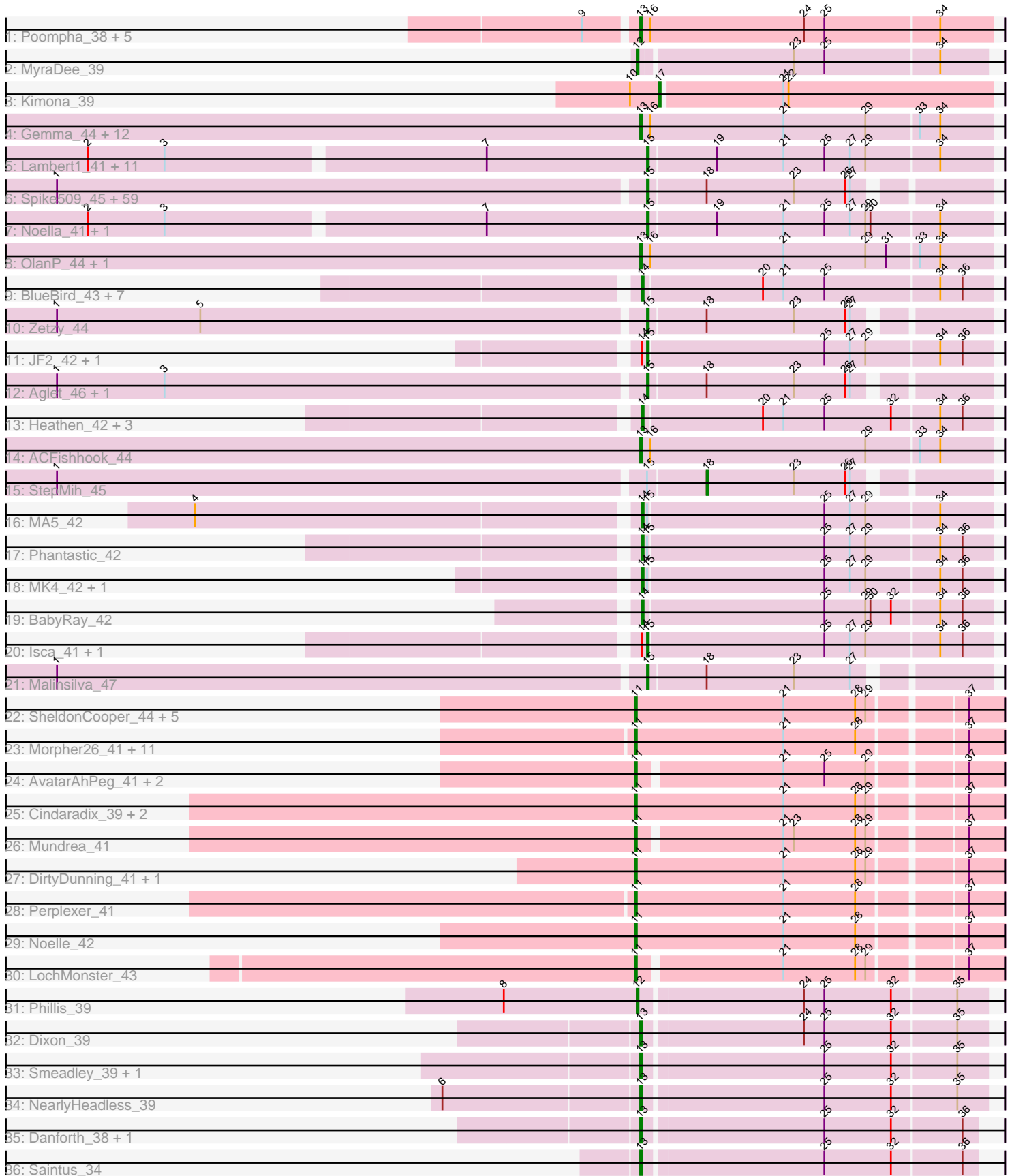


Pham 156169



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 156169 Report

This analysis was run 04/12/24 on database version 558.

Pham number 156169 has 162 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Poompha\_38, Trike\_36, Drake94\_37, Severus\_37, PeaceMeal1\_37, KittenMittens\_36
- Track 2 : MyraDee\_39
- Track 3 : Kimona\_39
- Track 4 : Gemma\_44, Kalnoky\_46, Heliosoles\_44, Phranny\_46, Marius\_46, Pawn\_45, Groupthink\_46, PurpleHaze\_45, Manu\_45, PhishRPhriends\_43, Kalb97\_46, Reba\_45, JeppNRM\_46
- Track 5 : Lambert1\_41, Pocahontas\_41, Todacoro\_41, Norbert\_40, Margo\_41, Popcicle\_41, Hookmount\_41, QuinnKiro\_40, Caviar\_41, Panamaxus\_39, ResDef\_42, Veracruz\_40
- Track 6 : Spike509\_45, Grum1\_45, Sabia\_45, Jobu08\_44, PotatoSplit\_47, AugsMagnumOpus\_48, Ollie\_45, Pembroke\_45, JHC117\_45, Hercules11\_45, MarQuardt\_45, Microwolf\_45, SoYo\_45, Watson\_45, Taurus\_46, LBerry\_46, DaHudson\_45, MadMarie\_45, Snickers\_45, P28Green\_46, Phoebe\_46, Fernando\_45, Grub\_45, MuchMore\_48, AgronaGT15\_44, BreSam8\_45, Dieselweasel\_46, Beauxregard13\_45, Vix\_45, Marie\_45, BuzzBuzz\_43, Colbster\_45, Anubis\_48, Grif\_45, Rummer\_44, Stagni\_45, LugYA\_48, Lilith\_46, MoneyMay\_45, KADY\_45, HashRod\_46, Tiffany\_45, GingkoMaracino\_45, Misomonster\_46, Louie6\_44, Sabinator\_44, PGHhamlin\_47, Mainiac\_45, Soshari\_47, Cullens\_45, Daishi\_44, Penny1\_46, Farber\_45, Phoxy\_45, EpicPhail\_46, Wooldri\_47, Bxz2\_41, LarryKay\_45, JenCasNa\_46, SoilDragon\_45
- Track 7 : Noella\_41, Texage\_40
- Track 8 : OlanP\_44, HaveUMetTed\_46
- Track 9 : BlueBird\_43, Giroux\_42, Bugatti\_42, Idleandcovert\_42, SaturnRing\_42, Pistachio\_43, Puppy\_43, TNguyen7\_42
- Track 10 : Zetzy\_44
- Track 11 : JF2\_42, JF4\_42
- Track 12 : Aglet\_46, GtownJaz\_45
- Track 13 : Heathen\_42, Fred313\_42, Scout\_42, HelDan\_42
- Track 14 : ACFishhook\_44
- Track 15 : StepMih\_45
- Track 16 : MA5\_42
- Track 17 : Phantastic\_42
- Track 18 : MK4\_42, B1\_39
- Track 19 : BabyRay\_42
- Track 20 : Isca\_41, Rockstar\_42
- Track 21 : Malinsilva\_47

- Track 22 : SheldonCooper\_44, BangNhom\_43, Cerulean\_43, LHTSCC\_44, Obama12\_43, ChampagnePapi\_44
- Track 23 : Morpher26\_41, Cici\_41, Datway\_41, Bumblebee11\_40, Badger\_40, Backyardigan\_40, Achebe\_40, Wile\_41, Xena\_40, PetiteSangsue\_41, AbbysRanger\_41, Katalie136\_41
- Track 24 : AvatarAhPeg\_41, Stink\_40, Miramae\_41
- Track 25 : Cindaradix\_39, Arturo\_41, Kratak\_42
- Track 26 : Mundrea\_41
- Track 27 : DirtyDunning\_41, Shygu2\_41
- Track 28 : Perplexer\_41
- Track 29 : Noelle\_42
- Track 30 : LochMonster\_43
- Track 31 : Phillis\_39
- Track 32 : Dixon\_39
- Track 33 : Smeadley\_39, Expelliarmus\_38
- Track 34 : NearlyHeadless\_39
- Track 35 : Danforth\_38, Roary\_39
- Track 36 : Saintus\_34

***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 80 of the 155 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aglet\_46, AgronaGT15\_44, Anubis\_48, AugsMagnumOpus\_48, Beauxregard13\_45, BreSam8\_45, BuzzBuzz\_43, Bxz2\_41, Caviar\_41, Colbster\_45, Cullens\_45, DaHudson\_45, Daishi\_44, Dieselweasel\_46, EpicPhail\_46, Farber\_45, Fernando\_45, GingkoMaracino\_45, Grif\_45, Grub\_45, Grum1\_45, GtownJaz\_45, HashRod\_46, Hercules11\_45, Hookmount\_41, Isca\_41, JF2\_42, JF4\_42, JHC117\_45, JenCasNa\_46, Jobu08\_44, KADY\_45, LBerry\_46, Lambert1\_41, LarryKay\_45, Lilith\_46, Louie6\_44, LugYA\_48, MadMarie\_45, Mainiac\_45, Malinsilva\_47, MarQuardt\_45, Margo\_41, Marie\_45, Microwolf\_45, Misomonster\_46, MoneyMay\_45, MuchMore\_48, Noella\_41, Norbert\_40, Ollie\_45, P28Green\_46, PGHhamlin\_47, Panamaxus\_39, Pembroke\_45, Penny1\_46, Phoebe\_46, Phoxy\_45, Pocahontas\_41, Popcicle\_41, PotatoSplit\_47, QuinnKiro\_40, ResDef\_42, Rockstar\_42, Rummer\_44, Sabia\_45, Sabinator\_44, Snickers\_45, SoYo\_45, SoilDragon\_45, Soshari\_47, Spike509\_45, Stagni\_45, Taurus\_46, Texage\_40, Tiffany\_45, Todacoro\_41, Veracruz\_40, Vix\_45, Watson\_45, Wooldri\_47, Zetzy\_44,

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

- B1\_39, MA5\_42, MK4\_42, Phantastic\_42, StepMih\_45,

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

- ACFishhook\_44, AbbysRanger\_41, Achebe\_40, Arturo\_41, AvatarAhPeg\_41, BabyRay\_42, Backyardigan\_40, Badger\_40, BangNhom\_43, BlueBird\_43, Bugatti\_42, Bumblebee11\_40, Cerulean\_43, ChampagnePapi\_44, Cici\_41, Cindaradix\_39, Danforth\_38, Datway\_41, DirtyDunning\_41, Dixon\_39, Drake94\_37, Expelliarmus\_38, Fred313\_42, Gemma\_44, Giroux\_42, Groupthink\_46, HaveUMetTed\_46, Heathen\_42, HeIDan\_42, Heliosoles\_44, Idleandcovert\_42,

JeppNRM\_46, Kalb97\_46, Kalnoky\_46, Katalie136\_41, Kimona\_39, KittenMittens\_36, Kratark\_42, LHTSCC\_44, LochMonster\_43, Manu\_45, Marius\_46, Miramae\_41, Morpher26\_41, Mundrea\_41, MyraDee\_39, NearlyHeadless\_39, Noelle\_42, Obama12\_43, OlanP\_44, Pawn\_45, PeaceMeal1\_37, Perplexer\_41, PetiteSangsue\_41, Phillis\_39, PhishRPhriends\_43, Phranny\_46, Pistachio\_43, Poompha\_38, Puppy\_43, PurpleHaze\_45, Reba\_45, Roary\_39, Saintus\_34, SaturnRing\_42, Scout\_42, Severus\_37, SheldonCooper\_44, Shygu2\_41, Smeadley\_39, Stink\_40, TNguyen7\_42, Trike\_36, Wile\_41, Xena\_40,

### Summary by start number:

#### Start 11:

- Found in 30 of 162 ( 18.5% ) of genes in pham
- Manual Annotations of this start: 29 of 155
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AbbysRanger\_41 (A4), Achebe\_40 (A4), Arturo\_41 (A4), AvatarAhPeg\_41 (A4), Backyardigan\_40 (A4), Badger\_40 (A4), BangNhom\_43 (A4), Bumblebee11\_40 (A4), Cerulean\_43 (A4), ChampagnePapi\_44 (A4), Cici\_41 (A4), Cindaradix\_39 (A4), Datway\_41 (A4), DirtyDunning\_41 (A4), Katalie136\_41 (A4), Kratark\_42 (A4), LHTSCC\_44 (A4), LochMonster\_43 (A4), Miramae\_41 (A4), Morpher26\_41 (A4), Mundrea\_41 (A4), Noelle\_42 (A4), Obama12\_43 (A4), Perplexer\_41 (A4), PetiteSangsue\_41 (A4), SheldonCooper\_44 (A4), Shygu2\_41 (A4), Stink\_40 (A4), Wile\_41 (A4), Xena\_40 (A4),

#### Start 12:

- Found in 2 of 162 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 2 of 155
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MyraDee\_39 (A18), Phillis\_39 (A8),

#### Start 13:

- Found in 29 of 162 ( 17.9% ) of genes in pham
- Manual Annotations of this start: 28 of 155
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ACFishhook\_44 (A3), Danforth\_38 (A8), Dixon\_39 (A8), Drake94\_37 (A10), Expelliarmus\_38 (A8), Gemma\_44 (A3), Groupthink\_46 (A3), HaveUMetTed\_46 (A3), Heliosoles\_44 (A3), JeppNRM\_46 (A3), Kalb97\_46 (A3), Kalnoky\_46 (A3), KittenMittens\_36 (A10), Manu\_45 (A3), Marius\_46 (A3), NearlyHeadless\_39 (A8), OlanP\_44 (A3), Pawn\_45 (A3), PeaceMeal1\_37 (A10), PhishRPhriends\_43 (A3), Phranny\_46 (A3), Poompha\_38 (A10), PurpleHaze\_45 (A3), Reba\_45 (A3), Roary\_39 (A8), Saintus\_34 (A8), Severus\_37 (A10), Smeadley\_39 (A8), Trike\_36 (A10),

#### Start 14:

- Found in 21 of 162 ( 13.0% ) of genes in pham
- Manual Annotations of this start: 14 of 155
- Called 81.0% of time when present
- Phage (with cluster) where this start called: B1\_39 (A3), BabyRay\_42 (A3), BlueBird\_43 (A3), Bugatti\_42 (A3), Fred313\_42 (A3), Giroux\_42 (A3), Heathen\_42 (A3), HelDan\_42 (A3), Idleandcovert\_42 (A3), MA5\_42 (A3), MK4\_42 (A3), Phantastic\_42 (A3), Pistachio\_43 (A3), Puppy\_43 (A3), SaturnRing\_42 (A3), Scout\_42 (A3), TNguyen7\_42 (A3),

#### Start 15:

- Found in 87 of 162 ( 53.7% ) of genes in pham
- Manual Annotations of this start: 80 of 155
- Called 94.3% of time when present
- Phage (with cluster) where this start called: Aglet\_46 (A3), AgronaGT15\_44 (A3), Anubis\_48 (A3), AugsMagnumOpus\_48 (A3), Beauxregard13\_45 (A3), BreSam8\_45 (A3), BuzzBuzz\_43 (A3), Bxz2\_41 (A3), Caviar\_41 (A3), Colbster\_45 (A3), Cullens\_45 (A3), DaHudson\_45 (A3), Daishi\_44 (A3), Dieselweasel\_46 (A3), EpicPhail\_46 (A3), Farber\_45 (A3), Fernando\_45 (A3), GingkoMaracino\_45 (A3), Grif\_45 (A3), Grub\_45 (A3), Grum1\_45 (A3), GtownJaz\_45 (A3), HashRod\_46 (A3), Hercules11\_45 (A3), Hookmount\_41 (A3), Isca\_41 (A3), JF2\_42 (A3), JF4\_42 (A3), JHC117\_45 (A3), JenCasNa\_46 (A3), Jobu08\_44 (A3), KADY\_45 (A3), LBerry\_46 (A3), Lambert1\_41 (A3), LarryKay\_45 (A3), Lilith\_46 (A3), Louie6\_44 (A3), LugYA\_48 (A3), MadMarie\_45 (A3), Mainiac\_45 (A3), Malinsilva\_47 (A3), MarQuardt\_45 (A3), Margo\_41 (A3), Marie\_45 (A3), Microwolf\_45 (A3), Misomonster\_46 (A3), MoneyMay\_45 (A3), MuchMore\_48 (A3), Noella\_41 (A3), Norbert\_40 (A3), Ollie\_45 (A3), P28Green\_46 (A3), PGHhamlin\_47 (A3), Panamaxus\_39 (A3), Pembroke\_45 (A3), Penny1\_46 (A3), Phoebe\_46 (A3), Phoxy\_45 (A3), Pocahontas\_41 (A3), Popcicle\_41 (A3), PotatoSplit\_47 (A3), QuinnKiro\_40 (A3), ResDef\_42 (A3), Rockstar\_42 (A3), Rummer\_44 (A3), Sabia\_45 (A3), Sabinator\_44 (A3), Snickers\_45 (A3), SoYo\_45 (A3), SoilDragon\_45 (A3), Soshari\_47 (A3), Spike509\_45 (A3), Stagni\_45 (A3), Taurus\_46 (A3), Texage\_40 (A3), Tiffany\_45 (A3), Todacoro\_41 (A3), Veracruz\_40 (A3), Vix\_45 (A3), Watson\_45 (A3), Wooldri\_47 (A3), Zetzy\_44 (A3),

#### Start 17:

- Found in 1 of 162 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 155
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kimona\_39 (A19),

#### Start 18:

- Found in 65 of 162 ( 40.1% ) of genes in pham
- Manual Annotations of this start: 1 of 155
- Called 1.5% of time when present
- Phage (with cluster) where this start called: StepMih\_45 (A3),

### Summary by clusters:

There are 6 clusters represented in this pham: A10, A19, A18, A3, A4, A8,

Info for manual annotations of cluster A10:

- Start number 13 was manually annotated 6 times for cluster A10.

Info for manual annotations of cluster A18:

- Start number 12 was manually annotated 1 time for cluster A18.

Info for manual annotations of cluster A19:

- Start number 17 was manually annotated 1 time for cluster A19.

Info for manual annotations of cluster A3:

- Start number 13 was manually annotated 15 times for cluster A3.
- Start number 14 was manually annotated 14 times for cluster A3.

- Start number 15 was manually annotated 80 times for cluster A3.
- Start number 18 was manually annotated 1 time for cluster A3.

Info for manual annotations of cluster A4:

- Start number 11 was manually annotated 29 times for cluster A4.

Info for manual annotations of cluster A8:

- Start number 12 was manually annotated 1 time for cluster A8.
- Start number 13 was manually annotated 7 times for cluster A8.

### **Gene Information:**

Gene: ACFishhook\_44 Start: 29603, Stop: 29400, Start Num: 13

Candidate Starts for ACFishhook\_44:

(Start: 13 @29603 has 28 MA's), (16, 29597), (29, 29471), (33, 29441), (34, 29429),

Gene: AbbysRanger\_41 Start: 29292, Stop: 29086, Start Num: 11

Candidate Starts for AbbysRanger\_41:

(Start: 11 @29292 has 29 MA's), (21, 29205), (28, 29163), (37, 29106),

Gene: Achebe\_40 Start: 29275, Stop: 29069, Start Num: 11

Candidate Starts for Achebe\_40:

(Start: 11 @29275 has 29 MA's), (21, 29188), (28, 29146), (37, 29089),

Gene: Aglet\_46 Start: 29633, Stop: 29448, Start Num: 15

Candidate Starts for Aglet\_46:

(1, 29972), (3, 29909), (Start: 15 @29633 has 80 MA's), (Start: 18 @29600 has 1 MA's), (23, 29549), (26, 29519), (27, 29516),

Gene: AgronaGT15\_44 Start: 29484, Stop: 29299, Start Num: 15

Candidate Starts for AgronaGT15\_44:

(1, 29823), (Start: 15 @29484 has 80 MA's), (Start: 18 @29451 has 1 MA's), (23, 29400), (26, 29370), (27, 29367),

Gene: Anubis\_48 Start: 29518, Stop: 29333, Start Num: 15

Candidate Starts for Anubis\_48:

(1, 29857), (Start: 15 @29518 has 80 MA's), (Start: 18 @29485 has 1 MA's), (23, 29434), (26, 29404), (27, 29401),

Gene: Arturo\_41 Start: 29582, Stop: 29382, Start Num: 11

Candidate Starts for Arturo\_41:

(Start: 11 @29582 has 29 MA's), (21, 29501), (28, 29459), (29, 29453), (37, 29402),

Gene: AugsMagnumOpus\_48 Start: 29624, Stop: 29439, Start Num: 15

Candidate Starts for AugsMagnumOpus\_48:

(1, 29963), (Start: 15 @29624 has 80 MA's), (Start: 18 @29591 has 1 MA's), (23, 29540), (26, 29510), (27, 29507),

Gene: AvatarAhPeg\_41 Start: 29801, Stop: 29601, Start Num: 11

Candidate Starts for AvatarAhPeg\_41:

(Start: 11 @29801 has 29 MA's), (21, 29720), (25, 29696), (29, 29672), (37, 29621),

Gene: B1\_39 Start: 28521, Stop: 28321, Start Num: 14

Candidate Starts for B1\_39:

(Start: 14 @28521 has 14 MA's), (Start: 15 @28518 has 80 MA's), (25, 28416), (27, 28401), (29, 28392), (34, 28350), (36, 28338),

Gene: BabyRay\_42 Start: 29257, Stop: 29057, Start Num: 14

Candidate Starts for BabyRay\_42:

(Start: 14 @29257 has 14 MA's), (25, 29152), (29, 29128), (30, 29125), (32, 29113), (34, 29086), (36, 29074),

Gene: Backyardigan\_40 Start: 29308, Stop: 29102, Start Num: 11

Candidate Starts for Backyardigan\_40:

(Start: 11 @29308 has 29 MA's), (21, 29221), (28, 29179), (37, 29122),

Gene: Badger\_40 Start: 29276, Stop: 29070, Start Num: 11

Candidate Starts for Badger\_40:

(Start: 11 @29276 has 29 MA's), (21, 29189), (28, 29147), (37, 29090),

Gene: BangNhom\_43 Start: 29748, Stop: 29542, Start Num: 11

Candidate Starts for BangNhom\_43:

(Start: 11 @29748 has 29 MA's), (21, 29661), (28, 29619), (29, 29613), (37, 29562),

Gene: Beauxregard13\_45 Start: 29635, Stop: 29450, Start Num: 15

Candidate Starts for Beauxregard13\_45:

(1, 29974), (Start: 15 @29635 has 80 MA's), (Start: 18 @29602 has 1 MA's), (23, 29551), (26, 29521), (27, 29518),

Gene: BlueBird\_43 Start: 29167, Stop: 28967, Start Num: 14

Candidate Starts for BlueBird\_43:

(Start: 14 @29167 has 14 MA's), (20, 29098), (21, 29086), (25, 29062), (34, 28996), (36, 28984),

Gene: BreSam8\_45 Start: 29625, Stop: 29440, Start Num: 15

Candidate Starts for BreSam8\_45:

(1, 29964), (Start: 15 @29625 has 80 MA's), (Start: 18 @29592 has 1 MA's), (23, 29541), (26, 29511), (27, 29508),

Gene: Bugatti\_42 Start: 29167, Stop: 28967, Start Num: 14

Candidate Starts for Bugatti\_42:

(Start: 14 @29167 has 14 MA's), (20, 29098), (21, 29086), (25, 29062), (34, 28996), (36, 28984),

Gene: Bumblebee11\_40 Start: 29278, Stop: 29072, Start Num: 11

Candidate Starts for Bumblebee11\_40:

(Start: 11 @29278 has 29 MA's), (21, 29191), (28, 29149), (37, 29092),

Gene: BuzzBuzz\_43 Start: 29663, Stop: 29478, Start Num: 15

Candidate Starts for BuzzBuzz\_43:

(1, 30002), (Start: 15 @29663 has 80 MA's), (Start: 18 @29630 has 1 MA's), (23, 29579), (26, 29549), (27, 29546),

Gene: Bxz2\_41 Start: 29670, Stop: 29485, Start Num: 15

Candidate Starts for Bxz2\_41:

(1, 30009), (Start: 15 @29670 has 80 MA's), (Start: 18 @29637 has 1 MA's), (23, 29586), (26, 29556), (27, 29553),

Gene: Caviar\_41 Start: 29364, Stop: 29167, Start Num: 15

Candidate Starts for Caviar\_41:

(2, 29682), (3, 29637), (7, 29457), (Start: 15 @29364 has 80 MA's), (19, 29325), (21, 29286), (25, 29262), (27, 29247), (29, 29238), (34, 29196),

Gene: Cerulean\_43 Start: 29749, Stop: 29543, Start Num: 11

Candidate Starts for Cerulean\_43:

(Start: 11 @29749 has 29 MA's), (21, 29662), (28, 29620), (29, 29614), (37, 29563),

Gene: ChampagnePapi\_44 Start: 29748, Stop: 29542, Start Num: 11

Candidate Starts for ChampagnePapi\_44:

(Start: 11 @29748 has 29 MA's), (21, 29661), (28, 29619), (29, 29613), (37, 29562),

Gene: Cici\_41 Start: 29293, Stop: 29087, Start Num: 11

Candidate Starts for Cici\_41:

(Start: 11 @29293 has 29 MA's), (21, 29206), (28, 29164), (37, 29107),

Gene: Cindaradix\_39 Start: 28915, Stop: 28709, Start Num: 11

Candidate Starts for Cindaradix\_39:

(Start: 11 @28915 has 29 MA's), (21, 28828), (28, 28786), (29, 28780), (37, 28729),

Gene: Colbster\_45 Start: 29635, Stop: 29450, Start Num: 15

Candidate Starts for Colbster\_45:

(1, 29974), (Start: 15 @29635 has 80 MA's), (Start: 18 @29602 has 1 MA's), (23, 29551), (26, 29521), (27, 29518),

Gene: Cullens\_45 Start: 29631, Stop: 29446, Start Num: 15

Candidate Starts for Cullens\_45:

(1, 29970), (Start: 15 @29631 has 80 MA's), (Start: 18 @29598 has 1 MA's), (23, 29547), (26, 29517), (27, 29514),

Gene: DaHudson\_45 Start: 29624, Stop: 29439, Start Num: 15

Candidate Starts for DaHudson\_45:

(1, 29963), (Start: 15 @29624 has 80 MA's), (Start: 18 @29591 has 1 MA's), (23, 29540), (26, 29510), (27, 29507),

Gene: Daishi\_44 Start: 28504, Stop: 28319, Start Num: 15

Candidate Starts for Daishi\_44:

(1, 28843), (Start: 15 @28504 has 80 MA's), (Start: 18 @28471 has 1 MA's), (23, 28420), (26, 28390), (27, 28387),

Gene: Danforth\_38 Start: 27928, Stop: 27740, Start Num: 13

Candidate Starts for Danforth\_38:

(Start: 13 @27928 has 28 MA's), (25, 27826), (32, 27787), (36, 27748),

Gene: Datway\_41 Start: 29264, Stop: 29058, Start Num: 11

Candidate Starts for Datway\_41:

(Start: 11 @29264 has 29 MA's), (21, 29177), (28, 29135), (37, 29078),

Gene: Dieselweasel\_46 Start: 29634, Stop: 29449, Start Num: 15



Candidate Starts for Dieselweasel\_46:

(1, 29973), (Start: 15 @29634 has 80 MA's), (Start: 18 @29601 has 1 MA's), (23, 29550), (26, 29520), (27, 29517),

Gene: DirtyDunning\_41 Start: 29323, Stop: 29117, Start Num: 11

Candidate Starts for DirtyDunning\_41:

(Start: 11 @29323 has 29 MA's), (21, 29236), (28, 29194), (29, 29188), (37, 29137),

Gene: Dixon\_39 Start: 28081, Stop: 27887, Start Num: 13

Candidate Starts for Dixon\_39:

(Start: 13 @28081 has 28 MA's), (24, 27991), (25, 27979), (32, 27940), (35, 27904),

Gene: Drake94\_37 Start: 27602, Stop: 27399, Start Num: 13

Candidate Starts for Drake94\_37:

(9, 27629), (Start: 13 @27602 has 28 MA's), (16, 27596), (24, 27506), (25, 27494), (34, 27428),

Gene: EpicPhail\_46 Start: 29635, Stop: 29450, Start Num: 15

Candidate Starts for EpicPhail\_46:

(1, 29974), (Start: 15 @29635 has 80 MA's), (Start: 18 @29602 has 1 MA's), (23, 29551), (26, 29521), (27, 29518),

Gene: Expelliarmus\_38 Start: 27958, Stop: 27764, Start Num: 13

Candidate Starts for Expelliarmus\_38:

(Start: 13 @27958 has 28 MA's), (25, 27856), (32, 27817), (35, 27781),

Gene: Farber\_45 Start: 29625, Stop: 29440, Start Num: 15

Candidate Starts for Farber\_45:

(1, 29964), (Start: 15 @29625 has 80 MA's), (Start: 18 @29592 has 1 MA's), (23, 29541), (26, 29511), (27, 29508),

Gene: Fernando\_45 Start: 29631, Stop: 29446, Start Num: 15

Candidate Starts for Fernando\_45:

(1, 29970), (Start: 15 @29631 has 80 MA's), (Start: 18 @29598 has 1 MA's), (23, 29547), (26, 29517), (27, 29514),

Gene: Fred313\_42 Start: 28919, Stop: 28719, Start Num: 14

Candidate Starts for Fred313\_42:

(Start: 14 @28919 has 14 MA's), (20, 28850), (21, 28838), (25, 28814), (32, 28775), (34, 28748), (36, 28736),

Gene: Gemma\_44 Start: 29527, Stop: 29324, Start Num: 13

Candidate Starts for Gemma\_44:

(Start: 13 @29527 has 28 MA's), (16, 29521), (21, 29443), (29, 29395), (33, 29365), (34, 29353),

Gene: GingkoMaracino\_45 Start: 29518, Stop: 29333, Start Num: 15

Candidate Starts for GingkoMaracino\_45:

(1, 29857), (Start: 15 @29518 has 80 MA's), (Start: 18 @29485 has 1 MA's), (23, 29434), (26, 29404), (27, 29401),

Gene: Giroux\_42 Start: 29166, Stop: 28966, Start Num: 14

Candidate Starts for Giroux\_42:

(Start: 14 @29166 has 14 MA's), (20, 29097), (21, 29085), (25, 29061), (34, 28995), (36, 28983),

Gene: Grif\_45 Start: 29706, Stop: 29521, Start Num: 15

Candidate Starts for Grif\_45:

(1, 30045), (Start: 15 @29706 has 80 MA's), (Start: 18 @29673 has 1 MA's), (23, 29622), (26, 29592), (27, 29589),

Gene: Groupthink\_46 Start: 29531, Stop: 29328, Start Num: 13

Candidate Starts for Groupthink\_46:

(Start: 13 @29531 has 28 MA's), (16, 29525), (21, 29447), (29, 29399), (33, 29369), (34, 29357),

Gene: Grub\_45 Start: 29624, Stop: 29439, Start Num: 15

Candidate Starts for Grub\_45:

(1, 29963), (Start: 15 @29624 has 80 MA's), (Start: 18 @29591 has 1 MA's), (23, 29540), (26, 29510), (27, 29507),

Gene: Grum1\_45 Start: 29631, Stop: 29446, Start Num: 15

Candidate Starts for Grum1\_45:

(1, 29970), (Start: 15 @29631 has 80 MA's), (Start: 18 @29598 has 1 MA's), (23, 29547), (26, 29517), (27, 29514),

Gene: GtownJaz\_45 Start: 29633, Stop: 29448, Start Num: 15

Candidate Starts for GtownJaz\_45:

(1, 29972), (3, 29909), (Start: 15 @29633 has 80 MA's), (Start: 18 @29600 has 1 MA's), (23, 29549), (26, 29519), (27, 29516),

Gene: HashRod\_46 Start: 29663, Stop: 29478, Start Num: 15

Candidate Starts for HashRod\_46:

(1, 30002), (Start: 15 @29663 has 80 MA's), (Start: 18 @29630 has 1 MA's), (23, 29579), (26, 29549), (27, 29546),

Gene: HaveUMetTed\_46 Start: 29513, Stop: 29310, Start Num: 13

Candidate Starts for HaveUMetTed\_46:

(Start: 13 @29513 has 28 MA's), (16, 29507), (21, 29429), (29, 29381), (31, 29369), (33, 29351), (34, 29339),

Gene: Heathen\_42 Start: 28975, Stop: 28775, Start Num: 14

Candidate Starts for Heathen\_42:

(Start: 14 @28975 has 14 MA's), (20, 28906), (21, 28894), (25, 28870), (32, 28831), (34, 28804), (36, 28792),

Gene: HelDan\_42 Start: 29227, Stop: 29027, Start Num: 14

Candidate Starts for HelDan\_42:

(Start: 14 @29227 has 14 MA's), (20, 29158), (21, 29146), (25, 29122), (32, 29083), (34, 29056), (36, 29044),

Gene: Heliosoles\_44 Start: 29534, Stop: 29331, Start Num: 13

Candidate Starts for Heliosoles\_44:

(Start: 13 @29534 has 28 MA's), (16, 29528), (21, 29450), (29, 29402), (33, 29372), (34, 29360),

Gene: Hercules11\_45 Start: 29640, Stop: 29455, Start Num: 15

Candidate Starts for Hercules11\_45:

(1, 29979), (Start: 15 @29640 has 80 MA's), (Start: 18 @29607 has 1 MA's), (23, 29556), (26, 29526), (27, 29523),

Gene: Hookmount\_41 Start: 29365, Stop: 29168, Start Num: 15  
Candidate Starts for Hookmount\_41:  
(2, 29683), (3, 29638), (7, 29458), (Start: 15 @29365 has 80 MA's), (19, 29326), (21, 29287), (25, 29263), (27, 29248), (29, 29239), (34, 29197),

Gene: Idleandcovert\_42 Start: 29167, Stop: 28967, Start Num: 14  
Candidate Starts for Idleandcovert\_42:  
(Start: 14 @29167 has 14 MA's), (20, 29098), (21, 29086), (25, 29062), (34, 28996), (36, 28984),

Gene: Isca\_41 Start: 28767, Stop: 28570, Start Num: 15  
Candidate Starts for Isca\_41:  
(Start: 14 @28770 has 14 MA's), (Start: 15 @28767 has 80 MA's), (25, 28665), (27, 28650), (29, 28641), (34, 28599), (36, 28587),

Gene: JF2\_42 Start: 28518, Stop: 28321, Start Num: 15  
Candidate Starts for JF2\_42:  
(Start: 14 @28521 has 14 MA's), (Start: 15 @28518 has 80 MA's), (25, 28416), (27, 28401), (29, 28392), (34, 28350), (36, 28338),

Gene: JF4\_42 Start: 28518, Stop: 28321, Start Num: 15  
Candidate Starts for JF4\_42:  
(Start: 14 @28521 has 14 MA's), (Start: 15 @28518 has 80 MA's), (25, 28416), (27, 28401), (29, 28392), (34, 28350), (36, 28338),

Gene: JHC117\_45 Start: 29630, Stop: 29445, Start Num: 15  
Candidate Starts for JHC117\_45:  
(1, 29969), (Start: 15 @29630 has 80 MA's), (Start: 18 @29597 has 1 MA's), (23, 29546), (26, 29516), (27, 29513),

Gene: JenCasNa\_46 Start: 29631, Stop: 29446, Start Num: 15  
Candidate Starts for JenCasNa\_46:  
(1, 29970), (Start: 15 @29631 has 80 MA's), (Start: 18 @29598 has 1 MA's), (23, 29547), (26, 29517), (27, 29514),

Gene: JeppNRM\_46 Start: 29532, Stop: 29329, Start Num: 13  
Candidate Starts for JeppNRM\_46:  
(Start: 13 @29532 has 28 MA's), (16, 29526), (21, 29448), (29, 29400), (33, 29370), (34, 29358),

Gene: Jobu08\_44 Start: 29464, Stop: 29279, Start Num: 15  
Candidate Starts for Jobu08\_44:  
(1, 29803), (Start: 15 @29464 has 80 MA's), (Start: 18 @29431 has 1 MA's), (23, 29380), (26, 29350), (27, 29347),

Gene: KADY\_45 Start: 29663, Stop: 29478, Start Num: 15  
Candidate Starts for KADY\_45:  
(1, 30002), (Start: 15 @29663 has 80 MA's), (Start: 18 @29630 has 1 MA's), (23, 29579), (26, 29549), (27, 29546),

Gene: Kalb97\_46 Start: 29530, Stop: 29327, Start Num: 13  
Candidate Starts for Kalb97\_46:  
(Start: 13 @29530 has 28 MA's), (16, 29524), (21, 29446), (29, 29398), (33, 29368), (34, 29356),

Gene: Kalnoky\_46 Start: 29528, Stop: 29325, Start Num: 13

Candidate Starts for Kalnoky\_46:

(Start: 13 @29528 has 28 MA's), (16, 29522), (21, 29444), (29, 29396), (33, 29366), (34, 29354),

Gene: Katalie136\_41 Start: 29278, Stop: 29072, Start Num: 11

Candidate Starts for Katalie136\_41:

(Start: 11 @29278 has 29 MA's), (21, 29191), (28, 29149), (37, 29092),

Gene: Kimona\_39 Start: 27191, Stop: 27000, Start Num: 17

Candidate Starts for Kimona\_39:

(10, 27206), (Start: 17 @27191 has 1 MA's), (21, 27122), (22, 27119),

Gene: KittenMittens\_36 Start: 27610, Stop: 27407, Start Num: 13

Candidate Starts for KittenMittens\_36:

(9, 27637), (Start: 13 @27610 has 28 MA's), (16, 27604), (24, 27514), (25, 27502), (34, 27436),

Gene: Kratark\_42 Start: 29465, Stop: 29265, Start Num: 11

Candidate Starts for Kratark\_42:

(Start: 11 @29465 has 29 MA's), (21, 29384), (28, 29342), (29, 29336), (37, 29285),

Gene: LBerry\_46 Start: 29635, Stop: 29450, Start Num: 15

Candidate Starts for LBerry\_46:

(1, 29974), (Start: 15 @29635 has 80 MA's), (Start: 18 @29602 has 1 MA's), (23, 29551), (26, 29521), (27, 29518),

Gene: LHTSCC\_44 Start: 29748, Stop: 29542, Start Num: 11

Candidate Starts for LHTSCC\_44:

(Start: 11 @29748 has 29 MA's), (21, 29661), (28, 29619), (29, 29613), (37, 29562),

Gene: Lambert1\_41 Start: 29364, Stop: 29167, Start Num: 15

Candidate Starts for Lambert1\_41:

(2, 29682), (3, 29637), (7, 29457), (Start: 15 @29364 has 80 MA's), (19, 29325), (21, 29286), (25, 29262), (27, 29247), (29, 29238), (34, 29196),

Gene: LarryKay\_45 Start: 29665, Stop: 29480, Start Num: 15

Candidate Starts for LarryKay\_45:

(1, 30004), (Start: 15 @29665 has 80 MA's), (Start: 18 @29632 has 1 MA's), (23, 29581), (26, 29551), (27, 29548),

Gene: Lilith\_46 Start: 29625, Stop: 29440, Start Num: 15

Candidate Starts for Lilith\_46:

(1, 29964), (Start: 15 @29625 has 80 MA's), (Start: 18 @29592 has 1 MA's), (23, 29541), (26, 29511), (27, 29508),

Gene: LochMonster\_43 Start: 29562, Stop: 29362, Start Num: 11

Candidate Starts for LochMonster\_43:

(Start: 11 @29562 has 29 MA's), (21, 29481), (28, 29439), (29, 29433), (37, 29382),

Gene: Louie6\_44 Start: 29664, Stop: 29479, Start Num: 15

Candidate Starts for Louie6\_44:

(1, 30003), (Start: 15 @29664 has 80 MA's), (Start: 18 @29631 has 1 MA's), (23, 29580), (26, 29550), (27, 29547),

Gene: LugYA\_48 Start: 29632, Stop: 29447, Start Num: 15

Candidate Starts for LugYA\_48:

(1, 29971), (Start: 15 @29632 has 80 MA's), (Start: 18 @29599 has 1 MA's), (23, 29548), (26, 29518), (27, 29515),

Gene: MA5\_42 Start: 28671, Stop: 28471, Start Num: 14

Candidate Starts for MA5\_42:

(4, 28920), (Start: 14 @28671 has 14 MA's), (Start: 15 @28668 has 80 MA's), (25, 28566), (27, 28551), (29, 28542), (34, 28500),

Gene: MK4\_42 Start: 28755, Stop: 28555, Start Num: 14

Candidate Starts for MK4\_42:

(Start: 14 @28755 has 14 MA's), (Start: 15 @28752 has 80 MA's), (25, 28650), (27, 28635), (29, 28626), (34, 28584), (36, 28572),

Gene: MadMarie\_45 Start: 29634, Stop: 29449, Start Num: 15

Candidate Starts for MadMarie\_45:

(1, 29973), (Start: 15 @29634 has 80 MA's), (Start: 18 @29601 has 1 MA's), (23, 29550), (26, 29520), (27, 29517),

Gene: Mainiac\_45 Start: 29625, Stop: 29440, Start Num: 15

Candidate Starts for Mainiac\_45:

(1, 29964), (Start: 15 @29625 has 80 MA's), (Start: 18 @29592 has 1 MA's), (23, 29541), (26, 29511), (27, 29508),

Gene: Malinsilva\_47 Start: 29624, Stop: 29439, Start Num: 15

Candidate Starts for Malinsilva\_47:

(1, 29963), (Start: 15 @29624 has 80 MA's), (Start: 18 @29591 has 1 MA's), (23, 29540), (27, 29507),

Gene: Manu\_45 Start: 29531, Stop: 29328, Start Num: 13

Candidate Starts for Manu\_45:

(Start: 13 @29531 has 28 MA's), (16, 29525), (21, 29447), (29, 29399), (33, 29369), (34, 29357),

Gene: MarQuardt\_45 Start: 29633, Stop: 29448, Start Num: 15

Candidate Starts for MarQuardt\_45:

(1, 29972), (Start: 15 @29633 has 80 MA's), (Start: 18 @29600 has 1 MA's), (23, 29549), (26, 29519), (27, 29516),

Gene: Margo\_41 Start: 29390, Stop: 29193, Start Num: 15

Candidate Starts for Margo\_41:

(2, 29708), (3, 29663), (7, 29483), (Start: 15 @29390 has 80 MA's), (19, 29351), (21, 29312), (25, 29288), (27, 29273), (29, 29264), (34, 29222),

Gene: Marie\_45 Start: 29631, Stop: 29446, Start Num: 15

Candidate Starts for Marie\_45:

(1, 29970), (Start: 15 @29631 has 80 MA's), (Start: 18 @29598 has 1 MA's), (23, 29547), (26, 29517), (27, 29514),

Gene: Marius\_46 Start: 29528, Stop: 29325, Start Num: 13

Candidate Starts for Marius\_46:

(Start: 13 @29528 has 28 MA's), (16, 29522), (21, 29444), (29, 29396), (33, 29366), (34, 29354),

Gene: Microwolf\_45 Start: 29633, Stop: 29448, Start Num: 15

Candidate Starts for Microwolf\_45:

(1, 29972), (Start: 15 @29633 has 80 MA's), (Start: 18 @29600 has 1 MA's), (23, 29549), (26, 29519), (27, 29516),

Gene: Miramae\_41 Start: 29463, Stop: 29263, Start Num: 11

Candidate Starts for Miramae\_41:

(Start: 11 @29463 has 29 MA's), (21, 29382), (25, 29358), (29, 29334), (37, 29283),

Gene: Misomonster\_46 Start: 29662, Stop: 29477, Start Num: 15

Candidate Starts for Misomonster\_46:

(1, 30001), (Start: 15 @29662 has 80 MA's), (Start: 18 @29629 has 1 MA's), (23, 29578), (26, 29548), (27, 29545),

Gene: MoneyMay\_45 Start: 29631, Stop: 29446, Start Num: 15

Candidate Starts for MoneyMay\_45:

(1, 29970), (Start: 15 @29631 has 80 MA's), (Start: 18 @29598 has 1 MA's), (23, 29547), (26, 29517), (27, 29514),

Gene: Morpher26\_41 Start: 29299, Stop: 29093, Start Num: 11

Candidate Starts for Morpher26\_41:

(Start: 11 @29299 has 29 MA's), (21, 29212), (28, 29170), (37, 29113),

Gene: MuchMore\_48 Start: 29624, Stop: 29439, Start Num: 15

Candidate Starts for MuchMore\_48:

(1, 29963), (Start: 15 @29624 has 80 MA's), (Start: 18 @29591 has 1 MA's), (23, 29540), (26, 29510), (27, 29507),

Gene: Mundrea\_41 Start: 29283, Stop: 29083, Start Num: 11

Candidate Starts for Mundrea\_41:

(Start: 11 @29283 has 29 MA's), (21, 29202), (23, 29196), (28, 29160), (29, 29154), (37, 29103),

Gene: MyraDee\_39 Start: 27023, Stop: 26826, Start Num: 12

Candidate Starts for MyraDee\_39:

(Start: 12 @27023 has 2 MA's), (23, 26936), (25, 26918), (34, 26852),

Gene: NearlyHeadless\_39 Start: 28011, Stop: 27817, Start Num: 13

Candidate Starts for NearlyHeadless\_39:

(6, 28122), (Start: 13 @28011 has 28 MA's), (25, 27909), (32, 27870), (35, 27834),

Gene: Noella\_41 Start: 29365, Stop: 29168, Start Num: 15

Candidate Starts for Noella\_41:

(2, 29683), (3, 29638), (7, 29458), (Start: 15 @29365 has 80 MA's), (19, 29326), (21, 29287), (25, 29263), (27, 29248), (29, 29239), (30, 29236), (34, 29197),

Gene: Noelle\_42 Start: 29588, Stop: 29382, Start Num: 11

Candidate Starts for Noelle\_42:

(Start: 11 @29588 has 29 MA's), (21, 29501), (28, 29459), (37, 29402),

Gene: Norbert\_40 Start: 29364, Stop: 29167, Start Num: 15

Candidate Starts for Norbert\_40:

(2, 29682), (3, 29637), (7, 29457), (Start: 15 @29364 has 80 MA's), (19, 29325), (21, 29286), (25, 29262), (27, 29247), (29, 29238), (34, 29196),

Gene: Obama12\_43 Start: 29750, Stop: 29544, Start Num: 11

Candidate Starts for Obama12\_43:

(Start: 11 @29750 has 29 MA's), (21, 29663), (28, 29621), (29, 29615), (37, 29564),

Gene: OlanP\_44 Start: 29701, Stop: 29498, Start Num: 13

Candidate Starts for OlanP\_44:

(Start: 13 @29701 has 28 MA's), (16, 29695), (21, 29617), (29, 29569), (31, 29557), (33, 29539), (34, 29527),

Gene: Ollie\_45 Start: 29503, Stop: 29318, Start Num: 15

Candidate Starts for Ollie\_45:

(1, 29842), (Start: 15 @29503 has 80 MA's), (Start: 18 @29470 has 1 MA's), (23, 29419), (26, 29389), (27, 29386),

Gene: P28Green\_46 Start: 29634, Stop: 29449, Start Num: 15

Candidate Starts for P28Green\_46:

(1, 29973), (Start: 15 @29634 has 80 MA's), (Start: 18 @29601 has 1 MA's), (23, 29550), (26, 29520), (27, 29517),

Gene: PGHhamlin\_47 Start: 29624, Stop: 29439, Start Num: 15

Candidate Starts for PGHhamlin\_47:

(1, 29963), (Start: 15 @29624 has 80 MA's), (Start: 18 @29591 has 1 MA's), (23, 29540), (26, 29510), (27, 29507),

Gene: Panamaxus\_39 Start: 29364, Stop: 29167, Start Num: 15

Candidate Starts for Panamaxus\_39:

(2, 29682), (3, 29637), (7, 29457), (Start: 15 @29364 has 80 MA's), (19, 29325), (21, 29286), (25, 29262), (27, 29247), (29, 29238), (34, 29196),

Gene: Pawn\_45 Start: 29535, Stop: 29332, Start Num: 13

Candidate Starts for Pawn\_45:

(Start: 13 @29535 has 28 MA's), (16, 29529), (21, 29451), (29, 29403), (33, 29373), (34, 29361),

Gene: PeaceMeal1\_37 Start: 27611, Stop: 27408, Start Num: 13

Candidate Starts for PeaceMeal1\_37:

(9, 27638), (Start: 13 @27611 has 28 MA's), (16, 27605), (24, 27515), (25, 27503), (34, 27437),

Gene: Pembroke\_45 Start: 29633, Stop: 29448, Start Num: 15

Candidate Starts for Pembroke\_45:

(1, 29972), (Start: 15 @29633 has 80 MA's), (Start: 18 @29600 has 1 MA's), (23, 29549), (26, 29519), (27, 29516),

Gene: Penny1\_46 Start: 29635, Stop: 29450, Start Num: 15

Candidate Starts for Penny1\_46:

(1, 29974), (Start: 15 @29635 has 80 MA's), (Start: 18 @29602 has 1 MA's), (23, 29551), (26, 29521), (27, 29518),

Gene: Perplexer\_41 Start: 29275, Stop: 29069, Start Num: 11

Candidate Starts for Perplexer\_41:

(Start: 11 @29275 has 29 MA's), (21, 29188), (28, 29146), (37, 29089),

Gene: PetiteSangsue\_41 Start: 29278, Stop: 29072, Start Num: 11

Candidate Starts for PetiteSangsue\_41:

(Start: 11 @29278 has 29 MA's), (21, 29191), (28, 29149), (37, 29092),

Gene: Phantastic\_42 Start: 28786, Stop: 28586, Start Num: 14

Candidate Starts for Phantastic\_42:

(Start: 14 @28786 has 14 MA's), (Start: 15 @28783 has 80 MA's), (25, 28681), (27, 28666), (29, 28657), (34, 28615), (36, 28603),

Gene: Phillis\_39 Start: 28025, Stop: 27828, Start Num: 12

Candidate Starts for Phillis\_39:

(8, 28103), (Start: 12 @28025 has 2 MA's), (24, 27932), (25, 27920), (32, 27881), (35, 27845),

Gene: PhishRPhriends\_43 Start: 28709, Stop: 28506, Start Num: 13

Candidate Starts for PhishRPhriends\_43:

(Start: 13 @28709 has 28 MA's), (16, 28703), (21, 28625), (29, 28577), (33, 28547), (34, 28535),

Gene: Phoebe\_46 Start: 29624, Stop: 29439, Start Num: 15

Candidate Starts for Phoebe\_46:

(1, 29963), (Start: 15 @29624 has 80 MA's), (Start: 18 @29591 has 1 MA's), (23, 29540), (26, 29510), (27, 29507),

Gene: Phoxy\_45 Start: 29660, Stop: 29475, Start Num: 15

Candidate Starts for Phoxy\_45:

(1, 29999), (Start: 15 @29660 has 80 MA's), (Start: 18 @29627 has 1 MA's), (23, 29576), (26, 29546), (27, 29543),

Gene: Phranny\_46 Start: 29517, Stop: 29314, Start Num: 13

Candidate Starts for Phranny\_46:

(Start: 13 @29517 has 28 MA's), (16, 29511), (21, 29433), (29, 29385), (33, 29355), (34, 29343),

Gene: Pistachio\_43 Start: 28714, Stop: 28514, Start Num: 14

Candidate Starts for Pistachio\_43:

(Start: 14 @28714 has 14 MA's), (20, 28645), (21, 28633), (25, 28609), (34, 28543), (36, 28531),

Gene: Pocahontas\_41 Start: 29361, Stop: 29164, Start Num: 15

Candidate Starts for Pocahontas\_41:

(2, 29679), (3, 29634), (7, 29454), (Start: 15 @29361 has 80 MA's), (19, 29322), (21, 29283), (25, 29259), (27, 29244), (29, 29235), (34, 29193),

Gene: Poompha\_38 Start: 27609, Stop: 27406, Start Num: 13

Candidate Starts for Poompha\_38:

(9, 27636), (Start: 13 @27609 has 28 MA's), (16, 27603), (24, 27513), (25, 27501), (34, 27435),

Gene: Popcicle\_41 Start: 29361, Stop: 29164, Start Num: 15

Candidate Starts for Popcicle\_41:

(2, 29679), (3, 29634), (7, 29454), (Start: 15 @29361 has 80 MA's), (19, 29322), (21, 29283), (25, 29259), (27, 29244), (29, 29235), (34, 29193),

Gene: PotatoSplit\_47 Start: 29635, Stop: 29450, Start Num: 15

Candidate Starts for PotatoSplit\_47:

(1, 29974), (Start: 15 @29635 has 80 MA's), (Start: 18 @29602 has 1 MA's), (23, 29551), (26, 29521), (27, 29518),

Gene: Puppy\_43 Start: 28787, Stop: 28587, Start Num: 14

Candidate Starts for Puppy\_43:



(Start: 14 @28787 has 14 MA's), (20, 28718), (21, 28706), (25, 28682), (34, 28616), (36, 28604),

Gene: PurpleHaze\_45 Start: 29530, Stop: 29327, Start Num: 13

Candidate Starts for PurpleHaze\_45:

(Start: 13 @29530 has 28 MA's), (16, 29524), (21, 29446), (29, 29398), (33, 29368), (34, 29356),

Gene: QuinnKiro\_40 Start: 29364, Stop: 29167, Start Num: 15

Candidate Starts for QuinnKiro\_40:

(2, 29682), (3, 29637), (7, 29457), (Start: 15 @29364 has 80 MA's), (19, 29325), (21, 29286), (25, 29262), (27, 29247), (29, 29238), (34, 29196),

Gene: Reba\_45 Start: 29190, Stop: 28987, Start Num: 13

Candidate Starts for Reba\_45:

(Start: 13 @29190 has 28 MA's), (16, 29184), (21, 29106), (29, 29058), (33, 29028), (34, 29016),

Gene: ResDef\_42 Start: 29364, Stop: 29167, Start Num: 15

Candidate Starts for ResDef\_42:

(2, 29682), (3, 29637), (7, 29457), (Start: 15 @29364 has 80 MA's), (19, 29325), (21, 29286), (25, 29262), (27, 29247), (29, 29238), (34, 29196),

Gene: Roary\_39 Start: 27913, Stop: 27725, Start Num: 13

Candidate Starts for Roary\_39:

(Start: 13 @27913 has 28 MA's), (25, 27811), (32, 27772), (36, 27733),

Gene: Rockstar\_42 Start: 28759, Stop: 28562, Start Num: 15

Candidate Starts for Rockstar\_42:

(Start: 14 @28762 has 14 MA's), (Start: 15 @28759 has 80 MA's), (25, 28657), (27, 28642), (29, 28633), (34, 28591), (36, 28579),

Gene: Rummer\_44 Start: 29663, Stop: 29478, Start Num: 15

Candidate Starts for Rummer\_44:

(1, 30002), (Start: 15 @29663 has 80 MA's), (Start: 18 @29630 has 1 MA's), (23, 29579), (26, 29549), (27, 29546),

Gene: Sabia\_45 Start: 29625, Stop: 29440, Start Num: 15

Candidate Starts for Sabia\_45:

(1, 29964), (Start: 15 @29625 has 80 MA's), (Start: 18 @29592 has 1 MA's), (23, 29541), (26, 29511), (27, 29508),

Gene: Sabinator\_44 Start: 29630, Stop: 29445, Start Num: 15

Candidate Starts for Sabinator\_44:

(1, 29969), (Start: 15 @29630 has 80 MA's), (Start: 18 @29597 has 1 MA's), (23, 29546), (26, 29516), (27, 29513),

Gene: Saintus\_34 Start: 24941, Stop: 24753, Start Num: 13

Candidate Starts for Saintus\_34:

(Start: 13 @24941 has 28 MA's), (25, 24839), (32, 24800), (36, 24761),

Gene: SaturnRing\_42 Start: 29167, Stop: 28967, Start Num: 14

Candidate Starts for SaturnRing\_42:

(Start: 14 @29167 has 14 MA's), (20, 29098), (21, 29086), (25, 29062), (34, 28996), (36, 28984),

Gene: Scout\_42 Start: 28474, Stop: 28274, Start Num: 14

Candidate Starts for Scout\_42:

(Start: 14 @28474 has 14 MA's), (20, 28405), (21, 28393), (25, 28369), (32, 28330), (34, 28303), (36, 28291),

Gene: Severus\_37 Start: 27609, Stop: 27406, Start Num: 13

Candidate Starts for Severus\_37:

(9, 27636), (Start: 13 @27609 has 28 MA's), (16, 27603), (24, 27513), (25, 27501), (34, 27435),

Gene: SheldonCooper\_44 Start: 29749, Stop: 29543, Start Num: 11

Candidate Starts for SheldonCooper\_44:

(Start: 11 @29749 has 29 MA's), (21, 29662), (28, 29620), (29, 29614), (37, 29563),

Gene: Shygu2\_41 Start: 29278, Stop: 29072, Start Num: 11

Candidate Starts for Shygu2\_41:

(Start: 11 @29278 has 29 MA's), (21, 29191), (28, 29149), (29, 29143), (37, 29092),

Gene: Smeadley\_39 Start: 28080, Stop: 27886, Start Num: 13

Candidate Starts for Smeadley\_39:

(Start: 13 @28080 has 28 MA's), (25, 27978), (32, 27939), (35, 27903),

Gene: Snickers\_45 Start: 29605, Stop: 29420, Start Num: 15

Candidate Starts for Snickers\_45:

(1, 29944), (Start: 15 @29605 has 80 MA's), (Start: 18 @29572 has 1 MA's), (23, 29521), (26, 29491), (27, 29488),

Gene: SoYo\_45 Start: 29543, Stop: 29358, Start Num: 15

Candidate Starts for SoYo\_45:

(1, 29882), (Start: 15 @29543 has 80 MA's), (Start: 18 @29510 has 1 MA's), (23, 29459), (26, 29429), (27, 29426),

Gene: SoilDragon\_45 Start: 29080, Stop: 28895, Start Num: 15

Candidate Starts for SoilDragon\_45:

(1, 29419), (Start: 15 @29080 has 80 MA's), (Start: 18 @29047 has 1 MA's), (23, 28996), (26, 28966), (27, 28963),

Gene: Soshari\_47 Start: 29659, Stop: 29474, Start Num: 15

Candidate Starts for Soshari\_47:

(1, 29998), (Start: 15 @29659 has 80 MA's), (Start: 18 @29626 has 1 MA's), (23, 29575), (26, 29545), (27, 29542),

Gene: Spike509\_45 Start: 29660, Stop: 29475, Start Num: 15

Candidate Starts for Spike509\_45:

(1, 29999), (Start: 15 @29660 has 80 MA's), (Start: 18 @29627 has 1 MA's), (23, 29576), (26, 29546), (27, 29543),

Gene: Stagni\_45 Start: 29634, Stop: 29449, Start Num: 15

Candidate Starts for Stagni\_45:

(1, 29973), (Start: 15 @29634 has 80 MA's), (Start: 18 @29601 has 1 MA's), (23, 29550), (26, 29520), (27, 29517),

Gene: StepMih\_45 Start: 29592, Stop: 29440, Start Num: 18

Candidate Starts for StepMih\_45:

(1, 29964), (Start: 15 @29625 has 80 MA's), (Start: 18 @29592 has 1 MA's), (23, 29541), (26, 29511), (27, 29508),

Gene: Stink\_40 Start: 29743, Stop: 29543, Start Num: 11

Candidate Starts for Stink\_40:

(Start: 11 @29743 has 29 MA's), (21, 29662), (25, 29638), (29, 29614), (37, 29563),

Gene: TNguyen7\_42 Start: 29134, Stop: 28934, Start Num: 14

Candidate Starts for TNguyen7\_42:

(Start: 14 @29134 has 14 MA's), (20, 29065), (21, 29053), (25, 29029), (34, 28963), (36, 28951),

Gene: Taurus\_46 Start: 29631, Stop: 29446, Start Num: 15

Candidate Starts for Taurus\_46:

(1, 29970), (Start: 15 @29631 has 80 MA's), (Start: 18 @29598 has 1 MA's), (23, 29547), (26, 29517), (27, 29514),

Gene: Texage\_40 Start: 29365, Stop: 29168, Start Num: 15

Candidate Starts for Texage\_40:

(2, 29683), (3, 29638), (7, 29458), (Start: 15 @29365 has 80 MA's), (19, 29326), (21, 29287), (25, 29263), (27, 29248), (29, 29239), (30, 29236), (34, 29197),

Gene: Tiffany\_45 Start: 29517, Stop: 29332, Start Num: 15

Candidate Starts for Tiffany\_45:

(1, 29856), (Start: 15 @29517 has 80 MA's), (Start: 18 @29484 has 1 MA's), (23, 29433), (26, 29403), (27, 29400),

Gene: Todacoro\_41 Start: 29364, Stop: 29167, Start Num: 15

Candidate Starts for Todacoro\_41:

(2, 29682), (3, 29637), (7, 29457), (Start: 15 @29364 has 80 MA's), (19, 29325), (21, 29286), (25, 29262), (27, 29247), (29, 29238), (34, 29196),

Gene: Trike\_36 Start: 27442, Stop: 27239, Start Num: 13

Candidate Starts for Trike\_36:

(9, 27469), (Start: 13 @27442 has 28 MA's), (16, 27436), (24, 27346), (25, 27334), (34, 27268),

Gene: Veracruz\_40 Start: 29364, Stop: 29167, Start Num: 15

Candidate Starts for Veracruz\_40:

(2, 29682), (3, 29637), (7, 29457), (Start: 15 @29364 has 80 MA's), (19, 29325), (21, 29286), (25, 29262), (27, 29247), (29, 29238), (34, 29196),

Gene: Vix\_45 Start: 29714, Stop: 29529, Start Num: 15

Candidate Starts for Vix\_45:

(1, 30053), (Start: 15 @29714 has 80 MA's), (Start: 18 @29681 has 1 MA's), (23, 29630), (26, 29600), (27, 29597),

Gene: Watson\_45 Start: 29624, Stop: 29439, Start Num: 15

Candidate Starts for Watson\_45:

(1, 29963), (Start: 15 @29624 has 80 MA's), (Start: 18 @29591 has 1 MA's), (23, 29540), (26, 29510), (27, 29507),

Gene: Wile\_41 Start: 29309, Stop: 29103, Start Num: 11

Candidate Starts for Wile\_41:

(Start: 11 @29309 has 29 MA's), (21, 29222), (28, 29180), (37, 29123),

Gene: Wooldri\_47 Start: 29543, Stop: 29358, Start Num: 15

Candidate Starts for Wooldri\_47:

(1, 29882), (Start: 15 @29543 has 80 MA's), (Start: 18 @29510 has 1 MA's), (23, 29459), (26, 29429), (27, 29426),

Gene: Xena\_40 Start: 29275, Stop: 29069, Start Num: 11

Candidate Starts for Xena\_40:

(Start: 11 @29275 has 29 MA's), (21, 29188), (28, 29146), (37, 29089),

Gene: Zetzy\_44 Start: 29195, Stop: 29010, Start Num: 15

Candidate Starts for Zetzy\_44:

(1, 29534), (5, 29450), (Start: 15 @29195 has 80 MA's), (Start: 18 @29162 has 1 MA's), (23, 29111), (26, 29081), (27, 29078),