 has 273 MA's), (32, 39637), (36, 39574),

Gene: Marge\_52 Start: 38082, Stop: 37900, Start Num: 31

Candidate Starts for Marge\_52:

(7, 38217), (11, 38199), (12, 38196), (21, 38148), (Start: 31 @38082 has 273 MA's),

Gene: Marleymoo\_60 Start: 46525, Stop: 46352, Start Num: 31

Candidate Starts for Marleymoo\_60:

(Start: 31 @46525 has 273 MA's), (35, 46468), (37, 46390), (38, 46366),

Gene: Maroc7\_50 Start: 37199, Stop: 37017, Start Num: 31

Candidate Starts for Maroc7\_50:

(Start: 29 @37226 has 1 MA's), (Start: 31 @37199 has 273 MA's), (36, 37082),

Gene: Marsha\_52 Start: 38641, Stop: 38456, Start Num: 31

Candidate Starts for Marsha\_52:

(Start: 31 @38641 has 273 MA's), (32, 38584),

Gene: MaryBeth\_52 Start: 38492, Stop: 38313, Start Num: 31

Candidate Starts for MaryBeth\_52:

(4, 38702), (9, 38621), (20, 38561), (23, 38552), (Start: 31 @38492 has 273 MA's), (32, 38441),

Gene: McGuire\_54 Start: 37727, Stop: 37548, Start Num: 31

Candidate Starts for McGuire\_54:

(Start: 29 @37754 has 1 MA's), (Start: 31 @37727 has 273 MA's),

Gene: McSinger\_53 Start: 37873, Stop: 37694, Start Num: 31

Candidate Starts for McSinger\_53:

(Start: 28 @37900 has 2 MA's), (Start: 31 @37873 has 273 MA's), (32, 37822),

Gene: MetalQZJ\_51 Start: 38492, Stop: 38313, Start Num: 31

Candidate Starts for MetalQZJ\_51:

(4, 38702), (9, 38621), (20, 38561), (23, 38552), (Start: 31 @38492 has 273 MA's), (32, 38441),

Gene: MiaZeal\_60 Start: 43456, Stop: 43283, Start Num: 31

Candidate Starts for MiaZeal\_60:

(Start: 31 @43456 has 273 MA's), (35, 43399), (37, 43321), (38, 43297),

Gene: Michley\_52 Start: 37372, Stop: 37193, Start Num: 31

Candidate Starts for Michley\_52:

(Start: 31 @37372 has 273 MA's), (32, 37321), (36, 37258),

Gene: MilleFeuille\_52 Start: 37642, Stop: 37463, Start Num: 31

Candidate Starts for MilleFeuille\_52:

(Start: 28 @37669 has 2 MA's), (Start: 31 @37642 has 273 MA's), (32, 37591),

Gene: Minerva\_69 Start: 49458, Stop: 49285, Start Num: 31  
Candidate Starts for Minerva\_69:  
(Start: 31 @49458 has 273 MA's), (35, 49401), (37, 49323), (38, 49299),

Gene: Mkhuseleli\_51 Start: 36939, Stop: 36760, Start Num: 31  
Candidate Starts for Mkhuseleli\_51:  
(Start: 31 @36939 has 273 MA's), (32, 36888),

Gene: Moldemort\_88 Start: 51994, Stop: 52221, Start Num: 31  
Candidate Starts for Moldemort\_88:  
(Start: 31 @51994 has 273 MA's), (32, 52045), (40, 52216),

Gene: Molly\_53 Start: 36942, Stop: 36763, Start Num: 31  
Candidate Starts for Molly\_53:  
(4, 37149), (9, 37071), (20, 37011), (23, 37002), (Start: 31 @36942 has 273 MA's), (32, 36891), (36, 36828),

Gene: Monet\_55 Start: 39071, Stop: 38892, Start Num: 31  
Candidate Starts for Monet\_55:  
(Start: 31 @39071 has 273 MA's), (32, 39020), (36, 38957),

Gene: Moose\_52 Start: 37422, Stop: 37252, Start Num: 31  
Candidate Starts for Moose\_52:  
(Start: 29 @37449 has 1 MA's), (Start: 31 @37422 has 273 MA's),

Gene: MrGordo\_52 Start: 38105, Stop: 37932, Start Num: 31  
Candidate Starts for MrGordo\_52:  
(Start: 31 @38105 has 273 MA's), (33, 38063),

Gene: Mryolo\_50 Start: 37901, Stop: 37716, Start Num: 31  
Candidate Starts for Mryolo\_50:  
(Start: 31 @37901 has 273 MA's), (32, 37844),

Gene: Mule\_49 Start: 36036, Stop: 35857, Start Num: 31  
Candidate Starts for Mule\_49:  
(Start: 31 @36036 has 273 MA's), (32, 35985),

Gene: Museum\_53 Start: 38080, Stop: 37895, Start Num: 31  
Candidate Starts for Museum\_53:  
(Start: 29 @38107 has 1 MA's), (Start: 31 @38080 has 273 MA's),

Gene: Myrale\_85 Start: 52538, Stop: 52765, Start Num: 31  
Candidate Starts for Myrale\_85:  
(19, 52469), (Start: 31 @52538 has 273 MA's), (32, 52589), (40, 52760),

Gene: NEHalo\_50 Start: 37817, Stop: 37632, Start Num: 31  
Candidate Starts for NEHalo\_50:  
(Start: 31 @37817 has 273 MA's), (32, 37760),

Gene: Naira\_55 Start: 39842, Stop: 39657, Start Num: 31  
Candidate Starts for Naira\_55:  
(Start: 29 @39869 has 1 MA's), (Start: 31 @39842 has 273 MA's),

Gene: Nekros\_61 Start: 46282, Stop: 46109, Start Num: 31  
Candidate Starts for Nekros\_61:  
(Start: 31 @46282 has 273 MA's), (35, 46225), (37, 46147), (38, 46123),

Gene: NihilNomen\_63 Start: 48129, Stop: 47956, Start Num: 31  
Candidate Starts for NihilNomen\_63:  
(Start: 31 @48129 has 273 MA's), (35, 48072), (37, 47994), (38, 47970),

Gene: Niza\_55 Start: 39894, Stop: 39715, Start Num: 31  
Candidate Starts for Niza\_55:  
(Start: 31 @39894 has 273 MA's), (32, 39843), (36, 39780),

Gene: Norz\_53 Start: 39069, Stop: 38890, Start Num: 31  
Candidate Starts for Norz\_53:  
(Start: 28 @39096 has 2 MA's), (Start: 31 @39069 has 273 MA's), (32, 39018), (36, 38955),

Gene: Noxious\_53 Start: 38391, Stop: 38209, Start Num: 31  
Candidate Starts for Noxious\_53:  
(7, 38514), (11, 38496), (12, 38493), (21, 38457), (Start: 31 @38391 has 273 MA's),

Gene: Odette\_61 Start: 47172, Stop: 46999, Start Num: 31  
Candidate Starts for Odette\_61:  
(Start: 31 @47172 has 273 MA's), (35, 47115), (37, 47037), (38, 47013),

Gene: Ohno789\_54 Start: 38616, Stop: 38443, Start Num: 31  
Candidate Starts for Ohno789\_54:  
(10, 38739), (14, 38721), (15, 38718), (22, 38682), (Start: 31 @38616 has 273 MA's), (33, 38574), (36, 38508),

Gene: Omega\_65 Start: 47992, Stop: 47822, Start Num: 31  
Candidate Starts for Omega\_65:  
(Start: 31 @47992 has 273 MA's), (32, 47941), (37, 47860), (38, 47836),

Gene: Oogway\_51 Start: 37739, Stop: 37560, Start Num: 31  
Candidate Starts for Oogway\_51:  
(Start: 28 @37766 has 2 MA's), (Start: 31 @37739 has 273 MA's), (32, 37688),

Gene: Optimus\_68 Start: 49044, Stop: 48871, Start Num: 31  
Candidate Starts for Optimus\_68:  
(Start: 31 @49044 has 273 MA's), (35, 48987), (37, 48909), (38, 48885),

Gene: PSullivan\_52 Start: 36904, Stop: 36725, Start Num: 31  
Candidate Starts for PSullivan\_52:  
(Start: 31 @36904 has 273 MA's), (32, 36853), (36, 36790),

Gene: PacerPaul\_52 Start: 38599, Stop: 38420, Start Num: 31  
Candidate Starts for PacerPaul\_52:  
(Start: 31 @38599 has 273 MA's), (32, 38548),

Gene: Papez\_55 Start: 40025, Stop: 39855, Start Num: 31  
Candidate Starts for Papez\_55:  
(Start: 29 @40052 has 1 MA's), (Start: 31 @40025 has 273 MA's),

Gene: Paphu\_50 Start: 37163, Stop: 36984, Start Num: 31  
Candidate Starts for Paphu\_50:  
(13, 37268), (14, 37265), (21, 37229), (Start: 31 @37163 has 273 MA's), (32, 37112),

Gene: Paraselene\_50 Start: 38489, Stop: 38304, Start Num: 31  
Candidate Starts for Paraselene\_50:  
(Start: 31 @38489 has 273 MA's), (32, 38432), (36, 38369),

Gene: Pari\_54 Start: 37560, Stop: 37390, Start Num: 31  
Candidate Starts for Pari\_54:  
(Start: 29 @37587 has 1 MA's), (Start: 31 @37560 has 273 MA's),

Gene: Parliament\_52 Start: 38082, Stop: 37903, Start Num: 31  
Candidate Starts for Parliament\_52:  
(Start: 28 @38109 has 2 MA's), (Start: 31 @38082 has 273 MA's), (32, 38031),

Gene: PascalRango\_53 Start: 38378, Stop: 38199, Start Num: 31  
Candidate Starts for PascalRango\_53:  
(Start: 28 @38405 has 2 MA's), (Start: 31 @38378 has 273 MA's), (32, 38327), (36, 38264),

Gene: Pat3\_83 Start: 50648, Stop: 50875, Start Num: 31  
Candidate Starts for Pat3\_83:  
(19, 50579), (Start: 31 @50648 has 273 MA's), (32, 50699), (40, 50870),

Gene: Payneful\_52 Start: 38050, Stop: 37871, Start Num: 31  
Candidate Starts for Payneful\_52:  
(Start: 31 @38050 has 273 MA's), (32, 37999), (36, 37936),

Gene: Pelly\_52 Start: 38001, Stop: 37822, Start Num: 31  
Candidate Starts for Pelly\_52:  
(Start: 31 @38001 has 273 MA's), (32, 37950),

Gene: Pepe\_49 Start: 36807, Stop: 36625, Start Num: 31  
Candidate Starts for Pepe\_49:  
(Start: 31 @36807 has 273 MA's),

Gene: Perseus\_52 Start: 38922, Stop: 38743, Start Num: 31  
Candidate Starts for Perseus\_52:  
(Start: 31 @38922 has 273 MA's), (32, 38871),

Gene: Peterson\_57 Start: 40276, Stop: 40091, Start Num: 31  
Candidate Starts for Peterson\_57:  
(Start: 31 @40276 has 273 MA's), (32, 40219),

Gene: Petp2012\_53 Start: 37901, Stop: 37722, Start Num: 31  
Candidate Starts for Petp2012\_53:  
(4, 38108), (9, 38030), (20, 37970), (23, 37961), (Start: 31 @37901 has 273 MA's), (32, 37850), (36, 37787),

Gene: Petruccio\_52 Start: 37638, Stop: 37459, Start Num: 31  
Candidate Starts for Petruccio\_52:  
(Start: 31 @37638 has 273 MA's), (32, 37587),

Gene: PherrisBueller\_52 Start: 36893, Stop: 36723, Start Num: 31  
Candidate Starts for PherrisBueller\_52:  
(Start: 31 @36893 has 273 MA's),

Gene: PhineBark\_52 Start: 38646, Stop: 38461, Start Num: 31  
Candidate Starts for PhineBark\_52:  
(Start: 31 @38646 has 273 MA's),

Gene: Phlippers\_51 Start: 38555, Stop: 38373, Start Num: 31  
Candidate Starts for Phlippers\_51:  
(Start: 29 @38582 has 1 MA's), (Start: 31 @38555 has 273 MA's), (36, 38438),

Gene: Phoebus\_62 Start: 48330, Stop: 48157, Start Num: 31  
Candidate Starts for Phoebus\_62:  
(Start: 31 @48330 has 273 MA's), (35, 48273), (37, 48195), (38, 48171),

Gene: PhrostyMug\_51 Start: 38201, Stop: 38022, Start Num: 31  
Candidate Starts for PhrostyMug\_51:  
(Start: 31 @38201 has 273 MA's), (32, 38150),

Gene: PinkPlastic\_53 Start: 37678, Stop: 37499, Start Num: 31  
Candidate Starts for PinkPlastic\_53:  
(Start: 28 @37705 has 2 MA's), (Start: 31 @37678 has 273 MA's), (32, 37627),

Gene: Pinto\_52 Start: 38070, Stop: 37891, Start Num: 31  
Candidate Starts for Pinto\_52:  
(Start: 28 @38097 has 2 MA's), (Start: 31 @38070 has 273 MA's), (32, 38019),

Gene: Pippin\_54 Start: 38003, Stop: 37821, Start Num: 31  
Candidate Starts for Pippin\_54:  
(7, 38126), (11, 38108), (12, 38105), (21, 38069), (Start: 31 @38003 has 273 MA's),

Gene: Pita2\_55 Start: 38401, Stop: 38222, Start Num: 31  
Candidate Starts for Pita2\_55:  
(Start: 31 @38401 has 273 MA's), (32, 38350), (36, 38287),

Gene: Porcelain\_59 Start: 43456, Stop: 43283, Start Num: 31  
Candidate Starts for Porcelain\_59:  
(Start: 31 @43456 has 273 MA's), (35, 43399), (37, 43321), (38, 43297),

Gene: Pound\_63 Start: 49463, Stop: 49290, Start Num: 31  
Candidate Starts for Pound\_63:  
(Start: 31 @49463 has 273 MA's), (35, 49406), (37, 49328), (38, 49304),

Gene: ProMouse\_54 Start: 38315, Stop: 38136, Start Num: 31  
Candidate Starts for ProMouse\_54:  
(30, 38324), (Start: 31 @38315 has 273 MA's), (32, 38264),

Gene: Raid\_52 Start: 37698, Stop: 37516, Start Num: 31  
Candidate Starts for Raid\_52:  
(6, 37878), (21, 37764), (Start: 31 @37698 has 273 MA's),

Gene: Rajelicia\_53 Start: 39012, Stop: 38833, Start Num: 31

Candidate Starts for Rajelicia\_53:  
(4, 39222), (9, 39141), (20, 39081), (23, 39072), (Start: 31 @39012 has 273 MA's), (32, 38961), (36, 38898),

Gene: Rakim\_86 Start: 51990, Stop: 52217, Start Num: 31  
Candidate Starts for Rakim\_86:  
(19, 51921), (Start: 31 @51990 has 273 MA's), (32, 52041), (40, 52212),

Gene: Rearden\_58 Start: 43787, Stop: 43614, Start Num: 31  
Candidate Starts for Rearden\_58:  
(Start: 31 @43787 has 273 MA's), (35, 43730), (37, 43652), (38, 43628),

Gene: Redno2\_60 Start: 44925, Stop: 44752, Start Num: 31  
Candidate Starts for Redno2\_60:  
(Start: 31 @44925 has 273 MA's), (35, 44868), (37, 44790), (38, 44766),

Gene: Rhynn\_51 Start: 37338, Stop: 37159, Start Num: 31  
Candidate Starts for Rhynn\_51:  
(Start: 31 @37338 has 273 MA's), (32, 37287),

Gene: RidgeCB\_52 Start: 38198, Stop: 38019, Start Num: 31  
Candidate Starts for RidgeCB\_52:  
(4, 38405), (9, 38327), (20, 38267), (23, 38258), (Start: 31 @38198 has 273 MA's), (32, 38147),

Gene: Ringer\_53 Start: 39320, Stop: 39141, Start Num: 31  
Candidate Starts for Ringer\_53:  
(Start: 28 @39347 has 2 MA's), (Start: 31 @39320 has 273 MA's), (32, 39269),

Gene: Rohr\_53 Start: 38081, Stop: 37902, Start Num: 31  
Candidate Starts for Rohr\_53:  
(Start: 31 @38081 has 273 MA's), (32, 38030), (36, 37967),

Gene: Rubeus\_52 Start: 35938, Stop: 35759, Start Num: 31  
Candidate Starts for Rubeus\_52:  
(Start: 28 @35965 has 2 MA's), (Start: 31 @35938 has 273 MA's), (32, 35887),

Gene: Rufus\_53 Start: 37708, Stop: 37529, Start Num: 31  
Candidate Starts for Rufus\_53:  
(Start: 31 @37708 has 273 MA's), (32, 37657), (36, 37594),

Gene: Ruotula\_55 Start: 39177, Stop: 38995, Start Num: 31  
Candidate Starts for Ruotula\_55:  
(7, 39312), (11, 39294), (12, 39291), (21, 39243), (Start: 31 @39177 has 273 MA's),

Gene: Rutherferd\_54 Start: 38554, Stop: 38375, Start Num: 31  
Candidate Starts for Rutherferd\_54:  
(Start: 31 @38554 has 273 MA's), (32, 38503),

Gene: STLscum\_55 Start: 38950, Stop: 38771, Start Num: 31  
Candidate Starts for STLscum\_55:  
(Start: 31 @38950 has 273 MA's), (32, 38899),

Gene: Sagefire\_55 Start: 38918, Stop: 38739, Start Num: 31

Candidate Starts for Sagefire\_55:  
(21, 38984), (Start: 31 @38918 has 273 MA's), (32, 38867),

Gene: Sandaddy\_51 Start: 37719, Stop: 37540, Start Num: 31  
Candidate Starts for Sandaddy\_51:  
(Start: 28 @37746 has 2 MA's), (Start: 31 @37719 has 273 MA's), (32, 37668),

Gene: Sanya\_50 Start: 38012, Stop: 37833, Start Num: 31  
Candidate Starts for Sanya\_50:  
(Start: 28 @38039 has 2 MA's), (Start: 31 @38012 has 273 MA's), (32, 37961),

Gene: SarFire\_50 Start: 37281, Stop: 37096, Start Num: 31  
Candidate Starts for SarFire\_50:  
(Start: 29 @37308 has 1 MA's), (Start: 31 @37281 has 273 MA's),

Gene: Schatzie\_58 Start: 46919, Stop: 46746, Start Num: 31  
Candidate Starts for Schatzie\_58:  
(Start: 31 @46919 has 273 MA's), (35, 46862), (37, 46784), (38, 46760),

Gene: Scowl\_53 Start: 38197, Stop: 38027, Start Num: 31  
Candidate Starts for Scowl\_53:  
(Start: 31 @38197 has 273 MA's),

Gene: Seabiscuit\_55 Start: 37814, Stop: 37635, Start Num: 31  
Candidate Starts for Seabiscuit\_55:  
(Start: 29 @37841 has 1 MA's), (Start: 31 @37814 has 273 MA's),

Gene: Seanderson\_54 Start: 39574, Stop: 39404, Start Num: 31  
Candidate Starts for Seanderson\_54:  
(Start: 31 @39574 has 273 MA's),

Gene: Shaboozey\_56 Start: 41971, Stop: 41804, Start Num: 31  
Candidate Starts for Shaboozey\_56:  
(Start: 31 @41971 has 273 MA's), (33, 41929), (37, 41842), (38, 41818),

Gene: ShortQueendom\_47 Start: 34739, Stop: 34560, Start Num: 31  
Candidate Starts for ShortQueendom\_47:  
(Start: 28 @34766 has 2 MA's), (Start: 31 @34739 has 273 MA's), (32, 34688), (36, 34625),

Gene: Sibs6\_54 Start: 36742, Stop: 36563, Start Num: 31  
Candidate Starts for Sibs6\_54:  
(Start: 31 @36742 has 273 MA's), (32, 36691), (36, 36628),

Gene: SkiPole\_57 Start: 38671, Stop: 38492, Start Num: 31  
Candidate Starts for SkiPole\_57:  
(Start: 31 @38671 has 273 MA's), (32, 38620), (36, 38557),

Gene: Slagathor\_54 Start: 38913, Stop: 38734, Start Num: 31  
Candidate Starts for Slagathor\_54:  
(4, 39120), (9, 39042), (20, 38982), (23, 38973), (Start: 31 @38913 has 273 MA's), (32, 38862), (36, 38799),

Gene: Smairt\_54 Start: 39194, Stop: 39015, Start Num: 31

Candidate Starts for Smairt\_54:  
(Start: 31 @39194 has 273 MA's), (32, 39143),

Gene: Smeagol\_54 Start: 39158, Stop: 38988, Start Num: 31  
Candidate Starts for Smeagol\_54:  
(Start: 29 @39185 has 1 MA's), (Start: 31 @39158 has 273 MA's),

Gene: Snazzy\_51 Start: 37348, Stop: 37169, Start Num: 31  
Candidate Starts for Snazzy\_51:  
(Start: 28 @37375 has 2 MA's), (Start: 31 @37348 has 273 MA's), (32, 37297), (36, 37234),

Gene: Solon\_51 Start: 37606, Stop: 37427, Start Num: 31  
Candidate Starts for Solon\_51:  
(Start: 28 @37633 has 2 MA's), (Start: 31 @37606 has 273 MA's), (32, 37555),

Gene: Sorpresa\_51 Start: 37721, Stop: 37542, Start Num: 31  
Candidate Starts for Sorpresa\_51:  
(Start: 28 @37748 has 2 MA's), (Start: 31 @37721 has 273 MA's), (32, 37670),

Gene: Sotrice96\_86 Start: 52138, Stop: 52365, Start Num: 31  
Candidate Starts for Sotrice96\_86:  
(Start: 31 @52138 has 273 MA's), (32, 52189), (40, 52360),

Gene: SpikeBT\_52 Start: 37966, Stop: 37787, Start Num: 31  
Candidate Starts for SpikeBT\_52:  
(Start: 31 @37966 has 273 MA's), (32, 37915), (36, 37852),

Gene: Squee\_53 Start: 38309, Stop: 38124, Start Num: 31  
Candidate Starts for Squee\_53:  
(Start: 29 @38336 has 1 MA's), (Start: 31 @38309 has 273 MA's),

Gene: Squint\_60 Start: 43575, Stop: 43402, Start Num: 31  
Candidate Starts for Squint\_60:  
(Start: 31 @43575 has 273 MA's), (35, 43518), (37, 43440), (38, 43416),

Gene: StewieG\_51 Start: 35126, Stop: 34947, Start Num: 31  
Candidate Starts for StewieG\_51:  
(Start: 28 @35153 has 2 MA's), (Start: 31 @35126 has 273 MA's), (32, 35075),

Gene: StolenFromERC\_88 Start: 52178, Stop: 52405, Start Num: 31  
Candidate Starts for StolenFromERC\_88:  
(19, 52109), (Start: 31 @52178 has 273 MA's), (32, 52229), (40, 52400),

Gene: Sumter\_49 Start: 38262, Stop: 38083, Start Num: 31  
Candidate Starts for Sumter\_49:  
(Start: 28 @38289 has 2 MA's), (Start: 31 @38262 has 273 MA's), (32, 38211),

Gene: Sunshine924\_54 Start: 37412, Stop: 37242, Start Num: 31  
Candidate Starts for Sunshine924\_54:  
(Start: 31 @37412 has 273 MA's),

Gene: Superphikiman\_61 Start: 43647, Stop: 43474, Start Num: 31  
Candidate Starts for Superphikiman\_61:

(Start: 31 @43647 has 273 MA's), (35, 43590), (37, 43512), (38, 43488),

Gene: SwissCheese\_54 Start: 37922, Stop: 37752, Start Num: 31

Candidate Starts for SwissCheese\_54:

(Start: 29 @37949 has 1 MA's), (Start: 31 @37922 has 273 MA's),

Gene: Switzer\_54 Start: 38834, Stop: 38655, Start Num: 31

Candidate Starts for Switzer\_54:

(Start: 28 @38861 has 2 MA's), (Start: 31 @38834 has 273 MA's), (32, 38783),

Gene: Swole\_53 Start: 37105, Stop: 36926, Start Num: 31

Candidate Starts for Swole\_53:

(Start: 29 @37132 has 1 MA's), (Start: 31 @37105 has 273 MA's),

Gene: Target\_53 Start: 36510, Stop: 36331, Start Num: 31

Candidate Starts for Target\_53:

(Start: 28 @36537 has 2 MA's), (Start: 31 @36510 has 273 MA's), (32, 36459),

Gene: Tasp14\_54 Start: 38203, Stop: 38024, Start Num: 31

Candidate Starts for Tasp14\_54:

(Start: 31 @38203 has 273 MA's), (32, 38152),

Gene: Teodoridan\_51 Start: 37403, Stop: 37218, Start Num: 31

Candidate Starts for Teodoridan\_51:

(Start: 31 @37403 has 273 MA's),

Gene: TheloniousMonk\_53 Start: 39927, Stop: 39742, Start Num: 31

Candidate Starts for TheloniousMonk\_53:

(Start: 31 @39927 has 273 MA's), (32, 39870), (36, 39807),

Gene: Thibault\_56 Start: 44634, Stop: 44461, Start Num: 31

Candidate Starts for Thibault\_56:

(Start: 31 @44634 has 273 MA's), (35, 44577), (37, 44499), (38, 44475),

Gene: Thor\_50 Start: 36639, Stop: 36454, Start Num: 31

Candidate Starts for Thor\_50:

(Start: 29 @36666 has 1 MA's), (Start: 31 @36639 has 273 MA's),

Gene: ThreeRngTarjay\_61 Start: 48205, Stop: 48032, Start Num: 31

Candidate Starts for ThreeRngTarjay\_61:

(Start: 31 @48205 has 273 MA's), (35, 48148), (37, 48070), (38, 48046),

Gene: Topgun\_52 Start: 37492, Stop: 37310, Start Num: 31

Candidate Starts for Topgun\_52:

(Start: 29 @37519 has 1 MA's), (Start: 31 @37492 has 273 MA's), (36, 37375),

Gene: Tote\_48 Start: 34372, Stop: 34193, Start Num: 31

Candidate Starts for Tote\_48:

(Start: 29 @34399 has 1 MA's), (Start: 31 @34372 has 273 MA's),

Gene: Traaww1\_81 Start: 51560, Stop: 51787, Start Num: 31

Candidate Starts for Traaww1\_81:

(Start: 31 @51560 has 273 MA's), (32, 51611), (40, 51782),

Gene: Traft412\_55 Start: 38835, Stop: 38650, Start Num: 31  
Candidate Starts for Traft412\_55:  
(Start: 31 @38835 has 273 MA's),

Gene: Treddle\_53 Start: 38583, Stop: 38404, Start Num: 31  
Candidate Starts for Treddle\_53:  
(Start: 31 @38583 has 273 MA's), (32, 38532), (36, 38469),

Gene: Tripl3t\_52 Start: 39208, Stop: 39026, Start Num: 31  
Candidate Starts for Tripl3t\_52:  
(Start: 31 @39208 has 273 MA's),

Gene: Trouble\_55 Start: 39314, Stop: 39141, Start Num: 31  
Candidate Starts for Trouble\_55:  
(Start: 31 @39314 has 273 MA's), (33, 39272),

Gene: Turj99\_51 Start: 38173, Stop: 37994, Start Num: 31  
Candidate Starts for Turj99\_51:  
(Start: 28 @38200 has 2 MA's), (Start: 31 @38173 has 273 MA's), (32, 38122),

Gene: TwoPeat\_53 Start: 37696, Stop: 37517, Start Num: 31  
Candidate Starts for TwoPeat\_53:  
(Start: 31 @37696 has 273 MA's), (32, 37645), (36, 37582),

Gene: U2\_52 Start: 38814, Stop: 38635, Start Num: 31  
Candidate Starts for U2\_52:  
(Start: 28 @38841 has 2 MA's), (Start: 31 @38814 has 273 MA's), (32, 38763),

Gene: Violet\_50 Start: 38591, Stop: 38412, Start Num: 31  
Candidate Starts for Violet\_50:  
(Start: 31 @38591 has 273 MA's), (32, 38540),

Gene: Wanda\_69 Start: 47917, Stop: 47744, Start Num: 31  
Candidate Starts for Wanda\_69:  
(Start: 31 @47917 has 273 MA's), (35, 47860), (37, 47782), (38, 47758),

Gene: Watermelon\_53 Start: 38032, Stop: 37853, Start Num: 31  
Candidate Starts for Watermelon\_53:  
(Start: 28 @38059 has 2 MA's), (Start: 31 @38032 has 273 MA's), (32, 37981),

Gene: Wheeler\_53 Start: 38076, Stop: 37897, Start Num: 31  
Candidate Starts for Wheeler\_53:  
(Start: 31 @38076 has 273 MA's), (32, 38025),

Gene: Whitspit\_50 Start: 35409, Stop: 35227, Start Num: 31  
Candidate Starts for Whitspit\_50:  
(Start: 31 @35409 has 273 MA's),

Gene: Wiggin\_87 Start: 51961, Stop: 52188, Start Num: 31  
Candidate Starts for Wiggin\_87:  
(Start: 31 @51961 has 273 MA's), (32, 52012), (40, 52183),

Gene: Wilkins\_52 Start: 37422, Stop: 37240, Start Num: 31  
Candidate Starts for Wilkins\_52:  
(Start: 29 @37449 has 1 MA's), (Start: 31 @37422 has 273 MA's), (36, 37305),

Gene: Xiaokay\_56 Start: 44841, Stop: 44668, Start Num: 31  
Candidate Starts for Xiaokay\_56:  
(Start: 31 @44841 has 273 MA's), (35, 44784), (37, 44706), (38, 44682),

Gene: Yeet\_61 Start: 47030, Stop: 46857, Start Num: 31  
Candidate Starts for Yeet\_61:  
(Start: 31 @47030 has 273 MA's), (35, 46973), (37, 46895), (38, 46871),

Gene: Zeeculate\_50 Start: 38630, Stop: 38457, Start Num: 31  
Candidate Starts for Zeeculate\_50:  
(Start: 31 @38630 has 273 MA's), (33, 38588),

Gene: Zelink\_61 Start: 48518, Stop: 48345, Start Num: 31  
Candidate Starts for Zelink\_61:  
(Start: 31 @48518 has 273 MA's), (35, 48461), (37, 48383), (38, 48359),

Gene: Zephyr\_52 Start: 37519, Stop: 37346, Start Num: 31  
Candidate Starts for Zephyr\_52:  
(14, 37624), (15, 37621), (22, 37585), (Start: 31 @37519 has 273 MA's), (33, 37477),

Gene: Zeuska\_51 Start: 38567, Stop: 38388, Start Num: 31  
Candidate Starts for Zeuska\_51:  
(Start: 31 @38567 has 273 MA's), (32, 38516), (36, 38453),