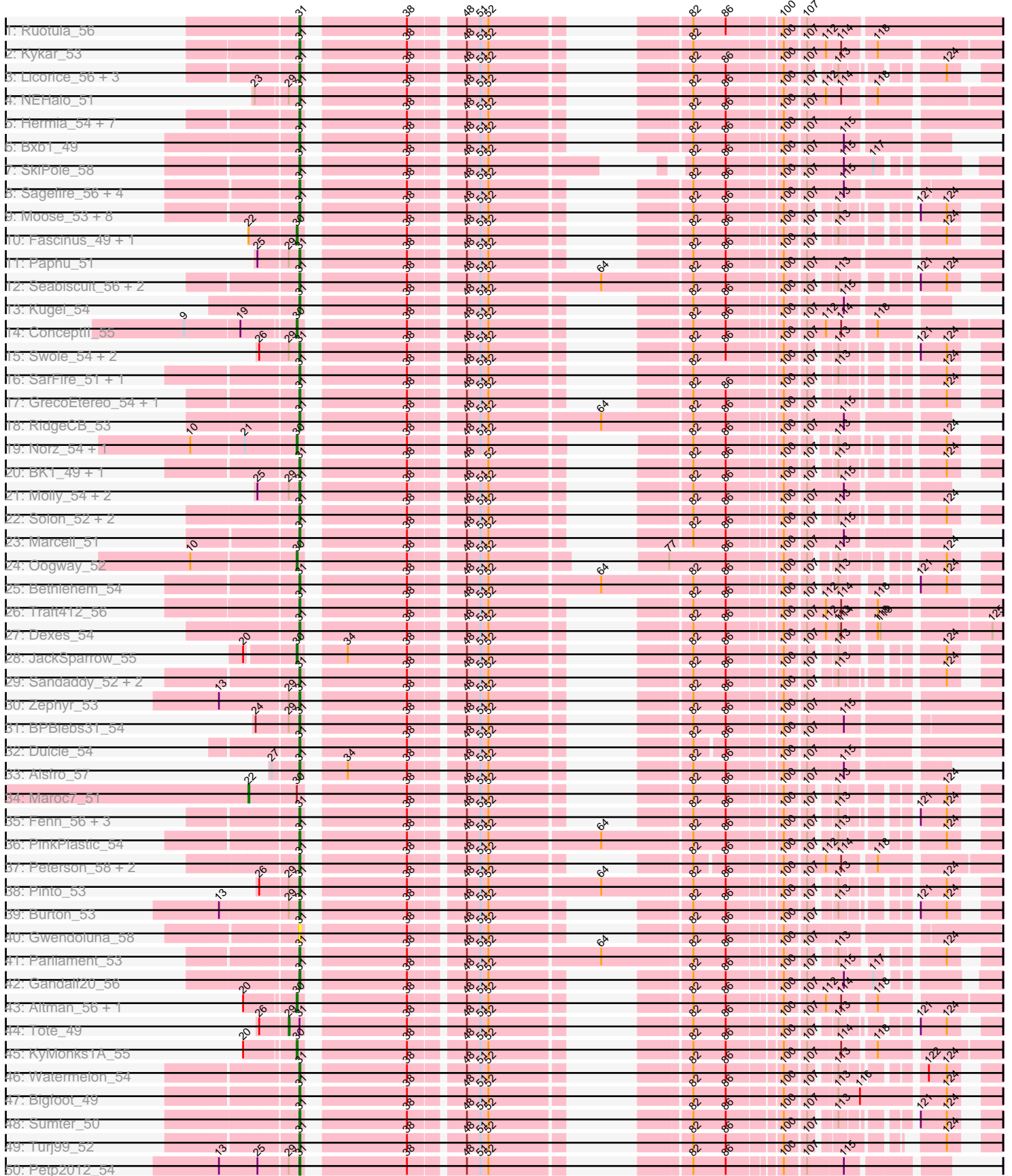
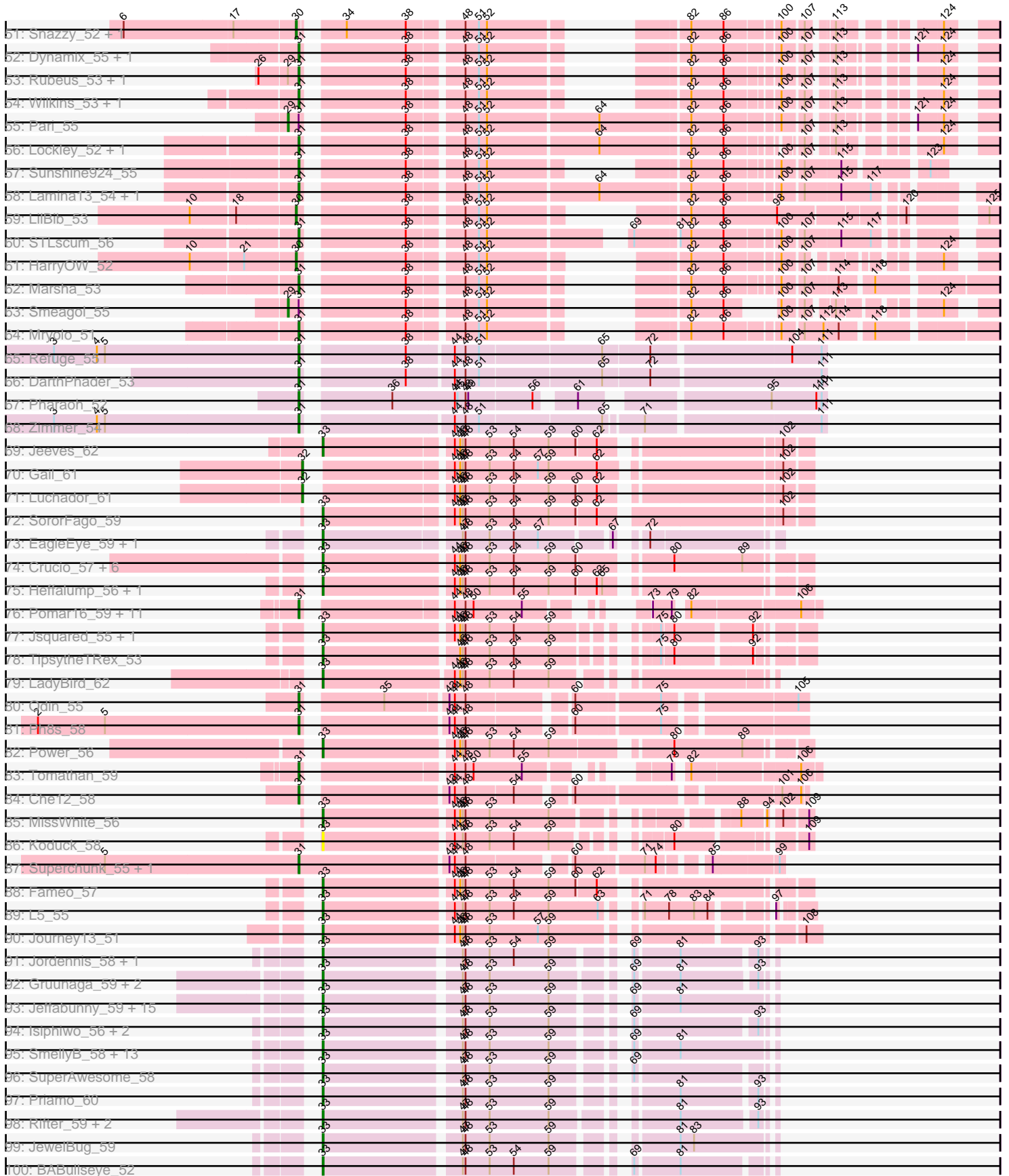


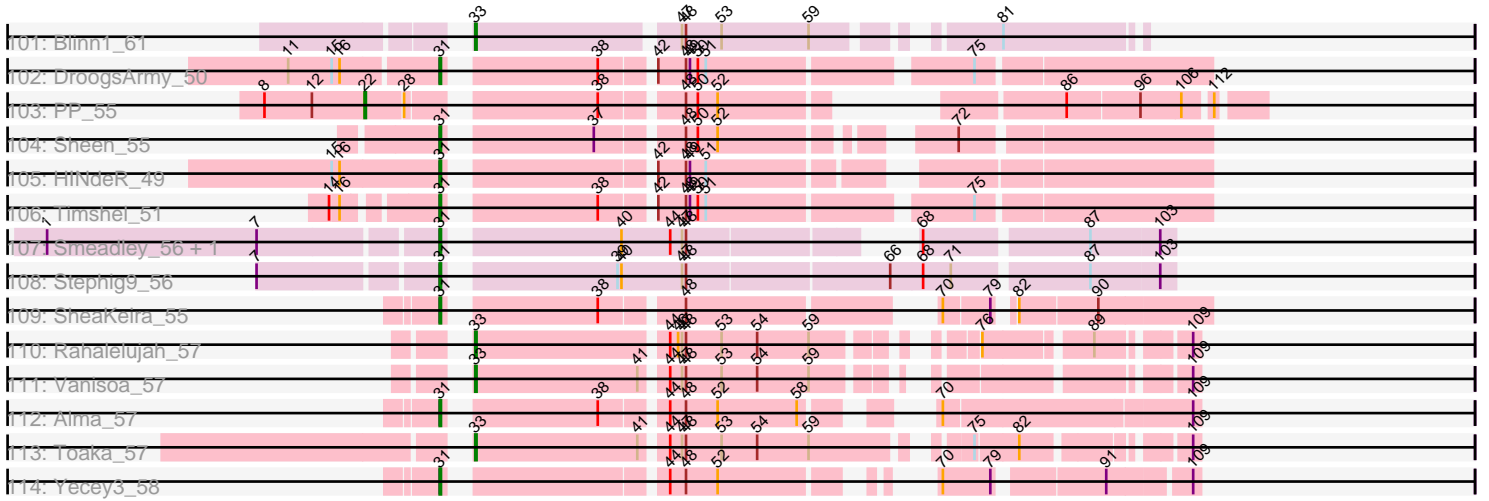
# Pham 163340



Pham 163340



Pham 163340



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 163340 Report

This analysis was run 04/28/24 on database version 559.

Pham number 163340 has 220 members, 15 are drafts.

Phages represented in each track:

- Track 1 : Ruotula\_56
- Track 2 : Kykar\_53
- Track 3 : Licorice\_56, Homines\_46, StewieG\_52, HanShotFirst\_54
- Track 4 : NEHalo\_51
- Track 5 : Hermia\_54, Ciao\_53, Buttons\_52, Fajezeel\_55, Marge\_53, Ohno789\_55, Pippin\_55, Greg\_55
- Track 6 : Bxb1\_49
- Track 7 : SkiPole\_58
- Track 8 : Sagefire\_56, MetalQZJ\_52, Rajelicia\_54, ILeeKay\_57, MaryBeth\_53
- Track 9 : Moose\_53, Corvo\_54, SwissCheese\_55, PascalRango\_54, Papez\_56, McGuire\_55, KSSJEB\_53, Killigrew\_54, Forsytheast\_53
- Track 10 : Fascinus\_49, Gyzlar\_49
- Track 11 : Paphu\_51
- Track 12 : Seabiscuit\_56, DreamCatcher\_57, Briton15\_57
- Track 13 : Kugel\_54
- Track 14 : Conceptll\_55
- Track 15 : Swole\_54, JuliaChild\_54, Museum\_54
- Track 16 : SarFire\_51, Thor\_51
- Track 17 : GrecoEtereo\_54, Magnito\_52
- Track 18 : RidgeCB\_53
- Track 19 : Norz\_54, Atkinbua\_56
- Track 20 : BK1\_49, A6\_49
- Track 21 : Molly\_54, Arcanine\_54, Slagathor\_55
- Track 22 : Solon\_52, U2\_53, Target\_54
- Track 23 : Marcell\_51
- Track 24 : Oogway\_52
- Track 25 : Bethlehem\_54
- Track 26 : Traft412\_56
- Track 27 : Dexes\_54
- Track 28 : JackSparrow\_55
- Track 29 : Sandaddy\_52, Sorpresa\_51, Ringer\_54
- Track 30 : Zephyr\_53
- Track 31 : BPBiebs31\_54
- Track 32 : Dulcie\_54
- Track 33 : Alsfro\_57
- Track 34 : Maroc7\_51
- Track 35 : Fenn\_56, Switzer\_55, Squee\_54, Naira\_56

- Track 36 : PinkPlastic\_54
- Track 37 : Peterson\_58, TheloniousMonk\_54, Paraselene\_51
- Track 38 : Pinto\_53
- Track 39 : Burton\_53
- Track 40 : Gwendoluna\_58
- Track 41 : Parliament\_53
- Track 42 : Gandalf20\_56
- Track 43 : Altman\_56, Kanely\_55
- Track 44 : Tote\_49
- Track 45 : KyMonks1A\_55
- Track 46 : Watermelon\_54
- Track 47 : Bigfoot\_49
- Track 48 : Sumter\_50
- Track 49 : Turj99\_52
- Track 50 : Petp2012\_54
- Track 51 : Snazzy\_52, ShortQueendom\_47
- Track 52 : Dynamix\_55, BeesKnees\_56
- Track 53 : Rubeus\_53, Ichabod\_56
- Track 54 : Wilkins\_53, Topgun\_53
- Track 55 : Pari\_55
- Track 56 : Lockley\_52, DD5\_53
- Track 57 : Sunshine924\_55
- Track 58 : Lamina13\_54, Tasp14\_55
- Track 59 : LilBib\_53
- Track 60 : STLscum\_56
- Track 61 : HarryOW\_52
- Track 62 : Marsha\_53
- Track 63 : Smeagol\_55
- Track 64 : Mryolo\_51
- Track 65 : Refuge\_55
- Track 66 : DARTHPhader\_53
- Track 67 : Pharaoh\_52
- Track 68 : Zimmer\_54
- Track 69 : Jeeves\_62
- Track 70 : Gail\_61
- Track 71 : Luchador\_61
- Track 72 : SororFago\_59
- Track 73 : EagleEye\_59, Lucyedi\_58
- Track 74 : Crucio\_57, Georgie2\_58, FiringLine\_57, SnapTap\_57, QueenBeesly\_57, SemperFi\_58, SweetiePie\_57
- Track 75 : Heffalump\_56, QueenB2\_56
- Track 76 : Pomar16\_59, C3\_55, AN9\_60, D29\_55, D32\_58, Kerberos\_59, DBQu4n\_59, Naji\_59, Duplo\_59, ANI8\_60, VC3\_60, StarStuff\_59
- Track 77 : Jsquared\_55, Serenity\_57
- Track 78 : TipsytheTRex\_53
- Track 79 : LadyBird\_62
- Track 80 : Odin\_55
- Track 81 : Ph8s\_58
- Track 82 : Power\_56
- Track 83 : Tomathan\_59
- Track 84 : Che12\_58
- Track 85 : MissWhite\_56
- Track 86 : Koduck\_58

- Track 87 : Superchunk\_55, Caraxes\_57
- Track 88 : Fameo\_57
- Track 89 : L5\_55
- Track 90 : Journey13\_51
- Track 91 : Jordennis\_58, Dorothea\_57
- Track 92 : Gruunaga\_59, Gladiator\_56, Blue7\_60
- Track 93 : Jeffabunny\_59, Artemis2UCLA\_59, ToneTone\_56, Wiks\_58, Koko\_60, Helmet\_61, Zaka\_59, Tucker\_59, Indra\_62, CloudWang3\_59, Garak\_61, Zulu\_60, Lilbunny\_57, WunderPhul\_59, Yokurt\_59, Hexamo\_59
- Track 94 : Isiphiwo\_56, Chartreuse\_57, DaVinci\_57
- Track 95 : SmellyB\_58, SuperCallie99\_57, Cookiedough\_58, GreedyLawyer\_58, Kipper29\_58, McFly\_58, Kazan\_59, EricB\_58, Neeharika16\_57, Candra\_58, Newrala\_58, VohminGhazi\_58, Pmask\_58, Hoot\_53
- Track 96 : SuperAwesome\_58
- Track 97 : Priamo\_60
- Track 98 : Rifter\_59, Hammer\_59, Roksolana\_60
- Track 99 : JewelBug\_59
- Track 100 : BABullseye\_52
- Track 101 : Blinn1\_61
- Track 102 : DroogsArmy\_50
- Track 103 : PP\_55
- Track 104 : Sheen\_55
- Track 105 : HINdeR\_49
- Track 106 : Timshel\_51
- Track 107 : Smeadley\_56, Expelliarmus\_54
- Track 108 : Stephig9\_56
- Track 109 : SheaKeira\_55
- Track 110 : Rahalelujah\_57
- Track 111 : Vanisoa\_57
- Track 112 : Alma\_57
- Track 113 : Toaka\_57
- Track 114 : Yecey3\_58

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

The start number called the most often in the published annotations is 31, it was called in 121 of the 205 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- A6\_49, AN9\_60, ANI8\_60, Alma\_57, Alsfro\_57, Arcanine\_54, BK1\_49, BPBiebs31\_54, BeesKnees\_56, Bethlehem\_54, Bigfoot\_49, Briton15\_57, Burton\_53, Buttons\_52, Bxb1\_49, C3\_55, Caraxes\_57, Che12\_58, Ciao\_53, Corvo\_54, D29\_55, D32\_58, DBQu4n\_59, DD5\_53, DarthPhader\_53, Dexes\_54, DreamCatcher\_57, DroogsArmy\_50, Dulcie\_54, Duplo\_59, Dynamix\_55, Expelliarmus\_54, Fajezeel\_55, Fenn\_56, Forsytheast\_53, Gandalf20\_56, GrecoEtereo\_54, Greg\_55, Gwendoluna\_58, HINdeR\_49, HanShotFirst\_54, Hermia\_54, Homines\_46, ILeeKay\_57, Ichabod\_56, JuliaChild\_54, KSSJEB\_53, Kerberos\_59, 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, Naji\_59,

Odin\_55, Ohno789\_55, Papez\_56, Paphu\_51, Paraselene\_51, Parliament\_53, PascalRango\_54, Peterson\_58, Petp2012\_54, Ph8s\_58, Pharaoh\_52, PinkPlastic\_54, Pinto\_53, Pippin\_55, Pomar16\_59, Rajelicia\_54, Refuge\_55, RidgeCB\_53, Ringer\_54, Rubeus\_53, Ruotula\_56, STLscum\_56, Sagefire\_56, Sandaddy\_52, SarFire\_51, Seabiscuit\_56, SheaKeira\_55, Sheen\_55, SkiPole\_58, Slagathor\_55, Smeadley\_56, Solon\_52, Sorpresa\_51, Squee\_54, StarStuff\_59, Stephig9\_56, StewieG\_52, Sumter\_50, Sunshine924\_55, Superchunk\_55, SwissCheese\_55, Switzer\_55, Swole\_54, Target\_54, Tasp14\_55, TheloniousMonk\_54, Thor\_51, Timshel\_51, Tomathan\_59, Topgun\_53, Traft412\_56, Turj99\_52, U2\_53, VC3\_60, Watermelon\_54, Wilkins\_53, Yecey3\_58, Zephyr\_53, Zimmer\_54,

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, Artemis2UCLA\_59, Atkinbua\_56, BABullseye\_52, Blinn1\_61, Blue7\_60, Candra\_58, Chartreuse\_57, CloudWang3\_59, ConceptII\_55, Cookiedough\_58, Crucio\_57, DaVinci\_57, Dorothea\_57, EagleEye\_59, EricB\_58, Fameo\_57, Fascinus\_49, FiringLine\_57, Gail\_61, Garak\_61, Georgie2\_58, Gladiator\_56, GreedyLawyer\_58, Gruunaga\_59, Gyzlar\_49, Hammer\_59, HarryOW\_52, Heffalump\_56, Helmet\_61, Hexamo\_59, Hoot\_53, Indra\_62, Isiphiwo\_56, JackSparrow\_55, Jeeves\_62, Jeffabunny\_59, JewelBug\_59, Jordennis\_58, Journey13\_51, Jsquared\_55, Kanely\_55, Kazan\_59, Kipper29\_58, Koduck\_58, Koko\_60, KyMonks1A\_55, L5\_55, LadyBird\_62, LilBib\_53, Lilbunny\_57, Luchador\_61, Lucyedi\_58, Maroc7\_51, McFly\_58, MissWhite\_56, Neeharika16\_57, Newrala\_58, Norz\_54, Oogway\_52, PP\_55, Pmask\_58, Power\_56, Priamo\_60, QueenB2\_56, QueenBeesly\_57, Rahalelujah\_57, Rifter\_59, Roksolana\_60, SemperFi\_58, Serenity\_57, ShortQueendom\_47, SmellyB\_58, SnapTap\_57, Snazzy\_52, SororFago\_59, SuperAwesome\_58, SuperCallie99\_57, SweetiePie\_57, TopsytheTRex\_53, Toaka\_57, ToneTone\_56, Tucker\_59, Vanisoa\_57, VohminGhazi\_58, Wiks\_58, WunderPhul\_59, Yokurt\_59, Zaka\_59, Zulu\_60,

### Summary by start number:

Start 22:

- Found in 4 of 220 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 2 of 205
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Maroc7\_51 (A1), PP\_55 (A7),

Start 29:

- Found in 18 of 220 ( 8.2% ) of genes in pham
- Manual Annotations of this start: 3 of 205
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Pari\_55 (A1), Smeagol\_55 (A1), Tote\_49 (A1),

Start 30:

- Found in 15 of 220 ( 6.8% ) of genes in pham
- Manual Annotations of this start: 13 of 205
- 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 31:

- Found in 130 of 220 ( 59.1% ) of genes in pham
- Manual Annotations of this start: 121 of 205
- Called 97.7% of time when present
- Phage (with cluster) where this start called: A6\_49 (A1), AN9\_60 (A2), ANI8\_60 (A2), Alma\_57 (A9), 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), C3\_55 (A2), Caraxes\_57 (A2), Che12\_58 (A2), Ciao\_53 (A1), Corvo\_54 (A1), D29\_55 (A2), D32\_58 (A2), DBQu4n\_59 (A2), DD5\_53 (A1), DarthPhader\_53 (A12), Dexes\_54 (A1), DreamCatcher\_57 (A1), DroogsArmy\_50 (A7), Dulcie\_54 (A1), Duplo\_59 (A2), Dynamix\_55 (A1), Expelliarmus\_54 (A8), Fajezeel\_55 (A1), Fenn\_56 (A1), Forsytheast\_53 (A1), Gandalf20\_56 (A1), GrecoEtereo\_54 (A1), Greg\_55 (A1), Gwendoluna\_58 (A1), HINdeR\_49 (A7), HanShotFirst\_54 (A1), Hermia\_54 (A1), Homines\_46 (A1), ILeeKay\_57 (A1), Ichabod\_56 (A1), JuliaChild\_54 (A1), KSSJEB\_53 (A1), Kerberos\_59 (A2), 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), Naji\_59 (A2), Odin\_55 (A2), Ohno789\_55 (A1), Papez\_56 (A1), Paphu\_51 (A1), Paraselene\_51 (A1), Parliament\_53 (A1), PascalRango\_54 (A1), Peterson\_58 (A1), Petp2012\_54 (A1), Ph8s\_58 (A2), Pharaoh\_52 (A12), PinkPlastic\_54 (A1), Pinto\_53 (A1), Pippin\_55 (A1), Pomar16\_59 (A2), Rajelicia\_54 (A1), Refuge\_55 (A12), RidgeCB\_53 (A1), Ringer\_54 (A1), Rubeus\_53 (A1), Ruotula\_56 (A1), STLscum\_56 (A1), Sagefire\_56 (A1), Sandaddy\_52 (A1), SarFire\_51 (A1), Seabiscuit\_56 (A1), SheaKeira\_55 (A9), Sheen\_55 (A7), SkiPole\_58 (A1), Slagathor\_55 (A1), Smeadley\_56 (A8), Solon\_52 (A1), Sorpresa\_51 (A1), Squee\_54 (A1), StarStuff\_59 (A2), StepHig9\_56 (A8), StewieG\_52 (A1), Sumter\_50 (A1), Sunshine924\_55 (A1), Superchunk\_55 (A2), SwissCheese\_55 (A1), Switzer\_55 (A1), Swole\_54 (A1), Target\_54 (A1), Tasp14\_55 (A1), TheloniousMonk\_54 (A1), Thor\_51 (A1), Timshel\_51 (A7), Tomathan\_59 (A2), Topgun\_53 (A1), Traft412\_56 (A1), Turj99\_52 (A1), U2\_53 (A1), VC3\_60 (A2), Watermelon\_54 (A1), Wilkins\_53 (A1), Yecey3\_58 (A9), Zephyr\_53 (A1), Zimmer\_54 (A12),

#### Start 32:

- Found in 2 of 220 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 2 of 205
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gail\_61 (A14), Luchador\_61 (A14),

#### Start 33:

- Found in 72 of 220 ( 32.7% ) of genes in pham
- Manual Annotations of this start: 64 of 205
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Artemis2UCLA\_59 (A6), BABullseye\_52 (A6), Blinn1\_61 (A6), Blue7\_60 (A6), Candra\_58 (A6), Chartreuse\_57 (A6), CloudWang3\_59 (A6), Cookiedough\_58 (A6), Crucio\_57 (A2), DaVinci\_57 (A6),



Dorothea\_57 (A6), EagleEye\_59 (A16), EricB\_58 (A6), Fameo\_57 (A2), FiringLine\_57 (A2), Garak\_61 (A6), Georgie2\_58 (A2), Gladiator\_56 (A6), GreedyLawyer\_58 (A6), Gruunaga\_59 (A6), Hammer\_59 (A6), Heffalump\_56 (A2), Helmet\_61 (A6), Hexamo\_59 (A6), Hoot\_53 (A6), Indra\_62 (A6), Isiphiwo\_56 (A6), Jeeves\_62 (A14), Jeffabunny\_59 (A6), JewelBug\_59 (A6), Jordennis\_58 (A6), Journey13\_51 (A2), Jsquared\_55 (A2), Kazan\_59 (A6), Kipper29\_58 (A6), Koduck\_58 (A2), Koko\_60 (A6), L5\_55 (A2), LadyBird\_62 (A2), Lilbunny\_57 (A6), Lucyedi\_58 (A16), McFly\_58 (A6), MissWhite\_56 (A2), Neeharika16\_57 (A6), Newrala\_58 (A6), Pmask\_58 (A6), Power\_56 (A2), Priamo\_60 (A6), QueenB2\_56 (A2), QueenBeesly\_57 (A2), Rahalelujah\_57 (A9), Rifter\_59 (A6), Roksolana\_60 (A6), SemperFi\_58 (A2), Serenity\_57 (A2), SmellyB\_58 (A6), SnapTap\_57 (A2), SororFago\_59 (A14), SuperAwesome\_58 (A6), SuperCallie99\_57 (A6), SweetiePie\_57 (A2), TipsytheTRex\_53 (A2), Toaka\_57 (A9), ToneTone\_56 (A6), Tucker\_59 (A6), Vanisoa\_57 (A9), VohminGhazi\_58 (A6), Wiks\_58 (A6), WunderPhul\_59 (A6), Yokurt\_59 (A6), Zaka\_59 (A6), Zulu\_60 (A6),

### **Summary by clusters:**

There are 9 clusters represented in this pham: A14, A16, A12, A1, A2, A7, A6, A9, A8,

Info for manual annotations of cluster A1:

- Start number 22 was manually annotated 1 time for cluster A1.
- Start number 29 was manually annotated 3 times for cluster A1.
- Start number 30 was manually annotated 13 times for cluster A1.
- Start number 31 was manually annotated 90 times for cluster A1.

Info for manual annotations of cluster A12:

- Start number 31 was manually annotated 4 times for cluster A12.

Info for manual annotations of cluster A14:

- Start number 32 was manually annotated 2 times for cluster A14.
- Start number 33 was manually annotated 2 times for cluster A14.

Info for manual annotations of cluster A16:

- Start number 33 was manually annotated 2 times for cluster A16.

Info for manual annotations of cluster A2:

- Start number 31 was manually annotated 17 times for cluster A2.
- Start number 33 was manually annotated 18 times for cluster A2.

Info for manual annotations of cluster A6:

- Start number 33 was manually annotated 39 times for cluster A6.

Info for manual annotations of cluster A7:

- Start number 22 was manually annotated 1 time for cluster A7.
- Start number 31 was manually annotated 4 times for cluster A7.

Info for manual annotations of cluster A8:

- Start number 31 was manually annotated 3 times for cluster A8.

Info for manual annotations of cluster A9:

- Start number 31 was manually annotated 3 times for cluster A9.

- Start number 33 was manually annotated 3 times for cluster A9.

**Gene Information:**

Gene: A6\_49 Start: 36945, Stop: 36379, Start Num: 31

Candidate Starts for A6\_49:

(Start: 31 @36945 has 121 MA's), (38, 36846), (48, 36792), (52, 36768), (82, 36633), (86, 36597), (100, 36543), (107, 36522), (113, 36501), (124, 36417),

Gene: AN9\_60 Start: 38397, Stop: 37942, Start Num: 31

Candidate Starts for AN9\_60:

(Start: 31 @38397 has 121 MA's), (44, 38256), (48, 38244), (50, 38235), (55, 38181), (73, 38106), (79, 38085), (82, 38076), (106, 37962),

Gene: ANI8\_60 Start: 38397, Stop: 37942, Start Num: 31

Candidate Starts for ANI8\_60:

(Start: 31 @38397 has 121 MA's), (44, 38256), (48, 38244), (50, 38235), (55, 38181), (73, 38106), (79, 38085), (82, 38076), (106, 37962),

Gene: Alma\_57 Start: 38259, Stop: 37786, Start Num: 31

Candidate Starts for Alma\_57:

(Start: 31 @38259 has 121 MA's), (38, 38160), (44, 38118), (48, 38106), (52, 38082), (58, 38022), (70, 37971), (109, 37791),

Gene: Alsfro\_57 Start: 38448, Stop: 37891, Start Num: 31

Candidate Starts for Alsfro\_57:

(27, 38475), (Start: 31 @38448 has 121 MA's), (34, 38415), (38, 38349), (48, 38295), (51, 38280), (52, 38271), (82, 38136), (86, 38100), (100, 38046), (107, 38025), (115, 37986),

Gene: Altman\_56 Start: 39112, Stop: 38498, Start Num: 30

Candidate Starts for Altman\_56:

(20, 39163), (Start: 30 @39112 has 13 MA's), (38, 39010), (48, 38956), (51, 38941), (52, 38932), (82, 38797), (86, 38761), (100, 38710), (107, 38689), (112, 38668), (114, 38653), (118, 38620),

Gene: Arcanine\_54 Start: 38877, Stop: 38323, Start Num: 31

Candidate Starts for Arcanine\_54:

(25, 38919), (Start: 29 @38889 has 3 MA's), (Start: 31 @38877 has 121 MA's), (38, 38778), (48, 38724), (51, 38709), (52, 38700), (82, 38565), (86, 38529), (100, 38478), (107, 38457), (115, 38418),

Gene: Artemis2UCLA\_59 Start: 37105, Stop: 36662, Start Num: 33

Candidate Starts for Artemis2UCLA\_59:

(Start: 33 @37105 has 64 MA's), (47, 36961), (48, 36958), (53, 36931), (59, 36865), (69, 36805), (81, 36760),

Gene: Atkinbua\_56 Start: 38718, Stop: 38152, Start Num: 30

Candidate Starts for Atkinbua\_56:

(10, 38829), (21, 38772), (Start: 30 @38718 has 13 MA's), (38, 38616), (48, 38562), (51, 38547), (52, 38538), (82, 38403), (86, 38367), (100, 38316), (107, 38295), (113, 38274), (124, 38190),

Gene: BABullseye\_52 Start: 34678, Stop: 34244, Start Num: 33

Candidate Starts for BABullseye\_52:

(Start: 33 @34678 has 64 MA's), (47, 34534), (48, 34531), (53, 34504), (54, 34477), (59, 34438), (69, 34378), (81, 34333),

Gene: BK1\_49 Start: 36945, Stop: 36379, Start Num: 31

Candidate Starts for BK1\_49:

(Start: 31 @36945 has 121 MA's), (38, 36846), (48, 36792), (52, 36768), (82, 36633), (86, 36597), (100, 36543), (107, 36522), (113, 36501), (124, 36417),

Gene: BPBiebs31\_54 Start: 39309, Stop: 38695, Start Num: 31

Candidate Starts for BPBiebs31\_54:

(24, 39351), (Start: 29 @39321 has 3 MA's), (Start: 31 @39309 has 121 MA's), (38, 39210), (48, 39156), (51, 39141), (52, 39132), (82, 38997), (86, 38961), (100, 38907), (107, 38886), (115, 38847),

Gene: BeesKnees\_56 Start: 38614, Stop: 38048, Start Num: 31

Candidate Starts for BeesKnees\_56:

(Start: 31 @38614 has 121 MA's), (38, 38515), (48, 38461), (51, 38446), (52, 38437), (82, 38302), (86, 38266), (100, 38212), (107, 38191), (113, 38170), (121, 38113), (124, 38086),

Gene: Bethlehem\_54 Start: 40112, Stop: 39468, Start Num: 31

Candidate Starts for Bethlehem\_54:

(Start: 31 @40112 has 121 MA's), (38, 40013), (48, 39959), (51, 39944), (52, 39935), (64, 39815), (82, 39719), (86, 39683), (100, 39632), (107, 39611), (113, 39590), (121, 39533), (124, 39506),

Gene: Bigfoot\_49 Start: 37265, Stop: 36663, Start Num: 31

Candidate Starts for Bigfoot\_49:

(Start: 31 @37265 has 121 MA's), (38, 37166), (48, 37112), (51, 37097), (52, 37088), (82, 36953), (86, 36917), (100, 36863), (107, 36842), (113, 36809), (116, 36785), (124, 36701),

Gene: Blinn1\_61 Start: 37123, Stop: 36680, Start Num: 33

Candidate Starts for Blinn1\_61:

(Start: 33 @37123 has 64 MA's), (47, 36979), (48, 36976), (53, 36949), (59, 36883), (81, 36778),

Gene: Blue7\_60 Start: 37199, Stop: 36762, Start Num: 33

Candidate Starts for Blue7\_60:

(Start: 33 @37199 has 64 MA's), (47, 37055), (48, 37052), (53, 37025), (59, 36959), (69, 36896), (81, 36851), (93, 36773),

Gene: Briton15\_57 Start: 38936, Stop: 38289, Start Num: 31

Candidate Starts for Briton15\_57:

(Start: 31 @38936 has 121 MA's), (38, 38837), (48, 38783), (51, 38768), (52, 38759), (64, 38639), (82, 38543), (86, 38507), (100, 38453), (107, 38432), (113, 38411), (121, 38354), (124, 38327),

Gene: Burton\_53 Start: 38704, Stop: 38138, Start Num: 31

Candidate Starts for Burton\_53:

(13, 38788), (Start: 29 @38716 has 3 MA's), (Start: 31 @38704 has 121 MA's), (38, 38605), (48, 38551), (51, 38536), (52, 38527), (82, 38392), (86, 38356), (100, 38302), (107, 38281), (113, 38260), (121, 38203), (124, 38176),

Gene: Buttons\_52 Start: 36766, Stop: 36149, Start Num: 31

Candidate Starts for Buttons\_52:

(Start: 31 @36766 has 121 MA's), (38, 36667), (48, 36613), (51, 36598), (52, 36589), (82, 36454), (86, 36418), (100, 36364), (107, 36343),

Gene: Bxb1\_49 Start: 37514, Stop: 36960, Start Num: 31

Candidate Starts for Bxb1\_49:

(Start: 31 @37514 has 121 MA's), (38, 37415), (48, 37361), (51, 37346), (52, 37337), (82, 37202), (86, 37166), (100, 37115), (107, 37094), (115, 37055),

Gene: C3\_55 Start: 38397, Stop: 37942, Start Num: 31

Candidate Starts for C3\_55:

(Start: 31 @38397 has 121 MA's), (44, 38256), (48, 38244), (50, 38235), (55, 38181), (73, 38106), (79, 38085), (82, 38076), (106, 37962),

Gene: Candra\_58 Start: 37045, Stop: 36602, Start Num: 33

Candidate Starts for Candra\_58:

(Start: 33 @37045 has 64 MA's), (47, 36901), (48, 36898), (53, 36871), (59, 36805), (69, 36745), (81, 36700),

Gene: Caraxes\_57 Start: 36675, Stop: 36196, Start Num: 31

Candidate Starts for Caraxes\_57:

(5, 36891), (Start: 31 @36675 has 121 MA's), (43, 36513), (44, 36507), (48, 36495), (60, 36393), (71, 36324), (74, 36312), (85, 36270), (99, 36201),

Gene: Chartreuse\_57 Start: 36396, Stop: 35962, Start Num: 33

Candidate Starts for Chartreuse\_57:

(Start: 33 @36396 has 64 MA's), (47, 36252), (48, 36249), (53, 36222), (59, 36156), (69, 36096), (93, 35973),

Gene: Che12\_58 Start: 37116, Stop: 36628, Start Num: 31

Candidate Starts for Che12\_58:

(Start: 31 @37116 has 121 MA's), (43, 36975), (44, 36969), (48, 36957), (54, 36906), (60, 36855), (101, 36654), (106, 36633),

Gene: Ciao\_53 Start: 38224, Stop: 37607, Start Num: 31

Candidate Starts for Ciao\_53:

(Start: 31 @38224 has 121 MA's), (38, 38125), (48, 38071), (51, 38056), (52, 38047), (82, 37912), (86, 37876), (100, 37822), (107, 37801),

Gene: CloudWang3\_59 Start: 37193, Stop: 36750, Start Num: 33

Candidate Starts for CloudWang3\_59:

(Start: 33 @37193 has 64 MA's), (47, 37049), (48, 37046), (53, 37019), (59, 36953), (69, 36893), (81, 36848),

Gene: ConceptII\_55 Start: 39890, Stop: 39276, Start Num: 30

Candidate Starts for ConceptII\_55:

(9, 40001), (19, 39944), (Start: 30 @39890 has 13 MA's), (38, 39788), (48, 39734), (51, 39719), (52, 39710), (82, 39575), (86, 39539), (100, 39488), (107, 39467), (112, 39446), (114, 39431), (118, 39398),

Gene: Cookiedough\_58 Start: 37024, Stop: 36581, Start Num: 33

Candidate Starts for Cookiedough\_58:

(Start: 33 @37024 has 64 MA's), (47, 36880), (48, 36877), (53, 36850), (59, 36784), (69, 36724), (81, 36679),

Gene: Corvo\_54 Start: 39669, Stop: 39103, Start Num: 31

Candidate Starts for Corvo\_54:

(Start: 31 @39669 has 121 MA's), (38, 39570), (48, 39516), (51, 39501), (52, 39492), (82, 39357), (86, 39321), (100, 39267), (107, 39246), (113, 39225), (121, 39168), (124, 39141),

Gene: Crucio\_57 Start: 38174, Stop: 37680, Start Num: 33

Candidate Starts for Crucio\_57:

(Start: 33 @38174 has 64 MA's), (44, 38036), (46, 38030), (47, 38027), (48, 38024), (53, 37997), (54, 37970), (59, 37931), (60, 37901), (80, 37817), (89, 37742),

Gene: D29\_55 Start: 38000, Stop: 37545, Start Num: 31

Candidate Starts for D29\_55:

(Start: 31 @38000 has 121 MA's), (44, 37859), (48, 37847), (50, 37838), (55, 37784), (73, 37709), (79, 37688), (82, 37679), (106, 37565),

Gene: D32\_58 Start: 38000, Stop: 37545, Start Num: 31

Candidate Starts for D32\_58:

(Start: 31 @38000 has 121 MA's), (44, 37859), (48, 37847), (50, 37838), (55, 37784), (73, 37709), (79, 37688), (82, 37679), (106, 37565),

Gene: DBQu4n\_59 Start: 37981, Stop: 37526, Start Num: 31

Candidate Starts for DBQu4n\_59:

(Start: 31 @37981 has 121 MA's), (44, 37840), (48, 37828), (50, 37819), (55, 37765), (73, 37690), (79, 37669), (82, 37660), (106, 37546),

Gene: DD5\_53 Start: 39005, Stop: 38370, Start Num: 31

Candidate Starts for DD5\_53:

(Start: 31 @39005 has 121 MA's), (38, 38906), (48, 38852), (51, 38837), (52, 38828), (64, 38708), (82, 38612), (86, 38576), (107, 38513), (113, 38492), (124, 38408),

Gene: DaVinci\_57 Start: 36450, Stop: 36016, Start Num: 33

Candidate Starts for DaVinci\_57:

(Start: 33 @36450 has 64 MA's), (47, 36306), (48, 36303), (53, 36276), (59, 36210), (69, 36150), (93, 36027),

Gene: DARTHPhader\_53 Start: 38914, Stop: 38369, Start Num: 31

Candidate Starts for DARTHPhader\_53:

(Start: 31 @38914 has 121 MA's), (38, 38815), (44, 38767), (48, 38755), (51, 38740), (65, 38608), (72, 38557), (111, 38374),

Gene: Dexes\_54 Start: 39125, Stop: 38514, Start Num: 31

Candidate Starts for Dexes\_54:

(Start: 31 @39125 has 121 MA's), (38, 39026), (48, 38972), (51, 38957), (52, 38948), (82, 38813), (86, 38777), (100, 38726), (107, 38705), (112, 38684), (113, 38672), (114, 38669), (118, 38636), (119, 38633), (125, 38525),

Gene: Dorothea\_57 Start: 37019, Stop: 36585, Start Num: 33

Candidate Starts for Dorothea\_57:

(Start: 33 @37019 has 64 MA's), (47, 36875), (48, 36872), (53, 36845), (54, 36818), (59, 36779), (69, 36719), (81, 36674), (93, 36596),

Gene: DreamCatcher\_57 Start: 39673, Stop: 39026, Start Num: 31

Candidate Starts for DreamCatcher\_57:

(Start: 31 @39673 has 121 MA's), (38, 39574), (48, 39520), (51, 39505), (52, 39496), (64, 39376), (82, 39280), (86, 39244), (100, 39190), (107, 39169), (113, 39148), (121, 39091), (124, 39064),

Gene: DroogsArmy\_50 Start: 38758, Stop: 38237, Start Num: 31

Candidate Starts for DroogsArmy\_50:

(11, 38866), (15, 38833), (16, 38827), (Start: 31 @38758 has 121 MA's), (38, 38659), (42, 38626), (48, 38605), (49, 38602), (50, 38596), (51, 38590), (75, 38407),

Gene: Dulcie\_54 Start: 38438, Stop: 37827, Start Num: 31

Candidate Starts for Dulcie\_54:

(Start: 31 @38438 has 121 MA's), (38, 38339), (48, 38285), (51, 38270), (52, 38261), (82, 38126), (86, 38096), (100, 38042), (107, 38021),

Gene: Duplo\_59 Start: 38037, Stop: 37582, Start Num: 31

Candidate Starts for Duplo\_59:

(Start: 31 @38037 has 121 MA's), (44, 37896), (48, 37884), (50, 37875), (55, 37821), (73, 37746), (79, 37725), (82, 37716), (106, 37602),

Gene: Dynamix\_55 Start: 38412, Stop: 37846, Start Num: 31

Candidate Starts for Dynamix\_55:

(Start: 31 @38412 has 121 MA's), (38, 38313), (48, 38259), (51, 38244), (52, 38235), (82, 38100), (86, 38064), (100, 38010), (107, 37989), (113, 37968), (121, 37911), (124, 37884),

Gene: EagleEye\_59 Start: 37874, Stop: 37425, Start Num: 33

Candidate Starts for EagleEye\_59:

(Start: 33 @37874 has 64 MA's), (47, 37730), (48, 37727), (53, 37700), (54, 37673), (57, 37646), (67, 37577), (72, 37559),

Gene: EricB\_58 Start: 37002, Stop: 36559, Start Num: 33

Candidate Starts for EricB\_58:

(Start: 33 @37002 has 64 MA's), (47, 36858), (48, 36855), (53, 36828), (59, 36762), (69, 36702), (81, 36657),

Gene: Expelliarmus\_54 Start: 36696, Stop: 36226, Start Num: 31

Candidate Starts for Expelliarmus\_54:

(1, 36981), (7, 36822), (Start: 31 @36696 has 121 MA's), (40, 36579), (44, 36543), (47, 36534), (48, 36531), (68, 36405), (87, 36288), (103, 36237),

Gene: Fajezeel\_55 Start: 38573, Stop: 37956, Start Num: 31

Candidate Starts for Fajezeel\_55:

(Start: 31 @38573 has 121 MA's), (38, 38474), (48, 38420), (51, 38405), (52, 38396), (82, 38261), (86, 38225), (100, 38171), (107, 38150),

Gene: Fameo\_57 Start: 38505, Stop: 38011, Start Num: 33

Candidate Starts for Fameo\_57:

(Start: 33 @38505 has 64 MA's), (44, 38367), (46, 38361), (47, 38358), (48, 38355), (53, 38328), (54, 38301), (59, 38262), (60, 38232), (62, 38211),

Gene: Fascinus\_49 Start: 37456, Stop: 36887, Start Num: 30

Candidate Starts for Fascinus\_49:

(Start: 22 @37507 has 2 MA's), (Start: 30 @37456 has 13 MA's), (38, 37354), (48, 37300), (51, 37285), (52, 37276), (82, 37141), (86, 37105), (100, 37054), (107, 37033), (113, 37012), (124, 36925),

Gene: Fenn\_56 Start: 40358, Stop: 39792, Start Num: 31

Candidate Starts for Fenn\_56:

(Start: 31 @40358 has 121 MA's), (38, 40259), (48, 40205), (51, 40190), (52, 40181), (82, 40046), (86, 40010), (100, 39956), (107, 39935), (113, 39914), (121, 39857), (124, 39830),

Gene: FiringLine\_57 Start: 38155, Stop: 37661, Start Num: 33

Candidate Starts for FiringLine\_57:

(Start: 33 @38155 has 64 MA's), (44, 38017), (46, 38011), (47, 38008), (48, 38005), (53, 37978), (54, 37951), (59, 37912), (60, 37882), (80, 37798), (89, 37723),

Gene: Forsytheast\_53 Start: 37985, Stop: 37419, Start Num: 31

Candidate Starts for Forsytheast\_53:

(Start: 31 @37985 has 121 MA's), (38, 37886), (48, 37832), (51, 37817), (52, 37808), (82, 37673), (86, 37637), (100, 37583), (107, 37562), (113, 37541), (121, 37484), (124, 37457),

Gene: Gail\_61 Start: 39377, Stop: 38874, Start Num: 32

Candidate Starts for Gail\_61:

(Start: 32 @39377 has 2 MA's), (44, 39242), (46, 39236), (47, 39233), (48, 39230), (53, 39203), (54, 39176), (57, 39149), (59, 39137), (62, 39083), (102, 38903),

Gene: Gandalf20\_56 Start: 40348, Stop: 39758, Start Num: 31

Candidate Starts for Gandalf20\_56:

(Start: 31 @40348 has 121 MA's), (38, 40249), (48, 40195), (51, 40180), (52, 40171), (82, 40036), (86, 40000), (100, 39946), (107, 39925), (115, 39886), (117, 39853),

Gene: Garak\_61 Start: 37472, Stop: 37029, Start Num: 33

Candidate Starts for Garak\_61:

(Start: 33 @37472 has 64 MA's), (47, 37328), (48, 37325), (53, 37298), (59, 37232), (69, 37172), (81, 37127),

Gene: Georgie2\_58 Start: 38200, Stop: 37706, Start Num: 33

Candidate Starts for Georgie2\_58:

(Start: 33 @38200 has 64 MA's), (44, 38062), (46, 38056), (47, 38053), (48, 38050), (53, 38023), (54, 37996), (59, 37957), (60, 37927), (80, 37843), (89, 37768),

Gene: Gladiator\_56 Start: 36697, Stop: 36260, Start Num: 33

Candidate Starts for Gladiator\_56:

(Start: 33 @36697 has 64 MA's), (47, 36553), (48, 36550), (53, 36523), (59, 36457), (69, 36394), (81, 36349), (93, 36271),

Gene: GrecoEtereo\_54 Start: 38332, Stop: 37766, Start Num: 31

Candidate Starts for GrecoEtereo\_54:

(Start: 31 @38332 has 121 MA's), (38, 38233), (48, 38179), (51, 38164), (52, 38155), (82, 38020), (86, 37984), (100, 37930), (107, 37909), (124, 37804),

Gene: GreedyLawyer\_58 Start: 37009, Stop: 36566, Start Num: 33

Candidate Starts for GreedyLawyer\_58:

(Start: 33 @37009 has 64 MA's), (47, 36865), (48, 36862), (53, 36835), (59, 36769), (69, 36709), (81, 36664),

Gene: Greg\_55 Start: 38573, Stop: 37956, Start Num: 31

Candidate Starts for Greg\_55:

(Start: 31 @38573 has 121 MA's), (38, 38474), (48, 38420), (51, 38405), (52, 38396), (82, 38261), (86, 38225), (100, 38171), (107, 38150),

Gene: Gruunaga\_59 Start: 37396, Stop: 36959, Start Num: 33

Candidate Starts for Gruunaga\_59:

(Start: 33 @37396 has 64 MA's), (47, 37252), (48, 37249), (53, 37222), (59, 37156), (69, 37093), (81, 37048), (93, 36970),

Gene: Gwendoluna\_58 Start: 40576, Stop: 39968, Start Num: 31

Candidate Starts for Gwendoluna\_58:

(Start: 31 @40576 has 121 MA's), (38, 40477), (48, 40423), (51, 40408), (52, 40399), (82, 40264), (86, 40228), (100, 40177), (107, 40156),

Gene: Gyzlar\_49 Start: 36249, Stop: 35680, Start Num: 30

Candidate Starts for Gyzlar\_49:

(Start: 22 @36300 has 2 MA's), (Start: 30 @36249 has 13 MA's), (38, 36147), (48, 36093), (51, 36078), (52, 36069), (82, 35934), (86, 35898), (100, 35844), (107, 35823), (113, 35802), (124, 35718),

Gene: HINdeR\_49 Start: 38405, Stop: 37899, Start Num: 31

Candidate Starts for HINdeR\_49:

(15, 38486), (16, 38480), (Start: 31 @38405 has 121 MA's), (42, 38273), (48, 38252), (49, 38249), (51, 38237),

Gene: Hammer\_59 Start: 37003, Stop: 36566, Start Num: 33

Candidate Starts for Hammer\_59:

(Start: 33 @37003 has 64 MA's), (47, 36859), (48, 36856), (53, 36829), (59, 36763), (81, 36655), (93, 36577),

Gene: HanShotFirst\_54 Start: 38872, Stop: 38306, Start Num: 31

Candidate Starts for HanShotFirst\_54:

(Start: 31 @38872 has 121 MA's), (38, 38773), (48, 38719), (51, 38704), (52, 38695), (82, 38560), (86, 38524), (100, 38470), (107, 38449), (113, 38428), (124, 38344),

Gene: HarryOW\_52 Start: 37507, Stop: 36938, Start Num: 30

Candidate Starts for HarryOW\_52:

(10, 37618), (21, 37561), (Start: 30 @37507 has 13 MA's), (38, 37405), (48, 37351), (51, 37336), (52, 37327), (82, 37192), (86, 37156), (100, 37102), (107, 37081), (124, 36976),

Gene: Heffalump\_56 Start: 38973, Stop: 38479, Start Num: 33

Candidate Starts for Heffalump\_56:

(Start: 33 @38973 has 64 MA's), (44, 38835), (46, 38829), (47, 38826), (48, 38823), (53, 38796), (54, 38769), (59, 38730), (60, 38700), (62, 38679), (65, 38673),

Gene: Helmet\_61 Start: 37472, Stop: 37029, Start Num: 33

Candidate Starts for Helmet\_61:

(Start: 33 @37472 has 64 MA's), (47, 37328), (48, 37325), (53, 37298), (59, 37232), (69, 37172), (81, 37127),

Gene: Hermia\_54 Start: 39005, Stop: 38388, Start Num: 31

Candidate Starts for Hermia\_54:

(Start: 31 @39005 has 121 MA's), (38, 38906), (48, 38852), (51, 38837), (52, 38828), (82, 38693), (86, 38657), (100, 38603), (107, 38582),

Gene: Hexamo\_59 Start: 37102, Stop: 36659, Start Num: 33

Candidate Starts for Hexamo\_59:



(Start: 33 @37102 has 64 MA's), (47, 36958), (48, 36955), (53, 36928), (59, 36862), (69, 36802), (81, 36757),

Gene: Homines\_46 Start: 34514, Stop: 33951, Start Num: 31

Candidate Starts for Homines\_46:

(Start: 31 @34514 has 121 MA's), (38, 34415), (48, 34361), (51, 34346), (52, 34337), (82, 34202), (86, 34166), (100, 34115), (107, 34094), (113, 34073), (124, 33989),

Gene: Hoot\_53 Start: 34860, Stop: 34417, Start Num: 33

Candidate Starts for Hoot\_53:

(Start: 33 @34860 has 64 MA's), (47, 34716), (48, 34713), (53, 34686), (59, 34620), (69, 34560), (81, 34515),

Gene: ILeeKay\_57 Start: 39101, Stop: 38547, Start Num: 31

Candidate Starts for ILeeKay\_57:

(Start: 31 @39101 has 121 MA's), (38, 39002), (48, 38948), (51, 38933), (52, 38924), (82, 38789), (86, 38753), (100, 38702), (107, 38681), (115, 38642),

Gene: Ichabod\_56 Start: 39693, Stop: 39127, Start Num: 31

Candidate Starts for Ichabod\_56:

(26, 39735), (Start: 29 @39705 has 3 MA's), (Start: 31 @39693 has 121 MA's), (38, 39594), (48, 39540), (51, 39525), (52, 39516), (82, 39381), (86, 39345), (100, 39291), (107, 39270), (113, 39249), (124, 39165),

Gene: Indra\_62 Start: 37473, Stop: 37030, Start Num: 33

Candidate Starts for Indra\_62:

(Start: 33 @37473 has 64 MA's), (47, 37329), (48, 37326), (53, 37299), (59, 37233), (69, 37173), (81, 37128),

Gene: Isiphiwo\_56 Start: 36576, Stop: 36142, Start Num: 33

Candidate Starts for Isiphiwo\_56:

(Start: 33 @36576 has 64 MA's), (47, 36432), (48, 36429), (53, 36402), (59, 36336), (69, 36276), (93, 36153),

Gene: JackSparrow\_55 Start: 38752, Stop: 38186, Start Num: 30

Candidate Starts for JackSparrow\_55:

(20, 38803), (Start: 30 @38752 has 13 MA's), (34, 38719), (38, 38653), (48, 38599), (51, 38584), (52, 38575), (82, 38440), (86, 38404), (100, 38350), (107, 38329), (113, 38308), (124, 38224),

Gene: Jeeves\_62 Start: 38354, Stop: 37857, Start Num: 33

Candidate Starts for Jeeves\_62:

(Start: 33 @38354 has 64 MA's), (44, 38219), (46, 38213), (47, 38210), (48, 38207), (53, 38180), (54, 38153), (59, 38114), (60, 38084), (62, 38063), (102, 37886),

Gene: Jeffabunny\_59 Start: 37099, Stop: 36656, Start Num: 33

Candidate Starts for Jeffabunny\_59:

(Start: 33 @37099 has 64 MA's), (47, 36955), (48, 36952), (53, 36925), (59, 36859), (69, 36799), (81, 36754),

Gene: JewelBug\_59 Start: 37215, Stop: 36772, Start Num: 33

Candidate Starts for JewelBug\_59:

(Start: 33 @37215 has 64 MA's), (47, 37071), (48, 37068), (53, 37041), (59, 36975), (81, 36870), (83, 36855),

Gene: Jordennis\_58 Start: 36696, Stop: 36262, Start Num: 33

Candidate Starts for Jordennis\_58:

(Start: 33 @36696 has 64 MA's), (47, 36552), (48, 36549), (53, 36522), (54, 36495), (59, 36456), (69, 36396), (81, 36351), (93, 36273),

Gene: Journey13\_51 Start: 36542, Stop: 36054, Start Num: 33

Candidate Starts for Journey13\_51:

(Start: 33 @36542 has 64 MA's), (44, 36404), (46, 36398), (47, 36395), (48, 36392), (53, 36365), (57, 36311), (59, 36299), (108, 36071),

Gene: Jsquared\_55 Start: 37136, Stop: 36672, Start Num: 33

Candidate Starts for Jsquared\_55:

(Start: 33 @37136 has 64 MA's), (44, 36998), (46, 36992), (47, 36989), (48, 36986), (53, 36959), (54, 36932), (59, 36893), (75, 36812), (80, 36800), (92, 36722),

Gene: JuliaChild\_54 Start: 38193, Stop: 37627, Start Num: 31

Candidate Starts for JuliaChild\_54:

(26, 38235), (Start: 29 @38205 has 3 MA's), (Start: 31 @38193 has 121 MA's), (38, 38094), (48, 38040), (51, 38025), (52, 38016), (82, 37881), (86, 37845), (100, 37791), (107, 37770), (113, 37749), (121, 37692), (124, 37665),

Gene: KSSJEB\_53 Start: 38192, Stop: 37626, Start Num: 31

Candidate Starts for KSSJEB\_53:

(Start: 31 @38192 has 121 MA's), (38, 38093), (48, 38039), (51, 38024), (52, 38015), (82, 37880), (86, 37844), (100, 37790), (107, 37769), (113, 37748), (121, 37691), (124, 37664),

Gene: Kanely\_55 Start: 38889, Stop: 38275, Start Num: 30

Candidate Starts for Kanely\_55:

(20, 38940), (Start: 30 @38889 has 13 MA's), (38, 38787), (48, 38733), (51, 38718), (52, 38709), (82, 38574), (86, 38538), (100, 38487), (107, 38466), (112, 38445), (114, 38430), (118, 38397),

Gene: Kazan\_59 Start: 37015, Stop: 36572, Start Num: 33

Candidate Starts for Kazan\_59:

(Start: 33 @37015 has 64 MA's), (47, 36871), (48, 36868), (53, 36841), (59, 36775), (69, 36715), (81, 36670),

Gene: Kerberos\_59 Start: 37999, Stop: 37544, Start Num: 31

Candidate Starts for Kerberos\_59:

(Start: 31 @37999 has 121 MA's), (44, 37858), (48, 37846), (50, 37837), (55, 37783), (73, 37708), (79, 37687), (82, 37678), (106, 37564),

Gene: Killigrew\_54 Start: 39392, Stop: 38826, Start Num: 31

Candidate Starts for Killigrew\_54:

(Start: 31 @39392 has 121 MA's), (38, 39293), (48, 39239), (51, 39224), (52, 39215), (82, 39080), (86, 39044), (100, 38990), (107, 38969), (113, 38948), (121, 38891), (124, 38864),

Gene: Kipper29\_58 Start: 37028, Stop: 36585, Start Num: 33

Candidate Starts for Kipper29\_58:

(Start: 33 @37028 has 64 MA's), (47, 36884), (48, 36881), (53, 36854), (59, 36788), (69, 36728), (81, 36683),

Gene: Koduck\_58 Start: 37415, Stop: 36957, Start Num: 33

Candidate Starts for Koduck\_58:

(Start: 33 @37415 has 64 MA's), (44, 37277), (47, 37268), (48, 37265), (53, 37238), (54, 37211), (59, 37172), (80, 37082), (109, 36962),

Gene: Koko\_60 Start: 37533, Stop: 37090, Start Num: 33

Candidate Starts for Koko\_60:

(Start: 33 @37533 has 64 MA's), (47, 37389), (48, 37386), (53, 37359), (59, 37293), (69, 37233), (81, 37188),

Gene: Kugel\_54 Start: 39457, Stop: 38903, Start Num: 31

Candidate Starts for Kugel\_54:

(Start: 31 @39457 has 121 MA's), (38, 39358), (48, 39304), (51, 39289), (52, 39280), (82, 39145), (86, 39109), (100, 39058), (107, 39037), (115, 38998),

Gene: KyMonks1A\_55 Start: 38450, Stop: 37833, Start Num: 30

Candidate Starts for KyMonks1A\_55:

(20, 38501), (Start: 30 @38450 has 13 MA's), (38, 38348), (48, 38294), (51, 38279), (52, 38270), (82, 38135), (86, 38099), (100, 38045), (107, 38024), (114, 37988), (118, 37955),

Gene: Kykar\_53 Start: 38219, Stop: 37605, Start Num: 31

Candidate Starts for Kykar\_53:

(Start: 31 @38219 has 121 MA's), (38, 38120), (48, 38066), (51, 38051), (52, 38042), (82, 37907), (100, 37817), (107, 37796), (112, 37775), (114, 37760), (118, 37727),

Gene: L5\_55 Start: 37502, Stop: 37032, Start Num: 33

Candidate Starts for L5\_55:

(Start: 33 @37502 has 64 MA's), (44, 37364), (47, 37355), (48, 37352), (53, 37325), (54, 37298), (59, 37259), (63, 37205), (71, 37184), (78, 37157), (83, 37130), (84, 37115), (97, 37064),

Gene: LadyBird\_62 Start: 39099, Stop: 38653, Start Num: 33

Candidate Starts for LadyBird\_62:

(Start: 33 @39099 has 64 MA's), (44, 38958), (46, 38952), (47, 38949), (48, 38946), (53, 38919), (54, 38892), (59, 38853),

Gene: Lamina13\_54 Start: 38247, Stop: 37576, Start Num: 31

Candidate Starts for Lamina13\_54:

(Start: 31 @38247 has 121 MA's), (38, 38148), (48, 38094), (51, 38079), (52, 38070), (64, 37950), (82, 37854), (86, 37818), (100, 37764), (107, 37743), (115, 37704), (117, 37671),

Gene: Licorice\_56 Start: 40561, Stop: 39995, Start Num: 31

Candidate Starts for Licorice\_56:

(Start: 31 @40561 has 121 MA's), (38, 40462), (48, 40408), (51, 40393), (52, 40384), (82, 40249), (86, 40213), (100, 40159), (107, 40138), (113, 40117), (124, 40033),

Gene: LilBib\_53 Start: 39658, Stop: 39053, Start Num: 30

Candidate Starts for LilBib\_53:

(10, 39769), (18, 39721), (Start: 30 @39658 has 13 MA's), (38, 39556), (48, 39502), (51, 39487), (52, 39478), (82, 39343), (86, 39307), (98, 39247), (120, 39124), (125, 39064),

Gene: Lilbunny\_57 Start: 37103, Stop: 36660, Start Num: 33

Candidate Starts for Lilbunny\_57:

(Start: 33 @37103 has 64 MA's), (47, 36959), (48, 36956), (53, 36929), (59, 36863), (69, 36803), (81, 36758),

Gene: Lockley\_52 Start: 38167, Stop: 37532, Start Num: 31

Candidate Starts for Lockley\_52:

(Start: 31 @38167 has 121 MA's), (38, 38068), (48, 38014), (51, 37999), (52, 37990), (64, 37870), (82, 37774), (86, 37738), (107, 37675), (113, 37654), (124, 37570),

Gene: Luchador\_61 Start: 39939, Stop: 39442, Start Num: 32

Candidate Starts for Luchador\_61:

(Start: 32 @39939 has 2 MA's), (44, 39804), (46, 39798), (47, 39795), (48, 39792), (53, 39765), (54, 39738), (59, 39699), (60, 39669), (62, 39648), (102, 39471),

Gene: Lucyedi\_58 Start: 38070, Stop: 37621, Start Num: 33

Candidate Starts for Lucyedi\_58:

(Start: 33 @38070 has 64 MA's), (47, 37926), (48, 37923), (53, 37896), (54, 37869), (57, 37842), (67, 37773), (72, 37755),

Gene: Magnito\_52 Start: 38460, Stop: 37900, Start Num: 31

Candidate Starts for Magnito\_52:

(Start: 31 @38460 has 121 MA's), (38, 38361), (48, 38307), (51, 38292), (52, 38283), (82, 38148), (86, 38112), (100, 38058), (107, 38037), (124, 37938),

Gene: Marcell\_51 Start: 37819, Stop: 37265, Start Num: 31

Candidate Starts for Marcell\_51:

(Start: 31 @37819 has 121 MA's), (38, 37720), (48, 37666), (51, 37651), (52, 37642), (82, 37507), (86, 37471), (100, 37420), (107, 37399), (115, 37360),

Gene: Marge\_53 Start: 38708, Stop: 38079, Start Num: 31

Candidate Starts for Marge\_53:

(Start: 31 @38708 has 121 MA's), (38, 38609), (48, 38555), (51, 38540), (52, 38531), (82, 38396), (86, 38360), (100, 38306), (107, 38285),

Gene: Maroc7\_51 Start: 37816, Stop: 37196, Start Num: 22

Candidate Starts for Maroc7\_51:

(Start: 22 @37816 has 2 MA's), (Start: 30 @37765 has 13 MA's), (38, 37663), (48, 37609), (51, 37594), (52, 37585), (82, 37450), (86, 37414), (100, 37363), (107, 37342), (113, 37321), (124, 37234),

Gene: Marsha\_53 Start: 39249, Stop: 38638, Start Num: 31

Candidate Starts for Marsha\_53:

(Start: 31 @39249 has 121 MA's), (38, 39150), (48, 39096), (51, 39081), (52, 39072), (82, 38937), (86, 38901), (100, 38850), (107, 38829), (114, 38793), (118, 38760),

Gene: MaryBeth\_53 Start: 39046, Stop: 38489, Start Num: 31

Candidate Starts for MaryBeth\_53:

(Start: 31 @39046 has 121 MA's), (38, 38947), (48, 38893), (51, 38878), (52, 38869), (82, 38734), (86, 38698), (100, 38644), (107, 38623), (115, 38584),

Gene: McFly\_58 Start: 37009, Stop: 36566, Start Num: 33

Candidate Starts for McFly\_58:

(Start: 33 @37009 has 64 MA's), (47, 36865), (48, 36862), (53, 36835), (59, 36769), (69, 36709), (81, 36664),

Gene: McGuire\_55 Start: 38290, Stop: 37724, Start Num: 31

Candidate Starts for McGuire\_55:

(Start: 31 @38290 has 121 MA's), (38, 38191), (48, 38137), (51, 38122), (52, 38113), (82, 37978), (86, 37942), (100, 37888), (107, 37867), (113, 37846), (121, 37789), (124, 37762),

Gene: MetalQZJ\_52 Start: 39046, Stop: 38489, Start Num: 31

Candidate Starts for MetalQZJ\_52:

(Start: 31 @39046 has 121 MA's), (38, 38947), (48, 38893), (51, 38878), (52, 38869), (82, 38734), (86, 38698), (100, 38644), (107, 38623), (115, 38584),

Gene: MissWhite\_56 Start: 36656, Stop: 36198, Start Num: 33

Candidate Starts for MissWhite\_56:

(Start: 33 @36656 has 64 MA's), (44, 36518), (46, 36512), (47, 36509), (48, 36506), (53, 36479), (59, 36413), (88, 36260), (94, 36236), (102, 36227), (109, 36203),

Gene: Molly\_54 Start: 37493, Stop: 36939, Start Num: 31

Candidate Starts for Molly\_54:

(25, 37535), (Start: 29 @37505 has 3 MA's), (Start: 31 @37493 has 121 MA's), (38, 37394), (48, 37340), (51, 37325), (52, 37316), (82, 37181), (86, 37145), (100, 37094), (107, 37073), (115, 37034),

Gene: Moose\_53 Start: 37985, Stop: 37419, Start Num: 31

Candidate Starts for Moose\_53:

(Start: 31 @37985 has 121 MA's), (38, 37886), (48, 37832), (51, 37817), (52, 37808), (82, 37673), (86, 37637), (100, 37583), (107, 37562), (113, 37541), (121, 37484), (124, 37457),

Gene: Mryolo\_51 Start: 38512, Stop: 37898, Start Num: 31

Candidate Starts for Mryolo\_51:

(Start: 31 @38512 has 121 MA's), (38, 38413), (48, 38359), (51, 38344), (52, 38335), (82, 38200), (86, 38164), (100, 38110), (107, 38089), (112, 38068), (114, 38053), (118, 38020),

Gene: Museum\_54 Start: 38643, Stop: 38077, Start Num: 31

Candidate Starts for Museum\_54:

(26, 38685), (Start: 29 @38655 has 3 MA's), (Start: 31 @38643 has 121 MA's), (38, 38544), (48, 38490), (51, 38475), (52, 38466), (82, 38331), (86, 38295), (100, 38241), (107, 38220), (113, 38199), (121, 38142), (124, 38115),

Gene: NEHalo\_51 Start: 38428, Stop: 37814, Start Num: 31

Candidate Starts for NEHalo\_51:

(23, 38470), (Start: 29 @38440 has 3 MA's), (Start: 31 @38428 has 121 MA's), (38, 38329), (48, 38275), (51, 38260), (52, 38251), (82, 38116), (86, 38080), (100, 38026), (107, 38005), (112, 37984), (114, 37969), (118, 37936),

Gene: Naira\_56 Start: 40405, Stop: 39839, Start Num: 31

Candidate Starts for Naira\_56:

(Start: 31 @40405 has 121 MA's), (38, 40306), (48, 40252), (51, 40237), (52, 40228), (82, 40093), (86, 40057), (100, 40003), (107, 39982), (113, 39961), (121, 39904), (124, 39877),

Gene: Naji\_59 Start: 38000, Stop: 37545, Start Num: 31

Candidate Starts for Naji\_59:

(Start: 31 @38000 has 121 MA's), (44, 37859), (48, 37847), (50, 37838), (55, 37784), (73, 37709), (79, 37688), (82, 37679), (106, 37565),

Gene: Neeharika16\_57 Start: 36469, Stop: 36026, Start Num: 33

Candidate Starts for Neeharika16\_57:

(Start: 33 @36469 has 64 MA's), (47, 36325), (48, 36322), (53, 36295), (59, 36229), (69, 36169), (81, 36124),

Gene: Newrala\_58 Start: 37011, Stop: 36568, Start Num: 33

Candidate Starts for Newrala\_58:

(Start: 33 @37011 has 64 MA's), (47, 36867), (48, 36864), (53, 36837), (59, 36771), (69, 36711), (81, 36666),

Gene: Norz\_54 Start: 39632, Stop: 39066, Start Num: 30

Candidate Starts for Norz\_54:

(10, 39743), (21, 39686), (Start: 30 @39632 has 13 MA's), (38, 39530), (48, 39476), (51, 39461), (52, 39452), (82, 39317), (86, 39281), (100, 39230), (107, 39209), (113, 39188), (124, 39104),

Gene: Odin\_55 Start: 37059, Stop: 36571, Start Num: 31

Candidate Starts for Odin\_55:

(Start: 31 @37059 has 121 MA's), (35, 36984), (43, 36921), (44, 36915), (48, 36903), (60, 36801), (75, 36714), (105, 36582),

Gene: Ohno789\_55 Start: 39227, Stop: 38613, Start Num: 31

Candidate Starts for Ohno789\_55:

(Start: 31 @39227 has 121 MA's), (38, 39128), (48, 39074), (51, 39059), (52, 39050), (82, 38915), (86, 38879), (100, 38828), (107, 38807),

Gene: Oogway\_52 Start: 38320, Stop: 37736, Start Num: 30

Candidate Starts for Oogway\_52:

(10, 38431), (Start: 30 @38320 has 13 MA's), (38, 38218), (48, 38164), (51, 38149), (52, 38140), (77, 38020), (86, 37957), (100, 37903), (107, 37882), (113, 37861), (124, 37774),

Gene: PP\_55 Start: 41225, Stop: 40698, Start Num: 22

Candidate Starts for PP\_55:

(8, 41300), (12, 41264), (Start: 22 @41225 has 2 MA's), (28, 41198), (38, 41075), (48, 41021), (50, 41012), (52, 40997), (86, 40829), (96, 40778), (106, 40748), (112, 40730),

Gene: Papez\_56 Start: 40588, Stop: 40022, Start Num: 31

Candidate Starts for Papez\_56:

(Start: 31 @40588 has 121 MA's), (38, 40489), (48, 40435), (51, 40420), (52, 40411), (82, 40276), (86, 40240), (100, 40186), (107, 40165), (113, 40144), (121, 40087), (124, 40060),

Gene: Paphu\_51 Start: 37777, Stop: 37160, Start Num: 31

Candidate Starts for Paphu\_51:

(25, 37819), (Start: 29 @37789 has 3 MA's), (Start: 31 @37777 has 121 MA's), (38, 37678), (48, 37624), (51, 37609), (52, 37600), (82, 37465), (86, 37429), (100, 37375), (107, 37354),

Gene: Paraselene\_51 Start: 39100, Stop: 38486, Start Num: 31

Candidate Starts for Paraselene\_51:

(Start: 31 @39100 has 121 MA's), (38, 39001), (48, 38947), (51, 38932), (52, 38923), (82, 38788), (86, 38752), (100, 38698), (107, 38677), (112, 38656), (114, 38641), (118, 38608),

Gene: Pari\_55 Start: 38216, Stop: 37557, Start Num: 29

Candidate Starts for Pari\_55:

(Start: 29 @38216 has 3 MA's), (Start: 31 @38204 has 121 MA's), (38, 38105), (48, 38051), (51, 38036), (52, 38027), (64, 37907), (82, 37811), (86, 37775), (100, 37721), (107, 37700), (113, 37679), (121, 37622), (124, 37595),

Gene: Parliament\_53 Start: 38723, Stop: 38079, Start Num: 31

Candidate Starts for Parliament\_53:

(Start: 31 @38723 has 121 MA's), (38, 38624), (48, 38570), (51, 38555), (52, 38546), (64, 38426), (82, 38330), (86, 38294), (100, 38243), (107, 38222), (113, 38201), (124, 38117),

Gene: PascalRango\_54 Start: 38941, Stop: 38375, Start Num: 31

Candidate Starts for PascalRango\_54:

(Start: 31 @38941 has 121 MA's), (38, 38842), (48, 38788), (51, 38773), (52, 38764), (82, 38629), (86, 38593), (100, 38539), (107, 38518), (113, 38497), (121, 38440), (124, 38413),

Gene: Peterson\_58 Start: 40881, Stop: 40273, Start Num: 31

Candidate Starts for Peterson\_58:

(Start: 31 @40881 has 121 MA's), (38, 40782), (48, 40728), (51, 40713), (52, 40704), (82, 40569), (86, 40539), (100, 40485), (107, 40464), (112, 40443), (114, 40428), (118, 40395),

Gene: Petp2012\_54 Start: 38452, Stop: 37898, Start Num: 31

Candidate Starts for Petp2012\_54:

(13, 38536), (25, 38494), (Start: 29 @38464 has 3 MA's), (Start: 31 @38452 has 121 MA's), (38, 38353), (48, 38299), (51, 38284), (52, 38275), (82, 38140), (86, 38104), (100, 38053), (107, 38032), (115, 37993),

Gene: Ph8s\_58 Start: 37416, Stop: 36925, Start Num: 31

Candidate Starts for Ph8s\_58:

(2, 37707), (5, 37632), (Start: 31 @37416 has 121 MA's), (43, 37275), (44, 37269), (48, 37257), (60, 37155), (75, 37068),

Gene: Pharaoh\_52 Start: 38002, Stop: 37490, Start Num: 31

Candidate Starts for Pharaoh\_52:

(Start: 31 @38002 has 121 MA's), (36, 37918), (44, 37849), (45, 37846), (48, 37837), (49, 37834), (56, 37765), (61, 37732), (95, 37549), (110, 37501), (111, 37495),

Gene: PinkPlastic\_54 Start: 38325, Stop: 37675, Start Num: 31

Candidate Starts for PinkPlastic\_54:

(Start: 31 @38325 has 121 MA's), (38, 38226), (48, 38172), (51, 38157), (52, 38148), (64, 38028), (82, 37932), (86, 37896), (100, 37842), (107, 37821), (113, 37800), (124, 37713),

Gene: Pinto\_53 Start: 38711, Stop: 38067, Start Num: 31

Candidate Starts for Pinto\_53:

(26, 38753), (Start: 29 @38723 has 3 MA's), (Start: 31 @38711 has 121 MA's), (38, 38612), (48, 38558), (51, 38543), (52, 38534), (64, 38414), (82, 38318), (86, 38282), (100, 38231), (107, 38210), (113, 38189), (124, 38105),

Gene: Pippin\_55 Start: 38617, Stop: 38000, Start Num: 31

Candidate Starts for Pippin\_55:

(Start: 31 @38617 has 121 MA's), (38, 38518), (48, 38464), (51, 38449), (52, 38440), (82, 38305), (86, 38269), (100, 38215), (107, 38194),

Gene: Pmask\_58 Start: 37012, Stop: 36569, Start Num: 33

Candidate Starts for Pmask\_58:

(Start: 33 @37012 has 64 MA's), (47, 36868), (48, 36865), (53, 36838), (59, 36772), (69, 36712), (81, 36667),

Gene: Pomar16\_59 Start: 38040, Stop: 37585, Start Num: 31

Candidate Starts for Pomar16\_59:

(Start: 31 @38040 has 121 MA's), (44, 37899), (48, 37887), (50, 37878), (55, 37824), (73, 37749), (79, 37728), (82, 37719), (106, 37605),

Gene: Power\_56 Start: 38208, Stop: 37714, Start Num: 33

Candidate Starts for Power\_56:

(Start: 33 @38208 has 64 MA's), (44, 38070), (46, 38064), (47, 38061), (48, 38058), (53, 38031), (54, 38004), (59, 37965), (80, 37851), (89, 37776),

Gene: Priamo\_60 Start: 36762, Stop: 36328, Start Num: 33

Candidate Starts for Priamo\_60:

(Start: 33 @36762 has 64 MA's), (47, 36618), (48, 36615), (53, 36588), (59, 36522), (81, 36417), (93, 36339),

Gene: QueenB2\_56 Start: 38186, Stop: 37692, Start Num: 33

Candidate Starts for QueenB2\_56:

(Start: 33 @38186 has 64 MA's), (44, 38048), (46, 38042), (47, 38039), (48, 38036), (53, 38009), (54, 37982), (59, 37943), (60, 37913), (62, 37892), (65, 37886),

Gene: QueenBeesly\_57 Start: 38155, Stop: 37661, Start Num: 33

Candidate Starts for QueenBeesly\_57:

(Start: 33 @38155 has 64 MA's), (44, 38017), (46, 38011), (47, 38008), (48, 38005), (53, 37978), (54, 37951), (59, 37912), (60, 37882), (80, 37798), (89, 37723),

Gene: Rahalelujah\_57 Start: 37729, Stop: 37271, Start Num: 33

Candidate Starts for Rahalelujah\_57:

(Start: 33 @37729 has 64 MA's), (44, 37591), (46, 37585), (47, 37582), (48, 37579), (53, 37552), (54, 37525), (59, 37486), (76, 37405), (89, 37333), (109, 37276),

Gene: Rajelicia\_54 Start: 39566, Stop: 39009, Start Num: 31

Candidate Starts for Rajelicia\_54:

(Start: 31 @39566 has 121 MA's), (38, 39467), (48, 39413), (51, 39398), (52, 39389), (82, 39254), (86, 39218), (100, 39164), (107, 39143), (115, 39104),

Gene: Refuge\_55 Start: 39270, Stop: 38728, Start Num: 31

Candidate Starts for Refuge\_55:

(3, 39543), (4, 39495), (5, 39486), (Start: 31 @39270 has 121 MA's), (38, 39171), (44, 39123), (48, 39111), (51, 39096), (65, 38964), (72, 38913), (104, 38766), (111, 38733),

Gene: RidgeCB\_53 Start: 38830, Stop: 38195, Start Num: 31

Candidate Starts for RidgeCB\_53:

(Start: 31 @38830 has 121 MA's), (38, 38731), (48, 38677), (51, 38662), (52, 38653), (64, 38533), (82, 38437), (86, 38401), (100, 38350), (107, 38329), (115, 38290),

Gene: Rifter\_59 Start: 36599, Stop: 36162, Start Num: 33

Candidate Starts for Rifter\_59:

(Start: 33 @36599 has 64 MA's), (47, 36455), (48, 36452), (53, 36425), (59, 36359), (81, 36251), (93, 36173),

Gene: Ringer\_54 Start: 39883, Stop: 39317, Start Num: 31

Candidate Starts for Ringer\_54:



(Start: 31 @39883 has 121 MA's), (38, 39784), (48, 39730), (51, 39715), (52, 39706), (82, 39571), (86, 39535), (100, 39481), (107, 39460), (113, 39439), (124, 39355),

Gene: Roksolana\_60 Start: 37433, Stop: 36996, Start Num: 33

Candidate Starts for Roksolana\_60:

(Start: 33 @37433 has 64 MA's), (47, 37289), (48, 37286), (53, 37259), (59, 37193), (81, 37085), (93, 37007),

Gene: Rubeus\_53 Start: 36498, Stop: 35935, Start Num: 31

Candidate Starts for Rubeus\_53:

(26, 36540), (Start: 29 @36510 has 3 MA's), (Start: 31 @36498 has 121 MA's), (38, 36399), (48, 36345), (51, 36330), (52, 36321), (82, 36186), (86, 36150), (100, 36099), (107, 36078), (113, 36057), (124, 35973),

Gene: Ruotula\_56 Start: 39803, Stop: 39174, Start Num: 31

Candidate Starts for Ruotula\_56:

(Start: 31 @39803 has 121 MA's), (38, 39704), (48, 39650), (51, 39635), (52, 39626), (82, 39491), (86, 39455), (100, 39401), (107, 39380),

Gene: STLscum\_56 Start: 39588, Stop: 38947, Start Num: 31

Candidate Starts for STLscum\_56:

(Start: 31 @39588 has 121 MA's), (38, 39489), (48, 39435), (51, 39420), (52, 39411), (69, 39282), (81, 39237), (82, 39225), (86, 39189), (100, 39135), (107, 39114), (115, 39075), (117, 39042),

Gene: Sagefire\_56 Start: 39529, Stop: 38915, Start Num: 31

Candidate Starts for Sagefire\_56:

(Start: 31 @39529 has 121 MA's), (38, 39430), (48, 39376), (51, 39361), (52, 39352), (82, 39217), (86, 39181), (100, 39127), (107, 39106), (115, 39067),

Gene: Sandaddy\_52 Start: 38282, Stop: 37716, Start Num: 31

Candidate Starts for Sandaddy\_52:

(Start: 31 @38282 has 121 MA's), (38, 38183), (48, 38129), (51, 38114), (52, 38105), (82, 37970), (86, 37934), (100, 37880), (107, 37859), (113, 37838), (124, 37754),

Gene: SarFire\_51 Start: 37844, Stop: 37278, Start Num: 31

Candidate Starts for SarFire\_51:

(Start: 31 @37844 has 121 MA's), (38, 37745), (48, 37691), (51, 37676), (52, 37667), (82, 37532), (100, 37442), (107, 37421), (113, 37400), (124, 37316),

Gene: Seabiscuit\_56 Start: 38458, Stop: 37811, Start Num: 31

Candidate Starts for Seabiscuit\_56:

(Start: 31 @38458 has 121 MA's), (38, 38359), (48, 38305), (51, 38290), (52, 38281), (64, 38161), (82, 38065), (86, 38029), (100, 37975), (107, 37954), (113, 37933), (121, 37876), (124, 37849),

Gene: SemperFi\_58 Start: 38423, Stop: 37929, Start Num: 33

Candidate Starts for SemperFi\_58:

(Start: 33 @38423 has 64 MA's), (44, 38285), (46, 38279), (47, 38276), (48, 38273), (53, 38246), (54, 38219), (59, 38180), (60, 38150), (80, 38066), (89, 37991),

Gene: Serenity\_57 Start: 37359, Stop: 36895, Start Num: 33

Candidate Starts for Serenity\_57:

(Start: 33 @37359 has 64 MA's), (44, 37221), (46, 37215), (47, 37212), (48, 37209), (53, 37182), (54, 37155), (59, 37116), (75, 37035), (80, 37023), (92, 36945),

Gene: SheaKeira\_55 Start: 37666, Stop: 37181, Start Num: 31

Candidate Starts for SheaKeira\_55:

(Start: 31 @37666 has 121 MA's), (38, 37567), (48, 37513), (70, 37360), (79, 37327), (82, 37321), (90, 37264),

Gene: Sheen\_55 Start: 40022, Stop: 39528, Start Num: 31

Candidate Starts for Sheen\_55:

(Start: 31 @40022 has 121 MA's), (37, 39926), (48, 39869), (50, 39860), (52, 39845), (72, 39707),

Gene: ShortQueendom\_47 Start: 35302, Stop: 34736, Start Num: 30

Candidate Starts for ShortQueendom\_47:

(6, 35488), (17, 35368), (Start: 30 @35302 has 13 MA's), (34, 35269), (38, 35203), (48, 35149), (51, 35134), (52, 35125), (82, 34990), (86, 34954), (100, 34900), (107, 34879), (113, 34858), (124, 34774),

Gene: SkiPole\_58 Start: 39258, Stop: 38668, Start Num: 31

Candidate Starts for SkiPole\_58:

(Start: 31 @39258 has 121 MA's), (38, 39159), (48, 39105), (51, 39090), (52, 39081), (82, 38946), (86, 38910), (100, 38856), (107, 38835), (115, 38796), (117, 38763),

Gene: Slagathor\_55 Start: 39464, Stop: 38910, Start Num: 31

Candidate Starts for Slagathor\_55:

(25, 39506), (Start: 29 @39476 has 3 MA's), (Start: 31 @39464 has 121 MA's), (38, 39365), (48, 39311), (51, 39296), (52, 39287), (82, 39152), (86, 39116), (100, 39065), (107, 39044), (115, 39005),

Gene: Smeadley\_56 Start: 36818, Stop: 36348, Start Num: 31

Candidate Starts for Smeadley\_56:

(1, 37103), (7, 36944), (Start: 31 @36818 has 121 MA's), (40, 36701), (44, 36665), (47, 36656), (48, 36653), (68, 36527), (87, 36410), (103, 36359),

Gene: Smeagol\_55 Start: 39706, Stop: 39155, Start Num: 29

Candidate Starts for Smeagol\_55:

(Start: 29 @39706 has 3 MA's), (Start: 31 @39694 has 121 MA's), (38, 39595), (48, 39541), (51, 39526), (52, 39517), (82, 39382), (86, 39346), (100, 39322), (107, 39301), (113, 39280), (124, 39193),

Gene: SmellyB\_58 Start: 37009, Stop: 36566, Start Num: 33

Candidate Starts for SmellyB\_58:

(Start: 33 @37009 has 64 MA's), (47, 36865), (48, 36862), (53, 36835), (59, 36769), (69, 36709), (81, 36664),

Gene: SnapTap\_57 Start: 38234, Stop: 37740, Start Num: 33

Candidate Starts for SnapTap\_57:

(Start: 33 @38234 has 64 MA's), (44, 38096), (46, 38090), (47, 38087), (48, 38084), (53, 38057), (54, 38030), (59, 37991), (60, 37961), (80, 37877), (89, 37802),

Gene: Snazzy\_52 Start: 37911, Stop: 37345, Start Num: 30

Candidate Starts for Snazzy\_52:

(6, 38097), (17, 37977), (Start: 30 @37911 has 13 MA's), (34, 37878), (38, 37812), (48, 37758), (51, 37743), (52, 37734), (82, 37599), (86, 37563), (100, 37509), (107, 37488), (113, 37467), (124, 37383),

Gene: Solon\_52 Start: 38166, Stop: 37603, Start Num: 31

Candidate Starts for Solon\_52:

(Start: 31 @38166 has 121 MA's), (38, 38067), (48, 38013), (51, 37998), (52, 37989), (82, 37854), (86, 37818), (100, 37767), (107, 37746), (113, 37725), (124, 37641),

Gene: SororFago\_59 Start: 39270, Stop: 38767, Start Num: 33

Candidate Starts for SororFago\_59:

(Start: 33 @39270 has 64 MA's), (44, 39135), (46, 39129), (47, 39126), (48, 39123), (53, 39096), (54, 39069), (59, 39030), (60, 39000), (62, 38979), (102, 38796),

Gene: Sorpresa\_51 Start: 38284, Stop: 37718, Start Num: 31

Candidate Starts for Sorpresa\_51:

(Start: 31 @38284 has 121 MA's), (38, 38185), (48, 38131), (51, 38116), (52, 38107), (82, 37972), (86, 37936), (100, 37882), (107, 37861), (113, 37840), (124, 37756),

Gene: Squee\_54 Start: 38872, Stop: 38306, Start Num: 31

Candidate Starts for Squee\_54:

(Start: 31 @38872 has 121 MA's), (38, 38773), (48, 38719), (51, 38704), (52, 38695), (82, 38560), (86, 38524), (100, 38470), (107, 38449), (113, 38428), (121, 38371), (124, 38344),

Gene: StarStuff\_59 Start: 38002, Stop: 37547, Start Num: 31

Candidate Starts for StarStuff\_59:

(Start: 31 @38002 has 121 MA's), (44, 37861), (48, 37849), (50, 37840), (55, 37786), (73, 37711), (79, 37690), (82, 37681), (106, 37567),

Gene: Stephig9\_56 Start: 36929, Stop: 36414, Start Num: 31

Candidate Starts for Stephig9\_56:

(7, 37055), (Start: 31 @36929 has 121 MA's), (39, 36815), (40, 36812), (47, 36767), (48, 36764), (66, 36617), (68, 36593), (71, 36572), (87, 36476), (103, 36425),

Gene: StewieG\_52 Start: 35689, Stop: 35123, Start Num: 31

Candidate Starts for StewieG\_52:

(Start: 31 @35689 has 121 MA's), (38, 35590), (48, 35536), (51, 35521), (52, 35512), (82, 35377), (86, 35341), (100, 35290), (107, 35269), (113, 35248), (124, 35161),

Gene: Sumter\_50 Start: 38825, Stop: 38259, Start Num: 31

Candidate Starts for Sumter\_50:

(Start: 31 @38825 has 121 MA's), (38, 38726), (48, 38672), (51, 38657), (52, 38648), (82, 38513), (86, 38477), (100, 38423), (107, 38402), (113, 38381), (121, 38324), (124, 38297),

Gene: Sunshine924\_55 Start: 37963, Stop: 37409, Start Num: 31

Candidate Starts for Sunshine924\_55:

(Start: 31 @37963 has 121 MA's), (38, 37864), (48, 37810), (51, 37795), (52, 37786), (82, 37651), (86, 37615), (100, 37564), (107, 37543), (115, 37504), (123, 37426),

Gene: SuperAwesome\_58 Start: 37014, Stop: 36580, Start Num: 33

Candidate Starts for SuperAwesome\_58:

(Start: 33 @37014 has 64 MA's), (47, 36870), (48, 36867), (53, 36840), (59, 36774), (69, 36714),

Gene: SuperCallie99\_57 Start: 36896, Stop: 36453, Start Num: 33

Candidate Starts for SuperCallie99\_57:

(Start: 33 @36896 has 64 MA's), (47, 36752), (48, 36749), (53, 36722), (59, 36656), (69, 36596), (81, 36551),

Gene: Superchunk\_55 Start: 36675, Stop: 36196, Start Num: 31

Candidate Starts for Superchunk\_55:

(5, 36891), (Start: 31 @36675 has 121 MA's), (43, 36513), (44, 36507), (48, 36495), (60, 36393), (71, 36324), (74, 36312), (85, 36270), (99, 36201),

Gene: SweetiePie\_57 Start: 38366, Stop: 37872, Start Num: 33

Candidate Starts for SweetiePie\_57:

(Start: 33 @38366 has 64 MA's), (44, 38228), (46, 38222), (47, 38219), (48, 38216), (53, 38189), (54, 38162), (59, 38123), (60, 38093), (80, 38009), (89, 37934),

Gene: SwissCheese\_55 Start: 38485, Stop: 37919, Start Num: 31

Candidate Starts for SwissCheese\_55:

(Start: 31 @38485 has 121 MA's), (38, 38386), (48, 38332), (51, 38317), (52, 38308), (82, 38173), (86, 38137), (100, 38083), (107, 38062), (113, 38041), (121, 37984), (124, 37957),

Gene: Switzer\_55 Start: 39397, Stop: 38831, Start Num: 31

Candidate Starts for Switzer\_55:

(Start: 31 @39397 has 121 MA's), (38, 39298), (48, 39244), (51, 39229), (52, 39220), (82, 39085), (86, 39049), (100, 38995), (107, 38974), (113, 38953), (121, 38896), (124, 38869),

Gene: Swole\_54 Start: 37668, Stop: 37102, Start Num: 31

Candidate Starts for Swole\_54:

(26, 37710), (Start: 29 @37680 has 3 MA's), (Start: 31 @37668 has 121 MA's), (38, 37569), (48, 37515), (51, 37500), (52, 37491), (82, 37356), (86, 37320), (100, 37266), (107, 37245), (113, 37224), (121, 37167), (124, 37140),

Gene: Target\_54 Start: 37073, Stop: 36507, Start Num: 31

Candidate Starts for Target\_54:

(Start: 31 @37073 has 121 MA's), (38, 36974), (48, 36920), (51, 36905), (52, 36896), (82, 36761), (86, 36725), (100, 36671), (107, 36650), (113, 36629), (124, 36545),

Gene: Tasp14\_55 Start: 38871, Stop: 38200, Start Num: 31

Candidate Starts for Tasp14\_55:

(Start: 31 @38871 has 121 MA's), (38, 38772), (48, 38718), (51, 38703), (52, 38694), (64, 38574), (82, 38478), (86, 38442), (100, 38388), (107, 38367), (115, 38328), (117, 38295),

Gene: TheloniousMonk\_54 Start: 40538, Stop: 39924, Start Num: 31

Candidate Starts for TheloniousMonk\_54:

(Start: 31 @40538 has 121 MA's), (38, 40439), (48, 40385), (51, 40370), (52, 40361), (82, 40226), (86, 40190), (100, 40136), (107, 40115), (112, 40094), (114, 40079), (118, 40046),

Gene: Thor\_51 Start: 37202, Stop: 36636, Start Num: 31

Candidate Starts for Thor\_51:

(Start: 31 @37202 has 121 MA's), (38, 37103), (48, 37049), (51, 37034), (52, 37025), (82, 36890), (100, 36800), (107, 36779), (113, 36758), (124, 36674),

Gene: Timshel\_51 Start: 38839, Stop: 38318, Start Num: 31

Candidate Starts for Timshel\_51:

(14, 38905), (16, 38899), (Start: 31 @38839 has 121 MA's), (38, 38740), (42, 38707), (48, 38686), (49, 38683), (50, 38677), (51, 38671), (75, 38488),

Gene: TipsytheTRex\_53 Start: 37429, Stop: 36965, Start Num: 33

Candidate Starts for TipsytheTRex\_53:

(Start: 33 @37429 has 64 MA's), (46, 37285), (47, 37282), (48, 37279), (53, 37252), (54, 37225), (59, 37186), (75, 37105), (80, 37093), (92, 37015),

Gene: Toaka\_57 Start: 37937, Stop: 37467, Start Num: 33

Candidate Starts for Toaka\_57:

(Start: 33 @37937 has 64 MA's), (41, 37814), (44, 37799), (47, 37790), (48, 37787), (53, 37760), (54, 37733), (59, 37694), (75, 37604), (82, 37574), (109, 37472),

Gene: Tomathan\_59 Start: 38049, Stop: 37594, Start Num: 31

Candidate Starts for Tomathan\_59:

(Start: 31 @38049 has 121 MA's), (44, 37908), (48, 37896), (50, 37887), (55, 37833), (79, 37737), (82, 37728), (106, 37614),

Gene: ToneTone\_56 Start: 37032, Stop: 36589, Start Num: 33

Candidate Starts for ToneTone\_56:

(Start: 33 @37032 has 64 MA's), (47, 36888), (48, 36885), (53, 36858), (59, 36792), (69, 36732), (81, 36687),

Gene: Topgun\_53 Start: 38055, Stop: 37489, Start Num: 31

Candidate Starts for Topgun\_53:

(Start: 31 @38055 has 121 MA's), (38, 37956), (48, 37902), (51, 37887), (52, 37878), (82, 37743), (86, 37707), (100, 37656), (107, 37635), (113, 37614), (124, 37527),

Gene: Tote\_49 Start: 34947, Stop: 34369, Start Num: 29

Candidate Starts for Tote\_49:

(26, 34977), (Start: 29 @34947 has 3 MA's), (Start: 31 @34935 has 121 MA's), (38, 34836), (48, 34782), (51, 34767), (52, 34758), (82, 34623), (86, 34587), (100, 34533), (107, 34512), (113, 34491), (121, 34434), (124, 34407),

Gene: Traft412\_56 Start: 39446, Stop: 38832, Start Num: 31

Candidate Starts for Traft412\_56:

(Start: 31 @39446 has 121 MA's), (38, 39347), (48, 39293), (51, 39278), (52, 39269), (82, 39134), (86, 39098), (100, 39044), (107, 39023), (112, 39002), (114, 38987), (118, 38954),

Gene: Tucker\_59 Start: 37201, Stop: 36758, Start Num: 33

Candidate Starts for Tucker\_59:

(Start: 33 @37201 has 64 MA's), (47, 37057), (48, 37054), (53, 37027), (59, 36961), (69, 36901), (81, 36856),

Gene: Turj99\_52 Start: 38730, Stop: 38170, Start Num: 31

Candidate Starts for Turj99\_52:

(Start: 31 @38730 has 121 MA's), (38, 38631), (48, 38577), (51, 38562), (52, 38553), (82, 38418), (86, 38382), (100, 38328), (107, 38307), (124, 38208),

Gene: U2\_53 Start: 39377, Stop: 38811, Start Num: 31

Candidate Starts for U2\_53:

(Start: 31 @39377 has 121 MA's), (38, 39278), (48, 39224), (51, 39209), (52, 39200), (82, 39065), (86, 39029), (100, 38975), (107, 38954), (113, 38933), (124, 38849),

Gene: VC3\_60 Start: 38397, Stop: 37942, Start Num: 31

Candidate Starts for VC3\_60:

(Start: 31 @38397 has 121 MA's), (44, 38256), (48, 38244), (50, 38235), (55, 38181), (73, 38106), (79, 38085), (82, 38076), (106, 37962),

Gene: Vanisoa\_57 Start: 39057, Stop: 38596, Start Num: 33

Candidate Starts for Vanisoa\_57:

(Start: 33 @39057 has 64 MA's), (41, 38934), (44, 38919), (47, 38910), (48, 38907), (53, 38880), (54, 38853), (59, 38814), (109, 38601),

Gene: VohminGhazi\_58 Start: 37010, Stop: 36567, Start Num: 33

Candidate Starts for VohminGhazi\_58:

(Start: 33 @37010 has 64 MA's), (47, 36866), (48, 36863), (53, 36836), (59, 36770), (69, 36710), (81, 36665),

Gene: Watermelon\_54 Start: 38595, Stop: 38029, Start Num: 31

Candidate Starts for Watermelon\_54:

(Start: 31 @38595 has 121 MA's), (38, 38496), (48, 38442), (51, 38427), (52, 38418), (82, 38283), (86, 38247), (100, 38193), (107, 38172), (113, 38151), (122, 38085), (124, 38067),

Gene: Wiks\_58 Start: 37103, Stop: 36660, Start Num: 33

Candidate Starts for Wiks\_58:

(Start: 33 @37103 has 64 MA's), (47, 36959), (48, 36956), (53, 36929), (59, 36863), (69, 36803), (81, 36758),

Gene: Wilkins\_53 Start: 37985, Stop: 37419, Start Num: 31

Candidate Starts for Wilkins\_53:

(Start: 31 @37985 has 121 MA's), (38, 37886), (48, 37832), (51, 37817), (52, 37808), (82, 37673), (86, 37637), (100, 37586), (107, 37565), (113, 37544), (124, 37457),

Gene: WunderPhul\_59 Start: 37101, Stop: 36658, Start Num: 33

Candidate Starts for WunderPhul\_59:

(Start: 33 @37101 has 64 MA's), (47, 36957), (48, 36954), (53, 36927), (59, 36861), (69, 36801), (81, 36756),

Gene: Yecey3\_58 Start: 37824, Stop: 37375, Start Num: 31

Candidate Starts for Yecey3\_58:

(Start: 31 @37824 has 121 MA's), (44, 37683), (48, 37671), (52, 37647), (70, 37545), (79, 37509), (91, 37437), (109, 37380),

Gene: Yokurt\_59 Start: 37103, Stop: 36660, Start Num: 33

Candidate Starts for Yokurt\_59:

(Start: 33 @37103 has 64 MA's), (47, 36959), (48, 36956), (53, 36929), (59, 36863), (69, 36803), (81, 36758),

Gene: Zaka\_59 Start: 37103, Stop: 36660, Start Num: 33

Candidate Starts for Zaka\_59:

(Start: 33 @37103 has 64 MA's), (47, 36959), (48, 36956), (53, 36929), (59, 36863), (69, 36803), (81, 36758),

Gene: Zephyr\_53 Start: 38133, Stop: 37516, Start Num: 31

Candidate Starts for Zephyr\_53:

(13, 38217), (Start: 29 @38145 has 3 MA's), (Start: 31 @38133 has 121 MA's), (38, 38034), (48, 37980), (51, 37965), (52, 37956), (82, 37821), (86, 37785), (100, 37731), (107, 37710),

Gene: Zimmer\_54 Start: 38954, Stop: 38418, Start Num: 31

Candidate Starts for Zimmer\_54:

(3, 39227), (4, 39179), (5, 39170), (Start: 31 @38954 has 121 MA's), (44, 38807), (48, 38795), (51, 38780), (65, 38648), (71, 38609), (111, 38423),

Gene: Zulu\_60 Start: 37481, Stop: 37038, Start Num: 33

Candidate Starts for Zulu\_60:

(Start: 33 @37481 has 64 MA's), (47, 37337), (48, 37334), (53, 37307), (59, 37241), (69, 37181), (81, 37136),