



Pham 192436



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 192436 Report

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

Pham number 192436 has 115 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Ruotula\_56
- Track 2 : Kykar\_53
- Track 3 : Greg\_55, Hermia\_54, Ciao\_53, Buttons\_52, Fajezeel\_55, Marge\_53, Ohno789\_55, Pippin\_55
- Track 4 : Licorice\_56, StewieG\_52, Homines\_46, Sanya\_51, HanShotFirst\_54
- Track 5 : NEHalo\_51
- Track 6 : Bxb1\_49
- Track 7 : SkiPole\_58
- Track 8 : Sagefire\_56, MetalQZJ\_52, ILeeKay\_57, MaryBeth\_53, Rajelicia\_54
- Track 9 : Turj99\_52
- Track 10 : Fascinus\_49, Gyzlar\_49
- Track 11 : Paphu\_51
- Track 12 : Seabiscuit\_56, DreamCatcher\_57, Briton15\_57
- Track 13 : Kugel\_54
- Track 14 : Corvo\_54, Forsytheast\_53, SwissCheese\_55, PascalRango\_54, McGuire\_55, KSSJEB\_53, Moose\_53, Papez\_56, Killigrew\_54
- Track 15 : Gandalf20\_56
- Track 16 : Swole\_54, JuliaChild\_54, Museum\_54
- Track 17 : SarFire\_51, Thor\_51
- Track 18 : GrecoEtereo\_54, Magnito\_52
- Track 19 : RidgeCB\_53
- Track 20 : Norz\_54, Atkinbua\_56
- Track 21 : BK1\_49, A6\_49
- Track 22 : Tote\_49
- Track 23 : Solon\_52, Target\_54, U2\_53
- Track 24 : Marcell\_51
- Track 25 : Oogway\_52
- Track 26 : Bethlehem\_54
- Track 27 : Traft412\_56
- Track 28 : Sandaddy\_52, Ringer\_54, Sorpresa\_52
- Track 29 : Dexes\_54
- Track 30 : JackSparrow\_55
- Track 31 : Pari\_55
- Track 32 : Zephyr\_53
- Track 33 : PinkPlastic\_54
- Track 34 : Alsfro\_57
- Track 35 : TheloniousMonk\_54, Peterson\_58, Paraselene\_51

- Track 36 : Maroc7\_51
- Track 37 : Sumter\_50
- Track 38 : Snazzy\_52, ShortQueendom\_47
- Track 39 : Pinto\_53
- Track 40 : Burton\_53
- Track 41 : Switzer\_55, Squee\_54, Fenn\_56, Naira\_56
- Track 42 : Gwendoluna\_57
- Track 43 : Parliament\_53
- Track 44 : Molly\_54, Arcanine\_54, Slagathor\_55
- Track 45 : BeesKnees\_56, Dynamix\_55
- Track 46 : Altman\_56, Kanely\_55
- Track 47 : KyMonks1A\_55
- Track 48 : Watermelon\_54
- Track 49 : Bigfoot\_49
- Track 50 : BPBiebs31\_54
- Track 51 : Petp2012\_54
- Track 52 : Rubeus\_53, Ichabod\_56
- Track 53 : ProMouse\_55
- Track 54 : Wilkins\_53, Topgun\_53
- Track 55 : LilBib\_53
- Track 56 : Lockley\_52, DD5\_53
- Track 57 : Conceptll\_55
- Track 58 : Sunshine924\_55
- Track 59 : Lamina13\_54, Tasp14\_55
- Track 60 : STLscum\_56
- Track 61 : HarryOW\_52
- Track 62 : Dulcie\_54
- Track 63 : Marsha\_53
- Track 64 : Smeagol\_55
- Track 65 : Mryolo\_51

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

The start number called the most often in the published annotations is 16, it was called in 92 of the 109 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- A6\_49, Alsfro\_57, Arcanine\_54, BK1\_49, BPBiebs31\_54, BeesKnees\_56, Bethlehem\_54, Bigfoot\_49, Briton15\_57, Burton\_53, Buttons\_52, Bxb1\_49, Ciao\_53, Corvo\_54, DD5\_53, Dexes\_54, DreamCatcher\_57, Dulcie\_54, Dynamix\_55, Fajezeel\_55, Fenn\_56, Forsytheast\_53, Gandalf20\_56, GrecoEtereo\_54, Greg\_55, Gwendoluna\_57, HanShotFirst\_54, Hermia\_54, Homines\_46, ILeeKay\_57, Ichabod\_56, JuliaChild\_54, KSSJEB\_53, Killigrew\_54, Kugel\_54, Kykar\_53, Lamina13\_54, Licorice\_56, Lockley\_52, Magnito\_52, Marcell\_51, Marge\_53, Marsha\_53, MaryBeth\_53, McGuire\_55, MetalQZJ\_52, Molly\_54, Moose\_53, Mryolo\_51, Museum\_54, NEHalo\_51, Naira\_56, Ohno789\_55, Papez\_56, Paphu\_51, Paraselene\_51, Parliament\_53, PascalRango\_54, Peterson\_58, Petp2012\_54, PinkPlastic\_54, Pinto\_53, Pippin\_55, ProMouse\_55, Rajelicia\_54, RidgeCB\_53, Ringer\_54, Rubeus\_53, Ruotula\_56, STLscum\_56, Sagefire\_56, Sandaddy\_52, Sanya\_51, SarFire\_51, Seabiscuit\_56, SkiPole\_58, Slagathor\_55, Solon\_52,

Sorpresa\_52, Squee\_54, StewieG\_52, Sumter\_50, Sunshine924\_55, SwissCheese\_55, Switzer\_55, Swole\_54, Target\_54, Tasp14\_55, TheloniousMonk\_54, Thor\_51, Topgun\_53, Traft412\_56, Turj99\_52, U2\_53, Watermelon\_54, Wilkins\_53, Zephyr\_53,

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

- Pari\_55, Smeagol\_55, Tote\_49,

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

- Altman\_56, Atkinbua\_56, ConceptII\_55, Fascinus\_49, Gyzlar\_49, HarryOW\_52, JackSparrow\_55, Kanely\_55, KyMonks1A\_55, LilBib\_53, Maroc7\_51, Norz\_54, Oogway\_52, ShortQueendom\_47, Snazzy\_52,

### Summary by start number:

Start 9:

- Found in 6 of 115 ( 5.2% ) of genes in pham
- Manual Annotations of this start: 1 of 109
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Maroc7\_51 (A1),

Start 14:

- Found in 18 of 115 ( 15.7% ) of genes in pham
- Manual Annotations of this start: 3 of 109
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Pari\_55 (A1), Smeagol\_55 (A1), Tote\_49 (A1),

Start 15:

- Found in 15 of 115 ( 13.0% ) of genes in pham
- Manual Annotations of this start: 13 of 109
- Called 93.3% of time when present
- Phage (with cluster) where this start called: Altman\_56 (A1), Atkinbua\_56 (A1), ConceptII\_55 (A1), Fascinus\_49 (A1), Gyzlar\_49 (A1), HarryOW\_52 (A1), JackSparrow\_55 (A1), Kanely\_55 (A1), KyMonks1A\_55 (A1), LilBib\_53 (A1), Norz\_54 (A1), Oogway\_52 (A1), ShortQueendom\_47 (A1), Snazzy\_52 (A1),

Start 16:

- Found in 100 of 115 ( 87.0% ) of genes in pham
- Manual Annotations of this start: 92 of 109
- Called 97.0% of time when present
- Phage (with cluster) where this start called: A6\_49 (A1), Alsfro\_57 (A1), Arcanine\_54 (A1), BK1\_49 (A1), BPBiebs31\_54 (A1), BeesKnees\_56 (A1), Bethlehem\_54 (A1), Bigfoot\_49 (A1), Briton15\_57 (A1), Burton\_53 (A1), Buttons\_52 (A1), Bxb1\_49 (A1), Ciao\_53 (A1), Corvo\_54 (A1), DD5\_53 (A1), Dexes\_54 (A1), DreamCatcher\_57 (A1), Dulcie\_54 (A1), Dynamix\_55 (A1), Fajezeel\_55 (A1), Fenn\_56 (A1), Forsytheast\_53 (A1), Gandalf20\_56 (A1), GrecoEtereo\_54 (A1), Greg\_55 (A1), Gwendoluna\_57 (A1), HanShotFirst\_54 (A1), Hermia\_54 (A1), Homines\_46 (A1), ILeeKay\_57 (A1), Ichabod\_56 (A1), JuliaChild\_54 (A1), KSSJEB\_53 (A1), Killigrew\_54 (A1), Kugel\_54 (A1), Kykar\_53 (A1), Lamina13\_54 (A1), Licorice\_56 (A1), Lockley\_52 (A1), Magnito\_52 (A1), Marcell\_51 (A1), Marge\_53 (A1), Marsha\_53 (A1), MaryBeth\_53 (A1), McGuire\_55 (A1), MetalQZJ\_52 (A1), Molly\_54 (A1), Moose\_53 (A1), Mryolo\_51 (A1), Museum\_54 (A1), NEHalo\_51

(A1), Naira\_56 (A1), Ohno789\_55 (A1), Papez\_56 (A1), Paphu\_51 (A1), Paraselene\_51 (A1), Parliament\_53 (A1), PascalRango\_54 (A1), Peterson\_58 (A1), Petp2012\_54 (A1), PinkPlastic\_54 (A1), Pinto\_53 (A1), Pippin\_55 (A1), ProMouse\_55 (A1), Rajelicia\_54 (A1), RidgeCB\_53 (A1), Ringer\_54 (A1), Rubeus\_53 (A1), Ruotula\_56 (A1), STLscum\_56 (A1), Sagefire\_56 (A1), Sandaddy\_52 (A1), Sanya\_51 (A1), SarFire\_51 (A1), Seabiscuit\_56 (A1), SkiPole\_58 (A1), Slagathor\_55 (A1), Solon\_52 (A1), Sorpresa\_52 (A1), Squee\_54 (A1), StewieG\_52 (A1), Sumter\_50 (A1), Sunshine924\_55 (A1), SwissCheese\_55 (A1), Switzer\_55 (A1), Swole\_54 (A1), Target\_54 (A1), Tasp14\_55 (A1), TheloniousMonk\_54 (A1), Thor\_51 (A1), Topgun\_53 (A1), Traft412\_56 (A1), Turj99\_52 (A1), U2\_53 (A1), Watermelon\_54 (A1), Wilkins\_53 (A1), Zephyr\_53 (A1),

### **Summary by clusters:**

There is one cluster represented in this pham: A1

Info for manual annotations of cluster A1:

- Start number 9 was manually annotated 1 time for cluster A1.
- Start number 14 was manually annotated 3 times for cluster A1.
- Start number 15 was manually annotated 13 times for cluster A1.
- Start number 16 was manually annotated 92 times for cluster A1.

### **Gene Information:**

Gene: A6\_49 Start: 36945, Stop: 36379, Start Num: 16

Candidate Starts for A6\_49:

(Start: 16 @36945 has 92 MA's), (18, 36846), (19, 36792), (21, 36768), (26, 36633), (27, 36597), (29, 36543), (30, 36522), (34, 36501), (45, 36417),

Gene: Alsfro\_57 Start: 38448, Stop: 37891, Start Num: 16

Candidate Starts for Alsfro\_57:

(13, 38475), (Start: 16 @38448 has 92 MA's), (17, 38415), (18, 38349), (19, 38295), (20, 38280), (21, 38271), (26, 38136), (27, 38100), (29, 38046), (30, 38025), (36, 37986),

Gene: Altman\_56 Start: 39112, Stop: 38498, Start Num: 15

Candidate Starts for Altman\_56:

(Start: 9 @39163 has 1 MA's), (Start: 15 @39112 has 13 MA's), (18, 39010), (19, 38956), (20, 38941), (21, 38932), (26, 38797), (27, 38761), (29, 38710), (30, 38689), (32, 38668), (35, 38653), (38, 38620),

Gene: Arcanine\_54 Start: 38877, Stop: 38323, Start Num: 16

Candidate Starts for Arcanine\_54:

(11, 38919), (Start: 14 @38889 has 3 MA's), (Start: 16 @38877 has 92 MA's), (18, 38778), (19, 38724), (20, 38709), (21, 38700), (26, 38565), (27, 38529), (29, 38478), (30, 38457), (36, 38418),

Gene: Atkinbua\_56 Start: 38718, Stop: 38152, Start Num: 15

Candidate Starts for Atkinbua\_56:

(2, 38829), (8, 38772), (Start: 15 @38718 has 13 MA's), (18, 38616), (19, 38562), (20, 38547), (21, 38538), (26, 38403), (27, 38367), (29, 38316), (30, 38295), (34, 38274), (45, 38190),

Gene: BK1\_49 Start: 36945, Stop: 36379, Start Num: 16

Candidate Starts for BK1\_49:

(Start: 16 @36945 has 92 MA's), (18, 36846), (19, 36792), (21, 36768), (26, 36633), (27, 36597), (29, 36543), (30, 36522), (34, 36501), (45, 36417),

Gene: BPBiebs31\_54 Start: 39309, Stop: 38695, Start Num: 16

Candidate Starts for BPBiebs31\_54:

(10, 39351), (Start: 14 @39321 has 3 MA's), (Start: 16 @39309 has 92 MA's), (18, 39210), (19, 39156), (20, 39141), (21, 39132), (26, 38997), (27, 38961), (29, 38907), (30, 38886), (36, 38847),

Gene: BeesKnees\_56 Start: 38614, Stop: 38048, Start Num: 16

Candidate Starts for BeesKnees\_56:

(Start: 16 @38614 has 92 MA's), (18, 38515), (19, 38461), (20, 38446), (21, 38437), (26, 38302), (27, 38266), (29, 38212), (30, 38191), (34, 38170), (43, 38113), (45, 38086),

Gene: Bethlehem\_54 Start: 40112, Stop: 39468, Start Num: 16

Candidate Starts for Bethlehem\_54:

(Start: 16 @40112 has 92 MA's), (18, 40013), (19, 39959), (20, 39944), (21, 39935), (22, 39815), (26, 39719), (27, 39683), (29, 39632), (30, 39611), (34, 39590), (43, 39533), (45, 39506),

Gene: Bigfoot\_49 Start: 37265, Stop: 36663, Start Num: 16

Candidate Starts for Bigfoot\_49:

(Start: 16 @37265 has 92 MA's), (18, 37166), (19, 37112), (20, 37097), (21, 37088), (26, 36953), (27, 36917), (29, 36863), (30, 36842), (33, 36809), (37, 36785), (45, 36701),

Gene: Briton15\_57 Start: 38936, Stop: 38289, Start Num: 16

Candidate Starts for Briton15\_57:

(Start: 16 @38936 has 92 MA's), (18, 38837), (19, 38783), (20, 38768), (21, 38759), (22, 38639), (26, 38543), (27, 38507), (29, 38453), (30, 38432), (34, 38411), (43, 38354), (45, 38327),

Gene: Burton\_53 Start: 38704, Stop: 38138, Start Num: 16

Candidate Starts for Burton\_53:

(4, 38788), (Start: 14 @38716 has 3 MA's), (Start: 16 @38704 has 92 MA's), (18, 38605), (19, 38551), (20, 38536), (21, 38527), (26, 38392), (27, 38356), (29, 38302), (30, 38281), (34, 38260), (43, 38203), (45, 38176),

Gene: Buttons\_52 Start: 36766, Stop: 36149, Start Num: 16

Candidate Starts for Buttons\_52:

(Start: 16 @36766 has 92 MA's), (18, 36667), (19, 36613), (20, 36598), (21, 36589), (26, 36454), (27, 36418), (29, 36364), (30, 36343),

Gene: Bxb1\_49 Start: 37514, Stop: 36960, Start Num: 16

Candidate Starts for Bxb1\_49:

(Start: 16 @37514 has 92 MA's), (18, 37415), (19, 37361), (20, 37346), (21, 37337), (26, 37202), (27, 37166), (29, 37115), (30, 37094), (36, 37055),

Gene: Ciao\_53 Start: 38224, Stop: 37607, Start Num: 16

Candidate Starts for Ciao\_53:

(Start: 16 @38224 has 92 MA's), (18, 38125), (19, 38071), (20, 38056), (21, 38047), (26, 37912), (27, 37876), (29, 37822), (30, 37801),

Gene: ConceptII\_55 Start: 39890, Stop: 39276, Start Num: 15

Candidate Starts for ConceptII\_55:

(3, 40001), (8, 39944), (Start: 15 @39890 has 13 MA's), (18, 39788), (19, 39734), (20, 39719), (21, 39710), (26, 39575), (27, 39539), (29, 39488), (30, 39467), (32, 39446), (35, 39431), (38, 39398),

Gene: Corvo\_54 Start: 39669, Stop: 39103, Start Num: 16

Candidate Starts for Corvo\_54:

(Start: 16 @39669 has 92 MA's), (18, 39570), (19, 39516), (20, 39501), (21, 39492), (26, 39357), (27, 39321), (29, 39267), (30, 39246), (34, 39225), (43, 39168), (45, 39141),

Gene: DD5\_53 Start: 39005, Stop: 38370, Start Num: 16

Candidate Starts for DD5\_53:

(Start: 16 @39005 has 92 MA's), (18, 38906), (19, 38852), (20, 38837), (21, 38828), (22, 38708), (26, 38612), (27, 38576), (30, 38513), (34, 38492), (45, 38408),

Gene: Dexes\_54 Start: 39125, Stop: 38514, Start Num: 16

Candidate Starts for Dexes\_54:

(Start: 16 @39125 has 92 MA's), (18, 39026), (19, 38972), (20, 38957), (21, 38948), (26, 38813), (27, 38777), (29, 38726), (30, 38705), (32, 38684), (33, 38672), (35, 38669), (38, 38636), (39, 38633), (46, 38525),

Gene: DreamCatcher\_57 Start: 39673, Stop: 39026, Start Num: 16

Candidate Starts for DreamCatcher\_57:

(Start: 16 @39673 has 92 MA's), (18, 39574), (19, 39520), (20, 39505), (21, 39496), (22, 39376), (26, 39280), (27, 39244), (29, 39190), (30, 39169), (34, 39148), (43, 39091), (45, 39064),

Gene: Dulcie\_54 Start: 38438, Stop: 37827, Start Num: 16

Candidate Starts for Dulcie\_54:

(Start: 16 @38438 has 92 MA's), (18, 38339), (19, 38285), (20, 38270), (21, 38261), (26, 38126), (27, 38096), (29, 38042), (30, 38021),

Gene: Dynamix\_55 Start: 38412, Stop: 37846, Start Num: 16

Candidate Starts for Dynamix\_55:

(Start: 16 @38412 has 92 MA's), (18, 38313), (19, 38259), (20, 38244), (21, 38235), (26, 38100), (27, 38064), (29, 38010), (30, 37989), (34, 37968), (43, 37911), (45, 37884),

Gene: Fajezeel\_55 Start: 38573, Stop: 37956, Start Num: 16

Candidate Starts for Fajezeel\_55:

(Start: 16 @38573 has 92 MA's), (18, 38474), (19, 38420), (20, 38405), (21, 38396), (26, 38261), (27, 38225), (29, 38171), (30, 38150),

Gene: Fascinus\_49 Start: 37456, Stop: 36887, Start Num: 15

Candidate Starts for Fascinus\_49:

(Start: 9 @37507 has 1 MA's), (Start: 15 @37456 has 13 MA's), (18, 37354), (19, 37300), (20, 37285), (21, 37276), (26, 37141), (27, 37105), (29, 37054), (30, 37033), (34, 37012), (45, 36925),

Gene: Fenn\_56 Start: 40358, Stop: 39792, Start Num: 16

Candidate Starts for Fenn\_56:

(Start: 16 @40358 has 92 MA's), (18, 40259), (19, 40205), (20, 40190), (21, 40181), (26, 40046), (27, 40010), (29, 39956), (30, 39935), (34, 39914), (43, 39857), (45, 39830),

Gene: Forsytheast\_53 Start: 37985, Stop: 37419, Start Num: 16

Candidate Starts for Forsytheast\_53:

(Start: 16 @37985 has 92 MA's), (18, 37886), (19, 37832), (20, 37817), (21, 37808), (26, 37673), (27, 37637), (29, 37583), (30, 37562), (34, 37541), (43, 37484), (45, 37457),

Gene: Gandalf20\_56 Start: 40348, Stop: 39758, Start Num: 16



Candidate Starts for Gandalf20\_56:

(Start: 16 @40348 has 92 MA's), (18, 40249), (19, 40195), (20, 40180), (21, 40171), (26, 40036), (27, 40000), (29, 39946), (30, 39925), (36, 39886), (40, 39853),

Gene: GrecoEtereo\_54 Start: 38332, Stop: 37766, Start Num: 16

Candidate Starts for GrecoEtereo\_54:

(Start: 16 @38332 has 92 MA's), (18, 38233), (19, 38179), (20, 38164), (21, 38155), (26, 38020), (27, 37984), (29, 37930), (30, 37909), (45, 37804),

Gene: Greg\_55 Start: 38573, Stop: 37956, Start Num: 16

Candidate Starts for Greg\_55:

(Start: 16 @38573 has 92 MA's), (18, 38474), (19, 38420), (20, 38405), (21, 38396), (26, 38261), (27, 38225), (29, 38171), (30, 38150),

Gene: Gwendoluna\_57 Start: 40576, Stop: 39968, Start Num: 16

Candidate Starts for Gwendoluna\_57:

(Start: 16 @40576 has 92 MA's), (18, 40477), (19, 40423), (20, 40408), (21, 40399), (26, 40264), (27, 40228), (29, 40177), (30, 40156),

Gene: Gyzlar\_49 Start: 36249, Stop: 35680, Start Num: 15

Candidate Starts for Gyzlar\_49:

(Start: 9 @36300 has 1 MA's), (Start: 15 @36249 has 13 MA's), (18, 36147), (19, 36093), (20, 36078), (21, 36069), (26, 35934), (27, 35898), (29, 35844), (30, 35823), (34, 35802), (45, 35718),

Gene: HanShotFirst\_54 Start: 38872, Stop: 38306, Start Num: 16

Candidate Starts for HanShotFirst\_54:

(Start: 16 @38872 has 92 MA's), (18, 38773), (19, 38719), (20, 38704), (21, 38695), (26, 38560), (27, 38524), (29, 38470), (30, 38449), (34, 38428), (45, 38344),

Gene: HarryOW\_52 Start: 37507, Stop: 36938, Start Num: 15

Candidate Starts for HarryOW\_52:

(2, 37618), (8, 37561), (Start: 15 @37507 has 13 MA's), (18, 37405), (19, 37351), (20, 37336), (21, 37327), (26, 37192), (27, 37156), (29, 37102), (30, 37081), (45, 36976),

Gene: Hermia\_54 Start: 39005, Stop: 38388, Start Num: 16

Candidate Starts for Hermia\_54:

(Start: 16 @39005 has 92 MA's), (18, 38906), (19, 38852), (20, 38837), (21, 38828), (26, 38693), (27, 38657), (29, 38603), (30, 38582),

Gene: Homines\_46 Start: 34514, Stop: 33951, Start Num: 16

Candidate Starts for Homines\_46:

(Start: 16 @34514 has 92 MA's), (18, 34415), (19, 34361), (20, 34346), (21, 34337), (26, 34202), (27, 34166), (29, 34115), (30, 34094), (34, 34073), (45, 33989),

Gene: ILeeKay\_57 Start: 39101, Stop: 38547, Start Num: 16

Candidate Starts for ILeeKay\_57:

(Start: 16 @39101 has 92 MA's), (18, 39002), (19, 38948), (20, 38933), (21, 38924), (26, 38789), (27, 38753), (29, 38702), (30, 38681), (36, 38642),

Gene: Ichabod\_56 Start: 39693, Stop: 39127, Start Num: 16

Candidate Starts for Ichabod\_56:

(12, 39735), (Start: 14 @39705 has 3 MA's), (Start: 16 @39693 has 92 MA's), (18, 39594), (19, 39540), (20, 39525), (21, 39516), (26, 39381), (27, 39345), (29, 39291), (30, 39270), (34, 39249), (45,

39165),

Gene: JackSparrow\_55 Start: 38752, Stop: 38186, Start Num: 15

Candidate Starts for JackSparrow\_55:

(7, 38803), (Start: 15 @38752 has 13 MA's), (17, 38719), (18, 38653), (19, 38599), (20, 38584), (21, 38575), (26, 38440), (27, 38404), (29, 38350), (30, 38329), (34, 38308), (45, 38224),

Gene: JuliaChild\_54 Start: 38193, Stop: 37627, Start Num: 16

Candidate Starts for JuliaChild\_54:

(12, 38235), (Start: 14 @38205 has 3 MA's), (Start: 16 @38193 has 92 MA's), (18, 38094), (19, 38040), (20, 38025), (21, 38016), (26, 37881), (27, 37845), (29, 37791), (30, 37770), (34, 37749), (43, 37692), (45, 37665),

Gene: KSSJEB\_53 Start: 38192, Stop: 37626, Start Num: 16

Candidate Starts for KSSJEB\_53:

(Start: 16 @38192 has 92 MA's), (18, 38093), (19, 38039), (20, 38024), (21, 38015), (26, 37880), (27, 37844), (29, 37790), (30, 37769), (34, 37748), (43, 37691), (45, 37664),

Gene: Kanely\_55 Start: 38889, Stop: 38275, Start Num: 15

Candidate Starts for Kanely\_55:

(Start: 9 @38940 has 1 MA's), (Start: 15 @38889 has 13 MA's), (18, 38787), (19, 38733), (20, 38718), (21, 38709), (26, 38574), (27, 38538), (29, 38487), (30, 38466), (32, 38445), (35, 38430), (38, 38397),

Gene: Killigrew\_54 Start: 39392, Stop: 38826, Start Num: 16

Candidate Starts for Killigrew\_54:

(Start: 16 @39392 has 92 MA's), (18, 39293), (19, 39239), (20, 39224), (21, 39215), (26, 39080), (27, 39044), (29, 38990), (30, 38969), (34, 38948), (43, 38891), (45, 38864),

Gene: Kugel\_54 Start: 39457, Stop: 38903, Start Num: 16

Candidate Starts for Kugel\_54:

(Start: 16 @39457 has 92 MA's), (18, 39358), (19, 39304), (20, 39289), (21, 39280), (26, 39145), (27, 39109), (29, 39058), (30, 39037), (36, 38998),

Gene: KyMonks1A\_55 Start: 38450, Stop: 37833, Start Num: 15

Candidate Starts for KyMonks1A\_55:

(Start: 9 @38501 has 1 MA's), (Start: 15 @38450 has 13 MA's), (18, 38348), (19, 38294), (20, 38279), (21, 38270), (26, 38135), (27, 38099), (29, 38045), (30, 38024), (35, 37988), (38, 37955),

Gene: Kykar\_53 Start: 38219, Stop: 37605, Start Num: 16

Candidate Starts for Kykar\_53:

(Start: 16 @38219 has 92 MA's), (18, 38120), (19, 38066), (20, 38051), (21, 38042), (26, 37907), (29, 37817), (30, 37796), (32, 37775), (35, 37760), (38, 37727),

Gene: Lamina13\_54 Start: 38247, Stop: 37576, Start Num: 16

Candidate Starts for Lamina13\_54:

(Start: 16 @38247 has 92 MA's), (18, 38148), (19, 38094), (20, 38079), (21, 38070), (22, 37950), (26, 37854), (27, 37818), (29, 37764), (30, 37743), (36, 37704), (40, 37671),

Gene: Licorice\_56 Start: 40561, Stop: 39995, Start Num: 16

Candidate Starts for Licorice\_56:

(Start: 16 @40561 has 92 MA's), (18, 40462), (19, 40408), (20, 40393), (21, 40384), (26, 40249), (27, 40213), (29, 40159), (30, 40138), (34, 40117), (45, 40033),

Gene: LilBib\_53 Start: 39658, Stop: 39053, Start Num: 15

Candidate Starts for LilBib\_53:

(2, 39769), (6, 39721), (Start: 15 @39658 has 13 MA's), (18, 39556), (19, 39502), (20, 39487), (21, 39478), (26, 39343), (27, 39307), (28, 39247), (41, 39124), (46, 39064),

Gene: Lockley\_52 Start: 38167, Stop: 37532, Start Num: 16

Candidate Starts for Lockley\_52:

(Start: 16 @38167 has 92 MA's), (18, 38068), (19, 38014), (20, 37999), (21, 37990), (22, 37870), (26, 37774), (27, 37738), (30, 37675), (34, 37654), (45, 37570),

Gene: Magnito\_52 Start: 38460, Stop: 37900, Start Num: 16

Candidate Starts for Magnito\_52:

(Start: 16 @38460 has 92 MA's), (18, 38361), (19, 38307), (20, 38292), (21, 38283), (26, 38148), (27, 38112), (29, 38058), (30, 38037), (45, 37938),

Gene: Marcell\_51 Start: 37819, Stop: 37265, Start Num: 16

Candidate Starts for Marcell\_51:

(Start: 16 @37819 has 92 MA's), (18, 37720), (19, 37666), (20, 37651), (21, 37642), (26, 37507), (27, 37471), (29, 37420), (30, 37399), (36, 37360),

Gene: Marge\_53 Start: 38708, Stop: 38079, Start Num: 16

Candidate Starts for Marge\_53:

(Start: 16 @38708 has 92 MA's), (18, 38609), (19, 38555), (20, 38540), (21, 38531), (26, 38396), (27, 38360), (29, 38306), (30, 38285),

Gene: Maroc7\_51 Start: 37816, Stop: 37196, Start Num: 9

Candidate Starts for Maroc7\_51:

(Start: 9 @37816 has 1 MA's), (Start: 15 @37765 has 13 MA's), (18, 37663), (19, 37609), (20, 37594), (21, 37585), (26, 37450), (27, 37414), (29, 37363), (30, 37342), (34, 37321), (45, 37234),

Gene: Marsha\_53 Start: 39249, Stop: 38638, Start Num: 16

Candidate Starts for Marsha\_53:

(Start: 16 @39249 has 92 MA's), (18, 39150), (19, 39096), (20, 39081), (21, 39072), (26, 38937), (27, 38901), (29, 38850), (30, 38829), (35, 38793), (38, 38760),

Gene: MaryBeth\_53 Start: 39046, Stop: 38489, Start Num: 16

Candidate Starts for MaryBeth\_53:

(Start: 16 @39046 has 92 MA's), (18, 38947), (19, 38893), (20, 38878), (21, 38869), (26, 38734), (27, 38698), (29, 38644), (30, 38623), (36, 38584),

Gene: McGuire\_55 Start: 38290, Stop: 37724, Start Num: 16

Candidate Starts for McGuire\_55:

(Start: 16 @38290 has 92 MA's), (18, 38191), (19, 38137), (20, 38122), (21, 38113), (26, 37978), (27, 37942), (29, 37888), (30, 37867), (34, 37846), (43, 37789), (45, 37762),

Gene: MetalQZJ\_52 Start: 39046, Stop: 38489, Start Num: 16

Candidate Starts for MetalQZJ\_52:

(Start: 16 @39046 has 92 MA's), (18, 38947), (19, 38893), (20, 38878), (21, 38869), (26, 38734), (27, 38698), (29, 38644), (30, 38623), (36, 38584),

Gene: Molly\_54 Start: 37493, Stop: 36939, Start Num: 16

Candidate Starts for Molly\_54:

(11, 37535), (Start: 14 @37505 has 3 MA's), (Start: 16 @37493 has 92 MA's), (18, 37394), (19, 37340), (20, 37325), (21, 37316), (26, 37181), (27, 37145), (29, 37094), (30, 37073), (36, 37034),

Gene: Moose\_53 Start: 37985, Stop: 37419, Start Num: 16

Candidate Starts for Moose\_53:

(Start: 16 @37985 has 92 MA's), (18, 37886), (19, 37832), (20, 37817), (21, 37808), (26, 37673), (27, 37637), (29, 37583), (30, 37562), (34, 37541), (43, 37484), (45, 37457),

Gene: Mryolo\_51 Start: 38512, Stop: 37898, Start Num: 16

Candidate Starts for Mryolo\_51:

(Start: 16 @38512 has 92 MA's), (18, 38413), (19, 38359), (20, 38344), (21, 38335), (26, 38200), (27, 38164), (29, 38110), (30, 38089), (32, 38068), (35, 38053), (38, 38020),

Gene: Museum\_54 Start: 38643, Stop: 38077, Start Num: 16

Candidate Starts for Museum\_54:

(12, 38685), (Start: 14 @38655 has 3 MA's), (Start: 16 @38643 has 92 MA's), (18, 38544), (19, 38490), (20, 38475), (21, 38466), (26, 38331), (27, 38295), (29, 38241), (30, 38220), (34, 38199), (43, 38142), (45, 38115),

Gene: NEHalo\_51 Start: 38428, Stop: 37814, Start Num: 16

Candidate Starts for NEHalo\_51:

(12, 38470), (Start: 14 @38440 has 3 MA's), (Start: 16 @38428 has 92 MA's), (18, 38329), (19, 38275), (20, 38260), (21, 38251), (26, 38116), (27, 38080), (29, 38026), (30, 38005), (32, 37984), (35, 37969), (38, 37936),

Gene: Naira\_56 Start: 40405, Stop: 39839, Start Num: 16

Candidate Starts for Naira\_56:

(Start: 16 @40405 has 92 MA's), (18, 40306), (19, 40252), (20, 40237), (21, 40228), (26, 40093), (27, 40057), (29, 40003), (30, 39982), (34, 39961), (43, 39904), (45, 39877),

Gene: Norz\_54 Start: 39632, Stop: 39066, Start Num: 15

Candidate Starts for Norz\_54:

(2, 39743), (8, 39686), (Start: 15 @39632 has 13 MA's), (18, 39530), (19, 39476), (20, 39461), (21, 39452), (26, 39317), (27, 39281), (29, 39230), (30, 39209), (34, 39188), (45, 39104),

Gene: Ohno789\_55 Start: 39227, Stop: 38613, Start Num: 16

Candidate Starts for Ohno789\_55:

(Start: 16 @39227 has 92 MA's), (18, 39128), (19, 39074), (20, 39059), (21, 39050), (26, 38915), (27, 38879), (29, 38828), (30, 38807),

Gene: Oogway\_52 Start: 38320, Stop: 37736, Start Num: 15

Candidate Starts for Oogway\_52:

(2, 38431), (Start: 15 @38320 has 13 MA's), (18, 38218), (19, 38164), (20, 38149), (21, 38140), (24, 38020), (27, 37957), (29, 37903), (30, 37882), (34, 37861), (45, 37774),

Gene: Papez\_56 Start: 40588, Stop: 40022, Start Num: 16

Candidate Starts for Papez\_56:

(Start: 16 @40588 has 92 MA's), (18, 40489), (19, 40435), (20, 40420), (21, 40411), (26, 40276), (27, 40240), (29, 40186), (30, 40165), (34, 40144), (43, 40087), (45, 40060),

Gene: Paphu\_51 Start: 37777, Stop: 37160, Start Num: 16

Candidate Starts for Paphu\_51:

(11, 37819), (Start: 14 @37789 has 3 MA's), (Start: 16 @37777 has 92 MA's), (18, 37678), (19, 37624), (20, 37609), (21, 37600), (26, 37465), (27, 37429), (29, 37375), (30, 37354),

Gene: Paraselene\_51 Start: 39100, Stop: 38486, Start Num: 16

Candidate Starts for Paraselene\_51:

(Start: 16 @39100 has 92 MA's), (18, 39001), (19, 38947), (20, 38932), (21, 38923), (26, 38788), (27, 38752), (29, 38698), (30, 38677), (32, 38656), (35, 38641), (38, 38608),

Gene: Pari\_55 Start: 38216, Stop: 37557, Start Num: 14

Candidate Starts for Pari\_55:

(Start: 14 @38216 has 3 MA's), (Start: 16 @38204 has 92 MA's), (18, 38105), (19, 38051), (20, 38036), (21, 38027), (22, 37907), (26, 37811), (27, 37775), (29, 37721), (30, 37700), (34, 37679), (43, 37622), (45, 37595),

Gene: Parliament\_53 Start: 38723, Stop: 38079, Start Num: 16

Candidate Starts for Parliament\_53:

(Start: 16 @38723 has 92 MA's), (18, 38624), (19, 38570), (20, 38555), (21, 38546), (22, 38426), (26, 38330), (27, 38294), (29, 38243), (30, 38222), (34, 38201), (45, 38117),

Gene: PascalRango\_54 Start: 38941, Stop: 38375, Start Num: 16

Candidate Starts for PascalRango\_54:

(Start: 16 @38941 has 92 MA's), (18, 38842), (19, 38788), (20, 38773), (21, 38764), (26, 38629), (27, 38593), (29, 38539), (30, 38518), (34, 38497), (43, 38440), (45, 38413),

Gene: Peterson\_58 Start: 40881, Stop: 40273, Start Num: 16

Candidate Starts for Peterson\_58:

(Start: 16 @40881 has 92 MA's), (18, 40782), (19, 40728), (20, 40713), (21, 40704), (26, 40569), (27, 40539), (29, 40485), (30, 40464), (32, 40443), (35, 40428), (38, 40395),

Gene: Petp2012\_54 Start: 38452, Stop: 37898, Start Num: 16

Candidate Starts for Petp2012\_54:

(4, 38536), (11, 38494), (Start: 14 @38464 has 3 MA's), (Start: 16 @38452 has 92 MA's), (18, 38353), (19, 38299), (20, 38284), (21, 38275), (26, 38140), (27, 38104), (29, 38053), (30, 38032), (36, 37993),

Gene: PinkPlastic\_54 Start: 38325, Stop: 37675, Start Num: 16

Candidate Starts for PinkPlastic\_54:

(Start: 16 @38325 has 92 MA's), (18, 38226), (19, 38172), (20, 38157), (21, 38148), (22, 38028), (26, 37932), (27, 37896), (29, 37842), (30, 37821), (34, 37800), (45, 37713),

Gene: Pinto\_53 Start: 38711, Stop: 38067, Start Num: 16

Candidate Starts for Pinto\_53:

(12, 38753), (Start: 14 @38723 has 3 MA's), (Start: 16 @38711 has 92 MA's), (18, 38612), (19, 38558), (20, 38543), (21, 38534), (22, 38414), (26, 38318), (27, 38282), (29, 38231), (30, 38210), (34, 38189), (45, 38105),

Gene: Pippin\_55 Start: 38617, Stop: 38000, Start Num: 16

Candidate Starts for Pippin\_55:

(Start: 16 @38617 has 92 MA's), (18, 38518), (19, 38464), (20, 38449), (21, 38440), (26, 38305), (27, 38269), (29, 38215), (30, 38194),

Gene: ProMouse\_55 Start: 38872, Stop: 38312, Start Num: 16

Candidate Starts for ProMouse\_55:

(Start: 16 @38872 has 92 MA's), (18, 38773), (19, 38719), (20, 38704), (21, 38695), (26, 38560), (27, 38524), (29, 38470), (31, 38446),

Gene: Rajelicia\_54 Start: 39566, Stop: 39009, Start Num: 16

Candidate Starts for Rajelicia\_54:

(Start: 16 @39566 has 92 MA's), (18, 39467), (19, 39413), (20, 39398), (21, 39389), (26, 39254), (27, 39218), (29, 39164), (30, 39143), (36, 39104),

Gene: RidgeCB\_53 Start: 38830, Stop: 38195, Start Num: 16

Candidate Starts for RidgeCB\_53:

(Start: 16 @38830 has 92 MA's), (18, 38731), (19, 38677), (20, 38662), (21, 38653), (22, 38533), (26, 38437), (27, 38401), (29, 38350), (30, 38329), (36, 38290),

Gene: Ringer\_54 Start: 39883, Stop: 39317, Start Num: 16

Candidate Starts for Ringer\_54:

(Start: 16 @39883 has 92 MA's), (18, 39784), (19, 39730), (20, 39715), (21, 39706), (26, 39571), (27, 39535), (29, 39481), (30, 39460), (34, 39439), (45, 39355),

Gene: Rubeus\_53 Start: 36498, Stop: 35935, Start Num: 16

Candidate Starts for Rubeus\_53:

(12, 36540), (Start: 14 @36510 has 3 MA's), (Start: 16 @36498 has 92 MA's), (18, 36399), (19, 36345), (20, 36330), (21, 36321), (26, 36186), (27, 36150), (29, 36099), (30, 36078), (34, 36057), (45, 35973),

Gene: Ruotula\_56 Start: 39803, Stop: 39174, Start Num: 16

Candidate Starts for Ruotula\_56:

(Start: 16 @39803 has 92 MA's), (18, 39704), (19, 39650), (20, 39635), (21, 39626), (26, 39491), (27, 39455), (29, 39401), (30, 39380),

Gene: STLscum\_56 Start: 39588, Stop: 38947, Start Num: 16

Candidate Starts for STLscum\_56:

(Start: 16 @39588 has 92 MA's), (18, 39489), (19, 39435), (20, 39420), (21, 39411), (23, 39282), (25, 39237), (26, 39225), (27, 39189), (29, 39135), (30, 39114), (36, 39075), (40, 39042),

Gene: Sagefire\_56 Start: 39529, Stop: 38915, Start Num: 16

Candidate Starts for Sagefire\_56:

(Start: 16 @39529 has 92 MA's), (18, 39430), (19, 39376), (20, 39361), (21, 39352), (26, 39217), (27, 39181), (29, 39127), (30, 39106), (36, 39067),

Gene: Sandaddy\_52 Start: 38282, Stop: 37716, Start Num: 16

Candidate Starts for Sandaddy\_52:

(Start: 16 @38282 has 92 MA's), (18, 38183), (19, 38129), (20, 38114), (21, 38105), (26, 37970), (27, 37934), (29, 37880), (30, 37859), (34, 37838), (45, 37754),

Gene: Sanya\_51 Start: 38572, Stop: 38009, Start Num: 16

Candidate Starts for Sanya\_51:

(Start: 16 @38572 has 92 MA's), (18, 38473), (19, 38419), (20, 38404), (21, 38395), (26, 38260), (27, 38224), (29, 38173), (30, 38152), (34, 38131), (45, 38047),

Gene: SarFire\_51 Start: 37844, Stop: 37278, Start Num: 16

Candidate Starts for SarFire\_51:

(Start: 16 @37844 has 92 MA's), (18, 37745), (19, 37691), (20, 37676), (21, 37667), (26, 37532), (29, 37442), (30, 37421), (34, 37400), (45, 37316),

Gene: Seabiscuit\_56 Start: 38458, Stop: 37811, Start Num: 16

Candidate Starts for Seabiscuit\_56:

(Start: 16 @38458 has 92 MA's), (18, 38359), (19, 38305), (20, 38290), (21, 38281), (22, 38161), (26, 38065), (27, 38029), (29, 37975), (30, 37954), (34, 37933), (43, 37876), (45, 37849),

Gene: ShortQueendom\_47 Start: 35302, Stop: 34736, Start Num: 15

Candidate Starts for ShortQueendom\_47:

(1, 35488), (5, 35368), (Start: 15 @35302 has 13 MA's), (17, 35269), (18, 35203), (19, 35149), (20, 35134), (21, 35125), (26, 34990), (27, 34954), (29, 34900), (30, 34879), (34, 34858), (45, 34774),

Gene: SkiPole\_58 Start: 39258, Stop: 38668, Start Num: 16

Candidate Starts for SkiPole\_58:

(Start: 16 @39258 has 92 MA's), (18, 39159), (19, 39105), (20, 39090), (21, 39081), (26, 38946), (27, 38910), (29, 38856), (30, 38835), (36, 38796), (40, 38763),

Gene: Slagathor\_55 Start: 39464, Stop: 38910, Start Num: 16

Candidate Starts for Slagathor\_55:

(11, 39506), (Start: 14 @39476 has 3 MA's), (Start: 16 @39464 has 92 MA's), (18, 39365), (19, 39311), (20, 39296), (21, 39287), (26, 39152), (27, 39116), (29, 39065), (30, 39044), (36, 39005),

Gene: Smeagol\_55 Start: 39706, Stop: 39155, Start Num: 14

Candidate Starts for Smeagol\_55:

(Start: 14 @39706 has 3 MA's), (Start: 16 @39694 has 92 MA's), (18, 39595), (19, 39541), (20, 39526), (21, 39517), (26, 39382), (27, 39346), (29, 39322), (30, 39301), (34, 39280), (45, 39193),

Gene: Snazzy\_52 Start: 37911, Stop: 37345, Start Num: 15

Candidate Starts for Snazzy\_52:

(1, 38097), (5, 37977), (Start: 15 @37911 has 13 MA's), (17, 37878), (18, 37812), (19, 37758), (20, 37743), (21, 37734), (26, 37599), (27, 37563), (29, 37509), (30, 37488), (34, 37467), (45, 37383),

Gene: Solon\_52 Start: 38166, Stop: 37603, Start Num: 16

Candidate Starts for Solon\_52:

(Start: 16 @38166 has 92 MA's), (18, 38067), (19, 38013), (20, 37998), (21, 37989), (26, 37854), (27, 37818), (29, 37767), (30, 37746), (34, 37725), (45, 37641),

Gene: Sorpresa\_52 Start: 38284, Stop: 37718, Start Num: 16

Candidate Starts for Sorpresa\_52:

(Start: 16 @38284 has 92 MA's), (18, 38185), (19, 38131), (20, 38116), (21, 38107), (26, 37972), (27, 37936), (29, 37882), (30, 37861), (34, 37840), (45, 37756),

Gene: Squee\_54 Start: 38872, Stop: 38306, Start Num: 16

Candidate Starts for Squee\_54:

(Start: 16 @38872 has 92 MA's), (18, 38773), (19, 38719), (20, 38704), (21, 38695), (26, 38560), (27, 38524), (29, 38470), (30, 38449), (34, 38428), (43, 38371), (45, 38344),

Gene: StewieG\_52 Start: 35689, Stop: 35123, Start Num: 16

Candidate Starts for StewieG\_52:

(Start: 16 @35689 has 92 MA's), (18, 35590), (19, 35536), (20, 35521), (21, 35512), (26, 35377), (27, 35341), (29, 35290), (30, 35269), (34, 35248), (45, 35161),

Gene: Sumter\_50 Start: 38825, Stop: 38259, Start Num: 16

Candidate Starts for Sumter\_50:

(Start: 16 @38825 has 92 MA's), (18, 38726), (19, 38672), (20, 38657), (21, 38648), (26, 38513), (27, 38477), (29, 38423), (30, 38402), (34, 38381), (43, 38324), (45, 38297),

Gene: Sunshine924\_55 Start: 37963, Stop: 37409, Start Num: 16

Candidate Starts for Sunshine924\_55:

(Start: 16 @37963 has 92 MA's), (18, 37864), (19, 37810), (20, 37795), (21, 37786), (26, 37651), (27, 37615), (29, 37564), (30, 37543), (36, 37504), (42, 37426),

Gene: SwissCheese\_55 Start: 38485, Stop: 37919, Start Num: 16

Candidate Starts for SwissCheese\_55:

(Start: 16 @38485 has 92 MA's), (18, 38386), (19, 38332), (20, 38317), (21, 38308), (26, 38173), (27, 38137), (29, 38083), (30, 38062), (34, 38041), (43, 37984), (45, 37957),

Gene: Switzer\_55 Start: 39397, Stop: 38831, Start Num: 16

Candidate Starts for Switzer\_55:

(Start: 16 @39397 has 92 MA's), (18, 39298), (19, 39244), (20, 39229), (21, 39220), (26, 39085), (27, 39049), (29, 38995), (30, 38974), (34, 38953), (43, 38896), (45, 38869),

Gene: Swole\_54 Start: 37668, Stop: 37102, Start Num: 16

Candidate Starts for Swole\_54:

(12, 37710), (Start: 14 @37680 has 3 MA's), (Start: 16 @37668 has 92 MA's), (18, 37569), (19, 37515), (20, 37500), (21, 37491), (26, 37356), (27, 37320), (29, 37266), (30, 37245), (34, 37224), (43, 37167), (45, 37140),

Gene: Target\_54 Start: 37073, Stop: 36507, Start Num: 16

Candidate Starts for Target\_54:

(Start: 16 @37073 has 92 MA's), (18, 36974), (19, 36920), (20, 36905), (21, 36896), (26, 36761), (27, 36725), (29, 36671), (30, 36650), (34, 36629), (45, 36545),

Gene: Tasp14\_55 Start: 38871, Stop: 38200, Start Num: 16

Candidate Starts for Tasp14\_55:

(Start: 16 @38871 has 92 MA's), (18, 38772), (19, 38718), (20, 38703), (21, 38694), (22, 38574), (26, 38478), (27, 38442), (29, 38388), (30, 38367), (36, 38328), (40, 38295),

Gene: TheloniousMonk\_54 Start: 40538, Stop: 39924, Start Num: 16

Candidate Starts for TheloniousMonk\_54:

(Start: 16 @40538 has 92 MA's), (18, 40439), (19, 40385), (20, 40370), (21, 40361), (26, 40226), (27, 40190), (29, 40136), (30, 40115), (32, 40094), (35, 40079), (38, 40046),

Gene: Thor\_51 Start: 37202, Stop: 36636, Start Num: 16

Candidate Starts for Thor\_51:

(Start: 16 @37202 has 92 MA's), (18, 37103), (19, 37049), (20, 37034), (21, 37025), (26, 36890), (29, 36800), (30, 36779), (34, 36758), (45, 36674),

Gene: Topgun\_53 Start: 38055, Stop: 37489, Start Num: 16

Candidate Starts for Topgun\_53:

(Start: 16 @38055 has 92 MA's), (18, 37956), (19, 37902), (20, 37887), (21, 37878), (26, 37743), (27, 37707), (29, 37656), (30, 37635), (34, 37614), (45, 37527),

Gene: Tote\_49 Start: 34947, Stop: 34369, Start Num: 14

Candidate Starts for Tote\_49:

(12, 34977), (Start: 14 @34947 has 3 MA's), (Start: 16 @34935 has 92 MA's), (18, 34836), (19, 34782), (20, 34767), (21, 34758), (26, 34623), (27, 34587), (29, 34533), (30, 34512), (34, 34491), (43,



34434), (45, 34407),

Gene: Traft412\_56 Start: 39446, Stop: 38832, Start Num: 16

Candidate Starts for Traft412\_56:

(Start: 16 @39446 has 92 MA's), (18, 39347), (19, 39293), (20, 39278), (21, 39269), (26, 39134), (27, 39098), (29, 39044), (30, 39023), (32, 39002), (35, 38987), (38, 38954),

Gene: Turj99\_52 Start: 38730, Stop: 38170, Start Num: 16

Candidate Starts for Turj99\_52:

(Start: 16 @38730 has 92 MA's), (18, 38631), (19, 38577), (20, 38562), (21, 38553), (26, 38418), (27, 38382), (29, 38328), (30, 38307), (45, 38208),

Gene: U2\_53 Start: 39377, Stop: 38811, Start Num: 16

Candidate Starts for U2\_53:

(Start: 16 @39377 has 92 MA's), (18, 39278), (19, 39224), (20, 39209), (21, 39200), (26, 39065), (27, 39029), (29, 38975), (30, 38954), (34, 38933), (45, 38849),

Gene: Watermelon\_54 Start: 38595, Stop: 38029, Start Num: 16

Candidate Starts for Watermelon\_54:

(Start: 16 @38595 has 92 MA's), (18, 38496), (19, 38442), (20, 38427), (21, 38418), (26, 38283), (27, 38247), (29, 38193), (30, 38172), (34, 38151), (44, 38085), (45, 38067),

Gene: Wilkins\_53 Start: 37985, Stop: 37419, Start Num: 16

Candidate Starts for Wilkins\_53:

(Start: 16 @37985 has 92 MA's), (18, 37886), (19, 37832), (20, 37817), (21, 37808), (26, 37673), (27, 37637), (29, 37586), (30, 37565), (34, 37544), (45, 37457),

Gene: Zephyr\_53 Start: 38133, Stop: 37516, Start Num: 16

Candidate Starts for Zephyr\_53:

(4, 38217), (Start: 14 @38145 has 3 MA's), (Start: 16 @38133 has 92 MA's), (18, 38034), (19, 37980), (20, 37965), (21, 37956), (26, 37821), (27, 37785), (29, 37731), (30, 37710),