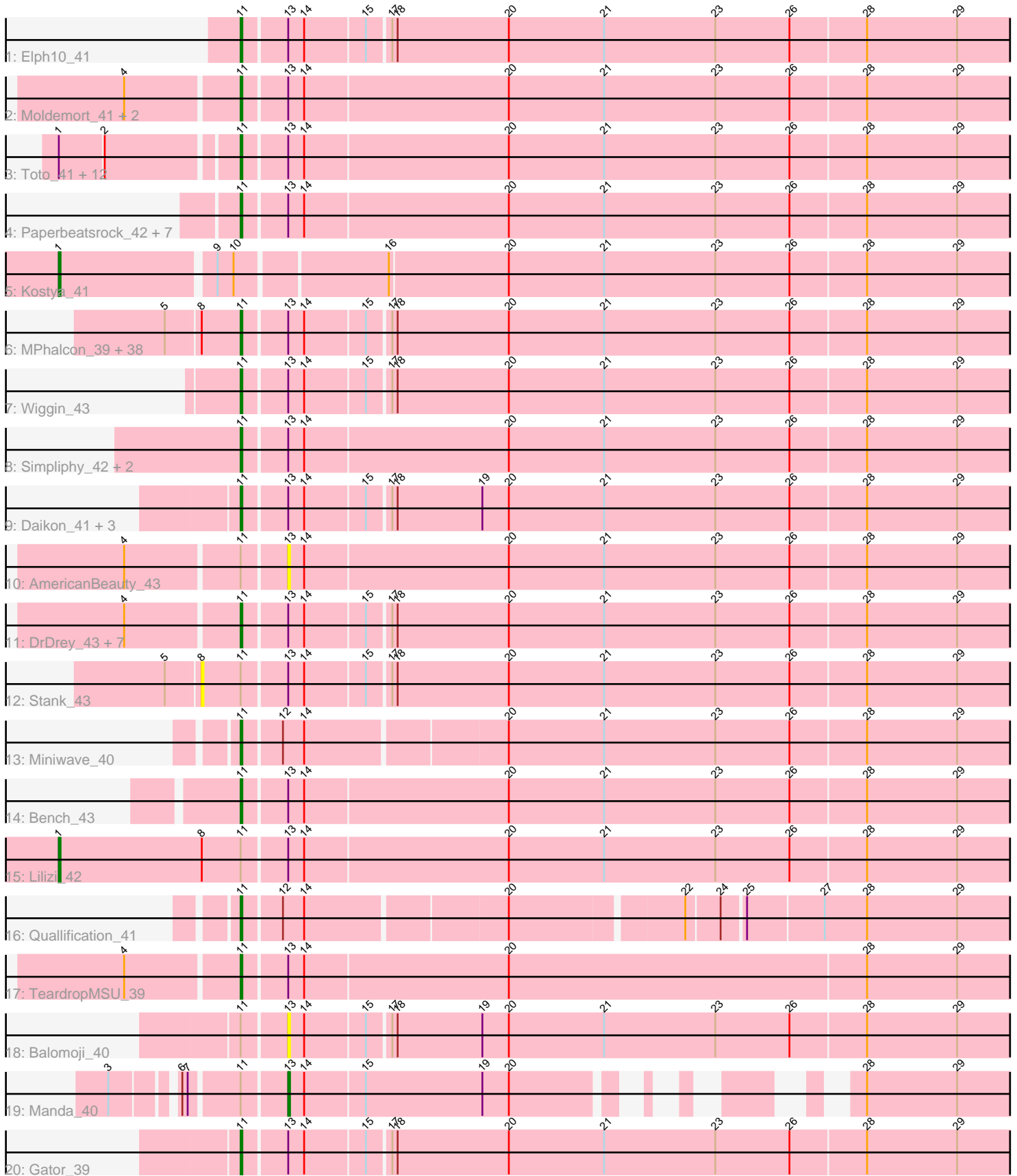


Pham 157777



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 157777 Report

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

Pham number 157777 has 91 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Elph10\_41
- Track 2 : Moldemort\_41, MadamMonkfish\_41, OrionPax\_42
- Track 3 : Toto\_41, BilboSwaggins\_41, Marshmallow\_41, IHOP\_40, Tuco\_43, CrystalP\_42, Myrale\_42, ShamWow\_42, StellaBean\_40, ABCat\_40, Phaja\_40, BaboJay\_40, Inca\_39
- Track 4 : Paperbeatsrock\_42, SophKB\_40, BadStone\_41, Tarkin\_42, NelitzaMV\_40, Dusk\_41, Pharsalus\_41, Henry\_42
- Track 5 : Kostya\_41
- Track 6 : MPhalcon\_39, Cactus\_41, Icee\_39, PhatBacter\_40, Argent26\_42, GooberAzure\_42, Asriel\_39, HufflyPuff\_39, Goldilocks\_41, StolenFromERC\_42, Gage\_42, Murphy\_41, NoSleep\_41, Nala\_40, xkcd\_41, MISSy\_39, Adnama\_43, Gemini\_43, Lilac\_42, Nimrod\_40, GoldenSpark\_42, Rakim\_41, Kimchi\_42, Barbarian\_39, Phaux\_39, FireRed\_40, Thresher\_42, Misfit\_40, Maxxinista\_41, Murica\_39, Command613\_41, Terminus\_40, Sotrice96\_40, Stark\_41, RiverMonster\_40, Bask21\_40, Hoonter\_42, TBrady12\_42, Cjw1\_41
- Track 7 : Wiggin\_43
- Track 8 : Simpliphy\_42, Saints25\_42, Highbury\_42
- Track 9 : Daikon\_41, Traaww1\_38, Glexan\_39, Harella\_41
- Track 10 : AmericanBeauty\_43
- Track 11 : DrDrey\_43, Phrux\_41, JeTaime\_43, 244\_44, Hopey\_43, Filch\_43, Pumpkin\_44, HanKaySha\_42
- Track 12 : Stank\_43
- Track 13 : Miniwave\_40
- Track 14 : Bench\_43
- Track 15 : Lilizi\_42
- Track 16 : Quallification\_41
- Track 17 : TeardropMSU\_39
- Track 18 : Balomoji\_40
- Track 19 : Manda\_40
- Track 20 : Gator\_39

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

The start number called the most often in the published annotations is 11, it was called in 82 of the 85 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 244\_44, ABCat\_40, Adnama\_43, Argent26\_42, Asriel\_39, BaboJay\_40, BadStone\_41, Barbarian\_39, Bask21\_40, Bench\_43, BilboSwaggins\_41, Cactus\_41, Cjw1\_41, Command613\_41, CrystalP\_42, Daikon\_41, DrDrey\_43, Dusk\_41, Elph10\_41, Filch\_43, FireRed\_40, Gage\_42, Gator\_39, Gemini\_43, Glexan\_39, GoldenSpark\_42, Goldilocks\_41, GooberAzure\_42, HanKaySha\_42, Harella\_41, Henry\_42, Highbury\_42, Hoonter\_42, Hopey\_43, HufflyPuff\_39, IHOP\_40, Icee\_39, Inca\_39, JeTaime\_43, Kimchi\_42, Lilac\_42, MISSy\_39, MPhalcon\_39, MadamMonkfish\_41, Marshmallow\_41, Maxxinista\_41, Miniwave\_40, Misfit\_40, Moldemort\_41, Murica\_39, Murphy\_41, Myrale\_42, Nala\_40, NelitzaMV\_40, Nimrod\_40, NoSleep\_41, OrionPax\_42, Paperbeatsrock\_42, Phaja\_40, Pharsalus\_41, PhatBacter\_40, Phaux\_39, Phrux\_41, Pumpkin\_44, Quallification\_41, Rakim\_41, RiverMonster\_40, Saints25\_42, ShamWow\_42, Simpliphy\_42, SophKB\_40, Sotrice96\_40, Stark\_41, StellaBean\_40, StolenFromERC\_42, TBrady12\_42, Tarkin\_42, TeardropMSU\_39, Terminus\_40, Thresher\_42, Toto\_41, Traaww1\_38, Tucu\_43, Wiggin\_43, xkcd\_41,

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

- AmericanBeauty\_43, Balomoji\_40, Lilizi\_42, Manda\_40, Stank\_43,

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

- Kostya\_41,

### Summary by start number:

Start 1:

- Found in 15 of 91 ( 16.5% ) of genes in pham
- Manual Annotations of this start: 2 of 85
- Called 13.3% of time when present
- Phage (with cluster) where this start called: Kostya\_41 (E), Lilizi\_42 (E),

Start 8:

- Found in 41 of 91 ( 45.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.4% of time when present
- Phage (with cluster) where this start called: Stank\_43 (E),

Start 11:

- Found in 90 of 91 ( 98.9% ) of genes in pham
- Manual Annotations of this start: 82 of 85
- Called 94.4% of time when present
- Phage (with cluster) where this start called: 244\_44 (E), ABCat\_40 (E), Adnama\_43 (E), Argent26\_42 (E), Asriel\_39 (E), BaboJay\_40 (E), BadStone\_41 (E), Barbarian\_39 (E), Bask21\_40 (E), Bench\_43 (E), BilboSwaggins\_41 (E), Cactus\_41 (E), Cjw1\_41 (E), Command613\_41 (E), CrystalP\_42 (E), Daikon\_41 (E), DrDrey\_43 (E), Dusk\_41 (E), Elph10\_41 (E), Filch\_43 (E), FireRed\_40 (E), Gage\_42 (E), Gator\_39 (E), Gemini\_43 (E), Glexan\_39 (E), GoldenSpark\_42 (E), Goldilocks\_41 (E), GooberAzure\_42 (E), HanKaySha\_42 (E), Harella\_41 (E), Henry\_42 (E), Highbury\_42 (E), Hoonter\_42 (E), Hopey\_43 (E), HufflyPuff\_39 (E), IHOP\_40 (E), Icee\_39 (E), Inca\_39 (E), JeTaime\_43 (E), Kimchi\_42 (E), Lilac\_42 (E), MISSy\_39

(E), MPhalcon\_39 (E), MadamMonkfish\_41 (E), Marshmallow\_41 (E), Maxxinista\_41 (E), Miniwave\_40 (E), Misfit\_40 (E), Moldemort\_41 (E), Murica\_39 (E), Murphy\_41 (E), Myrale\_42 (E), Nala\_40 (E), NelitzaMV\_40 (E), Nimrod\_40 (E), NoSleep\_41 (E), OrionPax\_42 (E), Paperbeatsrock\_42 (E), Phaja\_40 (E), Pharsalus\_41 (E), PhatBacter\_40 (E), Phaux\_39 (E), Phrux\_41 (E), Pumpkin\_44 (E), Qualification\_41 (E), Rakim\_41 (E), RiverMonster\_40 (E), Saints25\_42 (E), ShamWow\_42 (E), Simpliphy\_42 (E), SophKB\_40 (E), Sotrice96\_40 (E), Stark\_41 (E), StellaBean\_40 (E), StolenFromERC\_42 (E), TBrady12\_42 (E), Tarkin\_42 (E), TeardropMSU\_39 (E), Terminus\_40 (E), Thresher\_42 (E), Toto\_41 (E), Traaww1\_38 (E), Tuco\_43 (E), Wiggin\_43 (E), xkcd\_41 (E),

Start 13:

- Found in 88 of 91 ( 96.7% ) of genes in pham
- Manual Annotations of this start: 1 of 85
- Called 3.4% of time when present
- Phage (with cluster) where this start called: AmericanBeauty\_43 (E), Balomoji\_40 (E), Manda\_40 (E),

### **Summary by clusters:**

There is one cluster represented in this pham: E

Info for manual annotations of cluster E:

- Start number 1 was manually annotated 2 times for cluster E.
- Start number 11 was manually annotated 82 times for cluster E.
- Start number 13 was manually annotated 1 time for cluster E.

### **Gene Information:**

Gene: 244\_44 Start: 35171, Stop: 34707, Start Num: 11

Candidate Starts for 244\_44:

(4, 35231), (Start: 11 @35171 has 82 MA's), (Start: 13 @35147 has 1 MA's), (14, 35138), (15, 35105), (17, 35093), (18, 35090), (20, 35027), (21, 34973), (23, 34910), (26, 34868), (28, 34826), (29, 34775),

Gene: ABCat\_40 Start: 35339, Stop: 34872, Start Num: 11

Candidate Starts for ABCat\_40:

(Start: 1 @35432 has 2 MA's), (2, 35408), (Start: 11 @35339 has 82 MA's), (Start: 13 @35315 has 1 MA's), (14, 35306), (20, 35192), (21, 35138), (23, 35075), (26, 35033), (28, 34991), (29, 34940),

Gene: Adnama\_43 Start: 35176, Stop: 34712, Start Num: 11

Candidate Starts for Adnama\_43:

(5, 35215), (8, 35197), (Start: 11 @35176 has 82 MA's), (Start: 13 @35152 has 1 MA's), (14, 35143), (15, 35110), (17, 35098), (18, 35095), (20, 35032), (21, 34978), (23, 34915), (26, 34873), (28, 34831), (29, 34780),

Gene: AmericanBeauty\_43 Start: 34635, Stop: 34192, Start Num: 13

Candidate Starts for AmericanBeauty\_43:

(4, 34719), (Start: 11 @34659 has 82 MA's), (Start: 13 @34635 has 1 MA's), (14, 34626), (20, 34512), (21, 34458), (23, 34395), (26, 34353), (28, 34311), (29, 34260),

Gene: Argent26\_42 Start: 34659, Stop: 34195, Start Num: 11

Candidate Starts for Argent26\_42:

(5, 34698), (8, 34680), (Start: 11 @34659 has 82 MA's), (Start: 13 @34635 has 1 MA's), (14, 34626), (15, 34593), (17, 34581), (18, 34578), (20, 34515), (21, 34461), (23, 34398), (26, 34356), (28, 34314), (29, 34263),

Gene: Asriel\_39 Start: 33513, Stop: 33049, Start Num: 11

Candidate Starts for Asriel\_39:

(5, 33552), (8, 33534), (Start: 11 @33513 has 82 MA's), (Start: 13 @33489 has 1 MA's), (14, 33480), (15, 33447), (17, 33435), (18, 33432), (20, 33369), (21, 33315), (23, 33252), (26, 33210), (28, 33168), (29, 33117),

Gene: BaboJay\_40 Start: 34740, Stop: 34270, Start Num: 11

Candidate Starts for BaboJay\_40:

(Start: 1 @34833 has 2 MA's), (2, 34809), (Start: 11 @34740 has 82 MA's), (Start: 13 @34713 has 1 MA's), (14, 34704), (20, 34590), (21, 34536), (23, 34473), (26, 34431), (28, 34389), (29, 34338),

Gene: BadStone\_41 Start: 35477, Stop: 35010, Start Num: 11

Candidate Starts for BadStone\_41:

(Start: 11 @35477 has 82 MA's), (Start: 13 @35453 has 1 MA's), (14, 35444), (20, 35330), (21, 35276), (23, 35213), (26, 35171), (28, 35129), (29, 35078),

Gene: Balomoji\_40 Start: 35046, Stop: 34606, Start Num: 13

Candidate Starts for Balomoji\_40:

(Start: 11 @35070 has 82 MA's), (Start: 13 @35046 has 1 MA's), (14, 35037), (15, 35004), (17, 34992), (18, 34989), (19, 34941), (20, 34926), (21, 34872), (23, 34809), (26, 34767), (28, 34725), (29, 34674),

Gene: Barbarian\_39 Start: 33513, Stop: 33049, Start Num: 11

Candidate Starts for Barbarian\_39:

(5, 33552), (8, 33534), (Start: 11 @33513 has 82 MA's), (Start: 13 @33489 has 1 MA's), (14, 33480), (15, 33447), (17, 33435), (18, 33432), (20, 33369), (21, 33315), (23, 33252), (26, 33210), (28, 33168), (29, 33117),

Gene: Bask21\_40 Start: 33847, Stop: 33383, Start Num: 11

Candidate Starts for Bask21\_40:

(5, 33886), (8, 33868), (Start: 11 @33847 has 82 MA's), (Start: 13 @33823 has 1 MA's), (14, 33814), (15, 33781), (17, 33769), (18, 33766), (20, 33703), (21, 33649), (23, 33586), (26, 33544), (28, 33502), (29, 33451),

Gene: Bench\_43 Start: 34755, Stop: 34288, Start Num: 11

Candidate Starts for Bench\_43:

(Start: 11 @34755 has 82 MA's), (Start: 13 @34731 has 1 MA's), (14, 34722), (20, 34608), (21, 34554), (23, 34491), (26, 34449), (28, 34407), (29, 34356),

Gene: BilboSwaggins\_41 Start: 35347, Stop: 34880, Start Num: 11

Candidate Starts for BilboSwaggins\_41:

(Start: 1 @35440 has 2 MA's), (2, 35416), (Start: 11 @35347 has 82 MA's), (Start: 13 @35323 has 1 MA's), (14, 35314), (20, 35200), (21, 35146), (23, 35083), (26, 35041), (28, 34999), (29, 34948),

Gene: Cactus\_41 Start: 33880, Stop: 33416, Start Num: 11

Candidate Starts for Cactus\_41:

(5, 33919), (8, 33901), (Start: 11 @33880 has 82 MA's), (Start: 13 @33856 has 1 MA's), (14, 33847), (15, 33814), (17, 33802), (18, 33799), (20, 33736), (21, 33682), (23, 33619), (26, 33577), (28, 33535),

(29, 33484),

Gene: Cjw1\_41 Start: 35651, Stop: 35187, Start Num: 11

Candidate Starts for Cjw1\_41:

(5, 35690), (8, 35672), (Start: 11 @35651 has 82 MA's), (Start: 13 @35627 has 1 MA's), (14, 35618), (15, 35585), (17, 35573), (18, 35570), (20, 35507), (21, 35453), (23, 35390), (26, 35348), (28, 35306), (29, 35255),

Gene: Command613\_41 Start: 34919, Stop: 34455, Start Num: 11

Candidate Starts for Command613\_41:

(5, 34958), (8, 34940), (Start: 11 @34919 has 82 MA's), (Start: 13 @34895 has 1 MA's), (14, 34886), (15, 34853), (17, 34841), (18, 34838), (20, 34775), (21, 34721), (23, 34658), (26, 34616), (28, 34574), (29, 34523),

Gene: CrystalP\_42 Start: 35347, Stop: 34880, Start Num: 11

Candidate Starts for CrystalP\_42:

(Start: 1 @35440 has 2 MA's), (2, 35416), (Start: 11 @35347 has 82 MA's), (Start: 13 @35323 has 1 MA's), (14, 35314), (20, 35200), (21, 35146), (23, 35083), (26, 35041), (28, 34999), (29, 34948),

Gene: Daikon\_41 Start: 35091, Stop: 34627, Start Num: 11

Candidate Starts for Daikon\_41:

(Start: 11 @35091 has 82 MA's), (Start: 13 @35067 has 1 MA's), (14, 35058), (15, 35025), (17, 35013), (18, 35010), (19, 34962), (20, 34947), (21, 34893), (23, 34830), (26, 34788), (28, 34746), (29, 34695),

Gene: DrDrey\_43 Start: 35973, Stop: 35509, Start Num: 11

Candidate Starts for DrDrey\_43:

(4, 36033), (Start: 11 @35973 has 82 MA's), (Start: 13 @35949 has 1 MA's), (14, 35940), (15, 35907), (17, 35895), (18, 35892), (20, 35829), (21, 35775), (23, 35712), (26, 35670), (28, 35628), (29, 35577),

Gene: Dusk\_41 Start: 35137, Stop: 34670, Start Num: 11

Candidate Starts for Dusk\_41:

(Start: 11 @35137 has 82 MA's), (Start: 13 @35113 has 1 MA's), (14, 35104), (20, 34990), (21, 34936), (23, 34873), (26, 34831), (28, 34789), (29, 34738),

Gene: Elph10\_41 Start: 34122, Stop: 33658, Start Num: 11

Candidate Starts for Elph10\_41:

(Start: 11 @34122 has 82 MA's), (Start: 13 @34098 has 1 MA's), (14, 34089), (15, 34056), (17, 34044), (18, 34041), (20, 33978), (21, 33924), (23, 33861), (26, 33819), (28, 33777), (29, 33726),

Gene: Filch\_43 Start: 34650, Stop: 34186, Start Num: 11

Candidate Starts for Filch\_43:

(4, 34710), (Start: 11 @34650 has 82 MA's), (Start: 13 @34626 has 1 MA's), (14, 34617), (15, 34584), (17, 34572), (18, 34569), (20, 34506), (21, 34452), (23, 34389), (26, 34347), (28, 34305), (29, 34254),

Gene: FireRed\_40 Start: 34680, Stop: 34216, Start Num: 11

Candidate Starts for FireRed\_40:

(5, 34719), (8, 34701), (Start: 11 @34680 has 82 MA's), (Start: 13 @34656 has 1 MA's), (14, 34647), (15, 34614), (17, 34602), (18, 34599), (20, 34536), (21, 34482), (23, 34419), (26, 34377), (28, 34335), (29, 34284),

Gene: Gage\_42 Start: 34659, Stop: 34195, Start Num: 11

Candidate Starts for Gage\_42:

(5, 34698), (8, 34680), (Start: 11 @34659 has 82 MA's), (Start: 13 @34635 has 1 MA's), (14, 34626), (15, 34593), (17, 34581), (18, 34578), (20, 34515), (21, 34461), (23, 34398), (26, 34356), (28, 34314), (29, 34263),

Gene: Gator\_39 Start: 34961, Stop: 34497, Start Num: 11

Candidate Starts for Gator\_39:

(Start: 11 @34961 has 82 MA's), (Start: 13 @34937 has 1 MA's), (14, 34928), (15, 34895), (17, 34883), (18, 34880), (20, 34817), (21, 34763), (23, 34700), (26, 34658), (28, 34616), (29, 34565),

Gene: Gemini\_43 Start: 35176, Stop: 34712, Start Num: 11

Candidate Starts for Gemini\_43:

(5, 35215), (8, 35197), (Start: 11 @35176 has 82 MA's), (Start: 13 @35152 has 1 MA's), (14, 35143), (15, 35110), (17, 35098), (18, 35095), (20, 35032), (21, 34978), (23, 34915), (26, 34873), (28, 34831), (29, 34780),

Gene: Glexan\_39 Start: 34949, Stop: 34485, Start Num: 11

Candidate Starts for Glexan\_39:

(Start: 11 @34949 has 82 MA's), (Start: 13 @34925 has 1 MA's), (14, 34916), (15, 34883), (17, 34871), (18, 34868), (19, 34820), (20, 34805), (21, 34751), (23, 34688), (26, 34646), (28, 34604), (29, 34553),

Gene: GoldenSpark\_42 Start: 34659, Stop: 34195, Start Num: 11

Candidate Starts for GoldenSpark\_42:

(5, 34698), (8, 34680), (Start: 11 @34659 has 82 MA's), (Start: 13 @34635 has 1 MA's), (14, 34626), (15, 34593), (17, 34581), (18, 34578), (20, 34515), (21, 34461), (23, 34398), (26, 34356), (28, 34314), (29, 34263),

Gene: Goldilocks\_41 Start: 34161, Stop: 33697, Start Num: 11

Candidate Starts for Goldilocks\_41:

(5, 34200), (8, 34182), (Start: 11 @34161 has 82 MA's), (Start: 13 @34137 has 1 MA's), (14, 34128), (15, 34095), (17, 34083), (18, 34080), (20, 34017), (21, 33963), (23, 33900), (26, 33858), (28, 33816), (29, 33765),

Gene: GooberAzure\_42 Start: 34659, Stop: 34195, Start Num: 11

Candidate Starts for GooberAzure\_42:

(5, 34698), (8, 34680), (Start: 11 @34659 has 82 MA's), (Start: 13 @34635 has 1 MA's), (14, 34626), (15, 34593), (17, 34581), (18, 34578), (20, 34515), (21, 34461), (23, 34398), (26, 34356), (28, 34314), (29, 34263),

Gene: HanKaySha\_42 Start: 34633, Stop: 34169, Start Num: 11

Candidate Starts for HanKaySha\_42:

(4, 34693), (Start: 11 @34633 has 82 MA's), (Start: 13 @34609 has 1 MA's), (14, 34600), (15, 34567), (17, 34555), (18, 34552), (20, 34489), (21, 34435), (23, 34372), (26, 34330), (28, 34288), (29, 34237),

Gene: Harella\_41 Start: 35465, Stop: 35001, Start Num: 11

Candidate Starts for Harella\_41:

(Start: 11 @35465 has 82 MA's), (Start: 13 @35441 has 1 MA's), (14, 35432), (15, 35399), (17, 35387), (18, 35384), (19, 35336), (20, 35321), (21, 35267), (23, 35204), (26, 35162), (28, 35120), (29, 35069),

Gene: Henry\_42 Start: 35356, Stop: 34889, Start Num: 11

Candidate Starts for Henry\_42:

(Start: 11 @35356 has 82 MA's), (Start: 13 @35332 has 1 MA's), (14, 35323), (20, 35209), (21, 35155), (23, 35092), (26, 35050), (28, 35008), (29, 34957),

Gene: Highbury\_42 Start: 34424, Stop: 33957, Start Num: 11

Candidate Starts for Highbury\_42:

(Start: 11 @34424 has 82 MA's), (Start: 13 @34400 has 1 MA's), (14, 34391), (20, 34277), (21, 34223), (23, 34160), (26, 34118), (28, 34076), (29, 34025),

Gene: Hoonter\_42 Start: 34659, Stop: 34195, Start Num: 11

Candidate Starts for Hoonter\_42:

(5, 34698), (8, 34680), (Start: 11 @34659 has 82 MA's), (Start: 13 @34635 has 1 MA's), (14, 34626), (15, 34593), (17, 34581), (18, 34578), (20, 34515), (21, 34461), (23, 34398), (26, 34356), (28, 34314), (29, 34263),

Gene: Hokey\_43 Start: 35168, Stop: 34704, Start Num: 11

Candidate Starts for Hokey\_43:

(4, 35228), (Start: 11 @35168 has 82 MA's), (Start: 13 @35144 has 1 MA's), (14, 35135), (15, 35102), (17, 35090), (18, 35087), (20, 35024), (21, 34970), (23, 34907), (26, 34865), (28, 34823), (29, 34772),

Gene: HufflyPuff\_39 Start: 34636, Stop: 34172, Start Num: 11

Candidate Starts for HufflyPuff\_39:

(5, 34675), (8, 34657), (Start: 11 @34636 has 82 MA's), (Start: 13 @34612 has 1 MA's), (14, 34603), (15, 34570), (17, 34558), (18, 34555), (20, 34492), (21, 34438), (23, 34375), (26, 34333), (28, 34291), (29, 34240),

Gene: IHOP\_40 Start: 34911, Stop: 34444, Start Num: 11

Candidate Starts for IHOP\_40:

(Start: 1 @35004 has 2 MA's), (2, 34980), (Start: 11 @34911 has 82 MA's), (Start: 13 @34887 has 1 MA's), (14, 34878), (20, 34764), (21, 34710), (23, 34647), (26, 34605), (28, 34563), (29, 34512),

Gene: Icee\_39 Start: 34327, Stop: 33863, Start Num: 11

Candidate Starts for Icee\_39:

(5, 34366), (8, 34348), (Start: 11 @34327 has 82 MA's), (Start: 13 @34303 has 1 MA's), (14, 34294), (15, 34261), (17, 34249), (18, 34246), (20, 34183), (21, 34129), (23, 34066), (26, 34024), (28, 33982), (29, 33931),

Gene: Inca\_39 Start: 33436, Stop: 32969, Start Num: 11

Candidate Starts for Inca\_39:

(Start: 1 @33529 has 2 MA's), (2, 33505), (Start: 11 @33436 has 82 MA's), (Start: 13 @33412 has 1 MA's), (14, 33403), (20, 33289), (21, 33235), (23, 33172), (26, 33130), (28, 33088), (29, 33037),

Gene: JeTaime\_43 Start: 35692, Stop: 35228, Start Num: 11

Candidate Starts for JeTaime\_43:

(4, 35752), (Start: 11 @35692 has 82 MA's), (Start: 13 @35668 has 1 MA's), (14, 35659), (15, 35626), (17, 35614), (18, 35611), (20, 35548), (21, 35494), (23, 35431), (26, 35389), (28, 35347), (29, 35296),

Gene: Kimchi\_42 Start: 34662, Stop: 34198, Start Num: 11

Candidate Starts for Kimchi\_42:

(5, 34701), (8, 34683), (Start: 11 @34662 has 82 MA's), (Start: 13 @34638 has 1 MA's), (14, 34629), (15, 34596), (17, 34584), (18, 34581), (20, 34518), (21, 34464), (23, 34401), (26, 34359), (28, 34317), (29, 34266),

Gene: Kostya\_41 Start: 34766, Stop: 34206, Start Num: 1



Candidate Starts for Kostya\_41:

(Start: 1 @34766 has 2 MA's), (9, 34682), (10, 34673), (16, 34592), (20, 34526), (21, 34472), (23, 34409), (26, 34367), (28, 34325), (29, 34274),

Gene: Lilac\_42 Start: 34149, Stop: 33685, Start Num: 11

Candidate Starts for Lilac\_42:

(5, 34188), (8, 34170), (Start: 11 @34149 has 82 MA's), (Start: 13 @34125 has 1 MA's), (14, 34116), (15, 34083), (17, 34071), (18, 34068), (20, 34005), (21, 33951), (23, 33888), (26, 33846), (28, 33804), (29, 33753),

Gene: Lilizi\_42 Start: 34462, Stop: 33893, Start Num: 1

Candidate Starts for Lilizi\_42:

(Start: 1 @34462 has 2 MA's), (8, 34381), (Start: 11 @34360 has 82 MA's), (Start: 13 @34336 has 1 MA's), (14, 34327), (20, 34213), (21, 34159), (23, 34096), (26, 34054), (28, 34012), (29, 33961),

Gene: MISSy\_39 Start: 34165, Stop: 33701, Start Num: 11

Candidate Starts for MISSy\_39:

(5, 34204), (8, 34186), (Start: 11 @34165 has 82 MA's), (Start: 13 @34141 has 1 MA's), (14, 34132), (15, 34099), (17, 34087), (18, 34084), (20, 34021), (21, 33967), (23, 33904), (26, 33862), (28, 33820), (29, 33769),

Gene: MPhalcon\_39 Start: 34158, Stop: 33694, Start Num: 11

Candidate Starts for MPhalcon\_39:

(5, 34197), (8, 34179), (Start: 11 @34158 has 82 MA's), (Start: 13 @34134 has 1 MA's), (14, 34125), (15, 34092), (17, 34080), (18, 34077), (20, 34014), (21, 33960), (23, 33897), (26, 33855), (28, 33813), (29, 33762),

Gene: MadamMonkfish\_41 Start: 34185, Stop: 33718, Start Num: 11

Candidate Starts for MadamMonkfish\_41:

(4, 34245), (Start: 11 @34185 has 82 MA's), (Start: 13 @34161 has 1 MA's), (14, 34152), (20, 34038), (21, 33984), (23, 33921), (26, 33879), (28, 33837), (29, 33786),

Gene: Manda\_40 Start: 34836, Stop: 34465, Start Num: 13

Candidate Starts for Manda\_40:

(3, 34917), (6, 34887), (7, 34884), (Start: 11 @34860 has 82 MA's), (Start: 13 @34836 has 1 MA's), (14, 34827), (15, 34794), (19, 34728), (20, 34713), (28, 34599), (29, 34548),

Gene: Marshmallow\_41 Start: 35345, Stop: 34878, Start Num: 11

Candidate Starts for Marshmallow\_41:

(Start: 1 @35438 has 2 MA's), (2, 35414), (Start: 11 @35345 has 82 MA's), (Start: 13 @35321 has 1 MA's), (14, 35312), (20, 35198), (21, 35144), (23, 35081), (26, 35039), (28, 34997), (29, 34946),

Gene: Maxxinista\_41 Start: 34119, Stop: 33655, Start Num: 11

Candidate Starts for Maxxinista\_41:

(5, 34158), (8, 34140), (Start: 11 @34119 has 82 MA's), (Start: 13 @34095 has 1 MA's), (14, 34086), (15, 34053), (17, 34041), (18, 34038), (20, 33975), (21, 33921), (23, 33858), (26, 33816), (28, 33774), (29, 33723),

Gene: Miniwave\_40 Start: 34863, Stop: 34402, Start Num: 11

Candidate Starts for Miniwave\_40:

(Start: 11 @34863 has 82 MA's), (12, 34842), (14, 34830), (20, 34722), (21, 34668), (23, 34605), (26, 34563), (28, 34521), (29, 34470),

Gene: Misfit\_40 Start: 34739, Stop: 34275, Start Num: 11

Candidate Starts for Misfit\_40:

(5, 34778), (8, 34760), (Start: 11 @34739 has 82 MA's), (Start: 13 @34715 has 1 MA's), (14, 34706), (15, 34673), (17, 34661), (18, 34658), (20, 34595), (21, 34541), (23, 34478), (26, 34436), (28, 34394), (29, 34343),

Gene: Moldemort\_41 Start: 34414, Stop: 33947, Start Num: 11

Candidate Starts for Moldemort\_41:

(4, 34474), (Start: 11 @34414 has 82 MA's), (Start: 13 @34390 has 1 MA's), (14, 34381), (20, 34267), (21, 34213), (23, 34150), (26, 34108), (28, 34066), (29, 34015),

Gene: Murica\_39 Start: 34636, Stop: 34172, Start Num: 11

Candidate Starts for Murica\_39:

(5, 34675), (8, 34657), (Start: 11 @34636 has 82 MA's), (Start: 13 @34612 has 1 MA's), (14, 34603), (15, 34570), (17, 34558), (18, 34555), (20, 34492), (21, 34438), (23, 34375), (26, 34333), (28, 34291), (29, 34240),

Gene: Murphy\_41 Start: 34631, Stop: 34167, Start Num: 11

Candidate Starts for Murphy\_41:

(5, 34670), (8, 34652), (Start: 11 @34631 has 82 MA's), (Start: 13 @34607 has 1 MA's), (14, 34598), (15, 34565), (17, 34553), (18, 34550), (20, 34487), (21, 34433), (23, 34370), (26, 34328), (28, 34286), (29, 34235),

Gene: Myrale\_42 Start: 35210, Stop: 34743, Start Num: 11

Candidate Starts for Myrale\_42:

(Start: 1 @35303 has 2 MA's), (2, 35279), (Start: 11 @35210 has 82 MA's), (Start: 13 @35186 has 1 MA's), (14, 35177), (20, 35063), (21, 35009), (23, 34946), (26, 34904), (28, 34862), (29, 34811),

Gene: Nala\_40 Start: 34670, Stop: 34206, Start Num: 11

Candidate Starts for Nala\_40:

(5, 34709), (8, 34691), (Start: 11 @34670 has 82 MA's), (Start: 13 @34646 has 1 MA's), (14, 34637), (15, 34604), (17, 34592), (18, 34589), (20, 34526), (21, 34472), (23, 34409), (26, 34367), (28, 34325), (29, 34274),

Gene: NelitzaMV\_40 Start: 34723, Stop: 34256, Start Num: 11

Candidate Starts for NelitzaMV\_40:

(Start: 11 @34723 has 82 MA's), (Start: 13 @34699 has 1 MA's), (14, 34690), (20, 34576), (21, 34522), (23, 34459), (26, 34417), (28, 34375), (29, 34324),

Gene: Nimrod\_40 Start: 34894, Stop: 34430, Start Num: 11

Candidate Starts for Nimrod\_40:

(5, 34933), (8, 34915), (Start: 11 @34894 has 82 MA's), (Start: 13 @34870 has 1 MA's), (14, 34861), (15, 34828), (17, 34816), (18, 34813), (20, 34750), (21, 34696), (23, 34633), (26, 34591), (28, 34549), (29, 34498),

Gene: NoSleep\_41 Start: 34391, Stop: 33927, Start Num: 11

Candidate Starts for NoSleep\_41:

(5, 34430), (8, 34412), (Start: 11 @34391 has 82 MA's), (Start: 13 @34367 has 1 MA's), (14, 34358), (15, 34325), (17, 34313), (18, 34310), (20, 34247), (21, 34193), (23, 34130), (26, 34088), (28, 34046), (29, 33995),

Gene: OrionPax\_42 Start: 34639, Stop: 34172, Start Num: 11

Candidate Starts for OrionPax\_42:

(4, 34699), (Start: 11 @34639 has 82 MA's), (Start: 13 @34615 has 1 MA's), (14, 34606), (20, 34492), (21, 34438), (23, 34375), (26, 34333), (28, 34291), (29, 34240),

Gene: Paperbeatsrock\_42 Start: 35652, Stop: 35185, Start Num: 11

Candidate Starts for Paperbeatsrock\_42:

(Start: 11 @35652 has 82 MA's), (Start: 13 @35628 has 1 MA's), (14, 35619), (20, 35505), (21, 35451), (23, 35388), (26, 35346), (28, 35304), (29, 35253),

Gene: Phaja\_40 Start: 34910, Stop: 34443, Start Num: 11

Candidate Starts for Phaja\_40:

(Start: 1 @35003 has 2 MA's), (2, 34979), (Start: 11 @34910 has 82 MA's), (Start: 13 @34886 has 1 MA's), (14, 34877), (20, 34763), (21, 34709), (23, 34646), (26, 34604), (28, 34562), (29, 34511),

Gene: Pharsalus\_41 Start: 35452, Stop: 34985, Start Num: 11

Candidate Starts for Pharsalus\_41:

(Start: 11 @35452 has 82 MA's), (Start: 13 @35428 has 1 MA's), (14, 35419), (20, 35305), (21, 35251), (23, 35188), (26, 35146), (28, 35104), (29, 35053),

Gene: PhatBacter\_40 Start: 34680, Stop: 34216, Start Num: 11

Candidate Starts for PhatBacter\_40:

(5, 34719), (8, 34701), (Start: 11 @34680 has 82 MA's), (Start: 13 @34656 has 1 MA's), (14, 34647), (15, 34614), (17, 34602), (18, 34599), (20, 34536), (21, 34482), (23, 34419), (26, 34377), (28, 34335), (29, 34284),

Gene: Phaux\_39 Start: 34678, Stop: 34214, Start Num: 11

Candidate Starts for Phaux\_39:

(5, 34717), (8, 34699), (Start: 11 @34678 has 82 MA's), (Start: 13 @34654 has 1 MA's), (14, 34645), (15, 34612), (17, 34600), (18, 34597), (20, 34534), (21, 34480), (23, 34417), (26, 34375), (28, 34333), (29, 34282),

Gene: Phrux\_41 Start: 34632, Stop: 34168, Start Num: 11

Candidate Starts for Phrux\_41:

(4, 34692), (Start: 11 @34632 has 82 MA's), (Start: 13 @34608 has 1 MA's), (14, 34599), (15, 34566), (17, 34554), (18, 34551), (20, 34488), (21, 34434), (23, 34371), (26, 34329), (28, 34287), (29, 34236),

Gene: Pumpkin\_44 Start: 35558, Stop: 35094, Start Num: 11

Candidate Starts for Pumpkin\_44:

(4, 35618), (Start: 11 @35558 has 82 MA's), (Start: 13 @35534 has 1 MA's), (14, 35525), (15, 35492), (17, 35480), (18, 35477), (20, 35414), (21, 35360), (23, 35297), (26, 35255), (28, 35213), (29, 35162),

Gene: Quallification\_41 Start: 34860, Stop: 34411, Start Num: 11

Candidate Starts for Quallification\_41:

(Start: 11 @34860 has 82 MA's), (12, 34839), (14, 34827), (20, 34719), (22, 34626), (24, 34608), (25, 34596), (27, 34554), (28, 34530), (29, 34479),

Gene: Rakim\_41 Start: 34775, Stop: 34311, Start Num: 11

Candidate Starts for Rakim\_41:

(5, 34814), (8, 34796), (Start: 11 @34775 has 82 MA's), (Start: 13 @34751 has 1 MA's), (14, 34742), (15, 34709), (17, 34697), (18, 34694), (20, 34631), (21, 34577), (23, 34514), (26, 34472), (28, 34430), (29, 34379),

Gene: RiverMonster\_40 Start: 34407, Stop: 33943, Start Num: 11

Candidate Starts for RiverMonster\_40:

(5, 34446), (8, 34428), (Start: 11 @34407 has 82 MA's), (Start: 13 @34383 has 1 MA's), (14, 34374), (15, 34341), (17, 34329), (18, 34326), (20, 34263), (21, 34209), (23, 34146), (26, 34104), (28, 34062), (29, 34011),

Gene: Saints25\_42 Start: 34424, Stop: 33957, Start Num: 11

Candidate Starts for Saints25\_42:

(Start: 11 @34424 has 82 MA's), (Start: 13 @34400 has 1 MA's), (14, 34391), (20, 34277), (21, 34223), (23, 34160), (26, 34118), (28, 34076), (29, 34025),

Gene: ShamWow\_42 Start: 35347, Stop: 34880, Start Num: 11

Candidate Starts for ShamWow\_42:

(Start: 1 @35440 has 2 MA's), (2, 35416), (Start: 11 @35347 has 82 MA's), (Start: 13 @35323 has 1 MA's), (14, 35314), (20, 35200), (21, 35146), (23, 35083), (26, 35041), (28, 34999), (29, 34948),

Gene: Simpliphy\_42 Start: 34499, Stop: 34032, Start Num: 11

Candidate Starts for Simpliphy\_42:

(Start: 11 @34499 has 82 MA's), (Start: 13 @34475 has 1 MA's), (14, 34466), (20, 34352), (21, 34298), (23, 34235), (26, 34193), (28, 34151), (29, 34100),

Gene: SophKB\_40 Start: 34671, Stop: 34204, Start Num: 11

Candidate Starts for SophKB\_40:

(Start: 11 @34671 has 82 MA's), (Start: 13 @34647 has 1 MA's), (14, 34638), (20, 34524), (21, 34470), (23, 34407), (26, 34365), (28, 34323), (29, 34272),

Gene: Sotrice96\_40 Start: 34623, Stop: 34159, Start Num: 11

Candidate Starts for Sotrice96\_40:

(5, 34662), (8, 34644), (Start: 11 @34623 has 82 MA's), (Start: 13 @34599 has 1 MA's), (14, 34590), (15, 34557), (17, 34545), (18, 34542), (20, 34479), (21, 34425), (23, 34362), (26, 34320), (28, 34278), (29, 34227),

Gene: Stank\_43 Start: 35196, Stop: 34711, Start Num: 8

Candidate Starts for Stank\_43:

(5, 35214), (8, 35196), (Start: 11 @35175 has 82 MA's), (Start: 13 @35151 has 1 MA's), (14, 35142), (15, 35109), (17, 35097), (18, 35094), (20, 35031), (21, 34977), (23, 34914), (26, 34872), (28, 34830), (29, 34779),

Gene: Stark\_41 Start: 34410, Stop: 33946, Start Num: 11

Candidate Starts for Stark\_41:

(5, 34449), (8, 34431), (Start: 11 @34410 has 82 MA's), (Start: 13 @34386 has 1 MA's), (14, 34377), (15, 34344), (17, 34332), (18, 34329), (20, 34266), (21, 34212), (23, 34149), (26, 34107), (28, 34065), (29, 34014),

Gene: StellaBean\_40 Start: 34671, Stop: 34204, Start Num: 11

Candidate Starts for StellaBean\_40:

(Start: 1 @34764 has 2 MA's), (2, 34740), (Start: 11 @34671 has 82 MA's), (Start: 13 @34647 has 1 MA's), (14, 34638), (20, 34524), (21, 34470), (23, 34407), (26, 34365), (28, 34323), (29, 34272),

Gene: StolenFromERC\_42 Start: 34659, Stop: 34195, Start Num: 11

Candidate Starts for StolenFromERC\_42:

(5, 34698), (8, 34680), (Start: 11 @34659 has 82 MA's), (Start: 13 @34635 has 1 MA's), (14, 34626), (15, 34593), (17, 34581), (18, 34578), (20, 34515), (21, 34461), (23, 34398), (26, 34356), (28, 34314), (29, 34263),

Gene: TBrady12\_42 Start: 34659, Stop: 34195, Start Num: 11

Candidate Starts for TBrady12\_42:

(5, 34698), (8, 34680), (Start: 11 @34659 has 82 MA's), (Start: 13 @34635 has 1 MA's), (14, 34626), (15, 34593), (17, 34581), (18, 34578), (20, 34515), (21, 34461), (23, 34398), (26, 34356), (28, 34314), (29, 34263),

Gene: Tarkin\_42 Start: 35661, Stop: 35194, Start Num: 11

Candidate Starts for Tarkin\_42:

(Start: 11 @35661 has 82 MA's), (Start: 13 @35637 has 1 MA's), (14, 35628), (20, 35514), (21, 35460), (23, 35397), (26, 35355), (28, 35313), (29, 35262),

Gene: TeardropMSU\_39 Start: 34571, Stop: 34104, Start Num: 11

Candidate Starts for TeardropMSU\_39:

(4, 34631), (Start: 11 @34571 has 82 MA's), (Start: 13 @34547 has 1 MA's), (14, 34538), (20, 34424), (28, 34223), (29, 34172),

Gene: Terminus\_40 Start: 34739, Stop: 34275, Start Num: 11

Candidate Starts for Terminus\_40:

(5, 34778), (8, 34760), (Start: 11 @34739 has 82 MA's), (Start: 13 @34715 has 1 MA's), (14, 34706), (15, 34673), (17, 34661), (18, 34658), (20, 34595), (21, 34541), (23, 34478), (26, 34436), (28, 34394), (29, 34343),

Gene: Thresher\_42 Start: 35645, Stop: 35181, Start Num: 11

Candidate Starts for Thresher\_42:

(5, 35684), (8, 35666), (Start: 11 @35645 has 82 MA's), (Start: 13 @35621 has 1 MA's), (14, 35612), (15, 35579), (17, 35567), (18, 35564), (20, 35501), (21, 35447), (23, 35384), (26, 35342), (28, 35300), (29, 35249),

Gene: Toto\_41 Start: 35347, Stop: 34880, Start Num: 11

Candidate Starts for Toto\_41:

(Start: 1 @35440 has 2 MA's), (2, 35416), (Start: 11 @35347 has 82 MA's), (Start: 13 @35323 has 1 MA's), (14, 35314), (20, 35200), (21, 35146), (23, 35083), (26, 35041), (28, 34999), (29, 34948),

Gene: Traaww1\_38 Start: 34290, Stop: 33826, Start Num: 11

Candidate Starts for Traaww1\_38:

(Start: 11 @34290 has 82 MA's), (Start: 13 @34266 has 1 MA's), (14, 34257), (15, 34224), (17, 34212), (18, 34209), (19, 34161), (20, 34146), (21, 34092), (23, 34029), (26, 33987), (28, 33945), (29, 33894),

Gene: Tuco\_43 Start: 35855, Stop: 35388, Start Num: 11

Candidate Starts for Tuco\_43:

(Start: 1 @35948 has 2 MA's), (2, 35924), (Start: 11 @35855 has 82 MA's), (Start: 13 @35831 has 1 MA's), (14, 35822), (20, 35708), (21, 35654), (23, 35591), (26, 35549), (28, 35507), (29, 35456),

Gene: Wiggin\_43 Start: 35173, Stop: 34709, Start Num: 11

Candidate Starts for Wiggin\_43:

(Start: 11 @35173 has 82 MA's), (Start: 13 @35149 has 1 MA's), (14, 35140), (15, 35107), (17, 35095), (18, 35092), (20, 35029), (21, 34975), (23, 34912), (26, 34870), (28, 34828), (29, 34777),

Gene: xkcd\_41 Start: 34821, Stop: 34357, Start Num: 11

Candidate Starts for xkcd\_41:

(5, 34860), (8, 34842), (Start: 11 @34821 has 82 MA's), (Start: 13 @34797 has 1 MA's), (14, 34788), (15, 34755), (17, 34743), (18, 34740), (20, 34677), (21, 34623), (23, 34560), (26, 34518), (28, 34476),

(29, 34425),