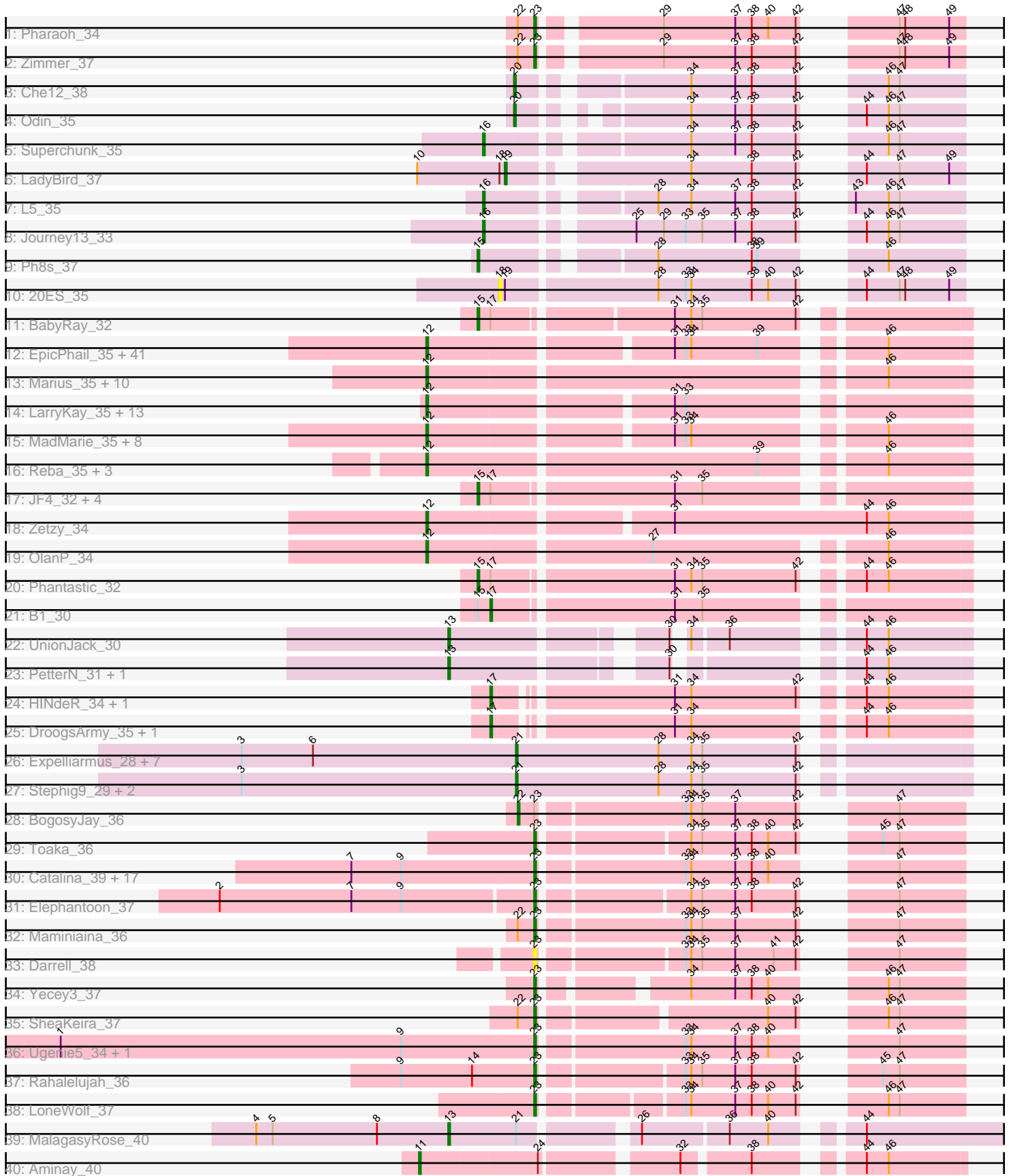


Pham 157653



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 157653 Report

This analysis was run 04/13/24 on database version 558.

Pham number 157653 has 149 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Pharaoh\_34
- Track 2 : Zimmer\_37
- Track 3 : Che12\_38
- Track 4 : Odin\_35
- Track 5 : Superchunk\_35
- Track 6 : LadyBird\_37
- Track 7 : L5\_35
- Track 8 : Journey13\_33
- Track 9 : Ph8s\_37
- Track 10 : 20ES\_35
- Track 11 : BabyRay\_32
- Track 12 : EpicPhail\_35, Marie\_35, Vix\_35, Taurus\_35, Grub\_35, Watson\_35, Dieselweasel\_35, LBerry\_35, PGHhamlin\_37, MuchMore\_37, PotatoSplit\_36, Malinsilva\_37, Aglet\_35, MarQuardt\_35, DaHudson\_35, Colbster\_35, Anubis\_37, JenCasNa\_35, Phoebe\_35, P28Green\_35, Grum1\_35, AugsMagnumOpus\_37, Jobu08\_34, GingkoMaracino\_35, SoYo\_35, Ollie\_35, Pembroke\_35, Cullens\_35, JHC117\_35, Farber\_35, SoilDragon\_34, Beauxregard13\_35, MoneyMay\_35, GtownJaz\_35, Wooldri\_37, Sabinator\_35, Microwolf\_35, Fernando\_35, Hercules11\_35, LugYA\_37, Lilith\_35, Penny1\_35
- Track 13 : Marius\_35, Kalb97\_35, Manu\_35, Groupthink\_35, Heliosoles\_34, JeppNRM\_35, Gemma\_34, Pawn\_35, Kainoky\_35, PurpleHaze\_34, HaveUMetTed\_35
- Track 14 : LarryKay\_35, Misomonster\_37, KADY\_36, BuzzBuzz\_34, Phoxy\_35, Rummer\_35, Spike509\_35, Daishi\_34, Methuselah\_34, Soshari\_37, HashRod\_36, Louie6\_35, AgronaGT15\_35, Bxz2\_33
- Track 15 : MadMarie\_35, StepMih\_35, Tiffany\_35, Mainiac\_35, BreSam8\_35, Sabia\_35, Snickers\_35, Grif\_35, Stagni\_35
- Track 16 : Reba\_35, Phranny\_35, ACFishhook\_34, PhishRPhriends\_33
- Track 17 : JF4\_32, JF2\_32, MK4\_32, Isca\_32, Rockstar\_32
- Track 18 : Zetzy\_34
- Track 19 : OlanP\_34
- Track 20 : Phantastic\_32
- Track 21 : B1\_30
- Track 22 : UnionJack\_30
- Track 23 : PetterN\_31, Chadwick\_31
- Track 24 : HINdeR\_34, Sheen\_35
- Track 25 : DroogsArmy\_35, Timshel\_35

- Track 26 : Expelliarmus\_28, Smeadley\_29, NearlyHeadless\_29, Groundhog\_28, Phillis\_29, Astro\_29, Danforth\_28, Saintus\_29
- Track 27 : Stephig9\_29, Dixon\_29, Roary\_29
- Track 28 : BogosyJay\_36
- Track 29 : Toaka\_36
- Track 30 : Catalina\_39, PackMan\_37, EmyBug\_35, Phaeder\_38, Aliter\_38, Conquerage\_38, Fayely\_38, Myxus\_38, Phonnegut\_38, Tubs\_38, Pioneer\_38, Spouty\_36, Priya\_38, Eidsmoe\_38, Beemo\_38, HortumSL17\_38, Qobbit\_38, ExplosioNervosa\_38
- Track 31 : Elephantoon\_37
- Track 32 : Maminiaina\_36
- Track 33 : Darrell\_38
- Track 34 : Yecey3\_37
- Track 35 : SheaKeira\_37
- Track 36 : Ugenie5\_34, Scherzo\_37
- Track 37 : Rahalelujah\_36
- Track 38 : LoneWolf\_37
- Track 39 : MalagasyRose\_40
- Track 40 : Aminay\_40

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

The start number called the most often in the published annotations is 12, it was called in 80 of the 143 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ACFishhook\_34, Aglet\_35, AgronaGT15\_35, Anubis\_37, AugsMagnumOpus\_37, Beauxregard13\_35, BreSam8\_35, BuzzBuzz\_34, Bxz2\_33, Colbster\_35, Cullens\_35, DaHudson\_35, Daishi\_34, Dieselweasel\_35, EpicPhail\_35, Farber\_35, Fernando\_35, Gemma\_34, GingkoMaracino\_35, Grif\_35, Groupthink\_35, Grub\_35, Grum1\_35, GtownJaz\_35, HashRod\_36, HaveUMetTed\_35, Heliosoles\_34, Hercules11\_35, JHC117\_35, JenCasNa\_35, JeppNRM\_35, Jobu08\_34, KADY\_36, Kalb97\_35, Kalnoky\_35, LBerry\_35, LarryKay\_35, Lilith\_35, Louie6\_35, LugYA\_37, MadMarie\_35, Mainiac\_35, Malinsilva\_37, Manu\_35, MarQuardt\_35, Marie\_35, Marius\_35, Methuselah\_34, Microwolf\_35, Misomonster\_37, MoneyMay\_35, MuchMore\_37, OlanP\_34, Ollie\_35, P28Green\_35, PGHhamlin\_37, Pawn\_35, Pembroke\_35, Penny1\_35, PhishRPhriends\_33, Phoebe\_35, Phoxy\_35, Phranny\_35, PotatoSplit\_36, PurpleHaze\_34, Reba\_35, Rummer\_35, Sabia\_35, Sabinator\_35, Snickers\_35, SoYo\_35, SoilDragon\_34, Soshari\_37, Spike509\_35, Stagni\_35, StepMih\_35, Taurus\_35, Tiffany\_35, Vix\_35, Watson\_35, Wooldri\_37, Zetzy\_34,

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

- 

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

- 20ES\_35, Aliter\_38, Aminay\_40, Astro\_29, B1\_30, BabyRay\_32, Beemo\_38, BogosyJay\_36, Catalina\_39, Chadwick\_31, Che12\_38, Conquerage\_38, Danforth\_28, Darrell\_38, Dixon\_29, DroogsArmy\_35, Eidsmoe\_38, Elephantoon\_37, EmyBug\_35, Expelliarmus\_28, ExplosioNervosa\_38, Fayely\_38, Groundhog\_28,

HINdeR\_34, HortumSL17\_38, Isca\_32, JF2\_32, JF4\_32, Journey13\_33, L5\_35, LadyBird\_37, LoneWolf\_37, MK4\_32, MalagasyRose\_40, Maminiana\_36, Myxus\_38, NearlyHeadless\_29, Odin\_35, PackMan\_37, PetterN\_31, Ph8s\_37, Phaeder\_38, Phantastic\_32, Pharaoh\_34, Phillis\_29, Phonnegut\_38, Pioneer\_38, Priya\_38, Qobbit\_38, Rahalelujah\_36, Roary\_29, Rockstar\_32, Saintus\_29, Scherzo\_37, SheaKeira\_37, Sheen\_35, Smeadley\_29, Spouty\_36, Stephig9\_29, Superchunk\_35, Timshel\_35, Toaka\_36, Tubs\_38, Ugenie5\_34, UnionJack\_30, Yecey3\_37, Zimmer\_37,

### Summary by start number:

#### Start 11:

- Found in 1 of 149 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 143
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aminay\_40 (K7),

#### Start 12:

- Found in 82 of 149 ( 55.0% ) of genes in pham
- Manual Annotations of this start: 80 of 143
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ACFishhook\_34 (A3), Aglet\_35 (A3), AgronaGT15\_35 (A3), Anubis\_37 (A3), AugsMagnumOpus\_37 (A3), Beauxregard13\_35 (A3), BreSam8\_35 (A3), BuzzBuzz\_34 (A3), Bxz2\_33 (A3), Colbster\_35 (A3), Cullens\_35 (A3), DaHudson\_35 (A3), Daishi\_34 (A3), Dieselweasel\_35 (A3), EpicPhail\_35 (A3), Farber\_35 (A3), Fernando\_35 (A3), Gemma\_34 (A3), GingkoMaracino\_35 (A3), Grif\_35 (A3), Groupthink\_35 (A3), Grub\_35 (A3), Grum1\_35 (A3), GtownJaz\_35 (A3), HashRod\_36 (A3), HaveUMetTed\_35 (A3), Heliosoles\_34 (A3), Hercules11\_35 (A3), JHC117\_35 (A3), JenCasNa\_35 (A3), JeppNRM\_35 (A3), Jobu08\_34 (A3), KADY\_36 (A3), Kalb97\_35 (A3), Kalnoky\_35 (A3), LBerry\_35 (A3), LarryKay\_35 (A3), Lilith\_35 (A3), Louie6\_35 (A3), LugYA\_37 (A3), MadMarie\_35 (A3), Mainiac\_35 (A3), Malinsilva\_37 (A3), Manu\_35 (A3), MarQuardt\_35 (A3), Marie\_35 (A3), Marius\_35 (A3), Methuselah\_34 (A3), Microwolf\_35 (A3), Misomonster\_37 (A3), MoneyMay\_35 (A3), MuchMore\_37 (A3), OlanP\_34 (A3), Ollie\_35 (A3), P28Green\_35 (A3), PGHhamlin\_37 (A3), Pawn\_35 (A3), Pembroke\_35 (A3), Penny1\_35 (A3), PhishRPhriends\_33 (A3), Phoebe\_35 (A3), Phoxy\_35 (A3), Phranny\_35 (A3), PotatoSplit\_36 (A3), PurpleHaze\_34 (A3), Reba\_35 (A3), Rummer\_35 (A3), Sabia\_35 (A3), Sabinator\_35 (A3), Snickers\_35 (A3), SoYo\_35 (A3), SoilDragon\_34 (A3), Soshari\_37 (A3), Spike509\_35 (A3), Stagni\_35 (A3), StepMih\_35 (A3), Taurus\_35 (A3), Tiffany\_35 (A3), Vix\_35 (A3), Watson\_35 (A3), Wooldri\_37 (A3), Zetzy\_34 (A3),

#### Start 13:

- Found in 4 of 149 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 4 of 143
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chadwick\_31 (A5), MalagasyRose\_40 (AG), PetterN\_31 (A5), UnionJack\_30 (A5),

#### Start 15:

- Found in 9 of 149 ( 6.0% ) of genes in pham
- Manual Annotations of this start: 8 of 143
- Called 88.9% of time when present

- Phage (with cluster) where this start called: BabyRay\_32 (A3), Isca\_32 (A3), JF2\_32 (A3), JF4\_32 (A3), MK4\_32 (A3), Ph8s\_37 (A2), Phantastic\_32 (A3), Rockstar\_32 (A3),

#### Start 16:

- Found in 3 of 149 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 3 of 143
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Journey13\_33 (A2), L5\_35 (A2), Superchunk\_35 (A2),

#### Start 17:

- Found in 12 of 149 ( 8.1% ) of genes in pham
- Manual Annotations of this start: 5 of 143
- Called 41.7% of time when present
- Phage (with cluster) where this start called: B1\_30 (A3), DroogsArmy\_35 (A7), HINdeR\_34 (A7), Sheen\_35 (A7), Timshel\_35 (A7),

#### Start 18:

- Found in 2 of 149 ( 1.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: 20ES\_35 (A2),

#### Start 19:

- Found in 2 of 149 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 1 of 143
- Called 50.0% of time when present
- Phage (with cluster) where this start called: LadyBird\_37 (A2),

#### Start 20:

- Found in 2 of 149 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 2 of 143
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Che12\_38 (A2), Odin\_35 (A2),

#### Start 21:

- Found in 12 of 149 ( 8.1% ) of genes in pham
- Manual Annotations of this start: 11 of 143
- Called 91.7% of time when present
- Phage (with cluster) where this start called: Astro\_29 (A8), Danforth\_28 (A8), Dixon\_29 (A8), Expelliarmus\_28 (A8), Groundhog\_28 (A8), NearlyHeadless\_29 (A8), Phillis\_29 (A8), Roary\_29 (A8), Saintus\_29 (A8), Smeadley\_29 (A8), Stephig9\_29 (A8),

#### Start 22:

- Found in 5 of 149 ( 3.4% ) of genes in pham
- Manual Annotations of this start: 1 of 143
- Called 20.0% of time when present
- Phage (with cluster) where this start called: BogosyJay\_36 (A9),

#### Start 23:

- Found in 31 of 149 ( 20.8% ) of genes in pham

- Manual Annotations of this start: 27 of 143
- Called 96.8% of time when present
- Phage (with cluster) where this start called: Aliter\_38 (A9), Beemo\_38 (A9), Catalina\_39 (A9), Conquerage\_38 (A9), Darrell\_38 (A9), Eidsmoe\_38 (A9), Elephantoon\_37 (A9), EmyBug\_35 (A9), ExplosioNervosa\_38 (A9), Fayely\_38 (A9), HortumSL17\_38 (A9), LoneWolf\_37 (A9), Maminaiina\_36 (A9), Myxus\_38 (A9), PackMan\_37 (A9), Phaeder\_38 (A9), Pharaoh\_34 (A12), Phonnegut\_38 (A9), Pioneer\_38 (A9), Priya\_38 (A9), Qobbit\_38 (A9), Rahalelujah\_36 (A9), Scherzo\_37 (A9), SheaKeira\_37 (A9), Spouty\_36 (A9), Toaka\_36 (A9), Tubs\_38 (A9), Ugenie5\_34 (A9), Yecey3\_37 (A9), Zimmer\_37 (A12),

### **Summary by clusters:**

There are 9 clusters represented in this pham: AG, A12, K7, A3, A2, A5, A7, A9, A8,

Info for manual annotations of cluster A12:

- Start number 23 was manually annotated 2 times for cluster A12.

Info for manual annotations of cluster A2:

- Start number 15 was manually annotated 1 time for cluster A2.
- Start number 16 was manually annotated 3 times for cluster A2.
- Start number 19 was manually annotated 1 time for cluster A2.
- Start number 20 was manually annotated 2 times for cluster A2.

Info for manual annotations of cluster A3:

- Start number 12 was manually annotated 80 times for cluster A3.
- Start number 15 was manually annotated 7 times for cluster A3.
- Start number 17 was manually annotated 1 time for cluster A3.

Info for manual annotations of cluster A5:

- Start number 13 was manually annotated 3 times for cluster A5.

Info for manual annotations of cluster A7:

- Start number 17 was manually annotated 4 times for cluster A7.

Info for manual annotations of cluster A8:

- Start number 21 was manually annotated 11 times for cluster A8.

Info for manual annotations of cluster A9:

- Start number 22 was manually annotated 1 time for cluster A9.
- Start number 23 was manually annotated 25 times for cluster A9.

Info for manual annotations of cluster AG:

- Start number 13 was manually annotated 1 time for cluster AG.

Info for manual annotations of cluster K7:

- Start number 11 was manually annotated 1 time for cluster K7.

### **Gene Information:**

Gene: 20ES\_35 Start: 26963, Stop: 27184, Start Num: 18

Candidate Starts for 20ES\_35:

(18, 26963), (Start: 19 @26966 has 1 MA's), (28, 27044), (33, 27059), (34, 27062), (38, 27095), (40, 27104), (42, 27119), (44, 27131), (47, 27149), (48, 27152), (49, 27176),

Gene: ACFishhook\_34 Start: 25582, Stop: 25310, Start Num: 12

Candidate Starts for ACFishhook\_34:

(Start: 12 @25582 has 80 MA's), (39, 25408), (46, 25354),

Gene: Aglet\_35 Start: 25649, Stop: 25383, Start Num: 12

Candidate Starts for Aglet\_35:

(Start: 12 @25649 has 80 MA's), (31, 25526), (33, 25520), (34, 25517), (39, 25481), (46, 25427),

Gene: AgronaGT15\_35 Start: 25544, Stop: 25278, Start Num: 12

Candidate Starts for AgronaGT15\_35:

(Start: 12 @25544 has 80 MA's), (31, 25421), (33, 25415),

Gene: Aliter\_38 Start: 28128, Stop: 27928, Start Num: 23

Candidate Starts for Aliter\_38:

(7, 28227), (9, 28200), (Start: 23 @28128 has 27 MA's), (33, 28053), (34, 28050), (37, 28026), (38, 28017), (40, 28008), (47, 27963),

Gene: Aminay\_40 Start: 32095, Stop: 32355, Start Num: 11

Candidate Starts for Aminay\_40:

(Start: 11 @32095 has 1 MA's), (24, 32158), (32, 32224), (38, 32257), (44, 32302), (46, 32314),

Gene: Anubis\_37 Start: 25534, Stop: 25268, Start Num: 12

Candidate Starts for Anubis\_37:

(Start: 12 @25534 has 80 MA's), (31, 25411), (33, 25405), (34, 25402), (39, 25366), (46, 25312),

Gene: Astro\_29 Start: 23519, Stop: 23289, Start Num: 21

Candidate Starts for Astro\_29:

(3, 23669), (6, 23630), (Start: 21 @23519 has 11 MA's), (28, 23441), (34, 23423), (35, 23417), (42, 23366),

Gene: AugsMagnumOpus\_37 Start: 25640, Stop: 25374, Start Num: 12

Candidate Starts for AugsMagnumOpus\_37:

(Start: 12 @25640 has 80 MA's), (31, 25517), (33, 25511), (34, 25508), (39, 25472), (46, 25418),

Gene: B1\_30 Start: 24676, Stop: 24440, Start Num: 17

Candidate Starts for B1\_30:

(Start: 15 @24682 has 8 MA's), (Start: 17 @24676 has 5 MA's), (31, 24583), (35, 24568),

Gene: BabyRay\_32 Start: 25239, Stop: 25000, Start Num: 15

Candidate Starts for BabyRay\_32:

(Start: 15 @25239 has 8 MA's), (Start: 17 @25233 has 5 MA's), (31, 25143), (34, 25134), (35, 25128), (42, 25077),

Gene: Beauxregard13\_35 Start: 25648, Stop: 25382, Start Num: 12

Candidate Starts for Beauxregard13\_35:

(Start: 12 @25648 has 80 MA's), (31, 25525), (33, 25519), (34, 25516), (39, 25480), (46, 25426),

Gene: Beemo\_38 Start: 28256, Stop: 28056, Start Num: 23

Candidate Starts for Beemo\_38:

(7, 28355), (9, 28328), (Start: 23 @28256 has 27 MA's), (33, 28181), (34, 28178), (37, 28154), (38, 28145), (40, 28136), (47, 28091),

Gene: BogosyJay\_36 Start: 27810, Stop: 27601, Start Num: 22

Candidate Starts for BogosyJay\_36:

(Start: 22 @27810 has 1 MA's), (Start: 23 @27801 has 27 MA's), (33, 27726), (34, 27723), (35, 27717), (37, 27699), (42, 27666), (47, 27636),

Gene: BreSam8\_35 Start: 25641, Stop: 25375, Start Num: 12

Candidate Starts for BreSam8\_35:

(Start: 12 @25641 has 80 MA's), (31, 25518), (33, 25512), (34, 25509), (46, 25419),

Gene: BuzzBuzz\_34 Start: 25723, Stop: 25457, Start Num: 12

Candidate Starts for BuzzBuzz\_34:

(Start: 12 @25723 has 80 MA's), (31, 25600), (33, 25594),

Gene: Bxz2\_33 Start: 25730, Stop: 25464, Start Num: 12

Candidate Starts for Bxz2\_33:

(Start: 12 @25730 has 80 MA's), (31, 25607), (33, 25601),

Gene: Catalina\_39 Start: 28201, Stop: 28001, Start Num: 23

Candidate Starts for Catalina\_39:

(7, 28300), (9, 28273), (Start: 23 @28201 has 27 MA's), (33, 28126), (34, 28123), (37, 28099), (38, 28090), (40, 28081), (47, 28036),

Gene: Chadwick\_31 Start: 23833, Stop: 23600, Start Num: 13

Candidate Starts for Chadwick\_31:

(Start: 13 @23833 has 4 MA's), (30, 23734), (44, 23656), (46, 23644),

Gene: Che12\_38 Start: 26571, Stop: 26371, Start Num: 20

Candidate Starts for Che12\_38:

(Start: 20 @26571 has 2 MA's), (34, 26493), (37, 26469), (38, 26460), (42, 26436), (46, 26412), (47, 26406),

Gene: Colbster\_35 Start: 25648, Stop: 25382, Start Num: 12

Candidate Starts for Colbster\_35:

(Start: 12 @25648 has 80 MA's), (31, 25525), (33, 25519), (34, 25516), (39, 25480), (46, 25426),

Gene: Conquerage\_38 Start: 28230, Stop: 28030, Start Num: 23

Candidate Starts for Conquerage\_38:

(7, 28329), (9, 28302), (Start: 23 @28230 has 27 MA's), (33, 28155), (34, 28152), (37, 28128), (38, 28119), (40, 28110), (47, 28065),

Gene: Cullens\_35 Start: 25647, Stop: 25381, Start Num: 12

Candidate Starts for Cullens\_35:

(Start: 12 @25647 has 80 MA's), (31, 25524), (33, 25518), (34, 25515), (39, 25479), (46, 25425),

Gene: DaHudson\_35 Start: 25640, Stop: 25374, Start Num: 12

Candidate Starts for DaHudson\_35:

(Start: 12 @25640 has 80 MA's), (31, 25517), (33, 25511), (34, 25508), (39, 25472), (46, 25418),

Gene: Daishi\_34 Start: 24564, Stop: 24298, Start Num: 12

Candidate Starts for Daishi\_34:



(Start: 12 @24564 has 80 MA's), (31, 24441), (33, 24435),

Gene: Danforth\_28 Start: 23494, Stop: 23264, Start Num: 21

Candidate Starts for Danforth\_28:

(3, 23644), (6, 23605), (Start: 21 @23494 has 11 MA's), (28, 23416), (34, 23398), (35, 23392), (42, 23341),

Gene: Darrell\_38 Start: 28636, Stop: 28439, Start Num: 23

Candidate Starts for Darrell\_38:

(Start: 23 @28636 has 27 MA's), (33, 28564), (34, 28561), (35, 28555), (37, 28537), (41, 28516), (42, 28504), (47, 28474),

Gene: Dieselweasel\_35 Start: 25650, Stop: 25384, Start Num: 12

Candidate Starts for Dieselweasel\_35:

(Start: 12 @25650 has 80 MA's), (31, 25527), (33, 25521), (34, 25518), (39, 25482), (46, 25428),

Gene: Dixon\_29 Start: 23513, Stop: 23283, Start Num: 21

Candidate Starts for Dixon\_29:

(3, 23663), (Start: 21 @23513 has 11 MA's), (28, 23435), (34, 23417), (35, 23411), (42, 23360),

Gene: DroogsArmy\_35 Start: 29491, Stop: 29261, Start Num: 17

Candidate Starts for DroogsArmy\_35:

(Start: 17 @29491 has 5 MA's), (31, 29404), (34, 29395), (44, 29317), (46, 29305),

Gene: Eidsmoe\_38 Start: 28264, Stop: 28064, Start Num: 23

Candidate Starts for Eidsmoe\_38:

(7, 28363), (9, 28336), (Start: 23 @28264 has 27 MA's), (33, 28189), (34, 28186), (37, 28162), (38, 28153), (40, 28144), (47, 28099),

Gene: Elephantoon\_37 Start: 27631, Stop: 27434, Start Num: 23

Candidate Starts for Elephantoon\_37:

(2, 27799), (7, 27727), (9, 27700), (Start: 23 @27631 has 27 MA's), (34, 27556), (35, 27550), (37, 27532), (38, 27523), (42, 27499), (47, 27469),

Gene: EmyBug\_35 Start: 28266, Stop: 28066, Start Num: 23

Candidate Starts for EmyBug\_35:

(7, 28365), (9, 28338), (Start: 23 @28266 has 27 MA's), (33, 28191), (34, 28188), (37, 28164), (38, 28155), (40, 28146), (47, 28101),

Gene: EpicPhail\_35 Start: 25648, Stop: 25382, Start Num: 12

Candidate Starts for EpicPhail\_35:

(Start: 12 @25648 has 80 MA's), (31, 25525), (33, 25519), (34, 25516), (39, 25480), (46, 25426),

Gene: Expelliarmus\_28 Start: 23480, Stop: 23250, Start Num: 21

Candidate Starts for Expelliarmus\_28:

(3, 23630), (6, 23591), (Start: 21 @23480 has 11 MA's), (28, 23402), (34, 23384), (35, 23378), (42, 23327),

Gene: ExplosioNervosa\_38 Start: 28290, Stop: 28090, Start Num: 23

Candidate Starts for ExplosioNervosa\_38:

(7, 28389), (9, 28362), (Start: 23 @28290 has 27 MA's), (33, 28215), (34, 28212), (37, 28188), (38, 28179), (40, 28170), (47, 28125),

Gene: Farber\_35 Start: 25641, Stop: 25375, Start Num: 12  
Candidate Starts for Farber\_35:  
(Start: 12 @25641 has 80 MA's), (31, 25518), (33, 25512), (34, 25509), (39, 25473), (46, 25419),

Gene: Fayely\_38 Start: 28233, Stop: 28033, Start Num: 23  
Candidate Starts for Fayely\_38:  
(7, 28332), (9, 28305), (Start: 23 @28233 has 27 MA's), (33, 28158), (34, 28155), (37, 28131), (38, 28122), (40, 28113), (47, 28068),

Gene: Fernando\_35 Start: 25647, Stop: 25381, Start Num: 12  
Candidate Starts for Fernando\_35:  
(Start: 12 @25647 has 80 MA's), (31, 25524), (33, 25518), (34, 25515), (39, 25479), (46, 25425),

Gene: Gemma\_34 Start: 25497, Stop: 25225, Start Num: 12  
Candidate Starts for Gemma\_34:  
(Start: 12 @25497 has 80 MA's), (46, 25269),

Gene: GingkoMaracino\_35 Start: 25534, Stop: 25268, Start Num: 12  
Candidate Starts for GingkoMaracino\_35:  
(Start: 12 @25534 has 80 MA's), (31, 25411), (33, 25405), (34, 25402), (39, 25366), (46, 25312),

Gene: Grif\_35 Start: 25722, Stop: 25456, Start Num: 12  
Candidate Starts for Grif\_35:  
(Start: 12 @25722 has 80 MA's), (31, 25599), (33, 25593), (34, 25590), (46, 25500),

Gene: Groundhog\_28 Start: 23481, Stop: 23251, Start Num: 21  
Candidate Starts for Groundhog\_28:  
(3, 23631), (6, 23592), (Start: 21 @23481 has 11 MA's), (28, 23403), (34, 23385), (35, 23379), (42, 23328),

Gene: Groupthink\_35 Start: 25501, Stop: 25229, Start Num: 12  
Candidate Starts for Groupthink\_35:  
(Start: 12 @25501 has 80 MA's), (46, 25273),

Gene: Grub\_35 Start: 25640, Stop: 25374, Start Num: 12  
Candidate Starts for Grub\_35:  
(Start: 12 @25640 has 80 MA's), (31, 25517), (33, 25511), (34, 25508), (39, 25472), (46, 25418),

Gene: Grum1\_35 Start: 25647, Stop: 25381, Start Num: 12  
Candidate Starts for Grum1\_35:  
(Start: 12 @25647 has 80 MA's), (31, 25524), (33, 25518), (34, 25515), (39, 25479), (46, 25425),

Gene: GtownJaz\_35 Start: 25649, Stop: 25383, Start Num: 12  
Candidate Starts for GtownJaz\_35:  
(Start: 12 @25649 has 80 MA's), (31, 25526), (33, 25520), (34, 25517), (39, 25481), (46, 25427),

Gene: HINdeR\_34 Start: 29552, Stop: 29322, Start Num: 17  
Candidate Starts for HINdeR\_34:  
(Start: 17 @29552 has 5 MA's), (31, 29465), (34, 29456), (42, 29399), (44, 29378), (46, 29366),

Gene: HashRod\_36 Start: 25723, Stop: 25457, Start Num: 12  
Candidate Starts for HashRod\_36:  
(Start: 12 @25723 has 80 MA's), (31, 25600), (33, 25594),

Gene: HaveUMetTed\_35 Start: 25494, Stop: 25222, Start Num: 12

Candidate Starts for HaveUMetTed\_35:

(Start: 12 @25494 has 80 MA's), (46, 25266),

Gene: Heliosoles\_34 Start: 25501, Stop: 25229, Start Num: 12

Candidate Starts for Heliosoles\_34:

(Start: 12 @25501 has 80 MA's), (46, 25273),

Gene: Hercules11\_35 Start: 25656, Stop: 25390, Start Num: 12

Candidate Starts for Hercules11\_35:

(Start: 12 @25656 has 80 MA's), (31, 25533), (33, 25527), (34, 25524), (39, 25488), (46, 25434),

Gene: HortumSL17\_38 Start: 28200, Stop: 28000, Start Num: 23

Candidate Starts for HortumSL17\_38:

(7, 28299), (9, 28272), (Start: 23 @28200 has 27 MA's), (33, 28125), (34, 28122), (37, 28098), (38, 28089), (40, 28080), (47, 28035),

Gene: Isca\_32 Start: 24932, Stop: 24690, Start Num: 15

Candidate Starts for Isca\_32:

(Start: 15 @24932 has 8 MA's), (Start: 17 @24926 has 5 MA's), (31, 24833), (35, 24818),

Gene: JF2\_32 Start: 24682, Stop: 24440, Start Num: 15

Candidate Starts for JF2\_32:

(Start: 15 @24682 has 8 MA's), (Start: 17 @24676 has 5 MA's), (31, 24583), (35, 24568),

Gene: JF4\_32 Start: 24682, Stop: 24440, Start Num: 15

Candidate Starts for JF4\_32:

(Start: 15 @24682 has 8 MA's), (Start: 17 @24676 has 5 MA's), (31, 24583), (35, 24568),

Gene: JHC117\_35 Start: 25646, Stop: 25380, Start Num: 12

Candidate Starts for JHC117\_35:

(Start: 12 @25646 has 80 MA's), (31, 25523), (33, 25517), (34, 25514), (39, 25478), (46, 25424),

Gene: JenCasNa\_35 Start: 25647, Stop: 25381, Start Num: 12

Candidate Starts for JenCasNa\_35:

(Start: 12 @25647 has 80 MA's), (31, 25524), (33, 25518), (34, 25515), (39, 25479), (46, 25425),

Gene: JeppNRM\_35 Start: 25500, Stop: 25228, Start Num: 12

Candidate Starts for JeppNRM\_35:

(Start: 12 @25500 has 80 MA's), (46, 25272),

Gene: Jobu08\_34 Start: 25478, Stop: 25212, Start Num: 12

Candidate Starts for Jobu08\_34:

(Start: 12 @25478 has 80 MA's), (31, 25355), (33, 25349), (34, 25346), (39, 25310), (46, 25256),

Gene: Journey13\_33 Start: 26731, Stop: 26510, Start Num: 16

Candidate Starts for Journey13\_33:

(Start: 16 @26731 has 3 MA's), (25, 26662), (29, 26647), (33, 26635), (35, 26626), (37, 26608), (38, 26599), (42, 26575), (44, 26563), (46, 26551), (47, 26545),

Gene: KADY\_36 Start: 25723, Stop: 25457, Start Num: 12

Candidate Starts for KADY\_36:

(Start: 12 @25723 has 80 MA's), (31, 25600), (33, 25594),

Gene: Kalb97\_35 Start: 25500, Stop: 25228, Start Num: 12

Candidate Starts for Kalb97\_35:

(Start: 12 @25500 has 80 MA's), (46, 25272),

Gene: Kalnoky\_35 Start: 25501, Stop: 25229, Start Num: 12

Candidate Starts for Kalnoky\_35:

(Start: 12 @25501 has 80 MA's), (46, 25273),

Gene: L5\_35 Start: 26547, Stop: 26329, Start Num: 16

Candidate Starts for L5\_35:

(Start: 16 @26547 has 3 MA's), (28, 26469), (34, 26451), (37, 26427), (38, 26418), (42, 26394), (43, 26388), (46, 26370), (47, 26364),

Gene: LBerry\_35 Start: 25648, Stop: 25382, Start Num: 12

Candidate Starts for LBerry\_35:

(Start: 12 @25648 has 80 MA's), (31, 25525), (33, 25519), (34, 25516), (39, 25480), (46, 25426),

Gene: LadyBird\_37 Start: 27424, Stop: 27630, Start Num: 19

Candidate Starts for LadyBird\_37:

(10, 27376), (18, 27421), (Start: 19 @27424 has 1 MA's), (34, 27508), (38, 27541), (42, 27565), (44, 27577), (47, 27595), (49, 27622),

Gene: LarryKay\_35 Start: 25725, Stop: 25459, Start Num: 12

Candidate Starts for LarryKay\_35:

(Start: 12 @25725 has 80 MA's), (31, 25602), (33, 25596),

Gene: Lilith\_35 Start: 25641, Stop: 25375, Start Num: 12

Candidate Starts for Lilith\_35:

(Start: 12 @25641 has 80 MA's), (31, 25518), (33, 25512), (34, 25509), (39, 25473), (46, 25419),

Gene: LoneWolf\_37 Start: 27789, Stop: 27595, Start Num: 23

Candidate Starts for LoneWolf\_37:

(Start: 23 @27789 has 27 MA's), (33, 27720), (34, 27717), (37, 27693), (38, 27684), (40, 27675), (42, 27660), (46, 27636), (47, 27630),

Gene: Louie6\_35 Start: 25724, Stop: 25458, Start Num: 12

Candidate Starts for Louie6\_35:

(Start: 12 @25724 has 80 MA's), (31, 25601), (33, 25595),

Gene: LugYA\_37 Start: 25648, Stop: 25382, Start Num: 12

Candidate Starts for LugYA\_37:

(Start: 12 @25648 has 80 MA's), (31, 25525), (33, 25519), (34, 25516), (39, 25480), (46, 25426),

Gene: MK4\_32 Start: 24916, Stop: 24674, Start Num: 15

Candidate Starts for MK4\_32:

(Start: 15 @24916 has 8 MA's), (Start: 17 @24910 has 5 MA's), (31, 24817), (35, 24802),

Gene: MadMarie\_35 Start: 25650, Stop: 25384, Start Num: 12

Candidate Starts for MadMarie\_35:

(Start: 12 @25650 has 80 MA's), (31, 25527), (33, 25521), (34, 25518), (46, 25428),

Gene: Mainiac\_35 Start: 25641, Stop: 25375, Start Num: 12

Candidate Starts for Mainiac\_35:

(Start: 12 @25641 has 80 MA's), (31, 25518), (33, 25512), (34, 25509), (46, 25419),

Gene: MalagasyRose\_40 Start: 30812, Stop: 30543, Start Num: 13

Candidate Starts for MalagasyRose\_40:

(4, 30917), (5, 30908), (8, 30851), (Start: 13 @30812 has 4 MA's), (Start: 21 @30776 has 11 MA's), (26, 30722), (36, 30677), (40, 30656), (44, 30620),

Gene: Malinsilva\_37 Start: 25640, Stop: 25374, Start Num: 12

Candidate Starts for Malinsilva\_37:

(Start: 12 @25640 has 80 MA's), (31, 25517), (33, 25511), (34, 25508), (39, 25472), (46, 25418),

Gene: Maminiaina\_36 Start: 27783, Stop: 27583, Start Num: 23

Candidate Starts for Maminiaina\_36:

(Start: 22 @27792 has 1 MA's), (Start: 23 @27783 has 27 MA's), (33, 27708), (34, 27705), (35, 27699), (37, 27681), (42, 27648), (47, 27618),

Gene: Manu\_35 Start: 25501, Stop: 25229, Start Num: 12

Candidate Starts for Manu\_35:

(Start: 12 @25501 has 80 MA's), (46, 25273),

Gene: MarQuardt\_35 Start: 25649, Stop: 25383, Start Num: 12

Candidate Starts for MarQuardt\_35:

(Start: 12 @25649 has 80 MA's), (31, 25526), (33, 25520), (34, 25517), (39, 25481), (46, 25427),

Gene: Marie\_35 Start: 25647, Stop: 25381, Start Num: 12

Candidate Starts for Marie\_35:

(Start: 12 @25647 has 80 MA's), (31, 25524), (33, 25518), (34, 25515), (39, 25479), (46, 25425),

Gene: Marius\_35 Start: 25501, Stop: 25229, Start Num: 12

Candidate Starts for Marius\_35:

(Start: 12 @25501 has 80 MA's), (46, 25273),

Gene: Methuselah\_34 Start: 25719, Stop: 25453, Start Num: 12

Candidate Starts for Methuselah\_34:

(Start: 12 @25719 has 80 MA's), (31, 25596), (33, 25590),

Gene: Microwolf\_35 Start: 25649, Stop: 25383, Start Num: 12

Candidate Starts for Microwolf\_35:

(Start: 12 @25649 has 80 MA's), (31, 25526), (33, 25520), (34, 25517), (39, 25481), (46, 25427),

Gene: Misomonster\_37 Start: 25722, Stop: 25456, Start Num: 12

Candidate Starts for Misomonster\_37:

(Start: 12 @25722 has 80 MA's), (31, 25599), (33, 25593),

Gene: MoneyMay\_35 Start: 25647, Stop: 25381, Start Num: 12

Candidate Starts for MoneyMay\_35:

(Start: 12 @25647 has 80 MA's), (31, 25524), (33, 25518), (34, 25515), (39, 25479), (46, 25425),

Gene: MuchMore\_37 Start: 25640, Stop: 25374, Start Num: 12

Candidate Starts for MuchMore\_37:

(Start: 12 @25640 has 80 MA's), (31, 25517), (33, 25511), (34, 25508), (39, 25472), (46, 25418),

Gene: Myxus\_38 Start: 28200, Stop: 28000, Start Num: 23

Candidate Starts for Myxus\_38:

(7, 28299), (9, 28272), (Start: 23 @28200 has 27 MA's), (33, 28125), (34, 28122), (37, 28098), (38, 28089), (40, 28080), (47, 28035),

Gene: NearlyHeadless\_29 Start: 23533, Stop: 23303, Start Num: 21

Candidate Starts for NearlyHeadless\_29:

(3, 23683), (6, 23644), (Start: 21 @23533 has 11 MA's), (28, 23455), (34, 23437), (35, 23431), (42, 23380),

Gene: Odin\_35 Start: 26375, Stop: 26184, Start Num: 20

Candidate Starts for Odin\_35:

(Start: 20 @26375 has 2 MA's), (34, 26306), (37, 26282), (38, 26273), (42, 26249), (44, 26237), (46, 26225), (47, 26219),

Gene: OlanP\_34 Start: 25682, Stop: 25410, Start Num: 12

Candidate Starts for OlanP\_34:

(Start: 12 @25682 has 80 MA's), (27, 25565), (46, 25454),

Gene: Ollie\_35 Start: 25518, Stop: 25252, Start Num: 12

Candidate Starts for Ollie\_35:

(Start: 12 @25518 has 80 MA's), (31, 25395), (33, 25389), (34, 25386), (39, 25350), (46, 25296),

Gene: P28Green\_35 Start: 25650, Stop: 25384, Start Num: 12

Candidate Starts for P28Green\_35:

(Start: 12 @25650 has 80 MA's), (31, 25527), (33, 25521), (34, 25518), (39, 25482), (46, 25428),

Gene: PGHhamlin\_37 Start: 25640, Stop: 25374, Start Num: 12

Candidate Starts for PGHhamlin\_37:

(Start: 12 @25640 has 80 MA's), (31, 25517), (33, 25511), (34, 25508), (39, 25472), (46, 25418),

Gene: PackMan\_37 Start: 28200, Stop: 28000, Start Num: 23

Candidate Starts for PackMan\_37:

(7, 28299), (9, 28272), (Start: 23 @28200 has 27 MA's), (33, 28125), (34, 28122), (37, 28098), (38, 28089), (40, 28080), (47, 28035),

Gene: Pawn\_35 Start: 25502, Stop: 25230, Start Num: 12

Candidate Starts for Pawn\_35:

(Start: 12 @25502 has 80 MA's), (46, 25274),

Gene: Pembroke\_35 Start: 25649, Stop: 25383, Start Num: 12

Candidate Starts for Pembroke\_35:

(Start: 12 @25649 has 80 MA's), (31, 25526), (33, 25520), (34, 25517), (39, 25481), (46, 25427),

Gene: Penny1\_35 Start: 25648, Stop: 25382, Start Num: 12

Candidate Starts for Penny1\_35:

(Start: 12 @25648 has 80 MA's), (31, 25525), (33, 25519), (34, 25516), (39, 25480), (46, 25426),

Gene: PetterN\_31 Start: 23833, Stop: 23600, Start Num: 13

Candidate Starts for PetterN\_31:

(Start: 13 @23833 has 4 MA's), (30, 23734), (44, 23656), (46, 23644),

Gene: Ph8s\_37 Start: 26625, Stop: 26404, Start Num: 15

Candidate Starts for Ph8s\_37:

(Start: 15 @26625 has 8 MA's), (28, 26544), (38, 26493), (39, 26490), (46, 26445),

Gene: Phaeder\_38 Start: 28200, Stop: 28000, Start Num: 23

Candidate Starts for Phaeder\_38:

(7, 28299), (9, 28272), (Start: 23 @28200 has 27 MA's), (33, 28125), (34, 28122), (37, 28098), (38, 28089), (40, 28080), (47, 28035),

Gene: Phantastic\_32 Start: 24954, Stop: 24712, Start Num: 15

Candidate Starts for Phantastic\_32:

(Start: 15 @24954 has 8 MA's), (Start: 17 @24948 has 5 MA's), (31, 24855), (34, 24846), (35, 24840), (42, 24789), (44, 24768), (46, 24756),

Gene: Pharaoh\_34 Start: 28121, Stop: 27927, Start Num: 23

Candidate Starts for Pharaoh\_34:

(Start: 22 @28130 has 1 MA's), (Start: 23 @28121 has 27 MA's), (29, 28064), (37, 28025), (38, 28016), (40, 28007), (42, 27992), (47, 27962), (48, 27959), (49, 27935),

Gene: Phillis\_29 Start: 23579, Stop: 23349, Start Num: 21

Candidate Starts for Phillis\_29:

(3, 23729), (6, 23690), (Start: 21 @23579 has 11 MA's), (28, 23501), (34, 23483), (35, 23477), (42, 23426),

Gene: PhishRPhriends\_33 Start: 24685, Stop: 24413, Start Num: 12

Candidate Starts for PhishRPhriends\_33:

(Start: 12 @24685 has 80 MA's), (39, 24511), (46, 24457),

Gene: Phoebe\_35 Start: 25640, Stop: 25380, Start Num: 12

Candidate Starts for Phoebe\_35:

(Start: 12 @25640 has 80 MA's), (31, 25523), (33, 25517), (34, 25514), (39, 25478), (46, 25424),

Gene: Phonnegut\_38 Start: 28255, Stop: 28055, Start Num: 23

Candidate Starts for Phonnegut\_38:

(7, 28354), (9, 28327), (Start: 23 @28255 has 27 MA's), (33, 28180), (34, 28177), (37, 28153), (38, 28144), (40, 28135), (47, 28090),

Gene: Phoxy\_35 Start: 25720, Stop: 25454, Start Num: 12

Candidate Starts for Phoxy\_35:

(Start: 12 @25720 has 80 MA's), (31, 25597), (33, 25591),

Gene: Phranny\_35 Start: 25493, Stop: 25221, Start Num: 12

Candidate Starts for Phranny\_35:

(Start: 12 @25493 has 80 MA's), (39, 25319), (46, 25265),

Gene: Pioneer\_38 Start: 28255, Stop: 28055, Start Num: 23

Candidate Starts for Pioneer\_38:

(7, 28354), (9, 28327), (Start: 23 @28255 has 27 MA's), (33, 28180), (34, 28177), (37, 28153), (38, 28144), (40, 28135), (47, 28090),

Gene: PotatoSplit\_36 Start: 25648, Stop: 25382, Start Num: 12

Candidate Starts for PotatoSplit\_36:

(Start: 12 @25648 has 80 MA's), (31, 25525), (33, 25519), (34, 25516), (39, 25480), (46, 25426),

Gene: Priya\_38 Start: 28267, Stop: 28067, Start Num: 23

Candidate Starts for Priya\_38:

(7, 28366), (9, 28339), (Start: 23 @28267 has 27 MA's), (33, 28192), (34, 28189), (37, 28165), (38, 28156), (40, 28147), (47, 28102),

Gene: PurpleHaze\_34 Start: 25500, Stop: 25228, Start Num: 12

Candidate Starts for PurpleHaze\_34:

(Start: 12 @25500 has 80 MA's), (46, 25272),

Gene: Qobbit\_38 Start: 28229, Stop: 28029, Start Num: 23

Candidate Starts for Qobbit\_38:

(7, 28328), (9, 28301), (Start: 23 @28229 has 27 MA's), (33, 28154), (34, 28151), (37, 28127), (38, 28118), (40, 28109), (47, 28064),

Gene: Rahalelujah\_36 Start: 27292, Stop: 27095, Start Num: 23

Candidate Starts for Rahalelujah\_36:

(9, 27364), (14, 27325), (Start: 23 @27292 has 27 MA's), (33, 27220), (34, 27217), (35, 27211), (37, 27193), (38, 27184), (42, 27160), (45, 27139), (47, 27130),

Gene: Reba\_35 Start: 25166, Stop: 24894, Start Num: 12

Candidate Starts for Reba\_35:

(Start: 12 @25166 has 80 MA's), (39, 24992), (46, 24938),

Gene: Roary\_29 Start: 23479, Stop: 23249, Start Num: 21

Candidate Starts for Roary\_29:

(3, 23629), (Start: 21 @23479 has 11 MA's), (28, 23401), (34, 23383), (35, 23377), (42, 23326),

Gene: Rockstar\_32 Start: 24924, Stop: 24682, Start Num: 15

Candidate Starts for Rockstar\_32:

(Start: 15 @24924 has 8 MA's), (Start: 17 @24918 has 5 MA's), (31, 24825), (35, 24810),

Gene: Rummer\_35 Start: 25720, Stop: 25454, Start Num: 12

Candidate Starts for Rummer\_35:

(Start: 12 @25720 has 80 MA's), (31, 25597), (33, 25591),

Gene: Sabia\_35 Start: 25641, Stop: 25375, Start Num: 12

Candidate Starts for Sabia\_35:

(Start: 12 @25641 has 80 MA's), (31, 25518), (33, 25512), (34, 25509), (46, 25419),

Gene: Sabinator\_35 Start: 25646, Stop: 25380, Start Num: 12

Candidate Starts for Sabinator\_35:

(Start: 12 @25646 has 80 MA's), (31, 25523), (33, 25517), (34, 25514), (39, 25478), (46, 25424),

Gene: Saintus\_29 Start: 23499, Stop: 23269, Start Num: 21

Candidate Starts for Saintus\_29:

(3, 23649), (6, 23610), (Start: 21 @23499 has 11 MA's), (28, 23421), (34, 23403), (35, 23397), (42, 23346),

Gene: Scherzo\_37 Start: 28212, Stop: 28012, Start Num: 23

Candidate Starts for Scherzo\_37:

(1, 28470), (9, 28284), (Start: 23 @28212 has 27 MA's), (33, 28137), (34, 28134), (37, 28110), (38, 28101), (40, 28092), (47, 28047),



Gene: SheaKeira\_37 Start: 27624, Stop: 27430, Start Num: 23

Candidate Starts for SheaKeira\_37:

(Start: 22 @27633 has 1 MA's), (Start: 23 @27624 has 27 MA's), (40, 27510), (42, 27495), (46, 27471), (47, 27465),

Gene: Sheen\_35 Start: 29301, Stop: 29071, Start Num: 17

Candidate Starts for Sheen\_35:

(Start: 17 @29301 has 5 MA's), (31, 29214), (34, 29205), (42, 29148), (44, 29127), (46, 29115),

Gene: Smeadley\_29 Start: 23512, Stop: 23282, Start Num: 21

Candidate Starts for Smeadley\_29:

(3, 23662), (6, 23623), (Start: 21 @23512 has 11 MA's), (28, 23434), (34, 23416), (35, 23410), (42, 23359),

Gene: Snickers\_35 Start: 25621, Stop: 25355, Start Num: 12

Candidate Starts for Snickers\_35:

(Start: 12 @25621 has 80 MA's), (31, 25498), (33, 25492), (34, 25489), (46, 25399),

Gene: SoYo\_35 Start: 25559, Stop: 25293, Start Num: 12

Candidate Starts for SoYo\_35:

(Start: 12 @25559 has 80 MA's), (31, 25436), (33, 25430), (34, 25427), (39, 25391), (46, 25337),

Gene: SoilDragon\_34 Start: 25094, Stop: 24828, Start Num: 12

Candidate Starts for SoilDragon\_34:

(Start: 12 @25094 has 80 MA's), (31, 24971), (33, 24965), (34, 24962), (39, 24926), (46, 24872),

Gene: Soshari\_37 Start: 25719, Stop: 25453, Start Num: 12

Candidate Starts for Soshari\_37:

(Start: 12 @25719 has 80 MA's), (31, 25596), (33, 25590),

Gene: Spike509\_35 Start: 25720, Stop: 25454, Start Num: 12

Candidate Starts for Spike509\_35:

(Start: 12 @25720 has 80 MA's), (31, 25597), (33, 25591),

Gene: Spouty\_36 Start: 28266, Stop: 28066, Start Num: 23

Candidate Starts for Spouty\_36:

(7, 28365), (9, 28338), (Start: 23 @28266 has 27 MA's), (33, 28191), (34, 28188), (37, 28164), (38, 28155), (40, 28146), (47, 28101),

Gene: Stagni\_35 Start: 25650, Stop: 25384, Start Num: 12

Candidate Starts for Stagni\_35:

(Start: 12 @25650 has 80 MA's), (31, 25527), (33, 25521), (34, 25518), (46, 25428),

Gene: StepMih\_35 Start: 25641, Stop: 25375, Start Num: 12

Candidate Starts for StepMih\_35:

(Start: 12 @25641 has 80 MA's), (31, 25518), (33, 25512), (34, 25509), (46, 25419),

Gene: Stephig9\_29 Start: 23494, Stop: 23264, Start Num: 21

Candidate Starts for Stephig9\_29:

(3, 23644), (Start: 21 @23494 has 11 MA's), (28, 23416), (34, 23398), (35, 23392), (42, 23341),

Gene: Superchunk\_35 Start: 26208, Stop: 25990, Start Num: 16

Candidate Starts for Superchunk\_35:

(Start: 16 @26208 has 3 MA's), (34, 26112), (37, 26088), (38, 26079), (42, 26055), (46, 26031), (47, 26025),

Gene: Taurus\_35 Start: 25647, Stop: 25381, Start Num: 12

Candidate Starts for Taurus\_35:

(Start: 12 @25647 has 80 MA's), (31, 25524), (33, 25518), (34, 25515), (39, 25479), (46, 25425),

Gene: Tiffany\_35 Start: 25533, Stop: 25267, Start Num: 12

Candidate Starts for Tiffany\_35:

(Start: 12 @25533 has 80 MA's), (31, 25410), (33, 25404), (34, 25401), (46, 25311),

Gene: Timshel\_35 Start: 29722, Stop: 29492, Start Num: 17

Candidate Starts for Timshel\_35:

(Start: 17 @29722 has 5 MA's), (31, 29635), (34, 29626), (44, 29548), (46, 29536),

Gene: Toaka\_36 Start: 27486, Stop: 27289, Start Num: 23

Candidate Starts for Toaka\_36:

(Start: 23 @27486 has 27 MA's), (34, 27411), (35, 27405), (37, 27387), (38, 27378), (40, 27369), (42, 27354), (45, 27333), (47, 27324),

Gene: Tubs\_38 Start: 28200, Stop: 28000, Start Num: 23

Candidate Starts for Tubs\_38:

(7, 28299), (9, 28272), (Start: 23 @28200 has 27 MA's), (33, 28125), (34, 28122), (37, 28098), (38, 28089), (40, 28080), (47, 28035),

Gene: Ugenie5\_34 Start: 28211, Stop: 28011, Start Num: 23

Candidate Starts for Ugenie5\_34:

(1, 28469), (9, 28283), (Start: 23 @28211 has 27 MA's), (33, 28136), (34, 28133), (37, 28109), (38, 28100), (40, 28091), (47, 28046),

Gene: UnionJack\_30 Start: 23572, Stop: 23339, Start Num: 13

Candidate Starts for UnionJack\_30:

(Start: 13 @23572 has 4 MA's), (30, 23473), (34, 23470), (36, 23452), (44, 23395), (46, 23383),

Gene: Vix\_35 Start: 25730, Stop: 25464, Start Num: 12

Candidate Starts for Vix\_35:

(Start: 12 @25730 has 80 MA's), (31, 25607), (33, 25601), (34, 25598), (39, 25562), (46, 25508),

Gene: Watson\_35 Start: 25640, Stop: 25374, Start Num: 12

Candidate Starts for Watson\_35:

(Start: 12 @25640 has 80 MA's), (31, 25517), (33, 25511), (34, 25508), (39, 25472), (46, 25418),

Gene: Wooldri\_37 Start: 25559, Stop: 25293, Start Num: 12

Candidate Starts for Wooldri\_37:

(Start: 12 @25559 has 80 MA's), (31, 25436), (33, 25430), (34, 25427), (39, 25391), (46, 25337),

Gene: Yecey3\_37 Start: 27443, Stop: 27255, Start Num: 23

Candidate Starts for Yecey3\_37:

(Start: 23 @27443 has 27 MA's), (34, 27377), (37, 27353), (38, 27344), (40, 27335), (46, 27296), (47, 27290),

Gene: Zetzy\_34 Start: 25205, Stop: 24921, Start Num: 12

Candidate Starts for Zetzy\_34:

(Start: 12 @25205 has 80 MA's), (31, 25082), (44, 24977), (46, 24965),

Gene: Zimmer\_37 Start: 29288, Stop: 29094, Start Num: 23

Candidate Starts for Zimmer\_37:

(Start: 22 @29297 has 1 MA's), (Start: 23 @29288 has 27 MA's), (29, 29231), (37, 29192), (38, 29183), (42, 29159), (47, 29129), (48, 29126), (49, 29102),