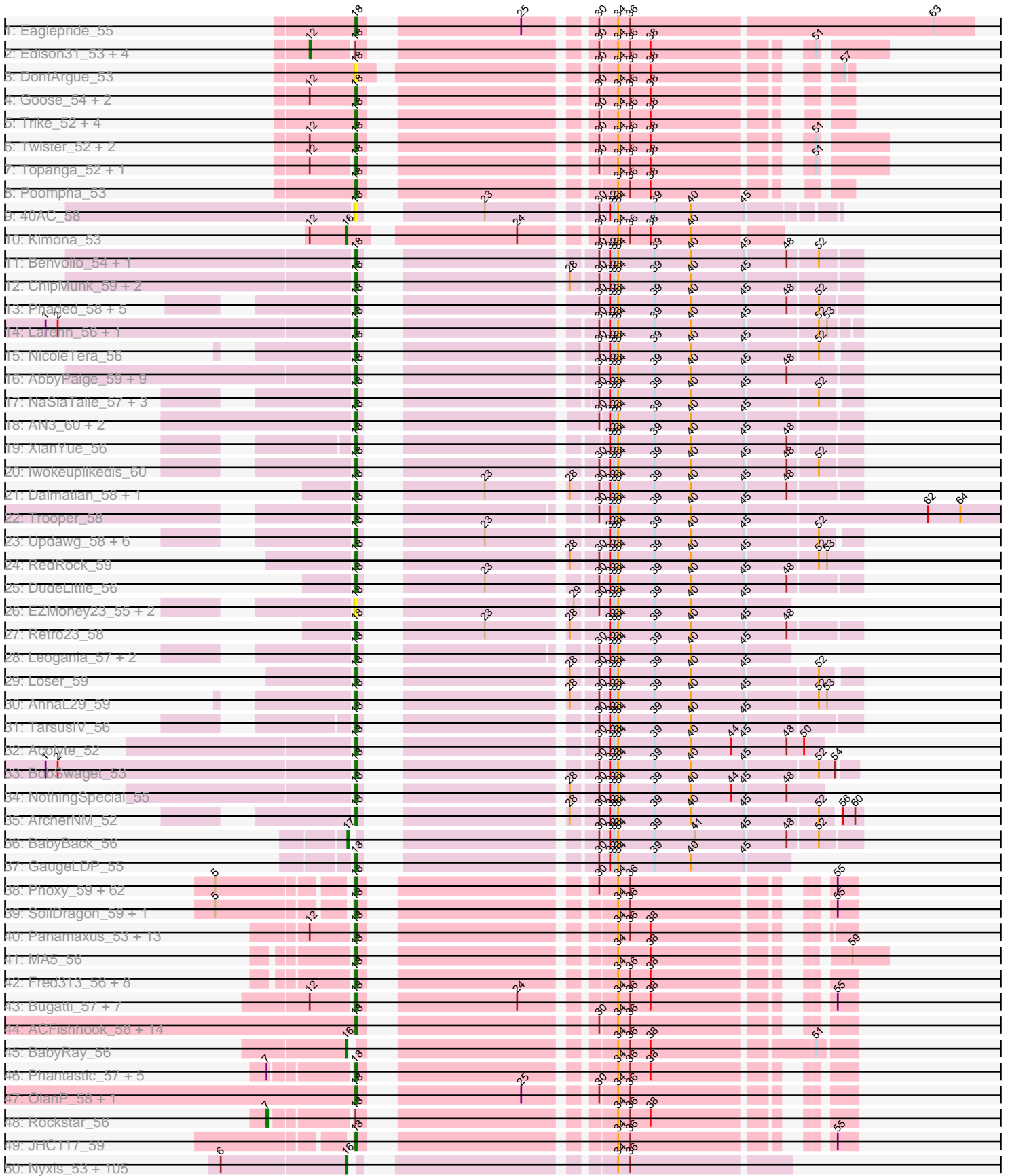
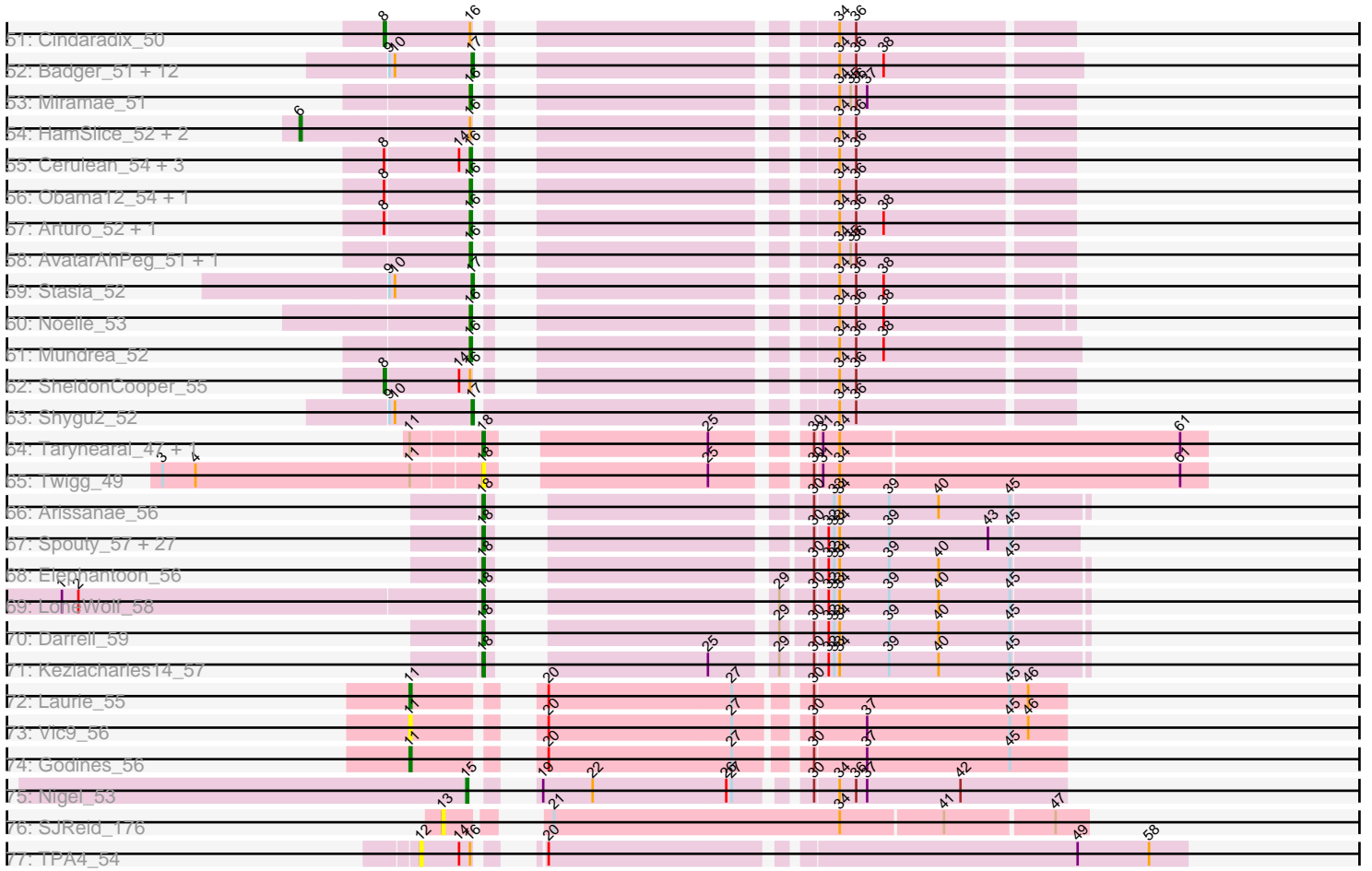


Pham 196206



Pham 196206



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 196206 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196206 has 388 members, 33 are drafts.

Phages represented in each track:

- Track 1 : Eaglepride\_55
- Track 2 : Edison31\_53, Rowdy\_58, DustyMartin\_58, Shapes\_58, Kristoff\_54
- Track 3 : DontArgue\_53
- Track 4 : Goose\_54, OKCentral2016\_53, Chupacabra\_53
- Track 5 : Trike\_52, Drake94\_52, Severus\_52, KittenMittens\_51, PeaceMeal1\_52
- Track 6 : Twister\_52, WalterMcMickey\_52, Rebeuca\_54
- Track 7 : Topanga\_52, RhynO\_55
- Track 8 : Poompha\_53
- Track 9 : 40AC\_58
- Track 10 : Kimona\_53
- Track 11 : Benvolio\_54, Echild\_57
- Track 12 : ChipMunk\_59, EvilGenius\_59, KingCyrus\_59
- Track 13 : Phaded\_58, IronMan\_57, Jaan\_57, Landor\_57, Pukovnik\_56, Bactobuster\_56
- Track 14 : Larenn\_56, Malec\_57
- Track 15 : NicoleTera\_56
- Track 16 : AbbyPaige\_59, Jerm\_59, Buggy\_59, Smeagan\_60, Dignity\_59, Whabigail7\_58, Leviathan\_59, Agape74\_59, LilTurb\_58, Turbido\_58
- Track 17 : NaSiaTalie\_57, Flare16\_57, MiculUcigas\_57, Centaur\_58
- Track 18 : AN3\_60, VA6\_58, Deloris\_58
- Track 19 : XianYue\_56
- Track 20 : Iwokeuplikedis\_60
- Track 21 : Dalmatian\_58, Anselm\_58
- Track 22 : Trooper\_58
- Track 23 : Updawg\_58, Equemioh13\_58, HarryHoudini\_58, WideWale\_58, Baehexic\_56, Piro94\_57, Drake55\_59
- Track 24 : RedRock\_59
- Track 25 : DudeLittle\_56
- Track 26 : EZMoney23\_55, 20ES\_60, First\_0059
- Track 27 : Retro23\_58
- Track 28 : Leogania\_57, BengiVuitton\_59, BiancaTri92\_57
- Track 29 : Loser\_59
- Track 30 : AnnaL29\_59
- Track 31 : TarsusIV\_56
- Track 32 : Acolyte\_52
- Track 33 : BobSwaget\_53
- Track 34 : NothingSpecial\_55

- Track 35 : ArcherNM\_52
- Track 36 : BabyBack\_56
- Track 37 : GaugeLDP\_55
- Track 38 : Phoxy\_59, Wooldri\_61, Malinsilva\_61, Spike509\_59, Sabia\_59, Lilith\_60, DaHudson\_59, Hercules11\_59, Watson\_59, Snickers\_59, Grub\_59, Beauxregard13\_59, Anubis\_62, Sabinator\_58, LugYA\_62, Bxz2\_55, LarryKay\_59, PGHhamlin\_61, PotatoSplit\_61, Ollie\_59, Fernando\_59, GtownJaz\_59, P28Green\_60, AgronaGT15\_58, SoYo\_59, Vix\_59, MadMarie\_59, StepMih\_59, Tiffany\_59, BreSam8\_59, MuchMore\_62, KADY\_59, MoneyMay\_59, Methuselah\_55, HashRod\_60, BuzzBuzz\_57, Marie\_59, Daishi\_58, Farber\_59, Taurus\_60, Phoebe\_60, Dieselweasel\_60, Zetzy\_58, Microwolf\_59, Penny1\_60, Grif\_59, Colbster\_59, EpicPhail\_60, MarQuardt\_59, Pembroke\_59, Aglet\_60, GingkoMaracino\_59, Grum1\_59, AugsMagnumOpus\_62, Misomonster\_60, LBerry\_60, Soshari\_61, Stagni\_59, Rummer\_58, JenCasNa\_60, Louie6\_58, Mainiac\_59, Cullens\_59
- Track 39 : SoilDragon\_59, Jobu08\_58
- Track 40 : Panamaxus\_53, Lambert1\_55, Caviar\_55, Noella\_55, ResDef\_55, Hookmount\_55, Texage\_54, Todacoro\_55, Pocahontas\_55, Margo\_55, QuinnKiro\_54, Norbert\_54, Veracruz\_54, Popcicle\_55
- Track 41 : MA5\_56
- Track 42 : Fred313\_56, Marchesa\_56, HelDan\_56, Kachowdy\_56, BabyJohn\_54, Scout\_56, Heathen\_56, DropBear\_56, Chiqui\_54
- Track 43 : Bugatti\_57, Idleandcovert\_57, Giroux\_57, Pistachio\_58, Puppy\_58, TNguyen7\_57, SaturnRing\_57, BlueBird\_58
- Track 44 : ACFishhook\_58, Heliosoles\_58, Manu\_59, Calvinny\_59, HaveUMetTed\_60, PhishRPhriends\_57, Kalnoky\_60, Reba\_59, PurpleHaze\_59, Kalb97\_60, JeppNRM\_60, Marius\_60, Grouphink\_60, Pawn\_59, Phranny\_60
- Track 45 : BabyRay\_56
- Track 46 : Phantastic\_57, JF4\_54, B1\_51, JF2\_54, MK4\_56, Isca\_55
- Track 47 : OlanP\_58, Gemma\_58
- Track 48 : Rockstar\_56
- Track 49 : JHC117\_59
- Track 50 : Nyxis\_53, Lemur\_53, Ulysses\_52, Chaph\_53, JetBlade\_53, TroyPia\_54, Caelakin\_53, LittleB\_53, Iceman\_53, DirtyDunning\_52, Phacado\_53, Wizard007\_53, BubbleTrouble\_52, Skipitt\_52, Kremtemulon\_53, TiroTheta9\_53, LeoAvram\_53, Roosevelt\_52, Florean\_53, MeeZee\_53, Spino\_52, Dhanush\_53, Pipcraft\_51, Maverick\_53, Eagle\_53, NorthStar\_52, Commander\_53, Rosa24\_52, Taquarus\_53, BellusTerra\_54, KFPoly\_52, Connomayer\_53, Eros\_53, Blackmoor\_53, Citius\_53, Peaches\_53, LittleGuy\_53, Clarenza\_52, Shaka\_53, Deano\_52, Eapen\_53, Phontbonne\_53, Ohfah\_54, Annyong\_53, Funston\_52, Palestino\_52, OKaNui\_53, Wilbur\_53, JoongJeon\_52, Mazhar510\_53, TygerBlood\_53, Koreni\_52, Millski\_52, Gadost\_53, Nebs\_54, Avle17\_53, Medusa\_53, NotAPhaseMom\_53, Sabertooth\_53, Lunsford\_54, Bartimeaus\_53, Polymorphads\_54, Morrow\_54, Bruiser\_52, Burger\_51, Albee\_53, Iracema64\_54, Maxo\_54, Houdini22\_53, Cintron\_52, Eris\_52, Sparxx\_54, Pumbaa\_53, Lorenzo\_53, YoSam321\_53, LochMonster\_54, Kingmustik0402\_53, Relief\_52, Jaykayelowell\_51, Melvin\_55, Wander\_53, ICleared\_53, Nemo27\_53, PeterPeter\_53, Bombshell\_53, Phelipe\_54, Ruin\_53, Huxley\_53, Alberto7\_54, Romney\_53, Flux\_53, Thanksgivukkah\_52, Scamp\_53, Camperdownii\_51, Baby16\_53, LappelDuVide\_53, Tinybot\_52, Druantia\_53, Abdiel\_53, Broseidon\_53, Holli\_52, Cocoaberry\_53, Phighter1804\_53, Kye\_53, CentreCat\_53, Eurydice\_54
- Track 51 : Cindaradix\_50
- Track 52 : Badger\_51, Bumblebee11\_51, Cici\_52, Datway\_52, PetiteSangsue\_52, Katalie136\_52, Achebe\_51, Morpher26\_52, Wile\_52, Xena\_51, AbbysRanger\_52,

Backyardigan\_51, Perplexer\_52

- Track 53 : Miramae\_51
- Track 54 : HamSlice\_52, TinaFeyge\_53, Kampy\_53
- Track 55 : Cerulean\_54, BangNhom\_54, Happiness\_52, ChampagnePapi\_55
- Track 56 : Obama12\_54, LHTSCC\_55
- Track 57 : Arturo\_52, Kratak\_53
- Track 58 : AvatarAhPeg\_51, Stink\_52
- Track 59 : Stasia\_52
- Track 60 : Noelle\_53
- Track 61 : Mundrea\_52
- Track 62 : SheldonCooper\_55
- Track 63 : Shygu2\_52
- Track 64 : Tarynearal\_47, Swirley\_51
- Track 65 : Twigg\_49
- Track 66 : Arissanae\_56
- Track 67 : Spouty\_57, Beemo\_57, Qobbit\_57, Onglai\_55, Phaeder\_57, Catalina\_58, RyeScarlet\_58, ExplosioNervosa\_57, Scherzo\_57, Fayely\_57, Sachima\_54, Lilleskat\_55, Priya\_57, Hanray\_55, Eidsmoe\_57, Myxus\_57, Horex\_56, EdogawaKiddo\_55, Aliter\_57, Ugenie5\_54, Conquerage\_57, Phonnegut\_57, Pioneer\_57, EmyBug\_56, PackMan\_56, HortumSL17\_57, Jiawan\_55, Tubs\_57
- Track 68 : Elephantoon\_56
- Track 69 : LoneWolf\_58
- Track 70 : Darrell\_59
- Track 71 : Keziacharles14\_57
- Track 72 : Laurie\_55
- Track 73 : Vic9\_56
- Track 74 : Godines\_56
- Track 75 : Nigel\_53
- Track 76 : SJReid\_176
- Track 77 : TPA4\_54

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

The start number called the most often in the published annotations is 18, it was called in 209 of the 355 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 20ES\_60, 40AC\_58, ACFishhook\_58, AN3\_60, AbbyPaige\_59, Acolyte\_52, Agape74\_59, Aglet\_60, AgronaGT15\_58, Aliter\_57, AnnaL29\_59, Anselm\_58, Anubis\_62, ArcherNM\_52, Arissanae\_56, AugsMagnumOpus\_62, B1\_51, BabyJohn\_54, Bactobuster\_56, Baehexic\_56, Beauxregard13\_59, Beemo\_57, BengiVuitton\_59, Benvolio\_54, BiancaTri92\_57, BlueBird\_58, BobSwaget\_53, BreSam8\_59, Bugatti\_57, Buggy\_59, BuzzBuzz\_57, Bxz2\_55, Calvinny\_59, Catalina\_58, Caviar\_55, Centaur\_58, ChipMunk\_59, Chiqui\_54, Chupacabra\_53, Colbster\_59, Conquerage\_57, Cullens\_59, DaHudson\_59, Daishi\_58, Dalmatian\_58, Darrell\_59, Deloris\_58, Dieselweasel\_60, Dignity\_59, DontArgue\_53, Drake55\_59, Drake94\_52, DropBear\_56, DudeLittle\_56, EZMoney23\_55, Eaglepride\_55, Echild\_57, EdogawaKiddo\_55, Eidsmoe\_57, Elephantoon\_56, EmyBug\_56, EpicPhail\_60, Equemioh13\_58, EvilGenius\_59, ExplosioNervosa\_57, Farber\_59, Fayely\_57, Fernando\_59, First\_0059, Flare16\_57, Fred313\_56, GaugeLDP\_55,

Gemma\_58, GingkoMaracino\_59, Giroux\_57, Goose\_54, Grif\_59, Groupthink\_60, Grub\_59, Grum1\_59, GtownJaz\_59, Hanray\_55, HarryHoudini\_58, HashRod\_60, HaveUMetTed\_60, Heathen\_56, HelDan\_56, Heliosoles\_58, Hercules11\_59, Horex\_56, Hookmount\_55, HortumSL17\_57, Idleandcovert\_57, IronMan\_57, Isca\_55, Iwokeuplikedis\_60, JF2\_54, JF4\_54, JHC117\_59, Jaan\_57, JenCasNa\_60, JeppNRM\_60, Jerm\_59, Jiawan\_55, Jobu08\_58, KADY\_59, Kachowdy\_56, Kalb97\_60, Kalnoky\_60, Keziacharles14\_57, KingCyrus\_59, KittenMittens\_51, LBerry\_60, Lambert1\_55, Landor\_57, Larenn\_56, LarryKay\_59, Leogania\_57, Leviathan\_59, LilTurb\_58, Lilith\_60, Lilleskat\_55, LoneWolf\_58, Loser\_59, Louie6\_58, LugYA\_62, MA5\_56, MK4\_56, MadMarie\_59, Mainiac\_59, Malec\_57, Malinsilva\_61, Manu\_59, MarQuardt\_59, Marchesa\_56, Margo\_55, Marie\_59, Marius\_60, Methuselah\_55, Microwolf\_59, MiculUcigas\_57, Misomonster\_60, MoneyMay\_59, MuchMore\_62, Myxus\_57, NaSiaTalie\_57, NicoleTera\_56, Noella\_55, Norbert\_54, NothingSpecial\_55, OKCentral2016\_53, OlanP\_58, Ollie\_59, Onglai\_55, P28Green\_60, PGHhamlin\_61, PackMan\_56, Panamaxus\_53, Pawn\_59, PeaceMeal1\_52, Pembroke\_59, Penny1\_60, Phaded\_58, Phaeder\_57, Phantastic\_57, PhishRPhriends\_57, Phoebe\_60, Phonnegut\_57, Phoxy\_59, Phranny\_60, Pioneer\_57, Piro94\_57, Pistachio\_58, Pocahontas\_55, Poompha\_53, Popcicle\_55, PotatoSplit\_61, Priya\_57, Pukovnik\_56, Puppy\_58, PurpleHaze\_59, Qobbit\_57, QuinnKiro\_54, Reba\_59, Rebeuca\_54, RedRock\_59, ResDef\_55, Retro23\_58, RhynO\_55, Rummer\_58, RyeScarlet\_58, Sabia\_59, Sabinator\_58, Sachima\_54, SaturnRing\_57, Scherzo\_57, Scout\_56, Severus\_52, Smeagan\_60, Snickers\_59, SoYo\_59, SoilDragon\_59, Soshari\_61, Spike509\_59, Spouty\_57, Stagni\_59, StepMih\_59, Swirley\_51, TNguyen7\_57, TarsusIV\_56, Tarynearal\_47, Taurus\_60, Texage\_54, Tiffany\_59, Todacoro\_55, Topanga\_52, Trike\_52, Trooper\_58, Tubs\_57, Turbido\_58, Twigg\_49, Twister\_52, Ugenie5\_54, Updawg\_58, VA6\_58, Veracruz\_54, Vix\_59, WalterMcMickey\_52, Watson\_59, Whabigail7\_58, WideWale\_58, Wooldri\_61, XianYue\_56, Zetty\_58,

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

- DustyMartin\_58, Edison31\_53, Kristoff\_54, Rockstar\_56, Rowdy\_58, Shapes\_58,

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

- AbbysRanger\_52, Abdiel\_53, Achebe\_51, Albee\_53, Alberto7\_54, Annyong\_53, Arturo\_52, AvatarAhPeg\_51, Avle17\_53, Baby16\_53, BabyBack\_56, BabyRay\_56, Backyardigan\_51, Badger\_51, BangNhom\_54, Bartimeaus\_53, BellusTerra\_54, Blackmoor\_53, Bombshell\_53, Broseidon\_53, Bruiser\_52, BubbleTrouble\_52, Bumblebee11\_51, Burger\_51, Caelakin\_53, Camperdownii\_51, CentreCat\_53, Cerulean\_54, ChampagnePapi\_55, Chaph\_53, Cici\_52, Cindaradix\_50, Cintron\_52, Citius\_53, Clarenza\_52, Cocoaberry\_53, Commander\_53, Connomayer\_53, Datway\_52, Deano\_52, Dhanush\_53, DirtyDunning\_52, Druantia\_53, Eagle\_53, Eapen\_53, Eris\_52, Eros\_53, Eurydice\_54, Florean\_53, Flux\_53, Funston\_52, Gadost\_53, Godines\_56, HamSlice\_52, Happiness\_52, Holli\_52, Houdini22\_53, Huxley\_53, ICleared\_53, Iceman\_53, Iracema64\_54, Jaykayelowell\_51, JetBlade\_53, JoongJeon\_52, KFPoly\_52, Kampy\_53, Katalie136\_52, Kimona\_53, Kingmustik0402\_53, Koreni\_52, Kratak\_53, Kremtemulon\_53, Kyee\_53, LHTSCC\_55, LappelDuVide\_53, Laurie\_55, Lemur\_53, LeoAvram\_53, LittleB\_53, LittleGuy\_53, LochMonster\_54, Lorenzo\_53, Lunsford\_54, Maverick\_53, Maxo\_54, Mazhar510\_53, Medusa\_53, MeeZee\_53, Melvin\_55, Millski\_52, Miramae\_51, Morpher26\_52, Morrow\_54, Mundrea\_52, Nebs\_54, Nemo27\_53, Nigel\_53, Noelle\_53, NorthStar\_52, NotAPhaseMom\_53, Nyxis\_53, OKaNui\_53, Obama12\_54, Ohfah\_54, Palestino\_52, Peaches\_53, Perplexer\_52, PeterPeter\_53, PetiteSangsue\_52, Phacado\_53, Phelipe\_54, Phighter1804\_53, Phontbonne\_53,

Pipcraft\_51, Polymorphads\_54, Pumbaa\_53, Relief\_52, Romney\_53, Roosevelt\_52, Rosa24\_52, Ruin\_53, SJReid\_176, Sabertooth\_53, Scamp\_53, Shaka\_53, SheldonCooper\_55, Shygu2\_52, Skipitt\_52, Sparxx\_54, Spino\_52, Stasia\_52, Stink\_52, TPA4\_54, Taquarus\_53, Thanksgivukkah\_52, TinaFeyge\_53, Tinybot\_52, TiroTheta9\_53, TroyPia\_54, TygerBlood\_53, Ulysses\_52, Vic9\_56, Wander\_53, Wilbur\_53, Wile\_52, Wizard007\_53, Xena\_51, YoSam321\_53,

### Summary by start number:

#### Start 6:

- Found in 109 of 388 ( 28.1% ) of genes in pham
- Manual Annotations of this start: 3 of 355
- Called 2.8% of time when present
- Phage (with cluster) where this start called: HamSlice\_52 (A4), Kamy\_53 (A4), TinaFeyge\_53 (A4),

#### Start 7:

- Found in 7 of 388 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 355
- Called 14.3% of time when present
- Phage (with cluster) where this start called: Rockstar\_56 (A3),

#### Start 8:

- Found in 10 of 388 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 2 of 355
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Cindaradix\_50 (A4), SheldonCooper\_55 (A4),

#### Start 11:

- Found in 6 of 388 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 2 of 355
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Godines\_56 (B2), Laurie\_55 (B2), Vic9\_56 (B2),

#### Start 12:

- Found in 37 of 388 ( 9.5% ) of genes in pham
- Manual Annotations of this start: 2 of 355
- Called 16.2% of time when present
- Phage (with cluster) where this start called: DustyMartin\_58 (A10), Edison31\_53 (A10), Kristoff\_54 (A10), Rowdy\_58 (A10), Shapes\_58 (A10), TPA4\_54 (singleton),

#### Start 13:

- Found in 1 of 388 ( 0.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SJReid\_176 (FC),

#### Start 15:

- Found in 1 of 388 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 355
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Nigel\_53 (B4),

#### Start 16:

- Found in 127 of 388 ( 32.7% ) of genes in pham
- Manual Annotations of this start: 119 of 355
- Called 95.3% of time when present
- Phage (with cluster) where this start called: Abdiel\_53 (A4), Albee\_53 (A4), Alberto7\_54 (A4), Annyong\_53 (A4), Arturo\_52 (A4), AvatarAhPeg\_51 (A4), Avle17\_53 (A4), Baby16\_53 (A4), BabyRay\_56 (A3), BangNhom\_54 (A4), Bartimeaus\_53 (A4), BellusTerra\_54 (A4), Blackmoor\_53 (A4), Bombshell\_53 (A4), Broseidon\_53 (A4), Bruiser\_52 (A4), BubbleTrouble\_52 (A4), Burger\_51 (A4), Caelakin\_53 (A4), Camperdownii\_51 (A4), CentreCat\_53 (A4), Cerulean\_54 (A4), ChampagnePapi\_55 (A4), Chaph\_53 (A4), Cintron\_52 (A4), Citius\_53 (A4), Clarenza\_52 (A4), Cocoaberry\_53 (A4), Commander\_53 (A4), Connomayer\_53 (A4), Deano\_52 (A4), Dhanush\_53 (A4), DirtyDunning\_52 (A4), Druantia\_53 (A4), Eagle\_53 (A4), Eapen\_53 (A4), Eris\_52 (A4), Eros\_53 (A4), Eurydice\_54 (A4), Florean\_53 (A4), Flux\_53 (A4), Funston\_52 (A4), Gadost\_53 (A4), Happiness\_52 (A4), Holli\_52 (A4), Houdini22\_53 (A4), Huxley\_53 (A4), ICleared\_53 (A4), Iceman\_53 (A4), Iracema64\_54 (A4), Jaykayelowell\_51 (A4), JetBlade\_53 (A4), JoongJeon\_52 (A4), KFPoly\_52 (A4), Kimona\_53 (A19), Kingmustik0402\_53 (A4), Koreni\_52 (A4), Kratak\_53 (A4), Kremtemulon\_53 (A4), Kyee\_53 (A4), LHTSCC\_55 (A4), LappelDuVide\_53 (A4), Lemur\_53 (A4), LeoAvram\_53 (A4), LittleB\_53 (A4), LittleGuy\_53 (A4), LochMonster\_54 (A4), Lorenzo\_53 (A4), Lunsford\_54 (A4), Maverick\_53 (A4), Maxo\_54 (A4), Mazhar510\_53 (A4), Medusa\_53 (A4), MeeZee\_53 (A4), Melvin\_55 (A4), Millski\_52 (A4), Miramae\_51 (A4), Morrow\_54 (A4), Mundrea\_52 (A4), Nebs\_54 (A4), Nemo27\_53 (A4), Noelle\_53 (A4), NorthStar\_52 (A4), NotAPhaseMom\_53 (A4), Nyxis\_53 (A4), OKaNui\_53 (A4), Obama12\_54 (A4), Ohfah\_54 (A4), Palestino\_52 (A4), Peaches\_53 (A4), PeterPeter\_53 (A4), Phacado\_53 (A4), Phelipe\_54 (A4), Phighter1804\_53 (A4), Phontbonne\_53 (A4), Pipcraft\_51 (A4), Polymorphads\_54 (A4), Pumbaa\_53 (A4), Relief\_52 (A4), Romney\_53 (A4), Roosevelt\_52 (A4), Rosa24\_52 (A4), Ruin\_53 (A4), Sabertooth\_53 (A4), Scamp\_53 (A4), Shaka\_53 (A4), Skipitt\_52 (A4), Sparxx\_54 (A4), Spino\_52 (A4), Stink\_52 (A4), Taquarus\_53 (A4), Thanksgivukkah\_52 (A4), Tinybot\_52 (A4), TiroTheta9\_53 (A4), TroyPia\_54 (A4), TygerBlood\_53 (A4), Ulysses\_52 (A4), Wander\_53 (A4), Wilbur\_53 (A4), Wizard007\_53 (A4), YoSam321\_53 (A4),

#### Start 17:

- Found in 16 of 388 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 16 of 355
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AbbysRanger\_52 (A4), Achebe\_51 (A4), BabyBack\_56 (A2), Backyardigan\_51 (A4), Badger\_51 (A4), Bumblebee11\_51 (A4), Cici\_52 (A4), Datway\_52 (A4), Katalie136\_52 (A4), Morpher26\_52 (A4), Perplexer\_52 (A4), PetiteSangsue\_52 (A4), Shygu2\_52 (A4), Stasia\_52 (A4), Wile\_52 (A4), Xena\_51 (A4),

#### Start 18:

- Found in 240 of 388 ( 61.9% ) of genes in pham
- Manual Annotations of this start: 209 of 355
- Called 97.5% of time when present
- Phage (with cluster) where this start called: 20ES\_60 (A2), 40AC\_58 (A17), ACFishhook\_58 (A3), AN3\_60 (A2), AbbyPaige\_59 (A2), Acolyte\_52 (A2), Agape74\_59 (A2), Aglet\_60 (A3), AgronaGT15\_58 (A3), Aliter\_57 (A9), AnnaL29\_59



(A2), Anselm\_58 (A2), Anubis\_62 (A3), ArcherNM\_52 (A2), Arissanae\_56 (A9), AugsMagnumOpus\_62 (A3), B1\_51 (A3), BabyJohn\_54 (A3), Bactobuster\_56 (A2), Baehexic\_56 (A2), Beauxregard13\_59 (A3), Beemo\_57 (A9), BengiVuitton\_59 (A2), Benvolio\_54 (A2), BiancaTri92\_57 (A2), BlueBird\_58 (A3), BobSwaget\_53 (A2), BreSam8\_59 (A3), Bugatti\_57 (A3), Buggy\_59 (A2), BuzzBuzz\_57 (A3), Bxz2\_55 (A3), Calvinny\_59 (A3), Catalina\_58 (A9), Caviar\_55 (A3), Centaur\_58 (A2), ChipMunk\_59 (A2), Chiqui\_54 (A3), Chupacabra\_53 (A10), Colbster\_59 (A3), Conquerage\_57 (A9), Cullens\_59 (A3), DaHudson\_59 (A3), Daishi\_58 (A3), Dalmatian\_58 (A2), Darrell\_59 (A9), Deloris\_58 (A2), Dieselweasel\_60 (A3), Dignity\_59 (A2), DontArgue\_53 (A10), Drake55\_59 (A2), Drake94\_52 (A10), DropBear\_56 (A3), DudeLittle\_56 (A2), EZMoney23\_55 (A2), Eaglepride\_55 (A10), Echild\_57 (A2), EdogawaKiddo\_55 (A9), Eidsmoe\_57 (A9), Elephantoan\_56 (A9), EmyBug\_56 (A9), EpicPhail\_60 (A3), Equemioh13\_58 (A2), EvilGenius\_59 (A2), ExplosioNervosa\_57 (A9), Farber\_59 (A3), Fayely\_57 (A9), Fernando\_59 (A3), First\_0059 (A2), Flare16\_57 (A2), Fred313\_56 (A3), GaugeLDP\_55 (A2), Gemma\_58 (A3), GingkoMaracino\_59 (A3), Giroux\_57 (A3), Goose\_54 (A10), Grif\_59 (A3), Groupthink\_60 (A3), Grub\_59 (A3), Grum1\_59 (A3), GtownJaz\_59 (A3), Hanray\_55 (A9), HarryHoudini\_58 (A2), HashRod\_60 (A3), HaveUMetTed\_60 (A3), Heathen\_56 (A3), HelDan\_56 (A3), Heliosoles\_58 (A3), Hercules11\_59 (A3), Horex\_56 (A9), Hookmount\_55 (A3), HortumSL17\_57 (A9), Idleandcovert\_57 (A3), IronMan\_57 (A2), Isca\_55 (A3), Iwokeuplikedis\_60 (A2), JF2\_54 (A3), JF4\_54 (A3), JHC117\_59 (A3), Jaan\_57 (A2), JenCasNa\_60 (A3), JeppNRM\_60 (A3), Jerm\_59 (A2), Jiawan\_55 (A9), Jobu08\_58 (A3), KADY\_59 (A3), Kachowdy\_56 (A3), Kalb97\_60 (A3), Kalnok\_60 (A3), Keziacharles14\_57 (A9), KingCyrus\_59 (A2), KittenMittens\_51 (A10), LBerry\_60 (A3), Lambert1\_55 (A3), Landor\_57 (A2), Larenn\_56 (A2), LarryKay\_59 (A3), Leogania\_57 (A2), Leviathan\_59 (A2), LilTurb\_58 (A2), Lilith\_60 (A3), Lilleskat\_55 (A9), LoneWolf\_58 (A9), Loser\_59 (A2), Louie6\_58 (A3), LugYA\_62 (A3), MA5\_56 (A3), MK4\_56 (A3), MadMarie\_59 (A3), Mainiac\_59 (A3), Malec\_57 (A2), Malinsilva\_61 (A3), Manu\_59 (A3), MarQuardt\_59 (A3), Marchesa\_56 (A3), Margo\_55 (A3), Marie\_59 (A3), Marius\_60 (A3), Methuselah\_55 (A3), Microwolf\_59 (A3), MiculUcigas\_57 (A2), Misomonster\_60 (A3), MoneyMay\_59 (A3), MuchMore\_62 (A3), Myxus\_57 (A9), NaSiaTalie\_57 (A2), NicoleTera\_56 (A2), Noella\_55 (A3), Norbert\_54 (A3), NothingSpecial\_55 (A2), OKCentral2016\_53 (A10), OlanP\_58 (A3), Ollie\_59 (A3), Onglai\_55 (A9), P28Green\_60 (A3), PGHhamlin\_61 (A3), PackMan\_56 (A9), Panamaxus\_53 (A3), Pawn\_59 (A3), PeaceMeal1\_52 (A10), Pembroke\_59 (A3), Penny1\_60 (A3), Phaded\_58 (A2), Phaeder\_57 (A9), Phantastic\_57 (A3), PhishRPhriends\_57 (A3), Phoebe\_60 (A3), Phonnegut\_57 (A9), Phoxy\_59 (A3), Phranny\_60 (A3), Pioneer\_57 (A9), Piro94\_57 (A2), Pistachio\_58 (A3), Pocahontas\_55 (A3), Poompha\_53 (A10), Popcicle\_55 (A3), PotatoSplit\_61 (A3), Priya\_57 (A9), Pukovnik\_56 (A2), Puppy\_58 (A3), PurpleHaze\_59 (A3), Qobbit\_57 (A9), QuinnKiro\_54 (A3), Reba\_59 (A3), Rebeuca\_54 (A10), RedRock\_59 (A2), ResDef\_55 (A3), Retro23\_58 (A2), RhynO\_55 (A10), Rummer\_58 (A3), RyeScarlet\_58 (A9), Sabia\_59 (A3), Sabinator\_58 (A3), Sachima\_54 (A9), SaturnRing\_57 (A3), Scherzo\_57 (A9), Scout\_56 (A3), Severus\_52 (A10), Smeagan\_60 (A2), Snickers\_59 (A3), SoYo\_59 (A3), SoilDragon\_59 (A3), Soshari\_61 (A3), Spike509\_59 (A3), Spouty\_57 (A9), Stagni\_59 (A3), StepMih\_59 (A3), Swirley\_51 (A5), TNguyen7\_57 (A3), TarsusIV\_56 (A2), Tarynearal\_47 (A5), Taurus\_60 (A3), Texage\_54 (A3), Tiffany\_59 (A3), Todacoro\_55 (A3), Topanga\_52 (A10), Trike\_52 (A10), Trooper\_58 (A2), Tubs\_57 (A9), Turbido\_58 (A2), Twigg\_49 (A5), Twister\_52 (A10), Ugenie5\_54 (A9), Updawg\_58 (A2), VA6\_58 (A2), Veracruz\_54 (A3), Vix\_59 (A3), WalterMcMickey\_52 (A10), Watson\_59 (A3), Whabigail7\_58 (A2), WideWale\_58 (A2), Wooldri\_61 (A3), XianYue\_56 (A2), Zetzy\_58 (A3),

## **Summary by clusters:**

There are 12 clusters represented in this pham: singleton, A10, FC, A19, A17, B4, A3, A2, A5, A4, B2, A9,

Info for manual annotations of cluster A10:

- Start number 12 was manually annotated 2 times for cluster A10.
- Start number 18 was manually annotated 15 times for cluster A10.

Info for manual annotations of cluster A19:

- Start number 16 was manually annotated 1 time for cluster A19.

Info for manual annotations of cluster A2:

- Start number 17 was manually annotated 1 time for cluster A2.
- Start number 18 was manually annotated 57 times for cluster A2.

Info for manual annotations of cluster A3:

- Start number 7 was manually annotated 1 time for cluster A3.
- Start number 16 was manually annotated 1 time for cluster A3.
- Start number 18 was manually annotated 110 times for cluster A3.

Info for manual annotations of cluster A4:

- Start number 6 was manually annotated 3 times for cluster A4.
- Start number 8 was manually annotated 2 times for cluster A4.
- Start number 16 was manually annotated 117 times for cluster A4.
- Start number 17 was manually annotated 15 times for cluster A4.

Info for manual annotations of cluster A5:

- Start number 18 was manually annotated 2 times for cluster A5.

Info for manual annotations of cluster A9:

- Start number 18 was manually annotated 25 times for cluster A9.

Info for manual annotations of cluster B2:

- Start number 11 was manually annotated 2 times for cluster B2.

Info for manual annotations of cluster B4:

- Start number 15 was manually annotated 1 time for cluster B4.

## **Gene Information:**

Gene: 20ES\_60 Start: 38647, Stop: 38324, Start Num: 18

Candidate Starts for 20ES\_60:

(Start: 18 @38647 has 209 MA's), (29, 38524), (30, 38509), (32, 38503), (33, 38500), (34, 38497), (39, 38470), (40, 38443), (45, 38404),

Gene: 40AC\_58 Start: 39262, Stop: 38960, Start Num: 18

Candidate Starts for 40AC\_58:

(Start: 18 @39262 has 209 MA's), (23, 39196), (30, 39124), (32, 39118), (33, 39115), (34, 39112), (39, 39085), (40, 39058), (45, 39019),

Gene: ACFishhook\_58 Start: 37950, Stop: 37657, Start Num: 18

Candidate Starts for ACFishhook\_58:

(Start: 18 @37950 has 209 MA's), (30, 37809), (34, 37797), (36, 37788),

Gene: AN3\_60 Start: 37335, Stop: 37009, Start Num: 18

Candidate Starts for AN3\_60:

(Start: 18 @37335 has 209 MA's), (30, 37194), (32, 37188), (33, 37185), (34, 37182), (39, 37155), (40, 37128), (45, 37089),

Gene: AbbyPaige\_59 Start: 38506, Stop: 38180, Start Num: 18

Candidate Starts for AbbyPaige\_59:

(Start: 18 @38506 has 209 MA's), (30, 38368), (32, 38362), (33, 38359), (34, 38356), (39, 38329), (40, 38302), (45, 38263), (48, 38233),

Gene: AbbysRanger\_52 Start: 37346, Stop: 37068, Start Num: 17

Candidate Starts for AbbysRanger\_52:

(9, 37391), (10, 37388), (Start: 17 @37346 has 16 MA's), (34, 37193), (36, 37184), (38, 37169),

Gene: Abdiel\_53 Start: 37381, Stop: 37106, Start Num: 16

Candidate Starts for Abdiel\_53:

(Start: 6 @37471 has 3 MA's), (Start: 16 @37381 has 119 MA's), (34, 37228), (36, 37219),

Gene: Achebe\_51 Start: 37329, Stop: 37051, Start Num: 17

Candidate Starts for Achebe\_51:

(9, 37374), (10, 37371), (Start: 17 @37329 has 16 MA's), (34, 37176), (36, 37167), (38, 37152),

Gene: Acolyte\_52 Start: 37328, Stop: 37029, Start Num: 18

Candidate Starts for Acolyte\_52:

(Start: 18 @37328 has 209 MA's), (30, 37190), (32, 37184), (33, 37181), (34, 37178), (39, 37151), (40, 37124), (44, 37094), (45, 37085), (48, 37055), (50, 37043),

Gene: Agape74\_59 Start: 38500, Stop: 38174, Start Num: 18

Candidate Starts for Agape74\_59:

(Start: 18 @38500 has 209 MA's), (30, 38362), (32, 38356), (33, 38353), (34, 38350), (39, 38323), (40, 38296), (45, 38257), (48, 38227),

Gene: Aglet\_60 Start: 37993, Stop: 37700, Start Num: 18

Candidate Starts for Aglet\_60:

(5, 38080), (Start: 18 @37993 has 209 MA's), (30, 37852), (34, 37840), (36, 37831), (55, 37714),

Gene: AgronaGT15\_58 Start: 37841, Stop: 37548, Start Num: 18

Candidate Starts for AgronaGT15\_58:

(5, 37928), (Start: 18 @37841 has 209 MA's), (30, 37700), (34, 37688), (36, 37679), (55, 37562),

Gene: Albee\_53 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Albee\_53:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Alberto7\_54 Start: 37717, Stop: 37442, Start Num: 16

Candidate Starts for Alberto7\_54:

(Start: 6 @37807 has 3 MA's), (Start: 16 @37717 has 119 MA's), (34, 37564), (36, 37555),

Gene: Aliter\_57 Start: 37884, Stop: 37606, Start Num: 18

Candidate Starts for Aliter\_57:

(Start: 18 @37884 has 209 MA's), (30, 37746), (32, 37740), (33, 37737), (34, 37734), (39, 37707), (43, 37653), (45, 37641),

Gene: AnnaL29\_59 Start: 39057, Stop: 38731, Start Num: 18

Candidate Starts for AnnaL29\_59:

(Start: 18 @39057 has 209 MA's), (28, 38937), (30, 38919), (32, 38913), (33, 38910), (34, 38907), (39, 38880), (40, 38853), (45, 38814), (52, 38763), (53, 38757),

Gene: Annyong\_53 Start: 37425, Stop: 37150, Start Num: 16

Candidate Starts for Annyong\_53:

(Start: 6 @37515 has 3 MA's), (Start: 16 @37425 has 119 MA's), (34, 37272), (36, 37263),

Gene: Anselm\_58 Start: 38407, Stop: 38084, Start Num: 18

Candidate Starts for Anselm\_58:

(Start: 18 @38407 has 209 MA's), (23, 38341), (28, 38287), (30, 38269), (32, 38263), (33, 38260), (34, 38257), (39, 38230), (40, 38203), (45, 38164), (48, 38134),

Gene: Anubis\_62 Start: 37879, Stop: 37586, Start Num: 18

Candidate Starts for Anubis\_62:

(5, 37966), (Start: 18 @37879 has 209 MA's), (30, 37738), (34, 37726), (36, 37717), (55, 37600),

Gene: ArcherNM\_52 Start: 38061, Stop: 37741, Start Num: 18

Candidate Starts for ArcherNM\_52:

(Start: 18 @38061 has 209 MA's), (28, 37941), (30, 37923), (32, 37917), (33, 37914), (34, 37911), (39, 37884), (40, 37857), (45, 37818), (52, 37767), (56, 37755), (60, 37746),

Gene: Arissanae\_56 Start: 38575, Stop: 38294, Start Num: 18

Candidate Starts for Arissanae\_56:

(Start: 18 @38575 has 209 MA's), (30, 38437), (33, 38428), (34, 38425), (39, 38398), (40, 38371), (45, 38332),

Gene: Arturo\_52 Start: 37652, Stop: 37377, Start Num: 16

Candidate Starts for Arturo\_52:

(Start: 8 @37697 has 2 MA's), (Start: 16 @37652 has 119 MA's), (34, 37499), (36, 37490), (38, 37475),

Gene: AugsMagnumOpus\_62 Start: 37984, Stop: 37691, Start Num: 18

Candidate Starts for AugsMagnumOpus\_62:

(5, 38071), (Start: 18 @37984 has 209 MA's), (30, 37843), (34, 37831), (36, 37822), (55, 37705),

Gene: AvatarAhPeg\_51 Start: 37165, Stop: 36890, Start Num: 16

Candidate Starts for AvatarAhPeg\_51:

(Start: 16 @37165 has 119 MA's), (34, 37012), (35, 37006), (36, 37003),

Gene: Avle17\_53 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for Avle17\_53:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: B1\_51 Start: 35979, Stop: 35686, Start Num: 18

Candidate Starts for B1\_51:

(Start: 7 @36033 has 1 MA's), (Start: 18 @35979 has 209 MA's), (34, 35826), (36, 35817), (38, 35802),

Gene: Baby16\_53 Start: 37391, Stop: 37116, Start Num: 16

Candidate Starts for Baby16\_53:

(Start: 6 @37481 has 3 MA's), (Start: 16 @37391 has 119 MA's), (34, 37238), (36, 37229),

Gene: BabyBack\_56 Start: 38693, Stop: 38370, Start Num: 17

Candidate Starts for BabyBack\_56:

(Start: 17 @38693 has 16 MA's), (30, 38555), (32, 38549), (33, 38546), (34, 38543), (39, 38516), (41, 38486), (45, 38450), (48, 38420), (52, 38399),

Gene: BabyJohn\_54 Start: 37800, Stop: 37507, Start Num: 18

Candidate Starts for BabyJohn\_54:

(Start: 18 @37800 has 209 MA's), (34, 37647), (36, 37638), (38, 37623),

Gene: BabyRay\_56 Start: 37770, Stop: 37456, Start Num: 16

Candidate Starts for BabyRay\_56:

(Start: 16 @37770 has 119 MA's), (34, 37617), (36, 37608), (38, 37593), (51, 37482),

Gene: Backyardigan\_51 Start: 37362, Stop: 37084, Start Num: 17

Candidate Starts for Backyardigan\_51:

(9, 37407), (10, 37404), (Start: 17 @37362 has 16 MA's), (34, 37209), (36, 37200), (38, 37185),

Gene: Bactobuster\_56 Start: 39010, Stop: 38684, Start Num: 18

Candidate Starts for Bactobuster\_56:

(Start: 18 @39010 has 209 MA's), (30, 38869), (32, 38863), (33, 38860), (34, 38857), (39, 38830), (40, 38803), (45, 38764), (48, 38734), (52, 38713),

Gene: Badger\_51 Start: 37330, Stop: 37052, Start Num: 17

Candidate Starts for Badger\_51:

(9, 37375), (10, 37372), (Start: 17 @37330 has 16 MA's), (34, 37177), (36, 37168), (38, 37153),

Gene: Baehexic\_56 Start: 38173, Stop: 37853, Start Num: 18

Candidate Starts for Baehexic\_56:

(Start: 18 @38173 has 209 MA's), (23, 38107), (32, 38029), (33, 38026), (34, 38023), (39, 37996), (40, 37969), (45, 37930), (52, 37879),

Gene: BangNhom\_54 Start: 37816, Stop: 37541, Start Num: 16

Candidate Starts for BangNhom\_54:

(Start: 8 @37861 has 2 MA's), (14, 37822), (Start: 16 @37816 has 119 MA's), (34, 37663), (36, 37654),

Gene: Bartimeaus\_53 Start: 37382, Stop: 37107, Start Num: 16

Candidate Starts for Bartimeaus\_53:

(Start: 6 @37472 has 3 MA's), (Start: 16 @37382 has 119 MA's), (34, 37229), (36, 37220),

Gene: Beauxregard13\_59 Start: 37996, Stop: 37703, Start Num: 18

Candidate Starts for Beauxregard13\_59:

(5, 38083), (Start: 18 @37996 has 209 MA's), (30, 37855), (34, 37843), (36, 37834), (55, 37717),

Gene: Beemo\_57 Start: 38054, Stop: 37776, Start Num: 18

Candidate Starts for Beemo\_57:

(Start: 18 @38054 has 209 MA's), (30, 37916), (32, 37910), (33, 37907), (34, 37904), (39, 37877), (43, 37823), (45, 37811),

Gene: BellusTerra\_54 Start: 37381, Stop: 37106, Start Num: 16

Candidate Starts for BellusTerra\_54:

(Start: 6 @37471 has 3 MA's), (Start: 16 @37381 has 119 MA's), (34, 37228), (36, 37219),

Gene: BengiVuitton\_59 Start: 38618, Stop: 38292, Start Num: 18

Candidate Starts for BengiVuitton\_59:

(Start: 18 @38618 has 209 MA's), (30, 38477), (32, 38471), (33, 38468), (34, 38465), (39, 38438), (40, 38411), (45, 38372),

Gene: Benvolio\_54 Start: 37431, Stop: 37108, Start Num: 18

Candidate Starts for Benvolio\_54:

(Start: 18 @37431 has 209 MA's), (30, 37293), (32, 37287), (33, 37284), (34, 37281), (39, 37254), (40, 37227), (45, 37188), (48, 37158), (52, 37137),

Gene: BiancaTri92\_57 Start: 38766, Stop: 38494, Start Num: 18

Candidate Starts for BiancaTri92\_57:

(Start: 18 @38766 has 209 MA's), (30, 38631), (32, 38625), (33, 38622), (34, 38619), (39, 38592), (40, 38565), (45, 38526),

Gene: Blackmoor\_53 Start: 37382, Stop: 37107, Start Num: 16

Candidate Starts for Blackmoor\_53:

(Start: 6 @37472 has 3 MA's), (Start: 16 @37382 has 119 MA's), (34, 37229), (36, 37220),

Gene: BlueBird\_58 Start: 37811, Stop: 37518, Start Num: 18

Candidate Starts for BlueBird\_58:

(Start: 12 @37841 has 2 MA's), (Start: 18 @37811 has 209 MA's), (24, 37715), (34, 37658), (36, 37649), (38, 37634), (55, 37532),

Gene: BobSwaget\_53 Start: 36907, Stop: 36587, Start Num: 18

Candidate Starts for BobSwaget\_53:

(1, 37132), (2, 37123), (Start: 18 @36907 has 209 MA's), (30, 36769), (32, 36763), (33, 36760), (34, 36757), (39, 36730), (40, 36703), (45, 36664), (52, 36613), (54, 36601),

Gene: Bombshell\_53 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for Bombshell\_53:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: BreSam8\_59 Start: 37986, Stop: 37693, Start Num: 18

Candidate Starts for BreSam8\_59:

(5, 38073), (Start: 18 @37986 has 209 MA's), (30, 37845), (34, 37833), (36, 37824), (55, 37707),

Gene: Broseidon\_53 Start: 37382, Stop: 37107, Start Num: 16

Candidate Starts for Broseidon\_53:

(Start: 6 @37472 has 3 MA's), (Start: 16 @37382 has 119 MA's), (34, 37229), (36, 37220),

Gene: Bruiser\_52 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Bruiser\_52:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: BubbleTrouble\_52 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for BubbleTrouble\_52:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Bugatti\_57 Start: 37811, Stop: 37518, Start Num: 18

Candidate Starts for Bugatti\_57:

(Start: 12 @37841 has 2 MA's), (Start: 18 @37811 has 209 MA's), (24, 37715), (34, 37658), (36, 37649), (38, 37634), (55, 37532),

Gene: Buggy\_59 Start: 38557, Stop: 38231, Start Num: 18

Candidate Starts for Buggy\_59:

(Start: 18 @38557 has 209 MA's), (30, 38419), (32, 38413), (33, 38410), (34, 38407), (39, 38380), (40, 38353), (45, 38314), (48, 38284),

Gene: Bumblebee11\_51 Start: 37332, Stop: 37054, Start Num: 17

Candidate Starts for Bumblebee11\_51:

(9, 37377), (10, 37374), (Start: 17 @37332 has 16 MA's), (34, 37179), (36, 37170), (38, 37155),

Gene: Burger\_51 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Burger\_51:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: BuzzBuzz\_57 Start: 38020, Stop: 37727, Start Num: 18

Candidate Starts for BuzzBuzz\_57:

(5, 38107), (Start: 18 @38020 has 209 MA's), (30, 37879), (34, 37867), (36, 37858), (55, 37741),

Gene: Bxz2\_55 Start: 38027, Stop: 37734, Start Num: 18

Candidate Starts for Bxz2\_55:

(5, 38114), (Start: 18 @38027 has 209 MA's), (30, 37886), (34, 37874), (36, 37865), (55, 37748),

Gene: Caelakin\_53 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Caelakin\_53:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Calvinny\_59 Start: 37878, Stop: 37585, Start Num: 18

Candidate Starts for Calvinny\_59:

(Start: 18 @37878 has 209 MA's), (30, 37737), (34, 37725), (36, 37716),

Gene: Camperdownii\_51 Start: 37054, Stop: 36779, Start Num: 16

Candidate Starts for Camperdownii\_51:

(Start: 6 @37144 has 3 MA's), (Start: 16 @37054 has 119 MA's), (34, 36901), (36, 36892),

Gene: Catalina\_58 Start: 37957, Stop: 37679, Start Num: 18

Candidate Starts for Catalina\_58:

(Start: 18 @37957 has 209 MA's), (30, 37819), (32, 37813), (33, 37810), (34, 37807), (39, 37780), (43, 37726), (45, 37714),

Gene: Caviar\_55 Start: 37764, Stop: 37474, Start Num: 18

Candidate Starts for Caviar\_55:

(Start: 12 @37794 has 2 MA's), (Start: 18 @37764 has 209 MA's), (34, 37611), (36, 37602), (38, 37587),

Gene: Centaur\_58 Start: 38387, Stop: 38070, Start Num: 18

Candidate Starts for Centaur\_58:

(Start: 18 @38387 has 209 MA's), (30, 38252), (32, 38246), (33, 38243), (34, 38240), (39, 38213), (40, 38186), (45, 38147), (52, 38096),

Gene: CentreCat\_53 Start: 37383, Stop: 37108, Start Num: 16

Candidate Starts for CentreCat\_53:

(Start: 6 @37473 has 3 MA's), (Start: 16 @37383 has 119 MA's), (34, 37230), (36, 37221),

Gene: Cerulean\_54 Start: 37817, Stop: 37542, Start Num: 16

Candidate Starts for Cerulean\_54:

(Start: 8 @37862 has 2 MA's), (14, 37823), (Start: 16 @37817 has 119 MA's), (34, 37664), (36, 37655),

Gene: ChampagnePapi\_55 Start: 37816, Stop: 37541, Start Num: 16

Candidate Starts for ChampagnePapi\_55:

(Start: 8 @37861 has 2 MA's), (14, 37822), (Start: 16 @37816 has 119 MA's), (34, 37663), (36, 37654),

Gene: Chaph\_53 Start: 37391, Stop: 37116, Start Num: 16

Candidate Starts for Chaph\_53:

(Start: 6 @37481 has 3 MA's), (Start: 16 @37391 has 119 MA's), (34, 37238), (36, 37229),

Gene: ChipMunk\_59 Start: 39757, Stop: 39434, Start Num: 18

Candidate Starts for ChipMunk\_59:

(Start: 18 @39757 has 209 MA's), (28, 39637), (30, 39619), (32, 39613), (33, 39610), (34, 39607), (39, 39580), (40, 39553), (45, 39514),

Gene: Chiqui\_54 Start: 37809, Stop: 37516, Start Num: 18

Candidate Starts for Chiqui\_54:

(Start: 18 @37809 has 209 MA's), (34, 37656), (36, 37647), (38, 37632),

Gene: Chupacabra\_53 Start: 37296, Stop: 37006, Start Num: 18

Candidate Starts for Chupacabra\_53:

(Start: 12 @37323 has 2 MA's), (Start: 18 @37296 has 209 MA's), (30, 37155), (34, 37143), (36, 37134), (38, 37119),

Gene: Cici\_52 Start: 37347, Stop: 37069, Start Num: 17

Candidate Starts for Cici\_52:

(9, 37392), (10, 37389), (Start: 17 @37347 has 16 MA's), (34, 37194), (36, 37185), (38, 37170),

Gene: Cindaradix\_50 Start: 37055, Stop: 36735, Start Num: 8

Candidate Starts for Cindaradix\_50:

(Start: 8 @37055 has 2 MA's), (Start: 16 @37010 has 119 MA's), (34, 36857), (36, 36848),

Gene: Cintron\_52 Start: 37357, Stop: 37082, Start Num: 16

Candidate Starts for Cintron\_52:

(Start: 6 @37447 has 3 MA's), (Start: 16 @37357 has 119 MA's), (34, 37204), (36, 37195),

Gene: Citius\_53 Start: 37401, Stop: 37126, Start Num: 16

Candidate Starts for Citius\_53:

(Start: 6 @37491 has 3 MA's), (Start: 16 @37401 has 119 MA's), (34, 37248), (36, 37239),

Gene: Clarenza\_52 Start: 37377, Stop: 37102, Start Num: 16



Candidate Starts for Clarenza\_52:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: Cocoaberry\_53 Start: 37384, Stop: 37109, Start Num: 16

Candidate Starts for Cocoaberry\_53:

(Start: 6 @37474 has 3 MA's), (Start: 16 @37384 has 119 MA's), (34, 37231), (36, 37222),

Gene: Colbster\_59 Start: 37996, Stop: 37703, Start Num: 18

Candidate Starts for Colbster\_59:

(5, 38083), (Start: 18 @37996 has 209 MA's), (30, 37855), (34, 37843), (36, 37834), (55, 37717),

Gene: Commander\_53 Start: 37379, Stop: 37104, Start Num: 16

Candidate Starts for Commander\_53:

(Start: 6 @37469 has 3 MA's), (Start: 16 @37379 has 119 MA's), (34, 37226), (36, 37217),

Gene: Connomayer\_53 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Connomayer\_53:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Conquerage\_57 Start: 38028, Stop: 37750, Start Num: 18

Candidate Starts for Conquerage\_57:

(Start: 18 @38028 has 209 MA's), (30, 37890), (32, 37884), (33, 37881), (34, 37878), (39, 37851), (43, 37797), (45, 37785),

Gene: Cullens\_59 Start: 37992, Stop: 37699, Start Num: 18

Candidate Starts for Cullens\_59:

(5, 38079), (Start: 18 @37992 has 209 MA's), (30, 37851), (34, 37839), (36, 37830), (55, 37713),

Gene: DaHudson\_59 Start: 37985, Stop: 37692, Start Num: 18

Candidate Starts for DaHudson\_59:

(5, 38072), (Start: 18 @37985 has 209 MA's), (30, 37844), (34, 37832), (36, 37823), (55, 37706),

Gene: Daishi\_58 Start: 36861, Stop: 36568, Start Num: 18

Candidate Starts for Daishi\_58:

(5, 36948), (Start: 18 @36861 has 209 MA's), (30, 36720), (34, 36708), (36, 36699), (55, 36582),

Gene: Dalmatian\_58 Start: 38380, Stop: 38057, Start Num: 18

Candidate Starts for Dalmatian\_58:

(Start: 18 @38380 has 209 MA's), (23, 38314), (28, 38260), (30, 38242), (32, 38236), (33, 38233), (34, 38230), (39, 38203), (40, 38176), (45, 38137), (48, 38107),

Gene: Darrell\_59 Start: 38653, Stop: 38372, Start Num: 18

Candidate Starts for Darrell\_59:

(Start: 18 @38653 has 209 MA's), (29, 38530), (30, 38515), (32, 38509), (33, 38506), (34, 38503), (39, 38476), (40, 38449), (45, 38410),

Gene: Datway\_52 Start: 37318, Stop: 37040, Start Num: 17

Candidate Starts for Datway\_52:

(9, 37363), (10, 37360), (Start: 17 @37318 has 16 MA's), (34, 37165), (36, 37156), (38, 37141),

Gene: Deano\_52 Start: 37388, Stop: 37113, Start Num: 16

Candidate Starts for Deano\_52:

(Start: 6 @37478 has 3 MA's), (Start: 16 @37388 has 119 MA's), (34, 37235), (36, 37226),

Gene: Deloris\_58 Start: 38287, Stop: 37961, Start Num: 18

Candidate Starts for Deloris\_58:

(Start: 18 @38287 has 209 MA's), (30, 38146), (32, 38140), (33, 38137), (34, 38134), (39, 38107), (40, 38080), (45, 38041),

Gene: Dhanush\_53 Start: 37383, Stop: 37108, Start Num: 16

Candidate Starts for Dhanush\_53:

(Start: 6 @37473 has 3 MA's), (Start: 16 @37383 has 119 MA's), (34, 37230), (36, 37221),

Gene: Dieselweasel\_60 Start: 37995, Stop: 37702, Start Num: 18

Candidate Starts for Dieselweasel\_60:

(5, 38082), (Start: 18 @37995 has 209 MA's), (30, 37854), (34, 37842), (36, 37833), (55, 37716),

Gene: Dignity\_59 Start: 38580, Stop: 38254, Start Num: 18

Candidate Starts for Dignity\_59:

(Start: 18 @38580 has 209 MA's), (30, 38442), (32, 38436), (33, 38433), (34, 38430), (39, 38403), (40, 38376), (45, 38337), (48, 38307),

Gene: DirtyDunning\_52 Start: 37392, Stop: 37117, Start Num: 16

Candidate Starts for DirtyDunning\_52:

(Start: 6 @37482 has 3 MA's), (Start: 16 @37392 has 119 MA's), (34, 37239), (36, 37230),

Gene: DontArgue\_53 Start: 36479, Stop: 36180, Start Num: 18

Candidate Starts for DontArgue\_53:

(Start: 18 @36479 has 209 MA's), (30, 36329), (34, 36317), (36, 36308), (38, 36293), (57, 36185),

Gene: Drake55\_59 Start: 38469, Stop: 38149, Start Num: 18

Candidate Starts for Drake55\_59:

(Start: 18 @38469 has 209 MA's), (23, 38403), (32, 38325), (33, 38322), (34, 38319), (39, 38292), (40, 38265), (45, 38226), (52, 38175),

Gene: Drake94\_52 Start: 36531, Stop: 36241, Start Num: 18

Candidate Starts for Drake94\_52:

(Start: 18 @36531 has 209 MA's), (30, 36390), (34, 36378), (36, 36369), (38, 36354),

Gene: DropBear\_56 Start: 37707, Stop: 37414, Start Num: 18

Candidate Starts for DropBear\_56:

(Start: 18 @37707 has 209 MA's), (34, 37554), (36, 37545), (38, 37530),

Gene: Druantia\_53 Start: 37383, Stop: 37108, Start Num: 16

Candidate Starts for Druantia\_53:

(Start: 6 @37473 has 3 MA's), (Start: 16 @37383 has 119 MA's), (34, 37230), (36, 37221),

Gene: DudeLittle\_56 Start: 38146, Stop: 37823, Start Num: 18

Candidate Starts for DudeLittle\_56:

(Start: 18 @38146 has 209 MA's), (23, 38080), (30, 38008), (32, 38002), (33, 37999), (34, 37996), (39, 37969), (40, 37942), (45, 37903), (48, 37873),

Gene: DustyMartin\_58 Start: 37428, Stop: 37081, Start Num: 12

Candidate Starts for DustyMartin\_58:

(Start: 12 @37428 has 2 MA's), (Start: 18 @37398 has 209 MA's), (30, 37257), (34, 37245), (36, 37236), (38, 37221), (51, 37125),

Gene: EZMoney23\_55 Start: 37861, Stop: 37586, Start Num: 18

Candidate Starts for EZMoney23\_55:

(Start: 18 @37861 has 209 MA's), (29, 37738), (30, 37723), (32, 37717), (33, 37714), (34, 37711), (39, 37684), (40, 37657), (45, 37618),

Gene: Eagle\_53 Start: 37405, Stop: 37130, Start Num: 16

Candidate Starts for Eagle\_53:

(Start: 6 @37495 has 3 MA's), (Start: 16 @37405 has 119 MA's), (34, 37252), (36, 37243),

Gene: Eaglepride\_55 Start: 37480, Stop: 37070, Start Num: 18

Candidate Starts for Eaglepride\_55:

(Start: 18 @37480 has 209 MA's), (25, 37381), (30, 37339), (34, 37327), (36, 37318), (63, 37099),

Gene: Eapen\_53 Start: 37375, Stop: 37100, Start Num: 16

Candidate Starts for Eapen\_53:

(Start: 6 @37465 has 3 MA's), (Start: 16 @37375 has 119 MA's), (34, 37222), (36, 37213),

Gene: Echild\_57 Start: 37455, Stop: 37132, Start Num: 18

Candidate Starts for Echild\_57:

(Start: 18 @37455 has 209 MA's), (30, 37317), (32, 37311), (33, 37308), (34, 37305), (39, 37278), (40, 37251), (45, 37212), (48, 37182), (52, 37161),

Gene: Edison31\_53 Start: 37356, Stop: 37009, Start Num: 12

Candidate Starts for Edison31\_53:

(Start: 12 @37356 has 2 MA's), (Start: 18 @37326 has 209 MA's), (30, 37185), (34, 37173), (36, 37164), (38, 37149), (51, 37053),

Gene: EdogawaKiddo\_55 Start: 38005, Stop: 37727, Start Num: 18

Candidate Starts for EdogawaKiddo\_55:

(Start: 18 @38005 has 209 MA's), (30, 37867), (32, 37861), (33, 37858), (34, 37855), (39, 37828), (43, 37774), (45, 37762),

Gene: Eidsmoe\_57 Start: 38020, Stop: 37742, Start Num: 18

Candidate Starts for Eidsmoe\_57:

(Start: 18 @38020 has 209 MA's), (30, 37882), (32, 37876), (33, 37873), (34, 37870), (39, 37843), (43, 37789), (45, 37777),

Gene: Elephantoon\_56 Start: 37395, Stop: 37114, Start Num: 18

Candidate Starts for Elephantoon\_56:

(Start: 18 @37395 has 209 MA's), (30, 37257), (32, 37251), (33, 37248), (34, 37245), (39, 37218), (40, 37191), (45, 37152),

Gene: EmyBug\_56 Start: 38022, Stop: 37744, Start Num: 18

Candidate Starts for EmyBug\_56:

(Start: 18 @38022 has 209 MA's), (30, 37884), (32, 37878), (33, 37875), (34, 37872), (39, 37845), (43, 37791), (45, 37779),

Gene: EpicPhail\_60 Start: 37996, Stop: 37703, Start Num: 18

Candidate Starts for EpicPhail\_60:

(5, 38083), (Start: 18 @37996 has 209 MA's), (30, 37855), (34, 37843), (36, 37834), (55, 37717),

Gene: Equemioh13\_58 Start: 38292, Stop: 37972, Start Num: 18

Candidate Starts for Equemioh13\_58:

(Start: 18 @38292 has 209 MA's), (23, 38226), (32, 38148), (33, 38145), (34, 38142), (39, 38115), (40, 38088), (45, 38049), (52, 37998),

Gene: Eris\_52 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Eris\_52:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Eros\_53 Start: 37382, Stop: 37107, Start Num: 16

Candidate Starts for Eros\_53:

(Start: 6 @37472 has 3 MA's), (Start: 16 @37382 has 119 MA's), (34, 37229), (36, 37220),

Gene: Eurydice\_54 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for Eurydice\_54:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: EvilGenius\_59 Start: 39758, Stop: 39435, Start Num: 18

Candidate Starts for EvilGenius\_59:

(Start: 18 @39758 has 209 MA's), (28, 39638), (30, 39620), (32, 39614), (33, 39611), (34, 39608), (39, 39581), (40, 39554), (45, 39515),

Gene: ExplosioNervosa\_57 Start: 38088, Stop: 37810, Start Num: 18

Candidate Starts for ExplosioNervosa\_57:

(Start: 18 @38088 has 209 MA's), (30, 37950), (32, 37944), (33, 37941), (34, 37938), (39, 37911), (43, 37857), (45, 37845),

Gene: Farber\_59 Start: 37982, Stop: 37689, Start Num: 18

Candidate Starts for Farber\_59:

(5, 38069), (Start: 18 @37982 has 209 MA's), (30, 37841), (34, 37829), (36, 37820), (55, 37703),

Gene: Fayely\_57 Start: 37989, Stop: 37711, Start Num: 18

Candidate Starts for Fayely\_57:

(Start: 18 @37989 has 209 MA's), (30, 37851), (32, 37845), (33, 37842), (34, 37839), (39, 37812), (43, 37758), (45, 37746),

Gene: Fernando\_59 Start: 37992, Stop: 37699, Start Num: 18

Candidate Starts for Fernando\_59:

(5, 38079), (Start: 18 @37992 has 209 MA's), (30, 37851), (34, 37839), (36, 37830), (55, 37713),

Gene: First\_0059 Start: 38547, Stop: 38224, Start Num: 18

Candidate Starts for First\_0059:

(Start: 18 @38547 has 209 MA's), (29, 38424), (30, 38409), (32, 38403), (33, 38400), (34, 38397), (39, 38370), (40, 38343), (45, 38304),

Gene: Flare16\_57 Start: 38048, Stop: 37731, Start Num: 18

Candidate Starts for Flare16\_57:

(Start: 18 @38048 has 209 MA's), (30, 37913), (32, 37907), (33, 37904), (34, 37901), (39, 37874), (40, 37847), (45, 37808), (52, 37757),

Gene: Florean\_53 Start: 37379, Stop: 37104, Start Num: 16

Candidate Starts for Florean\_53:

(Start: 6 @37469 has 3 MA's), (Start: 16 @37379 has 119 MA's), (34, 37226), (36, 37217),

Gene: Flux\_53 Start: 37379, Stop: 37104, Start Num: 16  
Candidate Starts for Flux\_53:  
(Start: 6 @37469 has 3 MA's), (Start: 16 @37379 has 119 MA's), (34, 37226), (36, 37217),

Gene: Fred313\_56 Start: 37398, Stop: 37105, Start Num: 18  
Candidate Starts for Fred313\_56:  
(Start: 18 @37398 has 209 MA's), (34, 37245), (36, 37236), (38, 37221),

Gene: Funston\_52 Start: 37380, Stop: 37105, Start Num: 16  
Candidate Starts for Funston\_52:  
(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Gadost\_53 Start: 37384, Stop: 37109, Start Num: 16  
Candidate Starts for Gadost\_53:  
(Start: 6 @37474 has 3 MA's), (Start: 16 @37384 has 119 MA's), (34, 37231), (36, 37222),

Gene: GaugeLDP\_55 Start: 38243, Stop: 37968, Start Num: 18  
Candidate Starts for GaugeLDP\_55:  
(Start: 18 @38243 has 209 MA's), (30, 38105), (32, 38099), (33, 38096), (34, 38093), (39, 38066), (40, 38039), (45, 38000),

Gene: Gemma\_58 Start: 37874, Stop: 37581, Start Num: 18  
Candidate Starts for Gemma\_58:  
(Start: 18 @37874 has 209 MA's), (25, 37775), (30, 37733), (34, 37721), (36, 37712),

Gene: GingkoMaracino\_59 Start: 37878, Stop: 37585, Start Num: 18  
Candidate Starts for GingkoMaracino\_59:  
(5, 37965), (Start: 18 @37878 has 209 MA's), (30, 37737), (34, 37725), (36, 37716), (55, 37599),

Gene: Giroux\_57 Start: 37810, Stop: 37517, Start Num: 18  
Candidate Starts for Giroux\_57:  
(Start: 12 @37840 has 2 MA's), (Start: 18 @37810 has 209 MA's), (24, 37714), (34, 37657), (36, 37648), (38, 37633), (55, 37531),

Gene: Godines\_56 Start: 50854, Stop: 50540, Start Num: 11  
Candidate Starts for Godines\_56:  
(Start: 11 @50854 has 2 MA's), (20, 50806), (27, 50707), (30, 50674), (37, 50647), (45, 50569),

Gene: Goose\_54 Start: 37112, Stop: 36822, Start Num: 18  
Candidate Starts for Goose\_54:  
(Start: 12 @37139 has 2 MA's), (Start: 18 @37112 has 209 MA's), (30, 36971), (34, 36959), (36, 36950), (38, 36935),

Gene: Grif\_59 Start: 38067, Stop: 37774, Start Num: 18  
Candidate Starts for Grif\_59:  
(5, 38154), (Start: 18 @38067 has 209 MA's), (30, 37926), (34, 37914), (36, 37905), (55, 37788),

Gene: Groupthink\_60 Start: 37878, Stop: 37585, Start Num: 18  
Candidate Starts for Groupthink\_60:  
(Start: 18 @37878 has 209 MA's), (30, 37737), (34, 37725), (36, 37716),

Gene: Grub\_59 Start: 37984, Stop: 37691, Start Num: 18  
Candidate Starts for Grub\_59:

(5, 38071), (Start: 18 @37984 has 209 MA's), (30, 37843), (34, 37831), (36, 37822), (55, 37705),

Gene: Grum1\_59 Start: 37992, Stop: 37699, Start Num: 18

Candidate Starts for Grum1\_59:

(5, 38079), (Start: 18 @37992 has 209 MA's), (30, 37851), (34, 37839), (36, 37830), (55, 37713),

Gene: GtownJaz\_59 Start: 37994, Stop: 37701, Start Num: 18

Candidate Starts for GtownJaz\_59:

(5, 38081), (Start: 18 @37994 has 209 MA's), (30, 37853), (34, 37841), (36, 37832), (55, 37715),

Gene: HamSlice\_52 Start: 37468, Stop: 37103, Start Num: 6

Candidate Starts for HamSlice\_52:

(Start: 6 @37468 has 3 MA's), (Start: 16 @37378 has 119 MA's), (34, 37225), (36, 37216),

Gene: Hanray\_55 Start: 38009, Stop: 37731, Start Num: 18

Candidate Starts for Hanray\_55:

(Start: 18 @38009 has 209 MA's), (30, 37871), (32, 37865), (33, 37862), (34, 37859), (39, 37832), (43, 37778), (45, 37766),

Gene: Happiness\_52 Start: 37399, Stop: 37124, Start Num: 16

Candidate Starts for Happiness\_52:

(Start: 8 @37444 has 2 MA's), (14, 37405), (Start: 16 @37399 has 119 MA's), (34, 37246), (36, 37237),

Gene: HarryHoudini\_58 Start: 38478, Stop: 38158, Start Num: 18

Candidate Starts for HarryHoudini\_58:

(Start: 18 @38478 has 209 MA's), (23, 38412), (32, 38334), (33, 38331), (34, 38328), (39, 38301), (40, 38274), (45, 38235), (52, 38184),

Gene: HashRod\_60 Start: 38020, Stop: 37727, Start Num: 18

Candidate Starts for HashRod\_60:

(5, 38107), (Start: 18 @38020 has 209 MA's), (30, 37879), (34, 37867), (36, 37858), (55, 37741),

Gene: HaveUMetTed\_60 Start: 37863, Stop: 37570, Start Num: 18

Candidate Starts for HaveUMetTed\_60:

(Start: 18 @37863 has 209 MA's), (30, 37722), (34, 37710), (36, 37701),

Gene: Heathen\_56 Start: 37496, Stop: 37203, Start Num: 18

Candidate Starts for Heathen\_56:

(Start: 18 @37496 has 209 MA's), (34, 37343), (36, 37334), (38, 37319),

Gene: HelDan\_56 Start: 37712, Stop: 37419, Start Num: 18

Candidate Starts for HelDan\_56:

(Start: 18 @37712 has 209 MA's), (34, 37559), (36, 37550), (38, 37535),

Gene: Heliosoles\_58 Start: 37881, Stop: 37588, Start Num: 18

Candidate Starts for Heliosoles\_58:

(Start: 18 @37881 has 209 MA's), (30, 37740), (34, 37728), (36, 37719),

Gene: Hercules11\_59 Start: 38001, Stop: 37708, Start Num: 18

Candidate Starts for Hercules11\_59:

(5, 38088), (Start: 18 @38001 has 209 MA's), (30, 37860), (34, 37848), (36, 37839), (55, 37722),

Gene: Horex\_56 Start: 38025, Stop: 37747, Start Num: 18  
Candidate Starts for Horex\_56:  
(Start: 18 @38025 has 209 MA's), (30, 37887), (32, 37881), (33, 37878), (34, 37875), (39, 37848), (43, 37794), (45, 37782),

Gene: Holli\_52 Start: 37170, Stop: 36895, Start Num: 16  
Candidate Starts for Holli\_52:  
(Start: 6 @37260 has 3 MA's), (Start: 16 @37170 has 119 MA's), (34, 37017), (36, 37008),

Gene: Hookmount\_55 Start: 37765, Stop: 37475, Start Num: 18  
Candidate Starts for Hookmount\_55:  
(Start: 12 @37795 has 2 MA's), (Start: 18 @37765 has 209 MA's), (34, 37612), (36, 37603), (38, 37588),

Gene: HortumSL17\_57 Start: 37956, Stop: 37678, Start Num: 18  
Candidate Starts for HortumSL17\_57:  
(Start: 18 @37956 has 209 MA's), (30, 37818), (32, 37812), (33, 37809), (34, 37806), (39, 37779), (43, 37725), (45, 37713),

Gene: Houdini22\_53 Start: 37384, Stop: 37109, Start Num: 16  
Candidate Starts for Houdini22\_53:  
(Start: 6 @37474 has 3 MA's), (Start: 16 @37384 has 119 MA's), (34, 37231), (36, 37222),

Gene: Huxley\_53 Start: 37441, Stop: 37166, Start Num: 16  
Candidate Starts for Huxley\_53:  
(Start: 6 @37531 has 3 MA's), (Start: 16 @37441 has 119 MA's), (34, 37288), (36, 37279),

Gene: ICleared\_53 Start: 37409, Stop: 37134, Start Num: 16  
Candidate Starts for ICleared\_53:  
(Start: 6 @37499 has 3 MA's), (Start: 16 @37409 has 119 MA's), (34, 37256), (36, 37247),

Gene: Iceman\_53 Start: 37666, Stop: 37391, Start Num: 16  
Candidate Starts for Iceman\_53:  
(Start: 6 @37756 has 3 MA's), (Start: 16 @37666 has 119 MA's), (34, 37513), (36, 37504),

Gene: Idleandcovert\_57 Start: 37811, Stop: 37518, Start Num: 18  
Candidate Starts for Idleandcovert\_57:  
(Start: 12 @37841 has 2 MA's), (Start: 18 @37811 has 209 MA's), (24, 37715), (34, 37658), (36, 37649), (38, 37634), (55, 37532),

Gene: Iracema64\_54 Start: 37644, Stop: 37369, Start Num: 16  
Candidate Starts for Iracema64\_54:  
(Start: 6 @37734 has 3 MA's), (Start: 16 @37644 has 119 MA's), (34, 37491), (36, 37482),

Gene: IronMan\_57 Start: 39193, Stop: 38867, Start Num: 18  
Candidate Starts for IronMan\_57:  
(Start: 18 @39193 has 209 MA's), (30, 39052), (32, 39046), (33, 39043), (34, 39040), (39, 39013), (40, 38986), (45, 38947), (48, 38917), (52, 38896),

Gene: Isca\_55 Start: 37278, Stop: 36985, Start Num: 18  
Candidate Starts for Isca\_55:  
(Start: 7 @37332 has 1 MA's), (Start: 18 @37278 has 209 MA's), (34, 37125), (36, 37116), (38, 37101),

Gene: Iwokeuplikedis\_60 Start: 38111, Stop: 37788, Start Num: 18

Candidate Starts for Iwokeuplikedis\_60:

(Start: 18 @38111 has 209 MA's), (30, 37973), (32, 37967), (33, 37964), (34, 37961), (39, 37934), (40, 37907), (45, 37868), (48, 37838), (52, 37817),

Gene: JF2\_54 Start: 35979, Stop: 35686, Start Num: 18

Candidate Starts for JF2\_54:

(Start: 7 @36033 has 1 MA's), (Start: 18 @35979 has 209 MA's), (34, 35826), (36, 35817), (38, 35802),

Gene: JF4\_54 Start: 35979, Stop: 35686, Start Num: 18

Candidate Starts for JF4\_54:

(Start: 7 @36033 has 1 MA's), (Start: 18 @35979 has 209 MA's), (34, 35826), (36, 35817), (38, 35802),

Gene: JHC117\_59 Start: 37991, Stop: 37698, Start Num: 18

Candidate Starts for JHC117\_59:

(Start: 18 @37991 has 209 MA's), (34, 37838), (36, 37829), (55, 37712),

Gene: Jaan\_57 Start: 39353, Stop: 39033, Start Num: 18

Candidate Starts for Jaan\_57:

(Start: 18 @39353 has 209 MA's), (30, 39218), (32, 39212), (33, 39209), (34, 39206), (39, 39179), (40, 39152), (45, 39113), (48, 39083), (52, 39062),

Gene: Jaykayelowell\_51 Start: 37373, Stop: 37098, Start Num: 16

Candidate Starts for Jaykayelowell\_51:

(Start: 6 @37463 has 3 MA's), (Start: 16 @37373 has 119 MA's), (34, 37220), (36, 37211),

Gene: JenCasNa\_60 Start: 37992, Stop: 37699, Start Num: 18

Candidate Starts for JenCasNa\_60:

(5, 38079), (Start: 18 @37992 has 209 MA's), (30, 37851), (34, 37839), (36, 37830), (55, 37713),

Gene: JeppNRM\_60 Start: 37879, Stop: 37586, Start Num: 18

Candidate Starts for JeppNRM\_60:

(Start: 18 @37879 has 209 MA's), (30, 37738), (34, 37726), (36, 37717),

Gene: Jerm\_59 Start: 38572, Stop: 38246, Start Num: 18

Candidate Starts for Jerm\_59:

(Start: 18 @38572 has 209 MA's), (30, 38434), (32, 38428), (33, 38425), (34, 38422), (39, 38395), (40, 38368), (45, 38329), (48, 38299),

Gene: JetBlade\_53 Start: 37374, Stop: 37099, Start Num: 16

Candidate Starts for JetBlade\_53:

(Start: 6 @37464 has 3 MA's), (Start: 16 @37374 has 119 MA's), (34, 37221), (36, 37212),

Gene: Jiawan\_55 Start: 38041, Stop: 37763, Start Num: 18

Candidate Starts for Jiawan\_55:

(Start: 18 @38041 has 209 MA's), (30, 37903), (32, 37897), (33, 37894), (34, 37891), (39, 37864), (43, 37810), (45, 37798),

Gene: Jobu08\_58 Start: 37824, Stop: 37531, Start Num: 18

Candidate Starts for Jobu08\_58:



(5, 37911), (Start: 18 @37824 has 209 MA's), (34, 37671), (36, 37662), (55, 37545),

Gene: JoongJeon\_52 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for JoongJeon\_52:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: KADY\_59 Start: 38020, Stop: 37727, Start Num: 18

Candidate Starts for KADY\_59:

(5, 38107), (Start: 18 @38020 has 209 MA's), (30, 37879), (34, 37867), (36, 37858), (55, 37741),

Gene: KFPoly\_52 Start: 37374, Stop: 37099, Start Num: 16

Candidate Starts for KFPoly\_52:

(Start: 6 @37464 has 3 MA's), (Start: 16 @37374 has 119 MA's), (34, 37221), (36, 37212),

Gene: Kachowdy\_56 Start: 37748, Stop: 37455, Start Num: 18

Candidate Starts for Kachowdy\_56:

(Start: 18 @37748 has 209 MA's), (34, 37595), (36, 37586), (38, 37571),

Gene: Kalb97\_60 Start: 37877, Stop: 37584, Start Num: 18

Candidate Starts for Kalb97\_60:

(Start: 18 @37877 has 209 MA's), (30, 37736), (34, 37724), (36, 37715),

Gene: Kalnoky\_60 Start: 37875, Stop: 37582, Start Num: 18

Candidate Starts for Kalnoky\_60:

(Start: 18 @37875 has 209 MA's), (30, 37734), (34, 37722), (36, 37713),

Gene: Kamy\_53 Start: 37472, Stop: 37107, Start Num: 6

Candidate Starts for Kamy\_53:

(Start: 6 @37472 has 3 MA's), (Start: 16 @37382 has 119 MA's), (34, 37229), (36, 37220),

Gene: Katalie136\_52 Start: 37332, Stop: 37054, Start Num: 17

Candidate Starts for Katalie136\_52:

(9, 37377), (10, 37374), (Start: 17 @37332 has 16 MA's), (34, 37179), (36, 37170), (38, 37155),

Gene: Keziacharles14\_57 Start: 39097, Stop: 38816, Start Num: 18

Candidate Starts for Keziacharles14\_57:

(Start: 18 @39097 has 209 MA's), (25, 39004), (29, 38974), (30, 38959), (32, 38953), (33, 38950), (34, 38947), (39, 38920), (40, 38893), (45, 38854),

Gene: Kimona\_53 Start: 35989, Stop: 35708, Start Num: 16

Candidate Starts for Kimona\_53:

(Start: 12 @36016 has 2 MA's), (Start: 16 @35989 has 119 MA's), (24, 35881), (30, 35836), (34, 35824), (36, 35815), (38, 35800), (40, 35770),

Gene: KingCyrus\_59 Start: 39753, Stop: 39430, Start Num: 18

Candidate Starts for KingCyrus\_59:

(Start: 18 @39753 has 209 MA's), (28, 39633), (30, 39615), (32, 39609), (33, 39606), (34, 39603), (39, 39576), (40, 39549), (45, 39510),

Gene: Kingmustik0402\_53 Start: 37369, Stop: 37094, Start Num: 16

Candidate Starts for Kingmustik0402\_53:

(Start: 6 @37459 has 3 MA's), (Start: 16 @37369 has 119 MA's), (34, 37216), (36, 37207),

Gene: KittenMittens\_51 Start: 36539, Stop: 36249, Start Num: 18  
Candidate Starts for KittenMittens\_51:  
(Start: 18 @36539 has 209 MA's), (30, 36398), (34, 36386), (36, 36377), (38, 36362),

Gene: Koreni\_52 Start: 37061, Stop: 36786, Start Num: 16  
Candidate Starts for Koreni\_52:  
(Start: 6 @37151 has 3 MA's), (Start: 16 @37061 has 119 MA's), (34, 36908), (36, 36899),

Gene: Kratark\_53 Start: 37535, Stop: 37260, Start Num: 16  
Candidate Starts for Kratark\_53:  
(Start: 8 @37580 has 2 MA's), (Start: 16 @37535 has 119 MA's), (34, 37382), (36, 37373), (38, 37358),

Gene: Kremtemulon\_53 Start: 37328, Stop: 37053, Start Num: 16  
Candidate Starts for Kremtemulon\_53:  
(Start: 6 @37418 has 3 MA's), (Start: 16 @37328 has 119 MA's), (34, 37175), (36, 37166),

Gene: Kristoff\_54 Start: 37714, Stop: 37370, Start Num: 12  
Candidate Starts for Kristoff\_54:  
(Start: 12 @37714 has 2 MA's), (Start: 18 @37687 has 209 MA's), (30, 37546), (34, 37534), (36, 37525), (38, 37510), (51, 37414),

Gene: Kyee\_53 Start: 37378, Stop: 37103, Start Num: 16  
Candidate Starts for Kyee\_53:  
(Start: 6 @37468 has 3 MA's), (Start: 16 @37378 has 119 MA's), (34, 37225), (36, 37216),

Gene: LBerry\_60 Start: 37996, Stop: 37703, Start Num: 18  
Candidate Starts for LBerry\_60:  
(5, 38083), (Start: 18 @37996 has 209 MA's), (30, 37855), (34, 37843), (36, 37834), (55, 37717),

Gene: LHTSCC\_55 Start: 37816, Stop: 37541, Start Num: 16  
Candidate Starts for LHTSCC\_55:  
(Start: 8 @37861 has 2 MA's), (Start: 16 @37816 has 119 MA's), (34, 37663), (36, 37654),

Gene: Lambert1\_55 Start: 37764, Stop: 37474, Start Num: 18  
Candidate Starts for Lambert1\_55:  
(Start: 12 @37794 has 2 MA's), (Start: 18 @37764 has 209 MA's), (34, 37611), (36, 37602), (38, 37587),

Gene: Landor\_57 Start: 39271, Stop: 38945, Start Num: 18  
Candidate Starts for Landor\_57:  
(Start: 18 @39271 has 209 MA's), (30, 39130), (32, 39124), (33, 39121), (34, 39118), (39, 39091), (40, 39064), (45, 39025), (48, 38995), (52, 38974),

Gene: LappelDuVide\_53 Start: 37379, Stop: 37104, Start Num: 16  
Candidate Starts for LappelDuVide\_53:  
(Start: 6 @37469 has 3 MA's), (Start: 16 @37379 has 119 MA's), (34, 37226), (36, 37217),

Gene: Larenn\_56 Start: 38162, Stop: 37842, Start Num: 18  
Candidate Starts for Larenn\_56:  
(1, 38387), (2, 38378), (Start: 18 @38162 has 209 MA's), (30, 38024), (32, 38018), (33, 38015), (34, 38012), (39, 37985), (40, 37958), (45, 37919), (52, 37868), (53, 37862),

Gene: LarryKay\_59 Start: 38022, Stop: 37729, Start Num: 18  
Candidate Starts for LarryKay\_59:  
(5, 38109), (Start: 18 @38022 has 209 MA's), (30, 37881), (34, 37869), (36, 37860), (55, 37743),

Gene: Laurie\_55 Start: 50282, Stop: 49968, Start Num: 11  
Candidate Starts for Laurie\_55:  
(Start: 11 @50282 has 2 MA's), (20, 50234), (27, 50135), (30, 50102), (45, 49997), (46, 49988),

Gene: Lemur\_53 Start: 37377, Stop: 37102, Start Num: 16  
Candidate Starts for Lemur\_53:  
(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: LeoAvram\_53 Start: 37380, Stop: 37105, Start Num: 16  
Candidate Starts for LeoAvram\_53:  
(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Leogania\_57 Start: 39144, Stop: 38872, Start Num: 18  
Candidate Starts for Leogania\_57:  
(Start: 18 @39144 has 209 MA's), (30, 39009), (32, 39003), (33, 39000), (34, 38997), (39, 38970), (40, 38943), (45, 38904),

Gene: Leviathan\_59 Start: 38629, Stop: 38303, Start Num: 18  
Candidate Starts for Leviathan\_59:  
(Start: 18 @38629 has 209 MA's), (30, 38491), (32, 38485), (33, 38482), (34, 38479), (39, 38452), (40, 38425), (45, 38386), (48, 38356),

Gene: LilTurb\_58 Start: 38453, Stop: 38127, Start Num: 18  
Candidate Starts for LilTurb\_58:  
(Start: 18 @38453 has 209 MA's), (30, 38315), (32, 38309), (33, 38306), (34, 38303), (39, 38276), (40, 38249), (45, 38210), (48, 38180),

Gene: Lilith\_60 Start: 37985, Stop: 37692, Start Num: 18  
Candidate Starts for Lilith\_60:  
(5, 38072), (Start: 18 @37985 has 209 MA's), (30, 37844), (34, 37832), (36, 37823), (55, 37706),

Gene: Lilleskat\_55 Start: 37958, Stop: 37680, Start Num: 18  
Candidate Starts for Lilleskat\_55:  
(Start: 18 @37958 has 209 MA's), (30, 37820), (32, 37814), (33, 37811), (34, 37808), (39, 37781), (43, 37727), (45, 37715),

Gene: LittleB\_53 Start: 37381, Stop: 37106, Start Num: 16  
Candidate Starts for LittleB\_53:  
(Start: 6 @37471 has 3 MA's), (Start: 16 @37381 has 119 MA's), (34, 37228), (36, 37219),

Gene: LittleGuy\_53 Start: 37276, Stop: 37001, Start Num: 16  
Candidate Starts for LittleGuy\_53:  
(Start: 6 @37366 has 3 MA's), (Start: 16 @37276 has 119 MA's), (34, 37123), (36, 37114),

Gene: LochMonster\_54 Start: 37616, Stop: 37341, Start Num: 16  
Candidate Starts for LochMonster\_54:  
(Start: 6 @37706 has 3 MA's), (Start: 16 @37616 has 119 MA's), (34, 37463), (36, 37454),

Gene: LoneWolf\_58 Start: 37989, Stop: 37708, Start Num: 18

Candidate Starts for LoneWolf\_58:

(1, 38214), (2, 38205), (Start: 18 @37989 has 209 MA's), (29, 37866), (30, 37851), (32, 37845), (33, 37842), (34, 37839), (39, 37812), (40, 37785), (45, 37746),

Gene: Lorenzo\_53 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Lorenzo\_53:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Loser\_59 Start: 39004, Stop: 38684, Start Num: 18

Candidate Starts for Loser\_59:

(Start: 18 @39004 has 209 MA's), (28, 38884), (30, 38866), (32, 38860), (33, 38857), (34, 38854), (39, 38827), (40, 38800), (45, 38761), (52, 38710),

Gene: Louie6\_58 Start: 38021, Stop: 37728, Start Num: 18

Candidate Starts for Louie6\_58:

(5, 38108), (Start: 18 @38021 has 209 MA's), (30, 37880), (34, 37868), (36, 37859), (55, 37742),

Gene: LugYA\_62 Start: 37993, Stop: 37700, Start Num: 18

Candidate Starts for LugYA\_62:

(5, 38080), (Start: 18 @37993 has 209 MA's), (30, 37852), (34, 37840), (36, 37831), (55, 37714),

Gene: Lunsford\_54 Start: 37374, Stop: 37099, Start Num: 16

Candidate Starts for Lunsford\_54:

(Start: 6 @37464 has 3 MA's), (Start: 16 @37374 has 119 MA's), (34, 37221), (36, 37212),

Gene: MA5\_56 Start: 37182, Stop: 36868, Start Num: 18

Candidate Starts for MA5\_56:

(Start: 18 @37182 has 209 MA's), (34, 37029), (38, 37005), (59, 36894),

Gene: MK4\_56 Start: 37263, Stop: 36970, Start Num: 18

Candidate Starts for MK4\_56:

(Start: 7 @37317 has 1 MA's), (Start: 18 @37263 has 209 MA's), (34, 37110), (36, 37101), (38, 37086),

Gene: MadMarie\_59 Start: 37994, Stop: 37701, Start Num: 18

Candidate Starts for MadMarie\_59:

(5, 38081), (Start: 18 @37994 has 209 MA's), (30, 37853), (34, 37841), (36, 37832), (55, 37715),

Gene: Mainiac\_59 Start: 37986, Stop: 37693, Start Num: 18

Candidate Starts for Mainiac\_59:

(5, 38073), (Start: 18 @37986 has 209 MA's), (30, 37845), (34, 37833), (36, 37824), (55, 37707),

Gene: Malec\_57 Start: 38729, Stop: 38409, Start Num: 18

Candidate Starts for Malec\_57:

(1, 38954), (2, 38945), (Start: 18 @38729 has 209 MA's), (30, 38591), (32, 38585), (33, 38582), (34, 38579), (39, 38552), (40, 38525), (45, 38486), (52, 38435), (53, 38429),

Gene: Malinsilva\_61 Start: 37984, Stop: 37691, Start Num: 18

Candidate Starts for Malinsilva\_61:

(5, 38071), (Start: 18 @37984 has 209 MA's), (30, 37843), (34, 37831), (36, 37822), (55, 37705),

Gene: Manu\_59 Start: 37878, Stop: 37585, Start Num: 18

Candidate Starts for Manu\_59:

(Start: 18 @37878 has 209 MA's), (30, 37737), (34, 37725), (36, 37716),

Gene: MarQuardt\_59 Start: 37994, Stop: 37701, Start Num: 18

Candidate Starts for MarQuardt\_59:

(5, 38081), (Start: 18 @37994 has 209 MA's), (30, 37853), (34, 37841), (36, 37832), (55, 37715),

Gene: Marchesa\_56 Start: 37698, Stop: 37405, Start Num: 18

Candidate Starts for Marchesa\_56:

(Start: 18 @37698 has 209 MA's), (34, 37545), (36, 37536), (38, 37521),

Gene: Margo\_55 Start: 37790, Stop: 37500, Start Num: 18

Candidate Starts for Margo\_55:

(Start: 12 @37820 has 2 MA's), (Start: 18 @37790 has 209 MA's), (34, 37637), (36, 37628), (38, 37613),

Gene: Marie\_59 Start: 37992, Stop: 37699, Start Num: 18

Candidate Starts for Marie\_59:

(5, 38079), (Start: 18 @37992 has 209 MA's), (30, 37851), (34, 37839), (36, 37830), (55, 37713),

Gene: Marius\_60 Start: 37875, Stop: 37582, Start Num: 18

Candidate Starts for Marius\_60:

(Start: 18 @37875 has 209 MA's), (30, 37734), (34, 37722), (36, 37713),

Gene: Maverick\_53 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Maverick\_53:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Maxo\_54 Start: 37382, Stop: 37107, Start Num: 16

Candidate Starts for Maxo\_54:

(Start: 6 @37472 has 3 MA's), (Start: 16 @37382 has 119 MA's), (34, 37229), (36, 37220),

Gene: Mazhar510\_53 Start: 37381, Stop: 37106, Start Num: 16

Candidate Starts for Mazhar510\_53:

(Start: 6 @37471 has 3 MA's), (Start: 16 @37381 has 119 MA's), (34, 37228), (36, 37219),

Gene: Medusa\_53 Start: 37379, Stop: 37104, Start Num: 16

Candidate Starts for Medusa\_53:

(Start: 6 @37469 has 3 MA's), (Start: 16 @37379 has 119 MA's), (34, 37226), (36, 37217),

Gene: MeeZee\_53 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for MeeZee\_53:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: Melvin\_55 Start: 37375, Stop: 37100, Start Num: 16

Candidate Starts for Melvin\_55:

(Start: 6 @37465 has 3 MA's), (Start: 16 @37375 has 119 MA's), (34, 37222), (36, 37213),

Gene: Methuselah\_55 Start: 38016, Stop: 37723, Start Num: 18

Candidate Starts for Methuselah\_55:

(5, 38103), (Start: 18 @38016 has 209 MA's), (30, 37875), (34, 37863), (36, 37854), (55, 37737),

Gene: Microwolf\_59 Start: 38008, Stop: 37715, Start Num: 18

Candidate Starts for Microwolf\_59:

(5, 38095), (Start: 18 @38008 has 209 MA's), (30, 37867), (34, 37855), (36, 37846), (55, 37729),

Gene: MiculUcigas\_57 Start: 37951, Stop: 37634, Start Num: 18

Candidate Starts for MiculUcigas\_57:

(Start: 18 @37951 has 209 MA's), (30, 37816), (32, 37810), (33, 37807), (34, 37804), (39, 37777), (40, 37750), (45, 37711), (52, 37660),

Gene: Millski\_52 Start: 37381, Stop: 37106, Start Num: 16

Candidate Starts for Millski\_52:

(Start: 6 @37471 has 3 MA's), (Start: 16 @37381 has 119 MA's), (34, 37228), (36, 37219),

Gene: Miramae\_51 Start: 36827, Stop: 36552, Start Num: 16

Candidate Starts for Miramae\_51:

(Start: 16 @36827 has 119 MA's), (34, 36674), (35, 36668), (36, 36665), (37, 36659),

Gene: Misomonster\_60 Start: 38019, Stop: 37726, Start Num: 18

Candidate Starts for Misomonster\_60:

(5, 38106), (Start: 18 @38019 has 209 MA's), (30, 37878), (34, 37866), (36, 37857), (55, 37740),

Gene: MoneyMay\_59 Start: 37992, Stop: 37699, Start Num: 18

Candidate Starts for MoneyMay\_59:

(5, 38079), (Start: 18 @37992 has 209 MA's), (30, 37851), (34, 37839), (36, 37830), (55, 37713),

Gene: Morpher26\_52 Start: 37353, Stop: 37075, Start Num: 17

Candidate Starts for Morpher26\_52:

(9, 37398), (10, 37395), (Start: 17 @37353 has 16 MA's), (34, 37200), (36, 37191), (38, 37176),

Gene: Morrow\_54 Start: 37386, Stop: 37111, Start Num: 16

Candidate Starts for Morrow\_54:

(Start: 6 @37476 has 3 MA's), (Start: 16 @37386 has 119 MA's), (34, 37233), (36, 37224),

Gene: MuchMore\_62 Start: 37984, Stop: 37691, Start Num: 18

Candidate Starts for MuchMore\_62:

(5, 38071), (Start: 18 @37984 has 209 MA's), (30, 37843), (34, 37831), (36, 37822), (55, 37705),

Gene: Mundrea\_52 Start: 37379, Stop: 37101, Start Num: 16

Candidate Starts for Mundrea\_52:

(Start: 16 @37379 has 119 MA's), (34, 37226), (36, 37217), (38, 37202),

Gene: Myxus\_57 Start: 37956, Stop: 37678, Start Num: 18

Candidate Starts for Myxus\_57:

(Start: 18 @37956 has 209 MA's), (30, 37818), (32, 37812), (33, 37809), (34, 37806), (39, 37779), (43, 37725), (45, 37713),

Gene: NaSiaTalie\_57 Start: 38045, Stop: 37728, Start Num: 18

Candidate Starts for NaSiaTalie\_57:

(Start: 18 @38045 has 209 MA's), (30, 37910), (32, 37904), (33, 37901), (34, 37898), (39, 37871), (40, 37844), (45, 37805), (52, 37754),

Gene: Nebs\_54 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Nebs\_54:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Nemo27\_53 Start: 37379, Stop: 37104, Start Num: 16

Candidate Starts for Nemo27\_53:

(Start: 6 @37469 has 3 MA's), (Start: 16 @37379 has 119 MA's), (34, 37226), (36, 37217),

Gene: NicoleTera\_56 Start: 38338, Stop: 38018, Start Num: 18

Candidate Starts for NicoleTera\_56:

(Start: 18 @38338 has 209 MA's), (30, 38200), (32, 38194), (33, 38191), (34, 38188), (39, 38161), (40, 38134), (45, 38095), (52, 38044),

Gene: Nigel\_53 Start: 51747, Stop: 51469, Start Num: 15

Candidate Starts for Nigel\_53:

(Start: 15 @51747 has 1 MA's), (19, 51735), (22, 51708), (26, 51636), (27, 51633), (30, 51603), (34, 51591), (36, 51582), (37, 51576), (42, 51525),

Gene: Noella\_55 Start: 37765, Stop: 37475, Start Num: 18

Candidate Starts for Noella\_55:

(Start: 12 @37795 has 2 MA's), (Start: 18 @37765 has 209 MA's), (34, 37612), (36, 37603), (38, 37588),

Gene: Noelle\_53 Start: 37655, Stop: 37383, Start Num: 16

Candidate Starts for Noelle\_53:

(Start: 16 @37655 has 119 MA's), (34, 37502), (36, 37493), (38, 37478),

Gene: Norbert\_54 Start: 37764, Stop: 37474, Start Num: 18

Candidate Starts for Norbert\_54:

(Start: 12 @37794 has 2 MA's), (Start: 18 @37764 has 209 MA's), (34, 37611), (36, 37602), (38, 37587),

Gene: NorthStar\_52 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for NorthStar\_52:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: NotAPhaseMom\_53 Start: 37384, Stop: 37109, Start Num: 16

Candidate Starts for NotAPhaseMom\_53:

(Start: 6 @37474 has 3 MA's), (Start: 16 @37384 has 119 MA's), (34, 37231), (36, 37222),

Gene: NothingSpecial\_55 Start: 38538, Stop: 38239, Start Num: 18

Candidate Starts for NothingSpecial\_55:

(Start: 18 @38538 has 209 MA's), (28, 38418), (30, 38400), (32, 38394), (33, 38391), (34, 38388), (39, 38361), (40, 38334), (44, 38304), (45, 38295), (48, 38265),

Gene: Nyxis\_53 Start: 37270, Stop: 36995, Start Num: 16

Candidate Starts for Nyxis\_53:

(Start: 6 @37360 has 3 MA's), (Start: 16 @37270 has 119 MA's), (34, 37117), (36, 37108),

Gene: OKCentral2016\_53 Start: 37015, Stop: 36725, Start Num: 18

Candidate Starts for OKCentral2016\_53:

(Start: 12 @37042 has 2 MA's), (Start: 18 @37015 has 209 MA's), (30, 36874), (34, 36862), (36, 36853), (38, 36838),

Gene: OKaNui\_53 Start: 37430, Stop: 37155, Start Num: 16

Candidate Starts for OKaNui\_53:

(Start: 6 @37520 has 3 MA's), (Start: 16 @37430 has 119 MA's), (34, 37277), (36, 37268),

Gene: Obama12\_54 Start: 37800, Stop: 37525, Start Num: 16

Candidate Starts for Obama12\_54:

(Start: 8 @37845 has 2 MA's), (Start: 16 @37800 has 119 MA's), (34, 37647), (36, 37638),

Gene: Ohfah\_54 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Ohfah\_54:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: OlanP\_58 Start: 38051, Stop: 37758, Start Num: 18

Candidate Starts for OlanP\_58:

(Start: 18 @38051 has 209 MA's), (25, 37952), (30, 37910), (34, 37898), (36, 37889),

Gene: Ollie\_59 Start: 37863, Stop: 37570, Start Num: 18

Candidate Starts for Ollie\_59:

(5, 37950), (Start: 18 @37863 has 209 MA's), (30, 37722), (34, 37710), (36, 37701), (55, 37584),

Gene: Onglai\_55 Start: 36297, Stop: 36019, Start Num: 18

Candidate Starts for Onglai\_55:

(Start: 18 @36297 has 209 MA's), (30, 36159), (32, 36153), (33, 36150), (34, 36147), (39, 36120), (43, 36066), (45, 36054),

Gene: P28Green\_60 Start: 37995, Stop: 37702, Start Num: 18

Candidate Starts for P28Green\_60:

(5, 38082), (Start: 18 @37995 has 209 MA's), (30, 37854), (34, 37842), (36, 37833), (55, 37716),

Gene: PGHhamlin\_61 Start: 37984, Stop: 37691, Start Num: 18

Candidate Starts for PGHhamlin\_61:

(5, 38071), (Start: 18 @37984 has 209 MA's), (30, 37843), (34, 37831), (36, 37822), (55, 37705),

Gene: PackMan\_56 Start: 37956, Stop: 37678, Start Num: 18

Candidate Starts for PackMan\_56:

(Start: 18 @37956 has 209 MA's), (30, 37818), (32, 37812), (33, 37809), (34, 37806), (39, 37779), (43, 37725), (45, 37713),

Gene: Palestino\_52 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Palestino\_52:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Panamaxus\_53 Start: 37764, Stop: 37474, Start Num: 18

Candidate Starts for Panamaxus\_53:

(Start: 12 @37794 has 2 MA's), (Start: 18 @37764 has 209 MA's), (34, 37611), (36, 37602), (38, 37587),

Gene: Pawn\_59 Start: 37882, Stop: 37589, Start Num: 18

Candidate Starts for Pawn\_59:

(Start: 18 @37882 has 209 MA's), (30, 37741), (34, 37729), (36, 37720),

Gene: PeaceMeal1\_52 Start: 36540, Stop: 36250, Start Num: 18

Candidate Starts for PeaceMeal1\_52:

(Start: 18 @36540 has 209 MA's), (30, 36399), (34, 36387), (36, 36378), (38, 36363),

Gene: Peaches\_53 Start: 37379, Stop: 37104, Start Num: 16



Candidate Starts for Peaches\_53:

(Start: 6 @37469 has 3 MA's), (Start: 16 @37379 has 119 MA's), (34, 37226), (36, 37217),

Gene: Pembroke\_59 Start: 37993, Stop: 37700, Start Num: 18

Candidate Starts for Pembroke\_59:

(5, 38080), (Start: 18 @37993 has 209 MA's), (30, 37852), (34, 37840), (36, 37831), (55, 37714),

Gene: Penny1\_60 Start: 37996, Stop: 37703, Start Num: 18

Candidate Starts for Penny1\_60:

(5, 38083), (Start: 18 @37996 has 209 MA's), (30, 37855), (34, 37843), (36, 37834), (55, 37717),

Gene: Perplexer\_52 Start: 37329, Stop: 37051, Start Num: 17

Candidate Starts for Perplexer\_52:

(9, 37374), (10, 37371), (Start: 17 @37329 has 16 MA's), (34, 37176), (36, 37167), (38, 37152),

Gene: PeterPeter\_53 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for PeterPeter\_53:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: PetiteSangsue\_52 Start: 37332, Stop: 37054, Start Num: 17

Candidate Starts for PetiteSangsue\_52:

(9, 37377), (10, 37374), (Start: 17 @37332 has 16 MA's), (34, 37179), (36, 37170), (38, 37155),

Gene: Phacado\_53 Start: 37379, Stop: 37104, Start Num: 16

Candidate Starts for Phacado\_53:

(Start: 6 @37469 has 3 MA's), (Start: 16 @37379 has 119 MA's), (34, 37226), (36, 37217),

Gene: Phaded\_58 Start: 39250, Stop: 38924, Start Num: 18

Candidate Starts for Phaded\_58:

(Start: 18 @39250 has 209 MA's), (30, 39109), (32, 39103), (33, 39100), (34, 39097), (39, 39070), (40, 39043), (45, 39004), (48, 38974), (52, 38953),

Gene: Phaeder\_57 Start: 37956, Stop: 37678, Start Num: 18

Candidate Starts for Phaeder\_57:

(Start: 18 @37956 has 209 MA's), (30, 37818), (32, 37812), (33, 37809), (34, 37806), (39, 37779), (43, 37725), (45, 37713),

Gene: Phantastic\_57 Start: 37440, Stop: 37147, Start Num: 18

Candidate Starts for Phantastic\_57:

(Start: 7 @37494 has 1 MA's), (Start: 18 @37440 has 209 MA's), (34, 37287), (36, 37278), (38, 37263),

Gene: Phelipe\_54 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Phelipe\_54:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Phighter1804\_53 Start: 37441, Stop: 37166, Start Num: 16

Candidate Starts for Phighter1804\_53:

(Start: 6 @37531 has 3 MA's), (Start: 16 @37441 has 119 MA's), (34, 37288), (36, 37279),

Gene: PhishRPhriends\_57 Start: 37059, Stop: 36766, Start Num: 18

Candidate Starts for PhishRPhriends\_57:

(Start: 18 @37059 has 209 MA's), (30, 36918), (34, 36906), (36, 36897),

Gene: Phoebe\_60 Start: 37985, Stop: 37692, Start Num: 18  
Candidate Starts for Phoebe\_60:  
(5, 38072), (Start: 18 @37985 has 209 MA's), (30, 37844), (34, 37832), (36, 37823), (55, 37706),

Gene: Phonnegut\_57 Start: 38053, Stop: 37775, Start Num: 18  
Candidate Starts for Phonnegut\_57:  
(Start: 18 @38053 has 209 MA's), (30, 37915), (32, 37909), (33, 37906), (34, 37903), (39, 37876), (43, 37822), (45, 37810),

Gene: Phontbonne\_53 Start: 37271, Stop: 36996, Start Num: 16  
Candidate Starts for Phontbonne\_53:  
(Start: 6 @37361 has 3 MA's), (Start: 16 @37271 has 119 MA's), (34, 37118), (36, 37109),

Gene: Phoxy\_59 Start: 38017, Stop: 37724, Start Num: 18  
Candidate Starts for Phoxy\_59:  
(5, 38104), (Start: 18 @38017 has 209 MA's), (30, 37876), (34, 37864), (36, 37855), (55, 37738),

Gene: Phranny\_60 Start: 37864, Stop: 37571, Start Num: 18  
Candidate Starts for Phranny\_60:  
(Start: 18 @37864 has 209 MA's), (30, 37723), (34, 37711), (36, 37702),

Gene: Pioneer\_57 Start: 38053, Stop: 37775, Start Num: 18  
Candidate Starts for Pioneer\_57:  
(Start: 18 @38053 has 209 MA's), (30, 37915), (32, 37909), (33, 37906), (34, 37903), (39, 37876), (43, 37822), (45, 37810),

Gene: Pipcraft\_51 Start: 37380, Stop: 37105, Start Num: 16  
Candidate Starts for Pipcraft\_51:  
(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Piro94\_57 Start: 38395, Stop: 38075, Start Num: 18  
Candidate Starts for Piro94\_57:  
(Start: 18 @38395 has 209 MA's), (23, 38329), (32, 38251), (33, 38248), (34, 38245), (39, 38218), (40, 38191), (45, 38152), (52, 38101),

Gene: Pistachio\_58 Start: 37358, Stop: 37065, Start Num: 18  
Candidate Starts for Pistachio\_58:  
(Start: 12 @37388 has 2 MA's), (Start: 18 @37358 has 209 MA's), (24, 37262), (34, 37205), (36, 37196), (38, 37181), (55, 37079),

Gene: Pocahontas\_55 Start: 37761, Stop: 37471, Start Num: 18  
Candidate Starts for Pocahontas\_55:  
(Start: 12 @37791 has 2 MA's), (Start: 18 @37761 has 209 MA's), (34, 37608), (36, 37599), (38, 37584),

Gene: Polymorphads\_54 Start: 37373, Stop: 37098, Start Num: 16  
Candidate Starts for Polymorphads\_54:  
(Start: 6 @37463 has 3 MA's), (Start: 16 @37373 has 119 MA's), (34, 37220), (36, 37211),

Gene: Poompha\_53 Start: 36538, Stop: 36248, Start Num: 18  
Candidate Starts for Poompha\_53:  
(Start: 18 @36538 has 209 MA's), (34, 36385), (36, 36376), (38, 36361),

Gene: Popcicle\_55 Start: 37761, Stop: 37471, Start Num: 18

Candidate Starts for Popcicle\_55:

(Start: 12 @37791 has 2 MA's), (Start: 18 @37761 has 209 MA's), (34, 37608), (36, 37599), (38, 37584),

Gene: PotatoSplit\_61 Start: 37996, Stop: 37703, Start Num: 18

Candidate Starts for PotatoSplit\_61:

(5, 38083), (Start: 18 @37996 has 209 MA's), (30, 37855), (34, 37843), (36, 37834), (55, 37717),

Gene: Priya\_57 Start: 38023, Stop: 37745, Start Num: 18

Candidate Starts for Priya\_57:

(Start: 18 @38023 has 209 MA's), (30, 37885), (32, 37879), (33, 37876), (34, 37873), (39, 37846), (43, 37792), (45, 37780),

Gene: Pukovnik\_56 Start: 38902, Stop: 38582, Start Num: 18

Candidate Starts for Pukovnik\_56:

(Start: 18 @38902 has 209 MA's), (30, 38767), (32, 38761), (33, 38758), (34, 38755), (39, 38728), (40, 38701), (45, 38662), (48, 38632), (52, 38611),

Gene: Pumbaa\_53 Start: 37325, Stop: 37050, Start Num: 16

Candidate Starts for Pumbaa\_53:

(Start: 6 @37415 has 3 MA's), (Start: 16 @37325 has 119 MA's), (34, 37172), (36, 37163),

Gene: Puppy\_58 Start: 37430, Stop: 37137, Start Num: 18

Candidate Starts for Puppy\_58:

(Start: 12 @37460 has 2 MA's), (Start: 18 @37430 has 209 MA's), (24, 37334), (34, 37277), (36, 37268), (38, 37253), (55, 37151),

Gene: PurpleHaze\_59 Start: 37877, Stop: 37584, Start Num: 18

Candidate Starts for PurpleHaze\_59:

(Start: 18 @37877 has 209 MA's), (30, 37736), (34, 37724), (36, 37715),

Gene: Qobbit\_57 Start: 37985, Stop: 37707, Start Num: 18

Candidate Starts for Qobbit\_57:

(Start: 18 @37985 has 209 MA's), (30, 37847), (32, 37841), (33, 37838), (34, 37835), (39, 37808), (43, 37754), (45, 37742),

Gene: QuinnKiro\_54 Start: 37764, Stop: 37474, Start Num: 18

Candidate Starts for QuinnKiro\_54:

(Start: 12 @37794 has 2 MA's), (Start: 18 @37764 has 209 MA's), (34, 37611), (36, 37602), (38, 37587),

Gene: Reba\_59 Start: 37537, Stop: 37244, Start Num: 18

Candidate Starts for Reba\_59:

(Start: 18 @37537 has 209 MA's), (30, 37396), (34, 37384), (36, 37375),

Gene: Rebeuca\_54 Start: 37688, Stop: 37371, Start Num: 18

Candidate Starts for Rebeuca\_54:

(Start: 12 @37715 has 2 MA's), (Start: 18 @37688 has 209 MA's), (30, 37547), (34, 37535), (36, 37526), (38, 37511), (51, 37415),

Gene: RedRock\_59 Start: 39237, Stop: 38911, Start Num: 18

Candidate Starts for RedRock\_59:

(Start: 18 @39237 has 209 MA's), (28, 39117), (30, 39099), (32, 39093), (33, 39090), (34, 39087), (39, 39060), (40, 39033), (45, 38994), (52, 38943), (53, 38937),

Gene: Relief\_52 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for Relief\_52:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: ResDef\_55 Start: 37764, Stop: 37474, Start Num: 18

Candidate Starts for ResDef\_55:

(Start: 12 @37794 has 2 MA's), (Start: 18 @37764 has 209 MA's), (34, 37611), (36, 37602), (38, 37587),

Gene: Retro23\_58 Start: 38400, Stop: 38077, Start Num: 18

Candidate Starts for Retro23\_58:

(Start: 18 @38400 has 209 MA's), (23, 38334), (28, 38280), (32, 38256), (33, 38253), (34, 38250), (39, 38223), (40, 38196), (45, 38157), (48, 38127),

Gene: RhynO\_55 Start: 37487, Stop: 37170, Start Num: 18

Candidate Starts for RhynO\_55:

(Start: 12 @37517 has 2 MA's), (Start: 18 @37487 has 209 MA's), (30, 37346), (34, 37334), (36, 37325), (38, 37310), (51, 37214),

Gene: Rockstar\_56 Start: 37326, Stop: 36979, Start Num: 7

Candidate Starts for Rockstar\_56:

(Start: 7 @37326 has 1 MA's), (Start: 18 @37272 has 209 MA's), (34, 37119), (36, 37110), (38, 37095),

Gene: Romney\_53 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for Romney\_53:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: Roosevelt\_52 Start: 37382, Stop: 37107, Start Num: 16

Candidate Starts for Roosevelt\_52:

(Start: 6 @37472 has 3 MA's), (Start: 16 @37382 has 119 MA's), (34, 37229), (36, 37220),

Gene: Rosa24\_52 Start: 37408, Stop: 37133, Start Num: 16

Candidate Starts for Rosa24\_52:

(Start: 6 @37498 has 3 MA's), (Start: 16 @37408 has 119 MA's), (34, 37255), (36, 37246),

Gene: Rowdy\_58 Start: 37428, Stop: 37081, Start Num: 12

Candidate Starts for Rowdy\_58:

(Start: 12 @37428 has 2 MA's), (Start: 18 @37398 has 209 MA's), (30, 37257), (34, 37245), (36, 37236), (38, 37221), (51, 37125),

Gene: Ruin\_53 Start: 37373, Stop: 37098, Start Num: 16

Candidate Starts for Ruin\_53:

(Start: 6 @37463 has 3 MA's), (Start: 16 @37373 has 119 MA's), (34, 37220), (36, 37211),

Gene: Rummer\_58 Start: 38020, Stop: 37727, Start Num: 18

Candidate Starts for Rummer\_58:

(5, 38107), (Start: 18 @38020 has 209 MA's), (30, 37879), (34, 37867), (36, 37858), (55, 37741),

Gene: RyeScarlet\_58 Start: 38028, Stop: 37750, Start Num: 18  
Candidate Starts for RyeScarlet\_58:  
(Start: 18 @38028 has 209 MA's), (30, 37890), (32, 37884), (33, 37881), (34, 37878), (39, 37851), (43, 37797), (45, 37785),

Gene: SJReid\_176 Start: 105039, Stop: 105353, Start Num: 13  
Candidate Starts for SJReid\_176:  
(13, 105039), (21, 105069), (34, 105225), (41, 105279), (47, 105336),

Gene: Sabertooth\_53 Start: 37382, Stop: 37107, Start Num: 16  
Candidate Starts for Sabertooth\_53:  
(Start: 6 @37472 has 3 MA's), (Start: 16 @37382 has 119 MA's), (34, 37229), (36, 37220),

Gene: Sabia\_59 Start: 38001, Stop: 37708, Start Num: 18  
Candidate Starts for Sabia\_59:  
(5, 38088), (Start: 18 @38001 has 209 MA's), (30, 37860), (34, 37848), (36, 37839), (55, 37722),

Gene: Sabinator\_58 Start: 37991, Stop: 37698, Start Num: 18  
Candidate Starts for Sabinator\_58:  
(5, 38078), (Start: 18 @37991 has 209 MA's), (30, 37850), (34, 37838), (36, 37829), (55, 37712),

Gene: Sachima\_54 Start: 37938, Stop: 37660, Start Num: 18  
Candidate Starts for Sachima\_54:  
(Start: 18 @37938 has 209 MA's), (30, 37800), (32, 37794), (33, 37791), (34, 37788), (39, 37761), (43, 37707), (45, 37695),

Gene: SaturnRing\_57 Start: 37811, Stop: 37518, Start Num: 18  
Candidate Starts for SaturnRing\_57:  
(Start: 12 @37841 has 2 MA's), (Start: 18 @37811 has 209 MA's), (24, 37715), (34, 37658), (36, 37649), (38, 37634), (55, 37532),

Gene: Scamp\_53 Start: 37382, Stop: 37107, Start Num: 16  
Candidate Starts for Scamp\_53:  
(Start: 6 @37472 has 3 MA's), (Start: 16 @37382 has 119 MA's), (34, 37229), (36, 37220),

Gene: Scherzo\_57 Start: 38242, Stop: 37964, Start Num: 18  
Candidate Starts for Scherzo\_57:  
(Start: 18 @38242 has 209 MA's), (30, 38104), (32, 38098), (33, 38095), (34, 38092), (39, 38065), (43, 38011), (45, 37999),

Gene: Scout\_56 Start: 36959, Stop: 36666, Start Num: 18  
Candidate Starts for Scout\_56:  
(Start: 18 @36959 has 209 MA's), (34, 36806), (36, 36797), (38, 36782),

Gene: Severus\_52 Start: 36538, Stop: 36248, Start Num: 18  
Candidate Starts for Severus\_52:  
(Start: 18 @36538 has 209 MA's), (30, 36397), (34, 36385), (36, 36376), (38, 36361),

Gene: Shaka\_53 Start: 37377, Stop: 37102, Start Num: 16  
Candidate Starts for Shaka\_53:  
(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: Shapes\_58 Start: 37428, Stop: 37081, Start Num: 12

Candidate Starts for Shapes\_58:

(Start: 12 @37428 has 2 MA's), (Start: 18 @37398 has 209 MA's), (30, 37257), (34, 37245), (36, 37236), (38, 37221), (51, 37125),

Gene: SheldonCooper\_55 Start: 37862, Stop: 37542, Start Num: 8

Candidate Starts for SheldonCooper\_55:

(Start: 8 @37862 has 2 MA's), (14, 37823), (Start: 16 @37817 has 119 MA's), (34, 37664), (36, 37655),

Gene: Shygu2\_52 Start: 37381, Stop: 37082, Start Num: 17

Candidate Starts for Shygu2\_52:

(9, 37426), (10, 37423), (Start: 17 @37381 has 16 MA's), (34, 37204), (36, 37195),

Gene: Skipitt\_52 Start: 37374, Stop: 37099, Start Num: 16

Candidate Starts for Skipitt\_52:

(Start: 6 @37464 has 3 MA's), (Start: 16 @37374 has 119 MA's), (34, 37221), (36, 37212),

Gene: Smeagan\_60 Start: 38716, Stop: 38390, Start Num: 18

Candidate Starts for Smeagan\_60:

(Start: 18 @38716 has 209 MA's), (30, 38578), (32, 38572), (33, 38569), (34, 38566), (39, 38539), (40, 38512), (45, 38473), (48, 38443),

Gene: Snickers\_59 Start: 37966, Stop: 37673, Start Num: 18

Candidate Starts for Snickers\_59:

(5, 38053), (Start: 18 @37966 has 209 MA's), (30, 37825), (34, 37813), (36, 37804), (55, 37687),

Gene: SoYo\_59 Start: 37904, Stop: 37611, Start Num: 18

Candidate Starts for SoYo\_59:

(5, 37991), (Start: 18 @37904 has 209 MA's), (30, 37763), (34, 37751), (36, 37742), (55, 37625),

Gene: SoilDragon\_59 Start: 37440, Stop: 37147, Start Num: 18

Candidate Starts for SoilDragon\_59:

(5, 37527), (Start: 18 @37440 has 209 MA's), (34, 37287), (36, 37278), (55, 37161),

Gene: Soshari\_61 Start: 38016, Stop: 37723, Start Num: 18

Candidate Starts for Soshari\_61:

(5, 38103), (Start: 18 @38016 has 209 MA's), (30, 37875), (34, 37863), (36, 37854), (55, 37737),

Gene: Sparxx\_54 Start: 37375, Stop: 37100, Start Num: 16

Candidate Starts for Sparxx\_54:

(Start: 6 @37465 has 3 MA's), (Start: 16 @37375 has 119 MA's), (34, 37222), (36, 37213),

Gene: Spike509\_59 Start: 38017, Stop: 37724, Start Num: 18

Candidate Starts for Spike509\_59:

(5, 38104), (Start: 18 @38017 has 209 MA's), (30, 37876), (34, 37864), (36, 37855), (55, 37738),

Gene: Spino\_52 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for Spino\_52:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Spouty\_57 Start: 38022, Stop: 37744, Start Num: 18

Candidate Starts for Spouty\_57:

(Start: 18 @38022 has 209 MA's), (30, 37884), (32, 37878), (33, 37875), (34, 37872), (39, 37845), (43, 37791), (45, 37779),

Gene: Stagni\_59 Start: 37995, Stop: 37702, Start Num: 18

Candidate Starts for Stagni\_59:

(5, 38082), (Start: 18 @37995 has 209 MA's), (30, 37854), (34, 37842), (36, 37833), (55, 37716),

Gene: Stasia\_52 Start: 37257, Stop: 36985, Start Num: 17

Candidate Starts for Stasia\_52:

(9, 37302), (10, 37299), (Start: 17 @37257 has 16 MA's), (34, 37104), (36, 37095), (38, 37080),

Gene: StepMih\_59 Start: 37986, Stop: 37693, Start Num: 18

Candidate Starts for StepMih\_59:

(5, 38073), (Start: 18 @37986 has 209 MA's), (30, 37845), (34, 37833), (36, 37824), (55, 37707),

Gene: Stink\_52 Start: 37107, Stop: 36832, Start Num: 16

Candidate Starts for Stink\_52:

(Start: 16 @37107 has 119 MA's), (34, 36954), (35, 36948), (36, 36945),

Gene: Swirley\_51 Start: 37021, Stop: 36671, Start Num: 18

Candidate Starts for Swirley\_51:

(Start: 11 @37051 has 2 MA's), (Start: 18 @37021 has 209 MA's), (25, 36922), (30, 36880), (31, 36877), (34, 36868), (61, 36685),

Gene: TNguyen7\_57 Start: 37777, Stop: 37484, Start Num: 18

Candidate Starts for TNguyen7\_57:

(Start: 12 @37807 has 2 MA's), (Start: 18 @37777 has 209 MA's), (24, 37681), (34, 37624), (36, 37615), (38, 37600), (55, 37498),

Gene: TPA4\_54 Start: 39893, Stop: 40261, Start Num: 12

Candidate Starts for TPA4\_54:

(Start: 12 @39893 has 2 MA's), (14, 39914), (Start: 16 @39920 has 119 MA's), (20, 39932), (49, 40202), (58, 40241),

Gene: Taquarus\_53 Start: 37383, Stop: 37108, Start Num: 16

Candidate Starts for Taquarus\_53:

(Start: 6 @37473 has 3 MA's), (Start: 16 @37383 has 119 MA's), (34, 37230), (36, 37221),

Gene: TarsusIV\_56 Start: 38026, Stop: 37703, Start Num: 18

Candidate Starts for TarsusIV\_56:

(Start: 18 @38026 has 209 MA's), (30, 37888), (32, 37882), (33, 37879), (34, 37876), (39, 37849), (40, 37822), (45, 37783),

Gene: Tarynearal\_47 Start: 36463, Stop: 36113, Start Num: 18

Candidate Starts for Tarynearal\_47:

(Start: 11 @36493 has 2 MA's), (Start: 18 @36463 has 209 MA's), (25, 36364), (30, 36322), (31, 36319), (34, 36310), (61, 36127),

Gene: Taurus\_60 Start: 37992, Stop: 37699, Start Num: 18

Candidate Starts for Taurus\_60:

(5, 38079), (Start: 18 @37992 has 209 MA's), (30, 37851), (34, 37839), (36, 37830), (55, 37713),

Gene: Texage\_54 Start: 37765, Stop: 37475, Start Num: 18

Candidate Starts for Texage\_54:

(Start: 12 @37795 has 2 MA's), (Start: 18 @37765 has 209 MA's), (34, 37612), (36, 37603), (38, 37588),

Gene: Thanksgivukkah\_52 Start: 37378, Stop: 37103, Start Num: 16

Candidate Starts for Thanksgivukkah\_52:

(Start: 6 @37468 has 3 MA's), (Start: 16 @37378 has 119 MA's), (34, 37225), (36, 37216),

Gene: Tiffany\_59 Start: 37878, Stop: 37585, Start Num: 18

Candidate Starts for Tiffany\_59:

(5, 37965), (Start: 18 @37878 has 209 MA's), (30, 37737), (34, 37725), (36, 37716), (55, 37599),

Gene: TinaFeyge\_53 Start: 37465, Stop: 37100, Start Num: 6

Candidate Starts for TinaFeyge\_53:

(Start: 6 @37465 has 3 MA's), (Start: 16 @37375 has 119 MA's), (34, 37222), (36, 37213),

Gene: Tinybot\_52 Start: 37407, Stop: 37132, Start Num: 16

Candidate Starts for Tinybot\_52:

(Start: 6 @37497 has 3 MA's), (Start: 16 @37407 has 119 MA's), (34, 37254), (36, 37245),

Gene: TiroTheta9\_53 Start: 37374, Stop: 37099, Start Num: 16

Candidate Starts for TiroTheta9\_53:

(Start: 6 @37464 has 3 MA's), (Start: 16 @37374 has 119 MA's), (34, 37221), (36, 37212),

Gene: Todacoro\_55 Start: 37764, Stop: 37474, Start Num: 18

Candidate Starts for Todacoro\_55:

(Start: 12 @37794 has 2 MA's), (Start: 18 @37764 has 209 MA's), (34, 37611), (36, 37602), (38, 37587),

Gene: Topanga\_52 Start: 37329, Stop: 37012, Start Num: 18

Candidate Starts for Topanga\_52:

(Start: 12 @37359 has 2 MA's), (Start: 18 @37329 has 209 MA's), (30, 37188), (34, 37176), (36, 37167), (38, 37152), (51, 37056),

Gene: Trike\_52 Start: 36547, Stop: 36257, Start Num: 18

Candidate Starts for Trike\_52:

(Start: 18 @36547 has 209 MA's), (30, 36406), (34, 36394), (36, 36385), (38, 36370),

Gene: Trooper\_58 Start: 38528, Stop: 38091, Start Num: 18

Candidate Starts for Trooper\_58:

(Start: 18 @38528 has 209 MA's), (30, 38393), (32, 38387), (33, 38384), (34, 38381), (39, 38354), (40, 38327), (45, 38288), (62, 38156), (64, 38132),

Gene: TroyPia\_54 Start: 37378, Stop: 37103, Start Num: 16

Candidate Starts for TroyPia\_54:

(Start: 6 @37468 has 3 MA's), (Start: 16 @37378 has 119 MA's), (34, 37225), (36, 37216),

Gene: Tubs\_57 Start: 37956, Stop: 37678, Start Num: 18

Candidate Starts for Tubs\_57:

(Start: 18 @37956 has 209 MA's), (30, 37818), (32, 37812), (33, 37809), (34, 37806), (39, 37779), (43, 37725), (45, 37713),

Gene: Turbido\_58 Start: 38450, Stop: 38124, Start Num: 18



Candidate Starts for Turbido\_58:

(Start: 18 @38450 has 209 MA's), (30, 38312), (32, 38306), (33, 38303), (34, 38300), (39, 38273), (40, 38246), (45, 38207), (48, 38177),

Gene: Twigg\_49 Start: 36660, Stop: 36310, Start Num: 18

Candidate Starts for Twigg\_49:

(3, 36825), (4, 36807), (Start: 11 @36690 has 2 MA's), (Start: 18 @36660 has 209 MA's), (25, 36561), (30, 36519), (31, 36516), (34, 36507), (61, 36324),

Gene: Twister\_52 Start: 37249, Stop: 36932, Start Num: 18

Candidate Starts for Twister\_52:

(Start: 12 @37276 has 2 MA's), (Start: 18 @37249 has 209 MA's), (30, 37108), (34, 37096), (36, 37087), (38, 37072), (51, 36976),

Gene: TygerBlood\_53 Start: 37380, Stop: 37105, Start Num: 16

Candidate Starts for TygerBlood\_53:

(Start: 6 @37470 has 3 MA's), (Start: 16 @37380 has 119 MA's), (34, 37227), (36, 37218),

Gene: Ugenie5\_54 Start: 38241, Stop: 37963, Start Num: 18

Candidate Starts for Ugenie5\_54:

(Start: 18 @38241 has 209 MA's), (30, 38103), (32, 38097), (33, 38094), (34, 38091), (39, 38064), (43, 38010), (45, 37998),

Gene: Ulysses\_52 Start: 37057, Stop: 36782, Start Num: 16

Candidate Starts for Ulysses\_52:

(Start: 6 @37147 has 3 MA's), (Start: 16 @37057 has 119 MA's), (34, 36904), (36, 36895),

Gene: Updawg\_58 Start: 38292, Stop: 37972, Start Num: 18

Candidate Starts for Updawg\_58:

(Start: 18 @38292 has 209 MA's), (23, 38226), (32, 38148), (33, 38145), (34, 38142), (39, 38115), (40, 38088), (45, 38049), (52, 37998),

Gene: VA6\_58 Start: 38513, Stop: 38187, Start Num: 18

Candidate Starts for VA6\_58:

(Start: 18 @38513 has 209 MA's), (30, 38372), (32, 38366), (33, 38363), (34, 38360), (39, 38333), (40, 38306), (45, 38267),

Gene: Veracruz\_54 Start: 37764, Stop: 37474, Start Num: 18

Candidate Starts for Veracruz\_54:

(Start: 12 @37794 has 2 MA's), (Start: 18 @37764 has 209 MA's), (34, 37611), (36, 37602), (38, 37587),

Gene: Vic9\_56 Start: 51306, Stop: 50992, Start Num: 11

Candidate Starts for Vic9\_56:

(Start: 11 @51306 has 2 MA's), (20, 51258), (27, 51159), (30, 51126), (37, 51099), (45, 51021), (46, 51012),

Gene: Vix\_59 Start: 38075, Stop: 37782, Start Num: 18

Candidate Starts for Vix\_59:

(5, 38162), (Start: 18 @38075 has 209 MA's), (30, 37934), (34, 37922), (36, 37913), (55, 37796),

Gene: WalterMcMickey\_52 Start: 37249, Stop: 36932, Start Num: 18

Candidate Starts for WalterMcMickey\_52:

(Start: 12 @37276 has 2 MA's), (Start: 18 @37249 has 209 MA's), (30, 37108), (34, 37096), (36, 37087), (38, 37072), (51, 36976),

Gene: Wander\_53 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for Wander\_53:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: Watson\_59 Start: 37984, Stop: 37691, Start Num: 18

Candidate Starts for Watson\_59:

(5, 38071), (Start: 18 @37984 has 209 MA's), (30, 37843), (34, 37831), (36, 37822), (55, 37705),

Gene: Whabigail7\_58 Start: 38435, Stop: 38109, Start Num: 18

Candidate Starts for Whabigail7\_58:

(Start: 18 @38435 has 209 MA's), (30, 38297), (32, 38291), (33, 38288), (34, 38285), (39, 38258), (40, 38231), (45, 38192), (48, 38162),

Gene: WideWale\_58 Start: 38292, Stop: 37972, Start Num: 18

Candidate Starts for WideWale\_58:

(Start: 18 @38292 has 209 MA's), (23, 38226), (32, 38148), (33, 38145), (34, 38142), (39, 38115), (40, 38088), (45, 38049), (52, 37998),

Gene: Wilbur\_53 Start: 37377, Stop: 37102, Start Num: 16

Candidate Starts for Wilbur\_53:

(Start: 6 @37467 has 3 MA's), (Start: 16 @37377 has 119 MA's), (34, 37224), (36, 37215),

Gene: Wile\_52 Start: 37363, Stop: 37085, Start Num: 17

Candidate Starts for Wile\_52:

(9, 37408), (10, 37405), (Start: 17 @37363 has 16 MA's), (34, 37210), (36, 37201), (38, 37186),

Gene: Wizard007\_53 Start: 37385, Stop: 37110, Start Num: 16

Candidate Starts for Wizard007\_53:

(Start: 6 @37475 has 3 MA's), (Start: 16 @37385 has 119 MA's), (34, 37232), (36, 37223),

Gene: Wooldri\_61 Start: 37904, Stop: 37611, Start Num: 18

Candidate Starts for Wooldri\_61:

(5, 37991), (Start: 18 @37904 has 209 MA's), (30, 37763), (34, 37751), (36, 37742), (55, 37625),

Gene: Xena\_51 Start: 37329, Stop: 37051, Start Num: 17

Candidate Starts for Xena\_51:

(9, 37374), (10, 37371), (Start: 17 @37329 has 16 MA's), (34, 37176), (36, 37167), (38, 37152),

Gene: XianYue\_56 Start: 37791, Stop: 37468, Start Num: 18

Candidate Starts for XianYue\_56:

(Start: 18 @37791 has 209 MA's), (32, 37647), (33, 37644), (34, 37641), (39, 37614), (40, 37587), (45, 37548), (48, 37518),

Gene: YoSam321\_53 Start: 37374, Stop: 37099, Start Num: 16

Candidate Starts for YoSam321\_53:

(Start: 6 @37464 has 3 MA's), (Start: 16 @37374 has 119 MA's), (34, 37221), (36, 37212),

Gene: Zetzy\_58 Start: 37555, Stop: 37262, Start Num: 18

Candidate Starts for Zetzy\_58:

(5, 37642), (Start: 18 @37555 has 209 MA's), (30, 37414), (34, 37402), (36, 37393), (55, 37276),

