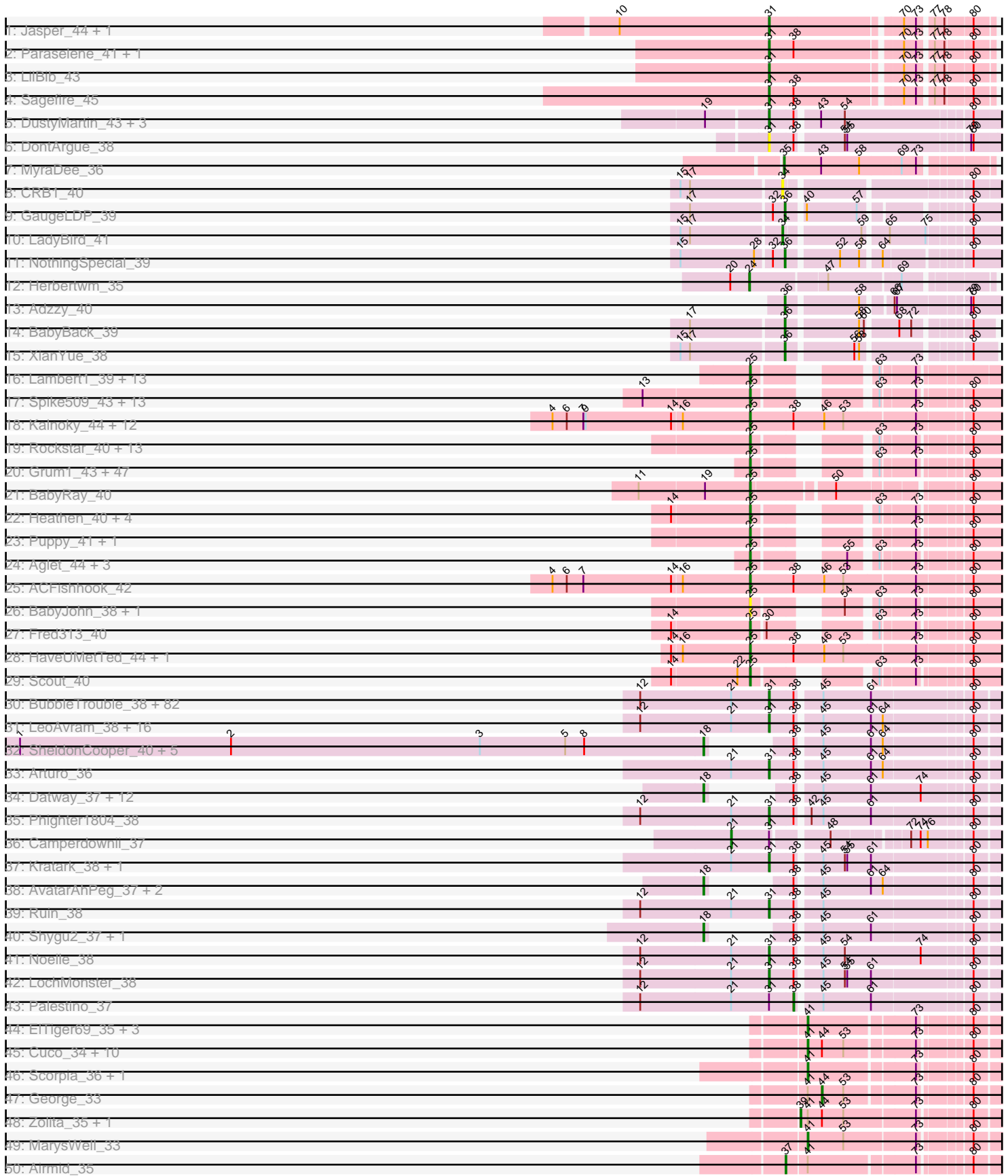


Pham 193673





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 193673 Report

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

Pham number 193673 has 320 members, 18 are drafts.

Phages represented in each track:

- Track 1 : Jasper\_44, Dreamboat\_44
- Track 2 : Paraselene\_41, Rutherford\_45
- Track 3 : LilBib\_43
- Track 4 : Sagefire\_45
- Track 5 : DustyMartin\_43, RhynO\_40, Shapes\_43, Rowdy\_43
- Track 6 : DontArgue\_38
- Track 7 : MyraDee\_36
- Track 8 : CRB1\_40
- Track 9 : GaugeLDP\_39
- Track 10 : LadyBird\_41
- Track 11 : NothingSpecial\_39
- Track 12 : Herbertwm\_35
- Track 13 : Adzzy\_40
- Track 14 : BabyBack\_39
- Track 15 : XianYue\_38
- Track 16 : Lambert1\_39, ResDef\_39, Noella\_39, Norbert\_38, Pocahontas\_39, Margo\_39, Popcicle\_39, Hookmount\_39, Caviar\_39, Todacoro\_39, QuinnKiro\_38, Panamaxus\_37, Texage\_38, Veracruz\_38
- Track 17 : Spike509\_43, Daishi\_42, BuzzBuzz\_41, Rummer\_42, Methuselah\_41, Soshari\_45, KADY\_43, HashRod\_44, Bxz2\_39, Misomonster\_44, Louie6\_42, AgronaGT15\_42, Phoxy\_43, LarryKay\_43
- Track 18 : Kalnoky\_44, Groupthink\_44, Pawn\_43, Heliosoles\_42, Marius\_44, PurpleHaze\_43, Manu\_43, Gemma\_42, Kalb97\_44, Reba\_43, JeppNRM\_44, PhishRPhriends\_41, Phranny\_44
- Track 19 : Rockstar\_40, Bugatti\_40, Idleandcovert\_40, Isca\_39, MA5\_40, JF4\_40, Pistachio\_41, B1\_37, JF2\_40, Giroux\_40, SaturnRing\_40, BlueBird\_41, MK4\_40, Phantastic\_40
- Track 20 : Grum1\_43, Sabia\_43, PotatoSplit\_45, Pembroke\_43, JHC117\_43, Hercules11\_43, MarQuardt\_43, Microwolf\_43, SoYo\_43, Watson\_43, Taurus\_44, LBerry\_44, DaHudson\_43, StepMih\_43, MadMarie\_43, P28Green\_44, Phoebe\_44, Fernando\_43, Dieselweasel\_44, Penny1\_44, MuchMore\_46, BreSam8\_43, GtownJaz\_43, Beauxregard13\_43, Vix\_43, Marie\_43, Colbster\_43, Grif\_43, Jobu08\_42, Lilith\_44, Stagni\_43, LugYA\_46, Zetzy\_42, AugsMagnumOpus\_46, MoneyMay\_43, Snickers\_43, PGHhamlin\_45, Mainiac\_43, Cullens\_43, Farber\_43, Malinsilva\_45, EpicPhail\_44, Sabinator\_42, Wooldri\_45, JenCasNa\_44, Tiffany\_43, SoilDragon\_43, Grub\_43
- Track 21 : BabyRay\_40

- Track 22 : Heathen\_40, DropBear\_40, Kachowdy\_40, HelDan\_40, Marchesa\_40
- Track 23 : Puppy\_41, TNguyen7\_40
- Track 24 : Aglet\_44, GingkoMaracino\_43, Anubis\_46, Ollie\_43
- Track 25 : ACFishhook\_42
- Track 26 : BabyJohn\_38, Chiqui\_38
- Track 27 : Fred313\_40
- Track 28 : HaveUMetTed\_44, OlanP\_42
- Track 29 : Scout\_40
- Track 30 : BubbleTrouble\_38, HamSlice\_37, Florean\_38, Cocoaberry\_38, Lorenzo\_38, Clarenza\_38, Pumbaa\_38, Avle17\_38, Sparxx\_39, Melvin\_40, Millski\_37, Taquarus\_38, Alberto7\_39, Tinybot\_37, Wilbur\_38, Dhanush\_38, Gadost\_38, Bruiser\_37, TinaFeyge\_39, CentreCat\_38, Funston\_38, Koreni\_37, Albee\_38, Baby16\_38, TygerBlood\_38, Nemo27\_38, Sabertooth\_38, Commander\_38, LittleGuy\_38, Lemur\_38, Eris\_37, Caelakin\_38, LittleB\_38, Lunsford\_39, NotAPhaseMom\_38, JoongJeon\_38, Burger\_36, Druantia\_38, Chaph\_38, Wander\_38, OKaNui\_39, Iceman\_39, TiroTheta9\_38, TroyPia\_39, MeeZee\_38, Holli\_37, Thanksgivukkah\_38, ICleared\_38, Blackmoor\_38, Houdini22\_38, Maverick\_38, Kingmustik0402\_38, Phacado\_38, Phontbonne\_38, Happiness\_37, Flux\_38, Peaches\_38, Eros\_38, Mazhar510\_38, Bartimeaus\_38, Romney\_38, Roosevelt\_37, Scamp\_38, Eapen\_38, PeterPeter\_38, Jaykayelowell\_37, Bombshell\_38, Deano\_38, Skipitt\_37, Shaka\_38, Spino\_38, Wizard007\_38, YoSam321\_38, LappelDuVide\_38, Broseidon\_38, JetBlade\_38, Connomayer\_38, Nyxis\_38, Ulysses\_37, Phelipe\_39, KFPoly\_38, Relief\_37, Kyee\_38
- Track 31 : LeoAvram\_38, Citius\_38, Mundrea\_36, Rosa24\_38, BellusTerra\_39, Nebs\_39, Eurydice\_39, Medusa\_38, Ohfah\_39, Polymorphads\_39, Morrow\_39, Eagle\_38, NorthStar\_37, Kampy\_38, Iracema64\_39, Abdiel\_38, Maxo\_39
- Track 32 : SheldonCooper\_40, Obama12\_39, BangNhom\_39, Cerulean\_39, LHTSCC\_40, ChampagnePapi\_40
- Track 33 : Arturo\_36
- Track 34 : Datway\_37, PetiteSangsue\_37, Badger\_36, Wile\_37, Bumblebee11\_36, Backyardigan\_36, Katalie136\_37, Morpher26\_37, AbbysRanger\_37, Xena\_36, Cici\_37, Perplexer\_37, Achebe\_36
- Track 35 : Phighter1804\_38
- Track 36 : Camperdownii\_37
- Track 37 : Kratark\_38, Kremtemulon\_38
- Track 38 : AvatarAhPeg\_37, Miramae\_37, Stink\_38
- Track 39 : Ruin\_38
- Track 40 : Shygu2\_37, Cintron\_38
- Track 41 : Noelle\_38
- Track 42 : LochMonster\_38
- Track 43 : Palestino\_37
- Track 44 : EITiger69\_35, PetterN\_36, Jabiru\_35, Naca\_35
- Track 45 : Cuco\_34, Milcery\_34, Micasa\_36, LittleCherry\_34, Archetta\_34, Tarynearal\_33, Midas2\_34, Coog\_34, Bonamassa\_34, Theia\_32, HuhtaEnerson15\_34
- Track 46 : Scorpia\_36, Chadwick\_36
- Track 47 : George\_33
- Track 48 : Zolita\_35, SydNat\_36
- Track 49 : MarysWell\_33
- Track 50 : Airmid\_35
- Track 51 : Benedict\_35
- Track 52 : Ghoulboy\_36

- Track 53 : UnionJack\_34
- Track 54 : Swirley\_36
- Track 55 : DroogsArmy\_37
- Track 56 : FlyCatcher\_43, Toro\_41
- Track 57 : Astro\_35, Groundhog\_34, StepHig9\_35, Dixon\_35, Smeadley\_35, NearlyHeadless\_35, Roary\_35, Danforth\_34, Expelliarmus\_34
- Track 58 : Phillis\_35
- Track 59 : Charm\_38, DreamTeam1\_38
- Track 60 : Toaka\_39
- Track 61 : LoneWolf\_41
- Track 62 : Scherzo\_41, Ugenie5\_38

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

The start number called the most often in the published annotations is 31, it was called in 113 of the 302 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abdiel\_38, Albee\_38, Alberto7\_39, Arturo\_36, Avle17\_38, Baby16\_38, Bartimeaus\_38, BellusTerra\_39, Blackmoor\_38, Bombshell\_38, Broseidon\_38, Bruiser\_37, BubbleTrouble\_38, Burger\_36, Caelakin\_38, CentreCat\_38, Chaph\_38, Citius\_38, Clarenza\_38, Cocoaberry\_38, Commander\_38, Connomayer\_38, Deano\_38, Dhanush\_38, DontArgue\_38, Dreamboat\_44, Druantia\_38, DustyMartin\_43, Eagle\_38, Eapen\_38, Eris\_37, Eros\_38, Eurydice\_39, Florean\_38, Flux\_38, Funston\_38, Gadost\_38, HamSlice\_37, Happiness\_37, Holli\_37, Houdini22\_38, ICleared\_38, Iceman\_39, Iracema64\_39, Jasper\_44, Jaykayelowell\_37, JetBlade\_38, JoongJeon\_38, KFPoly\_38, Kampy\_38, Kingmustik0402\_38, Koreni\_37, Kratark\_38, Kremtemulon\_38, Kyee\_38, LappelDuVide\_38, Lemur\_38, LeoAvram\_38, LilBib\_43, LittleB\_38, LittleGuy\_38, LochMonster\_38, Lorenzo\_38, Lunsford\_39, Maverick\_38, Maxo\_39, Mazhar510\_38, Medusa\_38, MeeZee\_38, Melvin\_40, Millski\_37, Morrow\_39, Mundrea\_36, Nebs\_39, Nemo27\_38, Noelle\_38, NorthStar\_37, NotAPhaseMom\_38, Nyxis\_38, OKaNui\_39, Ohfah\_39, Paraselene\_41, Peaches\_38, PeterPeter\_38, Phacado\_38, Phelipe\_39, Phighter1804\_38, Phontbonne\_38, Polymorphads\_39, Pumbaa\_38, Relief\_37, RhynO\_40, Romney\_38, Roosevelt\_37, Rosa24\_38, Rowdy\_43, Ruin\_38, Rutherford\_45, Sabertooth\_38, Sagefire\_45, Scamp\_38, Shaka\_38, Shapes\_43, Skipitt\_37, Sparxx\_39, Spino\_38, Taquarus\_38, Thanksgivukkah\_38, TinaFeyge\_39, Tinybot\_37, TiroTheta9\_38, TroyPia\_39, TygerBlood\_38, Ulysses\_37, Wander\_38, Wilbur\_38, Wizard007\_38, YoSam321\_38,

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

- Camperdownii\_37, FlyCatcher\_43, Palestino\_37, Toro\_41,

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

- ACFishhook\_42, AbbysRanger\_37, Achebe\_36, Adzzy\_40, Aglet\_44, AgronaGT15\_42, Airmid\_35, Anubis\_46, Archetta\_34, Astro\_35, AugsMagnumOpus\_46, AvatarAhPeg\_37, B1\_37, BabyBack\_39, BabyJohn\_38, BabyRay\_40, Backyardigan\_36, Badger\_36, BangNhom\_39, Beauxregard13\_43, Benedict\_35, BlueBird\_41, Bonamassa\_34, BreSam8\_43, Bugatti\_40, Bumblebee11\_36, BuzzBuzz\_41, Bxz2\_39, CRB1\_40, Caviar\_39, Cerulean\_39,

Chadwick\_36, ChampagnePapi\_40, Charm\_38, Chiqui\_38, Cici\_37, Cintron\_38, Colbster\_43, Coog\_34, Cuco\_34, Cullens\_43, DaHudson\_43, Daishi\_42, Danforth\_34, Datway\_37, Dieselweasel\_44, Dixon\_35, DreamTeam1\_38, DroogsArmy\_37, DropBear\_40, EITiger69\_35, EpicPhail\_44, Expelliarmus\_34, Farber\_43, Fernando\_43, Fred313\_40, GaugeLDP\_39, Gemma\_42, George\_33, Ghoulboy\_36, GingkoMaracino\_43, Giroux\_40, Grif\_43, Groundhog\_34, Groupthink\_44, Grub\_43, Grum1\_43, GtownJaz\_43, HashRod\_44, HaveUMetTed\_44, Heathen\_40, HelDan\_40, Heliosoles\_42, Herbertwm\_35, Hercules11\_43, Hookmount\_39, HuhtaEnerson15\_34, Idleandcovert\_40, Isca\_39, JF2\_40, JF4\_40, JHC117\_43, Jabiru\_35, JenCasNa\_44, JeppNRM\_44, Jobu08\_42, KADY\_43, Kachowdy\_40, Kalb97\_44, Kalnoky\_44, Katalie136\_37, LBerry\_44, LHTSCC\_40, LadyBird\_41, Lambert1\_39, LarryKay\_43, Lilith\_44, LittleCherry\_34, LoneWolf\_41, Louie6\_42, LugYA\_46, MA5\_40, MK4\_40, MadMarie\_43, Mainiac\_43, Malinsilva\_45, Manu\_43, MarQuardt\_43, Marchesa\_40, Margo\_39, Marie\_43, Marius\_44, MarysWell\_33, Methuselah\_41, Micasa\_36, Microwolf\_43, Midas2\_34, Milcery\_34, Miramae\_37, Misomonster\_44, MoneyMay\_43, Morpher26\_37, MuchMore\_46, MyraDee\_36, Naca\_35, NearlyHeadless\_35, Noella\_39, Norbert\_38, NothingSpecial\_39, Obama12\_39, OlanP\_42, Ollie\_43, P28Green\_44, PGHhamlin\_45, Panamaxus\_37, Pawn\_43, Pembroke\_43, Penny1\_44, Perplexer\_37, PetiteSangsue\_37, PetterN\_36, Phantastic\_40, Phillis\_35, PhishRPhriends\_41, Phoebe\_44, Phoxy\_43, Phranny\_44, Pistachio\_41, Pocahontas\_39, Popcicle\_39, PotatoSplit\_45, Puppy\_41, PurpleHaze\_43, QuinnKiro\_38, Reba\_43, ResDef\_39, Roary\_35, Rockstar\_40, Rummer\_42, Sabia\_43, Sabinator\_42, SaturnRing\_40, Scherzo\_41, Scorpia\_36, Scout\_40, SheldonCooper\_40, Shygu2\_37, Smeadley\_35, Snickers\_43, SoYo\_43, SoilDragon\_43, Soshari\_45, Spike509\_43, Stagni\_43, StepMih\_43, StepHig9\_35, Stink\_38, Swirley\_36, SydNat\_36, TNguyen7\_40, Tarynearal\_33, Taurus\_44, Texage\_38, Theia\_32, Tiffany\_43, Toaka\_39, Todacoro\_39, Ugenie5\_38, UnionJack\_34, Veracruz\_38, Vix\_43, Watson\_43, Wile\_37, Wooldri\_45, Xena\_36, XianYue\_38, Zetty\_42, Zolita\_35,

### Summary by start number:

#### Start 18:

- Found in 24 of 320 ( 7.5% ) of genes in pham
- Manual Annotations of this start: 24 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AbbysRanger\_37 (A4), Achebe\_36 (A4), AvatarAhPeg\_37 (A4), Backyardigan\_36 (A4), Badger\_36 (A4), BangNhom\_39 (A4), Bumblebee11\_36 (A4), Cerulean\_39 (A4), ChampagnePapi\_40 (A4), Cici\_37 (A4), Cintron\_38 (A4), Datway\_37 (A4), Katalie136\_37 (A4), LHTSCC\_40 (A4), Miramae\_37 (A4), Morpher26\_37 (A4), Obama12\_39 (A4), Perplexer\_37 (A4), PetiteSangsue\_37 (A4), SheldonCooper\_40 (A4), Shygu2\_37 (A4), Stink\_38 (A4), Wile\_37 (A4), Xena\_36 (A4),

#### Start 21:

- Found in 109 of 320 ( 34.1% ) of genes in pham
- Manual Annotations of this start: 1 of 302
- Called 0.9% of time when present
- Phage (with cluster) where this start called: Camperdownii\_37 (A4),

#### Start 23:

- Found in 2 of 320 ( 0.6% ) of genes in pham

- Manual Annotations of this start: 2 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Charm\_38 (A9), DreamTeam1\_38 (A9),

#### Start 24:

- Found in 1 of 320 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Herbertwm\_35 (A2),

#### Start 25:

- Found in 124 of 320 ( 38.8% ) of genes in pham
- Manual Annotations of this start: 112 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ACFishhook\_42 (A3), Aglet\_44 (A3), AgronaGT15\_42 (A3), Anubis\_46 (A3), AugsMagnumOpus\_46 (A3), B1\_37 (A3), BabyJohn\_38 (A3), BabyRay\_40 (A3), Beauxregard13\_43 (A3), BlueBird\_41 (A3), BreSam8\_43 (A3), Bugatti\_40 (A3), BuzzBuzz\_41 (A3), Bxz2\_39 (A3), Caviar\_39 (A3), Chiqui\_38 (A3), Colbster\_43 (A3), Cullens\_43 (A3), DaHudson\_43 (A3), Daishi\_42 (A3), Dieselweasel\_44 (A3), DropBear\_40 (A3), EpicPhail\_44 (A3), Farber\_43 (A3), Fernando\_43 (A3), FlyCatcher\_43 (A7), Fred313\_40 (A3), Gemma\_42 (A3), GingkoMaracino\_43 (A3), Giroux\_40 (A3), Grif\_43 (A3), Groupthink\_44 (A3), Grub\_43 (A3), Grum1\_43 (A3), GtownJaz\_43 (A3), HashRod\_44 (A3), HaveUMetTed\_44 (A3), Heathen\_40 (A3), HelDan\_40 (A3), Heliosoles\_42 (A3), Hercules11\_43 (A3), Hookmount\_39 (A3), Idleandcovert\_40 (A3), Isca\_39 (A3), JF2\_40 (A3), JF4\_40 (A3), JHC117\_43 (A3), JenCasNa\_44 (A3), JeppNRM\_44 (A3), Jobu08\_42 (A3), KADY\_43 (A3), Kachowdy\_40 (A3), Kalb97\_44 (A3), Kalnoky\_44 (A3), LBerry\_44 (A3), Lambert1\_39 (A3), LarryKay\_43 (A3), Lilith\_44 (A3), Louie6\_42 (A3), LugYA\_46 (A3), MA5\_40 (A3), MK4\_40 (A3), MadMarie\_43 (A3), Mainiac\_43 (A3), Malinsilva\_45 (A3), Manu\_43 (A3), MarQuardt\_43 (A3), Marchesa\_40 (A3), Margo\_39 (A3), Marie\_43 (A3), Marius\_44 (A3), Methuselah\_41 (A3), Microwolf\_43 (A3), Misomonster\_44 (A3), MoneyMay\_43 (A3), MuchMore\_46 (A3), Noella\_39 (A3), Norbert\_38 (A3), OlanP\_42 (A3), Ollie\_43 (A3), P28Green\_44 (A3), PGHhamlin\_45 (A3), Panamaxus\_37 (A3), Pawn\_43 (A3), Pembroke\_43 (A3), Penny1\_44 (A3), Phantastic\_40 (A3), PhishRPhriends\_41 (A3), Phoebe\_44 (A3), Phoxy\_43 (A3), Phranny\_44 (A3), Pistachio\_41 (A3), Pocahontas\_39 (A3), Popcicle\_39 (A3), PotatoSplit\_45 (A3), Puppy\_41 (A3), PurpleHaze\_43 (A3), QuinnKiro\_38 (A3), Reba\_43 (A3), ResDef\_39 (A3), Rockstar\_40 (A3), Rummer\_42 (A3), Sabia\_43 (A3), Sabinator\_42 (A3), SaturnRing\_40 (A3), Scout\_40 (A3), Snickers\_43 (A3), SoYo\_43 (A3), SoilDragon\_43 (A3), Soshari\_45 (A3), Spike509\_43 (A3), Stagni\_43 (A3), StepMih\_43 (A3), TNguyen7\_40 (A3), Taurus\_44 (A3), Texage\_38 (A3), Tiffany\_43 (A3), Todacoro\_39 (A3), Toro\_41 (A7), Veracruz\_38 (A3), Vix\_43 (A3), Watson\_43 (A3), Wooldri\_45 (A3), Zetzy\_42 (A3),

#### Start 26:

- Found in 4 of 320 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 4 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LoneWolf\_41 (A9), Scherzo\_41 (A9), Toaka\_39 (A9), Ugenie5\_38 (A9),

#### Start 27:

- Found in 10 of 320 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 10 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Astro\_35 (A8), Danforth\_34 (A8), Dixon\_35 (A8), Expelliarmus\_34 (A8), Groundhog\_34 (A8), NearlyHeadless\_35 (A8), Phillis\_35 (A8), Roary\_35 (A8), Smeadley\_35 (A8), Stephig9\_35 (A8),

#### Start 29:

- Found in 1 of 320 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DroogsArmy\_37 (A7),

#### Start 31:

- Found in 122 of 320 ( 38.1% ) of genes in pham
- Manual Annotations of this start: 113 of 302
- Called 96.7% of time when present
- Phage (with cluster) where this start called: Abdiel\_38 (A4), Albee\_38 (A4), Alberto7\_39 (A4), Arturo\_36 (A4), Avle17\_38 (A4), Baby16\_38 (A4), Bartimeaus\_38 (A4), BellusTerra\_39 (A4), Blackmoor\_38 (A4), Bombshell\_38 (A4), Broseidon\_38 (A4), Bruiser\_37 (A4), BubbleTrouble\_38 (A4), Burger\_36 (A4), Caelakin\_38 (A4), CentreCat\_38 (A4), Chaph\_38 (A4), Citius\_38 (A4), Clarenza\_38 (A4), Cocoaberry\_38 (A4), Commander\_38 (A4), Connomayer\_38 (A4), Deano\_38 (A4), Dhanush\_38 (A4), DontArgue\_38 (A10), Dreamboat\_44 (A1), Druantia\_38 (A4), DustyMartin\_43 (A10), Eagle\_38 (A4), Eapen\_38 (A4), Eris\_37 (A4), Eros\_38 (A4), Eurydice\_39 (A4), Florean\_38 (A4), Flux\_38 (A4), Funston\_38 (A4), Gadost\_38 (A4), HamSlice\_37 (A4), Happiness\_37 (A4), Holli\_37 (A4), Houdini22\_38 (A4), ICleared\_38 (A4), Iceman\_39 (A4), Iracema64\_39 (A4), Jasper\_44 (A1), Jaykayelowell\_37 (A4), JetBlade\_38 (A4), JoongJeon\_38 (A4), KFPoly\_38 (A4), Kamy\_38 (A4), Kingmustik0402\_38 (A4), Koreni\_37 (A4), Kratak\_38 (A4), Kremtemulon\_38 (A4), Kyee\_38 (A4), LappelDuVide\_38 (A4), Lemur\_38 (A4), LeoAvram\_38 (A4), LiBib\_43 (A1), LittleB\_38 (A4), LittleGuy\_38 (A4), LochMonster\_38 (A4), Lorenzo\_38 (A4), Lunsford\_39 (A4), Maverick\_38 (A4), Maxo\_39 (A4), Mazhar510\_38 (A4), Medusa\_38 (A4), MeeZee\_38 (A4), Melvin\_40 (A4), Millski\_37 (A4), Morrow\_39 (A4), Mundrea\_36 (A4), Nebs\_39 (A4), Nemo27\_38 (A4), Noelle\_38 (A4), NorthStar\_37 (A4), NotAPhaseMom\_38 (A4), Nyxis\_38 (A4), OKaNui\_39 (A4), Ohfah\_39 (A4), Paraselene\_41 (A1), Peaches\_38 (A4), PeterPeter\_38 (A4), Phacado\_38 (A4), Felipe\_39 (A4), Phighter1804\_38 (A4), Phontbonne\_38 (A4), Polymorphads\_39 (A4), Pumbaa\_38 (A4), Relief\_37 (A4), RhynO\_40 (A10), Romney\_38 (A4), Roosevelt\_37 (A4), Rosa24\_38 (A4), Rowdy\_43 (A10), Ruin\_38 (A4), Rutherford\_45 (A1), Sabertooth\_38 (A4), Sagefire\_45 (A1), Scamp\_38 (A4), Shaka\_38 (A4), Shapes\_43 (A10), Skipitt\_37 (A4), Sparxx\_39 (A4), Spino\_38 (A4), Taquarus\_38 (A4), Thanksgivukkah\_38 (A4), TinaFeyge\_39 (A4), Tinybot\_37 (A4), TiroTheta9\_38 (A4), TroyPia\_39 (A4), TygerBlood\_38 (A4), Ulysses\_37 (A4), Wander\_38 (A4), Wilbur\_38 (A4), Wizard007\_38 (A4), YoSam321\_38 (A4),

#### Start 34:

- Found in 2 of 320 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CRB1\_40 (A2), LadyBird\_41 (A2),



Start 35:

- Found in 1 of 320 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MyraDee\_36 (A18),

Start 36:

- Found in 5 of 320 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 5 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adzzy\_40 (A2), BabyBack\_39 (A2), GaugeLDP\_39 (A2), NothingSpecial\_39 (A2), XianYue\_38 (A2),

Start 37:

- Found in 1 of 320 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 302
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Airmid\_35 (A5),

Start 38:

- Found in 156 of 320 ( 48.8% ) of genes in pham
- Manual Annotations of this start: 1 of 302
- Called 0.6% of time when present
- Phage (with cluster) where this start called: Palestino\_37 (A4),

Start 39:

- Found in 3 of 320 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 2 of 302
- Called 66.7% of time when present
- Phage (with cluster) where this start called: SydNat\_36 (A5), Zolita\_35 (A5),

Start 41:

- Found in 26 of 320 ( 8.1% ) of genes in pham
- Manual Annotations of this start: 22 of 302
- Called 84.6% of time when present
- Phage (with cluster) where this start called: Archetta\_34 (A5), Benedict\_35 (A5), Bonamassa\_34 (A5), Chadwick\_36 (A5), Coog\_34 (A5), Cuco\_34 (A5), EITiger69\_35 (A5), Ghoulboy\_36 (A5), HuhtaEnerson15\_34 (A5), Jabiru\_35 (A5), LittleCherry\_34 (A5), MarysWell\_33 (A5), Micasa\_36 (A5), Midas2\_34 (A5), Milcery\_34 (A5), Naca\_35 (A5), PetterN\_36 (A5), Scorpia\_36 (A5), Swirley\_36 (A5), Tarynearal\_33 (A5), Theia\_32 (A5), UnionJack\_34 (A5),

Start 44:

- Found in 18 of 320 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 1 of 302
- Called 5.6% of time when present
- Phage (with cluster) where this start called: George\_33 (A5),

**Summary by clusters:**

There are 10 clusters represented in this pham: A10, A18, A1, A3, A2, A5, A4, A7, A9, A8,

Info for manual annotations of cluster A1:

- Start number 31 was manually annotated 6 times for cluster A1.

Info for manual annotations of cluster A10:

- Start number 31 was manually annotated 1 time for cluster A10.

Info for manual annotations of cluster A18:

- Start number 35 was manually annotated 1 time for cluster A18.

Info for manual annotations of cluster A2:

- Start number 24 was manually annotated 1 time for cluster A2.
- Start number 34 was manually annotated 1 time for cluster A2.
- Start number 36 was manually annotated 5 times for cluster A2.

Info for manual annotations of cluster A3:

- Start number 25 was manually annotated 112 times for cluster A3.

Info for manual annotations of cluster A4:

- Start number 18 was manually annotated 24 times for cluster A4.
- Start number 21 was manually annotated 1 time for cluster A4.
- Start number 31 was manually annotated 106 times for cluster A4.
- Start number 38 was manually annotated 1 time for cluster A4.

Info for manual annotations of cluster A5:

- Start number 37 was manually annotated 1 time for cluster A5.
- Start number 39 was manually annotated 2 times for cluster A5.
- Start number 41 was manually annotated 22 times for cluster A5.
- Start number 44 was manually annotated 1 time for cluster A5.

Info for manual annotations of cluster A7:

- Start number 29 was manually annotated 1 time for cluster A7.

Info for manual annotations of cluster A8:

- Start number 27 was manually annotated 10 times for cluster A8.

Info for manual annotations of cluster A9:

- Start number 23 was manually annotated 2 times for cluster A9.
- Start number 26 was manually annotated 4 times for cluster A9.

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

Gene: ACFishhook\_42 Start: 29061, Stop: 28756, Start Num: 25

Candidate Starts for ACFishhook\_42:

(4, 29307), (6, 29289), (7, 29268), (14, 29157), (16, 29145), (Start: 25 @29061 has 112 MA's), (Start: 38 @29007 has 1 MA's), (46, 28968), (53, 28944), (73, 28857), (80, 28794),

Gene: AbbysRanger\_37 Start: 28220, Stop: 27960, Start Num: 18

Candidate Starts for AbbysRanger\_37:

(Start: 18 @28220 has 24 MA's), (Start: 38 @28193 has 1 MA's), (45, 28166), (61, 28106), (74, 28043), (80, 27986),

Gene: Abdiel\_38 Start: 28375, Stop: 28109, Start Num: 31

Candidate Starts for Abdiel\_38:

(12, 28537), (Start: 21 @28423 has 1 MA's), (Start: 31 @28375 has 113 MA's), (Start: 38 @28345 has 1 MA's), (45, 28318), (61, 28258), (64, 28243), (80, 28141),

Gene: Achebe\_36 Start: 28203, Stop: 27943, Start Num: 18

Candidate Starts for Achebe\_36:

(Start: 18 @28203 has 24 MA's), (Start: 38 @28176 has 1 MA's), (45, 28149), (61, 28089), (74, 28026), (80, 27969),

Gene: Adzzy\_40 Start: 26940, Stop: 26704, Start Num: 36

Candidate Starts for Adzzy\_40:

(Start: 36 @26940 has 5 MA's), (58, 26856), (66, 26826), (67, 26823), (79, 26742), (80, 26739),

Gene: Aglet\_44 Start: 29103, Stop: 28864, Start Num: 25

Candidate Starts for Aglet\_44:

(Start: 25 @29103 has 112 MA's), (55, 29022), (63, 28995), (73, 28956), (80, 28902),

Gene: AgronaGT15\_42 Start: 28921, Stop: 28682, Start Num: 25

Candidate Starts for AgronaGT15\_42:

(13, 29053), (Start: 25 @28921 has 112 MA's), (63, 28813), (73, 28774), (80, 28720),

Gene: Airmid\_35 Start: 27047, Stop: 26814, Start Num: 37

Candidate Starts for Airmid\_35:

(Start: 37 @27047 has 1 MA's), (Start: 41 @27023 has 22 MA's), (73, 26897), (80, 26843),

Gene: Albee\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Albee\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Alberto7\_39 Start: 28714, Stop: 28448, Start Num: 31

Candidate Starts for Alberto7\_39:

(12, 28876), (Start: 21 @28762 has 1 MA's), (Start: 31 @28714 has 113 MA's), (Start: 38 @28684 has 1 MA's), (45, 28657), (61, 28597), (80, 28480),

Gene: Anubis\_46 Start: 28988, Stop: 28749, Start Num: 25

Candidate Starts for Anubis\_46:

(Start: 25 @28988 has 112 MA's), (55, 28907), (63, 28880), (73, 28841), (80, 28787),

Gene: Archetta\_34 Start: 27563, Stop: 27351, Start Num: 41

Candidate Starts for Archetta\_34:

(Start: 41 @27563 has 22 MA's), (Start: 44 @27545 has 1 MA's), (53, 27518), (73, 27437), (80, 27383),

Gene: Arturo\_36 Start: 28433, Stop: 28167, Start Num: 31

Candidate Starts for Arturo\_36:

(Start: 21 @28481 has 1 MA's), (Start: 31 @28433 has 113 MA's), (Start: 38 @28403 has 1 MA's), (45, 28376), (61, 28316), (64, 28301), (80, 28199),

Gene: Astro\_35 Start: 26960, Stop: 26682, Start Num: 27

Candidate Starts for Astro\_35:

(Start: 27 @26960 has 10 MA's), (53, 26855), (62, 26816), (73, 26768), (80, 26714),

Gene: AugsMagnumOpus\_46 Start: 29094, Stop: 28855, Start Num: 25  
Candidate Starts for AugsMagnumOpus\_46:  
(Start: 25 @29094 has 112 MA's), (63, 28986), (73, 28947), (80, 28893),

Gene: AvatarAhPeg\_37 Start: 28735, Stop: 28475, Start Num: 18  
Candidate Starts for AvatarAhPeg\_37:  
(Start: 18 @28735 has 24 MA's), (Start: 38 @28705 has 1 MA's), (45, 28678), (61, 28618), (64, 28603), (80, 28501),

Gene: Avle17\_38 Start: 28374, Stop: 28108, Start Num: 31  
Candidate Starts for Avle17\_38:  
(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: B1\_37 Start: 27979, Stop: 27740, Start Num: 25  
Candidate Starts for B1\_37:  
(Start: 25 @27979 has 112 MA's), (63, 27871), (73, 27832), (80, 27778),

Gene: Baby16\_38 Start: 28385, Stop: 28119, Start Num: 31  
Candidate Starts for Baby16\_38:  
(12, 28547), (Start: 21 @28433 has 1 MA's), (Start: 31 @28385 has 113 MA's), (Start: 38 @28355 has 1 MA's), (45, 28328), (61, 28268), (80, 28151),

Gene: BabyBack\_39 Start: 29153, Stop: 28929, Start Num: 36  
Candidate Starts for BabyBack\_39:  
(17, 29267), (Start: 36 @29153 has 5 MA's), (58, 29069), (60, 29063), (68, 29027), (72, 29012), (80, 28955),

Gene: BabyJohn\_38 Start: 28749, Stop: 28510, Start Num: 25  
Candidate Starts for BabyJohn\_38:  
(Start: 25 @28749 has 112 MA's), (54, 28671), (63, 28641), (73, 28602), (80, 28548),

Gene: BabyRay\_40 Start: 28714, Stop: 28439, Start Num: 25  
Candidate Starts for BabyRay\_40:  
(11, 28852), (19, 28771), (Start: 25 @28714 has 112 MA's), (50, 28621), (80, 28477),

Gene: Backyardigan\_36 Start: 28236, Stop: 27976, Start Num: 18  
Candidate Starts for Backyardigan\_36:  
(Start: 18 @28236 has 24 MA's), (Start: 38 @28209 has 1 MA's), (45, 28182), (61, 28122), (74, 28059), (80, 28002),

Gene: Badger\_36 Start: 28204, Stop: 27944, Start Num: 18  
Candidate Starts for Badger\_36:  
(Start: 18 @28204 has 24 MA's), (Start: 38 @28177 has 1 MA's), (45, 28150), (61, 28090), (74, 28027), (80, 27970),

Gene: BangNhom\_39 Start: 28676, Stop: 28410, Start Num: 18  
Candidate Starts for BangNhom\_39:  
(1, 29540), (2, 29273), (3, 28958), (5, 28850), (8, 28826), (Start: 18 @28676 has 24 MA's), (Start: 38 @28646 has 1 MA's), (45, 28619), (61, 28559), (64, 28544), (80, 28442),

Gene: Bartimeaus\_38 Start: 28376, Stop: 28110, Start Num: 31

Candidate Starts for Bartimeaus\_38:

(12, 28538), (Start: 21 @28424 has 1 MA's), (Start: 31 @28376 has 113 MA's), (Start: 38 @28346 has 1 MA's), (45, 28319), (61, 28259), (80, 28142),

Gene: Beauxregard13\_43 Start: 29105, Stop: 28866, Start Num: 25

Candidate Starts for Beauxregard13\_43:

(Start: 25 @29105 has 112 MA's), (63, 28997), (73, 28958), (80, 28904),

Gene: BellusTerra\_39 Start: 28375, Stop: 28109, Start Num: 31

Candidate Starts for BellusTerra\_39:

(12, 28537), (Start: 21 @28423 has 1 MA's), (Start: 31 @28375 has 113 MA's), (Start: 38 @28345 has 1 MA's), (45, 28318), (61, 28258), (64, 28243), (80, 28141),

Gene: Benedict\_35 Start: 27023, Stop: 26814, Start Num: 41

Candidate Starts for Benedict\_35:

(Start: 41 @27023 has 22 MA's), (Start: 44 @27005 has 1 MA's), (73, 26897), (80, 26843),

Gene: Blackmoor\_38 Start: 28376, Stop: 28110, Start Num: 31

Candidate Starts for Blackmoor\_38:

(12, 28538), (Start: 21 @28424 has 1 MA's), (Start: 31 @28376 has 113 MA's), (Start: 38 @28346 has 1 MA's), (45, 28319), (61, 28259), (80, 28142),

Gene: BlueBird\_41 Start: 28604, Stop: 28365, Start Num: 25

Candidate Starts for BlueBird\_41:

(Start: 25 @28604 has 112 MA's), (63, 28496), (73, 28457), (80, 28403),

Gene: Bombshell\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Bombshell\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Bonamassa\_34 Start: 27357, Stop: 27145, Start Num: 41

Candidate Starts for Bonamassa\_34:

(Start: 41 @27357 has 22 MA's), (Start: 44 @27339 has 1 MA's), (53, 27312), (73, 27231), (80, 27177),

Gene: BreSam8\_43 Start: 29095, Stop: 28856, Start Num: 25

Candidate Starts for BreSam8\_43:

(Start: 25 @29095 has 112 MA's), (63, 28987), (73, 28948), (80, 28894),

Gene: Broseidon\_38 Start: 28376, Stop: 28110, Start Num: 31

Candidate Starts for Broseidon\_38:

(12, 28538), (Start: 21 @28424 has 1 MA's), (Start: 31 @28376 has 113 MA's), (Start: 38 @28346 has 1 MA's), (45, 28319), (61, 28259), (80, 28142),

Gene: Bruiser\_37 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Bruiser\_37:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: BubbleTrouble\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for BubbleTrouble\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Bugatti\_40 Start: 28604, Stop: 28365, Start Num: 25

Candidate Starts for Bugatti\_40:

(Start: 25 @28604 has 112 MA's), (63, 28496), (73, 28457), (80, 28403),

Gene: Bumblebee11\_36 Start: 28206, Stop: 27946, Start Num: 18

Candidate Starts for Bumblebee11\_36:

(Start: 18 @28206 has 24 MA's), (Start: 38 @28179 has 1 MA's), (45, 28152), (61, 28092), (74, 28029), (80, 27972),

Gene: Burger\_36 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Burger\_36:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: BuzzBuzz\_41 Start: 29100, Stop: 28861, Start Num: 25

Candidate Starts for BuzzBuzz\_41:

(13, 29232), (Start: 25 @29100 has 112 MA's), (63, 28992), (73, 28953), (80, 28899),

Gene: Bxz2\_39 Start: 29107, Stop: 28868, Start Num: 25

Candidate Starts for Bxz2\_39:

(13, 29239), (Start: 25 @29107 has 112 MA's), (63, 28999), (73, 28960), (80, 28906),

Gene: CRB1\_40 Start: 28593, Stop: 28357, Start Num: 34

Candidate Starts for CRB1\_40:

(15, 28716), (17, 28704), (Start: 34 @28593 has 1 MA's), (80, 28389),

Gene: Caelakin\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Caelakin\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Camperdownii\_37 Start: 28095, Stop: 27802, Start Num: 21

Candidate Starts for Camperdownii\_37:

(Start: 21 @28095 has 1 MA's), (Start: 31 @28047 has 113 MA's), (48, 27987), (72, 27903), (74, 27891), (76, 27882), (80, 27834),

Gene: Caviar\_39 Start: 28759, Stop: 28520, Start Num: 25

Candidate Starts for Caviar\_39:

(Start: 25 @28759 has 112 MA's), (63, 28651), (73, 28612),

Gene: CentreCat\_38 Start: 28377, Stop: 28111, Start Num: 31

Candidate Starts for CentreCat\_38:

(12, 28539), (Start: 21 @28425 has 1 MA's), (Start: 31 @28377 has 113 MA's), (Start: 38 @28347 has 1 MA's), (45, 28320), (61, 28260), (80, 28143),

Gene: Cerulean\_39 Start: 28677, Stop: 28411, Start Num: 18

Candidate Starts for Cerulean\_39:

(1, 29541), (2, 29274), (3, 28959), (5, 28851), (8, 28827), (Start: 18 @28677 has 24 MA's), (Start: 38 @28647 has 1 MA's), (45, 28620), (61, 28560), (64, 28545), (80, 28443),

Gene: Chadwick\_36 Start: 26926, Stop: 26717, Start Num: 41  
Candidate Starts for Chadwick\_36:  
(Start: 41 @26926 has 22 MA's), (73, 26800), (80, 26746),

Gene: ChampagnePapi\_40 Start: 28676, Stop: 28410, Start Num: 18  
Candidate Starts for ChampagnePapi\_40:  
(1, 29540), (2, 29273), (3, 28958), (5, 28850), (8, 28826), (Start: 18 @28676 has 24 MA's), (Start: 38 @28646 has 1 MA's), (45, 28619), (61, 28559), (64, 28544), (80, 28442),

Gene: Chaph\_38 Start: 28385, Stop: 28119, Start Num: 31  
Candidate Starts for Chaph\_38:  
(12, 28547), (Start: 21 @28433 has 1 MA's), (Start: 31 @28385 has 113 MA's), (Start: 38 @28355 has 1 MA's), (45, 28328), (61, 28268), (80, 28151),

Gene: Charm\_38 Start: 28141, Stop: 27875, Start Num: 23  
Candidate Starts for Charm\_38:  
(Start: 23 @28141 has 2 MA's), (69, 27976), (72, 27964), (80, 27901),

Gene: Chiqui\_38 Start: 28758, Stop: 28519, Start Num: 25  
Candidate Starts for Chiqui\_38:  
(Start: 25 @28758 has 112 MA's), (54, 28680), (63, 28650), (73, 28611), (80, 28557),

Gene: Cici\_37 Start: 28221, Stop: 27961, Start Num: 18  
Candidate Starts for Cici\_37:  
(Start: 18 @28221 has 24 MA's), (Start: 38 @28194 has 1 MA's), (45, 28167), (61, 28107), (74, 28044), (80, 27987),

Gene: Cintron\_38 Start: 28440, Stop: 28174, Start Num: 18  
Candidate Starts for Cintron\_38:  
(Start: 18 @28440 has 24 MA's), (Start: 38 @28410 has 1 MA's), (45, 28383), (61, 28323), (80, 28206),

Gene: Citius\_38 Start: 28395, Stop: 28129, Start Num: 31  
Candidate Starts for Citius\_38:  
(12, 28557), (Start: 21 @28443 has 1 MA's), (Start: 31 @28395 has 113 MA's), (Start: 38 @28365 has 1 MA's), (45, 28338), (61, 28278), (64, 28263), (80, 28161),

Gene: Clarenza\_38 Start: 28371, Stop: 28105, Start Num: 31  
Candidate Starts for Clarenza\_38:  
(12, 28533), (Start: 21 @28419 has 1 MA's), (Start: 31 @28371 has 113 MA's), (Start: 38 @28341 has 1 MA's), (45, 28314), (61, 28254), (80, 28137),

Gene: Cocoaberry\_38 Start: 28378, Stop: 28112, Start Num: 31  
Candidate Starts for Cocoaberry\_38:  
(12, 28540), (Start: 21 @28426 has 1 MA's), (Start: 31 @28378 has 113 MA's), (Start: 38 @28348 has 1 MA's), (45, 28321), (61, 28261), (80, 28144),

Gene: Colbster\_43 Start: 29105, Stop: 28866, Start Num: 25  
Candidate Starts for Colbster\_43:  
(Start: 25 @29105 has 112 MA's), (63, 28997), (73, 28958), (80, 28904),

Gene: Commander\_38 Start: 28373, Stop: 28107, Start Num: 31  
Candidate Starts for Commander\_38:

(12, 28535), (Start: 21 @28421 has 1 MA's), (Start: 31 @28373 has 113 MA's), (Start: 38 @28343 has 1 MA's), (45, 28316), (61, 28256), (80, 28139),

Gene: Connomayer\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Connomayer\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Coog\_34 Start: 27403, Stop: 27185, Start Num: 41

Candidate Starts for Coog\_34:

(Start: 41 @27403 has 22 MA's), (Start: 44 @27385 has 1 MA's), (53, 27358), (73, 27271), (80, 27217),

Gene: Cuco\_34 Start: 27356, Stop: 27144, Start Num: 41

Candidate Starts for Cuco\_34:

(Start: 41 @27356 has 22 MA's), (Start: 44 @27338 has 1 MA's), (53, 27311), (73, 27230), (80, 27176),

Gene: Cullens\_43 Start: 29101, Stop: 28862, Start Num: 25

Candidate Starts for Cullens\_43:

(Start: 25 @29101 has 112 MA's), (63, 28993), (73, 28954), (80, 28900),

Gene: DaHudson\_43 Start: 29094, Stop: 28855, Start Num: 25

Candidate Starts for DaHudson\_43:

(Start: 25 @29094 has 112 MA's), (63, 28986), (73, 28947), (80, 28893),

Gene: Daishi\_42 Start: 27941, Stop: 27702, Start Num: 25

Candidate Starts for Daishi\_42:

(13, 28073), (Start: 25 @27941 has 112 MA's), (63, 27833), (73, 27794), (80, 27740),

Gene: Danforth\_34 Start: 26845, Stop: 26567, Start Num: 27

Candidate Starts for Danforth\_34:

(Start: 27 @26845 has 10 MA's), (53, 26740), (62, 26701), (73, 26653), (80, 26599),

Gene: Datway\_37 Start: 28192, Stop: 27932, Start Num: 18

Candidate Starts for Datway\_37:

(Start: 18 @28192 has 24 MA's), (Start: 38 @28165 has 1 MA's), (45, 28138), (61, 28078), (74, 28015), (80, 27958),

Gene: Deano\_38 Start: 28382, Stop: 28116, Start Num: 31

Candidate Starts for Deano\_38:

(12, 28544), (Start: 21 @28430 has 1 MA's), (Start: 31 @28382 has 113 MA's), (Start: 38 @28352 has 1 MA's), (45, 28325), (61, 28265), (80, 28148),

Gene: Dhanush\_38 Start: 28377, Stop: 28111, Start Num: 31

Candidate Starts for Dhanush\_38:

(12, 28539), (Start: 21 @28425 has 1 MA's), (Start: 31 @28377 has 113 MA's), (Start: 38 @28347 has 1 MA's), (45, 28320), (61, 28260), (80, 28143),

Gene: Dieselweasel\_44 Start: 29104, Stop: 28865, Start Num: 25

Candidate Starts for Dieselweasel\_44:

(Start: 25 @29104 has 112 MA's), (63, 28996), (73, 28957), (80, 28903),



Gene: Dixon\_35 Start: 26954, Stop: 26676, Start Num: 27  
Candidate Starts for Dixon\_35:  
(Start: 27 @26954 has 10 MA's), (53, 26849), (62, 26810), (73, 26762), (80, 26708),

Gene: DontArgue\_38 Start: 27488, Stop: 27219, Start Num: 31  
Candidate Starts for DontArgue\_38:  
(Start: 31 @27488 has 113 MA's), (Start: 38 @27458 has 1 MA's), (54, 27404), (55, 27401), (79, 27257), (80, 27254),

Gene: DreamTeam1\_38 Start: 28024, Stop: 27758, Start Num: 23  
Candidate Starts for DreamTeam1\_38:  
(Start: 23 @28024 has 2 MA's), (69, 27859), (72, 27847), (80, 27784),

Gene: Dreamboat\_44 Start: 32205, Stop: 31960, Start Num: 31  
Candidate Starts for Dreamboat\_44:  
(10, 32394), (Start: 31 @32205 has 113 MA's), (70, 32055), (73, 32040), (77, 32025), (78, 32013), (80, 31983),

Gene: DroogsArmy\_37 Start: 30255, Stop: 29989, Start Num: 29  
Candidate Starts for DroogsArmy\_37:  
(Start: 29 @30255 has 1 MA's), (49, 30168), (70, 30084), (71, 30078), (81, 30006),

Gene: DropBear\_40 Start: 28671, Stop: 28432, Start Num: 25  
Candidate Starts for DropBear\_40:  
(14, 28767), (Start: 25 @28671 has 112 MA's), (63, 28563), (73, 28524), (80, 28470),

Gene: Druantia\_38 Start: 28377, Stop: 28111, Start Num: 31  
Candidate Starts for Druantia\_38:  
(12, 28539), (Start: 21 @28425 has 1 MA's), (Start: 31 @28377 has 113 MA's), (Start: 38 @28347 has 1 MA's), (45, 28320), (61, 28260), (80, 28143),

Gene: DustyMartin\_43 Start: 28322, Stop: 28053, Start Num: 31  
Candidate Starts for DustyMartin\_43:  
(19, 28382), (Start: 31 @28322 has 113 MA's), (Start: 38 @28292 has 1 MA's), (43, 28268), (54, 28238), (80, 28088),

Gene: Eagle\_38 Start: 28399, Stop: 28133, Start Num: 31  
Candidate Starts for Eagle\_38:  
(12, 28561), (Start: 21 @28447 has 1 MA's), (Start: 31 @28399 has 113 MA's), (Start: 38 @28369 has 1 MA's), (45, 28342), (61, 28282), (64, 28267), (80, 28165),

Gene: Eapen\_38 Start: 28372, Stop: 28106, Start Num: 31  
Candidate Starts for Eapen\_38:  
(12, 28534), (Start: 21 @28420 has 1 MA's), (Start: 31 @28372 has 113 MA's), (Start: 38 @28342 has 1 MA's), (45, 28315), (61, 28255), (80, 28138),

Gene: EITiger69\_35 Start: 27021, Stop: 26812, Start Num: 41  
Candidate Starts for EITiger69\_35:  
(Start: 41 @27021 has 22 MA's), (73, 26895), (80, 26841),

Gene: EpicPhail\_44 Start: 29105, Stop: 28866, Start Num: 25  
Candidate Starts for EpicPhail\_44:  
(Start: 25 @29105 has 112 MA's), (63, 28997), (73, 28958), (80, 28904),

Gene: Eris\_37 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Eris\_37:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Eros\_38 Start: 28376, Stop: 28110, Start Num: 31

Candidate Starts for Eros\_38:

(12, 28538), (Start: 21 @28424 has 1 MA's), (Start: 31 @28376 has 113 MA's), (Start: 38 @28346 has 1 MA's), (45, 28319), (61, 28259), (80, 28142),

Gene: Eurydice\_39 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Eurydice\_39:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (64, 28242), (80, 28140),

Gene: Expelliarmus\_34 Start: 26831, Stop: 26553, Start Num: 27

Candidate Starts for Expelliarmus\_34:

(Start: 27 @26831 has 10 MA's), (53, 26726), (62, 26687), (73, 26639), (80, 26585),

Gene: Farber\_43 Start: 29095, Stop: 28856, Start Num: 25

Candidate Starts for Farber\_43:

(Start: 25 @29095 has 112 MA's), (63, 28987), (73, 28948), (80, 28894),

Gene: Fernando\_43 Start: 29101, Stop: 28862, Start Num: 25

Candidate Starts for Fernando\_43:

(Start: 25 @29101 has 112 MA's), (63, 28993), (73, 28954), (80, 28900),

Gene: Florean\_38 Start: 28373, Stop: 28107, Start Num: 31

Candidate Starts for Florean\_38:

(12, 28535), (Start: 21 @28421 has 1 MA's), (Start: 31 @28373 has 113 MA's), (Start: 38 @28343 has 1 MA's), (45, 28316), (61, 28256), (80, 28139),

Gene: Flux\_38 Start: 28376, Stop: 28110, Start Num: 31

Candidate Starts for Flux\_38:

(12, 28538), (Start: 21 @28424 has 1 MA's), (Start: 31 @28376 has 113 MA's), (Start: 38 @28346 has 1 MA's), (45, 28319), (61, 28259), (80, 28142),

Gene: FlyCatcher\_43 Start: 30738, Stop: 30514, Start Num: 25

Candidate Starts for FlyCatcher\_43:

(Start: 25 @30738 has 112 MA's), (Start: 31 @30720 has 113 MA's), (63, 30630), (73, 30591), (81, 30531),

Gene: Fred313\_40 Start: 28356, Stop: 28117, Start Num: 25

Candidate Starts for Fred313\_40:

(14, 28452), (Start: 25 @28356 has 112 MA's), (30, 28341), (63, 28248), (73, 28209), (80, 28155),

Gene: Funston\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Funston\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Gadost\_38 Start: 28378, Stop: 28112, Start Num: 31

Candidate Starts for Gadost\_38:

(12, 28540), (Start: 21 @28426 has 1 MA's), (Start: 31 @28378 has 113 MA's), (Start: 38 @28348 has 1 MA's), (45, 28321), (61, 28261), (80, 28144),

Gene: GaugeLDP\_39 Start: 29059, Stop: 28823, Start Num: 36

Candidate Starts for GaugeLDP\_39:

(17, 29173), (32, 29074), (Start: 36 @29059 has 5 MA's), (40, 29041), (57, 28978), (80, 28867),

Gene: Gemma\_42 Start: 28985, Stop: 28680, Start Num: 25

Candidate Starts for Gemma\_42:

(4, 29231), (6, 29213), (7, 29192), (9, 29189), (14, 29081), (16, 29069), (Start: 25 @28985 has 112 MA's), (Start: 38 @28931 has 1 MA's), (46, 28892), (53, 28868), (73, 28781), (80, 28718),

Gene: George\_33 Start: 27339, Stop: 27145, Start Num: 44

Candidate Starts for George\_33:

(Start: 41 @27357 has 22 MA's), (Start: 44 @27339 has 1 MA's), (53, 27312), (73, 27231), (80, 27177),

Gene: Ghouboy\_36 Start: 27962, Stop: 27744, Start Num: 41

Candidate Starts for Ghouboy\_36:

(Start: 39 @27971 has 2 MA's), (Start: 41 @27962 has 22 MA's), (Start: 44 @27944 has 1 MA's), (53, 27917), (73, 27830), (80, 27776),

Gene: GingkoMaracino\_43 Start: 28988, Stop: 28749, Start Num: 25

Candidate Starts for GingkoMaracino\_43:

(Start: 25 @28988 has 112 MA's), (55, 28907), (63, 28880), (73, 28841), (80, 28787),

Gene: Giroux\_40 Start: 28603, Stop: 28364, Start Num: 25

Candidate Starts for Giroux\_40:

(Start: 25 @28603 has 112 MA's), (63, 28495), (73, 28456), (80, 28402),

Gene: Grif\_43 Start: 29176, Stop: 28937, Start Num: 25

Candidate Starts for Grif\_43:

(Start: 25 @29176 has 112 MA's), (63, 29068), (73, 29029), (80, 28975),

Gene: Groundhog\_34 Start: 26925, Stop: 26647, Start Num: 27

Candidate Starts for Groundhog\_34:

(Start: 27 @26925 has 10 MA's), (53, 26820), (62, 26781), (73, 26733), (80, 26679),

Gene: Groupthink\_44 Start: 28989, Stop: 28684, Start Num: 25

Candidate Starts for Groupthink\_44:

(4, 29235), (6, 29217), (7, 29196), (9, 29193), (14, 29085), (16, 29073), (Start: 25 @28989 has 112 MA's), (Start: 38 @28935 has 1 MA's), (46, 28896), (53, 28872), (73, 28785), (80, 28722),

Gene: Grub\_43 Start: 29094, Stop: 28855, Start Num: 25

Candidate Starts for Grub\_43:

(Start: 25 @29094 has 112 MA's), (63, 28986), (73, 28947), (80, 28893),

Gene: Grum1\_43 Start: 29101, Stop: 28862, Start Num: 25

Candidate Starts for Grum1\_43:

(Start: 25 @29101 has 112 MA's), (63, 28993), (73, 28954), (80, 28900),

Gene: GtownJaz\_43 Start: 29103, Stop: 28864, Start Num: 25

Candidate Starts for GtownJaz\_43:

(Start: 25 @29103 has 112 MA's), (63, 28995), (73, 28956), (80, 28902),

Gene: HamSlice\_37 Start: 28372, Stop: 28106, Start Num: 31

Candidate Starts for HamSlice\_37:

(12, 28534), (Start: 21 @28420 has 1 MA's), (Start: 31 @28372 has 113 MA's), (Start: 38 @28342 has 1 MA's), (45, 28315), (61, 28255), (80, 28138),

Gene: Happiness\_37 Start: 28379, Stop: 28113, Start Num: 31

Candidate Starts for Happiness\_37:

(12, 28541), (Start: 21 @28427 has 1 MA's), (Start: 31 @28379 has 113 MA's), (Start: 38 @28349 has 1 MA's), (45, 28322), (61, 28262), (80, 28145),

Gene: HashRod\_44 Start: 29100, Stop: 28861, Start Num: 25

Candidate Starts for HashRod\_44:

(13, 29232), (Start: 25 @29100 has 112 MA's), (63, 28992), (73, 28953), (80, 28899),

Gene: HaveUMetTed\_44 Start: 28983, Stop: 28678, Start Num: 25

Candidate Starts for HaveUMetTed\_44:

(14, 29079), (16, 29067), (Start: 25 @28983 has 112 MA's), (Start: 38 @28929 has 1 MA's), (46, 28890), (53, 28866), (73, 28779), (80, 28716),

Gene: Heathen\_40 Start: 28412, Stop: 28173, Start Num: 25

Candidate Starts for Heathen\_40:

(14, 28508), (Start: 25 @28412 has 112 MA's), (63, 28304), (73, 28265), (80, 28211),

Gene: HelDan\_40 Start: 28664, Stop: 28425, Start Num: 25

Candidate Starts for HelDan\_40:

(14, 28760), (Start: 25 @28664 has 112 MA's), (63, 28556), (73, 28517), (80, 28463),

Gene: Heliosoles\_42 Start: 28992, Stop: 28687, Start Num: 25

Candidate Starts for Heliosoles\_42:

(4, 29238), (6, 29220), (7, 29199), (9, 29196), (14, 29088), (16, 29076), (Start: 25 @28992 has 112 MA's), (Start: 38 @28938 has 1 MA's), (46, 28899), (53, 28875), (73, 28788), (80, 28725),

Gene: Herbertwm\_35 Start: 26820, Stop: 26551, Start Num: 24

Candidate Starts for Herbertwm\_35:

(20, 26844), (Start: 24 @26820 has 1 MA's), (47, 26730), (69, 26646),

Gene: Hercules11\_43 Start: 29110, Stop: 28871, Start Num: 25

Candidate Starts for Hercules11\_43:

(Start: 25 @29110 has 112 MA's), (63, 29002), (73, 28963), (80, 28909),

Gene: Holli\_37 Start: 28164, Stop: 27898, Start Num: 31

Candidate Starts for Holli\_37:

(12, 28326), (Start: 21 @28212 has 1 MA's), (Start: 31 @28164 has 113 MA's), (Start: 38 @28134 has 1 MA's), (45, 28107), (61, 28047), (80, 27930),

Gene: Hookmount\_39 Start: 28760, Stop: 28521, Start Num: 25

Candidate Starts for Hookmount\_39:

(Start: 25 @28760 has 112 MA's), (63, 28652), (73, 28613),

Gene: Houdini22\_38 Start: 28378, Stop: 28112, Start Num: 31

Candidate Starts for Houdini22\_38:

(12, 28540), (Start: 21 @28426 has 1 MA's), (Start: 31 @28378 has 113 MA's), (Start: 38 @28348 has 1 MA's), (45, 28321), (61, 28261), (80, 28144),

Gene: HuhtaEnerson15\_34 Start: 27348, Stop: 27136, Start Num: 41

Candidate Starts for HuhtaEnerson15\_34:

(Start: 41 @27348 has 22 MA's), (Start: 44 @27330 has 1 MA's), (53, 27303), (73, 27222), (80, 27168),

Gene: ICleared\_38 Start: 28406, Stop: 28140, Start Num: 31

Candidate Starts for ICleared\_38:

(12, 28568), (Start: 21 @28454 has 1 MA's), (Start: 31 @28406 has 113 MA's), (Start: 38 @28376 has 1 MA's), (45, 28349), (61, 28289), (80, 28172),

Gene: Iceman\_39 Start: 28663, Stop: 28397, Start Num: 31

Candidate Starts for Iceman\_39:

(12, 28825), (Start: 21 @28711 has 1 MA's), (Start: 31 @28663 has 113 MA's), (Start: 38 @28633 has 1 MA's), (45, 28606), (61, 28546), (80, 28429),

Gene: Idleandcovert\_40 Start: 28604, Stop: 28365, Start Num: 25

Candidate Starts for Idleandcovert\_40:

(Start: 25 @28604 has 112 MA's), (63, 28496), (73, 28457), (80, 28403),

Gene: Iracema64\_39 Start: 28638, Stop: 28372, Start Num: 31

Candidate Starts for Iracema64\_39:

(12, 28800), (Start: 21 @28686 has 1 MA's), (Start: 31 @28638 has 113 MA's), (Start: 38 @28608 has 1 MA's), (45, 28581), (61, 28521), (64, 28506), (80, 28404),

Gene: Isca\_39 Start: 28228, Stop: 27989, Start Num: 25

Candidate Starts for Isca\_39:

(Start: 25 @28228 has 112 MA's), (63, 28120), (73, 28081), (80, 28027),

Gene: JF2\_40 Start: 27979, Stop: 27740, Start Num: 25

Candidate Starts for JF2\_40:

(Start: 25 @27979 has 112 MA's), (63, 27871), (73, 27832), (80, 27778),

Gene: JF4\_40 Start: 27979, Stop: 27740, Start Num: 25

Candidate Starts for JF4\_40:

(Start: 25 @27979 has 112 MA's), (63, 27871), (73, 27832), (80, 27778),

Gene: JHC117\_43 Start: 29100, Stop: 28861, Start Num: 25

Candidate Starts for JHC117\_43:

(Start: 25 @29100 has 112 MA's), (63, 28992), (73, 28953), (80, 28899),

Gene: Jabiru\_35 Start: 27070, Stop: 26861, Start Num: 41

Candidate Starts for Jabiru\_35:

(Start: 41 @27070 has 22 MA's), (73, 26944), (80, 26890),

Gene: Jasper\_44 Start: 32091, Stop: 31846, Start Num: 31

Candidate Starts for Jasper\_44:

(10, 32280), (Start: 31 @32091 has 113 MA's), (70, 31941), (73, 31926), (77, 31911), (78, 31899), (80, 31869),

Gene: Jaykayelowell\_37 Start: 28370, Stop: 28104, Start Num: 31  
Candidate Starts for Jaykayelowell\_37:  
(12, 28532), (Start: 21 @28418 has 1 MA's), (Start: 31 @28370 has 113 MA's), (Start: 38 @28340 has 1 MA's), (45, 28313), (61, 28253), (80, 28136),

Gene: JenCasNa\_44 Start: 29101, Stop: 28862, Start Num: 25  
Candidate Starts for JenCasNa\_44:  
(Start: 25 @29101 has 112 MA's), (63, 28993), (73, 28954), (80, 28900),

Gene: JeppNRM\_44 Start: 28990, Stop: 28685, Start Num: 25  
Candidate Starts for JeppNRM\_44:  
(4, 29236), (6, 29218), (7, 29197), (9, 29194), (14, 29086), (16, 29074), (Start: 25 @28990 has 112 MA's), (Start: 38 @28936 has 1 MA's), (46, 28897), (53, 28873), (73, 28786), (80, 28723),

Gene: JetBlade\_38 Start: 28371, Stop: 28105, Start Num: 31  
Candidate Starts for JetBlade\_38:  
(12, 28533), (Start: 21 @28419 has 1 MA's), (Start: 31 @28371 has 113 MA's), (Start: 38 @28341 has 1 MA's), (45, 28314), (61, 28254), (80, 28137),

Gene: Jobu08\_42 Start: 28934, Stop: 28692, Start Num: 25  
Candidate Starts for Jobu08\_42:  
(Start: 25 @28934 has 112 MA's), (63, 28826), (73, 28787), (80, 28730),

Gene: JoongJeon\_38 Start: 28374, Stop: 28108, Start Num: 31  
Candidate Starts for JoongJeon\_38:  
(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: KADY\_43 Start: 29100, Stop: 28861, Start Num: 25  
Candidate Starts for KADY\_43:  
(13, 29232), (Start: 25 @29100 has 112 MA's), (63, 28992), (73, 28953), (80, 28899),

Gene: KFPoly\_38 Start: 28371, Stop: 28105, Start Num: 31  
Candidate Starts for KFPoly\_38:  
(12, 28533), (Start: 21 @28419 has 1 MA's), (Start: 31 @28371 has 113 MA's), (Start: 38 @28341 has 1 MA's), (45, 28314), (61, 28254), (80, 28137),

Gene: Kachowdy\_40 Start: 28664, Stop: 28425, Start Num: 25  
Candidate Starts for Kachowdy\_40:  
(14, 28760), (Start: 25 @28664 has 112 MA's), (63, 28556), (73, 28517), (80, 28463),

Gene: Kalb97\_44 Start: 28988, Stop: 28683, Start Num: 25  
Candidate Starts for Kalb97\_44:  
(4, 29234), (6, 29216), (7, 29195), (9, 29192), (14, 29084), (16, 29072), (Start: 25 @28988 has 112 MA's), (Start: 38 @28934 has 1 MA's), (46, 28895), (53, 28871), (73, 28784), (80, 28721),

Gene: Kalnoky\_44 Start: 28986, Stop: 28681, Start Num: 25  
Candidate Starts for Kalnoky\_44:  
(4, 29232), (6, 29214), (7, 29193), (9, 29190), (14, 29082), (16, 29070), (Start: 25 @28986 has 112 MA's), (Start: 38 @28932 has 1 MA's), (46, 28893), (53, 28869), (73, 28782), (80, 28719),

Gene: Kampy\_38 Start: 28376, Stop: 28110, Start Num: 31  
Candidate Starts for Kampy\_38:

(12, 28538), (Start: 21 @28424 has 1 MA's), (Start: 31 @28376 has 113 MA's), (Start: 38 @28346 has 1 MA's), (45, 28319), (61, 28259), (64, 28244), (80, 28142),

Gene: Katalie136\_37 Start: 28206, Stop: 27946, Start Num: 18

Candidate Starts for Katalie136\_37:

(Start: 18 @28206 has 24 MA's), (Start: 38 @28179 has 1 MA's), (45, 28152), (61, 28092), (74, 28029), (80, 27972),

Gene: Kingmustik0402\_38 Start: 28366, Stop: 28100, Start Num: 31

Candidate Starts for Kingmustik0402\_38:

(12, 28528), (Start: 21 @28414 has 1 MA's), (Start: 31 @28366 has 113 MA's), (Start: 38 @28336 has 1 MA's), (45, 28309), (61, 28249), (80, 28132),

Gene: Koreni\_37 Start: 28055, Stop: 27789, Start Num: 31

Candidate Starts for Koreni\_37:

(12, 28217), (Start: 21 @28103 has 1 MA's), (Start: 31 @28055 has 113 MA's), (Start: 38 @28025 has 1 MA's), (45, 27998), (61, 27938), (80, 27821),

Gene: Kratak\_38 Start: 28316, Stop: 28050, Start Num: 31

Candidate Starts for Kratak\_38:

(Start: 21 @28364 has 1 MA's), (Start: 31 @28316 has 113 MA's), (Start: 38 @28286 has 1 MA's), (45, 28259), (54, 28232), (55, 28229), (61, 28199), (80, 28082),

Gene: Kremtemulon\_38 Start: 28328, Stop: 28062, Start Num: 31

Candidate Starts for Kremtemulon\_38:

(Start: 21 @28376 has 1 MA's), (Start: 31 @28328 has 113 MA's), (Start: 38 @28298 has 1 MA's), (45, 28271), (54, 28244), (55, 28241), (61, 28211), (80, 28094),

Gene: Kyee\_38 Start: 28372, Stop: 28106, Start Num: 31

Candidate Starts for Kyee\_38:

(12, 28534), (Start: 21 @28420 has 1 MA's), (Start: 31 @28372 has 113 MA's), (Start: 38 @28342 has 1 MA's), (45, 28315), (61, 28255), (80, 28138),

Gene: LBerry\_44 Start: 29105, Stop: 28866, Start Num: 25

Candidate Starts for LBerry\_44:

(Start: 25 @29105 has 112 MA's), (63, 28997), (73, 28958), (80, 28904),

Gene: LHTSCC\_40 Start: 28676, Stop: 28410, Start Num: 18

Candidate Starts for LHTSCC\_40:

(1, 29540), (2, 29273), (3, 28958), (5, 28850), (8, 28826), (Start: 18 @28676 has 24 MA's), (Start: 38 @28646 has 1 MA's), (45, 28619), (61, 28559), (64, 28544), (80, 28442),

Gene: LadyBird\_41 Start: 28555, Stop: 28316, Start Num: 34

Candidate Starts for LadyBird\_41:

(15, 28678), (17, 28666), (Start: 34 @28555 has 1 MA's), (59, 28468), (65, 28441), (75, 28396), (80, 28351),

Gene: Lambert1\_39 Start: 28759, Stop: 28520, Start Num: 25

Candidate Starts for Lambert1\_39:

(Start: 25 @28759 has 112 MA's), (63, 28651), (73, 28612),

Gene: LappelDuVide\_38 Start: 28373, Stop: 28107, Start Num: 31

Candidate Starts for LappelDuVide\_38:

(12, 28535), (Start: 21 @28421 has 1 MA's), (Start: 31 @28373 has 113 MA's), (Start: 38 @28343 has 1 MA's), (45, 28316), (61, 28256), (80, 28139),

Gene: LarryKay\_43 Start: 29102, Stop: 28863, Start Num: 25

Candidate Starts for LarryKay\_43:

(13, 29234), (Start: 25 @29102 has 112 MA's), (63, 28994), (73, 28955), (80, 28901),

Gene: Lemur\_38 Start: 28371, Stop: 28105, Start Num: 31

Candidate Starts for Lemur\_38:

(12, 28533), (Start: 21 @28419 has 1 MA's), (Start: 31 @28371 has 113 MA's), (Start: 38 @28341 has 1 MA's), (45, 28314), (61, 28254), (80, 28137),

Gene: LeoAvram\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for LeoAvram\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (64, 28242), (80, 28140),

Gene: LilBib\_43 Start: 33080, Stop: 32835, Start Num: 31

Candidate Starts for LilBib\_43:

(Start: 31 @33080 has 113 MA's), (70, 32930), (73, 32915), (77, 32900), (78, 32888), (80, 32858),

Gene: Lilith\_44 Start: 29095, Stop: 28856, Start Num: 25

Candidate Starts for Lilith\_44:

(Start: 25 @29095 has 112 MA's), (63, 28987), (73, 28948), (80, 28894),

Gene: LittleB\_38 Start: 28375, Stop: 28109, Start Num: 31

Candidate Starts for LittleB\_38:

(12, 28537), (Start: 21 @28423 has 1 MA's), (Start: 31 @28375 has 113 MA's), (Start: 38 @28345 has 1 MA's), (45, 28318), (61, 28258), (80, 28141),

Gene: LittleCherry\_34 Start: 27358, Stop: 27146, Start Num: 41

Candidate Starts for LittleCherry\_34:

(Start: 41 @27358 has 22 MA's), (Start: 44 @27340 has 1 MA's), (53, 27313), (73, 27232), (80, 27178),

Gene: LittleGuy\_38 Start: 28273, Stop: 28007, Start Num: 31

Candidate Starts for LittleGuy\_38:

(12, 28435), (Start: 21 @28321 has 1 MA's), (Start: 31 @28273 has 113 MA's), (Start: 38 @28243 has 1 MA's), (45, 28216), (61, 28156), (80, 28039),

Gene: LochMonster\_38 Start: 28413, Stop: 28147, Start Num: 31

Candidate Starts for LochMonster\_38:

(12, 28575), (Start: 21 @28461 has 1 MA's), (Start: 31 @28413 has 113 MA's), (Start: 38 @28383 has 1 MA's), (45, 28356), (54, 28329), (55, 28326), (61, 28296), (80, 28179),

Gene: LoneWolf\_41 Start: 28735, Stop: 28481, Start Num: 26

Candidate Starts for LoneWolf\_41:

(Start: 26 @28735 has 4 MA's), (51, 28642),

Gene: Lorenzo\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Lorenzo\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),



Gene: Louie6\_42 Start: 29101, Stop: 28862, Start Num: 25  
Candidate Starts for Louie6\_42:  
(13, 29233), (Start: 25 @29101 has 112 MA's), (63, 28993), (73, 28954), (80, 28900),

Gene: LugYA\_46 Start: 29102, Stop: 28863, Start Num: 25  
Candidate Starts for LugYA\_46:  
(Start: 25 @29102 has 112 MA's), (63, 28994), (73, 28955), (80, 28901),

Gene: Lunsford\_39 Start: 28371, Stop: 28105, Start Num: 31  
Candidate Starts for Lunsford\_39:  
(12, 28533), (Start: 21 @28419 has 1 MA's), (Start: 31 @28371 has 113 MA's), (Start: 38 @28341 has 1 MA's), (45, 28314), (61, 28254), (80, 28137),

Gene: MA5\_40 Start: 28108, Stop: 27869, Start Num: 25  
Candidate Starts for MA5\_40:  
(Start: 25 @28108 has 112 MA's), (63, 28000), (73, 27961), (80, 27907),

Gene: MK4\_40 Start: 28213, Stop: 27974, Start Num: 25  
Candidate Starts for MK4\_40:  
(Start: 25 @28213 has 112 MA's), (63, 28105), (73, 28066), (80, 28012),

Gene: MadMarie\_43 Start: 29104, Stop: 28865, Start Num: 25  
Candidate Starts for MadMarie\_43:  
(Start: 25 @29104 has 112 MA's), (63, 28996), (73, 28957), (80, 28903),

Gene: Mainiac\_43 Start: 29095, Stop: 28856, Start Num: 25  
Candidate Starts for Mainiac\_43:  
(Start: 25 @29095 has 112 MA's), (63, 28987), (73, 28948), (80, 28894),

Gene: Malinsilva\_45 Start: 29094, Stop: 28855, Start Num: 25  
Candidate Starts for Malinsilva\_45:  
(Start: 25 @29094 has 112 MA's), (63, 28986), (73, 28947), (80, 28893),

Gene: Manu\_43 Start: 28989, Stop: 28684, Start Num: 25  
Candidate Starts for Manu\_43:  
(4, 29235), (6, 29217), (7, 29196), (9, 29193), (14, 29085), (16, 29073), (Start: 25 @28989 has 112 MA's), (Start: 38 @28935 has 1 MA's), (46, 28896), (53, 28872), (73, 28785), (80, 28722),

Gene: MarQuardt\_43 Start: 29103, Stop: 28864, Start Num: 25  
Candidate Starts for MarQuardt\_43:  
(Start: 25 @29103 has 112 MA's), (63, 28995), (73, 28956), (80, 28902),

Gene: Marchesa\_40 Start: 28662, Stop: 28423, Start Num: 25  
Candidate Starts for Marchesa\_40:  
(14, 28758), (Start: 25 @28662 has 112 MA's), (63, 28554), (73, 28515), (80, 28461),

Gene: Margo\_39 Start: 28785, Stop: 28546, Start Num: 25  
Candidate Starts for Margo\_39:  
(Start: 25 @28785 has 112 MA's), (63, 28677), (73, 28638),

Gene: Marie\_43 Start: 29101, Stop: 28862, Start Num: 25  
Candidate Starts for Marie\_43:

(Start: 25 @29101 has 112 MA's), (63, 28993), (73, 28954), (80, 28900),

Gene: Marius\_44 Start: 28986, Stop: 28681, Start Num: 25

Candidate Starts for Marius\_44:

(4, 29232), (6, 29214), (7, 29193), (9, 29190), (14, 29082), (16, 29070), (Start: 25 @28986 has 112 MA's), (Start: 38 @28932 has 1 MA's), (46, 28893), (53, 28869), (73, 28782), (80, 28719),

Gene: MarysWell\_33 Start: 27412, Stop: 27194, Start Num: 41

Candidate Starts for MarysWell\_33:

(Start: 41 @27412 has 22 MA's), (53, 27367), (73, 27280), (80, 27226),

Gene: Maverick\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Maverick\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Maxo\_39 Start: 28376, Stop: 28110, Start Num: 31

Candidate Starts for Maxo\_39:

(12, 28538), (Start: 21 @28424 has 1 MA's), (Start: 31 @28376 has 113 MA's), (Start: 38 @28346 has 1 MA's), (45, 28319), (61, 28259), (64, 28244), (80, 28142),

Gene: Mazhar510\_38 Start: 28375, Stop: 28109, Start Num: 31

Candidate Starts for Mazhar510\_38:

(12, 28537), (Start: 21 @28423 has 1 MA's), (Start: 31 @28375 has 113 MA's), (Start: 38 @28345 has 1 MA's), (45, 28318), (61, 28258), (80, 28141),

Gene: Medusa\_38 Start: 28373, Stop: 28107, Start Num: 31

Candidate Starts for Medusa\_38:

(12, 28535), (Start: 21 @28421 has 1 MA's), (Start: 31 @28373 has 113 MA's), (Start: 38 @28343 has 1 MA's), (45, 28316), (61, 28256), (64, 28241), (80, 28139),

Gene: MeeZee\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for MeeZee\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Melvin\_40 Start: 28372, Stop: 28106, Start Num: 31

Candidate Starts for Melvin\_40:

(12, 28534), (Start: 21 @28420 has 1 MA's), (Start: 31 @28372 has 113 MA's), (Start: 38 @28342 has 1 MA's), (45, 28315), (61, 28255), (80, 28138),

Gene: Methuselah\_41 Start: 29096, Stop: 28857, Start Num: 25

Candidate Starts for Methuselah\_41:

(13, 29228), (Start: 25 @29096 has 112 MA's), (63, 28988), (73, 28949), (80, 28895),

Gene: Micasa\_36 Start: 27685, Stop: 27467, Start Num: 41

Candidate Starts for Micasa\_36:

(Start: 41 @27685 has 22 MA's), (Start: 44 @27667 has 1 MA's), (53, 27640), (73, 27553), (80, 27499),

Gene: Microwolf\_43 Start: 29103, Stop: 28864, Start Num: 25

Candidate Starts for Microwolf\_43:

(Start: 25 @29103 has 112 MA's), (63, 28995), (73, 28956), (80, 28902),

Gene: Midas2\_34 Start: 27403, Stop: 27185, Start Num: 41  
Candidate Starts for Midas2\_34:  
(Start: 41 @27403 has 22 MA's), (Start: 44 @27385 has 1 MA's), (53, 27358), (73, 27271), (80, 27217),

Gene: Milcery\_34 Start: 27362, Stop: 27150, Start Num: 41  
Candidate Starts for Milcery\_34:  
(Start: 41 @27362 has 22 MA's), (Start: 44 @27344 has 1 MA's), (53, 27317), (73, 27236), (80, 27182),

Gene: Millski\_37 Start: 28378, Stop: 28112, Start Num: 31  
Candidate Starts for Millski\_37:  
(12, 28540), (Start: 21 @28426 has 1 MA's), (Start: 31 @28378 has 113 MA's), (Start: 38 @28348 has 1 MA's), (45, 28321), (61, 28261), (80, 28144),

Gene: Miramae\_37 Start: 28397, Stop: 28137, Start Num: 18  
Candidate Starts for Miramae\_37:  
(Start: 18 @28397 has 24 MA's), (Start: 38 @28367 has 1 MA's), (45, 28340), (61, 28280), (64, 28265), (80, 28163),

Gene: Misomonster\_44 Start: 29099, Stop: 28860, Start Num: 25  
Candidate Starts for Misomonster\_44:  
(13, 29231), (Start: 25 @29099 has 112 MA's), (63, 28991), (73, 28952), (80, 28898),

Gene: MoneyMay\_43 Start: 29101, Stop: 28862, Start Num: 25  
Candidate Starts for MoneyMay\_43:  
(Start: 25 @29101 has 112 MA's), (63, 28993), (73, 28954), (80, 28900),

Gene: Morpher26\_37 Start: 28227, Stop: 27967, Start Num: 18  
Candidate Starts for Morpher26\_37:  
(Start: 18 @28227 has 24 MA's), (Start: 38 @28200 has 1 MA's), (45, 28173), (61, 28113), (74, 28050), (80, 27993),

Gene: Morrow\_39 Start: 28380, Stop: 28114, Start Num: 31  
Candidate Starts for Morrow\_39:  
(12, 28542), (Start: 21 @28428 has 1 MA's), (Start: 31 @28380 has 113 MA's), (Start: 38 @28350 has 1 MA's), (45, 28323), (61, 28263), (64, 28248), (80, 28146),

Gene: MuchMore\_46 Start: 29094, Stop: 28855, Start Num: 25  
Candidate Starts for MuchMore\_46:  
(Start: 25 @29094 has 112 MA's), (63, 28986), (73, 28947), (80, 28893),

Gene: Mundrea\_36 Start: 28134, Stop: 27874, Start Num: 31  
Candidate Starts for Mundrea\_36:  
(12, 28296), (Start: 21 @28182 has 1 MA's), (Start: 31 @28134 has 113 MA's), (Start: 38 @28104 has 1 MA's), (45, 28077), (61, 28017), (64, 28002), (80, 27900),

Gene: MyraDee\_36 Start: 26293, Stop: 26057, Start Num: 35  
Candidate Starts for MyraDee\_36:  
(Start: 35 @26293 has 1 MA's), (43, 26248), (58, 26200), (69, 26152), (73, 26134),

Gene: Naca\_35 Start: 27563, Stop: 27354, Start Num: 41

Candidate Starts for Naca\_35:

(Start: 41 @27563 has 22 MA's), (73, 27437), (80, 27383),

Gene: NearlyHeadless\_35 Start: 26884, Stop: 26606, Start Num: 27

Candidate Starts for NearlyHeadless\_35:

(Start: 27 @26884 has 10 MA's), (53, 26779), (62, 26740), (73, 26692), (80, 26638),

Gene: Nebs\_39 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Nebs\_39:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (64, 28242), (80, 28140),

Gene: Nemo27\_38 Start: 28373, Stop: 28107, Start Num: 31

Candidate Starts for Nemo27\_38:

(12, 28535), (Start: 21 @28421 has 1 MA's), (Start: 31 @28373 has 113 MA's), (Start: 38 @28343 has 1 MA's), (45, 28316), (61, 28256), (80, 28139),

Gene: Noella\_39 Start: 28760, Stop: 28521, Start Num: 25

Candidate Starts for Noella\_39:

(Start: 25 @28760 has 112 MA's), (63, 28652), (73, 28613),

Gene: Noelle\_38 Start: 28436, Stop: 28167, Start Num: 31

Candidate Starts for Noelle\_38:

(12, 28595), (Start: 21 @28481 has 1 MA's), (Start: 31 @28436 has 113 MA's), (Start: 38 @28406 has 1 MA's), (45, 28379), (54, 28352), (74, 28256), (80, 28199),

Gene: Norbert\_38 Start: 28759, Stop: 28520, Start Num: 25

Candidate Starts for Norbert\_38:

(Start: 25 @28759 has 112 MA's), (63, 28651), (73, 28612),

Gene: NorthStar\_37 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for NorthStar\_37:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (64, 28242), (80, 28140),

Gene: NotAPhaseMom\_38 Start: 28378, Stop: 28112, Start Num: 31

Candidate Starts for NotAPhaseMom\_38:

(12, 28540), (Start: 21 @28426 has 1 MA's), (Start: 31 @28378 has 113 MA's), (Start: 38 @28348 has 1 MA's), (45, 28321), (61, 28261), (80, 28144),

Gene: NothingSpecial\_39 Start: 29386, Stop: 29153, Start Num: 36

Candidate Starts for NothingSpecial\_39:

(15, 29512), (28, 29419), (32, 29401), (Start: 36 @29386 has 5 MA's), (52, 29326), (58, 29302), (64, 29281), (80, 29188),

Gene: Nyxis\_38 Start: 28267, Stop: 28001, Start Num: 31

Candidate Starts for Nyxis\_38:

(12, 28429), (Start: 21 @28315 has 1 MA's), (Start: 31 @28267 has 113 MA's), (Start: 38 @28237 has 1 MA's), (45, 28210), (61, 28150), (80, 28033),

Gene: OKaNui\_39 Start: 28427, Stop: 28161, Start Num: 31

Candidate Starts for OKaNui\_39:

(12, 28589), (Start: 21 @28475 has 1 MA's), (Start: 31 @28427 has 113 MA's), (Start: 38 @28397 has 1 MA's), (45, 28370), (61, 28310), (80, 28193),

Gene: Obama12\_39 Start: 28678, Stop: 28412, Start Num: 18

Candidate Starts for Obama12\_39:

(1, 29542), (2, 29275), (3, 28960), (5, 28852), (8, 28828), (Start: 18 @28678 has 24 MA's), (Start: 38 @28648 has 1 MA's), (45, 28621), (61, 28561), (64, 28546), (80, 28444),

Gene: Ohfah\_39 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Ohfah\_39:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (64, 28242), (80, 28140),

Gene: OlanP\_42 Start: 29171, Stop: 28866, Start Num: 25

Candidate Starts for OlanP\_42:

(14, 29267), (16, 29255), (Start: 25 @29171 has 112 MA's), (Start: 38 @29117 has 1 MA's), (46, 29078), (53, 29054), (73, 28967), (80, 28904),

Gene: Ollie\_43 Start: 28973, Stop: 28734, Start Num: 25

Candidate Starts for Ollie\_43:

(Start: 25 @28973 has 112 MA's), (55, 28892), (63, 28865), (73, 28826), (80, 28772),

Gene: P28Green\_44 Start: 29104, Stop: 28865, Start Num: 25

Candidate Starts for P28Green\_44:

(Start: 25 @29104 has 112 MA's), (63, 28996), (73, 28957), (80, 28903),

Gene: PGHhamlin\_45 Start: 29094, Stop: 28855, Start Num: 25

Candidate Starts for PGHhamlin\_45:

(Start: 25 @29094 has 112 MA's), (63, 28986), (73, 28947), (80, 28893),

Gene: Palestino\_37 Start: 28344, Stop: 28108, Start Num: 38

Candidate Starts for Palestino\_37:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Panamaxus\_37 Start: 28759, Stop: 28520, Start Num: 25

Candidate Starts for Panamaxus\_37:

(Start: 25 @28759 has 112 MA's), (63, 28651), (73, 28612),

Gene: Paraselene\_41 Start: 32492, Stop: 32247, Start Num: 31

Candidate Starts for Paraselene\_41:

(Start: 31 @32492 has 113 MA's), (Start: 38 @32462 has 1 MA's), (70, 32342), (73, 32327), (77, 32312), (78, 32300), (80, 32270),

Gene: Pawn\_43 Start: 28993, Stop: 28688, Start Num: 25

Candidate Starts for Pawn\_43:

(4, 29239), (6, 29221), (7, 29200), (9, 29197), (14, 29089), (16, 29077), (Start: 25 @28993 has 112 MA's), (Start: 38 @28939 has 1 MA's), (46, 28900), (53, 28876), (73, 28789), (80, 28726),

Gene: Peaches\_38 Start: 28373, Stop: 28107, Start Num: 31

Candidate Starts for Peaches\_38:

(12, 28535), (Start: 21 @28421 has 1 MA's), (Start: 31 @28373 has 113 MA's), (Start: 38 @28343 has 1 MA's), (45, 28316), (61, 28256), (80, 28139),

Gene: Pembroke\_43 Start: 29103, Stop: 28864, Start Num: 25  
Candidate Starts for Pembroke\_43:  
(Start: 25 @29103 has 112 MA's), (63, 28995), (73, 28956), (80, 28902),

Gene: Penny1\_44 Start: 29105, Stop: 28866, Start Num: 25  
Candidate Starts for Penny1\_44:  
(Start: 25 @29105 has 112 MA's), (63, 28997), (73, 28958), (80, 28904),

Gene: Perplexer\_37 Start: 28203, Stop: 27943, Start Num: 18  
Candidate Starts for Perplexer\_37:  
(Start: 18 @28203 has 24 MA's), (Start: 38 @28176 has 1 MA's), (45, 28149), (61, 28089), (74, 28026), (80, 27969),

Gene: PeterPeter\_38 Start: 28374, Stop: 28108, Start Num: 31  
Candidate Starts for PeterPeter\_38:  
(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: PetiteSangsue\_37 Start: 28206, Stop: 27946, Start Num: 18  
Candidate Starts for PetiteSangsue\_37:  
(Start: 18 @28206 has 24 MA's), (Start: 38 @28179 has 1 MA's), (45, 28152), (61, 28092), (74, 28029), (80, 27972),

Gene: PetterN\_36 Start: 26926, Stop: 26717, Start Num: 41  
Candidate Starts for PetterN\_36:  
(Start: 41 @26926 has 22 MA's), (73, 26800), (80, 26746),

Gene: Phacado\_38 Start: 28373, Stop: 28107, Start Num: 31  
Candidate Starts for Phacado\_38:  
(12, 28535), (Start: 21 @28421 has 1 MA's), (Start: 31 @28373 has 113 MA's), (Start: 38 @28343 has 1 MA's), (45, 28316), (61, 28256), (80, 28139),

Gene: Phantastic\_40 Start: 28244, Stop: 28005, Start Num: 25  
Candidate Starts for Phantastic\_40:  
(Start: 25 @28244 has 112 MA's), (63, 28136), (73, 28097), (80, 28043),

Gene: Phelipe\_39 Start: 28374, Stop: 28108, Start Num: 31  
Candidate Starts for Phelipe\_39:  
(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Phighter1804\_38 Start: 28416, Stop: 28150, Start Num: 31  
Candidate Starts for Phighter1804\_38:  
(12, 28578), (Start: 21 @28464 has 1 MA's), (Start: 31 @28416 has 113 MA's), (Start: 38 @28386 has 1 MA's), (42, 28374), (45, 28359), (61, 28299), (80, 28182),

Gene: Phillis\_35 Start: 26910, Stop: 26632, Start Num: 27  
Candidate Starts for Phillis\_35:  
(Start: 27 @26910 has 10 MA's), (53, 26805), (73, 26718), (80, 26664),

Gene: PhishRPhriends\_41 Start: 28167, Stop: 27862, Start Num: 25  
Candidate Starts for PhishRPhriends\_41:

(4, 28413), (6, 28395), (7, 28374), (9, 28371), (14, 28263), (16, 28251), (Start: 25 @28167 has 112 MA's), (Start: 38 @28113 has 1 MA's), (46, 28074), (53, 28050), (73, 27963), (80, 27900),

Gene: Phoebe\_44 Start: 29094, Stop: 28855, Start Num: 25

Candidate Starts for Phoebe\_44:

(Start: 25 @29094 has 112 MA's), (63, 28986), (73, 28947), (80, 28893),

Gene: Phontbonne\_38 Start: 28268, Stop: 28002, Start Num: 31

Candidate Starts for Phontbonne\_38:

(12, 28430), (Start: 21 @28316 has 1 MA's), (Start: 31 @28268 has 113 MA's), (Start: 38 @28238 has 1 MA's), (45, 28211), (61, 28151), (80, 28034),

Gene: Phoxy\_43 Start: 29097, Stop: 28858, Start Num: 25

Candidate Starts for Phoxy\_43:

(13, 29229), (Start: 25 @29097 has 112 MA's), (63, 28989), (73, 28950), (80, 28896),

Gene: Phranny\_44 Start: 28975, Stop: 28670, Start Num: 25

Candidate Starts for Phranny\_44:

(4, 29221), (6, 29203), (7, 29182), (9, 29179), (14, 29071), (16, 29059), (Start: 25 @28975 has 112 MA's), (Start: 38 @28921 has 1 MA's), (46, 28882), (53, 28858), (73, 28771), (80, 28708),

Gene: Pistachio\_41 Start: 28151, Stop: 27912, Start Num: 25

Candidate Starts for Pistachio\_41:

(Start: 25 @28151 has 112 MA's), (63, 28043), (73, 28004), (80, 27950),

Gene: Pocahontas\_39 Start: 28756, Stop: 28517, Start Num: 25

Candidate Starts for Pocahontas\_39:

(Start: 25 @28756 has 112 MA's), (63, 28648), (73, 28609),

Gene: Polymorphads\_39 Start: 28367, Stop: 28101, Start Num: 31

Candidate Starts for Polymorphads\_39:

(12, 28529), (Start: 21 @28415 has 1 MA's), (Start: 31 @28367 has 113 MA's), (Start: 38 @28337 has 1 MA's), (45, 28310), (61, 28250), (64, 28235), (80, 28133),

Gene: Popcicle\_39 Start: 28756, Stop: 28517, Start Num: 25

Candidate Starts for Popcicle\_39:

(Start: 25 @28756 has 112 MA's), (63, 28648), (73, 28609),

Gene: PotatoSplit\_45 Start: 29105, Stop: 28866, Start Num: 25

Candidate Starts for PotatoSplit\_45:

(Start: 25 @29105 has 112 MA's), (63, 28997), (73, 28958), (80, 28904),

Gene: Pumbaa\_38 Start: 28319, Stop: 28053, Start Num: 31

Candidate Starts for Pumbaa\_38:

(12, 28481), (Start: 21 @28367 has 1 MA's), (Start: 31 @28319 has 113 MA's), (Start: 38 @28289 has 1 MA's), (45, 28262), (61, 28202), (80, 28085),

Gene: Puppy\_41 Start: 28224, Stop: 27985, Start Num: 25

Candidate Starts for Puppy\_41:

(Start: 25 @28224 has 112 MA's), (73, 28077), (80, 28023),

Gene: PurpleHaze\_43 Start: 28988, Stop: 28683, Start Num: 25

Candidate Starts for PurpleHaze\_43:

(4, 29234), (6, 29216), (7, 29195), (9, 29192), (14, 29084), (16, 29072), (Start: 25 @28988 has 112 MA's), (Start: 38 @28934 has 1 MA's), (46, 28895), (53, 28871), (73, 28784), (80, 28721),

Gene: QuinnKiro\_38 Start: 28759, Stop: 28520, Start Num: 25  
Candidate Starts for QuinnKiro\_38:  
(Start: 25 @28759 has 112 MA's), (63, 28651), (73, 28612),

Gene: Reba\_43 Start: 28648, Stop: 28343, Start Num: 25  
Candidate Starts for Reba\_43:  
(4, 28894), (6, 28876), (7, 28855), (9, 28852), (14, 28744), (16, 28732), (Start: 25 @28648 has 112 MA's), (Start: 38 @28594 has 1 MA's), (46, 28555), (53, 28531), (73, 28444), (80, 28381),

Gene: Relief\_37 Start: 28374, Stop: 28108, Start Num: 31  
Candidate Starts for Relief\_37:  
(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: ResDef\_39 Start: 28759, Stop: 28520, Start Num: 25  
Candidate Starts for ResDef\_39:  
(Start: 25 @28759 has 112 MA's), (63, 28651), (73, 28612),

Gene: RhynO\_40 Start: 28414, Stop: 28145, Start Num: 31  
Candidate Starts for RhynO\_40:  
(19, 28474), (Start: 31 @28414 has 113 MA's), (Start: 38 @28384 has 1 MA's), (43, 28360), (54, 28330), (80, 28180),

Gene: Roary\_35 Start: 26830, Stop: 26552, Start Num: 27  
Candidate Starts for Roary\_35:  
(Start: 27 @26830 has 10 MA's), (53, 26725), (62, 26686), (73, 26638), (80, 26584),

Gene: Rockstar\_40 Start: 28220, Stop: 27981, Start Num: 25  
Candidate Starts for Rockstar\_40:  
(Start: 25 @28220 has 112 MA's), (63, 28112), (73, 28073), (80, 28019),

Gene: Romney\_38 Start: 28374, Stop: 28108, Start Num: 31  
Candidate Starts for Romney\_38:  
(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Roosevelt\_37 Start: 28376, Stop: 28110, Start Num: 31  
Candidate Starts for Roosevelt\_37:  
(12, 28538), (Start: 21 @28424 has 1 MA's), (Start: 31 @28376 has 113 MA's), (Start: 38 @28346 has 1 MA's), (45, 28319), (61, 28259), (80, 28142),

Gene: Rosa24\_38 Start: 28408, Stop: 28142, Start Num: 31  
Candidate Starts for Rosa24\_38:  
(12, 28570), (Start: 21 @28456 has 1 MA's), (Start: 31 @28408 has 113 MA's), (Start: 38 @28378 has 1 MA's), (45, 28351), (61, 28291), (64, 28276), (80, 28174),

Gene: Rowdy\_43 Start: 28322, Stop: 28053, Start Num: 31  
Candidate Starts for Rowdy\_43:  
(19, 28382), (Start: 31 @28322 has 113 MA's), (Start: 38 @28292 has 1 MA's), (43, 28268), (54, 28238), (80, 28088),



Gene: Ruin\_38 Start: 28370, Stop: 28104, Start Num: 31

Candidate Starts for Ruin\_38:

(12, 28532), (Start: 21 @28418 has 1 MA's), (Start: 31 @28370 has 113 MA's), (Start: 38 @28340 has 1 MA's), (45, 28313), (80, 28136),

Gene: Rummer\_42 Start: 29100, Stop: 28861, Start Num: 25

Candidate Starts for Rummer\_42:

(13, 29232), (Start: 25 @29100 has 112 MA's), (63, 28992), (73, 28953), (80, 28899),

Gene: Rutherferd\_45 Start: 33535, Stop: 33290, Start Num: 31

Candidate Starts for Rutherferd\_45:

(Start: 31 @33535 has 113 MA's), (Start: 38 @33505 has 1 MA's), (70, 33385), (73, 33370), (77, 33355), (78, 33343), (80, 33313),

Gene: Sabertooth\_38 Start: 28373, Stop: 28107, Start Num: 31

Candidate Starts for Sabertooth\_38:

(12, 28535), (Start: 21 @28421 has 1 MA's), (Start: 31 @28373 has 113 MA's), (Start: 38 @28343 has 1 MA's), (45, 28316), (61, 28256), (80, 28139),

Gene: Sabia\_43 Start: 29095, Stop: 28856, Start Num: 25

Candidate Starts for Sabia\_43:

(Start: 25 @29095 has 112 MA's), (63, 28987), (73, 28948), (80, 28894),

Gene: Sabinator\_42 Start: 29100, Stop: 28861, Start Num: 25

Candidate Starts for Sabinator\_42:

(Start: 25 @29100 has 112 MA's), (63, 28992), (73, 28953), (80, 28899),

Gene: Sagefire\_45 Start: 33468, Stop: 33223, Start Num: 31

Candidate Starts for Sagefire\_45:

(Start: 31 @33468 has 113 MA's), (Start: 38 @33438 has 1 MA's), (70, 33318), (73, 33303), (77, 33288), (78, 33276), (80, 33246),

Gene: SaturnRing\_40 Start: 28604, Stop: 28365, Start Num: 25

Candidate Starts for SaturnRing\_40:

(Start: 25 @28604 has 112 MA's), (63, 28496), (73, 28457), (80, 28403),

Gene: Scamp\_38 Start: 28376, Stop: 28110, Start Num: 31

Candidate Starts for Scamp\_38:

(12, 28538), (Start: 21 @28424 has 1 MA's), (Start: 31 @28376 has 113 MA's), (Start: 38 @28346 has 1 MA's), (45, 28319), (61, 28259), (80, 28142),

Gene: Scherzo\_41 Start: 29158, Stop: 28904, Start Num: 26

Candidate Starts for Scherzo\_41:

(Start: 26 @29158 has 4 MA's), (33, 29131), (51, 29065), (72, 28987),

Gene: Scorpia\_36 Start: 27003, Stop: 26794, Start Num: 41

Candidate Starts for Scorpia\_36:

(Start: 41 @27003 has 22 MA's), (73, 26877), (80, 26823),

Gene: Scout\_40 Start: 27911, Stop: 27672, Start Num: 25

Candidate Starts for Scout\_40:

(14, 28007), (22, 27926), (Start: 25 @27911 has 112 MA's), (63, 27803), (73, 27764), (80, 27710),

Gene: Shaka\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Shaka\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Shapes\_43 Start: 28322, Stop: 28053, Start Num: 31

Candidate Starts for Shapes\_43:

(19, 28382), (Start: 31 @28322 has 113 MA's), (Start: 38 @28292 has 1 MA's), (43, 28268), (54, 28238), (80, 28088),

Gene: SheldonCooper\_40 Start: 28677, Stop: 28411, Start Num: 18

Candidate Starts for SheldonCooper\_40:

(1, 29541), (2, 29274), (3, 28959), (5, 28851), (8, 28827), (Start: 18 @28677 has 24 MA's), (Start: 38 @28647 has 1 MA's), (45, 28620), (61, 28560), (64, 28545), (80, 28443),

Gene: Shygu2\_37 Start: 28206, Stop: 27946, Start Num: 18

Candidate Starts for Shygu2\_37:

(Start: 18 @28206 has 24 MA's), (Start: 38 @28176 has 1 MA's), (45, 28149), (61, 28089), (80, 27972),

Gene: Skipitt\_37 Start: 28371, Stop: 28105, Start Num: 31

Candidate Starts for Skipitt\_37:

(12, 28533), (Start: 21 @28419 has 1 MA's), (Start: 31 @28371 has 113 MA's), (Start: 38 @28341 has 1 MA's), (45, 28314), (61, 28254), (80, 28137),

Gene: Smeadley\_35 Start: 26953, Stop: 26675, Start Num: 27

Candidate Starts for Smeadley\_35:

(Start: 27 @26953 has 10 MA's), (53, 26848), (62, 26809), (73, 26761), (80, 26707),

Gene: Snickers\_43 Start: 29075, Stop: 28836, Start Num: 25

Candidate Starts for Snickers\_43:

(Start: 25 @29075 has 112 MA's), (63, 28967), (73, 28928), (80, 28874),

Gene: SoYo\_43 Start: 29013, Stop: 28774, Start Num: 25

Candidate Starts for SoYo\_43:

(Start: 25 @29013 has 112 MA's), (63, 28905), (73, 28866), (80, 28812),

Gene: SoilDragon\_43 Start: 28550, Stop: 28308, Start Num: 25

Candidate Starts for SoilDragon\_43:

(Start: 25 @28550 has 112 MA's), (63, 28442), (73, 28403), (80, 28346),

Gene: Soshari\_45 Start: 29096, Stop: 28857, Start Num: 25

Candidate Starts for Soshari\_45:

(13, 29228), (Start: 25 @29096 has 112 MA's), (63, 28988), (73, 28949), (80, 28895),

Gene: Sparxx\_39 Start: 28369, Stop: 28103, Start Num: 31

Candidate Starts for Sparxx\_39:

(12, 28531), (Start: 21 @28417 has 1 MA's), (Start: 31 @28369 has 113 MA's), (Start: 38 @28339 has 1 MA's), (45, 28312), (61, 28252), (80, 28135),

Gene: Spike509\_43 Start: 29097, Stop: 28858, Start Num: 25

Candidate Starts for Spike509\_43:

(13, 29229), (Start: 25 @29097 has 112 MA's), (63, 28989), (73, 28950), (80, 28896),

Gene: Spino\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for Spino\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Stagni\_43 Start: 29104, Stop: 28865, Start Num: 25

Candidate Starts for Stagni\_43:

(Start: 25 @29104 has 112 MA's), (63, 28996), (73, 28957), (80, 28903),

Gene: StepMih\_43 Start: 29095, Stop: 28856, Start Num: 25

Candidate Starts for StepMih\_43:

(Start: 25 @29095 has 112 MA's), (63, 28987), (73, 28948), (80, 28894),

Gene: Stephig9\_35 Start: 26858, Stop: 26580, Start Num: 27

Candidate Starts for Stephig9\_35:

(Start: 27 @26858 has 10 MA's), (53, 26753), (62, 26714), (73, 26666), (80, 26612),

Gene: Stink\_38 Start: 28677, Stop: 28417, Start Num: 18

Candidate Starts for Stink\_38:

(Start: 18 @28677 has 24 MA's), (Start: 38 @28647 has 1 MA's), (45, 28620), (61, 28560), (64, 28545), (80, 28443),

Gene: Swirley\_36 Start: 27689, Stop: 27477, Start Num: 41

Candidate Starts for Swirley\_36:

(Start: 41 @27689 has 22 MA's), (Start: 44 @27671 has 1 MA's), (73, 27563), (80, 27509),

Gene: SydNat\_36 Start: 27980, Stop: 27753, Start Num: 39

Candidate Starts for SydNat\_36:

(Start: 39 @27980 has 2 MA's), (Start: 41 @27971 has 22 MA's), (Start: 44 @27953 has 1 MA's), (53, 27926), (73, 27839), (80, 27785),

Gene: TNguyen7\_40 Start: 28571, Stop: 28332, Start Num: 25

Candidate Starts for TNguyen7\_40:

(Start: 25 @28571 has 112 MA's), (73, 28424), (80, 28370),

Gene: Taquarus\_38 Start: 28377, Stop: 28111, Start Num: 31

Candidate Starts for Taquarus\_38:

(12, 28539), (Start: 21 @28425 has 1 MA's), (Start: 31 @28377 has 113 MA's), (Start: 38 @28347 has 1 MA's), (45, 28320), (61, 28260), (80, 28143),

Gene: Tarynearal\_33 Start: 27355, Stop: 27143, Start Num: 41

Candidate Starts for Tarynearal\_33:

(Start: 41 @27355 has 22 MA's), (Start: 44 @27337 has 1 MA's), (53, 27310), (73, 27229), (80, 27175),

Gene: Taurus\_44 Start: 29101, Stop: 28862, Start Num: 25

Candidate Starts for Taurus\_44:

(Start: 25 @29101 has 112 MA's), (63, 28993), (73, 28954), (80, 28900),

Gene: Texage\_38 Start: 28760, Stop: 28521, Start Num: 25

Candidate Starts for Texage\_38:

(Start: 25 @28760 has 112 MA's), (63, 28652), (73, 28613),

Gene: Thanksgivukkah\_38 Start: 28375, Stop: 28109, Start Num: 31

Candidate Starts for Thanksgivukkah\_38:

(12, 28537), (Start: 21 @28423 has 1 MA's), (Start: 31 @28375 has 113 MA's), (Start: 38 @28345 has 1 MA's), (45, 28318), (61, 28258), (80, 28141),

Gene: Theia\_32 Start: 27379, Stop: 27167, Start Num: 41

Candidate Starts for Theia\_32:

(Start: 41 @27379 has 22 MA's), (Start: 44 @27361 has 1 MA's), (53, 27334), (73, 27253), (80, 27199),

Gene: Tiffany\_43 Start: 28987, Stop: 28748, Start Num: 25

Candidate Starts for Tiffany\_43:

(Start: 25 @28987 has 112 MA's), (63, 28879), (73, 28840), (80, 28786),

Gene: TinaFeyge\_39 Start: 28369, Stop: 28103, Start Num: 31

Candidate Starts for TinaFeyge\_39:

(12, 28531), (Start: 21 @28417 has 1 MA's), (Start: 31 @28369 has 113 MA's), (Start: 38 @28339 has 1 MA's), (45, 28312), (61, 28252), (80, 28135),

Gene: Tinybot\_37 Start: 28404, Stop: 28138, Start Num: 31

Candidate Starts for Tinybot\_37:

(12, 28566), (Start: 21 @28452 has 1 MA's), (Start: 31 @28404 has 113 MA's), (Start: 38 @28374 has 1 MA's), (45, 28347), (61, 28287), (80, 28170),

Gene: TiroTheta9\_38 Start: 28371, Stop: 28105, Start Num: 31

Candidate Starts for TiroTheta9\_38:

(12, 28533), (Start: 21 @28419 has 1 MA's), (Start: 31 @28371 has 113 MA's), (Start: 38 @28341 has 1 MA's), (45, 28314), (61, 28254), (80, 28137),

Gene: Toaka\_39 Start: 28247, Stop: 27996, Start Num: 26

Candidate Starts for Toaka\_39:

(Start: 26 @28247 has 4 MA's), (33, 28220), (51, 28154), (72, 28076),

Gene: Todacoro\_39 Start: 28759, Stop: 28520, Start Num: 25

Candidate Starts for Todacoro\_39:

(Start: 25 @28759 has 112 MA's), (63, 28651), (73, 28612),

Gene: Toro\_41 Start: 30738, Stop: 30514, Start Num: 25

Candidate Starts for Toro\_41:

(Start: 25 @30738 has 112 MA's), (Start: 31 @30720 has 113 MA's), (63, 30630), (73, 30591), (81, 30531),

Gene: TroyPia\_39 Start: 28372, Stop: 28106, Start Num: 31

Candidate Starts for TroyPia\_39:

(12, 28534), (Start: 21 @28420 has 1 MA's), (Start: 31 @28372 has 113 MA's), (Start: 38 @28342 has 1 MA's), (45, 28315), (61, 28255), (80, 28138),

Gene: TygerBlood\_38 Start: 28374, Stop: 28108, Start Num: 31

Candidate Starts for TygerBlood\_38:

(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Ugenie5\_38 Start: 29157, Stop: 28903, Start Num: 26  
Candidate Starts for Ugenie5\_38:  
(Start: 26 @29157 has 4 MA's), (33, 29130), (51, 29064), (72, 28986),

Gene: Ulysses\_37 Start: 28054, Stop: 27788, Start Num: 31  
Candidate Starts for Ulysses\_37:  
(12, 28216), (Start: 21 @28102 has 1 MA's), (Start: 31 @28054 has 113 MA's), (Start: 38 @28024 has 1 MA's), (45, 27997), (61, 27937), (80, 27820),

Gene: UnionJack\_34 Start: 26537, Stop: 26325, Start Num: 41  
Candidate Starts for UnionJack\_34:  
(Start: 41 @26537 has 22 MA's), (Start: 44 @26519 has 1 MA's), (73, 26411), (80, 26357),

Gene: Veracruz\_38 Start: 28759, Stop: 28520, Start Num: 25  
Candidate Starts for Veracruz\_38:  
(Start: 25 @28759 has 112 MA's), (63, 28651), (73, 28612),

Gene: Vix\_43 Start: 29184, Stop: 28945, Start Num: 25  
Candidate Starts for Vix\_43:  
(Start: 25 @29184 has 112 MA's), (63, 29076), (73, 29037), (80, 28983),

Gene: Wander\_38 Start: 28374, Stop: 28108, Start Num: 31  
Candidate Starts for Wander\_38:  
(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Watson\_43 Start: 29094, Stop: 28855, Start Num: 25  
Candidate Starts for Watson\_43:  
(Start: 25 @29094 has 112 MA's), (63, 28986), (73, 28947), (80, 28893),

Gene: Wilbur\_38 Start: 28374, Stop: 28108, Start Num: 31  
Candidate Starts for Wilbur\_38:  
(12, 28536), (Start: 21 @28422 has 1 MA's), (Start: 31 @28374 has 113 MA's), (Start: 38 @28344 has 1 MA's), (45, 28317), (61, 28257), (80, 28140),

Gene: Wile\_37 Start: 28237, Stop: 27977, Start Num: 18  
Candidate Starts for Wile\_37:  
(Start: 18 @28237 has 24 MA's), (Start: 38 @28210 has 1 MA's), (45, 28183), (61, 28123), (74, 28060), (80, 28003),

Gene: Wizard007\_38 Start: 28379, Stop: 28113, Start Num: 31  
Candidate Starts for Wizard007\_38:  
(12, 28541), (Start: 21 @28427 has 1 MA's), (Start: 31 @28379 has 113 MA's), (Start: 38 @28349 has 1 MA's), (45, 28322), (61, 28262), (80, 28145),

Gene: Wooldri\_45 Start: 29013, Stop: 28774, Start Num: 25  
Candidate Starts for Wooldri\_45:  
(Start: 25 @29013 has 112 MA's), (63, 28905), (73, 28866), (80, 28812),

Gene: Xena\_36 Start: 28203, Stop: 27943, Start Num: 18  
Candidate Starts for Xena\_36:

(Start: 18 @28203 has 24 MA's), (Start: 38 @28176 has 1 MA's), (45, 28149), (61, 28089), (74, 28026), (80, 27969),

Gene: XianYue\_38 Start: 28104, Stop: 27877, Start Num: 36

Candidate Starts for XianYue\_38:

(15, 28230), (17, 28218), (Start: 36 @28104 has 5 MA's), (56, 28026), (58, 28020), (80, 27906),

Gene: YoSam321\_38 Start: 28371, Stop: 28105, Start Num: 31

Candidate Starts for YoSam321\_38:

(12, 28533), (Start: 21 @28419 has 1 MA's), (Start: 31 @28371 has 113 MA's), (Start: 38 @28341 has 1 MA's), (45, 28314), (61, 28254), (80, 28137),

Gene: Zetzy\_42 Start: 28665, Stop: 28426, Start Num: 25

Candidate Starts for Zetzy\_42:

(Start: 25 @28665 has 112 MA's), (63, 28557), (73, 28518), (80, 28464),

Gene: Zolita\_35 Start: 27984, Stop: 27757, Start Num: 39

Candidate Starts for Zolita\_35:

(Start: 39 @27984 has 2 MA's), (Start: 41 @27975 has 22 MA's), (Start: 44 @27957 has 1 MA's), (53, 27930), (73, 27843), (80, 27789),