

Pham 215882



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 215882 Report

This analysis was run 02/22/25 on database version 588.

Pham number 215882 has 179 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Louie6\_64, Bxz2\_60, Mainiac\_65, JeppNRM\_66, GingkoMaracino\_65, HaveUMetTed\_66, Misomonster\_66, Grub\_65, TinyPebbles\_63, Cullens\_65, Daishi\_64, Heliosoles\_64, BreSam8\_65, GtownJaz\_65, Fernando\_65, JenCasNa\_66, Marie\_63, Grif\_65, SoilDragon\_65, Gemma\_64, OlanP\_64, P28Green\_66, Sabia\_65, LugYA\_68, LarryKay\_65, Phoebe\_66, Ollie\_65, Groupthink\_66, Reba\_65, Soshari\_67, MoneyMay\_64, Bigflo\_64, HashRod\_66, PhishRPhriends\_63, Watson\_64, Taurus\_66, Kalnoky\_66, DaHudson\_64, MadMarie\_65, Kalb97\_66, Methuselah\_60, PGHhamlin\_67, Hercules11\_65, Pawn\_65, MuchMore\_68, AgronaGT15\_64, EpicPhail\_66, Farber\_65, Malinsilva\_67, Phranny\_66, Phoxy\_65, Calvinny\_64, Wooldri\_67, Vix\_63, Marius\_66, Anubis\_68, LBerry\_66, Pembroke\_65, Rummer\_64, Spike509\_65, MarQuardt\_65, PotatoSplit\_66, PurpleHaze\_65, Dieselweasel\_66, AugsMagnumOpus\_68, Jobu08\_63, JHC117\_63, Manu\_65, Zetzy\_64, Tiffany\_64, Aglet\_66, ACFishhook\_63, Lowa\_64
- Track 2 : StepMih\_64, Microwolf\_63
- Track 3 : Lunsford\_60
- Track 4 : Koreni\_58, TygerBlood\_59, Millski\_58, Lemur\_59, Gadost\_59, Avle17\_59, Chaph\_59, KFPoly\_58, Melvin\_61, Ruin\_59, LittleB\_59, Alberto7\_60, Bruiser\_58, TroyPia\_60, Burger\_57, PeterPeter\_59, Kyee\_59, Thanksgivukkah\_58, Romney\_58, LittleGuy\_59, Albee\_59, Maxo\_60, Camperdownii\_57, Flux\_59, Eapen\_59, LappelDuVide\_59, Funston\_58, Palestino\_58, OKaNui\_59, Lorenzo\_59, BubbleTrouble\_58, Cocoaberry\_59, YoSam321\_59, Wilbur\_59, Kingmustik0402\_59, JoongJeon\_58, Mazhar510\_59, Kampy\_58
- Track 5 : LochMonster\_60, Rosa24\_57, Ulysses\_58, DirtyDunning\_58, Spino\_58
- Track 6 : Morrow\_60
- Track 7 : BellusTerra\_60
- Track 8 : Cindaradix\_54
- Track 9 : Miramae\_56
- Track 10 : Stink\_56, Katalie136\_57, AvatarAhPeg\_56, Cici\_57, Badger\_56, Wile\_57, AbbysRanger\_57, PetiteSangsue\_57, Perplexer\_57, Achebe\_56, Morpher26\_57, Shygu2\_57
- Track 11 : Cerulean\_60, Obama12\_60, Happiness\_58, LHTSCC\_61, ChampagnePapi\_61
- Track 12 : Wander\_59
- Track 13 : Sparxx\_60, Bombshell\_59, Sabertooth\_59, Eros\_59, Broseidon\_59, Bartimeaus\_59, Baby16\_59, Citius\_59, Scamp\_59, Holli\_58, Florean\_59, Polymorphads\_60, CentreCat\_59
- Track 14 : Iracema64\_60, Cintron\_58

- Track 15 : Medusa\_59
- Track 16 : Phighter1804\_59
- Track 17 : JetBlade\_59
- Track 18 : Connomayer\_59
- Track 19 : Ohfah\_60
- Track 20 : Kratak\_58
- Track 21 : Iceman\_59, LeoAvram\_58
- Track 22 : Arturo\_57
- Track 23 : Phacado\_59
- Track 24 : Clarenza\_58
- Track 25 : Phelipe\_60, Abdiel\_59
- Track 26 : Tinybot\_58
- Track 27 : Skipitt\_58
- Track 28 : Phontbonne\_59
- Track 29 : Mundrea\_57
- Track 30 : Eurydice\_60, Nebs\_60
- Track 31 : Dhanush\_59
- Track 32 : Relief\_58
- Track 33 : Pumbaa\_59
- Track 34 : Eris\_58

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

The start number called the most often in the published annotations is 15, it was called in 93 of the 174 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• AbbysRanger\_57, Abdiel\_59, Achebe\_56, Albee\_59, Alberto7\_60, Arturo\_57, AvatarAhPeg\_56, Avle17\_59, Baby16\_59, Badger\_56, Bartimeaus\_59, Bombshell\_59, Broseidon\_59, Bruiser\_58, BubbleTrouble\_58, Burger\_57, Camperdownii\_57, CentreCat\_59, Cerulean\_60, ChampagnePapi\_61, Chaph\_59, Cici\_57, Cindaradix\_54, Cintron\_58, Citius\_59, Clarenza\_58, Cocoaberry\_59, Connomayer\_59, Dhanush\_59, DirtyDunning\_58, Eapen\_59, Eros\_59, Floean\_59, Flux\_59, Funston\_58, Gadost\_59, Happiness\_58, Holli\_58, Iracema64\_60, JetBlade\_59, JoongJeon\_58, KFPoly\_58, Kamy\_58, Katalie136\_57, Kingmustik0402\_59, Koreni\_58, Kyee\_59, LHTSCC\_61, LappelDuVide\_59, Lemur\_59, LittleB\_59, LittleGuy\_59, LochMonster\_60, Lorenzo\_59, Lunsford\_60, Maxo\_60, Mazhar510\_59, Melvin\_61, Millski\_58, Miramae\_56, Morpher26\_57, Morrow\_60, Mundrea\_57, OKaNui\_59, Obama12\_60, Ohfah\_60, Palestino\_58, Perplexer\_57, PeterPeter\_59, PetiteSangsue\_57, Phacado\_59, Phelipe\_60, Phighter1804\_59, Phontbonne\_59, Polymorphads\_60, Pumbaa\_59, Relief\_58, Romney\_58, Rosa24\_57, Ruin\_59, Sabertooth\_59, Scamp\_59, Shygu2\_57, Sparxx\_60, Spino\_58, Stink\_56, Thanksgivukkah\_58, TroyPia\_60, TygerBlood\_59, Ulysses\_58, Wander\_59, Wilbur\_59, Wile\_57, YoSam321\_59,

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

• BellusTerra\_60, Eris\_58, Eurydice\_60, Iceman\_59, Kratak\_58, LeoAvram\_58, Medusa\_59, Nebs\_60, Skipitt\_58, Tinybot\_58,

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

- ACFishhook\_63, Aglet\_66, AgronaGT15\_64, Anubis\_68, AugsMagnumOpus\_68, Bigflo\_64, BreSam8\_65, Bxz2\_60, Calvinny\_64, Cullens\_65, DaHudson\_64, Daishi\_64, Dieselweasel\_66, EpicPhail\_66, Farber\_65, Fernando\_65, Gemma\_64, GingkoMaracino\_65, Grif\_65, Groupthink\_66, Grub\_65, GtownJaz\_65, HashRod\_66, HaveUMetTed\_66, Heliosoles\_64, Hercules11\_65, JHC117\_63, JenCasNa\_66, JeppNRM\_66, Jobu08\_63, Kalb97\_66, Kalnoky\_66, LBerry\_66, LarryKay\_65, Louie6\_64, Lowa\_64, LugYA\_68, MadMarie\_65, Mainiac\_65, Malinsilva\_67, Manu\_65, MarQuardt\_65, Marie\_63, Marius\_66, Methuselah\_60, Microwolf\_63, Misomonster\_66, MoneyMay\_64, MuchMore\_68, OlanP\_64, Ollie\_65, P28Green\_66, PGHhamlin\_67, Pawn\_65, Pembroke\_65, PhishRPhriends\_63, Phoebe\_66, Phoxy\_65, Phranny\_66, PotatoSplit\_66, PurpleHaze\_65, Reba\_65, Rummer\_64, Sabia\_65, SoilDragon\_65, Soshari\_67, Spike509\_65, StepMih\_64, Taurus\_66, Tiffany\_64, TinyPebbles\_63, Vix\_63, Watson\_64, Wooldri\_67, Zetzy\_64,

### Summary by start number:

#### Start 13:

- Found in 103 of 179 ( 57.5% ) of genes in pham
- Manual Annotations of this start: 3 of 174
- Called 2.9% of time when present
- Phage (with cluster) where this start called: Eris\_58 (A4), Medusa\_59 (A4), Skipitt\_58 (A4),

#### Start 14:

- Found in 75 of 179 ( 41.9% ) of genes in pham
- Manual Annotations of this start: 69 of 174
- Called 97.3% of time when present
- Phage (with cluster) where this start called: ACFishhook\_63 (A3), Aglet\_66 (A3), AgronaGT15\_64 (A3), Anubis\_68 (A3), AugsMagnumOpus\_68 (A3), Bigflo\_64 (A3), BreSam8\_65 (A3), Bxz2\_60 (A3), Calvinny\_64 (A3), Cullens\_65 (A3), DaHudson\_64 (A3), Daishi\_64 (A3), Dieselweasel\_66 (A3), EpicPhail\_66 (A3), Farber\_65 (A3), Fernando\_65 (A3), Gemma\_64 (A3), GingkoMaracino\_65 (A3), Grif\_65 (A3), Groupthink\_66 (A3), Grub\_65 (A3), GtownJaz\_65 (A3), HashRod\_66 (A3), HaveUMetTed\_66 (A3), Heliosoles\_64 (A3), Hercules11\_65 (A3), JHC117\_63 (A3), JenCasNa\_66 (A3), JeppNRM\_66 (A3), Jobu08\_63 (A3), Kalb97\_66 (A3), Kalnoky\_66 (A3), LBerry\_66 (A3), LarryKay\_65 (A3), Louie6\_64 (A3), Lowa\_64 (A3), LugYA\_68 (A3), MadMarie\_65 (A3), Mainiac\_65 (A3), Malinsilva\_67 (A3), Manu\_65 (A3), MarQuardt\_65 (A3), Marie\_63 (A3), Marius\_66 (A3), Methuselah\_60 (A3), Misomonster\_66 (A3), MoneyMay\_64 (A3), MuchMore\_68 (A3), OlanP\_64 (A3), Ollie\_65 (A3), P28Green\_66 (A3), PGHhamlin\_67 (A3), Pawn\_65 (A3), Pembroke\_65 (A3), PhishRPhriends\_63 (A3), Phoebe\_66 (A3), Phoxy\_65 (A3), Phranny\_66 (A3), PotatoSplit\_66 (A3), PurpleHaze\_65 (A3), Reba\_65 (A3), Rummer\_64 (A3), Sabia\_65 (A3), SoilDragon\_65 (A3), Soshari\_67 (A3), Spike509\_65 (A3), Taurus\_66 (A3), Tiffany\_64 (A3), TinyPebbles\_63 (A3), Vix\_63 (A3), Watson\_64 (A3), Wooldri\_67 (A3), Zetzy\_64 (A3),

#### Start 15:

- Found in 104 of 179 ( 58.1% ) of genes in pham
- Manual Annotations of this start: 93 of 174
- Called 90.4% of time when present
- Phage (with cluster) where this start called: AbbysRanger\_57 (A4), Abdiel\_59 (A4), Achebe\_56 (A4), Albee\_59 (A4), Alberto7\_60 (A4), Arturo\_57 (A4), AvatarAhPeg\_56 (A4), Avle17\_59 (A4), Baby16\_59 (A4), Badger\_56 (A4), Bartimeaus\_59 (A4),

Bombshell\_59 (A4), Broseidon\_59 (A4), Bruiser\_58 (A4), BubbleTrouble\_58 (A4), Burger\_57 (A4), Camperdownii\_57 (A4), CentreCat\_59 (A4), Cerulean\_60 (A4), ChampagnePapi\_61 (A4), Chaph\_59 (A4), Cici\_57 (A4), Cindaradix\_54 (A4), Cintron\_58 (A4), Citius\_59 (A4), Clarenza\_58 (A4), CoCoaberry\_59 (A4), Connomayer\_59 (A4), Dhanush\_59 (A4), DirtyDunning\_58 (A4), Eapen\_59 (A4), Eros\_59 (A4), Florean\_59 (A4), Flux\_59 (A4), Funston\_58 (A4), Gadost\_59 (A4), Happiness\_58 (A4), Holli\_58 (A4), Iracema64\_60 (A4), JetBlade\_59 (A4), JoongJeon\_58 (A4), KFPoly\_58 (A4), Kampy\_58 (A4), Katalie136\_57 (A4), Kingmustik0402\_59 (A4), Koreni\_58 (A4), Kyee\_59 (A4), LHTSCC\_61 (A4), LappelDuVide\_59 (A4), Lemur\_59 (A4), LittleB\_59 (A4), LittleGuy\_59 (A4), LochMonster\_60 (A4), Lorenzo\_59 (A4), Lunsford\_60 (A4), Maxo\_60 (A4), Mazhar510\_59 (A4), Melvin\_61 (A4), Millski\_58 (A4), Miramae\_56 (A4), Morpher26\_57 (A4), Morrow\_60 (A4), Mundrea\_57 (A4), OKaNui\_59 (A4), Obama12\_60 (A4), Ohfah\_60 (A4), Palestino\_58 (A4), Perplexer\_57 (A4), PeterPeter\_59 (A4), PetiteSangsue\_57 (A4), Phacado\_59 (A4), Phelipe\_60 (A4), Phighter1804\_59 (A4), Phontbonne\_59 (A4), Polymorphads\_60 (A4), Pumbaa\_59 (A4), Relief\_58 (A4), Romney\_58 (A4), Rosa24\_57 (A4), Ruin\_59 (A4), Sabertooth\_59 (A4), Scamp\_59 (A4), Shygu2\_57 (A4), Sparxx\_60 (A4), Spino\_58 (A4), Stink\_56 (A4), Thanksgivukkah\_58 (A4), TroyPia\_60 (A4), TygerBlood\_59 (A4), Ulysses\_58 (A4), Wander\_59 (A4), Wilbur\_59 (A4), Wile\_57 (A4), YoSam321\_59 (A4),

#### Start 16:

- Found in 75 of 179 ( 41.9% ) of genes in pham
- Manual Annotations of this start: 2 of 174
- Called 2.7% of time when present
- Phage (with cluster) where this start called: Microwolf\_63 (A3), StepMih\_64 (A3),

#### Start 17:

- Found in 18 of 179 ( 10.1% ) of genes in pham
- Manual Annotations of this start: 7 of 174
- Called 38.9% of time when present
- Phage (with cluster) where this start called: BellusTerra\_60 (A4), Eurydice\_60 (A4), Iceman\_59 (A4), Kratark\_58 (A4), LeoAvram\_58 (A4), Nebs\_60 (A4), Tinybot\_58 (A4),

### **Summary by clusters:**

There are 2 clusters represented in this pham: A3, A4,

Info for manual annotations of cluster A3:

- Start number 14 was manually annotated 69 times for cluster A3.
- Start number 16 was manually annotated 2 times for cluster A3.

Info for manual annotations of cluster A4:

- Start number 13 was manually annotated 3 times for cluster A4.
- Start number 15 was manually annotated 93 times for cluster A4.
- Start number 17 was manually annotated 7 times for cluster A4.

### **Gene Information:**

Gene: ACFishhook\_63 Start: 39664, Stop: 39560, Start Num: 14  
Candidate Starts for ACFishhook\_63:  
(Start: 14 @39664 has 69 MA's), (Start: 16 @39649 has 2 MA's), (19, 39637), (22, 39595),

Gene: AbbysRanger\_57 Start: 38899, Stop: 38798, Start Num: 15  
Candidate Starts for AbbysRanger\_57:  
(11, 39052), (12, 38965), (Start: 13 @38914 has 3 MA's), (Start: 15 @38899 has 93 MA's), (22, 38830),

Gene: Abdiel\_59 Start: 39049, Stop: 38960, Start Num: 15  
Candidate Starts for Abdiel\_59:  
(9, 39799), (10, 39658), (11, 39202), (12, 39115), (Start: 13 @39064 has 3 MA's), (Start: 15 @39049 has 93 MA's), (Start: 17 @39046 has 7 MA's), (20, 39031), (22, 38992),

Gene: Achebe\_56 Start: 38882, Stop: 38781, Start Num: 15  
Candidate Starts for Achebe\_56:  
(11, 39035), (12, 38948), (Start: 13 @38897 has 3 MA's), (Start: 15 @38882 has 93 MA's), (22, 38813),

Gene: Aglet\_66 Start: 39707, Stop: 39603, Start Num: 14  
Candidate Starts for Aglet\_66:  
(Start: 14 @39707 has 69 MA's), (Start: 16 @39692 has 2 MA's), (19, 39680), (22, 39638),

Gene: AgronaGT15\_64 Start: 39555, Stop: 39451, Start Num: 14  
Candidate Starts for AgronaGT15\_64:  
(Start: 14 @39555 has 69 MA's), (Start: 16 @39540 has 2 MA's), (19, 39528), (22, 39486),

Gene: Albee\_59 Start: 39045, Stop: 38959, Start Num: 15  
Candidate Starts for Albee\_59:  
(2, 40131), (3, 40119), (7, 39972), (8, 39963), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (20, 39030), (22, 38991),

Gene: Alberto7\_60 Start: 39382, Stop: 39296, Start Num: 15  
Candidate Starts for Alberto7\_60:  
(2, 40468), (3, 40456), (7, 40309), (8, 40300), (10, 39991), (11, 39535), (12, 39448), (Start: 13 @39397 has 3 MA's), (Start: 15 @39382 has 93 MA's), (20, 39367), (22, 39328),

Gene: Anubis\_68 Start: 39593, Stop: 39489, Start Num: 14  
Candidate Starts for Anubis\_68:  
(Start: 14 @39593 has 69 MA's), (Start: 16 @39578 has 2 MA's), (19, 39566), (22, 39524),

Gene: Arturo\_57 Start: 39160, Stop: 39071, Start Num: 15  
Candidate Starts for Arturo\_57:  
(12, 39226), (Start: 13 @39175 has 3 MA's), (Start: 15 @39160 has 93 MA's), (20, 39142),

Gene: AugsMagnumOpus\_68 Start: 39698, Stop: 39594, Start Num: 14  
Candidate Starts for AugsMagnumOpus\_68:  
(Start: 14 @39698 has 69 MA's), (Start: 16 @39683 has 2 MA's), (19, 39671), (22, 39629),

Gene: AvatarAhPeg\_56 Start: 38672, Stop: 38583, Start Num: 15  
Candidate Starts for AvatarAhPeg\_56:  
(11, 38825), (12, 38738), (Start: 13 @38687 has 3 MA's), (Start: 15 @38672 has 93 MA's), (22, 38615),

Gene: Avle17\_59 Start: 39042, Stop: 38956, Start Num: 15  
Candidate Starts for Avle17\_59:

(2, 40128), (3, 40116), (7, 39969), (8, 39960), (10, 39651), (11, 39195), (12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: Baby16\_59 Start: 39056, Stop: 38970, Start Num: 15

Candidate Starts for Baby16\_59:

(12, 39122), (Start: 13 @39071 has 3 MA's), (Start: 15 @39056 has 93 MA's), (20, 39041), (22, 39002),

Gene: Badger\_56 Start: 38883, Stop: 38782, Start Num: 15

Candidate Starts for Badger\_56:

(11, 39036), (12, 38949), (Start: 13 @38898 has 3 MA's), (Start: 15 @38883 has 93 MA's), (22, 38814),

Gene: Bartimeaus\_59 Start: 39047, Stop: 38961, Start Num: 15

Candidate Starts for Bartimeaus\_59:

(12, 39113), (Start: 13 @39062 has 3 MA's), (Start: 15 @39047 has 93 MA's), (20, 39032), (22, 38993),

Gene: BellusTerra\_60 Start: 39046, Stop: 38960, Start Num: 17

Candidate Starts for BellusTerra\_60:

(12, 39115), (Start: 13 @39064 has 3 MA's), (Start: 15 @39049 has 93 MA's), (Start: 17 @39046 has 7 MA's), (20, 39031), (22, 38992),

Gene: Bigflo\_64 Start: 39706, Stop: 39602, Start Num: 14

Candidate Starts for Bigflo\_64:

(Start: 14 @39706 has 69 MA's), (Start: 16 @39691 has 2 MA's), (19, 39679), (22, 39637),

Gene: Bombshell\_59 Start: 39042, Stop: 38956, Start Num: 15

Candidate Starts for Bombshell\_59:

(12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: BreSam8\_65 Start: 39700, Stop: 39596, Start Num: 14

Candidate Starts for BreSam8\_65:

(Start: 14 @39700 has 69 MA's), (Start: 16 @39685 has 2 MA's), (19, 39673), (22, 39631),

Gene: Broseidon\_59 Start: 39047, Stop: 38961, Start Num: 15

Candidate Starts for Broseidon\_59:

(12, 39113), (Start: 13 @39062 has 3 MA's), (Start: 15 @39047 has 93 MA's), (20, 39032), (22, 38993),

Gene: Bruiser\_58 Start: 39045, Stop: 38959, Start Num: 15

Candidate Starts for Bruiser\_58:

(2, 40131), (3, 40119), (7, 39972), (8, 39963), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (20, 39030), (22, 38991),

Gene: BubbleTrouble\_58 Start: 39045, Stop: 38959, Start Num: 15

Candidate Starts for BubbleTrouble\_58:

(2, 40131), (3, 40119), (7, 39972), (8, 39963), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (20, 39030), (22, 38991),

Gene: Burger\_57 Start: 39045, Stop: 38959, Start Num: 15

Candidate Starts for Burger\_57:

(2, 40131), (3, 40119), (7, 39972), (8, 39963), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (20, 39030), (22, 38991),

Gene: Bxz2\_60 Start: 39741, Stop: 39637, Start Num: 14

Candidate Starts for Bxz2\_60:

(Start: 14 @39741 has 69 MA's), (Start: 16 @39726 has 2 MA's), (19, 39714), (22, 39672),

Gene: Calvinny\_64 Start: 39592, Stop: 39488, Start Num: 14

Candidate Starts for Calvinny\_64:

(Start: 14 @39592 has 69 MA's), (Start: 16 @39577 has 2 MA's), (19, 39565), (22, 39523),

Gene: Camperdownii\_57 Start: 38719, Stop: 38633, Start Num: 15

Candidate Starts for Camperdownii\_57:

(2, 39805), (3, 39793), (7, 39646), (8, 39637), (10, 39328), (11, 38872), (12, 38785), (Start: 13 @38734 has 3 MA's), (Start: 15 @38719 has 93 MA's), (20, 38704), (22, 38665),

Gene: CentreCat\_59 Start: 39048, Stop: 38962, Start Num: 15

Candidate Starts for CentreCat\_59:

(12, 39114), (Start: 13 @39063 has 3 MA's), (Start: 15 @39048 has 93 MA's), (20, 39033), (22, 38994),

Gene: Cerulean\_60 Start: 39449, Stop: 39363, Start Num: 15

Candidate Starts for Cerulean\_60:

(9, 40199), (10, 40058), (11, 39602), (12, 39515), (Start: 13 @39464 has 3 MA's), (Start: 15 @39449 has 93 MA's), (22, 39395),

Gene: ChampagnePapi\_61 Start: 39448, Stop: 39362, Start Num: 15

Candidate Starts for ChampagnePapi\_61:

(9, 40198), (10, 40057), (11, 39601), (12, 39514), (Start: 13 @39463 has 3 MA's), (Start: 15 @39448 has 93 MA's), (22, 39394),

Gene: Chaph\_59 Start: 39056, Stop: 38970, Start Num: 15

Candidate Starts for Chaph\_59:

(2, 40142), (3, 40130), (7, 39983), (8, 39974), (10, 39665), (11, 39209), (12, 39122), (Start: 13 @39071 has 3 MA's), (Start: 15 @39056 has 93 MA's), (20, 39041), (22, 39002),

Gene: Cici\_57 Start: 38900, Stop: 38799, Start Num: 15

Candidate Starts for Cici\_57:

(11, 39053), (12, 38966), (Start: 13 @38915 has 3 MA's), (Start: 15 @38900 has 93 MA's), (22, 38831),

Gene: Cindaradix\_54 Start: 38518, Stop: 38429, Start Num: 15

Candidate Starts for Cindaradix\_54:

(11, 38671), (12, 38584), (Start: 13 @38533 has 3 MA's), (Start: 15 @38518 has 93 MA's), (18, 38500),

Gene: Cintron\_58 Start: 39025, Stop: 38936, Start Num: 15

Candidate Starts for Cintron\_58:

(1, 40165), (6, 39958), (7, 39952), (10, 39634), (11, 39178), (12, 39091), (Start: 13 @39040 has 3 MA's), (Start: 15 @39025 has 93 MA's), (Start: 17 @39022 has 7 MA's), (20, 39007), (22, 38968),

Gene: Citius\_59 Start: 39066, Stop: 38980, Start Num: 15

Candidate Starts for Citius\_59:

(12, 39132), (Start: 13 @39081 has 3 MA's), (Start: 15 @39066 has 93 MA's), (20, 39051), (22, 39012),

Gene: Clarenza\_58 Start: 39042, Stop: 38956, Start Num: 15

Candidate Starts for Clarenza\_58:

(10, 39651), (11, 39195), (12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: Cocoaberry\_59 Start: 39049, Stop: 38963, Start Num: 15



Candidate Starts for Cocoaberry\_59:

(2, 40135), (3, 40123), (7, 39976), (8, 39967), (10, 39658), (11, 39202), (12, 39115), (Start: 13 @39064 has 3 MA's), (Start: 15 @39049 has 93 MA's), (20, 39034), (22, 38995),

Gene: Connomayer\_59 Start: 39045, Stop: 38959, Start Num: 15

Candidate Starts for Connomayer\_59:

(3, 40119), (7, 39972), (8, 39963), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (20, 39030), (22, 38991),

Gene: Cullens\_65 Start: 39706, Stop: 39602, Start Num: 14

Candidate Starts for Cullens\_65:

(Start: 14 @39706 has 69 MA's), (Start: 16 @39691 has 2 MA's), (19, 39679), (22, 39637),

Gene: DaHudson\_64 Start: 39699, Stop: 39595, Start Num: 14

Candidate Starts for DaHudson\_64:

(Start: 14 @39699 has 69 MA's), (Start: 16 @39684 has 2 MA's), (19, 39672), (22, 39630),

Gene: Daishi\_64 Start: 38575, Stop: 38471, Start Num: 14

Candidate Starts for Daishi\_64:

(Start: 14 @38575 has 69 MA's), (Start: 16 @38560 has 2 MA's), (19, 38548), (22, 38506),

Gene: Dhanush\_59 Start: 39048, Stop: 38962, Start Num: 15

Candidate Starts for Dhanush\_59:

(2, 40134), (3, 40122), (7, 39975), (8, 39966), (10, 39657), (11, 39201), (12, 39114), (Start: 13 @39063 has 3 MA's), (Start: 15 @39048 has 93 MA's), (22, 38994),

Gene: Dieselweasel\_66 Start: 39709, Stop: 39605, Start Num: 14

Candidate Starts for Dieselweasel\_66:

(Start: 14 @39709 has 69 MA's), (Start: 16 @39694 has 2 MA's), (19, 39682), (22, 39640),

Gene: DirtyDunning\_58 Start: 39060, Stop: 38971, Start Num: 15

Candidate Starts for DirtyDunning\_58:

(10, 39669), (11, 39213), (12, 39126), (Start: 13 @39075 has 3 MA's), (Start: 15 @39060 has 93 MA's), (Start: 17 @39057 has 7 MA's), (20, 39042), (22, 39003),

Gene: Eapen\_59 Start: 39040, Stop: 38954, Start Num: 15

Candidate Starts for Eapen\_59:

(2, 40126), (3, 40114), (7, 39967), (8, 39958), (10, 39649), (11, 39193), (12, 39106), (Start: 13 @39055 has 3 MA's), (Start: 15 @39040 has 93 MA's), (20, 39025), (22, 38986),

Gene: EpicPhail\_66 Start: 39710, Stop: 39606, Start Num: 14

Candidate Starts for EpicPhail\_66:

(Start: 14 @39710 has 69 MA's), (Start: 16 @39695 has 2 MA's), (19, 39683), (22, 39641),

Gene: Eris\_58 Start: 39075, Stop: 38959, Start Num: 13

Candidate Starts for Eris\_58:

(11, 39213), (12, 39126), (Start: 13 @39075 has 3 MA's), (Start: 15 @39060 has 93 MA's), (22, 38991),

Gene: Eros\_59 Start: 39047, Stop: 38961, Start Num: 15

Candidate Starts for Eros\_59:

(12, 39113), (Start: 13 @39062 has 3 MA's), (Start: 15 @39047 has 93 MA's), (20, 39032), (22, 38993),

Gene: Eurydice\_60 Start: 39042, Stop: 38956, Start Num: 17

Candidate Starts for Eurydice\_60:

(9, 39795), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (Start: 17 @39042 has 7 MA's), (20, 39027), (22, 38988),

Gene: Farber\_65 Start: 39696, Stop: 39592, Start Num: 14

Candidate Starts for Farber\_65:

(Start: 14 @39696 has 69 MA's), (Start: 16 @39681 has 2 MA's), (19, 39669), (22, 39627),

Gene: Fernando\_65 Start: 39706, Stop: 39602, Start Num: 14

Candidate Starts for Fernando\_65:

(Start: 14 @39706 has 69 MA's), (Start: 16 @39691 has 2 MA's), (19, 39679), (22, 39637),

Gene: Florean\_59 Start: 39044, Stop: 38958, Start Num: 15

Candidate Starts for Florean\_59:

(12, 39110), (Start: 13 @39059 has 3 MA's), (Start: 15 @39044 has 93 MA's), (20, 39029), (22, 38990),

Gene: Flux\_59 Start: 39044, Stop: 38958, Start Num: 15

Candidate Starts for Flux\_59:

(2, 40130), (3, 40118), (7, 39971), (8, 39962), (10, 39653), (11, 39197), (12, 39110), (Start: 13 @39059 has 3 MA's), (Start: 15 @39044 has 93 MA's), (20, 39029), (22, 38990),

Gene: Funston\_58 Start: 39045, Stop: 38959, Start Num: 15

Candidate Starts for Funston\_58:

(2, 40131), (3, 40119), (7, 39972), (8, 39963), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (20, 39030), (22, 38991),

Gene: Gadost\_59 Start: 39049, Stop: 38963, Start Num: 15

Candidate Starts for Gadost\_59:

(2, 40135), (3, 40123), (7, 39976), (8, 39967), (10, 39658), (11, 39202), (12, 39115), (Start: 13 @39064 has 3 MA's), (Start: 15 @39049 has 93 MA's), (20, 39034), (22, 38995),

Gene: Gemma\_64 Start: 39588, Stop: 39484, Start Num: 14

Candidate Starts for Gemma\_64:

(Start: 14 @39588 has 69 MA's), (Start: 16 @39573 has 2 MA's), (19, 39561), (22, 39519),

Gene: GingkoMaracino\_65 Start: 39592, Stop: 39488, Start Num: 14

Candidate Starts for GingkoMaracino\_65:

(Start: 14 @39592 has 69 MA's), (Start: 16 @39577 has 2 MA's), (19, 39565), (22, 39523),

Gene: Grif\_65 Start: 39781, Stop: 39677, Start Num: 14

Candidate Starts for Grif\_65:

(Start: 14 @39781 has 69 MA's), (Start: 16 @39766 has 2 MA's), (19, 39754), (22, 39712),

Gene: Groupthink\_66 Start: 39592, Stop: 39488, Start Num: 14

Candidate Starts for Groupthink\_66:

(Start: 14 @39592 has 69 MA's), (Start: 16 @39577 has 2 MA's), (19, 39565), (22, 39523),

Gene: Grub\_65 Start: 39698, Stop: 39594, Start Num: 14

Candidate Starts for Grub\_65:

(Start: 14 @39698 has 69 MA's), (Start: 16 @39683 has 2 MA's), (19, 39671), (22, 39629),

Gene: GtownJaz\_65 Start: 39708, Stop: 39604, Start Num: 14

Candidate Starts for GtownJaz\_65:

(Start: 14 @39708 has 69 MA's), (Start: 16 @39693 has 2 MA's), (19, 39681), (22, 39639),

Gene: Happiness\_58 Start: 39031, Stop: 38945, Start Num: 15

Candidate Starts for Happiness\_58:

(9, 39781), (10, 39640), (11, 39184), (12, 39097), (Start: 13 @39046 has 3 MA's), (Start: 15 @39031 has 93 MA's), (22, 38977),

Gene: HashRod\_66 Start: 39734, Stop: 39630, Start Num: 14

Candidate Starts for HashRod\_66:

(Start: 14 @39734 has 69 MA's), (Start: 16 @39719 has 2 MA's), (19, 39707), (22, 39665),

Gene: HaveUMetTed\_66 Start: 39577, Stop: 39473, Start Num: 14

Candidate Starts for HaveUMetTed\_66:

(Start: 14 @39577 has 69 MA's), (Start: 16 @39562 has 2 MA's), (19, 39550), (22, 39508),

Gene: Heliosoles\_64 Start: 39595, Stop: 39491, Start Num: 14

Candidate Starts for Heliosoles\_64:

(Start: 14 @39595 has 69 MA's), (Start: 16 @39580 has 2 MA's), (19, 39568), (22, 39526),

Gene: Hercules11\_65 Start: 39715, Stop: 39611, Start Num: 14

Candidate Starts for Hercules11\_65:

(Start: 14 @39715 has 69 MA's), (Start: 16 @39700 has 2 MA's), (19, 39688), (22, 39646),

Gene: Holli\_58 Start: 38835, Stop: 38749, Start Num: 15

Candidate Starts for Holli\_58:

(12, 38901), (Start: 13 @38850 has 3 MA's), (Start: 15 @38835 has 93 MA's), (20, 38820), (22, 38781),

Gene: Iceman\_59 Start: 39331, Stop: 39245, Start Num: 17

Candidate Starts for Iceman\_59:

(11, 39487), (12, 39400), (Start: 13 @39349 has 3 MA's), (Start: 15 @39334 has 93 MA's), (Start: 17 @39331 has 7 MA's), (20, 39316), (22, 39277),

Gene: Iracema64\_60 Start: 39312, Stop: 39223, Start Num: 15

Candidate Starts for Iracema64\_60:

(1, 40452), (6, 40245), (7, 40239), (10, 39921), (11, 39465), (12, 39378), (Start: 13 @39327 has 3 MA's), (Start: 15 @39312 has 93 MA's), (Start: 17 @39309 has 7 MA's), (20, 39294), (22, 39255),

Gene: JHC117\_63 Start: 39705, Stop: 39601, Start Num: 14

Candidate Starts for JHC117\_63:

(Start: 14 @39705 has 69 MA's), (Start: 16 @39690 has 2 MA's), (19, 39678), (22, 39636),

Gene: JenCasNa\_66 Start: 39706, Stop: 39602, Start Num: 14

Candidate Starts for JenCasNa\_66:

(Start: 14 @39706 has 69 MA's), (Start: 16 @39691 has 2 MA's), (19, 39679), (22, 39637),

Gene: JeppNRM\_66 Start: 39593, Stop: 39489, Start Num: 14

Candidate Starts for JeppNRM\_66:

(Start: 14 @39593 has 69 MA's), (Start: 16 @39578 has 2 MA's), (19, 39566), (22, 39524),

Gene: JetBlade\_59 Start: 39039, Stop: 38953, Start Num: 15

Candidate Starts for JetBlade\_59:

(9, 39789), (10, 39648), (11, 39192), (12, 39105), (Start: 13 @39054 has 3 MA's), (Start: 15 @39039 has 93 MA's), (20, 39024), (22, 38985),

Gene: Jobu08\_63 Start: 39538, Stop: 39434, Start Num: 14

Candidate Starts for Jobu08\_63:

(Start: 14 @39538 has 69 MA's), (Start: 16 @39523 has 2 MA's), (19, 39511), (22, 39469),

Gene: JoongJeon\_58 Start: 39042, Stop: 38956, Start Num: 15

Candidate Starts for JoongJeon\_58:

(2, 40128), (3, 40116), (7, 39969), (8, 39960), (10, 39651), (11, 39195), (12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: KFPoly\_58 Start: 39039, Stop: 38953, Start Num: 15

Candidate Starts for KFPoly\_58:

(2, 40125), (3, 40113), (7, 39966), (8, 39957), (10, 39648), (11, 39192), (12, 39105), (Start: 13 @39054 has 3 MA's), (Start: 15 @39039 has 93 MA's), (20, 39024), (22, 38985),

Gene: Kalb97\_66 Start: 39591, Stop: 39487, Start Num: 14

Candidate Starts for Kalb97\_66:

(Start: 14 @39591 has 69 MA's), (Start: 16 @39576 has 2 MA's), (19, 39564), (22, 39522),

Gene: Kalnoky\_66 Start: 39589, Stop: 39485, Start Num: 14

Candidate Starts for Kalnoky\_66:

(Start: 14 @39589 has 69 MA's), (Start: 16 @39574 has 2 MA's), (19, 39562), (22, 39520),

Gene: Kampy\_58 Start: 39047, Stop: 38961, Start Num: 15

Candidate Starts for Kampy\_58:

(2, 40133), (3, 40121), (7, 39974), (8, 39965), (10, 39656), (11, 39200), (12, 39113), (Start: 13 @39062 has 3 MA's), (Start: 15 @39047 has 93 MA's), (20, 39032), (22, 38993),

Gene: Katalie136\_57 Start: 38885, Stop: 38784, Start Num: 15

Candidate Starts for Katalie136\_57:

(11, 39038), (12, 38951), (Start: 13 @38900 has 3 MA's), (Start: 15 @38885 has 93 MA's), (22, 38816),

Gene: Kingmustik0402\_59 Start: 39034, Stop: 38948, Start Num: 15

Candidate Starts for Kingmustik0402\_59:

(2, 40120), (3, 40108), (7, 39961), (8, 39952), (10, 39643), (11, 39187), (12, 39100), (Start: 13 @39049 has 3 MA's), (Start: 15 @39034 has 93 MA's), (20, 39019), (22, 38980),

Gene: Koreni\_58 Start: 38726, Stop: 38640, Start Num: 15

Candidate Starts for Koreni\_58:

(2, 39812), (3, 39800), (7, 39653), (8, 39644), (10, 39335), (11, 38879), (12, 38792), (Start: 13 @38741 has 3 MA's), (Start: 15 @38726 has 93 MA's), (20, 38711), (22, 38672),

Gene: Kratark\_58 Start: 39040, Stop: 38954, Start Num: 17

Candidate Starts for Kratark\_58:

(10, 39652), (11, 39196), (12, 39109), (Start: 13 @39058 has 3 MA's), (Start: 15 @39043 has 93 MA's), (Start: 17 @39040 has 7 MA's), (20, 39025),

Gene: Kyee\_59 Start: 39043, Stop: 38957, Start Num: 15

Candidate Starts for Kyee\_59:

(2, 40129), (3, 40117), (7, 39970), (8, 39961), (10, 39652), (11, 39196), (12, 39109), (Start: 13 @39058 has 3 MA's), (Start: 15 @39043 has 93 MA's), (20, 39028), (22, 38989),

Gene: LBerry\_66 Start: 39710, Stop: 39606, Start Num: 14

Candidate Starts for LBerry\_66:

(Start: 14 @39710 has 69 MA's), (Start: 16 @39695 has 2 MA's), (19, 39683), (22, 39641),

Gene: LHTSCC\_61 Start: 39448, Stop: 39362, Start Num: 15

Candidate Starts for LHTSCC\_61:

(9, 40198), (10, 40057), (11, 39601), (12, 39514), (Start: 13 @39463 has 3 MA's), (Start: 15 @39448 has 93 MA's), (22, 39394),

Gene: LappelDuVide\_59 Start: 39044, Stop: 38958, Start Num: 15

Candidate Starts for LappelDuVide\_59:

(2, 40130), (3, 40118), (7, 39971), (8, 39962), (10, 39653), (11, 39197), (12, 39110), (Start: 13 @39059 has 3 MA's), (Start: 15 @39044 has 93 MA's), (20, 39029), (22, 38990),

Gene: LarryKay\_65 Start: 39736, Stop: 39632, Start Num: 14

Candidate Starts for LarryKay\_65:

(Start: 14 @39736 has 69 MA's), (Start: 16 @39721 has 2 MA's), (19, 39709), (22, 39667),

Gene: Lemur\_59 Start: 39042, Stop: 38956, Start Num: 15

Candidate Starts for Lemur\_59:

(2, 40128), (3, 40116), (7, 39969), (8, 39960), (10, 39651), (11, 39195), (12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: LeoAvram\_58 Start: 39045, Stop: 38959, Start Num: 17

Candidate Starts for LeoAvram\_58:

(11, 39201), (12, 39114), (Start: 13 @39063 has 3 MA's), (Start: 15 @39048 has 93 MA's), (Start: 17 @39045 has 7 MA's), (20, 39030), (22, 38991),

Gene: LittleB\_59 Start: 39046, Stop: 38960, Start Num: 15

Candidate Starts for LittleB\_59:

(2, 40132), (3, 40120), (7, 39973), (8, 39964), (10, 39655), (11, 39199), (12, 39112), (Start: 13 @39061 has 3 MA's), (Start: 15 @39046 has 93 MA's), (20, 39031), (22, 38992),

Gene: LittleGuy\_59 Start: 38941, Stop: 38855, Start Num: 15

Candidate Starts for LittleGuy\_59:

(2, 40027), (3, 40015), (7, 39868), (8, 39859), (10, 39550), (11, 39094), (12, 39007), (Start: 13 @38956 has 3 MA's), (Start: 15 @38941 has 93 MA's), (20, 38926), (22, 38887),

Gene: LochMonster\_60 Start: 39284, Stop: 39195, Start Num: 15

Candidate Starts for LochMonster\_60:

(10, 39893), (11, 39437), (12, 39350), (Start: 13 @39299 has 3 MA's), (Start: 15 @39284 has 93 MA's), (Start: 17 @39281 has 7 MA's), (20, 39266), (22, 39227),

Gene: Lorenzo\_59 Start: 39045, Stop: 38959, Start Num: 15

Candidate Starts for Lorenzo\_59:

(2, 40131), (3, 40119), (7, 39972), (8, 39963), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (20, 39030), (22, 38991),

Gene: Louie6\_64 Start: 39735, Stop: 39631, Start Num: 14

Candidate Starts for Louie6\_64:

(Start: 14 @39735 has 69 MA's), (Start: 16 @39720 has 2 MA's), (19, 39708), (22, 39666),

Gene: Lowa\_64 Start: 39698, Stop: 39594, Start Num: 14

Candidate Starts for Lowa\_64:

(Start: 14 @39698 has 69 MA's), (Start: 16 @39683 has 2 MA's), (19, 39671), (22, 39629),

Gene: LugYA\_68 Start: 39707, Stop: 39603, Start Num: 14

Candidate Starts for LugYA\_68:

(Start: 14 @39707 has 69 MA's), (Start: 16 @39692 has 2 MA's), (19, 39680), (22, 39638),

Gene: Lunsford\_60 Start: 39039, Stop: 38953, Start Num: 15

Candidate Starts for Lunsford\_60:

(11, 39192), (12, 39105), (Start: 13 @39054 has 3 MA's), (Start: 15 @39039 has 93 MA's), (20, 39024), (22, 38985),

Gene: MadMarie\_65 Start: 39708, Stop: 39604, Start Num: 14

Candidate Starts for MadMarie\_65:

(Start: 14 @39708 has 69 MA's), (Start: 16 @39693 has 2 MA's), (19, 39681), (22, 39639),

Gene: Mainiac\_65 Start: 39700, Stop: 39596, Start Num: 14

Candidate Starts for Mainiac\_65:

(Start: 14 @39700 has 69 MA's), (Start: 16 @39685 has 2 MA's), (19, 39673), (22, 39631),

Gene: Malinsilva\_67 Start: 39698, Stop: 39594, Start Num: 14

Candidate Starts for Malinsilva\_67:

(Start: 14 @39698 has 69 MA's), (Start: 16 @39683 has 2 MA's), (19, 39671), (22, 39629),

Gene: Manu\_65 Start: 39592, Stop: 39488, Start Num: 14

Candidate Starts for Manu\_65:

(Start: 14 @39592 has 69 MA's), (Start: 16 @39577 has 2 MA's), (19, 39565), (22, 39523),

Gene: MarQuardt\_65 Start: 39708, Stop: 39604, Start Num: 14

Candidate Starts for MarQuardt\_65:

(Start: 14 @39708 has 69 MA's), (Start: 16 @39693 has 2 MA's), (19, 39681), (22, 39639),

Gene: Marie\_63 Start: 39706, Stop: 39602, Start Num: 14

Candidate Starts for Marie\_63:

(Start: 14 @39706 has 69 MA's), (Start: 16 @39691 has 2 MA's), (19, 39679), (22, 39637),

Gene: Marius\_66 Start: 39589, Stop: 39485, Start Num: 14

Candidate Starts for Marius\_66:

(Start: 14 @39589 has 69 MA's), (Start: 16 @39574 has 2 MA's), (19, 39562), (22, 39520),

Gene: Maxo\_60 Start: 39047, Stop: 38961, Start Num: 15

Candidate Starts for Maxo\_60:

(2, 40133), (3, 40121), (7, 39974), (8, 39965), (10, 39656), (11, 39200), (12, 39113), (Start: 13 @39062 has 3 MA's), (Start: 15 @39047 has 93 MA's), (20, 39032), (22, 38993),

Gene: Mazhar510\_59 Start: 39046, Stop: 38960, Start Num: 15

Candidate Starts for Mazhar510\_59:

(2, 40132), (3, 40120), (7, 39973), (8, 39964), (10, 39655), (11, 39199), (12, 39112), (Start: 13 @39061 has 3 MA's), (Start: 15 @39046 has 93 MA's), (20, 39031), (22, 38992),

Gene: Medusa\_59 Start: 39074, Stop: 38958, Start Num: 13

Candidate Starts for Medusa\_59:

(11, 39212), (12, 39125), (Start: 13 @39074 has 3 MA's), (Start: 15 @39059 has 93 MA's), (21, 38993), (22, 38990),

Gene: Melvin\_61 Start: 39040, Stop: 38954, Start Num: 15

Candidate Starts for Melvin\_61:

(2, 40126), (3, 40114), (7, 39967), (8, 39958), (10, 39649), (11, 39193), (12, 39106), (Start: 13 @39055 has 3 MA's), (Start: 15 @39040 has 93 MA's), (20, 39025), (22, 38986),

Gene: Methuselah\_60 Start: 39730, Stop: 39626, Start Num: 14

Candidate Starts for Methuselah\_60:

(Start: 14 @39730 has 69 MA's), (Start: 16 @39715 has 2 MA's), (19, 39703), (22, 39661),

Gene: Microwolf\_63 Start: 39707, Stop: 39618, Start Num: 16

Candidate Starts for Microwolf\_63:

(Start: 14 @39722 has 69 MA's), (Start: 16 @39707 has 2 MA's), (19, 39695), (22, 39653),

Gene: Millski\_58 Start: 39046, Stop: 38960, Start Num: 15

Candidate Starts for Millski\_58:

(2, 40132), (3, 40120), (7, 39973), (8, 39964), (10, 39655), (11, 39199), (12, 39112), (Start: 13 @39061 has 3 MA's), (Start: 15 @39046 has 93 MA's), (20, 39031), (22, 38992),

Gene: Miramae\_56 Start: 38334, Stop: 38245, Start Num: 15

Candidate Starts for Miramae\_56:

(11, 38487), (12, 38400), (Start: 13 @38349 has 3 MA's), (Start: 15 @38334 has 93 MA's), (20, 38316), (22, 38277),

Gene: Misomonster\_66 Start: 39733, Stop: 39629, Start Num: 14

Candidate Starts for Misomonster\_66:

(Start: 14 @39733 has 69 MA's), (Start: 16 @39718 has 2 MA's), (19, 39706), (22, 39664),

Gene: MoneyMay\_64 Start: 39706, Stop: 39602, Start Num: 14

Candidate Starts for MoneyMay\_64:

(Start: 14 @39706 has 69 MA's), (Start: 16 @39691 has 2 MA's), (19, 39679), (22, 39637),

Gene: Morpher26\_57 Start: 38906, Stop: 38805, Start Num: 15

Candidate Starts for Morpher26\_57:

(11, 39059), (12, 38972), (Start: 13 @38921 has 3 MA's), (Start: 15 @38906 has 93 MA's), (22, 38837),

Gene: Morrow\_60 Start: 39051, Stop: 38965, Start Num: 15

Candidate Starts for Morrow\_60:

(7, 39978), (8, 39969), (10, 39660), (11, 39204), (12, 39117), (Start: 13 @39066 has 3 MA's), (Start: 15 @39051 has 93 MA's), (20, 39036), (22, 38997),

Gene: MuchMore\_68 Start: 39698, Stop: 39594, Start Num: 14

Candidate Starts for MuchMore\_68:

(Start: 14 @39698 has 69 MA's), (Start: 16 @39683 has 2 MA's), (19, 39671), (22, 39629),

Gene: Mundrea\_57 Start: 38898, Stop: 38797, Start Num: 15

Candidate Starts for Mundrea\_57:

(11, 39051), (12, 38964), (Start: 13 @38913 has 3 MA's), (Start: 15 @38898 has 93 MA's), (19, 38871), (22, 38829),

Gene: Nebs\_60 Start: 39045, Stop: 38959, Start Num: 17

Candidate Starts for Nebs\_60:

(9, 39798), (10, 39657), (11, 39201), (12, 39114), (Start: 13 @39063 has 3 MA's), (Start: 15 @39048 has 93 MA's), (Start: 17 @39045 has 7 MA's), (20, 39030), (22, 38991),

Gene: OKaNui\_59 Start: 39095, Stop: 39009, Start Num: 15

Candidate Starts for OKaNui\_59:

(2, 40181), (3, 40169), (7, 40022), (8, 40013), (10, 39704), (11, 39248), (12, 39161), (Start: 13 @39110 has 3 MA's), (Start: 15 @39095 has 93 MA's), (20, 39080), (22, 39041),

Gene: Obama12\_60 Start: 39432, Stop: 39346, Start Num: 15

Candidate Starts for Obama12\_60:

(9, 40182), (10, 40041), (11, 39585), (12, 39498), (Start: 13 @39447 has 3 MA's), (Start: 15 @39432 has 93 MA's), (22, 39378),

Gene: Ohfah\_60 Start: 39048, Stop: 38959, Start Num: 15

Candidate Starts for Ohfah\_60:

(9, 39798), (10, 39657), (11, 39201), (12, 39114), (Start: 13 @39063 has 3 MA's), (Start: 15 @39048 has 93 MA's), (Start: 17 @39045 has 7 MA's), (20, 39030), (22, 38991),

Gene: OlanP\_64 Start: 39765, Stop: 39661, Start Num: 14

Candidate Starts for OlanP\_64:

(Start: 14 @39765 has 69 MA's), (Start: 16 @39750 has 2 MA's), (19, 39738), (22, 39696),

Gene: Ollie\_65 Start: 39577, Stop: 39473, Start Num: 14

Candidate Starts for Ollie\_65:

(Start: 14 @39577 has 69 MA's), (Start: 16 @39562 has 2 MA's), (19, 39550), (22, 39508),

Gene: P28Green\_66 Start: 39709, Stop: 39605, Start Num: 14

Candidate Starts for P28Green\_66:

(Start: 14 @39709 has 69 MA's), (Start: 16 @39694 has 2 MA's), (19, 39682), (22, 39640),

Gene: PGHhamlin\_67 Start: 39698, Stop: 39594, Start Num: 14

Candidate Starts for PGHhamlin\_67:

(Start: 14 @39698 has 69 MA's), (Start: 16 @39683 has 2 MA's), (19, 39671), (22, 39629),

Gene: Palestino\_58 Start: 39045, Stop: 38959, Start Num: 15

Candidate Starts for Palestino\_58:

(2, 40131), (3, 40119), (7, 39972), (8, 39963), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (20, 39030), (22, 38991),

Gene: Pawn\_65 Start: 39596, Stop: 39492, Start Num: 14

Candidate Starts for Pawn\_65:

(Start: 14 @39596 has 69 MA's), (Start: 16 @39581 has 2 MA's), (19, 39569), (22, 39527),

Gene: Pembroke\_65 Start: 39707, Stop: 39603, Start Num: 14

Candidate Starts for Pembroke\_65:

(Start: 14 @39707 has 69 MA's), (Start: 16 @39692 has 2 MA's), (19, 39680), (22, 39638),

Gene: Perplexer\_57 Start: 38882, Stop: 38781, Start Num: 15

Candidate Starts for Perplexer\_57:

(11, 39035), (12, 38948), (Start: 13 @38897 has 3 MA's), (Start: 15 @38882 has 93 MA's), (22, 38813),

Gene: PeterPeter\_59 Start: 39042, Stop: 38956, Start Num: 15

Candidate Starts for PeterPeter\_59:



(2, 40128), (3, 40116), (7, 39969), (8, 39960), (10, 39651), (11, 39195), (12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: PetiteSangusue\_57 Start: 38885, Stop: 38784, Start Num: 15

Candidate Starts for PetiteSangusue\_57:

(11, 39038), (12, 38951), (Start: 13 @38900 has 3 MA's), (Start: 15 @38885 has 93 MA's), (22, 38816),

Gene: Phacado\_59 Start: 39044, Stop: 38958, Start Num: 15

Candidate Starts for Phacado\_59:

(2, 40130), (3, 40118), (7, 39971), (8, 39962), (10, 39653), (11, 39197), (12, 39110), (Start: 15 @39044 has 93 MA's), (20, 39029), (22, 38990),

Gene: Phelipe\_60 Start: 39048, Stop: 38959, Start Num: 15

Candidate Starts for Phelipe\_60:

(9, 39798), (10, 39657), (11, 39201), (12, 39114), (Start: 13 @39063 has 3 MA's), (Start: 15 @39048 has 93 MA's), (Start: 17 @39045 has 7 MA's), (20, 39030), (22, 38991),

Gene: Phighter1804\_59 Start: 39109, Stop: 39020, Start Num: 15

Candidate Starts for Phighter1804\_59:

(11, 39262), (12, 39175), (Start: 13 @39124 has 3 MA's), (Start: 15 @39109 has 93 MA's), (Start: 17 @39106 has 7 MA's), (20, 39091), (22, 39052),

Gene: PhishRPhriends\_63 Start: 38773, Stop: 38669, Start Num: 14

Candidate Starts for PhishRPhriends\_63:

(Start: 14 @38773 has 69 MA's), (Start: 16 @38758 has 2 MA's), (19, 38746), (22, 38704),

Gene: Phoebe\_66 Start: 39699, Stop: 39595, Start Num: 14

Candidate Starts for Phoebe\_66:

(Start: 14 @39699 has 69 MA's), (Start: 16 @39684 has 2 MA's), (19, 39672), (22, 39630),

Gene: Phontbonne\_59 Start: 38951, Stop: 38850, Start Num: 15

Candidate Starts for Phontbonne\_59:

(10, 39560), (11, 39104), (12, 39017), (Start: 13 @38966 has 3 MA's), (Start: 15 @38951 has 93 MA's), (21, 38885), (22, 38882),

Gene: Phoxy\_65 Start: 39731, Stop: 39627, Start Num: 14

Candidate Starts for Phoxy\_65:

(Start: 14 @39731 has 69 MA's), (Start: 16 @39716 has 2 MA's), (19, 39704), (22, 39662),

Gene: Phranny\_66 Start: 39578, Stop: 39474, Start Num: 14

Candidate Starts for Phranny\_66:

(Start: 14 @39578 has 69 MA's), (Start: 16 @39563 has 2 MA's), (19, 39551), (22, 39509),

Gene: Polymorphads\_60 Start: 39038, Stop: 38952, Start Num: 15

Candidate Starts for Polymorphads\_60:

(12, 39104), (Start: 13 @39053 has 3 MA's), (Start: 15 @39038 has 93 MA's), (20, 39023), (22, 38984),

Gene: PotatoSplit\_66 Start: 39710, Stop: 39606, Start Num: 14

Candidate Starts for PotatoSplit\_66:

(Start: 14 @39710 has 69 MA's), (Start: 16 @39695 has 2 MA's), (19, 39683), (22, 39641),

Gene: Pumbaa\_59 Start: 38990, Stop: 38904, Start Num: 15

Candidate Starts for Pumbaa\_59:

(2, 40076), (6, 39923), (7, 39917), (10, 39599), (11, 39143), (12, 39056), (Start: 13 @39005 has 3 MA's), (Start: 15 @38990 has 93 MA's), (20, 38975), (22, 38936),

Gene: PurpleHaze\_65 Start: 39591, Stop: 39487, Start Num: 14

Candidate Starts for PurpleHaze\_65:

(Start: 14 @39591 has 69 MA's), (Start: 16 @39576 has 2 MA's), (19, 39564), (22, 39522),

Gene: Reba\_65 Start: 39251, Stop: 39147, Start Num: 14

Candidate Starts for Reba\_65:

(Start: 14 @39251 has 69 MA's), (Start: 16 @39236 has 2 MA's), (19, 39224), (22, 39182),

Gene: Relief\_58 Start: 39042, Stop: 38956, Start Num: 15

Candidate Starts for Relief\_58:

(2, 40128), (3, 40116), (5, 39996), (7, 39969), (8, 39960), (10, 39651), (11, 39195), (12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: Romney\_58 Start: 39042, Stop: 38956, Start Num: 15

Candidate Starts for Romney\_58:

(2, 40128), (3, 40116), (7, 39969), (8, 39960), (10, 39651), (11, 39195), (12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: Rosa24\_57 Start: 39076, Stop: 38987, Start Num: 15

Candidate Starts for Rosa24\_57:

(10, 39685), (11, 39229), (12, 39142), (Start: 13 @39091 has 3 MA's), (Start: 15 @39076 has 93 MA's), (Start: 17 @39073 has 7 MA's), (20, 39058), (22, 39019),

Gene: Ruin\_59 Start: 39038, Stop: 38952, Start Num: 15

Candidate Starts for Ruin\_59:

(2, 40124), (3, 40112), (7, 39965), (8, 39956), (10, 39647), (11, 39191), (12, 39104), (Start: 13 @39053 has 3 MA's), (Start: 15 @39038 has 93 MA's), (20, 39023), (22, 38984),

Gene: Rummer\_64 Start: 39734, Stop: 39630, Start Num: 14

Candidate Starts for Rummer\_64:

(Start: 14 @39734 has 69 MA's), (Start: 16 @39719 has 2 MA's), (19, 39707), (22, 39665),

Gene: Sabertooth\_59 Start: 39047, Stop: 38961, Start Num: 15

Candidate Starts for Sabertooth\_59:

(12, 39113), (Start: 13 @39062 has 3 MA's), (Start: 15 @39047 has 93 MA's), (20, 39032), (22, 38993),

Gene: Sabia\_65 Start: 39715, Stop: 39611, Start Num: 14

Candidate Starts for Sabia\_65:

(Start: 14 @39715 has 69 MA's), (Start: 16 @39700 has 2 MA's), (19, 39688), (22, 39646),

Gene: Scamp\_59 Start: 39047, Stop: 38961, Start Num: 15

Candidate Starts for Scamp\_59:

(12, 39113), (Start: 13 @39062 has 3 MA's), (Start: 15 @39047 has 93 MA's), (20, 39032), (22, 38993),

Gene: Shygu2\_57 Start: 38936, Stop: 38835, Start Num: 15

Candidate Starts for Shygu2\_57:

(11, 39089), (12, 39002), (Start: 13 @38951 has 3 MA's), (Start: 15 @38936 has 93 MA's), (22, 38867),

Gene: Skipitt\_58 Start: 39054, Stop: 38953, Start Num: 13

Candidate Starts for Skipitt\_58:

(2, 40125), (3, 40113), (7, 39966), (8, 39957), (10, 39648), (11, 39192), (12, 39105), (Start: 13 @39054 has 3 MA's), (Start: 15 @39039 has 93 MA's), (20, 39024), (22, 38985),

Gene: SoilDragon\_65 Start: 39154, Stop: 39050, Start Num: 14

Candidate Starts for SoilDragon\_65:

(Start: 14 @39154 has 69 MA's), (Start: 16 @39139 has 2 MA's), (19, 39127), (22, 39085),

Gene: Soshari\_67 Start: 39730, Stop: 39626, Start Num: 14

Candidate Starts for Soshari\_67:

(Start: 14 @39730 has 69 MA's), (Start: 16 @39715 has 2 MA's), (19, 39703), (22, 39661),

Gene: Sparxx\_60 Start: 39040, Stop: 38954, Start Num: 15

Candidate Starts for Sparxx\_60:

(12, 39106), (Start: 13 @39055 has 3 MA's), (Start: 15 @39040 has 93 MA's), (20, 39025), (22, 38986),

Gene: Spike509\_65 Start: 39731, Stop: 39627, Start Num: 14

Candidate Starts for Spike509\_65:

(Start: 14 @39731 has 69 MA's), (Start: 16 @39716 has 2 MA's), (19, 39704), (22, 39662),

Gene: Spino\_58 Start: 39048, Stop: 38959, Start Num: 15

Candidate Starts for Spino\_58:

(10, 39657), (11, 39201), (12, 39114), (Start: 13 @39063 has 3 MA's), (Start: 15 @39048 has 93 MA's), (Start: 17 @39045 has 7 MA's), (20, 39030), (22, 38991),

Gene: StepMih\_64 Start: 39685, Stop: 39596, Start Num: 16

Candidate Starts for StepMih\_64:

(Start: 14 @39700 has 69 MA's), (Start: 16 @39685 has 2 MA's), (19, 39673), (22, 39631),

Gene: Stink\_56 Start: 38614, Stop: 38525, Start Num: 15

Candidate Starts for Stink\_56:

(11, 38767), (12, 38680), (Start: 13 @38629 has 3 MA's), (Start: 15 @38614 has 93 MA's), (22, 38557),

Gene: Taurus\_66 Start: 39706, Stop: 39602, Start Num: 14

Candidate Starts for Taurus\_66:

(Start: 14 @39706 has 69 MA's), (Start: 16 @39691 has 2 MA's), (19, 39679), (22, 39637),

Gene: Thanksgivukkah\_58 Start: 39043, Stop: 38957, Start Num: 15

Candidate Starts for Thanksgivukkah\_58:

(2, 40129), (3, 40117), (7, 39970), (8, 39961), (10, 39652), (11, 39196), (12, 39109), (Start: 13 @39058 has 3 MA's), (Start: 15 @39043 has 93 MA's), (20, 39028), (22, 38989),

Gene: Tiffany\_64 Start: 39592, Stop: 39488, Start Num: 14

Candidate Starts for Tiffany\_64:

(Start: 14 @39592 has 69 MA's), (Start: 16 @39577 has 2 MA's), (19, 39565), (22, 39523),

Gene: TinyPebbles\_63 Start: 39736, Stop: 39632, Start Num: 14

Candidate Starts for TinyPebbles\_63:

(Start: 14 @39736 has 69 MA's), (Start: 16 @39721 has 2 MA's), (19, 39709), (22, 39667),

Gene: Tinybot\_58 Start: 39072, Stop: 38986, Start Num: 17

Candidate Starts for Tinybot\_58:

(10, 39684), (11, 39228), (12, 39141), (Start: 13 @39090 has 3 MA's), (Start: 15 @39075 has 93 MA's), (Start: 17 @39072 has 7 MA's), (20, 39057), (22, 39018),

Gene: TroyPia\_60 Start: 39043, Stop: 38957, Start Num: 15

Candidate Starts for TroyPia\_60:

(2, 40129), (3, 40117), (7, 39970), (8, 39961), (10, 39652), (11, 39196), (12, 39109), (Start: 13 @39058 has 3 MA's), (Start: 15 @39043 has 93 MA's), (20, 39028), (22, 38989),

Gene: TygerBlood\_59 Start: 39045, Stop: 38959, Start Num: 15

Candidate Starts for TygerBlood\_59:

(2, 40131), (3, 40119), (7, 39972), (8, 39963), (10, 39654), (11, 39198), (12, 39111), (Start: 13 @39060 has 3 MA's), (Start: 15 @39045 has 93 MA's), (20, 39030), (22, 38991),

Gene: Ulysses\_58 Start: 38725, Stop: 38636, Start Num: 15

Candidate Starts for Ulysses\_58:

(10, 39334), (11, 38878), (12, 38791), (Start: 13 @38740 has 3 MA's), (Start: 15 @38725 has 93 MA's), (Start: 17 @38722 has 7 MA's), (20, 38707), (22, 38668),

Gene: Vix\_63 Start: 39789, Stop: 39685, Start Num: 14

Candidate Starts for Vix\_63:

(Start: 14 @39789 has 69 MA's), (Start: 16 @39774 has 2 MA's), (19, 39762), (22, 39720),

Gene: Wander\_59 Start: 39042, Stop: 38956, Start Num: 15

Candidate Starts for Wander\_59:

(2, 40128), (3, 40116), (4, 40059), (7, 39969), (8, 39960), (10, 39651), (11, 39195), (12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: Watson\_64 Start: 39698, Stop: 39594, Start Num: 14

Candidate Starts for Watson\_64:

(Start: 14 @39698 has 69 MA's), (Start: 16 @39683 has 2 MA's), (19, 39671), (22, 39629),

Gene: Wilbur\_59 Start: 39042, Stop: 38956, Start Num: 15

Candidate Starts for Wilbur\_59:

(2, 40128), (3, 40116), (7, 39969), (8, 39960), (10, 39651), (11, 39195), (12, 39108), (Start: 13 @39057 has 3 MA's), (Start: 15 @39042 has 93 MA's), (20, 39027), (22, 38988),

Gene: Wile\_57 Start: 38916, Stop: 38815, Start Num: 15

Candidate Starts for Wile\_57:

(11, 39069), (12, 38982), (Start: 13 @38931 has 3 MA's), (Start: 15 @38916 has 93 MA's), (22, 38847),

Gene: Wooldri\_67 Start: 39618, Stop: 39514, Start Num: 14

Candidate Starts for Wooldri\_67:

(Start: 14 @39618 has 69 MA's), (Start: 16 @39603 has 2 MA's), (19, 39591), (22, 39549),

Gene: YoSam321\_59 Start: 39039, Stop: 38953, Start Num: 15

Candidate Starts for YoSam321\_59:

(2, 40125), (3, 40113), (7, 39966), (8, 39957), (10, 39648), (11, 39192), (12, 39105), (Start: 13 @39054 has 3 MA's), (Start: 15 @39039 has 93 MA's), (20, 39024), (22, 38985),

Gene: Zetzy\_64 Start: 39269, Stop: 39165, Start Num: 14

Candidate Starts for Zetzy\_64:

(Start: 14 @39269 has 69 MA's), (Start: 16 @39254 has 2 MA's), (19, 39242), (22, 39200),