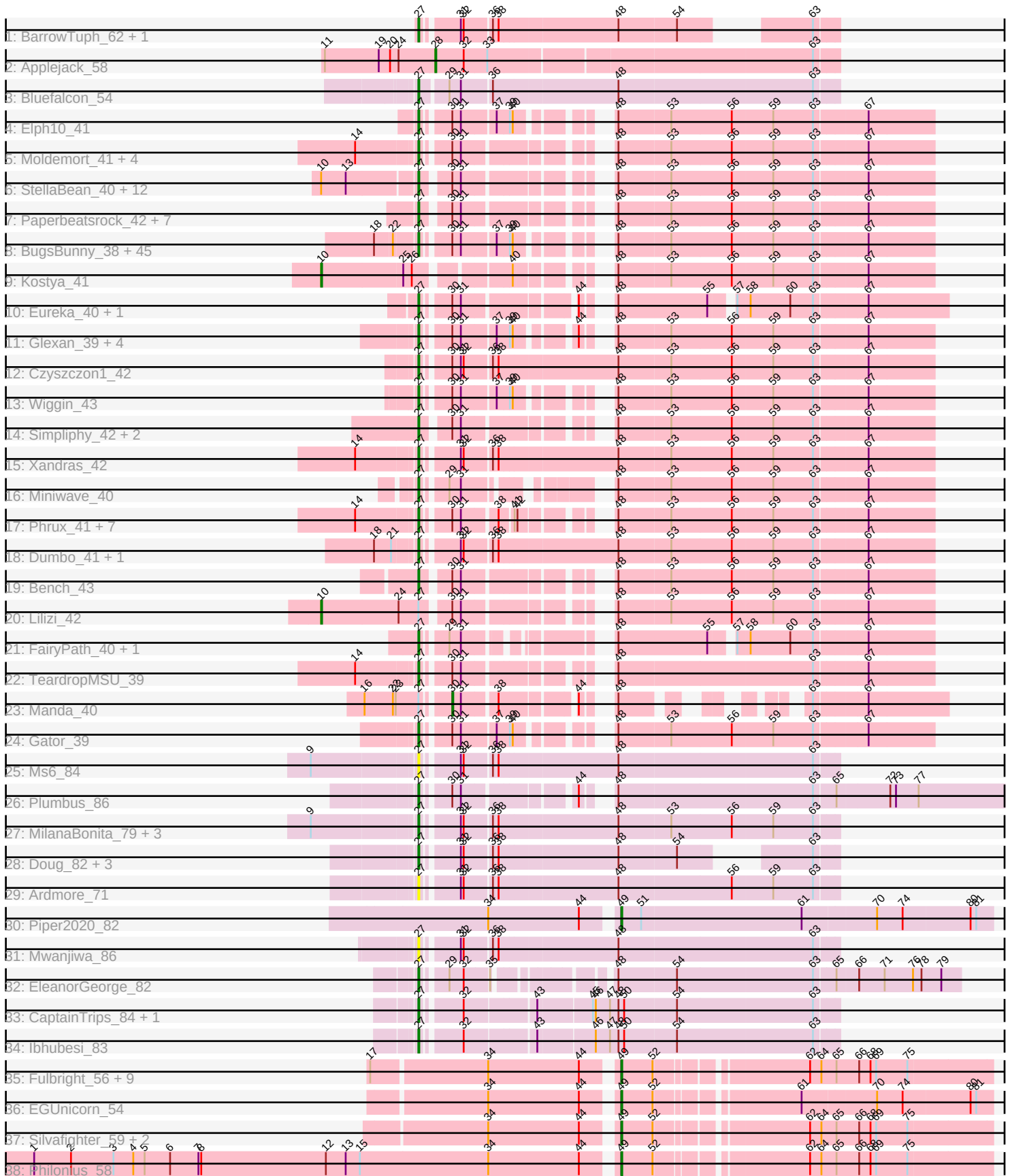


# Pham 280180



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 280180 Report

This analysis was run 02/07/26 on database version 634.

Pham number 280180 has 141 members, 11 are drafts.

Phages represented in each track:

- Track 1 : BarrowTuph\_62, Teodoridan\_59
- Track 2 : Applejack\_58
- Track 3 : Bluefalcon\_54
- Track 4 : Elph10\_41
- Track 5 : Moldemort\_41, MadamMonkfish\_41, Bogg\_41, OrionPax\_42, AmericanBeauty\_42
- Track 6 : StellaBean\_40, Toto\_41, ABCat\_40, BilboSwaggins\_41, Marshmallow\_41, BaboJay\_40, IHOP\_40, CrystalP\_42, Myrale\_42, ShamWow\_42, Phaja\_40, Tuco\_43, Inca\_39
- Track 7 : Paperbeatsrock\_42, SophKB\_40, BadStone\_41, Tarkin\_42, NelitzaMV\_40, Dusk\_41, Pharsalus\_41, Henry\_42
- Track 8 : BugsBunny\_38, MPhalcon\_39, Cactus\_41, Icee\_39, Argent26\_42, GooberAzure\_42, Asriel\_39, Nimrod\_40, HuffyPuff\_39, Goldilocks\_41, StolenFromERC\_42, Gage\_42, Murphy\_41, NoSleep\_41, Nala\_40, Stank\_43, xkcd\_41, MISSy\_39, Adnama\_43, Gemini\_43, Palpatine\_40, Lilac\_42, Rakim\_41, Kimchi\_42, Barbarian\_39, Phaux\_39, Greep\_41, FireRed\_40, Thresher\_42, Misfit\_40, Maxxinista\_41, Murica\_39, Command613\_41, Becksu\_40, Terminus\_40, Sotrice96\_40, GoldenSpark\_42, PhatBacter\_40, Stark\_41, RiverMonster\_40, Bask21\_40, Policronamos\_40, Hoonter\_42, TBrady12\_42, Cjw1\_41, Thimble\_41
- Track 9 : Kostya\_41
- Track 10 : Eureka\_40, Goku\_40
- Track 11 : Glexan\_39, Daikon\_41, Traaww1\_38, Balomoji\_40, Harella\_41
- Track 12 : Czyszczo1\_42
- Track 13 : Wiggin\_43
- Track 14 : Simpliphy\_42, Saints25\_42, Highbury\_42
- Track 15 : Xandras\_42
- Track 16 : Miniwave\_40
- Track 17 : Phrux\_41, DrDrey\_43, HanKaySha\_42, JeTaime\_43, 244\_44, Hopey\_43, Filch\_43, Pumpkin\_44
- Track 18 : Dumbo\_41, Easy2Say\_42
- Track 19 : Bench\_43
- Track 20 : Lilizi\_42
- Track 21 : FairyPath\_40, Quallification\_41
- Track 22 : TeardropMSU\_39
- Track 23 : Manda\_40
- Track 24 : Gator\_39
- Track 25 : Ms6\_84

- Track 26 : Plumbus\_86
- Track 27 : MilanaBonita\_79, Kumao\_61, Fruitloop\_85, Akhila\_80
- Track 28 : Doug\_82, Ogopogo\_89, Tchotchke\_78, Bipolar\_86
- Track 29 : Ardmore\_71
- Track 30 : Piper2020\_82
- Track 31 : Mwanjiwa\_86
- Track 32 : EleanorGeorge\_82
- Track 33 : CaptainTrips\_84, MinionDave\_80
- Track 34 : Ibhubesi\_83
- Track 35 : Fulbright\_56, Carcharodon\_58, Phloss\_56, Magsby\_58, Parmesanjohn\_58, Xerxes\_58, Smurph\_58, Gex\_59, Pipsqueaks\_59, Schnauzer\_59
- Track 36 : EGUnicorn\_54
- Track 37 : Silvafighter\_59, Melville\_63, Duplicity\_56
- Track 38 : Philonius\_58

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

The start number called the most often in the published annotations is 27, it was called in 110 of the 130 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 244\_44, ABCat\_40, Adnama\_43, Akhila\_80, AmericanBeauty\_42, Ardmore\_71, Argent26\_42, Asriel\_39, BaboJay\_40, BadStone\_41, Balomoji\_40, Barbarian\_39, BarrowTuph\_62, Bask21\_40, Becksu\_40, Bench\_43, BilboSwaggins\_41, Bipolar\_86, Bluefalcon\_54, Bogg\_41, BugsBunny\_38, Cactus\_41, CaptainTrips\_84, Cjw1\_41, Command613\_41, CrystalP\_42, Czyszczonek\_42, Daikon\_41, Doug\_82, DrDrey\_43, Dumbo\_41, Dusk\_41, Easy2Say\_42, EleanorGeorge\_82, Elph10\_41, Eureka\_40, FairyPath\_40, Filch\_43, FireRed\_40, Fruitloop\_85, Gage\_42, Gator\_39, Gemini\_43, Glexan\_39, Goku\_40, GoldenSpark\_42, Goldilocks\_41, GooberAzure\_42, Greep\_41, HanKaySha\_42, Harella\_41, Henry\_42, Highbury\_42, Hoonter\_42, Hopey\_43, HuffyPuff\_39, IHOP\_40, Ibhubesi\_83, Icee\_39, Inca\_39, JeTaime\_43, Kimchi\_42, Kumao\_61, Lilac\_42, MISSy\_39, MPhalcon\_39, MadamMonkfish\_41, Marshmallow\_41, Maxxinista\_41, MilanaBonita\_79, MinionDave\_80, Miniwave\_40, Misfit\_40, Moldemort\_41, Ms6\_84, Murica\_39, Murphy\_41, Mwanjiwa\_86, Myrale\_42, Nala\_40, NelitzaMV\_40, Nimrod\_40, NoSleep\_41, Ogopogo\_89, OrionPax\_42, Palpatine\_40, Paperbeatsrock\_42, Phaja\_40, Pharsalus\_41, PhatBacter\_40, Phaux\_39, Phrux\_41, Plumbus\_86, Policronamos\_40, Pumpkin\_44, Quallification\_41, Rakim\_41, RiverMonster\_40, Saints25\_42, ShamWow\_42, Simpliphy\_42, SophKB\_40, Sotrice96\_40, Stank\_43, Stark\_41, StellaBean\_40, StolenFromERC\_42, TBrady12\_42, Tarkin\_42, Tchotchke\_78, TeardropMSU\_39, Teodoridan\_59, Terminus\_40, Thimble\_41, Thresher\_42, Toto\_41, Traaww1\_38, Tuco\_43, Wiggin\_43, Xandras\_42, xkcd\_41,

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

- Lilizi\_42, Manda\_40,

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

- Applejack\_58, Carcharodon\_58, Duplicity\_56, EGUnicorn\_54, Fulbright\_56, Gex\_59, Kostya\_41, Magsby\_58, Melville\_63, Parmesanjohn\_58, Philonius\_58, Phloss\_56, Piper2020\_82, Pipsqueaks\_59, Schnauzer\_59, Silvafighter\_59,

Smurph\_58, Xerxes\_58,

### Summary by start number:

#### Start 10:

- Found in 15 of 141 ( 10.6% ) of genes in pham
- Manual Annotations of this start: 2 of 130
- Called 13.3% of time when present
- Phage (with cluster) where this start called: Kostya\_41 (E), Lilizi\_42 (E),

#### Start 27:

- Found in 123 of 141 ( 87.2% ) of genes in pham
- Manual Annotations of this start: 110 of 130
- Called 98.4% of time when present
- Phage (with cluster) where this start called: 244\_44 (E), ABCat\_40 (E), Adnama\_43 (E), Akhila\_80 (F1), AmericanBeauty\_42 (E), Ardmore\_71 (F1), Argent26\_42 (E), Asriel\_39 (E), BaboJay\_40 (E), BadStone\_41 (E), Balomoji\_40 (E), Barbarian\_39 (E), BarrowTuph\_62 (A1), Bask21\_40 (E), Becksu\_40 (E), Bench\_43 (E), BilboSwaggins\_41 (E), Bipolar\_86 (F1), Bluefalcon\_54 (A5), Bogg\_41 (E), BugsBunny\_38 (E), Cactus\_41 (E), CaptainTrips\_84 (F1), Cjw1\_41 (E), Command613\_41 (E), CrystalP\_42 (E), Czystczon1\_42 (E), Daikon\_41 (E), Doug\_82 (F1), DrDrey\_43 (E), Dumbo\_41 (E), Dusk\_41 (E), Easy2Say\_42 (E), EleanorGeorge\_82 (F1), Elph10\_41 (E), Eureka\_40 (E), FairyPath\_40 (E), Filch\_43 (E), FireRed\_40 (E), Fruitloop\_85 (F1), Gage\_42 (E), Gator\_39 (E), Gemini\_43 (E), Glexan\_39 (E), Goku\_40 (E), GoldenSpark\_42 (E), Goldilocks\_41 (E), GooberAzure\_42 (E), Greep\_41 (E), HanKaySha\_42 (E), Harella\_41 (E), Henry\_42 (E), Highbury\_42 (E), Hoonter\_42 (E), Hopey\_43 (E), HuffyPuff\_39 (E), IHOP\_40 (E), Ibhubesi\_83 (F1), Icee\_39 (E), Inca\_39 (E), JeTaime\_43 (E), Kimchi\_42 (E), Kumao\_61 (singleton), Lilac\_42 (E), MISSy\_39 (E), MPhalcon\_39 (E), MadamMonkfish\_41 (E), Marshmallow\_41 (E), Maxxinista\_41 (E), MilanaBonita\_79 (F1), MinionDave\_80 (F1), Miniwave\_40 (E), Misfit\_40 (E), Moldemort\_41 (E), Ms6\_84 (F1), Murica\_39 (E), Murphy\_41 (E), Mwanjiwa\_86 (F1), Myrale\_42 (E), Nala\_40 (E), NelitzaMV\_40 (E), Nimrod\_40 (E), NoSleep\_41 (E), Ogopogo\_89 (F1), OrionPax\_42 (E), Palpatine\_40 (E), Paperbeatsrock\_42 (E), Phaja\_40 (E), Pharsalus\_41 (E), PhatBacter\_40 (E), Phaux\_39 (E), Phrux\_41 (E), Plumbus\_86 (F1), Policronamos\_40 (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), Stank\_43 (E), Stark\_41 (E), StellaBean\_40 (E), StolenFromERC\_42 (E), TBrady12\_42 (E), Tarkin\_42 (E), Tchotchke\_78 (F1), TeardropMSU\_39 (E), Teodoridan\_59 (A1), Terminus\_40 (E), Thimble\_41 (E), Thresher\_42 (E), Toto\_41 (E), Traaww1\_38 (E), Tuco\_43 (E), Wiggin\_43 (E), Xandras\_42 (E), xkcd\_41 (E),

#### Start 28:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 130
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Applejack\_58 (A1),

#### Start 30:

- Found in 99 of 141 ( 70.2% ) of genes in pham
- Manual Annotations of this start: 1 of 130
- Called 1.0% of time when present

- Phage (with cluster) where this start called: Manda\_40 (E),

Start 49:

- Found in 16 of 141 ( 11.3% ) of genes in pham
- Manual Annotations of this start: 16 of 130
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Carcharodon\_58 (N), Duplicity\_56 (N), EGUunicorn\_54 (N), Fulbright\_56 (N), Gex\_59 (N), Magsby\_58 (N), Melville\_63 (N), Parmesanjohn\_58 (N), Philonius\_58 (N), Phloss\_56 (N), Piper2020\_82 (F1), Pipsqueaks\_59 (N), Schnauzer\_59 (N), Silvafighter\_59 (N), Smurph\_58 (N), Xerxes\_58 (N),

### **Summary by clusters:**

There are 6 clusters represented in this pham: F1, singleton, E, N, A1, A5,

Info for manual annotations of cluster A1:

- Start number 27 was manually annotated 1 time for cluster A1.
- Start number 28 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster A5:

- Start number 27 was manually annotated 1 time for cluster A5.

Info for manual annotations of cluster E:

- Start number 10 was manually annotated 2 times for cluster E.
- Start number 27 was manually annotated 96 times for cluster E.
- Start number 30 was manually annotated 1 time for cluster E.

Info for manual annotations of cluster F1:

- Start number 27 was manually annotated 11 times for cluster F1.
- Start number 49 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster N:

- Start number 49 was manually annotated 15 times for cluster N.

### **Gene Information:**

Gene: 244\_44 Start: 35171, Stop: 34707, Start Num: 27

Candidate Starts for 244\_44:

(14, 35231), (Start: 27 @35171 has 110 MA's), (Start: 30 @35147 has 1 MA's), (31, 35138), (38, 35105), (41, 35093), (42, 35090), (48, 35027), (53, 34973), (56, 34910), (59, 34868), (63, 34826), (67, 34775),

Gene: ABCat\_40 Start: 35339, Stop: 34872, Start Num: 27

Candidate Starts for ABCat\_40:

(Start: 10 @35432 has 2 MA's), (13, 35408), (Start: 27 @35339 has 110 MA's), (Start: 30 @35315 has 1 MA's), (31, 35306), (48, 35192), (53, 35138), (56, 35075), (59, 35033), (63, 34991), (67, 34940),

Gene: Adnama\_43 Start: 35176, Stop: 34712, Start Num: 27

Candidate Starts for Adnama\_43:

(18, 35215), (22, 35197), (Start: 27 @35176 has 110 MA's), (Start: 30 @35152 has 1 MA's), (31, 35143), (37, 35110), (39, 35098), (40, 35095), (48, 35032), (53, 34978), (56, 34915), (59, 34873), (63, 34831), (67, 34780),

Gene: Akhila\_80 Start: 48623, Stop: 49036, Start Num: 27

Candidate Starts for Akhila\_80:

(9, 48518), (Start: 27 @48623 has 110 MA's), (31, 48656), (32, 48659), (36, 48686), (38, 48692), (48, 48812), (53, 48866), (56, 48929), (59, 48971), (63, 49013),

Gene: AmericanBeauty\_42 Start: 34659, Stop: 34192, Start Num: 27

Candidate Starts for AmericanBeauty\_42:

(14, 34719), (Start: 27 @34659 has 110 MA's), (Start: 30 @34635 has 1 MA's), (31, 34626), (48, 34512), (53, 34458), (56, 34395), (59, 34353), (63, 34311), (67, 34260),

Gene: Applejack\_58 Start: 39182, Stop: 38778, Start Num: 28

Candidate Starts for Applejack\_58:

(11, 39293), (19, 39236), (20, 39224), (24, 39215), (Start: 28 @39182 has 1 MA's), (32, 39152), (33, 39128), (63, 38801),

Gene: Ardmore\_71 Start: 44747, Stop: 45160, Start Num: 27

Candidate Starts for Ardmore\_71:

(Start: 27 @44747 has 110 MA's), (31, 44780), (32, 44783), (36, 44810), (38, 44816), (48, 44936), (56, 45053), (59, 45095), (63, 45137),

Gene: Argent26\_42 Start: 34659, Stop: 34195, Start Num: 27

Candidate Starts for Argent26\_42:

(18, 34698), (22, 34680), (Start: 27 @34659 has 110 MA's), (Start: 30 @34635 has 1 MA's), (31, 34626), (37, 34593), (39, 34581), (40, 34578), (48, 34515), (53, 34461), (56, 34398), (59, 34356), (63, 34314), (67, 34263),

Gene: Asriel\_39 Start: 33513, Stop: 33049, Start Num: 27

Candidate Starts for Asriel\_39:

(18, 33552), (22, 33534), (Start: 27 @33513 has 110 MA's), (Start: 30 @33489 has 1 MA's), (31, 33480), (37, 33447), (39, 33435), (40, 33432), (48, 33369), (53, 33315), (56, 33252), (59, 33210), (63, 33168), (67, 33117),

Gene: BaboJay\_40 Start: 34740, Stop: 34270, Start Num: 27

Candidate Starts for BaboJay\_40:

(Start: 10 @34833 has 2 MA's), (13, 34809), (Start: 27 @34740 has 110 MA's), (Start: 30 @34713 has 1 MA's), (31, 34704), (48, 34590), (53, 34536), (56, 34473), (59, 34431), (63, 34389), (67, 34338),

Gene: BadStone\_41 Start: 35477, Stop: 35010, Start Num: 27

Candidate Starts for BadStone\_41:

(Start: 27 @35477 has 110 MA's), (Start: 30 @35453 has 1 MA's), (31, 35444), (48, 35330), (53, 35276), (56, 35213), (59, 35171), (63, 35129), (67, 35078),

Gene: Balomoji\_40 Start: 35070, Stop: 34606, Start Num: 27

Candidate Starts for Balomoji\_40:

(Start: 27 @35070 has 110 MA's), (Start: 30 @35046 has 1 MA's), (31, 35037), (37, 35004), (39, 34992), (40, 34989), (44, 34941), (48, 34926), (53, 34872), (56, 34809), (59, 34767), (63, 34725), (67, 34674),

Gene: Barbarian\_39 Start: 33513, Stop: 33049, Start Num: 27

Candidate Starts for Barbarian\_39:

(18, 33552), (22, 33534), (Start: 27 @33513 has 110 MA's), (Start: 30 @33489 has 1 MA's), (31, 33480), (37, 33447), (39, 33435), (40, 33432), (48, 33369), (53, 33315), (56, 33252), (59, 33210), (63, 33168), (67, 33117),

Gene: BarrowTuph\_62 Start: 40812, Stop: 40450, Start Num: 27

Candidate Starts for BarrowTuph\_62:

(Start: 27 @40812 has 110 MA's), (31, 40779), (32, 40776), (36, 40749), (38, 40743), (48, 40623), (54, 40563), (63, 40473),

Gene: Bask21\_40 Start: 33847, Stop: 33383, Start Num: 27

Candidate Starts for Bask21\_40:

(18, 33886), (22, 33868), (Start: 27 @33847 has 110 MA's), (Start: 30 @33823 has 1 MA's), (31, 33814), (37, 33781), (39, 33769), (40, 33766), (48, 33703), (53, 33649), (56, 33586), (59, 33544), (63, 33502), (67, 33451),

Gene: Becksu\_40 Start: 34835, Stop: 34371, Start Num: 27

Candidate Starts for Becksu\_40:

(18, 34874), (22, 34856), (Start: 27 @34835 has 110 MA's), (Start: 30 @34811 has 1 MA's), (31, 34802), (37, 34769), (39, 34757), (40, 34754), (48, 34691), (53, 34637), (56, 34574), (59, 34532), (63, 34490), (67, 34439),

Gene: Bench\_43 Start: 34755, Stop: 34288, Start Num: 27

Candidate Starts for Bench\_43:

(Start: 27 @34755 has 110 MA's), (Start: 30 @34731 has 1 MA's), (31, 34722), (48, 34608), (53, 34554), (56, 34491), (59, 34449), (63, 34407), (67, 34356),

Gene: BilboSwaggins\_41 Start: 35347, Stop: 34880, Start Num: 27

Candidate Starts for BilboSwaggins\_41:

(Start: 10 @35440 has 2 MA's), (13, 35416), (Start: 27 @35347 has 110 MA's), (Start: 30 @35323 has 1 MA's), (31, 35314), (48, 35200), (53, 35146), (56, 35083), (59, 35041), (63, 34999), (67, 34948),

Gene: Bipolar\_86 Start: 51239, Stop: 51601, Start Num: 27

Candidate Starts for Bipolar\_86:

(Start: 27 @51239 has 110 MA's), (31, 51272), (32, 51275), (36, 51302), (38, 51308), (48, 51428), (54, 51488), (63, 51578),

Gene: Bluefalcon\_54 Start: 39442, Stop: 39023, Start Num: 27

Candidate Starts for Bluefalcon\_54:

(Start: 27 @39442 has 110 MA's), (29, 39415), (31, 39403), (36, 39373), (48, 39247), (63, 39046),

Gene: Bogg\_41 Start: 34087, Stop: 33620, Start Num: 27

Candidate Starts for Bogg\_41:

(14, 34147), (Start: 27 @34087 has 110 MA's), (Start: 30 @34063 has 1 MA's), (31, 34054), (48, 33940), (53, 33886), (56, 33823), (59, 33781), (63, 33739), (67, 33688),

Gene: BugsBunny\_38 Start: 34241, Stop: 33777, Start Num: 27

Candidate Starts for BugsBunny\_38:

(18, 34280), (22, 34262), (Start: 27 @34241 has 110 MA's), (Start: 30 @34217 has 1 MA's), (31, 34208), (37, 34175), (39, 34163), (40, 34160), (48, 34097), (53, 34043), (56, 33980), (59, 33938), (63, 33896), (67, 33845),

Gene: Cactus\_41 Start: 33880, Stop: 33416, Start Num: 27

Candidate Starts for Cactus\_41:

(18, 33919), (22, 33901), (Start: 27 @33880 has 110 MA's), (Start: 30 @33856 has 1 MA's), (31, 33847), (37, 33814), (39, 33802), (40, 33799), (48, 33736), (53, 33682), (56, 33619), (59, 33577), (63, 33535), (67, 33484),

Gene: CaptainTrips\_84 Start: 49276, Stop: 49686, Start Num: 27

Candidate Starts for CaptainTrips\_84:

(Start: 27 @49276 has 110 MA's), (32, 49312), (43, 49381), (45, 49435), (46, 49438), (47, 49453), (48, 49462), (50, 49468), (54, 49522), (63, 49663),

Gene: Carcharodon\_58 Start: 37518, Stop: 37880, Start Num: 49

Candidate Starts for Carcharodon\_58:

(17, 37275), (34, 37392), (44, 37488), (Start: 49 @37518 has 16 MA's), (52, 37551), (62, 37692), (64, 37704), (65, 37719), (66, 37743), (68, 37755), (69, 37761), (75, 37794),

Gene: Cjw1\_41 Start: 35651, Stop: 35187, Start Num: 27

Candidate Starts for Cjw1\_41:

(18, 35690), (22, 35672), (Start: 27 @35651 has 110 MA's), (Start: 30 @35627 has 1 MA's), (31, 35618), (37, 35585), (39, 35573), (40, 35570), (48, 35507), (53, 35453), (56, 35390), (59, 35348), (63, 35306), (67, 35255),

Gene: Command613\_41 Start: 34919, Stop: 34455, Start Num: 27

Candidate Starts for Command613\_41:

(18, 34958), (22, 34940), (Start: 27 @34919 has 110 MA's), (Start: 30 @34895 has 1 MA's), (31, 34886), (37, 34853), (39, 34841), (40, 34838), (48, 34775), (53, 34721), (56, 34658), (59, 34616), (63, 34574), (67, 34523),

Gene: CrystalP\_42 Start: 35347, Stop: 34880, Start Num: 27

Candidate Starts for CrystalP\_42:

(Start: 10 @35440 has 2 MA's), (13, 35416), (Start: 27 @35347 has 110 MA's), (Start: 30 @35323 has 1 MA's), (31, 35314), (48, 35200), (53, 35146), (56, 35083), (59, 35041), (63, 34999), (67, 34948),

Gene: Czyszczone1\_42 Start: 34681, Stop: 34172, Start Num: 27

Candidate Starts for Czyszczone1\_42:

(Start: 27 @34681 has 110 MA's), (Start: 30 @34657 has 1 MA's), (31, 34648), (32, 34645), (36, 34618), (38, 34612), (48, 34492), (53, 34438), (56, 34375), (59, 34333), (63, 34291), (67, 34240),

Gene: Daikon\_41 Start: 35091, Stop: 34627, Start Num: 27

Candidate Starts for Daikon\_41:

(Start: 27 @35091 has 110 MA's), (Start: 30 @35067 has 1 MA's), (31, 35058), (37, 35025), (39, 35013), (40, 35010), (44, 34962), (48, 34947), (53, 34893), (56, 34830), (59, 34788), (63, 34746), (67, 34695),

Gene: Doug\_82 Start: 50547, Stop: 50909, Start Num: 27

Candidate Starts for Doug\_82:

(Start: 27 @50547 has 110 MA's), (31, 50580), (32, 50583), (36, 50610), (38, 50616), (48, 50736), (54, 50796), (63, 50886),

Gene: DrDrey\_43 Start: 35973, Stop: 35509, Start Num: 27

Candidate Starts for DrDrey\_43:

(14, 36033), (Start: 27 @35973 has 110 MA's), (Start: 30 @35949 has 1 MA's), (31, 35940), (38, 35907), (41, 35895), (42, 35892), (48, 35829), (53, 35775), (56, 35712), (59, 35670), (63, 35628), (67, 35577),



Gene: Dumbo\_41 Start: 34403, Stop: 33894, Start Num: 27

Candidate Starts for Dumbo\_41:

(18, 34442), (21, 34424), (Start: 27 @34403 has 110 MA's), (31, 34370), (32, 34367), (36, 34340), (38, 34334), (48, 34214), (53, 34160), (56, 34097), (59, 34055), (63, 34013), (67, 33962),

Gene: Duplicity\_56 Start: 36775, Stop: 37137, Start Num: 49

Candidate Starts for Duplicity\_56:

(34, 36649), (44, 36745), (Start: 49 @36775 has 16 MA's), (52, 36808), (62, 36949), (64, 36961), (65, 36976), (66, 37000), (68, 37012), (69, 37018), (75, 37051),

Gene: Dusk\_41 Start: 35137, Stop: 34670, Start Num: 27

Candidate Starts for Dusk\_41:

(Start: 27 @35137 has 110 MA's), (Start: 30 @35113 has 1 MA's), (31, 35104), (48, 34990), (53, 34936), (56, 34873), (59, 34831), (63, 34789), (67, 34738),

Gene: EGUnicorn\_54 Start: 36355, Stop: 36714, Start Num: 49

Candidate Starts for EGUnicorn\_54:

(34, 36229), (44, 36325), (Start: 49 @36355 has 16 MA's), (52, 36388), (61, 36520), (70, 36595), (74, 36622), (80, 36691), (81, 36697),

Gene: Easy2Say\_42 Start: 35947, Stop: 35438, Start Num: 27

Candidate Starts for Easy2Say\_42:

(18, 35986), (21, 35968), (Start: 27 @35947 has 110 MA's), (31, 35914), (32, 35911), (36, 35884), (38, 35878), (48, 35758), (53, 35704), (56, 35641), (59, 35599), (63, 35557), (67, 35506),

Gene: EleanorGeorge\_82 Start: 49312, Stop: 49815, Start Num: 27

Candidate Starts for EleanorGeorge\_82:

(Start: 27 @49312 has 110 MA's), (29, 49333), (32, 49348), (35, 49372), (48, 49465), (54, 49525), (63, 49666), (65, 49687), (66, 49708), (71, 49735), (76, 49765), (78, 49774), (79, 49795),

Gene: Elph10\_41 Start: 34122, Stop: 33658, Start Num: 27

Candidate Starts for Elph10\_41:

(Start: 27 @34122 has 110 MA's), (Start: 30 @34098 has 1 MA's), (31, 34089), (37, 34056), (39, 34044), (40, 34041), (48, 33978), (53, 33924), (56, 33861), (59, 33819), (63, 33777), (67, 33726),

Gene: Eureka\_40 Start: 34965, Stop: 34495, Start Num: 27

Candidate Starts for Eureka\_40:

(Start: 27 @34965 has 110 MA's), (Start: 30 @34941 has 1 MA's), (31, 34932), (44, 34833), (48, 34818), (55, 34725), (57, 34707), (58, 34695), (60, 34653), (63, 34629), (67, 34578),

Gene: FairyPath\_40 Start: 34849, Stop: 34400, Start Num: 27

Candidate Starts for FairyPath\_40:

(Start: 27 @34849 has 110 MA's), (29, 34828), (31, 34816), (48, 34708), (55, 34615), (57, 34597), (58, 34585), (60, 34543), (63, 34519), (67, 34468),

Gene: Filch\_43 Start: 34650, Stop: 34186, Start Num: 27

Candidate Starts for Filch\_43:

(14, 34710), (Start: 27 @34650 has 110 MA's), (Start: 30 @34626 has 1 MA's), (31, 34617), (38, 34584), (41, 34572), (42, 34569), (48, 34506), (53, 34452), (56, 34389), (59, 34347), (63, 34305), (67, 34254),

Gene: FireRed\_40 Start: 34680, Stop: 34216, Start Num: 27

Candidate Starts for FireRed\_40:

(18, 34719), (22, 34701), (Start: 27 @34680 has 110 MA's), (Start: 30 @34656 has 1 MA's), (31, 34647), (37, 34614), (39, 34602), (40, 34599), (48, 34536), (53, 34482), (56, 34419), (59, 34377), (63, 34335), (67, 34284),

Gene: Fruitloop\_85 Start: 51126, Stop: 51539, Start Num: 27

Candidate Starts for Fruitloop\_85:

(9, 51021), (Start: 27 @51126 has 110 MA's), (31, 51159), (32, 51162), (36, 51189), (38, 51195), (48, 51315), (53, 51369), (56, 51432), (59, 51474), (63, 51516),

Gene: Fulbright\_56 Start: 36212, Stop: 36574, Start Num: 49

Candidate Starts for Fulbright\_56:

(17, 35969), (34, 36086), (44, 36182), (Start: 49 @36212 has 16 MA's), (52, 36245), (62, 36386), (64, 36398), (65, 36413), (66, 36437), (68, 36449), (69, 36455), (75, 36488),

Gene: Gage\_42 Start: 34659, Stop: 34195, Start Num: 27

Candidate Starts for Gage\_42:

(18, 34698), (22, 34680), (Start: 27 @34659 has 110 MA's), (Start: 30 @34635 has 1 MA's), (31, 34626), (37, 34593), (39, 34581), (40, 34578), (48, 34515), (53, 34461), (56, 34398), (59, 34356), (63, 34314), (67, 34263),

Gene: Gator\_39 Start: 34961, Stop: 34497, Start Num: 27

Candidate Starts for Gator\_39:

(Start: 27 @34961 has 110 MA's), (Start: 30 @34937 has 1 MA's), (31, 34928), (37, 34895), (39, 34883), (40, 34880), (48, 34817), (53, 34763), (56, 34700), (59, 34658), (63, 34616), (67, 34565),

Gene: Gemini\_43 Start: 35176, Stop: 34712, Start Num: 27

Candidate Starts for Gemini\_43:

(18, 35215), (22, 35197), (Start: 27 @35176 has 110 MA's), (Start: 30 @35152 has 1 MA's), (31, 35143), (37, 35110), (39, 35098), (40, 35095), (48, 35032), (53, 34978), (56, 34915), (59, 34873), (63, 34831), (67, 34780),

Gene: Gex\_59 Start: 37534, Stop: 37896, Start Num: 49

Candidate Starts for Gex\_59:

(17, 37291), (34, 37408), (44, 37504), (Start: 49 @37534 has 16 MA's), (52, 37567), (62, 37708), (64, 37720), (65, 37735), (66, 37759), (68, 37771), (69, 37777), (75, 37810),

Gene: Glexan\_39 Start: 34949, Stop: 34485, Start Num: 27

Candidate Starts for Glexan\_39:

(Start: 27 @34949 has 110 MA's), (Start: 30 @34925 has 1 MA's), (31, 34916), (37, 34883), (39, 34871), (40, 34868), (44, 34820), (48, 34805), (53, 34751), (56, 34688), (59, 34646), (63, 34604), (67, 34553),

Gene: Goku\_40 Start: 34694, Stop: 34224, Start Num: 27

Candidate Starts for Goku\_40:

(Start: 27 @34694 has 110 MA's), (Start: 30 @34670 has 1 MA's), (31, 34661), (44, 34562), (48, 34547), (55, 34454), (57, 34436), (58, 34424), (60, 34382), (63, 34358), (67, 34307),

Gene: GoldenSpark\_42 Start: 34659, Stop: 34195, Start Num: 27

Candidate Starts for GoldenSpark\_42:

(18, 34698), (22, 34680), (Start: 27 @34659 has 110 MA's), (Start: 30 @34635 has 1 MA's), (31, 34626), (37, 34593), (39, 34581), (40, 34578), (48, 34515), (53, 34461), (56, 34398), (59, 34356), (63, 34314), (67, 34263),

Gene: Goldilocks\_41 Start: 34161, Stop: 33697, Start Num: 27

Candidate Starts for Goldilocks\_41:

(18, 34200), (22, 34182), (Start: 27 @34161 has 110 MA's), (Start: 30 @34137 has 1 MA's), (31, 34128), (37, 34095), (39, 34083), (40, 34080), (48, 34017), (53, 33963), (56, 33900), (59, 33858), (63, 33816), (67, 33765),

Gene: GooberAzure\_42 Start: 34659, Stop: 34195, Start Num: 27

Candidate Starts for GooberAzure\_42:

(18, 34698), (22, 34680), (Start: 27 @34659 has 110 MA's), (Start: 30 @34635 has 1 MA's), (31, 34626), (37, 34593), (39, 34581), (40, 34578), (48, 34515), (53, 34461), (56, 34398), (59, 34356), (63, 34314), (67, 34263),

Gene: Greep\_41 Start: 34972, Stop: 34508, Start Num: 27

Candidate Starts for Greep\_41:

(18, 35011), (22, 34993), (Start: 27 @34972 has 110 MA's), (Start: 30 @34948 has 1 MA's), (31, 34939), (37, 34906), (39, 34894), (40, 34891), (48, 34828), (53, 34774), (56, 34711), (59, 34669), (63, 34627), (67, 34576),

Gene: HanKaySha\_42 Start: 34633, Stop: 34169, Start Num: 27

Candidate Starts for HanKaySha\_42:

(14, 34693), (Start: 27 @34633 has 110 MA's), (Start: 30 @34609 has 1 MA's), (31, 34600), (38, 34567), (41, 34555), (42, 34552), (48, 34489), (53, 34435), (56, 34372), (59, 34330), (63, 34288), (67, 34237),

Gene: Harella\_41 Start: 35465, Stop: 35001, Start Num: 27

Candidate Starts for Harella\_41:

(Start: 27 @35465 has 110 MA's), (Start: 30 @35441 has 1 MA's), (31, 35432), (37, 35399), (39, 35387), (40, 35384), (44, 35336), (48, 35321), (53, 35267), (56, 35204), (59, 35162), (63, 35120), (67, 35069),

Gene: Henry\_42 Start: 35356, Stop: 34889, Start Num: 27

Candidate Starts for Henry\_42:

(Start: 27 @35356 has 110 MA's), (Start: 30 @35332 has 1 MA's), (31, 35323), (48, 35209), (53, 35155), (56, 35092), (59, 35050), (63, 35008), (67, 34957),

Gene: Highbury\_42 Start: 34424, Stop: 33957, Start Num: 27

Candidate Starts for Highbury\_42:

(Start: 27 @34424 has 110 MA's), (Start: 30 @34400 has 1 MA's), (31, 34391), (48, 34277), (53, 34223), (56, 34160), (59, 34118), (63, 34076), (67, 34025),

Gene: Hoonter\_42 Start: 34659, Stop: 34195, Start Num: 27

Candidate Starts for Hoonter\_42:

(18, 34698), (22, 34680), (Start: 27 @34659 has 110 MA's), (Start: 30 @34635 has 1 MA's), (31, 34626), (37, 34593), (39, 34581), (40, 34578), (48, 34515), (53, 34461), (56, 34398), (59, 34356), (63, 34314), (67, 34263),

Gene: Hopey\_43 Start: 35168, Stop: 34704, Start Num: 27

Candidate Starts for Hopey\_43:

(14, 35228), (Start: 27 @35168 has 110 MA's), (Start: 30 @35144 has 1 MA's), (31, 35135), (38, 35102), (41, 35090), (42, 35087), (48, 35024), (53, 34970), (56, 34907), (59, 34865), (63, 34823), (67, 34772),

Gene: HufflyPuff\_39 Start: 34636, Stop: 34172, Start Num: 27

Candidate Starts for HufflyPuff\_39:

(18, 34675), (22, 34657), (Start: 27 @34636 has 110 MA's), (Start: 30 @34612 has 1 MA's), (31, 34603), (37, 34570), (39, 34558), (40, 34555), (48, 34492), (53, 34438), (56, 34375), (59, 34333), (63, 34291), (67, 34240),

Gene: IHOP\_40 Start: 34911, Stop: 34444, Start Num: 27

Candidate Starts for IHOP\_40:

(Start: 10 @35004 has 2 MA's), (13, 34980), (Start: 27 @34911 has 110 MA's), (Start: 30 @34887 has 1 MA's), (31, 34878), (48, 34764), (53, 34710), (56, 34647), (59, 34605), (63, 34563), (67, 34512),

Gene: Ibhubesi\_83 Start: 48014, Stop: 48424, Start Num: 27

Candidate Starts for Ibhubesi\_83:

(Start: 27 @48014 has 110 MA's), (32, 48050), (43, 48119), (46, 48176), (47, 48191), (48, 48200), (50, 48206), (54, 48260), (63, 48401),

Gene: Icee\_39 Start: 34327, Stop: 33863, Start Num: 27

Candidate Starts for Icee\_39:

(18, 34366), (22, 34348), (Start: 27 @34327 has 110 MA's), (Start: 30 @34303 has 1 MA's), (31, 34294), (37, 34261), (39, 34249), (40, 34246), (48, 34183), (53, 34129), (56, 34066), (59, 34024), (63, 33982), (67, 33931),

Gene: Inca\_39 Start: 33436, Stop: 32969, Start Num: 27

Candidate Starts for Inca\_39:

(Start: 10 @33529 has 2 MA's), (13, 33505), (Start: 27 @33436 has 110 MA's), (Start: 30 @33412 has 1 MA's), (31, 33403), (48, 33289), (53, 33235), (56, 33172), (59, 33130), (63, 33088), (67, 33037),

Gene: JeTaime\_43 Start: 35692, Stop: 35228, Start Num: 27

Candidate Starts for JeTaime\_43:

(14, 35752), (Start: 27 @35692 has 110 MA's), (Start: 30 @35668 has 1 MA's), (31, 35659), (38, 35626), (41, 35614), (42, 35611), (48, 35548), (53, 35494), (56, 35431), (59, 35389), (63, 35347), (67, 35296),

Gene: Kimchi\_42 Start: 34662, Stop: 34198, Start Num: 27

Candidate Starts for Kimchi\_42:

(18, 34701), (22, 34683), (Start: 27 @34662 has 110 MA's), (Start: 30 @34638 has 1 MA's), (31, 34629), (37, 34596), (39, 34584), (40, 34581), (48, 34518), (53, 34464), (56, 34401), (59, 34359), (63, 34317), (67, 34266),

Gene: Kostya\_41 Start: 34766, Stop: 34206, Start Num: 10

Candidate Starts for Kostya\_41:

(Start: 10 @34766 has 2 MA's), (25, 34682), (26, 34673), (40, 34592), (48, 34526), (53, 34472), (56, 34409), (59, 34367), (63, 34325), (67, 34274),

Gene: Kumao\_61 Start: 43622, Stop: 44035, Start Num: 27

Candidate Starts for Kumao\_61:

(9, 43517), (Start: 27 @43622 has 110 MA's), (31, 43655), (32, 43658), (36, 43685), (38, 43691), (48, 43811), (53, 43865), (56, 43928), (59, 43970), (63, 44012),

Gene: Lilac\_42 Start: 34149, Stop: 33685, Start Num: 27

Candidate Starts for Lilac\_42:

(18, 34188), (22, 34170), (Start: 27 @34149 has 110 MA's), (Start: 30 @34125 has 1 MA's), (31, 34116), (37, 34083), (39, 34071), (40, 34068), (48, 34005), (53, 33951), (56, 33888), (59, 33846), (63,

33804), (67, 33753),

Gene: Lilizi\_42 Start: 34462, Stop: 33893, Start Num: 10

Candidate Starts for Lilizi\_42:

(Start: 10 @34462 has 2 MA's), (24, 34381), (Start: 27 @34360 has 110 MA's), (Start: 30 @34336 has 1 MA's), (31, 34327), (48, 34213), (53, 34159), (56, 34096), (59, 34054), (63, 34012), (67, 33961),

Gene: MISSy\_39 Start: 34165, Stop: 33701, Start Num: 27

Candidate Starts for MISSy\_39:

(18, 34204), (22, 34186), (Start: 27 @34165 has 110 MA's), (Start: 30 @34141 has 1 MA's), (31, 34132), (37, 34099), (39, 34087), (40, 34084), (48, 34021), (53, 33967), (56, 33904), (59, 33862), (63, 33820), (67, 33769),

Gene: MPhalcon\_39 Start: 34158, Stop: 33694, Start Num: 27

Candidate Starts for MPhalcon\_39:

(18, 34197), (22, 34179), (Start: 27 @34158 has 110 MA's), (Start: 30 @34134 has 1 MA's), (31, 34125), (37, 34092), (39, 34080), (40, 34077), (48, 34014), (53, 33960), (56, 33897), (59, 33855), (63, 33813), (67, 33762),

Gene: MadamMonkfish\_41 Start: 34185, Stop: 33718, Start Num: 27

Candidate Starts for MadamMonkfish\_41:

(14, 34245), (Start: 27 @34185 has 110 MA's), (Start: 30 @34161 has 1 MA's), (31, 34152), (48, 34038), (53, 33984), (56, 33921), (59, 33879), (63, 33837), (67, 33786),

Gene: Magsby\_58 Start: 37535, Stop: 37897, Start Num: 49

Candidate Starts for Magsby\_58:

(17, 37292), (34, 37409), (44, 37505), (Start: 49 @37535 has 16 MA's), (52, 37568), (62, 37709), (64, 37721), (65, 37736), (66, 37760), (68, 37772), (69, 37778), (75, 37811),

Gene: Manda\_40 Start: 34836, Stop: 34465, Start Num: 30

Candidate Starts for Manda\_40:

(16, 34917), (22, 34887), (23, 34884), (Start: 27 @34860 has 110 MA's), (Start: 30 @34836 has 1 MA's), (31, 34827), (38, 34794), (44, 34728), (48, 34713), (63, 34599), (67, 34548),

Gene: Marshmallow\_41 Start: 35345, Stop: 34878, Start Num: 27

Candidate Starts for Marshmallow\_41:

(Start: 10 @35438 has 2 MA's), (13, 35414), (Start: 27 @35345 has 110 MA's), (Start: 30 @35321 has 1 MA's), (31, 35312), (48, 35198), (53, 35144), (56, 35081), (59, 35039), (63, 34997), (67, 34946),

Gene: Maxxinista\_41 Start: 34119, Stop: 33655, Start Num: 27

Candidate Starts for Maxxinista\_41:

(18, 34158), (22, 34140), (Start: 27 @34119 has 110 MA's), (Start: 30 @34095 has 1 MA's), (31, 34086), (37, 34053), (39, 34041), (40, 34038), (48, 33975), (53, 33921), (56, 33858), (59, 33816), (63, 33774), (67, 33723),

Gene: Melville\_63 Start: 37089, Stop: 37451, Start Num: 49

Candidate Starts for Melville\_63:

(34, 36963), (44, 37059), (Start: 49 @37089 has 16 MA's), (52, 37122), (62, 37263), (64, 37275), (65, 37290), (66, 37314), (68, 37326), (69, 37332), (75, 37365),

Gene: MilanaBonita\_79 Start: 48623, Stop: 49036, Start Num: 27

Candidate Starts for MilanaBonita\_79:

(9, 48518), (Start: 27 @48623 has 110 MA's), (31, 48656), (32, 48659), (36, 48686), (38, 48692), (48, 48812), (53, 48866), (56, 48929), (59, 48971), (63, 49013),

Gene: MinionDave\_80 Start: 49276, Stop: 49686, Start Num: 27

Candidate Starts for MinionDave\_80:

(Start: 27 @49276 has 110 MA's), (32, 49312), (43, 49381), (45, 49435), (46, 49438), (47, 49453), (48, 49462), (50, 49468), (54, 49522), (63, 49663),

Gene: Miniwave\_40 Start: 34863, Stop: 34402, Start Num: 27

Candidate Starts for Miniwave\_40:

(Start: 27 @34863 has 110 MA's), (29, 34842), (31, 34830), (48, 34722), (53, 34668), (56, 34605), (59, 34563), (63, 34521), (67, 34470),

Gene: Misfit\_40 Start: 34739, Stop: 34275, Start Num: 27

Candidate Starts for Misfit\_40:

(18, 34778), (22, 34760), (Start: 27 @34739 has 110 MA's), (Start: 30 @34715 has 1 MA's), (31, 34706), (37, 34673), (39, 34661), (40, 34658), (48, 34595), (53, 34541), (56, 34478), (59, 34436), (63, 34394), (67, 34343),

Gene: Moldemort\_41 Start: 34414, Stop: 33947, Start Num: 27

Candidate Starts for Moldemort\_41:

(14, 34474), (Start: 27 @34414 has 110 MA's), (Start: 30 @34390 has 1 MA's), (31, 34381), (48, 34267), (53, 34213), (56, 34150), (59, 34108), (63, 34066), (67, 34015),

Gene: Ms6\_84 Start: 46316, Stop: 46729, Start Num: 27

Candidate Starts for Ms6\_84:

(9, 46211), (Start: 27 @46316 has 110 MA's), (31, 46349), (32, 46352), (36, 46379), (38, 46385), (48, 46505), (63, 46706),

Gene: Murica\_39 Start: 34636, Stop: 34172, Start Num: 27

Candidate Starts for Murica\_39:

(18, 34675), (22, 34657), (Start: 27 @34636 has 110 MA's), (Start: 30 @34612 has 1 MA's), (31, 34603), (37, 34570), (39, 34558), (40, 34555), (48, 34492), (53, 34438), (56, 34375), (59, 34333), (63, 34291), (67, 34240),

Gene: Murphy\_41 Start: 34631, Stop: 34167, Start Num: 27

Candidate Starts for Murphy\_41:

(18, 34670), (22, 34652), (Start: 27 @34631 has 110 MA's), (Start: 30 @34607 has 1 MA's), (31, 34598), (37, 34565), (39, 34553), (40, 34550), (48, 34487), (53, 34433), (56, 34370), (59, 34328), (63, 34286), (67, 34235),

Gene: Mwanjiwa\_86 Start: 50418, Stop: 50831, Start Num: 27

Candidate Starts for Mwanjiwa\_86:

(Start: 27 @50418 has 110 MA's), (31, 50451), (32, 50454), (36, 50481), (38, 50487), (48, 50607), (63, 50808),

Gene: Myrale\_42 Start: 35210, Stop: 34743, Start Num: 27

Candidate Starts for Myrale\_42:

(Start: 10 @35303 has 2 MA's), (13, 35279), (Start: 27 @35210 has 110 MA's), (Start: 30 @35186 has 1 MA's), (31, 35177), (48, 35063), (53, 35009), (56, 34946), (59, 34904), (63, 34862), (67, 34811),

Gene: Nala\_40 Start: 34670, Stop: 34206, Start Num: 27

Candidate Starts for Nala\_40:

(18, 34709), (22, 34691), (Start: 27 @34670 has 110 MA's), (Start: 30 @34646 has 1 MA's), (31, 34637), (37, 34604), (39, 34592), (40, 34589), (48, 34526), (53, 34472), (56, 34409), (59, 34367), (63, 34325), (67, 34274),

Gene: NelitzaMV\_40 Start: 34723, Stop: 34256, Start Num: 27

Candidate Starts for NelitzaMV\_40:

(Start: 27 @34723 has 110 MA's), (Start: 30 @34699 has 1 MA's), (31, 34690), (48, 34576), (53, 34522), (56, 34459), (59, 34417), (63, 34375), (67, 34324),

Gene: Nimrod\_40 Start: 34894, Stop: 34430, Start Num: 27

Candidate Starts for Nimrod\_40:

(18, 34933), (22, 34915), (Start: 27 @34894 has 110 MA's), (Start: 30 @34870 has 1 MA's), (31, 34861), (37, 34828), (39, 34816), (40, 34813), (48, 34750), (53, 34696), (56, 34633), (59, 34591), (63, 34549), (67, 34498),

Gene: NoSleep\_41 Start: 34391, Stop: 33927, Start Num: 27

Candidate Starts for NoSleep\_41:

(18, 34430), (22, 34412), (Start: 27 @34391 has 110 MA's), (Start: 30 @34367 has 1 MA's), (31, 34358), (37, 34325), (39, 34313), (40, 34310), (48, 34247), (53, 34193), (56, 34130), (59, 34088), (63, 34046), (67, 33995),

Gene: Ogopogo\_89 Start: 49435, Stop: 49848, Start Num: 27

Candidate Starts for Ogopogo\_89:

(Start: 27 @49435 has 110 MA's), (31, 49468), (32, 49471), (36, 49498), (38, 49504), (48, 49624), (54, 49684), (63, 49825),

Gene: OrionPax\_42 Start: 34639, Stop: 34172, Start Num: 27

Candidate Starts for OrionPax\_42:

(14, 34699), (Start: 27 @34639 has 110 MA's), (Start: 30 @34615 has 1 MA's), (31, 34606), (48, 34492), (53, 34438), (56, 34375), (59, 34333), (63, 34291), (67, 34240),

Gene: Palpatine\_40 Start: 34666, Stop: 34202, Start Num: 27

Candidate Starts for Palpatine\_40:

(18, 34705), (22, 34687), (Start: 27 @34666 has 110 MA's), (Start: 30 @34642 has 1 MA's), (31, 34633), (37, 34600), (39, 34588), (40, 34585), (48, 34522), (53, 34468), (56, 34405), (59, 34363), (63, 34321), (67, 34270),

Gene: Paperbeatsrock\_42 Start: 35652, Stop: 35185, Start Num: 27

Candidate Starts for Paperbeatsrock\_42:

(Start: 27 @35652 has 110 MA's), (Start: 30 @35628 has 1 MA's), (31, 35619), (48, 35505), (53, 35451), (56, 35388), (59, 35346), (63, 35304), (67, 35253),

Gene: Parmesanjohn\_58 Start: 37538, Stop: 37900, Start Num: 49

Candidate Starts for Parmesanjohn\_58:

(17, 37295), (34, 37412), (44, 37508), (Start: 49 @37538 has 16 MA's), (52, 37571), (62, 37712), (64, 37724), (65, 37739), (66, 37763), (68, 37775), (69, 37781), (75, 37814),

Gene: Phaja\_40 Start: 34910, Stop: 34443, Start Num: 27

Candidate Starts for Phaja\_40:

(Start: 10 @35003 has 2 MA's), (13, 34979), (Start: 27 @34910 has 110 MA's), (Start: 30 @34886 has 1 MA's), (31, 34877), (48, 34763), (53, 34709), (56, 34646), (59, 34604), (63, 34562), (67, 34511),

Gene: Pharsalus\_41 Start: 35452, Stop: 34985, Start Num: 27

Candidate Starts for Pharsalus\_41:

(Start: 27 @35452 has 110 MA's), (Start: 30 @35428 has 1 MA's), (31, 35419), (48, 35305), (53, 35251), (56, 35188), (59, 35146), (63, 35104), (67, 35053),

Gene: PhatBacter\_40 Start: 34680, Stop: 34216, Start Num: 27

Candidate Starts for PhatBacter\_40:

(18, 34719), (22, 34701), (Start: 27 @34680 has 110 MA's), (Start: 30 @34656 has 1 MA's), (31, 34647), (37, 34614), (39, 34602), (40, 34599), (48, 34536), (53, 34482), (56, 34419), (59, 34377), (63, 34335), (67, 34284),

Gene: Phaux\_39 Start: 34678, Stop: 34214, Start Num: 27

Candidate Starts for Phaux\_39:

(18, 34717), (22, 34699), (Start: 27 @34678 has 110 MA's), (Start: 30 @34654 has 1 MA's), (31, 34645), (37, 34612), (39, 34600), (40, 34597), (48, 34534), (53, 34480), (56, 34417), (59, 34375), (63, 34333), (67, 34282),

Gene: Philonius\_58 Start: 37703, Stop: 38065, Start Num: 49

Candidate Starts for Philonius\_58:

(1, 37097), (2, 37136), (3, 37181), (4, 37202), (5, 37214), (6, 37241), (7, 37271), (8, 37274), (12, 37406), (13, 37427), (15, 37442), (34, 37577), (44, 37673), (Start: 49 @37703 has 16 MA's), (52, 37736), (62, 37877), (64, 37889), (65, 37904), (66, 37928), (68, 37940), (69, 37946), (75, 37979),

Gene: Phloss\_56 Start: 36945, Stop: 37307, Start Num: 49

Candidate Starts for Phloss\_56:

(17, 36702), (34, 36819), (44, 36915), (Start: 49 @36945 has 16 MA's), (52, 36978), (62, 37119), (64, 37131), (65, 37146), (66, 37170), (68, 37182), (69, 37188), (75, 37221),

Gene: Phrux\_41 Start: 34632, Stop: 34168, Start Num: 27

Candidate Starts for Phrux\_41:

(14, 34692), (Start: 27 @34632 has 110 MA's), (Start: 30 @34608 has 1 MA's), (31, 34599), (38, 34566), (41, 34554), (42, 34551), (48, 34488), (53, 34434), (56, 34371), (59, 34329), (63, 34287), (67, 34236),

Gene: Piper2020\_82 Start: 50625, Stop: 51008, Start Num: 49

Candidate Starts for Piper2020\_82:

(34, 50499), (44, 50595), (Start: 49 @50625 has 16 MA's), (51, 50646), (61, 50814), (70, 50889), (74, 50916), (80, 50985), (81, 50991),

Gene: Pipsqueaks\_59 Start: 37516, Stop: 37878, Start Num: 49

Candidate Starts for Pipsqueaks\_59:

(17, 37273), (34, 37390), (44, 37486), (Start: 49 @37516 has 16 MA's), (52, 37549), (62, 37690), (64, 37702), (65, 37717), (66, 37741), (68, 37753), (69, 37759), (75, 37792),

Gene: Plumbus\_86 Start: 47486, Stop: 48037, Start Num: 27

Candidate Starts for Plumbus\_86:

(Start: 27 @47486 has 110 MA's), (Start: 30 @47510 has 1 MA's), (31, 47519), (44, 47618), (48, 47633), (63, 47834), (65, 47855), (72, 47909), (73, 47915), (77, 47939),

Gene: Policronamos\_40 Start: 34678, Stop: 34214, Start Num: 27

Candidate Starts for Policronamos\_40:

(18, 34717), (22, 34699), (Start: 27 @34678 has 110 MA's), (Start: 30 @34654 has 1 MA's), (31, 34645), (37, 34612), (39, 34600), (40, 34597), (48, 34534), (53, 34480), (56, 34417), (59, 34375), (63, 34333), (67, 34282),



Gene: Pumpkin\_44 Start: 35558, Stop: 35094, Start Num: 27

Candidate Starts for Pumpkin\_44:

(14, 35618), (Start: 27 @35558 has 110 MA's), (Start: 30 @35534 has 1 MA's), (31, 35525), (38, 35492), (41, 35480), (42, 35477), (48, 35414), (53, 35360), (56, 35297), (59, 35255), (63, 35213), (67, 35162),

Gene: Qualification\_41 Start: 34860, Stop: 34411, Start Num: 27

Candidate Starts for Qualification\_41:

(Start: 27 @34860 has 110 MA's), (29, 34839), (31, 34827), (48, 34719), (55, 34626), (57, 34608), (58, 34596), (60, 34554), (63, 34530), (67, 34479),

Gene: Rakim\_41 Start: 34775, Stop: 34311, Start Num: 27

Candidate Starts for Rakim\_41:

(18, 34814), (22, 34796), (Start: 27 @34775 has 110 MA's), (Start: 30 @34751 has 1 MA's), (31, 34742), (37, 34709), (39, 34697), (40, 34694), (48, 34631), (53, 34577), (56, 34514), (59, 34472), (63, 34430), (67, 34379),

Gene: RiverMonster\_40 Start: 34407, Stop: 33943, Start Num: 27

Candidate Starts for RiverMonster\_40:

(18, 34446), (22, 34428), (Start: 27 @34407 has 110 MA's), (Start: 30 @34383 has 1 MA's), (31, 34374), (37, 34341), (39, 34329), (40, 34326), (48, 34263), (53, 34209), (56, 34146), (59, 34104), (63, 34062), (67, 34011),

Gene: Saints25\_42 Start: 34424, Stop: 33957, Start Num: 27

Candidate Starts for Saints25\_42:

(Start: 27 @34424 has 110 MA's), (Start: 30 @34400 has 1 MA's), (31, 34391), (48, 34277), (53, 34223), (56, 34160), (59, 34118), (63, 34076), (67, 34025),

Gene: Schnauzer\_59 Start: 37538, Stop: 37900, Start Num: 49

Candidate Starts for Schnauzer\_59:

(17, 37295), (34, 37412), (44, 37508), (Start: 49 @37538 has 16 MA's), (52, 37571), (62, 37712), (64, 37724), (65, 37739), (66, 37763), (68, 37775), (69, 37781), (75, 37814),

Gene: ShamWow\_42 Start: 35347, Stop: 34880, Start Num: 27

Candidate Starts for ShamWow\_42:

(Start: 10 @35440 has 2 MA's), (13, 35416), (Start: 27 @35347 has 110 MA's), (Start: 30 @35323 has 1 MA's), (31, 35314), (48, 35200), (53, 35146), (56, 35083), (59, 35041), (63, 34999), (67, 34948),

Gene: Silvafighter\_59 Start: 37081, Stop: 37443, Start Num: 49

Candidate Starts for Silvafighter\_59:

(34, 36955), (44, 37051), (Start: 49 @37081 has 16 MA's), (52, 37114), (62, 37255), (64, 37267), (65, 37282), (66, 37306), (68, 37318), (69, 37324), (75, 37357),

Gene: Simpliphy\_42 Start: 34499, Stop: 34032, Start Num: 27

Candidate Starts for Simpliphy\_42:

(Start: 27 @34499 has 110 MA's), (Start: 30 @34475 has 1 MA's), (31, 34466), (48, 34352), (53, 34298), (56, 34235), (59, 34193), (63, 34151), (67, 34100),

Gene: Smurph\_58 Start: 37538, Stop: 37900, Start Num: 49

Candidate Starts for Smurph\_58:

(17, 37295), (34, 37412), (44, 37508), (Start: 49 @37538 has 16 MA's), (52, 37571), (62, 37712), (64, 37724), (65, 37739), (66, 37763), (68, 37775), (69, 37781), (75, 37814),

Gene: SophKB\_40 Start: 34671, Stop: 34204, Start Num: 27

Candidate Starts for SophKB\_40:

(Start: 27 @34671 has 110 MA's), (Start: 30 @34647 has 1 MA's), (31, 34638), (48, 34524), (53, 34470), (56, 34407), (59, 34365), (63, 34323), (67, 34272),

Gene: Sotrice96\_40 Start: 34623, Stop: 34159, Start Num: 27

Candidate Starts for Sotrice96\_40:

(18, 34662), (22, 34644), (Start: 27 @34623 has 110 MA's), (Start: 30 @34599 has 1 MA's), (31, 34590), (37, 34557), (39, 34545), (40, 34542), (48, 34479), (53, 34425), (56, 34362), (59, 34320), (63, 34278), (67, 34227),

Gene: Stank\_43 Start: 35175, Stop: 34711, Start Num: 27

Candidate Starts for Stank\_43:

(18, 35214), (22, 35196), (Start: 27 @35175 has 110 MA's), (Start: 30 @35151 has 1 MA's), (31, 35142), (37, 35109), (39, 35097), (40, 35094), (48, 35031), (53, 34977), (56, 34914), (59, 34872), (63, 34830), (67, 34779),

Gene: Stark\_41 Start: 34410, Stop: 33946, Start Num: 27

Candidate Starts for Stark\_41:

(18, 34449), (22, 34431), (Start: 27 @34410 has 110 MA's), (Start: 30 @34386 has 1 MA's), (31, 34377), (37, 34344), (39, 34332), (40, 34329), (48, 34266), (53, 34212), (56, 34149), (59, 34107), (63, 34065), (67, 34014),

Gene: StellaBean\_40 Start: 34671, Stop: 34204, Start Num: 27

Candidate Starts for StellaBean\_40:

(Start: 10 @34764 has 2 MA's), (13, 34740), (Start: 27 @34671 has 110 MA's), (Start: 30 @34647 has 1 MA's), (31, 34638), (48, 34524), (53, 34470), (56, 34407), (59, 34365), (63, 34323), (67, 34272),

Gene: StolenFromERC\_42 Start: 34659, Stop: 34195, Start Num: 27

Candidate Starts for StolenFromERC\_42:

(18, 34698), (22, 34680), (Start: 27 @34659 has 110 MA's), (Start: 30 @34635 has 1 MA's), (31, 34626), (37, 34593), (39, 34581), (40, 34578), (48, 34515), (53, 34461), (56, 34398), (59, 34356), (63, 34314), (67, 34263),

Gene: TBrady12\_42 Start: 34659, Stop: 34195, Start Num: 27

Candidate Starts for TBrady12\_42:

(18, 34698), (22, 34680), (Start: 27 @34659 has 110 MA's), (Start: 30 @34635 has 1 MA's), (31, 34626), (37, 34593), (39, 34581), (40, 34578), (48, 34515), (53, 34461), (56, 34398), (59, 34356), (63, 34314), (67, 34263),

Gene: Tarkin\_42 Start: 35661, Stop: 35194, Start Num: 27

Candidate Starts for Tarkin\_42:

(Start: 27 @35661 has 110 MA's), (Start: 30 @35637 has 1 MA's), (31, 35628), (48, 35514), (53, 35460), (56, 35397), (59, 35355), (63, 35313), (67, 35262),

Gene: Tchotchke\_78 Start: 48324, Stop: 48737, Start Num: 27

Candidate Starts for Tchotchke\_78:

(Start: 27 @48324 has 110 MA's), (31, 48357), (32, 48360), (36, 48387), (38, 48393), (48, 48513), (54, 48573), (63, 48714),

Gene: TeardropMSU\_39 Start: 34571, Stop: 34104, Start Num: 27

Candidate Starts for TeardropMSU\_39:

(14, 34631), (Start: 27 @34571 has 110 MA's), (Start: 30 @34547 has 1 MA's), (31, 34538), (48, 34424), (63, 34223), (67, 34172),

Gene: Teodoridan\_59 Start: 40032, Stop: 39670, Start Num: 27

Candidate Starts for Teodoridan\_59:

(Start: 27 @40032 has 110 MA's), (31, 39999), (32, 39996), (36, 39969), (38, 39963), (48, 39843), (54, 39783), (63, 39693),

Gene: Terminus\_40 Start: 34739, Stop: 34275, Start Num: 27

Candidate Starts for Terminus\_40:

(18, 34778), (22, 34760), (Start: 27 @34739 has 110 MA's), (Start: 30 @34715 has 1 MA's), (31, 34706), (37, 34673), (39, 34661), (40, 34658), (48, 34595), (53, 34541), (56, 34478), (59, 34436), (63, 34394), (67, 34343),

Gene: Thimble\_41 Start: 33841, Stop: 33377, Start Num: 27

Candidate Starts for Thimble\_41:

(18, 33880), (22, 33862), (Start: 27 @33841 has 110 MA's), (Start: 30 @33817 has 1 MA's), (31, 33808), (37, 33775), (39, 33763), (40, 33760), (48, 33697), (53, 33643), (56, 33580), (59, 33538), (63, 33496), (67, 33445),

Gene: Thresher\_42 Start: 35645, Stop: 35181, Start Num: 27

Candidate Starts for Thresher\_42:

(18, 35684), (22, 35666), (Start: 27 @35645 has 110 MA's), (Start: 30 @35621 has 1 MA's), (31, 35612), (37, 35579), (39, 35567), (40, 35564), (48, 35501), (53, 35447), (56, 35384), (59, 35342), (63, 35300), (67, 35249),

Gene: Toto\_41 Start: 35347, Stop: 34880, Start Num: 27

Candidate Starts for Toto\_41:

(Start: 10 @35440 has 2 MA's), (13, 35416), (Start: 27 @35347 has 110 MA's), (Start: 30 @35323 has 1 MA's), (31, 35314), (48, 35200), (53, 35146), (56, 35083), (59, 35041), (63, 34999), (67, 34948),

Gene: Traaww1\_38 Start: 34290, Stop: 33826, Start Num: 27

Candidate Starts for Traaww1\_38:

(Start: 27 @34290 has 110 MA's), (Start: 30 @34266 has 1 MA's), (31, 34257), (37, 34224), (39, 34212), (40, 34209), (44, 34161), (48, 34146), (53, 34092), (56, 34029), (59, 33987), (63, 33945), (67, 33894),

Gene: Tuco\_43 Start: 35855, Stop: 35388, Start Num: 27

Candidate Starts for Tuco\_43:

(Start: 10 @35948 has 2 MA's), (13, 35924), (Start: 27 @35855 has 110 MA's), (Start: 30 @35831 has 1 MA's), (31, 35822), (48, 35708), (53, 35654), (56, 35591), (59, 35549), (63, 35507), (67, 35456),

Gene: Wiggin\_43 Start: 35173, Stop: 34709, Start Num: 27

Candidate Starts for Wiggin\_43:

(Start: 27 @35173 has 110 MA's), (Start: 30 @35149 has 1 MA's), (31, 35140), (37, 35107), (39, 35095), (40, 35092), (48, 35029), (53, 34975), (56, 34912), (59, 34870), (63, 34828), (67, 34777),

Gene: Xandras\_42 Start: 34687, Stop: 34178, Start Num: 27

Candidate Starts for Xandras\_42:

(14, 34747), (Start: 27 @34687 has 110 MA's), (31, 34654), (32, 34651), (36, 34624), (38, 34618), (48, 34498), (53, 34444), (56, 34381), (59, 34339), (63, 34297), (67, 34246),

Gene: Xerxes\_58 Start: 37535, Stop: 37897, Start Num: 49

Candidate Starts for Xerxes\_58:

(17, 37292), (34, 37409), (44, 37505), (Start: 49 @37535 has 16 MA's), (52, 37568), (62, 37709), (64, 37721), (65, 37736), (66, 37760), (68, 37772), (69, 37778), (75, 37811),

Gene: xkcd\_41 Start: 34821, Stop: 34357, Start Num: 27

Candidate Starts for xkcd\_41:

(18, 34860), (22, 34842), (Start: 27 @34821 has 110 MA's), (Start: 30 @34797 has 1 MA's), (31, 34788), (37, 34755), (39, 34743), (40, 34740), (48, 34677), (53, 34623), (56, 34560), (59, 34518), (63, 34476), (67, 34425),