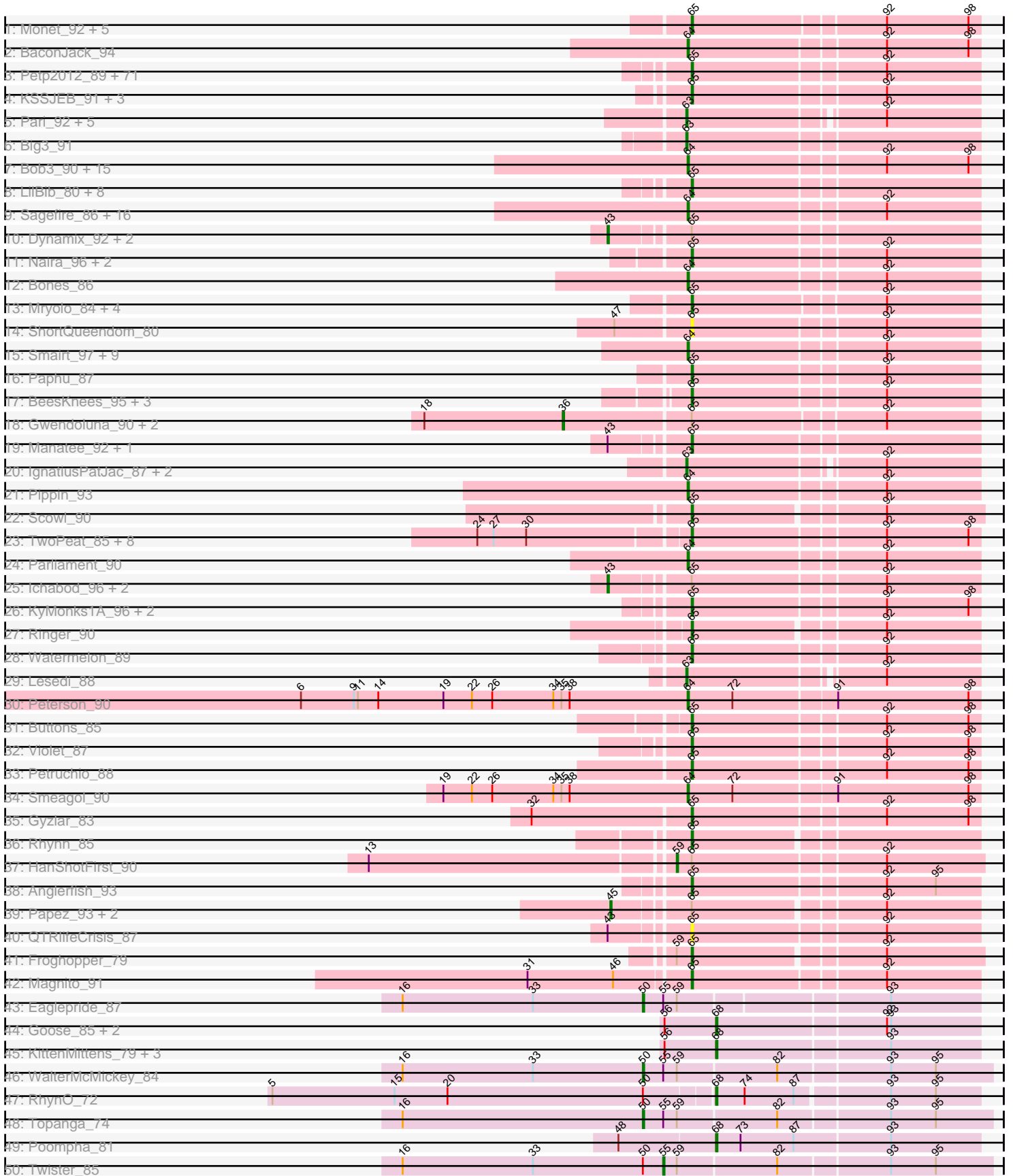
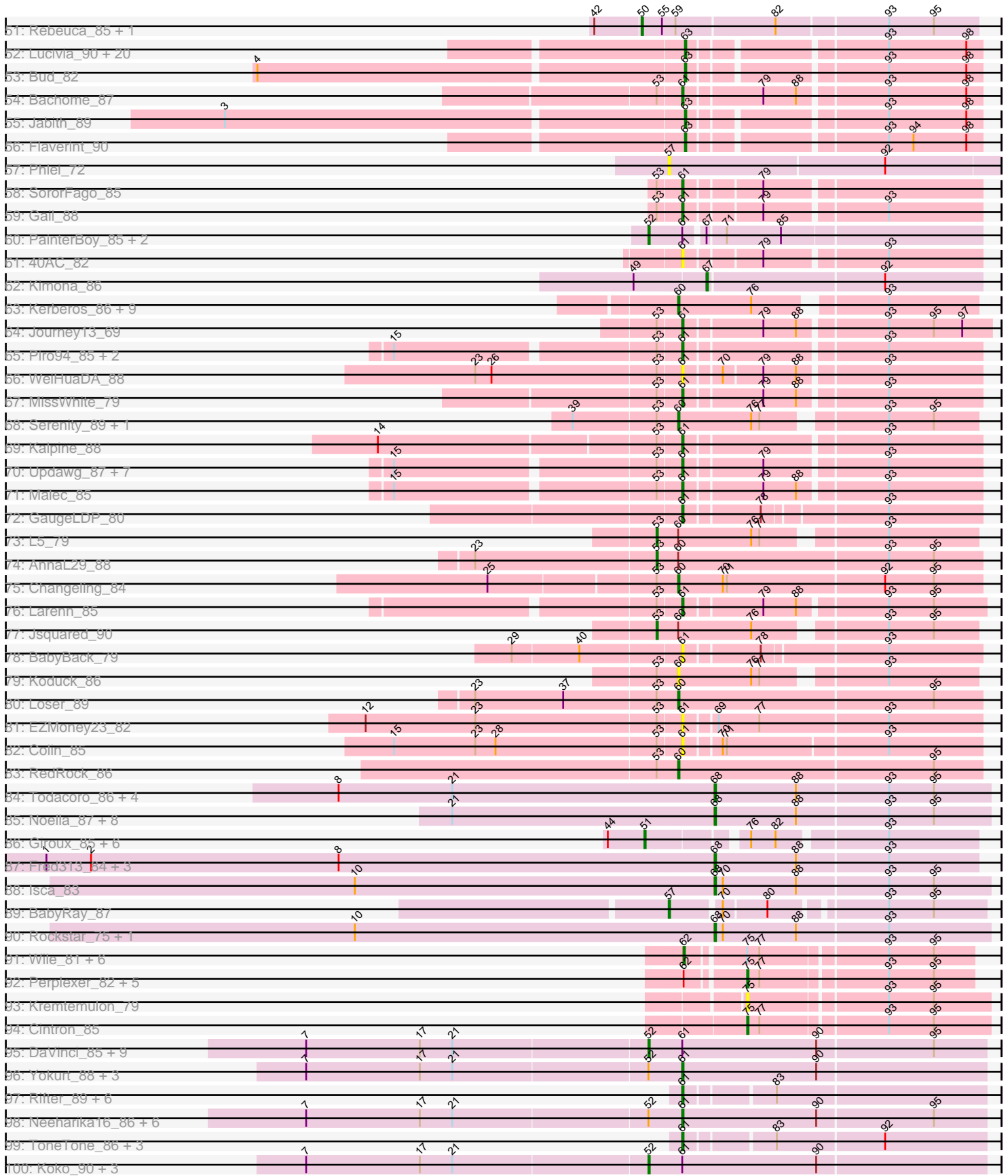


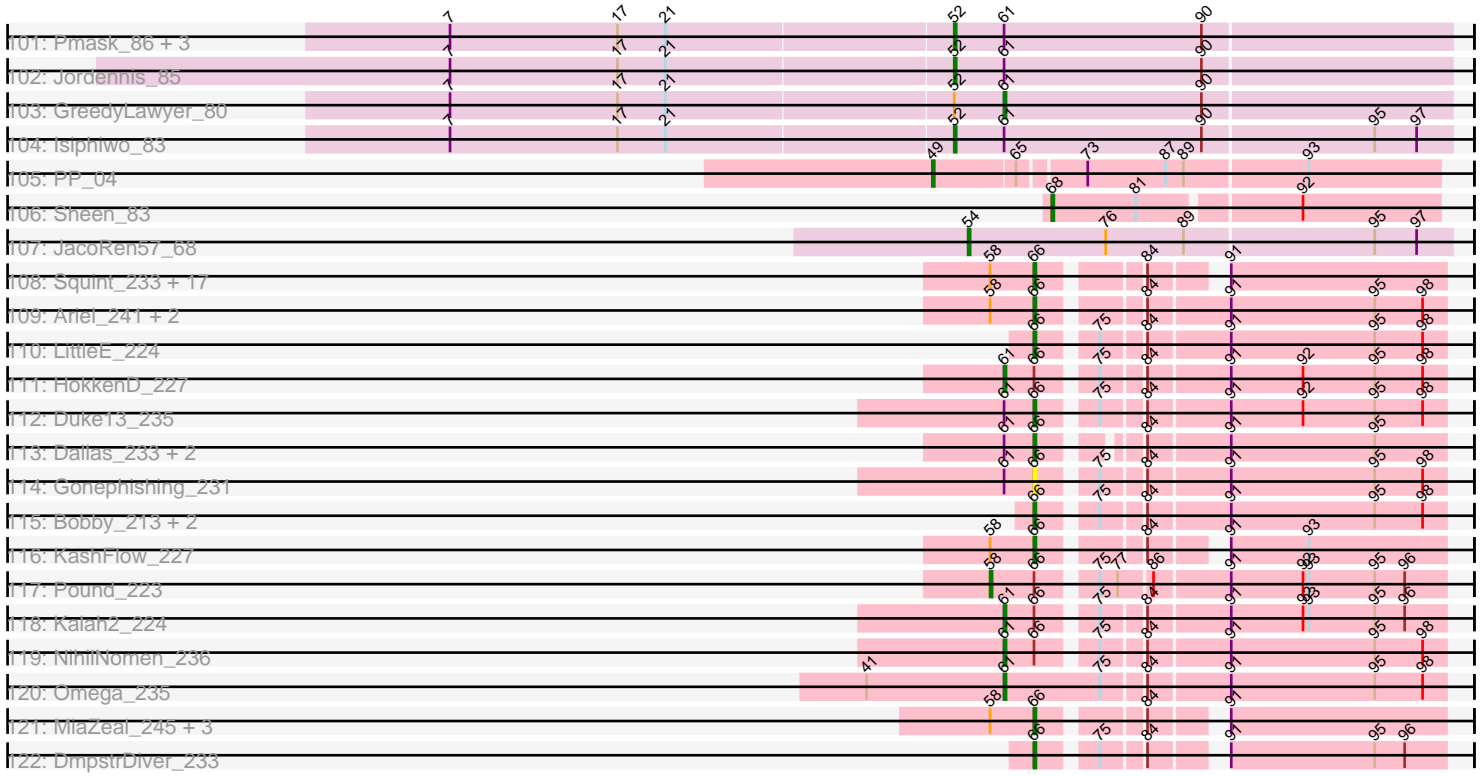
Pham 163259



# Pham 163259



Pham 163259



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 163259 Report

This analysis was run 04/28/24 on database version 559.

Pham number 163259 has 423 members, 45 are drafts.

Phages represented in each track:

- Track 1 : Monet\_92, Treddle\_90, Bxb1\_84, Fushigi\_84, Homines\_83, Crispicous1\_86
- Track 2 : BaconJack\_94
- Track 3 : Petp2012\_89, STLscum\_100, Pepe\_86, Rajelicia\_89, Maroc7\_92, Bigfoot\_86, Sibs6\_95, Magnar\_91, Sorpresa\_89, Greg\_90, Carlyle\_91, MrGordo\_92, Adahisdi\_85, Kugel\_94, SwissCheese\_95, Dussy\_87, Dexes\_93, Arcanine\_94, TheloniousMonk\_90, Sandaddy\_90, Abbyshoes\_89, CactusRose\_96, Forsytheast\_96, Ohno789\_95, Ajay\_84, Bruns\_96, Turj99\_86, Hermia\_84, Niza\_89, Euphoria\_95, Fajezeel\_90, GrecoEtereo\_92, ILeeKay\_91, Ruotula\_94, Rufus\_93, Bethlehem\_87, Corvo\_94, Burton\_90, Lopton\_88, Wheeler\_96, Oogway\_87, PattyP\_92, Trip13t\_91, Arlo\_96, Chanagan\_87, Atkinbua\_98, Pelly\_91, MetalQZJ\_88, DrFeelGood\_85, BillKnuckles\_86, Kykar\_88, Traft412\_86, BigPaolini\_85, ConceptII\_97, Alvin\_86, Museum\_90, Zephyr\_92, Moose\_95, Kenmech\_93, Acme\_91, GageAP\_90, Ciao\_94, MaryBeth\_91, Fascinus\_86, DreamCatcher\_102, NEHalo\_88, AFIS\_88, Eyeball\_94, Rubeus\_88, Hope4ever\_88, Snazzy\_92, SpikeBT\_87
- Track 4 : KSSJEB\_91, Kanely\_93, Seanderson\_89, Altman\_94
- Track 5 : Pari\_92, A6\_85, BK1\_85, PherrisBueller\_88, Killigrew\_87, Zeeculate\_91
- Track 6 : Big3\_91
- Track 7 : Bob3\_90, RidgeCB\_89, Gandalf20\_90, Solon\_83, Edtherson\_87, Rutherferd\_91, Paraselene\_87, Abrogate\_880, Sunshine924\_93, Topgun\_89, Wilkins\_90, StewieG\_86, SkiPole\_98, Jorgensen\_100, Applejack\_89, Ashballer\_91
- Track 8 : LilBib\_80, Agaliana\_87, Seabiscuit\_95, Norz\_90, Francis47\_93, Marcell\_83, Slagathor\_92, PacerPaul\_93, Pinto\_87
- Track 9 : Sagefire\_86, Barriga\_101, Lamina13\_93, Marsha\_93, Sumter\_87, Aeneas\_96, Nerujay\_93, Jerm2\_90, HermioneGrange\_94, Marge\_87, Hami1\_83, JC27\_94, Nhonho\_87, HarryOW\_91, Rohr\_92, BigMau\_91, MPlant7149\_90
- Track 10 : Dynamix\_92, Briton15\_95, Switzer\_91
- Track 11 : Naira\_96, Fenn\_97, Squee\_92
- Track 12 : Bones\_86
- Track 13 : Mryolo\_84, Espresso\_86, Teodoridan\_93, Payneiful\_73, Marchy\_77
- Track 14 : ShortQueendom\_80
- Track 15 : Smairt\_97, Mule\_92, JackSparrow\_92, Tasp14\_87, Bexan\_87, StrongArm\_88, Trouble\_90, PhrostyMug\_94, Perseus\_90, Beatrix\_89
- Track 16 : Paphu\_87
- Track 17 : BeesKnees\_95, Jasper\_93, McGuire\_92, Dreamboat\_93
- Track 18 : Gwendoluna\_90, Gompeii16\_90, Bircsak\_90

- Track 19 : Manatee\_92, PascalRango\_92
- Track 20 : IgnatiusPatJac\_87, BluSpix\_84, Alsfro\_94
- Track 21 : Pippin\_93
- Track 22 : Scowl\_90
- Track 23 : TwoPeat\_85, Molly\_89, PSullivan\_85, Swole\_88, KBG\_87, JuliaChild\_91, Tote\_86, Doom\_84, Pita2\_91
- Track 24 : Parliament\_90
- Track 25 : Ichabod\_96, SarFire\_98, Thor\_98
- Track 26 : KyMonks1A\_96, Licorice\_91, Target\_90
- Track 27 : Ringer\_90
- Track 28 : Watermelon\_89
- Track 29 : Lesedi\_88
- Track 30 : Peterson\_90
- Track 31 : Buttons\_85
- Track 32 : Violet\_87
- Track 33 : Petruccio\_88
- Track 34 : Smeagol\_90
- Track 35 : Gyzlar\_83
- Track 36 : Rhynn\_85
- Track 37 : HanShotFirst\_90
- Track 38 : Anglerfish\_93
- Track 39 : Papez\_93, Michley\_91, Graduation\_93
- Track 40 : QTRlifeCrisis\_87
- Track 41 : Froghopper\_79
- Track 42 : Magnito\_91
- Track 43 : Eaglepride\_87
- Track 44 : Goose\_85, Chupacabra\_81, OKCentral2016\_83
- Track 45 : KittenMittens\_79, Severus\_82, PeaceMeal1\_81, Drake94\_81
- Track 46 : WalterMcMickey\_84
- Track 47 : RhynO\_72
- Track 48 : Topanga\_74
- Track 49 : Poompha\_81
- Track 50 : Twister\_85
- Track 51 : Rebeuca\_85, Kristoff\_82
- Track 52 : Lucivia\_90, Orange\_89, Gilberta\_87, Aneem\_90, MaCh\_89, Joselito\_87, Et2Brutus\_89, Timothy\_89, Bowtie\_85, Fibonacci\_89, Mabel\_89, Salz\_85, Munch\_88, Sham4\_86, Insomnia\_88, Ebony\_88, Hutc2\_86, Petersenfast\_83, TinyTimmy\_87, Mulciber\_88, Snape\_89
- Track 53 : Bud\_82
- Track 54 : Bachome\_87
- Track 55 : Jabith\_89
- Track 56 : Flaverint\_90
- Track 57 : Phlei\_72
- Track 58 : SororFago\_85
- Track 59 : Gail\_88
- Track 60 : PainterBoy\_85, Lucyedi\_86, EagleEye\_87
- Track 61 : 40AC\_82
- Track 62 : Kimona\_86
- Track 63 : Kerberos\_86, Tomathan\_86, Pomar16\_86, Duplo\_87, VC3\_84, StarStuff\_86, ANI8\_85, DBQu4n\_86, AN9\_85, C3\_78
- Track 64 : Journey13\_69
- Track 65 : Piro94\_85, HarryHoudini\_86, Drake55\_87
- Track 66 : WeiHuaDA\_88

- Track 67 : MissWhite\_79
- Track 68 : Serenity\_89, TipsytheTRex\_85
- Track 69 : Kalpine\_88
- Track 70 : Updawg\_87, WideWale\_87, Baehexic\_85, MiculUcigas\_86, Centaur\_86, NaSiaTalie\_87, Flare16\_86, Equemioh13\_86
- Track 71 : Malec\_85
- Track 72 : GaugeLDP\_80
- Track 73 : L5\_79
- Track 74 : AnnaL29\_88
- Track 75 : Changeling\_84
- Track 76 : Larenn\_85
- Track 77 : Jsquared\_90
- Track 78 : BabyBack\_79
- Track 79 : Koduck\_86
- Track 80 : Loser\_89
- Track 81 : EZMoney23\_82
- Track 82 : Colin\_85
- Track 83 : RedRock\_86
- Track 84 : Todacoro\_86, QuinnKiro\_85, Veracruz\_83, Margo\_86, Lambert1\_86
- Track 85 : Noella\_87, Caviar\_75, Norbert\_82, Hookmount\_86, Popcicle\_86, ResDef\_84, Panamaxus\_82, Texage\_84, Pocahontas\_85
- Track 86 : Giroux\_85, Bugatti\_88, Pistachio\_87, SaturnRing\_88, TNguyen7\_88, BlueBird\_89, Puppy\_88
- Track 87 : Fred313\_84, HelDan\_86, Heathen\_86, Scout\_86
- Track 88 : Isca\_83
- Track 89 : BabyRay\_87
- Track 90 : Rockstar\_75, Phantastic\_87
- Track 91 : Wile\_81, Wizard007\_82, Druantia\_84, Backyardigan\_80, Achebe\_81, Badger\_81, Cici\_82
- Track 92 : Perplexer\_82, Bumblebee11\_81, Katalie136\_82, PetiteSangsue\_82, Morpher26\_82, AbbysRanger\_82
- Track 93 : Kremtemulon\_79
- Track 94 : Cintron\_85
- Track 95 : DaVinci\_85, McFly\_87, Hoot\_82, Cookiedough\_87, Kazan\_88, Zulu\_90, Kipper29\_87, VohminGhazi\_87, SmellyB\_87, BABullseye\_80
- Track 96 : Yokurt\_88, Helmet\_90, Zaka\_89, Garak\_90
- Track 97 : Rifter\_89, Gruunaga\_88, Artemis2UCLA\_88, CloudWang3\_89, Hexamo\_88, Roksolana\_89, Gladiator\_85
- Track 98 : Neeharika16\_86, Priamo\_88, EricB\_85, Chartreuse\_85, Dorothea\_84, Candra\_85, SuperCallie99\_83
- Track 99 : ToneTone\_86, Lilbunny\_86, Hammer\_89, Tucker\_89
- Track 100 : Koko\_90, Blue7\_90, Indra\_92, Wiks\_88
- Track 101 : Pmask\_86, SuperAwesome\_87, Newrala\_86, JewelBug\_79
- Track 102 : Jordennis\_85
- Track 103 : GreedyLawyer\_80
- Track 104 : Isiphiwo\_83
- Track 105 : PP\_04
- Track 106 : Sheen\_83
- Track 107 : JacoRen57\_68
- Track 108 : Squint\_233, Hughesyang\_237, Yeet\_229, EricMillard\_232, Redno2\_226, Dove\_226, Bombitas\_219, Bagrid\_240, Beem\_238, Ejimix\_226, Zelink\_228, Phoebus\_233, Klein\_242, ThreeRngTarjay\_234, JuicyJay\_230, Hannaconda\_225, Schatzie\_227, Odette\_234

- Track 109 : Ariel\_241, Courthouse\_237, Superphikiman\_233
- Track 110 : LittleE\_224
- Track 111 : HokkenD\_227
- Track 112 : Duke13\_235
- Track 113 : Dallas\_233, Halley\_237, Minerva\_233
- Track 114 : Gonephishing\_231
- Track 115 : Bobby\_213, Constella\_224, Thibault\_209
- Track 116 : KashFlow\_227
- Track 117 : Pound\_223
- Track 118 : Kalah2\_224
- Track 119 : NihilNomen\_236
- Track 120 : Omega\_235
- Track 121 : MiaZeal\_245, Lucky2013\_232, Porcelain\_236, Wanda\_234
- Track 122 : DmpstrDiver\_233

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

The start number called the most often in the published annotations is 65, it was called in 117 of the 378 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AFIS\_88, Abbyshoes\_89, Acme\_91, Adahisdi\_85, Agaliana\_87, Ajay\_84, Altman\_94, Alvin\_86, Anglerfish\_93, Arcanine\_94, Arlo\_96, Atkinbua\_98, BeesKnees\_95, Bethlehem\_87, BigPaolini\_85, Bigfoot\_86, BillKnuckles\_86, Bruns\_96, Burton\_90, Buttons\_85, Bxb1\_84, CactusRose\_96, Carlyle\_91, Chanagan\_87, Ciao\_94, ConceptII\_97, Corvo\_94, Crispicous1\_86, Dexes\_93, Doom\_84, DrFeelGood\_85, DreamCatcher\_102, Dreamboat\_93, Dussy\_87, Espresso\_86, Euphoria\_95, Eyeball\_94, Fajezeel\_90, Fascinus\_86, Fenn\_97, Forsytheast\_96, Francis47\_93, Froghopper\_79, Fushigi\_84, GageAP\_90, GrecoEtereo\_92, Greg\_90, Gyzlar\_83, Hermia\_84, Homines\_83, Hope4ever\_88, ILeeKay\_91, Jasper\_93, JuliaChild\_91, KBG\_87, KSSJEB\_91, Kanely\_93, Kenmech\_93, Kugel\_94, KyMonks1A\_96, Kykar\_88, Licorice\_91, LilBib\_80, Lopton\_88, Magnar\_91, Magnito\_91, Manatee\_92, Marcell\_83, Marchy\_77, Maroc7\_92, MaryBeth\_91, McGuire\_92, MetalQZJ\_88, Molly\_89, Monet\_92, Moose\_95, MrGordo\_92, Mryolo\_84, Museum\_90, NEHalo\_88, Naira\_96, Niza\_89, Norz\_90, Ohno789\_95, Oogway\_87, PSullivan\_85, PacerPaul\_93, Paphu\_87, PascalRango\_92, PattyP\_92, Payneeful\_73, Pelly\_91, Pepe\_86, Petp2012\_89, Petruccio\_88, Pinto\_87, Pita2\_91, QTRlifeCrisis\_87, Rajelicia\_89, Rhynn\_85, Ringer\_90, Rubeus\_88, Rufus\_93, Ruotula\_94, STLscum\_100, Sandaddy\_90, Scowl\_90, Seabiscuit\_95, Seanderson\_89, ShortQueendom\_80, Sibs6\_95, Slagathor\_92, Snazzy\_92, Sorpresa\_89, SpikeBT\_87, Squee\_92, SwissCheese\_95, Swole\_88, Target\_90, Teodoridan\_93, TheloniousMonk\_90, Tote\_86, Traff412\_86, Treddle\_90, Tripl3t\_91, Turj99\_86, TwoPeat\_85, Violet\_87, Watermelon\_89, Wheeler\_96, Zephyr\_92,

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

- Bircsak\_90, Briton15\_95, Dynamix\_92, Gompeii16\_90, Graduation\_93, Gwendoluna\_90, HanShotFirst\_90, Ichabod\_96, Michley\_91, PP\_04, Papez\_93, SarFire\_98, Switzer\_91, Thor\_98,

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

• 40AC\_82, A6\_85, AN9\_85, AN18\_85, AbbysRanger\_82, Abrogate\_880, Achebe\_81, Aeneas\_96, Alsfro\_94, Aneem\_90, AnnaL29\_88, Applejack\_89, Ariel\_241, Artemis2UCLA\_88, Ashballer\_91, BABullseye\_80, BK1\_85, BabyBack\_79, BabyRay\_87, Bachome\_87, Backyardigan\_80, BaconJack\_94, Badger\_81, Baehexic\_85, Bagrid\_240, Barriga\_101, Beatrix\_89, Beem\_238, Bexan\_87, Big3\_91, BigMau\_91, BluSpix\_84, Blue7\_90, BlueBird\_89, Bob3\_90, Bobby\_213, Bombitas\_219, Bones\_86, Bowtie\_85, Bud\_82, Bugatti\_88, Bumblebee11\_81, C3\_78, Candra\_85, Caviar\_75, Centaur\_86, Changeling\_84, Chartreuse\_85, Chupacabra\_81, Cici\_82, Cintron\_85, CloudWang3\_89, Colin\_85, Constella\_224, Cookiedough\_87, Courthouse\_237, DBQu4n\_86, DaVinci\_85, Dallas\_233, DmpstrDiver\_233, Dorothea\_84, Dove\_226, Drake55\_87, Drake94\_81, Druantia\_84, Duke13\_235, Duplo\_87, EZMoney23\_82, EagleEye\_87, Eaglepride\_87, Ebony\_88, Edtherson\_87, Ejimix\_226, Equemioh13\_86, EricB\_85, EricMillard\_232, Et2Brutus\_89, Fibonacci\_89, Flare16\_86, Flaverint\_90, Fred313\_84, Gail\_88, Gandalf20\_90, Garak\_90, GaugeLDP\_80, Gilberta\_87, Giroux\_85, Gladiator\_85, Gonephishing\_231, Goose\_85, GreedyLawyer\_80, Gruunaga\_88, Halley\_237, Hami1\_83, Hammer\_89, Hannaconda\_225, HarryHoudini\_86, HarryOW\_91, Heathen\_86, HelDan\_86, Helmet\_90, HermioneGrange\_94, Hexamo\_88, HokkenD\_227, Hookmount\_86, Hoot\_82, Hughesyang\_237, Hutc2\_86, IgnatiusPatJac\_87, Indra\_92, Insomnia\_88, Isca\_83, Isiphiwo\_83, JC27\_94, Jabith\_89, JackSparrow\_92, JacoRen57\_68, Jerm2\_90, JewelBug\_79, Jordennis\_85, Jorgensen\_100, Joselito\_87, Journey13\_69, Jsquared\_90, JuicyJay\_230, Kalah2\_224, Kalpine\_88, KashFlow\_227, Katalie136\_82, Kazan\_88, Kerberos\_86, Killigrew\_87, Kimona\_86, Kipper29\_87, KittenMittens\_79, Klein\_242, Koduck\_86, Koko\_90, Kremtemulon\_79, Kristoff\_82, L5\_79, Lambert1\_86, Lamina13\_93, Larenn\_85, Lesedi\_88, Lilbunny\_86, LittleE\_224, Loser\_89, Lucivia\_90, Lucky2013\_232, Lucyedi\_86, MPlant7149\_90, MaCh\_89, Mabel\_89, Malec\_85, Marge\_87, Margo\_86, Marsha\_93, McFly\_87, MiaZeal\_245, MiculUcigas\_86, Minerva\_233, MissWhite\_79, Morpher26\_82, Mulciber\_88, Mule\_92, Munch\_88, NaSiaTalie\_87, Neeharika16\_86, Nerujay\_93, Newrala\_86, Nhonho\_87, NihilNomen\_236, Noella\_87, Norbert\_82, OKCentral2016\_83, Odette\_234, Omega\_235, Orange\_89, PainterBoy\_85, Panamaxus\_82, Paraselene\_87, Pari\_92, Parliament\_90, PeaceMeal1\_81, Perplexer\_82, Perseus\_90, Petersenfast\_83, Peterson\_90, PetiteSangsue\_82, Phantastic\_87, PherrisBueller\_88, Phlei\_72, Phoebus\_233, PhrostyMug\_94, Pippin\_93, Piro94\_85, Pistachio\_87, Pmask\_86, Pocahontas\_85, Pomar16\_86, Poompha\_81, Popcicle\_86, Porcelain\_236, Pound\_223, Priamo\_88, Puppy\_88, QuinnKiro\_85, Rebeuca\_85, RedRock\_86, Redno2\_226, ResDef\_84, RhynO\_72, RidgeCB\_89, Rifter\_89, Rockstar\_75, Rohr\_92, Roksolana\_89, Rutherford\_91, Sagefire\_86, Salz\_85, SaturnRing\_88, Schatzie\_227, Scout\_86, Serenity\_89, Severus\_82, Sham4\_86, Sheen\_83, SkiPole\_98, Smairt\_97, Smeagol\_90, SmellyB\_87, Snape\_89, Solon\_83, SororFago\_85, Squint\_233, StarStuff\_86, StewieG\_86, StrongArm\_88, Sumter\_87, Sunshine924\_93, SuperAwesome\_87, SuperCallie99\_83, Superphikiman\_233, TNguyen7\_88, Tasp14\_87, Texage\_84, Thibault\_209, ThreeRngTarjay\_234, Timothy\_89, TinyTimmy\_87, TopsytheTRex\_85, Todacoro\_86, Tomathan\_86, ToneTone\_86, Topanga\_74, Topgun\_89, Trouble\_90, Tucker\_89, Twister\_85, Updawg\_87, VC3\_84, Veracruz\_83, VohminGhazi\_87, WalterMcMickey\_84, Wanda\_234, WeiHuaDA\_88, WideWale\_87, Wiks\_88, Wile\_81, Wilkins\_90, Wizard007\_82, Yeet\_229, Yokurt\_88, Zaka\_89, Zeeculate\_91, Zelink\_228, Zulu\_90,

**Summary by start number:**



Start 36:

- Found in 3 of 423 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 2 of 378
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bircsak\_90 (A1), Gompeii16\_90 (A1), Gwendoluna\_90 (A1),

Start 43:

- Found in 9 of 423 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 6 of 378
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Briton15\_95 (A1), Dynamix\_92 (A1), Ichabod\_96 (A1), SarFire\_98 (A1), Switzer\_91 (A1), Thor\_98 (A1),

Start 45:

- Found in 3 of 423 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 3 of 378
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Graduation\_93 (A1), Michley\_91 (A1), Papez\_93 (A1),

Start 49:

- Found in 2 of 423 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 378
- Called 50.0% of time when present
- Phage (with cluster) where this start called: PP\_04 (A7),

Start 50:

- Found in 7 of 423 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 5 of 378
- Called 71.4% of time when present
- Phage (with cluster) where this start called: Eaglepride\_87 (A10), Kristoff\_82 (A10), Rebeuca\_85 (A10), Topanga\_74 (A10), WalterMcMickey\_84 (A10),

Start 51:

- Found in 7 of 423 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 4 of 378
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BlueBird\_89 (A3), Bugatti\_88 (A3), Giroux\_85 (A3), Pistachio\_87 (A3), Puppy\_88 (A3), SaturnRing\_88 (A3), TNguyen7\_88 (A3),

Start 52:

- Found in 35 of 423 ( 8.3% ) of genes in pham
- Manual Annotations of this start: 23 of 378
- Called 65.7% of time when present
- Phage (with cluster) where this start called: BABullseye\_80 (A6), Blue7\_90 (A6), Cookiedough\_87 (A6), DaVinci\_85 (A6), EagleEye\_87 (A16), Hoot\_82 (A6), Indra\_92 (A6), Isiphiwo\_83 (A6), JewelBug\_79 (A6), Jordennis\_85 (A6), Kazan\_88 (A6), Kipper29\_87 (A6), Koko\_90 (A6), Lucyedi\_86 (A16), McFly\_87 (A6), Newrala\_86 (A6), PainterBoy\_85 (A16), Pmask\_86 (A6), SmellyB\_87 (A6), SuperAwesome\_87 (A6), VohminGhazi\_87 (A6), Wiks\_88 (A6), Zulu\_90 (A6),

Start 53:

- Found in 31 of 423 ( 7.3% ) of genes in pham
- Manual Annotations of this start: 3 of 378
- Called 9.7% of time when present
- Phage (with cluster) where this start called: AnnaL29\_88 (A2), Jsquared\_90 (A2), L5\_79 (A2),

Start 54:

- Found in 1 of 423 ( 0.2% ) of genes in pham
- Manual Annotations of this start: 1 of 378
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JacoRen57\_68 (AB),

Start 55:

- Found in 6 of 423 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 378
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Twister\_85 (A10),

Start 57:

- Found in 2 of 423 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 378
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BabyRay\_87 (A3), Phlei\_72 (A13),

Start 58:

- Found in 27 of 423 ( 6.4% ) of genes in pham
- Manual Annotations of this start: 1 of 378
- Called 3.7% of time when present
- Phage (with cluster) where this start called: Pound\_223 (J),

Start 59:

- Found in 8 of 423 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 378
- Called 12.5% of time when present
- Phage (with cluster) where this start called: HanShotFirst\_90 (A1),

Start 60:

- Found in 19 of 423 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 15 of 378
- Called 84.2% of time when present
- Phage (with cluster) where this start called: AN9\_85 (A2), ANI8\_85 (A2), C3\_78 (A2), Changeling\_84 (A2), DBQu4n\_86 (A2), Duplo\_87 (A2), Kerberos\_86 (A2), Koduck\_86 (A2), Loser\_89 (A2), Pomar16\_86 (A2), RedRock\_86 (A2), Serenity\_89 (A2), StarStuff\_86 (A2), TipsytheTRex\_85 (A2), Tomathan\_86 (A2), VC3\_84 (A2),

Start 61:

- Found in 80 of 423 ( 18.9% ) of genes in pham
- Manual Annotations of this start: 40 of 378
- Called 65.0% of time when present
- Phage (with cluster) where this start called: 40AC\_82 (A17), Artemis2UCLA\_88 (A6), BabyBack\_79 (A2), Bachome\_87 (A11), Baehexic\_85 (A2), Candra\_85 (A6), Centaur\_86 (A2), Chartreuse\_85 (A6), CloudWang3\_89 (A6), Colin\_85 (A2),

Dorothea\_84 (A6), Drake55\_87 (A2), EZMoney23\_82 (A2), Equemioh13\_86 (A2), EricB\_85 (A6), Flare16\_86 (A2), Gail\_88 (A14), Garak\_90 (A6), GaugeLDP\_80 (A2), Gladiator\_85 (A6), GreedyLawyer\_80 (A6), Gruunaga\_88 (A6), Hammer\_89 (A6), HarryHoudini\_86 (A2), Helmet\_90 (A6), Hexamo\_88 (A6), HokkenD\_227 (J), Journey13\_69 (A2), Kalah2\_224 (J), Kalpine\_88 (A2), Larenn\_85 (A2), Lilbunny\_86 (A6), Malec\_85 (A2), MiculUcigas\_86 (A2), MissWhite\_79 (A2), NaSiaTalie\_87 (A2), Neeharika16\_86 (A6), NihilNomen\_236 (J), Omega\_235 (J), Piro94\_85 (A2), Priamo\_88 (A6), Rifter\_89 (A6), Roksolana\_89 (A6), SororFago\_85 (A14), SuperCallie99\_83 (A6), ToneTone\_86 (A6), Tucker\_89 (A6), Updawg\_87 (A2), WeiHuaDA\_88 (A2), WideWale\_87 (A2), Yokurt\_88 (A6), Zaka\_89 (A6),

#### Start 62:

- Found in 13 of 423 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 7 of 378
- Called 53.8% of time when present
- Phage (with cluster) where this start called: Achebe\_81 (A4), Backyardigan\_80 (A4), Badger\_81 (A4), Cici\_82 (A4), Druantia\_84 (A4), Wile\_81 (A4), Wizard007\_82 (A4),

#### Start 63:

- Found in 35 of 423 ( 8.3% ) of genes in pham
- Manual Annotations of this start: 31 of 378
- Called 100.0% of time when present
- Phage (with cluster) where this start called: A6\_85 (A1), Alsfro\_94 (A1), Aneem\_90 (A11), BK1\_85 (A1), Big3\_91 (A1), BluSpix\_84 (A1), Bowtie\_85 (A11), Bud\_82 (A11), Ebony\_88 (A11), Et2Brutus\_89 (A11), Fibonacci\_89 (A11), Flaverint\_90 (A11), Gilberta\_87 (A11), Hutc2\_86 (A11), IgnatiusPatJac\_87 (A1), Insomnia\_88 (A11), Jabith\_89 (A11), Joselito\_87 (A11), Killigrew\_87 (A1), Lesedi\_88 (A1), Lucivia\_90 (A11), MaCh\_89 (A11), Mabel\_89 (A11), Mulciber\_88 (A11), Munch\_88 (A11), Orange\_89 (A11), Pari\_92 (A1), Petersenfast\_83 (A11), PherrisBueller\_88 (A1), Salz\_85 (A11), Sham4\_86 (A11), Snape\_89 (A11), Timothy\_89 (A11), TinyTimmy\_87 (A11), Zeeculate\_91 (A1),

#### Start 64:

- Found in 49 of 423 ( 11.6% ) of genes in pham
- Manual Annotations of this start: 46 of 378
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abrogate\_880 (A1), Aeneas\_96 (A1), Applejack\_89 (A1), Ashballer\_91 (A1), BaconJack\_94 (A1), Barriga\_101 (A1), Beatrix\_89 (A1), Bexan\_87 (A1), BigMau\_91 (A1), Bob3\_90 (A1), Bones\_86 (A1), Edtherson\_87 (A1), Gandalf20\_90 (A1), Hami1\_83 (A1), HarryOW\_91 (A1), HermioneGrange\_94 (A1), JC27\_94 (A1), JackSparrow\_92 (A1), Jerm2\_90 (A1), Jorgensen\_100 (A1), Lamina13\_93 (A1), MPlant7149\_90 (A1), Marge\_87 (A1), Marsha\_93 (A1), Mule\_92 (A1), Nerujay\_93 (A1), Nhonho\_87 (A1), Paraselene\_87 (A1), Parliament\_90 (A1), Perseus\_90 (A1), Peterson\_90 (A1), PhrostyMug\_94 (A1), Pippin\_93 (A1), RidgeCB\_89 (A1), Rohr\_92 (A1), Rutherford\_91 (A1), Sagefire\_86 (A1), SkiPole\_98 (A1), Smairt\_97 (A1), Smeagol\_90 (A1), Solon\_83 (A1), StewieG\_86 (A1), StrongArm\_88 (A1), Sumter\_87 (A1), Sunshine924\_93 (A1), Tasp14\_87 (A1), Topgun\_89 (A1), Trouble\_90 (A1), Wilkins\_90 (A1),

#### Start 65:

- Found in 145 of 423 ( 34.3% ) of genes in pham
- Manual Annotations of this start: 117 of 378
- Called 90.3% of time when present

- Phage (with cluster) where this start called: AFIS\_88 (A1), Abbyshoes\_89 (A1), Acme\_91 (A1), Adahisdi\_85 (A1), Agaliana\_87 (A1), Ajay\_84 (A1), Altman\_94 (A1), Alvin\_86 (A1), Anglerfish\_93 (A1), Arcanine\_94 (A1), Arlo\_96 (A1), Atkinbua\_98 (A1), BeesKnees\_95 (A1), Bethlehem\_87 (A1), BigPaolini\_85 (A1), Bigfoot\_86 (A1), BillKnuckles\_86 (A1), Bruns\_96 (A1), Burton\_90 (A1), Buttons\_85 (A1), Bxb1\_84 (A1), CactusRose\_96 (A1), Carlyle\_91 (A1), Chanagan\_87 (A1), Ciao\_94 (A1), Conceptll\_97 (A1), Corvo\_94 (A1), Crispicous1\_86 (A1), Dexes\_93 (A1), Doom\_84 (A1), DrFeelGood\_85 (A1), DreamCatcher\_102 (A1), Dreamboat\_93 (A1), Dussy\_87 (A1), Espresso\_86 (A1), Euphoria\_95 (A1), Eyeball\_94 (A1), Fajezeel\_90 (A1), Fascinus\_86 (A1), Fenn\_97 (A1), Forsytheast\_96 (A1), Francis47\_93 (A1), Froghopper\_79 (A1), Fushigi\_84 (A1), GageAP\_90 (A1), GrecoEtereo\_92 (A1), Greg\_90 (A1), Gyzzlar\_83 (A1), Hermia\_84 (A1), Homines\_83 (A1), Hope4ever\_88 (A1), lLeeKay\_91 (A1), Jasper\_93 (A1), JuliaChild\_91 (A1), KBG\_87 (A1), KSSJEB\_91 (A1), Kanely\_93 (A1), Kenmech\_93 (A1), Kugel\_94 (A1), KyMonks1A\_96 (A1), Kykar\_88 (A1), Licorice\_91 (A1), LilBib\_80 (A1), Lopton\_88 (A1), Magnar\_91 (A1), Magnito\_91 (A1), Manatee\_92 (A1), Marcell\_83 (A1), Marchy\_77 (A1), Maroc7\_92 (A1), MaryBeth\_91 (A1), McGuire\_92 (A1), MetalQZJ\_88 (A1), Molly\_89 (A1), Monet\_92 (A1), Moose\_95 (A1), MrGordo\_92 (A1), Mryolo\_84 (A1), Museum\_90 (A1), NEHalo\_88 (A1), Naira\_96 (A1), Niza\_89 (A1), Norz\_90 (A1), Ohno789\_95 (A1), Oogway\_87 (A1), PSullivan\_85 (A1), PacerPaul\_93 (A1), Paphu\_87 (A1), PascalRango\_92 (A1), PattyP\_92 (A1), Payneful\_73 (A1), Pelly\_91 (A1), Pepe\_86 (A1), Petp2012\_89 (A1), Petruccio\_88 (A1), Pinto\_87 (A1), Pita2\_91 (A1), QTRlifeCrisis\_87 (A1), Rajelicia\_89 (A1), Rhynn\_85 (A1), Ringer\_90 (A1), Rubeus\_88 (A1), Rufus\_93 (A1), Ruotula\_94 (A1), STLscum\_100 (A1), Sandaddy\_90 (A1), Scowl\_90 (A1), Seabiscuit\_95 (A1), Seanderson\_89 (A1), ShortQueendom\_80 (A1), Sibs6\_95 (A1), Slagathor\_92 (A1), Snazzy\_92 (A1), Sorpresa\_89 (A1), SpikeBT\_87 (A1), Squee\_92 (A1), SwissCheese\_95 (A1), Swole\_88 (A1), Target\_90 (A1), Teodoridan\_93 (A1), TheloniousMonk\_90 (A1), Tote\_86 (A1), Traft412\_86 (A1), Treddle\_90 (A1), Tripl3t\_91 (A1), Turj99\_86 (A1), TwoPeat\_85 (A1), Violet\_87 (A1), Watermelon\_89 (A1), Wheeler\_96 (A1), Zephyr\_92 (A1),

Start 66:

- Found in 40 of 423 ( 9.5% ) of genes in pham
- Manual Annotations of this start: 32 of 378
- Called 90.0% of time when present
- Phage (with cluster) where this start called: Ariel\_241 (J), Bagrid\_240 (J), Beem\_238 (J), Bobby\_213 (J), Bombitas\_219 (J), Constella\_224 (J), Courthouse\_237 (J), Dallas\_233 (J), DmpstrDiver\_233 (J), Dove\_226 (J), Duke13\_235 (J), Ejimix\_226 (J), EricMillard\_232 (J), Gonephishing\_231 (J), Halley\_237 (J), Hannaconda\_225 (J), Hughesyang\_237 (J), JuicyJay\_230 (J), KashFlow\_227 (J), Klein\_242 (J), LittleE\_224 (J), Lucky2013\_232 (J), MiaZeal\_245 (J), Minerva\_233 (J), Odette\_234 (J), Phoebus\_233 (J), Porcelain\_236 (J), Redno2\_226 (J), Schatzie\_227 (J), Squint\_233 (J), Superphikiman\_233 (J), Thibault\_209 (J), ThreeRngTarjay\_234 (J), Wanda\_234 (J), Yeet\_229 (J), Zelink\_228 (J),

Start 67:

- Found in 4 of 423 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 378
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Kimona\_86 (A19),

Start 68:

- Found in 31 of 423 ( 7.3% ) of genes in pham
- Manual Annotations of this start: 30 of 378
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Caviar\_75 (A3), Chupacabra\_81 (A10), Drake94\_81 (A10), Fred313\_84 (A3), Goose\_85 (A10), Heathen\_86 (A3), HelDan\_86 (A3), Hookmount\_86 (A3), Isca\_83 (A3), KittenMittens\_79 (A10), Lambert1\_86 (A3), Margo\_86 (A3), Noella\_87 (A3), Norbert\_82 (A3), OKCentral2016\_83 (A10), Panamaxus\_82 (A3), PeaceMeal1\_81 (A10), Phantastic\_87 (A3), Pocahontas\_85 (A3), Poompha\_81 (A10), Poppicle\_86 (A3), QuinnKiro\_85 (A3), ResDef\_84 (A3), RhynO\_72 (A10), Rockstar\_75 (A3), Scout\_86 (A3), Severus\_82 (A10), Sheen\_83 (A7), Texage\_84 (A3), Todacoro\_86 (A3), Veracruz\_83 (A3),

Start 75:

- Found in 27 of 423 ( 6.4% ) of genes in pham
- Manual Annotations of this start: 7 of 378
- Called 29.6% of time when present
- Phage (with cluster) where this start called: AbbysRanger\_82 (A4), Bumblebee11\_81 (A4), Cintron\_85 (A4), Katalie136\_82 (A4), Kremtemulon\_79 (A4), Morpher26\_82 (A4), Perplexer\_82 (A4), PetiteSangsue\_82 (A4),

### **Summary by clusters:**

There are 15 clusters represented in this pham: A14, A17, A16, A11, A10, A13, J, A19, A1, A3, A2, A4, A7, A6, AB,

Info for manual annotations of cluster A1:

- Start number 36 was manually annotated 2 times for cluster A1.
- Start number 43 was manually annotated 6 times for cluster A1.
- Start number 45 was manually annotated 3 times for cluster A1.
- Start number 59 was manually annotated 1 time for cluster A1.
- Start number 63 was manually annotated 10 times for cluster A1.
- Start number 64 was manually annotated 46 times for cluster A1.
- Start number 65 was manually annotated 117 times for cluster A1.

Info for manual annotations of cluster A10:

- Start number 50 was manually annotated 5 times for cluster A10.
- Start number 55 was manually annotated 1 time for cluster A10.
- Start number 68 was manually annotated 9 times for cluster A10.

Info for manual annotations of cluster A11:

- Start number 61 was manually annotated 1 time for cluster A11.
- Start number 63 was manually annotated 21 times for cluster A11.

Info for manual annotations of cluster A14:

- Start number 61 was manually annotated 2 times for cluster A14.

Info for manual annotations of cluster A16:

- Start number 52 was manually annotated 3 times for cluster A16.

Info for manual annotations of cluster A19:

- Start number 67 was manually annotated 1 time for cluster A19.

Info for manual annotations of cluster A2:

- Start number 53 was manually annotated 3 times for cluster A2.
- Start number 60 was manually annotated 15 times for cluster A2.
- Start number 61 was manually annotated 17 times for cluster A2.

Info for manual annotations of cluster A3:

- Start number 51 was manually annotated 4 times for cluster A3.
- Start number 57 was manually annotated 1 time for cluster A3.
- Start number 68 was manually annotated 20 times for cluster A3.

Info for manual annotations of cluster A4:

- Start number 62 was manually annotated 7 times for cluster A4.
- Start number 75 was manually annotated 7 times for cluster A4.

Info for manual annotations of cluster A6:

- Start number 52 was manually annotated 20 times for cluster A6.
- Start number 61 was manually annotated 16 times for cluster A6.

Info for manual annotations of cluster A7:

- Start number 49 was manually annotated 1 time for cluster A7.
- Start number 68 was manually annotated 1 time for cluster A7.

Info for manual annotations of cluster AB:

- Start number 54 was manually annotated 1 time for cluster AB.

Info for manual annotations of cluster J:

- Start number 58 was manually annotated 1 time for cluster J.
- Start number 61 was manually annotated 4 times for cluster J.
- Start number 66 was manually annotated 32 times for cluster J.

### ***Gene Information:***

Gene: 40AC\_82 Start: 48479, Stop: 48276, Start Num: 61

Candidate Starts for 40AC\_82:

(Start: 61 @48479 has 40 MA's), (79, 48428), (93, 48344),

Gene: A6\_85 Start: 49336, Stop: 49130, Start Num: 63

Candidate Starts for A6\_85:

(Start: 63 @49336 has 31 MA's), (92, 49198),

Gene: AFIS\_88 Start: 51338, Stop: 51135, Start Num: 65

Candidate Starts for AFIS\_88:

(Start: 65 @51338 has 117 MA's), (92, 51203),

Gene: AN9\_85 Start: 47253, Stop: 47056, Start Num: 60

Candidate Starts for AN9\_85:

(Start: 60 @47253 has 15 MA's), (76, 47199), (93, 47121),

Gene: ANI8\_85 Start: 47253, Stop: 47056, Start Num: 60

Candidate Starts for ANI8\_85:

(Start: 60 @47253 has 15 MA's), (76, 47199), (93, 47121),

Gene: AbbysRanger\_82 Start: 48599, Stop: 48441, Start Num: 75

Candidate Starts for AbbysRanger\_82:

(Start: 62 @48638 has 7 MA's), (Start: 75 @48599 has 7 MA's), (77, 48590), (93, 48503), (95, 48470),

Gene: Abbysshoes\_89 Start: 50942, Stop: 50739, Start Num: 65

Candidate Starts for Abbysshoes\_89:

(Start: 65 @50942 has 117 MA's), (92, 50807),

Gene: Abrogate\_880 Start: 50891, Stop: 51097, Start Num: 64

Candidate Starts for Abrogate\_880:

(Start: 64 @50891 has 46 MA's), (92, 51029), (98, 51089),

Gene: Achebe\_81 Start: 48782, Stop: 48585, Start Num: 62

Candidate Starts for Achebe\_81:

(Start: 62 @48782 has 7 MA's), (Start: 75 @48743 has 7 MA's), (77, 48734), (93, 48647), (95, 48614),

Gene: Acme\_91 Start: 51412, Stop: 51209, Start Num: 65

Candidate Starts for Acme\_91:

(Start: 65 @51412 has 117 MA's), (92, 51277),

Gene: Adahisdi\_85 Start: 51316, Stop: 51113, Start Num: 65

Candidate Starts for Adahisdi\_85:

(Start: 65 @51316 has 117 MA's), (92, 51181),

Gene: Aeneas\_96 Start: 52191, Stop: 52397, Start Num: 64

Candidate Starts for Aeneas\_96:

(Start: 64 @52191 has 46 MA's), (92, 52329),

Gene: Agaliana\_87 Start: 49294, Stop: 49091, Start Num: 65

Candidate Starts for Agaliana\_87:

(Start: 65 @49294 has 117 MA's),

Gene: Ajay\_84 Start: 49128, Stop: 48925, Start Num: 65

Candidate Starts for Ajay\_84:

(Start: 65 @49128 has 117 MA's), (92, 48993),

Gene: Alsfro\_94 Start: 49646, Stop: 49846, Start Num: 63

Candidate Starts for Alsfro\_94:

(Start: 63 @49646 has 31 MA's), (92, 49778),

Gene: Altman\_94 Start: 52124, Stop: 51921, Start Num: 65

Candidate Starts for Altman\_94:

(Start: 65 @52124 has 117 MA's), (92, 51989),

Gene: Alvin\_86 Start: 49180, Stop: 48977, Start Num: 65

Candidate Starts for Alvin\_86:

(Start: 65 @49180 has 117 MA's), (92, 49045),

Gene: Aneem\_90 Start: 48299, Stop: 48102, Start Num: 63

Candidate Starts for Aneem\_90:

(Start: 63 @48299 has 31 MA's), (93, 48170), (98, 48113),

Gene: Anglerfish\_93 Start: 51993, Stop: 51790, Start Num: 65

Candidate Starts for Anglerfish\_93:

(Start: 65 @51993 has 117 MA's), (92, 51858), (95, 51822),

Gene: AnnaL29\_88 Start: 49242, Stop: 49006, Start Num: 53

Candidate Starts for AnnaL29\_88:

(23, 49371), (Start: 53 @49242 has 3 MA's), (Start: 60 @49227 has 15 MA's), (93, 49074), (95, 49041),

Gene: Applejack\_89 Start: 48130, Stop: 48336, Start Num: 64

Candidate Starts for Applejack\_89:

(Start: 64 @48130 has 46 MA's), (92, 48268), (98, 48328),

Gene: Arcanine\_94 Start: 51887, Stop: 51687, Start Num: 65

Candidate Starts for Arcanine\_94:

(Start: 65 @51887 has 117 MA's), (92, 51755),

Gene: Ariel\_241 Start: 107734, Stop: 107546, Start Num: 66

Candidate Starts for Ariel\_241:

(Start: 58 @107755 has 1 MA's), (Start: 66 @107734 has 32 MA's), (84, 107692), (91, 107653), (95, 107581), (98, 107557),

Gene: Arlo\_96 Start: 52566, Stop: 52363, Start Num: 65

Candidate Starts for Arlo\_96:

(Start: 65 @52566 has 117 MA's), (92, 52431),

Gene: Artemis2UCLA\_88 Start: 46537, Stop: 46328, Start Num: 61

Candidate Starts for Artemis2UCLA\_88:

(Start: 61 @46537 has 40 MA's), (83, 46477),

Gene: Ashballer\_91 Start: 50593, Stop: 50799, Start Num: 64

Candidate Starts for Ashballer\_91:

(Start: 64 @50593 has 46 MA's), (92, 50731), (98, 50791),

Gene: Atkinbua\_98 Start: 52558, Stop: 52355, Start Num: 65

Candidate Starts for Atkinbua\_98:

(Start: 65 @52558 has 117 MA's), (92, 52423),

Gene: BABullseye\_80 Start: 44890, Stop: 44648, Start Num: 52

Candidate Starts for BABullseye\_80:

(7, 45139), (17, 45055), (21, 45031), (Start: 52 @44890 has 23 MA's), (Start: 61 @44866 has 40 MA's), (90, 44770), (95, 44686),

Gene: BK1\_85 Start: 49336, Stop: 49130, Start Num: 63

Candidate Starts for BK1\_85:

(Start: 63 @49336 has 31 MA's), (92, 49198),

Gene: BabyBack\_79 Start: 48271, Stop: 48068, Start Num: 61

Candidate Starts for BabyBack\_79:

(29, 48391), (40, 48343), (Start: 61 @48271 has 40 MA's), (78, 48220), (93, 48136),



Gene: BabyRay\_87 Start: 47952, Stop: 47743, Start Num: 57  
Candidate Starts for BabyRay\_87:  
(Start: 57 @47952 has 1 MA's), (70, 47919), (80, 47889), (93, 47814), (95, 47781),

Gene: Bachome\_87 Start: 47191, Stop: 46985, Start Num: 61  
Candidate Starts for Bachome\_87:  
(Start: 53 @47206 has 3 MA's), (Start: 61 @47191 has 40 MA's), (79, 47137), (88, 47113), (93, 47053), (98, 46996),

Gene: Backyardigan\_80 Start: 48654, Stop: 48457, Start Num: 62  
Candidate Starts for Backyardigan\_80:  
(Start: 62 @48654 has 7 MA's), (Start: 75 @48615 has 7 MA's), (77, 48606), (93, 48519), (95, 48486),

Gene: BaconJack\_94 Start: 52144, Stop: 52350, Start Num: 64  
Candidate Starts for BaconJack\_94:  
(Start: 64 @52144 has 46 MA's), (92, 52282), (98, 52342),

Gene: Badger\_81 Start: 48620, Stop: 48423, Start Num: 62  
Candidate Starts for Badger\_81:  
(Start: 62 @48620 has 7 MA's), (Start: 75 @48581 has 7 MA's), (77, 48572), (93, 48485), (95, 48452),

Gene: Baehexic\_85 Start: 48457, Stop: 48251, Start Num: 61  
Candidate Starts for Baehexic\_85:  
(15, 48655), (Start: 53 @48472 has 3 MA's), (Start: 61 @48457 has 40 MA's), (79, 48403), (93, 48319),

Gene: Bagrid\_240 Start: 111821, Stop: 111645, Start Num: 66  
Candidate Starts for Bagrid\_240:  
(Start: 58 @111842 has 1 MA's), (Start: 66 @111821 has 32 MA's), (84, 111779), (91, 111752),

Gene: Barriga\_101 Start: 51933, Stop: 52139, Start Num: 64  
Candidate Starts for Barriga\_101:  
(Start: 64 @51933 has 46 MA's), (92, 52071),

Gene: Beatrix\_89 Start: 50789, Stop: 50995, Start Num: 64  
Candidate Starts for Beatrix\_89:  
(Start: 64 @50789 has 46 MA's), (92, 50927),

Gene: Beem\_238 Start: 110940, Stop: 110764, Start Num: 66  
Candidate Starts for Beem\_238:  
(Start: 58 @110961 has 1 MA's), (Start: 66 @110940 has 32 MA's), (84, 110898), (91, 110871),

Gene: BeesKnees\_95 Start: 51081, Stop: 50878, Start Num: 65  
Candidate Starts for BeesKnees\_95:  
(Start: 65 @51081 has 117 MA's), (92, 50946),

Gene: Bethlehem\_87 Start: 51847, Stop: 51644, Start Num: 65  
Candidate Starts for Bethlehem\_87:  
(Start: 65 @51847 has 117 MA's), (92, 51712),

Gene: Bexan\_87 Start: 50565, Stop: 50771, Start Num: 64  
Candidate Starts for Bexan\_87:  
(Start: 64 @50565 has 46 MA's), (92, 50703),

Gene: Big3\_91 Start: 53046, Stop: 52840, Start Num: 63

Candidate Starts for Big3\_91:

(Start: 63 @53046 has 31 MA's),

Gene: BigMau\_91 Start: 51153, Stop: 51362, Start Num: 64

Candidate Starts for BigMau\_91:

(Start: 64 @51153 has 46 MA's), (92, 51291),

Gene: BigPaolini\_85 Start: 49205, Stop: 49005, Start Num: 65

Candidate Starts for BigPaolini\_85:

(Start: 65 @49205 has 117 MA's), (92, 49073),

Gene: Bigfoot\_86 Start: 51251, Stop: 51048, Start Num: 65

Candidate Starts for Bigfoot\_86:

(Start: 65 @51251 has 117 MA's), (92, 51116),

Gene: BillKnuckles\_86 Start: 51482, Stop: 51279, Start Num: 65

Candidate Starts for BillKnuckles\_86:

(Start: 65 @51482 has 117 MA's), (92, 51347),

Gene: Bircsak\_90 Start: 52909, Stop: 52619, Start Num: 36

Candidate Starts for Bircsak\_90:

(18, 53011), (Start: 36 @52909 has 2 MA's), (Start: 65 @52822 has 117 MA's), (92, 52687),

Gene: BluSpix\_84 Start: 44982, Stop: 45182, Start Num: 63

Candidate Starts for BluSpix\_84:

(Start: 63 @44982 has 31 MA's), (92, 45114),

Gene: Blue7\_90 Start: 46789, Stop: 46547, Start Num: 52

Candidate Starts for Blue7\_90:

(7, 47038), (17, 46954), (21, 46930), (Start: 52 @46789 has 23 MA's), (Start: 61 @46765 has 40 MA's), (90, 46669),

Gene: BlueBird\_89 Start: 48203, Stop: 47985, Start Num: 51

Candidate Starts for BlueBird\_89:

(44, 48230), (Start: 51 @48203 has 4 MA's), (76, 48140), (82, 48122), (93, 48050),

Gene: Bob3\_90 Start: 50587, Stop: 50793, Start Num: 64

Candidate Starts for Bob3\_90:

(Start: 64 @50587 has 46 MA's), (92, 50725), (98, 50785),

Gene: Bobby\_213 Start: 108407, Stop: 108219, Start Num: 66

Candidate Starts for Bobby\_213:

(Start: 66 @108407 has 32 MA's), (Start: 75 @108383 has 7 MA's), (84, 108365), (91, 108326), (95, 108254), (98, 108230),

Gene: Bombitas\_219 Start: 107223, Stop: 107050, Start Num: 66

Candidate Starts for Bombitas\_219:

(Start: 58 @107244 has 1 MA's), (Start: 66 @107223 has 32 MA's), (84, 107181), (91, 107154),

Gene: Bones\_86 Start: 51038, Stop: 51244, Start Num: 64

Candidate Starts for Bones\_86:

(Start: 64 @51038 has 46 MA's), (92, 51176),

Gene: Bowtie\_85 Start: 46906, Stop: 46709, Start Num: 63

Candidate Starts for Bowtie\_85:

(Start: 63 @46906 has 31 MA's), (93, 46777), (98, 46720),

Gene: Briton15\_95 Start: 52689, Stop: 52435, Start Num: 43

Candidate Starts for Briton15\_95:

(Start: 43 @52689 has 6 MA's), (Start: 65 @52638 has 117 MA's),

Gene: Bruns\_96 Start: 52614, Stop: 52411, Start Num: 65

Candidate Starts for Bruns\_96:

(Start: 65 @52614 has 117 MA's), (92, 52479),

Gene: Bud\_82 Start: 46736, Stop: 46539, Start Num: 63

Candidate Starts for Bud\_82:

(4, 47042), (Start: 63 @46736 has 31 MA's), (93, 46607), (98, 46550),

Gene: Bugatti\_88 Start: 48203, Stop: 47985, Start Num: 51

Candidate Starts for Bugatti\_88:

(44, 48230), (Start: 51 @48203 has 4 MA's), (76, 48140), (82, 48122), (93, 48050),

Gene: Bumblebee11\_81 Start: 48581, Stop: 48423, Start Num: 75

Candidate Starts for Bumblebee11\_81:

(Start: 62 @48620 has 7 MA's), (Start: 75 @48581 has 7 MA's), (77, 48572), (93, 48485), (95, 48452),

Gene: Burton\_90 Start: 52230, Stop: 52027, Start Num: 65

Candidate Starts for Burton\_90:

(Start: 65 @52230 has 117 MA's), (92, 52095),

Gene: Buttons\_85 Start: 48633, Stop: 48430, Start Num: 65

Candidate Starts for Buttons\_85:

(Start: 65 @48633 has 117 MA's), (92, 48498), (98, 48438),

Gene: Bxb1\_84 Start: 48903, Stop: 49112, Start Num: 65

Candidate Starts for Bxb1\_84:

(Start: 65 @48903 has 117 MA's), (92, 49044), (98, 49104),

Gene: C3\_78 Start: 47253, Stop: 47056, Start Num: 60

Candidate Starts for C3\_78:

(Start: 60 @47253 has 15 MA's), (76, 47199), (93, 47121),

Gene: CactusRose\_96 Start: 52264, Stop: 52061, Start Num: 65

Candidate Starts for CactusRose\_96:

(Start: 65 @52264 has 117 MA's), (92, 52129),

Gene: Candra\_85 Start: 46570, Stop: 46352, Start Num: 61

Candidate Starts for Candra\_85:

(7, 46843), (17, 46759), (21, 46735), (Start: 52 @46594 has 23 MA's), (Start: 61 @46570 has 40 MA's), (90, 46474), (95, 46390),

Gene: Carlyle\_91 Start: 50831, Stop: 50628, Start Num: 65

Candidate Starts for Carlyle\_91:

(Start: 65 @50831 has 117 MA's), (92, 50696),

Gene: Caviar\_75 Start: 44830, Stop: 44630, Start Num: 68

Candidate Starts for Caviar\_75:

(21, 45019), (Start: 68 @44830 has 30 MA's), (88, 44770), (93, 44704), (95, 44671),

Gene: Centaur\_86 Start: 48324, Stop: 48118, Start Num: 61

Candidate Starts for Centaur\_86:

(15, 48522), (Start: 53 @48339 has 3 MA's), (Start: 61 @48324 has 40 MA's), (79, 48270), (93, 48186),

Gene: Chanagan\_87 Start: 50342, Stop: 50139, Start Num: 65

Candidate Starts for Chanagan\_87:

(Start: 65 @50342 has 117 MA's), (92, 50207),

Gene: Changeling\_84 Start: 49033, Stop: 48812, Start Num: 60

Candidate Starts for Changeling\_84:

(25, 49165), (Start: 53 @49048 has 3 MA's), (Start: 60 @49033 has 15 MA's), (70, 49000), (71, 48997), (92, 48883), (95, 48847),

Gene: Chartreuse\_85 Start: 45871, Stop: 45653, Start Num: 61

Candidate Starts for Chartreuse\_85:

(7, 46144), (17, 46060), (21, 46036), (Start: 52 @45895 has 23 MA's), (Start: 61 @45871 has 40 MA's), (90, 45775), (95, 45691),

Gene: Chupacabra\_81 Start: 48564, Stop: 48376, Start Num: 68

Candidate Starts for Chupacabra\_81:

(56, 48597), (Start: 68 @48564 has 30 MA's), (92, 48444), (93, 48441),

Gene: Ciao\_94 Start: 50559, Stop: 50362, Start Num: 65

Candidate Starts for Ciao\_94:

(Start: 65 @50559 has 117 MA's), (92, 50430),

Gene: Cici\_82 Start: 48633, Stop: 48436, Start Num: 62

Candidate Starts for Cici\_82:

(Start: 62 @48633 has 7 MA's), (Start: 75 @48594 has 7 MA's), (77, 48585), (93, 48498), (95, 48465),

Gene: Cintron\_85 Start: 48872, Stop: 48702, Start Num: 75

Candidate Starts for Cintron\_85:

(Start: 75 @48872 has 7 MA's), (77, 48863), (93, 48776), (95, 48743),

Gene: CloudWang3\_89 Start: 47066, Stop: 46857, Start Num: 61

Candidate Starts for CloudWang3\_89:

(Start: 61 @47066 has 40 MA's), (83, 47006),

Gene: Colin\_85 Start: 49399, Stop: 49190, Start Num: 61

Candidate Starts for Colin\_85:

(15, 49606), (23, 49546), (28, 49531), (Start: 53 @49414 has 3 MA's), (Start: 61 @49399 has 40 MA's), (70, 49375), (71, 49372), (93, 49258),

Gene: ConceptII\_97 Start: 52890, Stop: 52687, Start Num: 65

Candidate Starts for ConceptII\_97:

(Start: 65 @52890 has 117 MA's), (92, 52755),

Gene: Constella\_224 Start: 108319, Stop: 108131, Start Num: 66  
Candidate Starts for Constella\_224:  
(Start: 66 @108319 has 32 MA's), (Start: 75 @108295 has 7 MA's), (84, 108277), (91, 108238), (95, 108166), (98, 108142),

Gene: Cookiedough\_87 Start: 47203, Stop: 46961, Start Num: 52  
Candidate Starts for Cookiedough\_87:  
(7, 47452), (17, 47368), (21, 47344), (Start: 52 @47203 has 23 MA's), (Start: 61 @47179 has 40 MA's), (90, 47083), (95, 46999),

Gene: Corvo\_94 Start: 52995, Stop: 52792, Start Num: 65  
Candidate Starts for Corvo\_94:  
(Start: 65 @52995 has 117 MA's), (92, 52860),

Gene: Courthouse\_237 Start: 108498, Stop: 108310, Start Num: 66  
Candidate Starts for Courthouse\_237:  
(Start: 58 @108519 has 1 MA's), (Start: 66 @108498 has 32 MA's), (84, 108456), (91, 108417), (95, 108345), (98, 108321),

Gene: Crispicous1\_86 Start: 49167, Stop: 49370, Start Num: 65  
Candidate Starts for Crispicous1\_86:  
(Start: 65 @49167 has 117 MA's), (92, 49302), (98, 49362),

Gene: DBQu4n\_86 Start: 48304, Stop: 48101, Start Num: 60  
Candidate Starts for DBQu4n\_86:  
(Start: 60 @48304 has 15 MA's), (76, 48250), (93, 48166),

Gene: DaVinci\_85 Start: 45949, Stop: 45707, Start Num: 52  
Candidate Starts for DaVinci\_85:  
(7, 46198), (17, 46114), (21, 46090), (Start: 52 @45949 has 23 MA's), (Start: 61 @45925 has 40 MA's), (90, 45829), (95, 45745),

Gene: Dallas\_233 Start: 109177, Stop: 108995, Start Num: 66  
Candidate Starts for Dallas\_233:  
(Start: 61 @109192 has 40 MA's), (Start: 66 @109177 has 32 MA's), (84, 109141), (91, 109102), (95, 109030),

Gene: Dexes\_93 Start: 53941, Stop: 53738, Start Num: 65  
Candidate Starts for Dexes\_93:  
(Start: 65 @53941 has 117 MA's), (92, 53806),

Gene: DmpstrDiver\_233 Start: 109198, Stop: 109022, Start Num: 66  
Candidate Starts for DmpstrDiver\_233:  
(Start: 66 @109198 has 32 MA's), (Start: 75 @109174 has 7 MA's), (84, 109156), (91, 109129), (95, 109057), (96, 109042),

Gene: Doom\_84 Start: 50622, Stop: 50419, Start Num: 65  
Candidate Starts for Doom\_84:  
(24, 50769), (27, 50757), (30, 50733), (Start: 65 @50622 has 117 MA's), (92, 50487), (98, 50427),

Gene: Dorothea\_84 Start: 47171, Stop: 46953, Start Num: 61  
Candidate Starts for Dorothea\_84:

(7, 47444), (17, 47360), (21, 47336), (Start: 52 @47195 has 23 MA's), (Start: 61 @47171 has 40 MA's), (90, 47075), (95, 46991),

Gene: Dove\_226 Start: 105704, Stop: 105528, Start Num: 66

Candidate Starts for Dove\_226:

(Start: 58 @105725 has 1 MA's), (Start: 66 @105704 has 32 MA's), (84, 105662), (91, 105635),

Gene: DrFeelGood\_85 Start: 49766, Stop: 49563, Start Num: 65

Candidate Starts for DrFeelGood\_85:

(Start: 65 @49766 has 117 MA's), (92, 49631),

Gene: Drake55\_87 Start: 48575, Stop: 48369, Start Num: 61

Candidate Starts for Drake55\_87:

(15, 48773), (Start: 53 @48590 has 3 MA's), (Start: 61 @48575 has 40 MA's), (93, 48437),

Gene: Drake94\_81 Start: 47718, Stop: 47530, Start Num: 68

Candidate Starts for Drake94\_81:

(56, 47751), (Start: 68 @47718 has 30 MA's), (93, 47595),

Gene: DreamCatcher\_102 Start: 53024, Stop: 52821, Start Num: 65

Candidate Starts for DreamCatcher\_102:

(Start: 65 @53024 has 117 MA's), (92, 52889),

Gene: Dreamboat\_93 Start: 50459, Stop: 50256, Start Num: 65

Candidate Starts for Dreamboat\_93:

(Start: 65 @50459 has 117 MA's), (92, 50324),

Gene: Druantia\_84 Start: 48829, Stop: 48632, Start Num: 62

Candidate Starts for Druantia\_84:

(Start: 62 @48829 has 7 MA's), (Start: 75 @48790 has 7 MA's), (77, 48781), (93, 48694), (95, 48661),

Gene: Duke13\_235 Start: 110008, Stop: 109820, Start Num: 66

Candidate Starts for Duke13\_235:

(Start: 61 @110023 has 40 MA's), (Start: 66 @110008 has 32 MA's), (Start: 75 @109984 has 7 MA's), (84, 109966), (91, 109927), (92, 109891), (95, 109855), (98, 109831),

Gene: Duplo\_87 Start: 48361, Stop: 48158, Start Num: 60

Candidate Starts for Duplo\_87:

(Start: 60 @48361 has 15 MA's), (76, 48307), (93, 48223),

Gene: Dussy\_87 Start: 50962, Stop: 50759, Start Num: 65

Candidate Starts for Dussy\_87:

(Start: 65 @50962 has 117 MA's), (92, 50827),

Gene: Dynamix\_92 Start: 50284, Stop: 50030, Start Num: 43

Candidate Starts for Dynamix\_92:

(Start: 43 @50284 has 6 MA's), (Start: 65 @50233 has 117 MA's),

Gene: EZMoney23\_82 Start: 48034, Stop: 47822, Start Num: 61

Candidate Starts for EZMoney23\_82:

(12, 48262), (23, 48181), (Start: 53 @48049 has 3 MA's), (Start: 61 @48034 has 40 MA's), (69, 48013), (77, 47983), (93, 47890),

Gene: EagleEye\_87 Start: 48171, Stop: 47941, Start Num: 52  
Candidate Starts for EagleEye\_87:  
(Start: 52 @48171 has 23 MA's), (Start: 61 @48147 has 40 MA's), (Start: 67 @48135 has 1 MA's),  
(71, 48123), (85, 48084),

Gene: Eaglepride\_87 Start: 48695, Stop: 48462, Start Num: 50  
Candidate Starts for Eaglepride\_87:  
(16, 48872), (33, 48776), (Start: 50 @48695 has 5 MA's), (Start: 55 @48680 has 1 MA's), (Start: 59  
@48671 has 1 MA's), (93, 48527),

Gene: Ebony\_88 Start: 47870, Stop: 47673, Start Num: 63  
Candidate Starts for Ebony\_88:  
(Start: 63 @47870 has 31 MA's), (93, 47741), (98, 47684),

Gene: Edtherson\_87 Start: 49832, Stop: 50038, Start Num: 64  
Candidate Starts for Edtherson\_87:  
(Start: 64 @49832 has 46 MA's), (92, 49970), (98, 50030),

Gene: Ejimix\_226 Start: 109183, Stop: 109007, Start Num: 66  
Candidate Starts for Ejimix\_226:  
(Start: 58 @109204 has 1 MA's), (Start: 66 @109183 has 32 MA's), (84, 109141), (91, 109114),

Gene: Equemioh13\_86 Start: 48553, Stop: 48347, Start Num: 61  
Candidate Starts for Equemioh13\_86:  
(15, 48751), (Start: 53 @48568 has 3 MA's), (Start: 61 @48553 has 40 MA's), (79, 48499), (93,  
48415),

Gene: EricB\_85 Start: 46068, Stop: 45850, Start Num: 61  
Candidate Starts for EricB\_85:  
(7, 46341), (17, 46257), (21, 46233), (Start: 52 @46092 has 23 MA's), (Start: 61 @46068 has 40  
MA's), (90, 45972), (95, 45888),

Gene: EricMillard\_232 Start: 111027, Stop: 110851, Start Num: 66  
Candidate Starts for EricMillard\_232:  
(Start: 58 @111048 has 1 MA's), (Start: 66 @111027 has 32 MA's), (84, 110985), (91, 110958),

Gene: Espresso\_86 Start: 50463, Stop: 50666, Start Num: 65  
Candidate Starts for Espresso\_86:  
(Start: 65 @50463 has 117 MA's), (92, 50598),

Gene: Et2Brutus\_89 Start: 48147, Stop: 47950, Start Num: 63  
Candidate Starts for Et2Brutus\_89:  
(Start: 63 @48147 has 31 MA's), (93, 48018), (98, 47961),

Gene: Euphoria\_95 Start: 53188, Stop: 52985, Start Num: 65  
Candidate Starts for Euphoria\_95:  
(Start: 65 @53188 has 117 MA's), (92, 53053),

Gene: Eyeball\_94 Start: 51846, Stop: 51643, Start Num: 65  
Candidate Starts for Eyeball\_94:  
(Start: 65 @51846 has 117 MA's), (92, 51711),

Gene: Fajezeel\_90 Start: 50702, Stop: 50499, Start Num: 65

Candidate Starts for Fajezeel\_90:  
(Start: 65 @50702 has 117 MA's), (92, 50567),

Gene: Fascinus\_86 Start: 51761, Stop: 51558, Start Num: 65  
Candidate Starts for Fascinus\_86:  
(Start: 65 @51761 has 117 MA's), (92, 51626),

Gene: Fenn\_97 Start: 52841, Stop: 52638, Start Num: 65  
Candidate Starts for Fenn\_97:  
(Start: 65 @52841 has 117 MA's), (92, 52706),

Gene: Fibonacci\_89 Start: 48153, Stop: 47956, Start Num: 63  
Candidate Starts for Fibonacci\_89:  
(Start: 63 @48153 has 31 MA's), (93, 48024), (98, 47967),

Gene: Flare16\_86 Start: 48368, Stop: 48162, Start Num: 61  
Candidate Starts for Flare16\_86:  
(15, 48566), (Start: 53 @48383 has 3 MA's), (Start: 61 @48368 has 40 MA's), (79, 48314), (93, 48230),

Gene: Flaverint\_90 Start: 48297, Stop: 48100, Start Num: 63  
Candidate Starts for Flaverint\_90:  
(Start: 63 @48297 has 31 MA's), (93, 48168), (94, 48150), (98, 48111),

Gene: Forsytheast\_96 Start: 52313, Stop: 52110, Start Num: 65  
Candidate Starts for Forsytheast\_96:  
(Start: 65 @52313 has 117 MA's), (92, 52178),

Gene: Francis47\_93 Start: 53565, Stop: 53362, Start Num: 65  
Candidate Starts for Francis47\_93:  
(Start: 65 @53565 has 117 MA's),

Gene: Fred313\_84 Start: 47806, Stop: 47615, Start Num: 68  
Candidate Starts for Fred313\_84:  
(1, 48295), (2, 48262), (8, 48079), (Start: 68 @47806 has 30 MA's), (88, 47746), (93, 47680),

Gene: Froghopper\_79 Start: 47225, Stop: 47428, Start Num: 65  
Candidate Starts for Froghopper\_79:  
(Start: 59 @47216 has 1 MA's), (Start: 65 @47225 has 117 MA's), (92, 47357),

Gene: Fushigi\_84 Start: 48765, Stop: 48968, Start Num: 65  
Candidate Starts for Fushigi\_84:  
(Start: 65 @48765 has 117 MA's), (92, 48900), (98, 48960),

Gene: GageAP\_90 Start: 51509, Stop: 51306, Start Num: 65  
Candidate Starts for GageAP\_90:  
(Start: 65 @51509 has 117 MA's), (92, 51374),

Gene: Gail\_88 Start: 48344, Stop: 48141, Start Num: 61  
Candidate Starts for Gail\_88:  
(Start: 53 @48359 has 3 MA's), (Start: 61 @48344 has 40 MA's), (79, 48293), (93, 48209),

Gene: Gandalf20\_90 Start: 50084, Stop: 50290, Start Num: 64



Candidate Starts for Gandalf20\_90:  
(Start: 64 @50084 has 46 MA's), (92, 50222), (98, 50282),

Gene: Garak\_90 Start: 47008, Stop: 46790, Start Num: 61  
Candidate Starts for Garak\_90:  
(7, 47281), (17, 47197), (21, 47173), (Start: 52 @47032 has 23 MA's), (Start: 61 @47008 has 40 MA's), (90, 46912),

Gene: GaugeLDP\_80 Start: 47824, Stop: 47624, Start Num: 61  
Candidate Starts for GaugeLDP\_80:  
(Start: 61 @47824 has 40 MA's), (78, 47773), (93, 47692),

Gene: Gilberta\_87 Start: 47173, Stop: 46976, Start Num: 63  
Candidate Starts for Gilberta\_87:  
(Start: 63 @47173 has 31 MA's), (93, 47044), (98, 46987),

Gene: Giroux\_85 Start: 48202, Stop: 47984, Start Num: 51  
Candidate Starts for Giroux\_85:  
(44, 48229), (Start: 51 @48202 has 4 MA's), (76, 48139), (82, 48121), (93, 48049),

Gene: Gladiator\_85 Start: 46722, Stop: 46513, Start Num: 61  
Candidate Starts for Gladiator\_85:  
(Start: 61 @46722 has 40 MA's), (83, 46662),

Gene: Gompeii16\_90 Start: 52910, Stop: 52620, Start Num: 36  
Candidate Starts for Gompeii16\_90:  
(18, 53012), (Start: 36 @52910 has 2 MA's), (Start: 65 @52823 has 117 MA's), (92, 52688),

Gene: Gonephishing\_231 Start: 108727, Stop: 108539, Start Num: 66  
Candidate Starts for Gonephishing\_231:  
(Start: 61 @108742 has 40 MA's), (Start: 66 @108727 has 32 MA's), (Start: 75 @108703 has 7 MA's), (84, 108685), (91, 108646), (95, 108574), (98, 108550),

Gene: Goose\_85 Start: 48375, Stop: 48187, Start Num: 68  
Candidate Starts for Goose\_85:  
(56, 48408), (Start: 68 @48375 has 30 MA's), (92, 48255), (93, 48252),

Gene: Graduation\_93 Start: 51162, Stop: 50911, Start Num: 45  
Candidate Starts for Graduation\_93:  
(Start: 45 @51162 has 3 MA's), (Start: 65 @51114 has 117 MA's), (92, 50979),

Gene: GrecoEtereo\_92 Start: 51814, Stop: 51611, Start Num: 65  
Candidate Starts for GrecoEtereo\_92:  
(Start: 65 @51814 has 117 MA's), (92, 51679),

Gene: GreedyLawyer\_80 Start: 46501, Stop: 46283, Start Num: 61  
Candidate Starts for GreedyLawyer\_80:  
(7, 46774), (17, 46690), (21, 46666), (Start: 52 @46525 has 23 MA's), (Start: 61 @46501 has 40 MA's), (90, 46405),

Gene: Greg\_90 Start: 50702, Stop: 50499, Start Num: 65  
Candidate Starts for Greg\_90:  
(Start: 65 @50702 has 117 MA's), (92, 50567),

Gene: Gruunaga\_88 Start: 46677, Stop: 46468, Start Num: 61

Candidate Starts for Gruunaga\_88:

(Start: 61 @46677 has 40 MA's), (83, 46617),

Gene: Gwendoluna\_90 Start: 51399, Stop: 51109, Start Num: 36

Candidate Starts for Gwendoluna\_90:

(18, 51501), (Start: 36 @51399 has 2 MA's), (Start: 65 @51312 has 117 MA's), (92, 51177),

Gene: Gyzlar\_83 Start: 47405, Stop: 47608, Start Num: 65

Candidate Starts for Gyzlar\_83:

(32, 47294), (Start: 65 @47405 has 117 MA's), (92, 47540), (98, 47600),

Gene: Halley\_237 Start: 109664, Stop: 109482, Start Num: 66

Candidate Starts for Halley\_237:

(Start: 61 @109679 has 40 MA's), (Start: 66 @109664 has 32 MA's), (84, 109628), (91, 109589), (95, 109517),

Gene: Hami1\_83 Start: 46210, Stop: 46416, Start Num: 64

Candidate Starts for Hami1\_83:

(Start: 64 @46210 has 46 MA's), (92, 46348),

Gene: Hammer\_89 Start: 46384, Stop: 46175, Start Num: 61

Candidate Starts for Hammer\_89:

(Start: 61 @46384 has 40 MA's), (83, 46324), (92, 46249),

Gene: HanShotFirst\_90 Start: 51379, Stop: 51594, Start Num: 59

Candidate Starts for HanShotFirst\_90:

(13, 51163), (Start: 59 @51379 has 1 MA's), (Start: 65 @51388 has 117 MA's), (92, 51523),

Gene: Hannaconda\_225 Start: 109232, Stop: 109056, Start Num: 66

Candidate Starts for Hannaconda\_225:

(Start: 58 @109253 has 1 MA's), (Start: 66 @109232 has 32 MA's), (84, 109190), (91, 109163),

Gene: HarryHoudini\_86 Start: 48578, Stop: 48372, Start Num: 61

Candidate Starts for HarryHoudini\_86:

(15, 48776), (Start: 53 @48593 has 3 MA's), (Start: 61 @48578 has 40 MA's), (93, 48440),

Gene: HarryOW\_91 Start: 51434, Stop: 51640, Start Num: 64

Candidate Starts for HarryOW\_91:

(Start: 64 @51434 has 46 MA's), (92, 51572),

Gene: Heathen\_86 Start: 47894, Stop: 47703, Start Num: 68

Candidate Starts for Heathen\_86:

(1, 48383), (2, 48350), (8, 48167), (Start: 68 @47894 has 30 MA's), (88, 47834), (93, 47768),

Gene: HelDan\_86 Start: 48117, Stop: 47926, Start Num: 68

Candidate Starts for HelDan\_86:

(1, 48606), (2, 48573), (8, 48390), (Start: 68 @48117 has 30 MA's), (88, 48057), (93, 47991),

Gene: Helmet\_90 Start: 47008, Stop: 46790, Start Num: 61

Candidate Starts for Helmet\_90:

(7, 47281), (17, 47197), (21, 47173), (Start: 52 @47032 has 23 MA's), (Start: 61 @47008 has 40 MA's), (90, 46912),

Gene: Hermia\_84 Start: 49274, Stop: 49071, Start Num: 65  
Candidate Starts for Hermia\_84:  
(Start: 65 @49274 has 117 MA's), (92, 49139),

Gene: HermioneGrange\_94 Start: 51648, Stop: 51857, Start Num: 64  
Candidate Starts for HermioneGrange\_94:  
(Start: 64 @51648 has 46 MA's), (92, 51786),

Gene: Hexamo\_88 Start: 46552, Stop: 46343, Start Num: 61  
Candidate Starts for Hexamo\_88:  
(Start: 61 @46552 has 40 MA's), (83, 46492),

Gene: HokkenD\_227 Start: 110994, Stop: 110791, Start Num: 61  
Candidate Starts for HokkenD\_227:  
(Start: 61 @110994 has 40 MA's), (Start: 66 @110979 has 32 MA's), (Start: 75 @110955 has 7 MA's), (84, 110937), (91, 110898), (92, 110862), (95, 110826), (98, 110802),

Gene: Homines\_83 Start: 46852, Stop: 47055, Start Num: 65  
Candidate Starts for Homines\_83:  
(Start: 65 @46852 has 117 MA's), (92, 46987), (98, 47047),

Gene: Hookmount\_86 Start: 47833, Stop: 47633, Start Num: 68  
Candidate Starts for Hookmount\_86:  
(21, 48022), (Start: 68 @47833 has 30 MA's), (88, 47773), (93, 47707), (95, 47674),

Gene: Hoot\_82 Start: 44409, Stop: 44167, Start Num: 52  
Candidate Starts for Hoot\_82:  
(7, 44658), (17, 44574), (21, 44550), (Start: 52 @44409 has 23 MA's), (Start: 61 @44385 has 40 MA's), (90, 44289), (95, 44205),

Gene: Hope4ever\_88 Start: 50126, Stop: 49923, Start Num: 65  
Candidate Starts for Hope4ever\_88:  
(Start: 65 @50126 has 117 MA's), (92, 49991),

Gene: Hughesyang\_237 Start: 110914, Stop: 110738, Start Num: 66  
Candidate Starts for Hughesyang\_237:  
(Start: 58 @110935 has 1 MA's), (Start: 66 @110914 has 32 MA's), (84, 110872), (91, 110845),

Gene: Hutc2\_86 Start: 47037, Stop: 46840, Start Num: 63  
Candidate Starts for Hutc2\_86:  
(Start: 63 @47037 has 31 MA's), (93, 46908), (98, 46851),

Gene: ILeeKay\_91 Start: 50632, Stop: 50429, Start Num: 65  
Candidate Starts for ILeeKay\_91:  
(Start: 65 @50632 has 117 MA's), (92, 50497),

Gene: Ichabod\_96 Start: 52974, Stop: 52720, Start Num: 43  
Candidate Starts for Ichabod\_96:  
(Start: 43 @52974 has 6 MA's), (Start: 65 @52923 has 117 MA's), (92, 52788),

Gene: IgnatiusPatJac\_87 Start: 48927, Stop: 49127, Start Num: 63  
Candidate Starts for IgnatiusPatJac\_87:  
(Start: 63 @48927 has 31 MA's), (92, 49059),

Gene: Indra\_92 Start: 47033, Stop: 46791, Start Num: 52  
Candidate Starts for Indra\_92:  
(7, 47282), (17, 47198), (21, 47174), (Start: 52 @47033 has 23 MA's), (Start: 61 @47009 has 40 MA's), (90, 46913),

Gene: Insomnia\_88 Start: 48331, Stop: 48134, Start Num: 63  
Candidate Starts for Insomnia\_88:  
(Start: 63 @48331 has 31 MA's), (93, 48202), (98, 48145),

Gene: Isca\_83 Start: 47223, Stop: 47023, Start Num: 68  
Candidate Starts for Isca\_83:  
(10, 47487), (Start: 68 @47223 has 30 MA's), (70, 47217), (88, 47163), (93, 47097), (95, 47064),

Gene: Isiphiwo\_83 Start: 46120, Stop: 45878, Start Num: 52  
Candidate Starts for Isiphiwo\_83:  
(7, 46369), (17, 46285), (21, 46261), (Start: 52 @46120 has 23 MA's), (Start: 61 @46096 has 40 MA's), (90, 46000), (95, 45916), (97, 45895),

Gene: JC27\_94 Start: 50665, Stop: 50871, Start Num: 64  
Candidate Starts for JC27\_94:  
(Start: 64 @50665 has 46 MA's), (92, 50803),

Gene: Jabith\_89 Start: 48345, Stop: 48148, Start Num: 63  
Candidate Starts for Jabith\_89:  
(3, 48675), (Start: 63 @48345 has 31 MA's), (93, 48216), (98, 48159),

Gene: JackSparrow\_92 Start: 50104, Stop: 50310, Start Num: 64  
Candidate Starts for JackSparrow\_92:  
(Start: 64 @50104 has 46 MA's), (92, 50242),

Gene: JacoRen57\_68 Start: 49553, Stop: 49792, Start Num: 54  
Candidate Starts for JacoRen57\_68:  
(Start: 54 @49553 has 1 MA's), (76, 49622), (89, 49661), (95, 49754), (97, 49775),

Gene: Jasper\_93 Start: 50345, Stop: 50142, Start Num: 65  
Candidate Starts for Jasper\_93:  
(Start: 65 @50345 has 117 MA's), (92, 50210),

Gene: Jerm2\_90 Start: 51717, Stop: 51926, Start Num: 64  
Candidate Starts for Jerm2\_90:  
(Start: 64 @51717 has 46 MA's), (92, 51855),

Gene: JewelBug\_79 Start: 44888, Stop: 44646, Start Num: 52  
Candidate Starts for JewelBug\_79:  
(7, 45137), (17, 45053), (21, 45029), (Start: 52 @44888 has 23 MA's), (Start: 61 @44864 has 40 MA's), (90, 44768),

Gene: Jordennis\_85 Start: 46792, Stop: 46550, Start Num: 52  
Candidate Starts for Jordennis\_85:

(7, 47041), (17, 46957), (21, 46933), (Start: 52 @46792 has 23 MA's), (Start: 61 @46768 has 40 MA's), (90, 46672),

Gene: Jorgensen\_100 Start: 52124, Stop: 52330, Start Num: 64  
Candidate Starts for Jorgensen\_100:  
(Start: 64 @52124 has 46 MA's), (92, 52262), (98, 52322),

Gene: Joselito\_87 Start: 48051, Stop: 47854, Start Num: 63  
Candidate Starts for Joselito\_87:  
(Start: 63 @48051 has 31 MA's), (93, 47922), (98, 47865),

Gene: Journey13\_69 Start: 43468, Stop: 43256, Start Num: 61  
Candidate Starts for Journey13\_69:  
(Start: 53 @43483 has 3 MA's), (Start: 61 @43468 has 40 MA's), (79, 43414), (88, 43390), (93, 43330), (95, 43297), (97, 43276),

Gene: Jsquared\_90 Start: 48187, Stop: 47969, Start Num: 53  
Candidate Starts for Jsquared\_90:  
(Start: 53 @48187 has 3 MA's), (Start: 60 @48172 has 15 MA's), (76, 48118), (93, 48034), (95, 48001),

Gene: JuicyJay\_230 Start: 110889, Stop: 110713, Start Num: 66  
Candidate Starts for JuicyJay\_230:  
(Start: 58 @110910 has 1 MA's), (Start: 66 @110889 has 32 MA's), (84, 110847), (91, 110820),

Gene: JuliaChild\_91 Start: 51435, Stop: 51232, Start Num: 65  
Candidate Starts for JuliaChild\_91:  
(24, 51582), (27, 51570), (30, 51546), (Start: 65 @51435 has 117 MA's), (92, 51300), (98, 51240),

Gene: KBG\_87 Start: 52193, Stop: 51990, Start Num: 65  
Candidate Starts for KBG\_87:  
(24, 52340), (27, 52328), (30, 52304), (Start: 65 @52193 has 117 MA's), (92, 52058), (98, 51998),

Gene: KSSJEB\_91 Start: 50745, Stop: 50542, Start Num: 65  
Candidate Starts for KSSJEB\_91:  
(Start: 65 @50745 has 117 MA's), (92, 50610),

Gene: Kalah2\_224 Start: 108578, Stop: 108375, Start Num: 61  
Candidate Starts for Kalah2\_224:  
(Start: 61 @108578 has 40 MA's), (Start: 66 @108563 has 32 MA's), (Start: 75 @108539 has 7 MA's), (84, 108521), (91, 108482), (92, 108446), (93, 108443), (95, 108410), (96, 108395),

Gene: Kalpine\_88 Start: 49294, Stop: 49088, Start Num: 61  
Candidate Starts for Kalpine\_88:  
(14, 49507), (Start: 53 @49309 has 3 MA's), (Start: 61 @49294 has 40 MA's), (93, 49156),

Gene: Kanely\_93 Start: 51901, Stop: 51698, Start Num: 65  
Candidate Starts for Kanely\_93:  
(Start: 65 @51901 has 117 MA's), (92, 51766),

Gene: KashFlow\_227 Start: 109125, Stop: 108949, Start Num: 66  
Candidate Starts for KashFlow\_227:

(Start: 58 @109146 has 1 MA's), (Start: 66 @109125 has 32 MA's), (84, 109083), (91, 109056), (93, 109017),

Gene: Katalie136\_82 Start: 48581, Stop: 48423, Start Num: 75

Candidate Starts for Katalie136\_82:

(Start: 62 @48620 has 7 MA's), (Start: 75 @48581 has 7 MA's), (77, 48572), (93, 48485), (95, 48452),

Gene: Kazan\_88 Start: 46564, Stop: 46322, Start Num: 52

Candidate Starts for Kazan\_88:

(7, 46813), (17, 46729), (21, 46705), (Start: 52 @46564 has 23 MA's), (Start: 61 @46540 has 40 MA's), (90, 46444), (95, 46360),

Gene: Kenmech\_93 Start: 52088, Stop: 51885, Start Num: 65

Candidate Starts for Kenmech\_93:

(Start: 65 @52088 has 117 MA's), (92, 51953),

Gene: Kerberos\_86 Start: 48324, Stop: 48121, Start Num: 60

Candidate Starts for Kerberos\_86:

(Start: 60 @48324 has 15 MA's), (76, 48270), (93, 48186),

Gene: Killigrew\_87 Start: 50774, Stop: 50574, Start Num: 63

Candidate Starts for Killigrew\_87:

(Start: 63 @50774 has 31 MA's), (92, 50642),

Gene: Kimona\_86 Start: 47954, Stop: 47757, Start Num: 67

Candidate Starts for Kimona\_86:

(Start: 49 @48005 has 1 MA's), (Start: 67 @47954 has 1 MA's), (92, 47828),

Gene: Kipper29\_87 Start: 46567, Stop: 46325, Start Num: 52

Candidate Starts for Kipper29\_87:

(7, 46816), (17, 46732), (21, 46708), (Start: 52 @46567 has 23 MA's), (Start: 61 @46543 has 40 MA's), (90, 46447), (95, 46363),

Gene: KittenMittens\_79 Start: 47725, Stop: 47537, Start Num: 68

Candidate Starts for KittenMittens\_79:

(56, 47758), (Start: 68 @47725 has 30 MA's), (93, 47602),

Gene: Klein\_242 Start: 109911, Stop: 109735, Start Num: 66

Candidate Starts for Klein\_242:

(Start: 58 @109932 has 1 MA's), (Start: 66 @109911 has 32 MA's), (84, 109869), (91, 109842),

Gene: Koduck\_86 Start: 47511, Stop: 47308, Start Num: 60

Candidate Starts for Koduck\_86:

(Start: 53 @47526 has 3 MA's), (Start: 60 @47511 has 15 MA's), (76, 47457), (77, 47451), (93, 47373),

Gene: Koko\_90 Start: 47422, Stop: 47180, Start Num: 52

Candidate Starts for Koko\_90:

(7, 47671), (17, 47587), (21, 47563), (Start: 52 @47422 has 23 MA's), (Start: 61 @47398 has 40 MA's), (90, 47302),

Gene: Kremtemulon\_79 Start: 48636, Stop: 48466, Start Num: 75

Candidate Starts for Kremtemulon\_79:

(Start: 75 @48636 has 7 MA's), (93, 48540), (95, 48507),

Gene: Kristoff\_82 Start: 49033, Stop: 48797, Start Num: 50

Candidate Starts for Kristoff\_82:

(42, 49066), (Start: 50 @49033 has 5 MA's), (Start: 55 @49018 has 1 MA's), (Start: 59 @49009 has 1 MA's), (82, 48940), (93, 48862), (95, 48829),

Gene: Kugel\_94 Start: 51995, Stop: 51792, Start Num: 65

Candidate Starts for Kugel\_94:

(Start: 65 @51995 has 117 MA's), (92, 51860),

Gene: KyMonks1A\_96 Start: 51763, Stop: 51560, Start Num: 65

Candidate Starts for KyMonks1A\_96:

(Start: 65 @51763 has 117 MA's), (92, 51628), (98, 51568),

Gene: Kykar\_88 Start: 49910, Stop: 49701, Start Num: 65

Candidate Starts for Kykar\_88:

(Start: 65 @49910 has 117 MA's), (92, 49769),

Gene: L5\_79 Start: 47417, Stop: 47199, Start Num: 53

Candidate Starts for L5\_79:

(Start: 53 @47417 has 3 MA's), (Start: 60 @47402 has 15 MA's), (76, 47348), (77, 47342), (93, 47264),

Gene: Lambert1\_86 Start: 47834, Stop: 47634, Start Num: 68

Candidate Starts for Lambert1\_86:

(8, 48107), (21, 48023), (Start: 68 @47834 has 30 MA's), (88, 47774), (93, 47708), (95, 47675),

Gene: Lamina13\_93 Start: 51757, Stop: 51963, Start Num: 64

Candidate Starts for Lamina13\_93:

(Start: 64 @51757 has 46 MA's), (92, 51895),

Gene: Larenn\_85 Start: 48736, Stop: 48527, Start Num: 61

Candidate Starts for Larenn\_85:

(Start: 53 @48751 has 3 MA's), (Start: 61 @48736 has 40 MA's), (79, 48682), (88, 48658), (93, 48598), (95, 48565),

Gene: Lesedi\_88 Start: 50089, Stop: 49889, Start Num: 63

Candidate Starts for Lesedi\_88:

(Start: 63 @50089 has 31 MA's), (92, 49957),

Gene: Licorice\_91 Start: 52878, Stop: 52678, Start Num: 65

Candidate Starts for Licorice\_91:

(Start: 65 @52878 has 117 MA's), (92, 52746), (98, 52686),

Gene: LilBib\_80 Start: 49937, Stop: 49734, Start Num: 65

Candidate Starts for LilBib\_80:

(Start: 65 @49937 has 117 MA's),

Gene: Lilbunny\_86 Start: 46631, Stop: 46422, Start Num: 61

Candidate Starts for Lilbunny\_86:

(Start: 61 @46631 has 40 MA's), (83, 46571), (92, 46496),

Gene: LittleE\_224 Start: 106916, Stop: 106728, Start Num: 66

Candidate Starts for LittleE\_224:

(Start: 66 @106916 has 32 MA's), (Start: 75 @106892 has 7 MA's), (84, 106874), (91, 106835), (95, 106763), (98, 106739),

Gene: Lopton\_88 Start: 52012, Stop: 51809, Start Num: 65

Candidate Starts for Lopton\_88:

(Start: 65 @52012 has 117 MA's), (92, 51877),

Gene: Loser\_89 Start: 49477, Stop: 49256, Start Num: 60

Candidate Starts for Loser\_89:

(23, 49621), (37, 49558), (Start: 53 @49492 has 3 MA's), (Start: 60 @49477 has 15 MA's), (95, 49291),

Gene: Lucivia\_90 Start: 48330, Stop: 48133, Start Num: 63

Candidate Starts for Lucivia\_90:

(Start: 63 @48330 has 31 MA's), (93, 48201), (98, 48144),

Gene: Lucky2013\_232 Start: 106413, Stop: 106237, Start Num: 66

Candidate Starts for Lucky2013\_232:

(Start: 58 @106434 has 1 MA's), (Start: 66 @106413 has 32 MA's), (84, 106371), (91, 106344),

Gene: Lucyedi\_86 Start: 48370, Stop: 48140, Start Num: 52

Candidate Starts for Lucyedi\_86:

(Start: 52 @48370 has 23 MA's), (Start: 61 @48346 has 40 MA's), (Start: 67 @48334 has 1 MA's), (71, 48322), (85, 48283),

Gene: MPlant7149\_90 Start: 49878, Stop: 50087, Start Num: 64

Candidate Starts for MPlant7149\_90:

(Start: 64 @49878 has 46 MA's), (92, 50016),

Gene: MaCh\_89 Start: 48294, Stop: 48097, Start Num: 63

Candidate Starts for MaCh\_89:

(Start: 63 @48294 has 31 MA's), (93, 48165), (98, 48108),

Gene: Mabel\_89 Start: 48295, Stop: 48098, Start Num: 63

Candidate Starts for Mabel\_89:

(Start: 63 @48295 has 31 MA's), (93, 48166), (98, 48109),

Gene: Magnar\_91 Start: 51040, Stop: 50837, Start Num: 65

Candidate Starts for Magnar\_91:

(Start: 65 @51040 has 117 MA's), (92, 50905),

Gene: Magnito\_91 Start: 51185, Stop: 50982, Start Num: 65

Candidate Starts for Magnito\_91:

(31, 51299), (46, 51236), (Start: 65 @51185 has 117 MA's), (92, 51050),

Gene: Malec\_85 Start: 49144, Stop: 48938, Start Num: 61

Candidate Starts for Malec\_85:

(15, 49342), (Start: 53 @49159 has 3 MA's), (Start: 61 @49144 has 40 MA's), (79, 49090), (88, 49066), (93, 49006),

Gene: Manatee\_92 Start: 50646, Stop: 50443, Start Num: 65



Candidate Starts for Manatee\_92:  
(Start: 43 @50697 has 6 MA's), (Start: 65 @50646 has 117 MA's),

Gene: Marcell\_83 Start: 48789, Stop: 48586, Start Num: 65  
Candidate Starts for Marcell\_83:  
(Start: 65 @48789 has 117 MA's),

Gene: Marchy\_77 Start: 47255, Stop: 47052, Start Num: 65  
Candidate Starts for Marchy\_77:  
(Start: 65 @47255 has 117 MA's), (92, 47120),

Gene: Marge\_87 Start: 49768, Stop: 49974, Start Num: 64  
Candidate Starts for Marge\_87:  
(Start: 64 @49768 has 46 MA's), (92, 49906),

Gene: Margo\_86 Start: 47859, Stop: 47659, Start Num: 68  
Candidate Starts for Margo\_86:  
(8, 48132), (21, 48048), (Start: 68 @47859 has 30 MA's), (88, 47799), (93, 47733), (95, 47700),

Gene: Maroc7\_92 Start: 52980, Stop: 52777, Start Num: 65  
Candidate Starts for Maroc7\_92:  
(Start: 65 @52980 has 117 MA's), (92, 52845),

Gene: Marsha\_93 Start: 52954, Stop: 53160, Start Num: 64  
Candidate Starts for Marsha\_93:  
(Start: 64 @52954 has 46 MA's), (92, 53092),

Gene: MaryBeth\_91 Start: 51469, Stop: 51266, Start Num: 65  
Candidate Starts for MaryBeth\_91:  
(Start: 65 @51469 has 117 MA's), (92, 51334),

Gene: McFly\_87 Start: 46903, Stop: 46661, Start Num: 52  
Candidate Starts for McFly\_87:  
(7, 47152), (17, 47068), (21, 47044), (Start: 52 @46903 has 23 MA's), (Start: 61 @46879 has 40 MA's), (90, 46783), (95, 46699),

Gene: McGuire\_92 Start: 50898, Stop: 50695, Start Num: 65  
Candidate Starts for McGuire\_92:  
(Start: 65 @50898 has 117 MA's), (92, 50763),

Gene: MetalQZJ\_88 Start: 51469, Stop: 51266, Start Num: 65  
Candidate Starts for MetalQZJ\_88:  
(Start: 65 @51469 has 117 MA's), (92, 51334),

Gene: MiaZeal\_245 Start: 108550, Stop: 108374, Start Num: 66  
Candidate Starts for MiaZeal\_245:  
(Start: 58 @108571 has 1 MA's), (Start: 66 @108550 has 32 MA's), (84, 108508), (91, 108481),

Gene: Michley\_91 Start: 50597, Stop: 50346, Start Num: 45  
Candidate Starts for Michley\_91:  
(Start: 45 @50597 has 3 MA's), (Start: 65 @50549 has 117 MA's), (92, 50414),

Gene: MiculUcigas\_86 Start: 48271, Stop: 48065, Start Num: 61

Candidate Starts for MiculUcigas\_86:  
(15, 48469), (Start: 53 @48286 has 3 MA's), (Start: 61 @48271 has 40 MA's), (79, 48217), (93, 48133),

Gene: Minerva\_233 Start: 107908, Stop: 107726, Start Num: 66  
Candidate Starts for Minerva\_233:  
(Start: 61 @107923 has 40 MA's), (Start: 66 @107908 has 32 MA's), (84, 107872), (91, 107833), (95, 107761),

Gene: MissWhite\_79 Start: 45139, Stop: 44933, Start Num: 61  
Candidate Starts for MissWhite\_79:  
(Start: 53 @45154 has 3 MA's), (Start: 61 @45139 has 40 MA's), (79, 45085), (88, 45061), (93, 45001),

Gene: Molly\_89 Start: 49678, Stop: 49475, Start Num: 65  
Candidate Starts for Molly\_89:  
(24, 49825), (27, 49813), (30, 49789), (Start: 65 @49678 has 117 MA's), (92, 49543), (98, 49483),

Gene: Monet\_92 Start: 51735, Stop: 51938, Start Num: 65  
Candidate Starts for Monet\_92:  
(Start: 65 @51735 has 117 MA's), (92, 51870), (98, 51930),

Gene: Moose\_95 Start: 52313, Stop: 52110, Start Num: 65  
Candidate Starts for Moose\_95:  
(Start: 65 @52313 has 117 MA's), (92, 52178),

Gene: Morpher26\_82 Start: 48602, Stop: 48444, Start Num: 75  
Candidate Starts for Morpher26\_82:  
(Start: 62 @48641 has 7 MA's), (Start: 75 @48602 has 7 MA's), (77, 48593), (93, 48506), (95, 48473),

Gene: MrGordo\_92 Start: 50603, Stop: 50400, Start Num: 65  
Candidate Starts for MrGordo\_92:  
(Start: 65 @50603 has 117 MA's), (92, 50468),

Gene: Mryolo\_84 Start: 48769, Stop: 48972, Start Num: 65  
Candidate Starts for Mryolo\_84:  
(Start: 65 @48769 has 117 MA's), (92, 48904),

Gene: Mulciber\_88 Start: 48150, Stop: 47953, Start Num: 63  
Candidate Starts for Mulciber\_88:  
(Start: 63 @48150 has 31 MA's), (93, 48021), (98, 47964),

Gene: Mule\_92 Start: 49973, Stop: 50179, Start Num: 64  
Candidate Starts for Mule\_92:  
(Start: 64 @49973 has 46 MA's), (92, 50111),

Gene: Munch\_88 Start: 48299, Stop: 48102, Start Num: 63  
Candidate Starts for Munch\_88:  
(Start: 63 @48299 has 31 MA's), (93, 48170), (98, 48113),

Gene: Museum\_90 Start: 51040, Stop: 50837, Start Num: 65  
Candidate Starts for Museum\_90:  
(Start: 65 @51040 has 117 MA's), (92, 50905),

Gene: NEHalo\_88 Start: 50148, Stop: 49945, Start Num: 65  
Candidate Starts for NEHalo\_88:  
(Start: 65 @50148 has 117 MA's), (92, 50013),

Gene: NaSiaTalie\_87 Start: 48558, Stop: 48352, Start Num: 61  
Candidate Starts for NaSiaTalie\_87:  
(15, 48756), (Start: 53 @48573 has 3 MA's), (Start: 61 @48558 has 40 MA's), (79, 48504), (93, 48420),

Gene: Naira\_96 Start: 52973, Stop: 52770, Start Num: 65  
Candidate Starts for Naira\_96:  
(Start: 65 @52973 has 117 MA's), (92, 52838),

Gene: Neeharika16\_86 Start: 46630, Stop: 46412, Start Num: 61  
Candidate Starts for Neeharika16\_86:  
(7, 46903), (17, 46819), (21, 46795), (Start: 52 @46654 has 23 MA's), (Start: 61 @46630 has 40 MA's), (90, 46534), (95, 46450),

Gene: Nerujay\_93 Start: 51720, Stop: 51926, Start Num: 64  
Candidate Starts for Nerujay\_93:  
(Start: 64 @51720 has 46 MA's), (92, 51858),

Gene: Newrala\_86 Start: 47000, Stop: 46758, Start Num: 52  
Candidate Starts for Newrala\_86:  
(7, 47249), (17, 47165), (21, 47141), (Start: 52 @47000 has 23 MA's), (Start: 61 @46976 has 40 MA's), (90, 46880),

Gene: Nhonho\_87 Start: 50646, Stop: 50852, Start Num: 64  
Candidate Starts for Nhonho\_87:  
(Start: 64 @50646 has 46 MA's), (92, 50784),

Gene: NihilNomen\_236 Start: 108748, Stop: 108545, Start Num: 61  
Candidate Starts for NihilNomen\_236:  
(Start: 61 @108748 has 40 MA's), (Start: 66 @108733 has 32 MA's), (Start: 75 @108709 has 7 MA's), (84, 108691), (91, 108652), (95, 108580), (98, 108556),

Gene: Niza\_89 Start: 51286, Stop: 51083, Start Num: 65  
Candidate Starts for Niza\_89:  
(Start: 65 @51286 has 117 MA's), (92, 51151),

Gene: Noella\_87 Start: 47835, Stop: 47635, Start Num: 68  
Candidate Starts for Noella\_87:  
(21, 48024), (Start: 68 @47835 has 30 MA's), (88, 47775), (93, 47709), (95, 47676),

Gene: Norbert\_82 Start: 47832, Stop: 47632, Start Num: 68  
Candidate Starts for Norbert\_82:  
(21, 48021), (Start: 68 @47832 has 30 MA's), (88, 47772), (93, 47706), (95, 47673),

Gene: Norz\_90 Start: 53476, Stop: 53273, Start Num: 65  
Candidate Starts for Norz\_90:  
(Start: 65 @53476 has 117 MA's),

Gene: OKCentral2016\_83 Start: 47802, Stop: 47614, Start Num: 68  
Candidate Starts for OKCentral2016\_83:  
(56, 47835), (Start: 68 @47802 has 30 MA's), (92, 47682), (93, 47679),

Gene: Odette\_234 Start: 110012, Stop: 109836, Start Num: 66  
Candidate Starts for Odette\_234:  
(Start: 58 @110033 has 1 MA's), (Start: 66 @110012 has 32 MA's), (84, 109970), (91, 109943),

Gene: Ohno789\_95 Start: 52428, Stop: 52225, Start Num: 65  
Candidate Starts for Ohno789\_95:  
(Start: 65 @52428 has 117 MA's), (92, 52293),

Gene: Omega\_235 Start: 109887, Stop: 109675, Start Num: 61  
Candidate Starts for Omega\_235:  
(41, 109956), (Start: 61 @109887 has 40 MA's), (Start: 75 @109839 has 7 MA's), (84, 109821), (91, 109782), (95, 109710), (98, 109686),

Gene: Oogway\_87 Start: 51358, Stop: 51155, Start Num: 65  
Candidate Starts for Oogway\_87:  
(Start: 65 @51358 has 117 MA's), (92, 51223),

Gene: Orange\_89 Start: 47849, Stop: 47652, Start Num: 63  
Candidate Starts for Orange\_89:  
(Start: 63 @47849 has 31 MA's), (93, 47720), (98, 47663),

Gene: PP\_04 Start: 1143, Stop: 901, Start Num: 49  
Candidate Starts for PP\_04:  
(Start: 49 @1143 has 1 MA's), (Start: 65 @1104 has 117 MA's), (73, 1074), (87, 1035), (89, 1026), (93, 966),

Gene: PSullivan\_85 Start: 49195, Stop: 48992, Start Num: 65  
Candidate Starts for PSullivan\_85:  
(24, 49342), (27, 49330), (30, 49306), (Start: 65 @49195 has 117 MA's), (92, 49060), (98, 49000),

Gene: PacerPaul\_93 Start: 52361, Stop: 52158, Start Num: 65  
Candidate Starts for PacerPaul\_93:  
(Start: 65 @52361 has 117 MA's),

Gene: PainterBoy\_85 Start: 48081, Stop: 47851, Start Num: 52  
Candidate Starts for PainterBoy\_85:  
(Start: 52 @48081 has 23 MA's), (Start: 61 @48057 has 40 MA's), (Start: 67 @48045 has 1 MA's), (71, 48033), (85, 47994),

Gene: Panamaxus\_82 Start: 47834, Stop: 47634, Start Num: 68  
Candidate Starts for Panamaxus\_82:  
(21, 48023), (Start: 68 @47834 has 30 MA's), (88, 47774), (93, 47708), (95, 47675),

Gene: Papez\_93 Start: 51585, Stop: 51337, Start Num: 45  
Candidate Starts for Papez\_93:  
(Start: 45 @51585 has 3 MA's), (Start: 65 @51537 has 117 MA's), (92, 51405),

Gene: Paphu\_87 Start: 49638, Stop: 49841, Start Num: 65  
Candidate Starts for Paphu\_87:

(Start: 65 @49638 has 117 MA's), (92, 49773),

Gene: Paraselene\_87 Start: 49509, Stop: 49715, Start Num: 64

Candidate Starts for Paraselene\_87:

(Start: 64 @49509 has 46 MA's), (92, 49647), (98, 49707),

Gene: Pari\_92 Start: 50227, Stop: 50027, Start Num: 63

Candidate Starts for Pari\_92:

(Start: 63 @50227 has 31 MA's), (92, 50095),

Gene: Parliament\_90 Start: 52239, Stop: 52445, Start Num: 64

Candidate Starts for Parliament\_90:

(Start: 64 @52239 has 46 MA's), (92, 52377),

Gene: PascalRango\_92 Start: 52074, Stop: 51871, Start Num: 65

Candidate Starts for PascalRango\_92:

(Start: 43 @52125 has 6 MA's), (Start: 65 @52074 has 117 MA's),

Gene: PattyP\_92 Start: 51679, Stop: 51476, Start Num: 65

Candidate Starts for PattyP\_92:

(Start: 65 @51679 has 117 MA's), (92, 51544),

Gene: Payneful\_73 Start: 46347, Stop: 46144, Start Num: 65

Candidate Starts for Payneful\_73:

(Start: 65 @46347 has 117 MA's), (92, 46212),

Gene: PeaceMeal1\_81 Start: 47729, Stop: 47541, Start Num: 68

Candidate Starts for PeaceMeal1\_81:

(56, 47762), (Start: 68 @47729 has 30 MA's), (93, 47606),

Gene: Pelly\_91 Start: 53346, Stop: 53143, Start Num: 65

Candidate Starts for Pelly\_91:

(Start: 65 @53346 has 117 MA's), (92, 53211),

Gene: Pepe\_86 Start: 50134, Stop: 49931, Start Num: 65

Candidate Starts for Pepe\_86:

(Start: 65 @50134 has 117 MA's), (92, 49999),

Gene: Perplexer\_82 Start: 48582, Stop: 48424, Start Num: 75

Candidate Starts for Perplexer\_82:

(Start: 62 @48621 has 7 MA's), (Start: 75 @48582 has 7 MA's), (77, 48573), (93, 48486), (95, 48453),

Gene: Perseus\_90 Start: 51769, Stop: 51975, Start Num: 64

Candidate Starts for Perseus\_90:

(Start: 64 @51769 has 46 MA's), (92, 51907),

Gene: Petersenfast\_83 Start: 46730, Stop: 46533, Start Num: 63

Candidate Starts for Petersenfast\_83:

(Start: 63 @46730 has 31 MA's), (93, 46601), (98, 46544),

Gene: Peterson\_90 Start: 51816, Stop: 51607, Start Num: 64

Candidate Starts for Peterson\_90:

(6, 52101), (9, 52062), (11, 52059), (14, 52044), (19, 51996), (22, 51975), (26, 51960), (34, 51915), (35, 51909), (38, 51903), (Start: 64 @51816 has 46 MA's), (72, 51783), (91, 51711), (98, 51615),

Gene: PetiteSangsue\_82 Start: 48585, Stop: 48427, Start Num: 75

Candidate Starts for PetiteSangsue\_82:

(Start: 62 @48624 has 7 MA's), (Start: 75 @48585 has 7 MA's), (77, 48576), (93, 48489), (95, 48456),

Gene: Petp2012\_89 Start: 51326, Stop: 51123, Start Num: 65

Candidate Starts for Petp2012\_89:

(Start: 65 @51326 has 117 MA's), (92, 51191),

Gene: Petruccio\_88 Start: 48718, Stop: 48515, Start Num: 65

Candidate Starts for Petruccio\_88:

(Start: 65 @48718 has 117 MA's), (92, 48583), (98, 48523),

Gene: Phantastic\_87 Start: 47341, Stop: 47150, Start Num: 68

Candidate Starts for Phantastic\_87:

(10, 47605), (Start: 68 @47341 has 30 MA's), (70, 47335), (88, 47281), (93, 47215),

Gene: PherrisBueller\_88 Start: 48812, Stop: 48612, Start Num: 63

Candidate Starts for PherrisBueller\_88:

(Start: 63 @48812 has 31 MA's), (92, 48680),

Gene: Phlei\_72 Start: 46175, Stop: 45936, Start Num: 57

Candidate Starts for Phlei\_72:

(Start: 57 @46175 has 1 MA's), (92, 46019),

Gene: Phoebus\_233 Start: 112122, Stop: 111946, Start Num: 66

Candidate Starts for Phoebus\_233:

(Start: 58 @112143 has 1 MA's), (Start: 66 @112122 has 32 MA's), (84, 112080), (91, 112053),

Gene: PhrostyMug\_94 Start: 52143, Stop: 52349, Start Num: 64

Candidate Starts for PhrostyMug\_94:

(Start: 64 @52143 has 46 MA's), (92, 52281),

Gene: Pinto\_87 Start: 50214, Stop: 50011, Start Num: 65

Candidate Starts for Pinto\_87:

(Start: 65 @50214 has 117 MA's),

Gene: Pippin\_93 Start: 50646, Stop: 50852, Start Num: 64

Candidate Starts for Pippin\_93:

(Start: 64 @50646 has 46 MA's), (92, 50784),

Gene: Piro94\_85 Start: 48506, Stop: 48300, Start Num: 61

Candidate Starts for Piro94\_85:

(15, 48704), (Start: 53 @48521 has 3 MA's), (Start: 61 @48506 has 40 MA's), (93, 48368),

Gene: Pistachio\_87 Start: 47750, Stop: 47532, Start Num: 51

Candidate Starts for Pistachio\_87:

(44, 47777), (Start: 51 @47750 has 4 MA's), (76, 47687), (82, 47669), (93, 47597),

Gene: Pita2\_91 Start: 50691, Stop: 50488, Start Num: 65

Candidate Starts for Pita2\_91:

(24, 50838), (27, 50826), (30, 50802), (Start: 65 @50691 has 117 MA's), (92, 50556), (98, 50496),

Gene: Pmask\_86 Start: 47201, Stop: 46959, Start Num: 52

Candidate Starts for Pmask\_86:

(7, 47450), (17, 47366), (21, 47342), (Start: 52 @47201 has 23 MA's), (Start: 61 @47177 has 40 MA's), (90, 47081),

Gene: Pocahontas\_85 Start: 47830, Stop: 47630, Start Num: 68

Candidate Starts for Pocahontas\_85:

(21, 48019), (Start: 68 @47830 has 30 MA's), (88, 47770), (93, 47704), (95, 47671),

Gene: Pomar16\_86 Start: 48397, Stop: 48194, Start Num: 60

Candidate Starts for Pomar16\_86:

(Start: 60 @48397 has 15 MA's), (76, 48343), (93, 48259),

Gene: Poompha\_81 Start: 47730, Stop: 47539, Start Num: 68

Candidate Starts for Poompha\_81:

(48, 47796), (Start: 68 @47730 has 30 MA's), (73, 47712), (87, 47673), (93, 47604),

Gene: Popcicle\_86 Start: 47830, Stop: 47630, Start Num: 68

Candidate Starts for Popcicle\_86:

(21, 48019), (Start: 68 @47830 has 30 MA's), (88, 47770), (93, 47704), (95, 47671),

Gene: Porcelain\_236 Start: 107360, Stop: 107184, Start Num: 66

Candidate Starts for Porcelain\_236:

(Start: 58 @107381 has 1 MA's), (Start: 66 @107360 has 32 MA's), (84, 107318), (91, 107291),

Gene: Pound\_223 Start: 107829, Stop: 107617, Start Num: 58

Candidate Starts for Pound\_223:

(Start: 58 @107829 has 1 MA's), (Start: 66 @107808 has 32 MA's), (Start: 75 @107784 has 7 MA's), (77, 107775), (86, 107760), (91, 107724), (92, 107688), (93, 107685), (95, 107652), (96, 107637),

Gene: Priamo\_88 Start: 46420, Stop: 46202, Start Num: 61

Candidate Starts for Priamo\_88:

(7, 46693), (17, 46609), (21, 46585), (Start: 52 @46444 has 23 MA's), (Start: 61 @46420 has 40 MA's), (90, 46324), (95, 46240),

Gene: Puppy\_88 Start: 47820, Stop: 47602, Start Num: 51

Candidate Starts for Puppy\_88:

(44, 47847), (Start: 51 @47820 has 4 MA's), (76, 47757), (82, 47739), (93, 47667),

Gene: QTRlifeCrisis\_87 Start: 49246, Stop: 49043, Start Num: 65

Candidate Starts for QTRlifeCrisis\_87:

(Start: 43 @49297 has 6 MA's), (Start: 65 @49246 has 117 MA's), (92, 49111),

Gene: QuinnKiro\_85 Start: 47833, Stop: 47633, Start Num: 68

Candidate Starts for QuinnKiro\_85:

(8, 48106), (21, 48022), (Start: 68 @47833 has 30 MA's), (88, 47773), (93, 47707), (95, 47674),

Gene: Rajelicia\_89 Start: 52457, Stop: 52257, Start Num: 65

Candidate Starts for Rajelicia\_89:

(Start: 65 @52457 has 117 MA's), (92, 52325),

Gene: Rebeuca\_85 Start: 49034, Stop: 48798, Start Num: 50  
Candidate Starts for Rebeuca\_85:  
(42, 49067), (Start: 50 @49034 has 5 MA's), (Start: 55 @49019 has 1 MA's), (Start: 59 @49010 has 1 MA's), (82, 48941), (93, 48863), (95, 48830),

Gene: RedRock\_86 Start: 49130, Stop: 48909, Start Num: 60  
Candidate Starts for RedRock\_86:  
(Start: 53 @49145 has 3 MA's), (Start: 60 @49130 has 15 MA's), (95, 48944),

Gene: Redno2\_226 Start: 106231, Stop: 106055, Start Num: 66  
Candidate Starts for Redno2\_226:  
(Start: 58 @106252 has 1 MA's), (Start: 66 @106231 has 32 MA's), (84, 106189), (91, 106162),

Gene: ResDef\_84 Start: 47836, Stop: 47636, Start Num: 68  
Candidate Starts for ResDef\_84:  
(21, 48025), (Start: 68 @47836 has 30 MA's), (88, 47776), (93, 47710), (95, 47677),

Gene: RhynO\_72 Start: 44427, Stop: 44242, Start Num: 68  
Candidate Starts for RhynO\_72:  
(5, 44745), (15, 44655), (20, 44616), (Start: 50 @44472 has 5 MA's), (Start: 68 @44427 has 30 MA's), (74, 44406), (87, 44370), (93, 44307), (95, 44274),

Gene: Rhynn\_85 Start: 50726, Stop: 50926, Start Num: 65  
Candidate Starts for Rhynn\_85:  
(Start: 65 @50726 has 117 MA's),

Gene: RidgeCB\_89 Start: 49216, Stop: 49422, Start Num: 64  
Candidate Starts for RidgeCB\_89:  
(Start: 64 @49216 has 46 MA's), (92, 49354), (98, 49414),

Gene: Rifter\_89 Start: 46179, Stop: 45970, Start Num: 61  
Candidate Starts for Rifter\_89:  
(Start: 61 @46179 has 40 MA's), (83, 46119),

Gene: Ringer\_90 Start: 51410, Stop: 51210, Start Num: 65  
Candidate Starts for Ringer\_90:  
(Start: 65 @51410 has 117 MA's), (92, 51278),

Gene: Rockstar\_75 Start: 45031, Stop: 44831, Start Num: 68  
Candidate Starts for Rockstar\_75:  
(10, 45295), (Start: 68 @45031 has 30 MA's), (70, 45025), (88, 44971), (93, 44905),

Gene: Rohr\_92 Start: 51968, Stop: 52177, Start Num: 64  
Candidate Starts for Rohr\_92:  
(Start: 64 @51968 has 46 MA's), (92, 52106),

Gene: Roksolana\_89 Start: 46895, Stop: 46686, Start Num: 61  
Candidate Starts for Roksolana\_89:  
(Start: 61 @46895 has 40 MA's), (83, 46835),

Gene: Rubeus\_88 Start: 48657, Stop: 48454, Start Num: 65  
Candidate Starts for Rubeus\_88:  
(Start: 65 @48657 has 117 MA's), (92, 48522),



Gene: Rufus\_93 Start: 51974, Stop: 51771, Start Num: 65

Candidate Starts for Rufus\_93:

(Start: 65 @51974 has 117 MA's), (92, 51839),

Gene: Ruotula\_94 Start: 52218, Stop: 52015, Start Num: 65

Candidate Starts for Ruotula\_94:

(Start: 65 @52218 has 117 MA's), (92, 52083),

Gene: Rutherferd\_91 Start: 50676, Stop: 50882, Start Num: 64

Candidate Starts for Rutherferd\_91:

(Start: 64 @50676 has 46 MA's), (92, 50814), (98, 50874),

Gene: STLscum\_100 Start: 51894, Stop: 51691, Start Num: 65

Candidate Starts for STLscum\_100:

(Start: 65 @51894 has 117 MA's), (92, 51759),

Gene: Sagefire\_86 Start: 50112, Stop: 50318, Start Num: 64

Candidate Starts for Sagefire\_86:

(Start: 64 @50112 has 46 MA's), (92, 50250),

Gene: Salz\_85 Start: 46959, Stop: 46762, Start Num: 63

Candidate Starts for Salz\_85:

(Start: 63 @46959 has 31 MA's), (93, 46830), (98, 46773),

Gene: Sandaddy\_90 Start: 51546, Stop: 51343, Start Num: 65

Candidate Starts for Sandaddy\_90:

(Start: 65 @51546 has 117 MA's), (92, 51411),

Gene: SarFire\_98 Start: 53353, Stop: 53099, Start Num: 43

Candidate Starts for SarFire\_98:

(Start: 43 @53353 has 6 MA's), (Start: 65 @53302 has 117 MA's), (92, 53167),

Gene: SaturnRing\_88 Start: 48203, Stop: 47985, Start Num: 51

Candidate Starts for SaturnRing\_88:

(44, 48230), (Start: 51 @48203 has 4 MA's), (76, 48140), (82, 48122), (93, 48050),

Gene: Schatzie\_227 Start: 109153, Stop: 108977, Start Num: 66

Candidate Starts for Schatzie\_227:

(Start: 58 @109174 has 1 MA's), (Start: 66 @109153 has 32 MA's), (84, 109111), (91, 109084),

Gene: Scout\_86 Start: 47357, Stop: 47166, Start Num: 68

Candidate Starts for Scout\_86:

(1, 47846), (2, 47813), (8, 47630), (Start: 68 @47357 has 30 MA's), (88, 47297), (93, 47231),

Gene: Scowl\_90 Start: 50695, Stop: 50898, Start Num: 65

Candidate Starts for Scowl\_90:

(Start: 65 @50695 has 117 MA's), (92, 50827),

Gene: Seabiscuit\_95 Start: 51387, Stop: 51184, Start Num: 65

Candidate Starts for Seabiscuit\_95:

(Start: 65 @51387 has 117 MA's),

Gene: Seanderson\_89 Start: 52624, Stop: 52421, Start Num: 65  
Candidate Starts for Seanderson\_89:  
(Start: 65 @52624 has 117 MA's), (92, 52489),

Gene: Serenity\_89 Start: 47970, Stop: 47767, Start Num: 60  
Candidate Starts for Serenity\_89:  
(39, 48045), (Start: 53 @47985 has 3 MA's), (Start: 60 @47970 has 15 MA's), (76, 47916), (77, 47910), (93, 47832), (95, 47799),

Gene: Severus\_82 Start: 47724, Stop: 47536, Start Num: 68  
Candidate Starts for Severus\_82:  
(56, 47757), (Start: 68 @47724 has 30 MA's), (93, 47601),

Gene: Sham4\_86 Start: 47045, Stop: 46848, Start Num: 63  
Candidate Starts for Sham4\_86:  
(Start: 63 @47045 has 31 MA's), (93, 46916), (98, 46859),

Gene: Sheen\_83 Start: 50900, Stop: 50715, Start Num: 68  
Candidate Starts for Sheen\_83:  
(Start: 68 @50900 has 30 MA's), (81, 50858), (92, 50783),

Gene: ShortQueendom\_80 Start: 48241, Stop: 48038, Start Num: 65  
Candidate Starts for ShortQueendom\_80:  
(47, 48289), (Start: 65 @48241 has 117 MA's), (92, 48106),

Gene: Sibs6\_95 Start: 49833, Stop: 49630, Start Num: 65  
Candidate Starts for Sibs6\_95:  
(Start: 65 @49833 has 117 MA's), (92, 49698),

Gene: SkiPole\_98 Start: 51505, Stop: 51711, Start Num: 64  
Candidate Starts for SkiPole\_98:  
(Start: 64 @51505 has 46 MA's), (92, 51643), (98, 51703),

Gene: Slagathor\_92 Start: 51592, Stop: 51389, Start Num: 65  
Candidate Starts for Slagathor\_92:  
(Start: 65 @51592 has 117 MA's),

Gene: Smairt\_97 Start: 53160, Stop: 53366, Start Num: 64  
Candidate Starts for Smairt\_97:  
(Start: 64 @53160 has 46 MA's), (92, 53298),

Gene: Smeagol\_90 Start: 52545, Stop: 52336, Start Num: 64  
Candidate Starts for Smeagol\_90:  
(19, 52725), (22, 52704), (26, 52689), (34, 52644), (35, 52638), (38, 52632), (Start: 64 @52545 has 46 MA's), (72, 52512), (91, 52440), (98, 52344),

Gene: SmellyB\_87 Start: 46558, Stop: 46316, Start Num: 52  
Candidate Starts for SmellyB\_87:  
(7, 46807), (17, 46723), (21, 46699), (Start: 52 @46558 has 23 MA's), (Start: 61 @46534 has 40 MA's), (90, 46438), (95, 46354),

Gene: Snape\_89 Start: 47838, Stop: 47641, Start Num: 63  
Candidate Starts for Snape\_89:

(Start: 63 @47838 has 31 MA's), (93, 47709), (98, 47652),

Gene: Snazzy\_92 Start: 51835, Stop: 51632, Start Num: 65

Candidate Starts for Snazzy\_92:

(Start: 65 @51835 has 117 MA's), (92, 51700),

Gene: Solon\_83 Start: 47822, Stop: 48028, Start Num: 64

Candidate Starts for Solon\_83:

(Start: 64 @47822 has 46 MA's), (92, 47960), (98, 48020),

Gene: SororFago\_85 Start: 48106, Stop: 47903, Start Num: 61

Candidate Starts for SororFago\_85:

(Start: 53 @48121 has 3 MA's), (Start: 61 @48106 has 40 MA's), (79, 48055),

Gene: Sorpresa\_89 Start: 51552, Stop: 51349, Start Num: 65

Candidate Starts for Sorpresa\_89:

(Start: 65 @51552 has 117 MA's), (92, 51417),

Gene: SpikeBT\_87 Start: 49792, Stop: 49589, Start Num: 65

Candidate Starts for SpikeBT\_87:

(Start: 65 @49792 has 117 MA's), (92, 49657),

Gene: Squee\_92 Start: 51943, Stop: 51740, Start Num: 65

Candidate Starts for Squee\_92:

(Start: 65 @51943 has 117 MA's), (92, 51808),

Gene: Squint\_233 Start: 108166, Stop: 107990, Start Num: 66

Candidate Starts for Squint\_233:

(Start: 58 @108187 has 1 MA's), (Start: 66 @108166 has 32 MA's), (84, 108124), (91, 108097),

Gene: StarStuff\_86 Start: 48359, Stop: 48156, Start Num: 60

Candidate Starts for StarStuff\_86:

(Start: 60 @48359 has 15 MA's), (76, 48305), (93, 48221),

Gene: StewieG\_86 Start: 47748, Stop: 47954, Start Num: 64

Candidate Starts for StewieG\_86:

(Start: 64 @47748 has 46 MA's), (92, 47886), (98, 47946),

Gene: StrongArm\_88 Start: 50693, Stop: 50899, Start Num: 64

Candidate Starts for StrongArm\_88:

(Start: 64 @50693 has 46 MA's), (92, 50831),

Gene: Sumter\_87 Start: 51154, Stop: 51363, Start Num: 64

Candidate Starts for Sumter\_87:

(Start: 64 @51154 has 46 MA's), (92, 51292),

Gene: Sunshine924\_93 Start: 49690, Stop: 49896, Start Num: 64

Candidate Starts for Sunshine924\_93:

(Start: 64 @49690 has 46 MA's), (92, 49828), (98, 49888),

Gene: SuperAwesome\_87 Start: 47240, Stop: 46998, Start Num: 52

Candidate Starts for SuperAwesome\_87:

(7, 47489), (17, 47405), (21, 47381), (Start: 52 @47240 has 23 MA's), (Start: 61 @47216 has 40 MA's), (90, 47120),

Gene: SuperCallie99\_83 Start: 46597, Stop: 46379, Start Num: 61

Candidate Starts for SuperCallie99\_83:

(7, 46870), (17, 46786), (21, 46762), (Start: 52 @46621 has 23 MA's), (Start: 61 @46597 has 40 MA's), (90, 46501), (95, 46417),

Gene: Superphikiman\_233 Start: 107294, Stop: 107106, Start Num: 66

Candidate Starts for Superphikiman\_233:

(Start: 58 @107315 has 1 MA's), (Start: 66 @107294 has 32 MA's), (84, 107252), (91, 107213), (95, 107141), (98, 107117),

Gene: SwissCheese\_95 Start: 51439, Stop: 51236, Start Num: 65

Candidate Starts for SwissCheese\_95:

(Start: 65 @51439 has 117 MA's), (92, 51304),

Gene: Switzer\_91 Start: 51956, Stop: 51702, Start Num: 43

Candidate Starts for Switzer\_91:

(Start: 43 @51956 has 6 MA's), (Start: 65 @51905 has 117 MA's),

Gene: Swole\_88 Start: 50909, Stop: 50706, Start Num: 65

Candidate Starts for Swole\_88:

(24, 51056), (27, 51044), (30, 51020), (Start: 65 @50909 has 117 MA's), (92, 50774), (98, 50714),

Gene: TNguyen7\_88 Start: 48161, Stop: 47943, Start Num: 51

Candidate Starts for TNguyen7\_88:

(44, 48188), (Start: 51 @48161 has 4 MA's), (76, 48098), (82, 48080), (93, 48008),

Gene: Target\_90 Start: 48713, Stop: 48510, Start Num: 65

Candidate Starts for Target\_90:

(Start: 65 @48713 has 117 MA's), (92, 48578), (98, 48518),

Gene: Tasp14\_87 Start: 49921, Stop: 50127, Start Num: 64

Candidate Starts for Tasp14\_87:

(Start: 64 @49921 has 46 MA's), (92, 50059),

Gene: Teodoridan\_93 Start: 50495, Stop: 50698, Start Num: 65

Candidate Starts for Teodoridan\_93:

(Start: 65 @50495 has 117 MA's), (92, 50630),

Gene: Texage\_84 Start: 47834, Stop: 47634, Start Num: 68

Candidate Starts for Texage\_84:

(21, 48023), (Start: 68 @47834 has 30 MA's), (88, 47774), (93, 47708), (95, 47675),

Gene: TheloniousMonk\_90 Start: 51663, Stop: 51460, Start Num: 65

Candidate Starts for TheloniousMonk\_90:

(Start: 65 @51663 has 117 MA's), (92, 51528),

Gene: Thibault\_209 Start: 104098, Stop: 103910, Start Num: 66

Candidate Starts for Thibault\_209:

(Start: 66 @104098 has 32 MA's), (Start: 75 @104074 has 7 MA's), (84, 104056), (91, 104017), (95, 103945), (98, 103921),

Gene: Thor\_98 Start: 52711, Stop: 52457, Start Num: 43

Candidate Starts for Thor\_98:

(Start: 43 @52711 has 6 MA's), (Start: 65 @52660 has 117 MA's), (92, 52525),

Gene: ThreeRngTarjay\_234 Start: 111335, Stop: 111162, Start Num: 66

Candidate Starts for ThreeRngTarjay\_234:

(Start: 58 @111356 has 1 MA's), (Start: 66 @111335 has 32 MA's), (84, 111293), (91, 111266),

Gene: Timothy\_89 Start: 47815, Stop: 47618, Start Num: 63

Candidate Starts for Timothy\_89:

(Start: 63 @47815 has 31 MA's), (93, 47686), (98, 47629),

Gene: TinyTimmy\_87 Start: 47544, Stop: 47347, Start Num: 63

Candidate Starts for TinyTimmy\_87:

(Start: 63 @47544 has 31 MA's), (93, 47415), (98, 47358),

Gene: TopsytheTRex\_85 Start: 47972, Stop: 47769, Start Num: 60

Candidate Starts for TopsytheTRex\_85:

(39, 48047), (Start: 53 @47987 has 3 MA's), (Start: 60 @47972 has 15 MA's), (76, 47918), (77, 47912), (93, 47834), (95, 47801),

Gene: Todacoro\_86 Start: 47833, Stop: 47633, Start Num: 68

Candidate Starts for Todacoro\_86:

(8, 48106), (21, 48022), (Start: 68 @47833 has 30 MA's), (88, 47773), (93, 47707), (95, 47674),

Gene: Tomathan\_86 Start: 48437, Stop: 48234, Start Num: 60

Candidate Starts for Tomathan\_86:

(Start: 60 @48437 has 15 MA's), (76, 48383), (93, 48299),

Gene: ToneTone\_86 Start: 46559, Stop: 46350, Start Num: 61

Candidate Starts for ToneTone\_86:

(Start: 61 @46559 has 40 MA's), (83, 46499), (92, 46424),

Gene: Topanga\_74 Start: 45508, Stop: 45263, Start Num: 50

Candidate Starts for Topanga\_74:

(16, 45685), (Start: 50 @45508 has 5 MA's), (Start: 55 @45493 has 1 MA's), (Start: 59 @45484 has 1 MA's), (82, 45415), (93, 45337), (95, 45304),

Gene: Topgun\_89 Start: 49318, Stop: 49524, Start Num: 64

Candidate Starts for Topgun\_89:

(Start: 64 @49318 has 46 MA's), (92, 49456), (98, 49516),

Gene: Tote\_86 Start: 48177, Stop: 47974, Start Num: 65

Candidate Starts for Tote\_86:

(24, 48324), (27, 48312), (30, 48288), (Start: 65 @48177 has 117 MA's), (92, 48042), (98, 47982),

Gene: Traft412\_86 Start: 50830, Stop: 50627, Start Num: 65

Candidate Starts for Traft412\_86:

(Start: 65 @50830 has 117 MA's), (92, 50695),

Gene: Treddle\_90 Start: 51379, Stop: 51582, Start Num: 65

Candidate Starts for Treddle\_90:

(Start: 65 @51379 has 117 MA's), (92, 51514), (98, 51574),

Gene: Tripl3t\_91 Start: 53185, Stop: 52982, Start Num: 65

Candidate Starts for Tripl3t\_91:

(Start: 65 @53185 has 117 MA's), (92, 53050),

Gene: Trouble\_90 Start: 50598, Stop: 50804, Start Num: 64

Candidate Starts for Trouble\_90:

(Start: 64 @50598 has 46 MA's), (92, 50736),

Gene: Tucker\_89 Start: 46762, Stop: 46553, Start Num: 61

Candidate Starts for Tucker\_89:

(Start: 61 @46762 has 40 MA's), (83, 46702), (92, 46627),

Gene: Turj99\_86 Start: 50763, Stop: 50560, Start Num: 65

Candidate Starts for Turj99\_86:

(Start: 65 @50763 has 117 MA's), (92, 50628),

Gene: Twister\_85 Start: 48707, Stop: 48477, Start Num: 55

Candidate Starts for Twister\_85:

(16, 48899), (33, 48803), (Start: 50 @48722 has 5 MA's), (Start: 55 @48707 has 1 MA's), (Start: 59 @48698 has 1 MA's), (82, 48629), (93, 48551), (95, 48518),

Gene: TwoPeat\_85 Start: 50371, Stop: 50168, Start Num: 65

Candidate Starts for TwoPeat\_85:

(24, 50518), (27, 50506), (30, 50482), (Start: 65 @50371 has 117 MA's), (92, 50236), (98, 50176),

Gene: Updawg\_87 Start: 48553, Stop: 48347, Start Num: 61

Candidate Starts for Updawg\_87:

(15, 48751), (Start: 53 @48568 has 3 MA's), (Start: 61 @48553 has 40 MA's), (79, 48499), (93, 48415),

Gene: VC3\_84 Start: 47253, Stop: 47056, Start Num: 60

Candidate Starts for VC3\_84:

(Start: 60 @47253 has 15 MA's), (76, 47199), (93, 47121),

Gene: Veracruz\_83 Start: 47834, Stop: 47634, Start Num: 68

Candidate Starts for Veracruz\_83:

(8, 48107), (21, 48023), (Start: 68 @47834 has 30 MA's), (88, 47774), (93, 47708), (95, 47675),

Gene: Violet\_87 Start: 50920, Stop: 51123, Start Num: 65

Candidate Starts for Violet\_87:

(Start: 65 @50920 has 117 MA's), (92, 51055), (98, 51115),

Gene: VohminGhazi\_87 Start: 46559, Stop: 46317, Start Num: 52

Candidate Starts for VohminGhazi\_87:

(7, 46808), (17, 46724), (21, 46700), (Start: 52 @46559 has 23 MA's), (Start: 61 @46535 has 40 MA's), (90, 46439), (95, 46355),

Gene: WalterMcMickey\_84 Start: 48722, Stop: 48477, Start Num: 50

Candidate Starts for WalterMcMickey\_84:

(16, 48899), (33, 48803), (Start: 50 @48722 has 5 MA's), (Start: 55 @48707 has 1 MA's), (Start: 59 @48698 has 1 MA's), (82, 48629), (93, 48551), (95, 48518),

Gene: Wanda\_234 Start: 107541, Stop: 107365, Start Num: 66  
Candidate Starts for Wanda\_234:  
(Start: 58 @107562 has 1 MA's), (Start: 66 @107541 has 32 MA's), (84, 107499), (91, 107472),

Gene: Watermelon\_89 Start: 50581, Stop: 50378, Start Num: 65  
Candidate Starts for Watermelon\_89:  
(Start: 65 @50581 has 117 MA's), (92, 50446),

Gene: WeiHuaDA\_88 Start: 49575, Stop: 49372, Start Num: 61  
Candidate Starts for WeiHuaDA\_88:  
(23, 49722), (26, 49710), (Start: 53 @49590 has 3 MA's), (Start: 61 @49575 has 40 MA's), (70, 49551), (79, 49524), (88, 49500), (93, 49440),

Gene: Wheeler\_96 Start: 53218, Stop: 53015, Start Num: 65  
Candidate Starts for Wheeler\_96:  
(Start: 65 @53218 has 117 MA's), (92, 53083),

Gene: WideWale\_87 Start: 48553, Stop: 48347, Start Num: 61  
Candidate Starts for WideWale\_87:  
(15, 48751), (Start: 53 @48568 has 3 MA's), (Start: 61 @48553 has 40 MA's), (79, 48499), (93, 48415),

Gene: Wiks\_88 Start: 46663, Stop: 46421, Start Num: 52  
Candidate Starts for Wiks\_88:  
(7, 46912), (17, 46828), (21, 46804), (Start: 52 @46663 has 23 MA's), (Start: 61 @46639 has 40 MA's), (90, 46543),

Gene: Wile\_81 Start: 48650, Stop: 48453, Start Num: 62  
Candidate Starts for Wile\_81:  
(Start: 62 @48650 has 7 MA's), (Start: 75 @48611 has 7 MA's), (77, 48602), (93, 48515), (95, 48482),

Gene: Wilkins\_90 Start: 49248, Stop: 49454, Start Num: 64  
Candidate Starts for Wilkins\_90:  
(Start: 64 @49248 has 46 MA's), (92, 49386), (98, 49446),

Gene: Wizard007\_82 Start: 48376, Stop: 48179, Start Num: 62  
Candidate Starts for Wizard007\_82:  
(Start: 62 @48376 has 7 MA's), (Start: 75 @48337 has 7 MA's), (77, 48328), (93, 48241), (95, 48208),

Gene: Yeet\_229 Start: 109251, Stop: 109075, Start Num: 66  
Candidate Starts for Yeet\_229:  
(Start: 58 @109272 has 1 MA's), (Start: 66 @109251 has 32 MA's), (84, 109209), (91, 109182),

Gene: Yokurt\_88 Start: 46639, Stop: 46421, Start Num: 61  
Candidate Starts for Yokurt\_88:  
(7, 46912), (17, 46828), (21, 46804), (Start: 52 @46663 has 23 MA's), (Start: 61 @46639 has 40 MA's), (90, 46543),

Gene: Zaka\_89 Start: 46639, Stop: 46421, Start Num: 61  
Candidate Starts for Zaka\_89:  
(7, 46912), (17, 46828), (21, 46804), (Start: 52 @46663 has 23 MA's), (Start: 61 @46639 has 40 MA's), (90, 46543),

Gene: Zeeculate\_91 Start: 53471, Stop: 53271, Start Num: 63

Candidate Starts for Zeeculate\_91:

(Start: 63 @53471 has 31 MA's), (92, 53339),

Gene: Zelink\_228 Start: 108839, Stop: 108663, Start Num: 66

Candidate Starts for Zelink\_228:

(Start: 58 @108860 has 1 MA's), (Start: 66 @108839 has 32 MA's), (84, 108797), (91, 108770),

Gene: Zephyr\_92 Start: 51932, Stop: 51723, Start Num: 65

Candidate Starts for Zephyr\_92:

(Start: 65 @51932 has 117 MA's), (92, 51791),

Gene: Zulu\_90 Start: 47040, Stop: 46798, Start Num: 52

Candidate Starts for Zulu\_90:

(7, 47289), (17, 47205), (21, 47181), (Start: 52 @47040 has 23 MA's), (Start: 61 @47016 has 40 MA's), (90, 46920), (95, 46836),