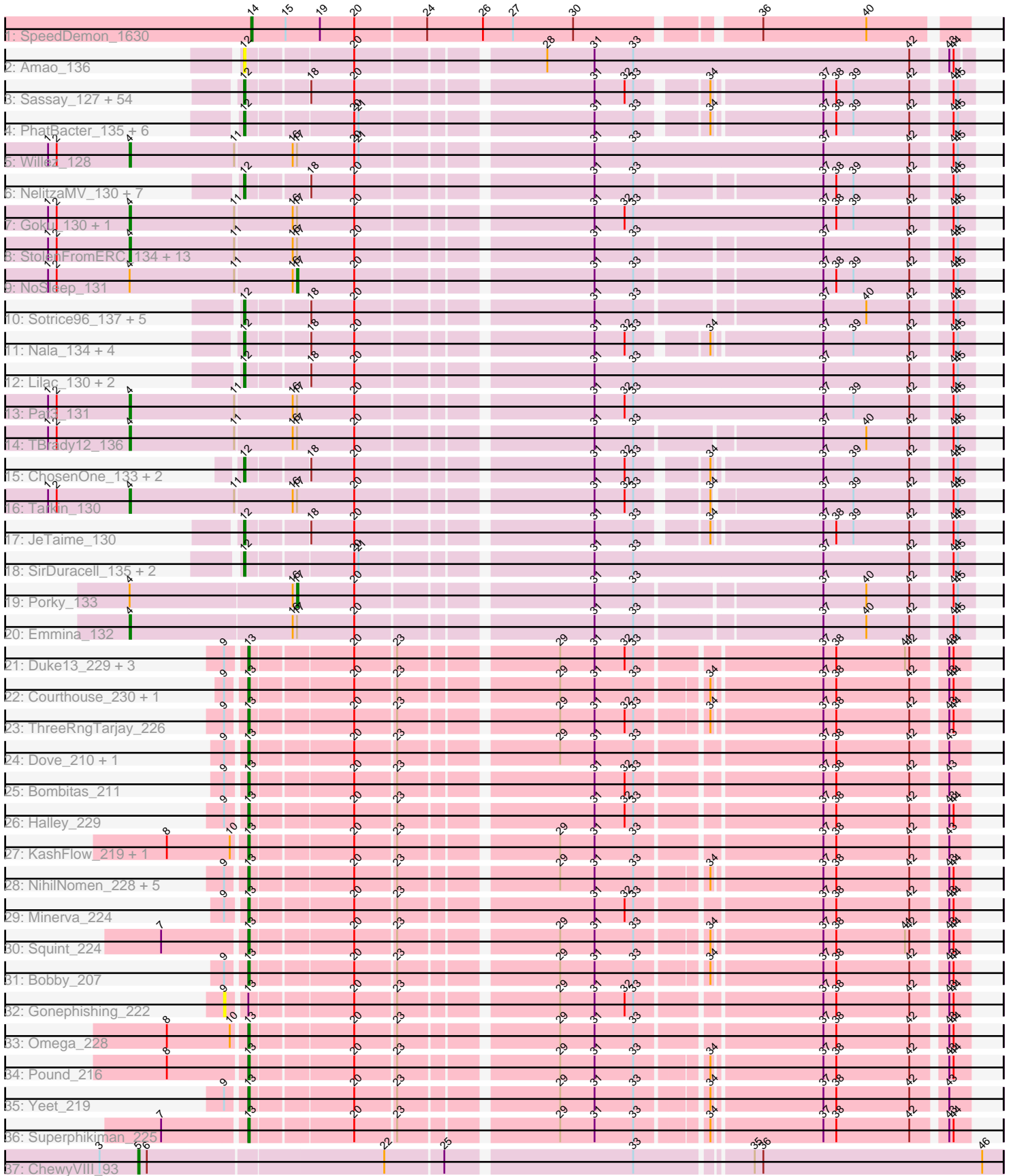


Pham 192393



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 192393 Report

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

Pham number 192393 has 144 members, 9 are drafts.

Phages represented in each track:

- Track 1 : SpeedDemon\_1630
- Track 2 : Amao\_136
- Track 3 : Sassay\_127, TeardropMSU\_133, IHOP\_136, SophKB\_130, ABCat\_133, Harella\_138, DrDrey\_135, MISSy\_134, DoctorDiddles\_130, Phrux\_128, Tomaszewski\_126, Contagion\_128, BaboJay\_131, BadStone\_133, Misfit\_132, Murphy\_131, Phaja\_136, Henry\_134, Gator\_134, Youngblood\_136, Bask21\_137, Mosby\_129, Petra64142\_134, Inca\_131, Asriel\_129, Filch\_134, OrionPax\_128, Palpatine\_132, CrystalP\_132, Dusk\_133, 244\_133, Barbarian\_132, BugsBunny\_131, BilboSwaggins\_130, Tuco\_138, Terminus\_135, Marshmallow\_133, Flypotenuse\_127, Ukulele\_127, Kostya\_133, Toto\_130, Simpliphy\_131, ShamWow\_132, Icee\_137, ChotaBhai\_136, MPhalcon\_133, RiverMonster\_131, Traaww1\_128, MadamMonkfish\_132, Glexan\_136, Nimrod\_132, Bruin\_129, Hopey\_131, Pumpkin\_132, Maxxinista\_134
- Track 4 : PhatBacter\_135, FireRed\_135, HufflyPuff\_134, YassJohnny\_128, Murica\_136, Policronamos\_135, Phaux\_134
- Track 5 : Willez\_128
- Track 6 : NelitzaMV\_130, Command613\_134, Daikon\_134, Thresher\_134, Elph10\_130, Balomoji\_132, Rakim\_133, Mindy\_135
- Track 7 : Goku\_130, Eureka\_131
- Track 8 : StolenFromERC\_134, Stank\_135, GooberAzure\_134, Adnama\_136, Argent26\_136, GoldenSpark\_136, Xandras\_132, Moldemort\_134, Easy2Say\_133, Gemini\_137, AmericanBeauty\_135, Lilizi\_132, Kimchi\_137, Goldilocks\_137
- Track 9 : NoSleep\_131
- Track 10 : Sotrice96\_137, Wiggin\_135, Highbury\_128, Saints25\_128, Hoonter\_135, Cactus\_140
- Track 11 : Nala\_134, Dumbo\_133, Rimmer\_129, Stark\_130, Cjw1\_130
- Track 12 : Lilac\_130, Bench\_134, Cookies\_133
- Track 13 : Pat3\_131
- Track 14 : TBrady12\_136
- Track 15 : ChosenOne\_133, Lilpickle\_132, Elite2014\_132
- Track 16 : Tarkin\_130
- Track 17 : JeTaime\_130
- Track 18 : SirDuracell\_135, Holt\_138, Manda\_133
- Track 19 : Porky\_133
- Track 20 : Emmina\_132
- Track 21 : Duke13\_229, Hughesyang\_227, EricMillard\_223, Bagrid\_233
- Track 22 : Courthouse\_230, DmpstrDiver\_226

- Track 23 : ThreeRngTarjay\_226
- Track 24 : Dove\_210, Schatzie\_217
- Track 25 : Bombitas\_211
- Track 26 : Halley\_229
- Track 27 : KashFlow\_219, Hannaconda\_217
- Track 28 : NihilNomen\_228, Phoebus\_224, Ariel\_233, Beem\_228, JuicyJay\_221, HokkenD\_217
- Track 29 : Minerva\_224
- Track 30 : Squint\_224
- Track 31 : Bobby\_207
- Track 32 : Gonephishing\_222
- Track 33 : Omega\_228
- Track 34 : Pound\_216
- Track 35 : Yeet\_219
- Track 36 : Superphikiman\_225
- Track 37 : ChewyVIII\_93

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

The start number called the most often in the published annotations is 12, it was called in 85 of the 135 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 244\_133, ABCat\_133, Amao\_136, Asriel\_129, BaboJay\_131, BadStone\_133, Balomoji\_132, Barbarian\_132, Bask21\_137, Bench\_134, BilboSwaggins\_130, Bruin\_129, BugsBunny\_131, Cactus\_140, ChosenOne\_133, ChotaBhai\_136, Cjw1\_130, Command613\_134, Contagion\_128, Cookies\_133, CrystalP\_132, Daikon\_134, DoctorDiddles\_130, DrDrey\_135, Dumbo\_133, Dusk\_133, Elite2014\_132, Elph10\_130, Filch\_134, FireRed\_135, Flypotenuse\_127, Gator\_134, Glexan\_136, Harella\_138, Henry\_134, Highbury\_128, Holt\_138, Hoonter\_135, Hopey\_131, HufflyPuff\_134, IHOP\_136, Icee\_137, Inca\_131, JeTaime\_130, Kostya\_133, Lilac\_130, Lilpickle\_132, MISSy\_134, MPhalcon\_133, MadamMonkfish\_132, Manda\_133, Marshmallow\_133, Maxxinista\_134, Mindy\_135, Misfit\_132, Mosby\_129, Murica\_136, Murphy\_131, Nala\_134, NelitzaMV\_130, Nimrod\_132, OrionPax\_128, Palpatine\_132, Petra64142\_134, Phaja\_136, PhatBacter\_135, Phaux\_134, Phrux\_128, Policronamos\_135, Pumpkin\_132, Rakim\_133, Rimmer\_129, RiverMonster\_131, Saints25\_128, Sassay\_127, ShamWow\_132, Simpliphy\_131, SirDuracell\_135, SophKB\_130, Sotrice96\_137, Stark\_130, TeardropMSU\_133, Terminus\_135, Thresher\_134, Tomaszewski\_126, Toto\_130, Traaww1\_128, Tuco\_138, Ukulele\_127, Wiggin\_135, YassJohnny\_128, Youngblood\_136,

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

- 

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

- Adnama\_136, AmericanBeauty\_135, Argent26\_136, Ariel\_233, Bagrid\_233, Beem\_228, Bobby\_207, Bombitas\_211, ChewyVIII\_93, Courthouse\_230, DmpstrDiver\_226, Dove\_210, Duke13\_229, Easy2Say\_133, Emmina\_132, EricMillard\_223, Eureka\_131, Gemini\_137, Goku\_130, GoldenSpark\_136,

Goldilocks\_137, Gonephishing\_222, GooberAzure\_134, Halley\_229, Hannaconda\_217, HokkenD\_217, Hughesyang\_227, JuicyJay\_221, KashFlow\_219, Kimchi\_137, Lilizi\_132, Minerva\_224, Moldemort\_134, NihilNomen\_228, NoSleep\_131, Omega\_228, Pat3\_131, Phoebus\_224, Porky\_133, Pound\_216, Schatzie\_217, SpeedDemon\_1630, Squint\_224, Stank\_135, StolenFromERC\_134, Superphikiman\_225, TBrady12\_136, Tarkin\_130, ThreeRngTarjay\_226, Willez\_128, Xandras\_132, Yeet\_219,

### Summary by start number:

#### Start 4:

- Found in 23 of 144 ( 16.0% ) of genes in pham
- Manual Annotations of this start: 21 of 135
- Called 91.3% of time when present
- Phage (with cluster) where this start called: Adnama\_136 (E), AmericanBeauty\_135 (E), Argent26\_136 (E), Easy2Say\_133 (E), Emmina\_132 (E), Eureka\_131 (E), Gemini\_137 (E), Goku\_130 (E), GoldenSpark\_136 (E), Goldilocks\_137 (E), GooberAzure\_134 (E), Kimchi\_137 (E), Lilizi\_132 (E), Moldemort\_134 (E), Pat3\_131 (E), Stank\_135 (E), StolenFromERC\_134 (E), TBrady12\_136 (E), Tarkin\_130 (E), Willez\_128 (E), Xandras\_132 (E),

#### Start 5:

- Found in 1 of 144 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 135
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ChewyVIII\_93 (singleton),

#### Start 9:

- Found in 21 of 144 ( 14.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 4.8% of time when present
- Phage (with cluster) where this start called: Gonephishing\_222 (J),

#### Start 12:

- Found in 92 of 144 ( 63.9% ) of genes in pham
- Manual Annotations of this start: 85 of 135
- Called 100.0% of time when present
- Phage (with cluster) where this start called: 244\_133 (E), ABCat\_133 (E), Amao\_136 (E), Asriel\_129 (E), BaboJay\_131 (E), BadStone\_133 (E), Balomoji\_132 (E), Barbarian\_132 (E), Bask21\_137 (E), Bench\_134 (E), BilboSwaggins\_130 (E), Bruin\_129 (E), BugsBunny\_131 (E), Cactus\_140 (E), ChosenOne\_133 (E), ChotaBhai\_136 (E), Cjw1\_130 (E), Command613\_134 (E), Contagion\_128 (E), Cookies\_133 (E), CrystalP\_132 (E), Daikon\_134 (E), DoctorDiddles\_130 (E), DrDrey\_135 (E), Dumbo\_133 (E), Dusk\_133 (E), Elite2014\_132 (E), Elph10\_130 (E), Filch\_134 (E), FireRed\_135 (E), Flypotenuse\_127 (E), Gator\_134 (E), Glexan\_136 (E), Harella\_138 (E), Henry\_134 (E), Highbury\_128 (E), Holt\_138 (E), Hoonter\_135 (E), Hopey\_131 (E), HufflyPuff\_134 (E), IHOP\_136 (E), Icee\_137 (E), Inca\_131 (E), JeTaimé\_130 (E), Kostya\_133 (E), Lilac\_130 (E), Lilpickle\_132 (E), MISSy\_134 (E), MPhalcon\_133 (E), MadamMonkfish\_132 (E), Manda\_133 (E), Marshmallow\_133 (E), Maxxinista\_134 (E), Mindy\_135 (E), Misfit\_132 (E), Mosby\_129 (E), Murica\_136 (E), Murphy\_131 (E), Nala\_134 (E), NelitzaMV\_130 (E), Nimrod\_132 (E), OrionPax\_128 (E), Palpatine\_132 (E), Petra64142\_134 (E), Phaja\_136 (E), PhatBacter\_135 (E), Phaux\_134 (E), Phrux\_128 (E), Policronamos\_135 (E),

Pumpkin\_132 (E), Rakim\_133 (E), Rimmer\_129 (E), RiverMonster\_131 (E), Saints25\_128 (E), Sassay\_127 (E), ShamWow\_132 (E), Simpliphy\_131 (E), SirDuracell\_135 (E), SophKB\_130 (E), Sotrice96\_137 (E), Stark\_130 (E), TeardropMSU\_133 (E), Terminus\_135 (E), Thresher\_134 (E), Tomaszewski\_126 (E), Toto\_130 (E), Traaww1\_128 (E), Tuco\_138 (E), Ukulele\_127 (E), Wiggin\_135 (E), YassJohnny\_128 (E), Youngblood\_136 (E),

Start 13:

- Found in 27 of 144 ( 18.8% ) of genes in pham
- Manual Annotations of this start: 25 of 135
- Called 96.3% of time when present
- Phage (with cluster) where this start called: Ariel\_233 (J), Bagrid\_233 (J), Beem\_228 (J), Bobby\_207 (J), Bombitas\_211 (J), Courthouse\_230 (J), DmpstrDiver\_226 (J), Dove\_210 (J), Duke13\_229 (J), EricMillard\_223 (J), Halley\_229 (J), Hannaconda\_217 (J), HokkenD\_217 (J), Hughesyang\_227 (J), JuicyJay\_221 (J), KashFlow\_219 (J), Minerva\_224 (J), NihilNomen\_228 (J), Omega\_228 (J), Phoebus\_224 (J), Pound\_216 (J), Schatzie\_217 (J), Squint\_224 (J), Superphikiman\_225 (J), ThreeRngTarjay\_226 (J), Yeet\_219 (J),

Start 14:

- Found in 1 of 144 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 135
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SpeedDemon\_1630 (DL),

Start 17:

- Found in 23 of 144 ( 16.0% ) of genes in pham
- Manual Annotations of this start: 2 of 135
- Called 8.7% of time when present
- Phage (with cluster) where this start called: NoSleep\_131 (E), Porky\_133 (E),

### **Summary by clusters:**

There are 4 clusters represented in this pham: singleton, J, E, DL,

Info for manual annotations of cluster DL:

- Start number 14 was manually annotated 1 time for cluster DL.

Info for manual annotations of cluster E:

- Start number 4 was manually annotated 21 times for cluster E.
- Start number 12 was manually annotated 85 times for cluster E.
- Start number 17 was manually annotated 2 times for cluster E.

Info for manual annotations of cluster J:

- Start number 13 was manually annotated 25 times for cluster J.

### **Gene Information:**

Gene: 244\_133 Start: 70573, Stop: 70115, Start Num: 12

Candidate Starts for 244\_133:

(Start: 12 @70573 has 85 MA's), (18, 70534), (20, 70504), (31, 70354), (32, 70333), (33, 70327), (34, 70285), (37, 70213), (38, 70204), (39, 70192), (42, 70153), (44, 70129), (45, 70126),

Gene: ABCat\_133 Start: 72121, Stop: 71663, Start Num: 12

Candidate Starts for ABCat\_133:

(Start: 12 @72121 has 85 MA's), (18, 72082), (20, 72052), (31, 71902), (32, 71881), (33, 71875), (34, 71833), (37, 71761), (38, 71752), (39, 71740), (42, 71701), (44, 71677), (45, 71674),

Gene: Adnama\_136 Start: 70869, Stop: 70321, Start Num: 4

Candidate Starts for Adnama\_136:

(1, 70926), (2, 70920), (Start: 4 @70869 has 21 MA's), (11, 70797), (16, 70758), (Start: 17 @70755 has 2 MA's), (20, 70716), (31, 70566), (33, 70539), (37, 70419), (42, 70359), (44, 70335), (45, 70332),

Gene: Amao\_136 Start: 71946, Stop: 71473, Start Num: 12

Candidate Starts for Amao\_136:

(Start: 12 @71946 has 85 MA's), (20, 71877), (28, 71760), (31, 71727), (33, 71700), (42, 71508), (43, 71487), (44, 71484),

Gene: AmericanBeauty\_135 Start: 70911, Stop: 70363, Start Num: 4

Candidate Starts for AmericanBeauty\_135:

(1, 70968), (2, 70962), (Start: 4 @70911 has 21 MA's), (11, 70839), (16, 70800), (Start: 17 @70797 has 2 MA's), (20, 70758), (31, 70608), (33, 70581), (37, 70461), (42, 70401), (44, 70377), (45, 70374),

Gene: Argent26\_136 Start: 70793, Stop: 70245, Start Num: 4

Candidate Starts for Argent26\_136:

(1, 70850), (2, 70844), (Start: 4 @70793 has 21 MA's), (11, 70721), (16, 70682), (Start: 17 @70679 has 2 MA's), (20, 70640), (31, 70490), (33, 70463), (37, 70343), (42, 70283), (44, 70259), (45, 70256),

Gene: Ariel\_233 Start: 105828, Stop: 105376, Start Num: 13

Candidate Starts for Ariel\_233:

(9, 105840), (Start: 13 @105828 has 25 MA's), (20, 105762), (23, 105735), (29, 105636), (31, 105612), (33, 105585), (34, 105543), (37, 105471), (38, 105462), (42, 105411), (43, 105390), (44, 105387),

Gene: Asriel\_129 Start: 69426, Stop: 68968, Start Num: 12

Candidate Starts for Asriel\_129:

(Start: 12 @69426 has 85 MA's), (18, 69387), (20, 69357), (31, 69207), (32, 69186), (33, 69180), (34, 69138), (37, 69066), (38, 69057), (39, 69045), (42, 69006), (44, 68982), (45, 68979),

Gene: BaboJay\_131 Start: 71740, Stop: 71282, Start Num: 12

Candidate Starts for BaboJay\_131:

(Start: 12 @71740 has 85 MA's), (18, 71701), (20, 71671), (31, 71521), (32, 71500), (33, 71494), (34, 71452), (37, 71380), (38, 71371), (39, 71359), (42, 71320), (44, 71296), (45, 71293),

Gene: BadStone\_133 Start: 71669, Stop: 71211, Start Num: 12

Candidate Starts for BadStone\_133:

(Start: 12 @71669 has 85 MA's), (18, 71630), (20, 71600), (31, 71450), (32, 71429), (33, 71423), (34, 71381), (37, 71309), (38, 71300), (39, 71288), (42, 71249), (44, 71225), (45, 71222),

Gene: Bagrid\_233 Start: 109850, Stop: 109392, Start Num: 13

Candidate Starts for Bagrid\_233:

(9, 109862), (Start: 13 @109850 has 25 MA's), (20, 109784), (23, 109757), (29, 109658), (31, 109634), (32, 109613), (33, 109607), (37, 109487), (38, 109478), (41, 109430), (42, 109427), (43,

109406), (44, 109403),

Gene: Balomoji\_132 Start: 71215, Stop: 70751, Start Num: 12

Candidate Starts for Balomoji\_132:

(Start: 12 @71215 has 85 MA's), (18, 71176), (20, 71146), (31, 70996), (33, 70969), (37, 70849), (38, 70840), (39, 70828), (42, 70789), (44, 70765), (45, 70762),

Gene: Barbarian\_132 Start: 69426, Stop: 68968, Start Num: 12

Candidate Starts for Barbarian\_132:

(Start: 12 @69426 has 85 MA's), (18, 69387), (20, 69357), (31, 69207), (32, 69186), (33, 69180), (34, 69138), (37, 69066), (38, 69057), (39, 69045), (42, 69006), (44, 68982), (45, 68979),

Gene: Bask21\_137 Start: 70592, Stop: 70134, Start Num: 12

Candidate Starts for Bask21\_137:

(Start: 12 @70592 has 85 MA's), (18, 70553), (20, 70523), (31, 70373), (32, 70352), (33, 70346), (34, 70304), (37, 70232), (38, 70223), (39, 70211), (42, 70172), (44, 70148), (45, 70145),

Gene: Beem\_228 Start: 108612, Stop: 108160, Start Num: 13

Candidate Starts for Beem\_228:

(9, 108624), (Start: 13 @108612 has 25 MA's), (20, 108546), (23, 108519), (29, 108420), (31, 108396), (33, 108369), (34, 108327), (37, 108255), (38, 108246), (42, 108195), (43, 108174), (44, 108171),

Gene: Bench\_134 Start: 71466, Stop: 71002, Start Num: 12

Candidate Starts for Bench\_134:

(Start: 12 @71466 has 85 MA's), (18, 71427), (20, 71397), (31, 71247), (33, 71220), (37, 71100), (42, 71040), (44, 71016), (45, 71013),

Gene: BilboSwaggins\_130 Start: 71706, Stop: 71248, Start Num: 12

Candidate Starts for BilboSwaggins\_130:

(Start: 12 @71706 has 85 MA's), (18, 71667), (20, 71637), (31, 71487), (32, 71466), (33, 71460), (34, 71418), (37, 71346), (38, 71337), (39, 71325), (42, 71286), (44, 71262), (45, 71259),

Gene: Bobby\_207 Start: 106620, Stop: 106168, Start Num: 13

Candidate Starts for Bobby\_207:

(9, 106632), (Start: 13 @106620 has 25 MA's), (20, 106554), (23, 106527), (29, 106428), (31, 106404), (33, 106377), (34, 106335), (37, 106263), (38, 106254), (42, 106203), (43, 106182), (44, 106179),

Gene: Bombitas\_211 Start: 105190, Stop: 104732, Start Num: 13

Candidate Starts for Bombitas\_211:

(9, 105202), (Start: 13 @105190 has 25 MA's), (20, 105124), (23, 105097), (31, 104974), (32, 104953), (33, 104947), (37, 104827), (38, 104818), (42, 104767), (43, 104746),

Gene: Bruin\_129 Start: 69850, Stop: 69392, Start Num: 12

Candidate Starts for Bruin\_129:

(Start: 12 @69850 has 85 MA's), (18, 69811), (20, 69781), (31, 69631), (32, 69610), (33, 69604), (34, 69562), (37, 69490), (38, 69481), (39, 69469), (42, 69430), (44, 69406), (45, 69403),

Gene: BugsBunny\_131 Start: 71165, Stop: 70707, Start Num: 12

Candidate Starts for BugsBunny\_131:

(Start: 12 @71165 has 85 MA's), (18, 71126), (20, 71096), (31, 70946), (32, 70925), (33, 70919), (34, 70877), (37, 70805), (38, 70796), (39, 70784), (42, 70745), (44, 70721), (45, 70718),

Gene: Cactus\_140 Start: 71263, Stop: 70799, Start Num: 12

Candidate Starts for Cactus\_140:

(Start: 12 @71263 has 85 MA's), (18, 71224), (20, 71194), (31, 71044), (33, 71017), (37, 70897), (40, 70867), (42, 70837), (44, 70813), (45, 70810),

Gene: ChewyVIII\_93 Start: 67567, Stop: 68139, Start Num: 5

Candidate Starts for ChewyVIII\_93:

(3, 67540), (Start: 5 @67567 has 1 MA's), (6, 67573), (22, 67732), (25, 67771), (33, 67894), (35, 67966), (36, 67972), (46, 68125),

Gene: ChosenOne\_133 Start: 70642, Stop: 70184, Start Num: 12

Candidate Starts for ChosenOne\_133:

(Start: 12 @70642 has 85 MA's), (18, 70603), (20, 70573), (31, 70423), (32, 70402), (33, 70396), (34, 70354), (37, 70282), (39, 70261), (42, 70222), (44, 70198), (45, 70195),

Gene: ChotaBhai\_136 Start: 71428, Stop: 70970, Start Num: 12

Candidate Starts for ChotaBhai\_136:

(Start: 12 @71428 has 85 MA's), (18, 71389), (20, 71359), (31, 71209), (32, 71188), (33, 71182), (34, 71140), (37, 71068), (38, 71059), (39, 71047), (42, 71008), (44, 70984), (45, 70981),

Gene: Cjw1\_130 Start: 71844, Stop: 71386, Start Num: 12

Candidate Starts for Cjw1\_130:

(Start: 12 @71844 has 85 MA's), (18, 71805), (20, 71775), (31, 71625), (32, 71604), (33, 71598), (34, 71556), (37, 71484), (39, 71463), (42, 71424), (44, 71400), (45, 71397),

Gene: Command613\_134 Start: 71208, Stop: 70744, Start Num: 12

Candidate Starts for Command613\_134:

(Start: 12 @71208 has 85 MA's), (18, 71169), (20, 71139), (31, 70989), (33, 70962), (37, 70842), (38, 70833), (39, 70821), (42, 70782), (44, 70758), (45, 70755),

Gene: Contagion\_128 Start: 70212, Stop: 69754, Start Num: 12

Candidate Starts for Contagion\_128:

(Start: 12 @70212 has 85 MA's), (18, 70173), (20, 70143), (31, 69993), (32, 69972), (33, 69966), (34, 69924), (37, 69852), (38, 69843), (39, 69831), (42, 69792), (44, 69768), (45, 69765),

Gene: Cookies\_133 Start: 71754, Stop: 71278, Start Num: 12

Candidate Starts for Cookies\_133:

(Start: 12 @71754 has 85 MA's), (18, 71715), (20, 71685), (31, 71535), (33, 71508), (37, 71376), (42, 71316), (44, 71292), (45, 71289),

Gene: Courthouse\_230 Start: 106688, Stop: 106236, Start Num: 13

Candidate Starts for Courthouse\_230:

(9, 106700), (Start: 13 @106688 has 25 MA's), (20, 106622), (23, 106595), (29, 106496), (31, 106472), (33, 106445), (34, 106403), (37, 106331), (38, 106322), (42, 106271), (43, 106250), (44, 106247),

Gene: CrystalP\_132 Start: 71706, Stop: 71248, Start Num: 12

Candidate Starts for CrystalP\_132:

(Start: 12 @71706 has 85 MA's), (18, 71667), (20, 71637), (31, 71487), (32, 71466), (33, 71460), (34, 71418), (37, 71346), (38, 71337), (39, 71325), (42, 71286), (44, 71262), (45, 71259),

Gene: Daikon\_134 Start: 70511, Stop: 70047, Start Num: 12



Candidate Starts for Daikon\_134:

(Start: 12 @70511 has 85 MA's), (18, 70472), (20, 70442), (31, 70292), (33, 70265), (37, 70145), (38, 70136), (39, 70124), (42, 70085), (44, 70061), (45, 70058),

Gene: DmpstrDiver\_226 Start: 107322, Stop: 106870, Start Num: 13

Candidate Starts for DmpstrDiver\_226:

(9, 107334), (Start: 13 @107322 has 25 MA's), (20, 107256), (23, 107229), (29, 107130), (31, 107106), (33, 107079), (34, 107037), (37, 106965), (38, 106956), (42, 106905), (43, 106884), (44, 106881),

Gene: DoctorDiddles\_130 Start: 70165, Stop: 69707, Start Num: 12

Candidate Starts for DoctorDiddles\_130:

(Start: 12 @70165 has 85 MA's), (18, 70126), (20, 70096), (31, 69946), (32, 69925), (33, 69919), (34, 69877), (37, 69805), (38, 69796), (39, 69784), (42, 69745), (44, 69721), (45, 69718),

Gene: Dove\_210 Start: 103730, Stop: 103272, Start Num: 13

Candidate Starts for Dove\_210:

(9, 103742), (Start: 13 @103730 has 25 MA's), (20, 103664), (23, 103637), (29, 103538), (31, 103514), (33, 103487), (37, 103367), (38, 103358), (42, 103307), (43, 103286),

Gene: DrDrey\_135 Start: 72902, Stop: 72444, Start Num: 12

Candidate Starts for DrDrey\_135:

(Start: 12 @72902 has 85 MA's), (18, 72863), (20, 72833), (31, 72683), (32, 72662), (33, 72656), (34, 72614), (37, 72542), (38, 72533), (39, 72521), (42, 72482), (44, 72458), (45, 72455),

Gene: Duke13\_229 Start: 108040, Stop: 107582, Start Num: 13

Candidate Starts for Duke13\_229:

(9, 108052), (Start: 13 @108040 has 25 MA's), (20, 107974), (23, 107947), (29, 107848), (31, 107824), (32, 107803), (33, 107797), (37, 107677), (38, 107668), (41, 107620), (42, 107617), (43, 107596), (44, 107593),

Gene: Dumbo\_133 Start: 70853, Stop: 70395, Start Num: 12

Candidate Starts for Dumbo\_133:

(Start: 12 @70853 has 85 MA's), (18, 70814), (20, 70784), (31, 70634), (32, 70613), (33, 70607), (34, 70565), (37, 70493), (39, 70472), (42, 70433), (44, 70409), (45, 70406),

Gene: Dusk\_133 Start: 71329, Stop: 70871, Start Num: 12

Candidate Starts for Dusk\_133:

(Start: 12 @71329 has 85 MA's), (18, 71290), (20, 71260), (31, 71110), (32, 71089), (33, 71083), (34, 71041), (37, 70969), (38, 70960), (39, 70948), (42, 70909), (44, 70885), (45, 70882),

Gene: Easy2Say\_133 Start: 71259, Stop: 70711, Start Num: 4

Candidate Starts for Easy2Say\_133:

(1, 71316), (2, 71310), (Start: 4 @71259 has 21 MA's), (11, 71187), (16, 71148), (Start: 17 @71145 has 2 MA's), (20, 71106), (31, 70956), (33, 70929), (37, 70809), (42, 70749), (44, 70725), (45, 70722),

Gene: Elite2014\_132 Start: 70641, Stop: 70183, Start Num: 12

Candidate Starts for Elite2014\_132:

(Start: 12 @70641 has 85 MA's), (18, 70602), (20, 70572), (31, 70422), (32, 70401), (33, 70395), (34, 70353), (37, 70281), (39, 70260), (42, 70221), (44, 70197), (45, 70194),

Gene: Elph10\_130 Start: 69960, Stop: 69496, Start Num: 12

Candidate Starts for Elph10\_130:

(Start: 12 @69960 has 85 MA's), (18, 69921), (20, 69891), (31, 69741), (33, 69714), (37, 69594), (38, 69585), (39, 69573), (42, 69534), (44, 69510), (45, 69507),

Gene: Emmina\_132 Start: 70211, Stop: 69663, Start Num: 4

Candidate Starts for Emmina\_132:

(Start: 4 @70211 has 21 MA's), (16, 70100), (Start: 17 @70097 has 2 MA's), (20, 70058), (31, 69908), (33, 69881), (37, 69761), (40, 69731), (42, 69701), (44, 69677), (45, 69674),

Gene: EricMillard\_223 Start: 108742, Stop: 108284, Start Num: 13

Candidate Starts for EricMillard\_223:

(9, 108754), (Start: 13 @108742 has 25 MA's), (20, 108676), (23, 108649), (29, 108550), (31, 108526), (32, 108505), (33, 108499), (37, 108379), (38, 108370), (41, 108322), (42, 108319), (43, 108298), (44, 108295),

Gene: Eureka\_131 Start: 71139, Stop: 70579, Start Num: 4

Candidate Starts for Eureka\_131:

(1, 71196), (2, 71190), (Start: 4 @71139 has 21 MA's), (11, 71067), (16, 71028), (Start: 17 @71025 has 2 MA's), (20, 70986), (31, 70836), (32, 70815), (33, 70809), (37, 70677), (38, 70668), (39, 70656), (42, 70617), (44, 70593), (45, 70590),

Gene: Filch\_134 Start: 70782, Stop: 70324, Start Num: 12

Candidate Starts for Filch\_134:

(Start: 12 @70782 has 85 MA's), (18, 70743), (20, 70713), (31, 70563), (32, 70542), (33, 70536), (34, 70494), (37, 70422), (38, 70413), (39, 70401), (42, 70362), (44, 70338), (45, 70335),

Gene: FireRed\_135 Start: 71291, Stop: 70833, Start Num: 12

Candidate Starts for FireRed\_135:

(Start: 12 @71291 has 85 MA's), (20, 71222), (21, 71219), (31, 71072), (33, 71045), (34, 71003), (37, 70931), (38, 70922), (39, 70910), (42, 70871), (44, 70847), (45, 70844),

Gene: Flypotenuse\_127 Start: 70080, Stop: 69622, Start Num: 12

Candidate Starts for Flypotenuse\_127:

(Start: 12 @70080 has 85 MA's), (18, 70041), (20, 70011), (31, 69861), (32, 69840), (33, 69834), (34, 69792), (37, 69720), (38, 69711), (39, 69699), (42, 69660), (44, 69636), (45, 69633),

Gene: Gator\_134 Start: 71620, Stop: 71162, Start Num: 12

Candidate Starts for Gator\_134:

(Start: 12 @71620 has 85 MA's), (18, 71581), (20, 71551), (31, 71401), (32, 71380), (33, 71374), (34, 71332), (37, 71260), (38, 71251), (39, 71239), (42, 71200), (44, 71176), (45, 71173),

Gene: Gemini\_137 Start: 71310, Stop: 70762, Start Num: 4

Candidate Starts for Gemini\_137:

(1, 71367), (2, 71361), (Start: 4 @71310 has 21 MA's), (11, 71238), (16, 71199), (Start: 17 @71196 has 2 MA's), (20, 71157), (31, 71007), (33, 70980), (37, 70860), (42, 70800), (44, 70776), (45, 70773),

Gene: Glexan\_136 Start: 71770, Stop: 71312, Start Num: 12

Candidate Starts for Glexan\_136:

(Start: 12 @71770 has 85 MA's), (18, 71731), (20, 71701), (31, 71551), (32, 71530), (33, 71524), (34, 71482), (37, 71410), (38, 71401), (39, 71389), (42, 71350), (44, 71326), (45, 71323),

Gene: Goku\_130 Start: 71448, Stop: 70888, Start Num: 4

Candidate Starts for Goku\_130:

(1, 71505), (2, 71499), (Start: 4 @71448 has 21 MA's), (11, 71376), (16, 71337), (Start: 17 @71334 has 2 MA's), (20, 71295), (31, 71145), (32, 71124), (33, 71118), (37, 70986), (38, 70977), (39, 70965), (42, 70926), (44, 70902), (45, 70899),

Gene: GoldenSpark\_136 Start: 70793, Stop: 70245, Start Num: 4

Candidate Starts for GoldenSpark\_136:

(1, 70850), (2, 70844), (Start: 4 @70793 has 21 MA's), (11, 70721), (16, 70682), (Start: 17 @70679 has 2 MA's), (20, 70640), (31, 70490), (33, 70463), (37, 70343), (42, 70283), (44, 70259), (45, 70256),

Gene: Goldilocks\_137 Start: 71389, Stop: 70841, Start Num: 4

Candidate Starts for Goldilocks\_137:

(1, 71446), (2, 71440), (Start: 4 @71389 has 21 MA's), (11, 71317), (16, 71278), (Start: 17 @71275 has 2 MA's), (20, 71236), (31, 71086), (33, 71059), (37, 70939), (42, 70879), (44, 70855), (45, 70852),

Gene: Gonephishing\_222 Start: 106099, Stop: 105629, Start Num: 9

Candidate Starts for Gonephishing\_222:

(9, 106099), (Start: 13 @106087 has 25 MA's), (20, 106021), (23, 105994), (29, 105895), (31, 105871), (32, 105850), (33, 105844), (37, 105724), (38, 105715), (42, 105664), (43, 105643), (44, 105640),

Gene: GooberAzure\_134 Start: 70793, Stop: 70245, Start Num: 4

Candidate Starts for GooberAzure\_134:

(1, 70850), (2, 70844), (Start: 4 @70793 has 21 MA's), (11, 70721), (16, 70682), (Start: 17 @70679 has 2 MA's), (20, 70640), (31, 70490), (33, 70463), (37, 70343), (42, 70283), (44, 70259), (45, 70256),

Gene: Halley\_229 Start: 107495, Stop: 107037, Start Num: 13

Candidate Starts for Halley\_229:

(9, 107507), (Start: 13 @107495 has 25 MA's), (20, 107429), (23, 107402), (31, 107279), (32, 107258), (33, 107252), (37, 107132), (38, 107123), (42, 107072), (43, 107051), (44, 107048),

Gene: Hannaconda\_217 Start: 107027, Stop: 106569, Start Num: 13

Candidate Starts for Hannaconda\_217:

(8, 107078), (10, 107036), (Start: 13 @107027 has 25 MA's), (20, 106961), (23, 106934), (29, 106835), (31, 106811), (33, 106784), (37, 106664), (38, 106655), (42, 106604), (43, 106583),

Gene: Harella\_138 Start: 72286, Stop: 71828, Start Num: 12

Candidate Starts for Harella\_138:

(Start: 12 @72286 has 85 MA's), (18, 72247), (20, 72217), (31, 72067), (32, 72046), (33, 72040), (34, 71998), (37, 71926), (38, 71917), (39, 71905), (42, 71866), (44, 71842), (45, 71839),

Gene: Henry\_134 Start: 71571, Stop: 71113, Start Num: 12

Candidate Starts for Henry\_134:

(Start: 12 @71571 has 85 MA's), (18, 71532), (20, 71502), (31, 71352), (32, 71331), (33, 71325), (34, 71283), (37, 71211), (38, 71202), (39, 71190), (42, 71151), (44, 71127), (45, 71124),

Gene: Highbury\_128 Start: 69055, Stop: 68591, Start Num: 12

Candidate Starts for Highbury\_128:

(Start: 12 @69055 has 85 MA's), (18, 69016), (20, 68986), (31, 68836), (33, 68809), (37, 68689), (40, 68659), (42, 68629), (44, 68605), (45, 68602),

Gene: HokkenD\_217 Start: 108333, Stop: 107881, Start Num: 13

Candidate Starts for HokkenD\_217:

(9, 108345), (Start: 13 @108333 has 25 MA's), (20, 108267), (23, 108240), (29, 108141), (31, 108117), (33, 108090), (34, 108048), (37, 107976), (38, 107967), (42, 107916), (43, 107895), (44, 107892),

Gene: Holt\_138 Start: 71715, Stop: 71239, Start Num: 12

Candidate Starts for Holt\_138:

(Start: 12 @71715 has 85 MA's), (20, 71646), (21, 71643), (31, 71496), (33, 71469), (37, 71337), (42, 71277), (44, 71253), (45, 71250),

Gene: Hoonter\_135 Start: 71202, Stop: 70738, Start Num: 12

Candidate Starts for Hoonter\_135:

(Start: 12 @71202 has 85 MA's), (18, 71163), (20, 71133), (31, 70983), (33, 70956), (37, 70836), (40, 70806), (42, 70776), (44, 70752), (45, 70749),

Gene: Hokey\_131 Start: 71209, Stop: 70751, Start Num: 12

Candidate Starts for Hokey\_131:

(Start: 12 @71209 has 85 MA's), (18, 71170), (20, 71140), (31, 70990), (32, 70969), (33, 70963), (34, 70921), (37, 70849), (38, 70840), (39, 70828), (42, 70789), (44, 70765), (45, 70762),

Gene: HufflyPuff\_134 Start: 71517, Stop: 71059, Start Num: 12

Candidate Starts for HufflyPuff\_134:

(Start: 12 @71517 has 85 MA's), (20, 71448), (21, 71445), (31, 71298), (33, 71271), (34, 71229), (37, 71157), (38, 71148), (39, 71136), (42, 71097), (44, 71073), (45, 71070),

Gene: Hughesyang\_227 Start: 108297, Stop: 107839, Start Num: 13

Candidate Starts for Hughesyang\_227:

(9, 108309), (Start: 13 @108297 has 25 MA's), (20, 108231), (23, 108204), (29, 108105), (31, 108081), (32, 108060), (33, 108054), (37, 107934), (38, 107925), (41, 107877), (42, 107874), (43, 107853), (44, 107850),

Gene: IHOP\_136 Start: 71145, Stop: 70687, Start Num: 12

Candidate Starts for IHOP\_136:

(Start: 12 @71145 has 85 MA's), (18, 71106), (20, 71076), (31, 70926), (32, 70905), (33, 70899), (34, 70857), (37, 70785), (38, 70776), (39, 70764), (42, 70725), (44, 70701), (45, 70698),

Gene: Icee\_137 Start: 71021, Stop: 70563, Start Num: 12

Candidate Starts for Icee\_137:

(Start: 12 @71021 has 85 MA's), (18, 70982), (20, 70952), (31, 70802), (32, 70781), (33, 70775), (34, 70733), (37, 70661), (38, 70652), (39, 70640), (42, 70601), (44, 70577), (45, 70574),

Gene: Inca\_131 Start: 69165, Stop: 68707, Start Num: 12

Candidate Starts for Inca\_131:

(Start: 12 @69165 has 85 MA's), (18, 69126), (20, 69096), (31, 68946), (32, 68925), (33, 68919), (34, 68877), (37, 68805), (38, 68796), (39, 68784), (42, 68745), (44, 68721), (45, 68718),

Gene: JeTaime\_130 Start: 70681, Stop: 70223, Start Num: 12

Candidate Starts for JeTaime\_130:

(Start: 12 @70681 has 85 MA's), (18, 70642), (20, 70612), (31, 70462), (33, 70435), (34, 70393), (37, 70321), (38, 70312), (39, 70300), (42, 70261), (44, 70237), (45, 70234),

Gene: JuicyJay\_221 Start: 108561, Stop: 108109, Start Num: 13

Candidate Starts for JuicyJay\_221:

(9, 108573), (Start: 13 @108561 has 25 MA's), (20, 108495), (23, 108468), (29, 108369), (31, 108345), (33, 108318), (34, 108276), (37, 108204), (38, 108195), (42, 108144), (43, 108123), (44, 108120),

Gene: KashFlow\_219 Start: 106921, Stop: 106463, Start Num: 13

Candidate Starts for KashFlow\_219:

(8, 106972), (10, 106930), (Start: 13 @106921 has 25 MA's), (20, 106855), (23, 106828), (29, 106729), (31, 106705), (33, 106678), (37, 106558), (38, 106549), (42, 106498), (43, 106477),

Gene: Kimchi\_137 Start: 71514, Stop: 70966, Start Num: 4

Candidate Starts for Kimchi\_137:

(1, 71571), (2, 71565), (Start: 4 @71514 has 21 MA's), (11, 71442), (16, 71403), (Start: 17 @71400 has 2 MA's), (20, 71361), (31, 71211), (33, 71184), (37, 71064), (42, 71004), (44, 70980), (45, 70977),

Gene: Kostya\_133 Start: 71247, Stop: 70789, Start Num: 12

Candidate Starts for Kostya\_133:

(Start: 12 @71247 has 85 MA's), (18, 71208), (20, 71178), (31, 71028), (32, 71007), (33, 71001), (34, 70959), (37, 70887), (38, 70878), (39, 70866), (42, 70827), (44, 70803), (45, 70800),

Gene: Lilac\_130 Start: 71659, Stop: 71183, Start Num: 12

Candidate Starts for Lilac\_130:

(Start: 12 @71659 has 85 MA's), (18, 71620), (20, 71590), (31, 71440), (33, 71413), (37, 71281), (42, 71221), (44, 71197), (45, 71194),

Gene: Lilizi\_132 Start: 71021, Stop: 70473, Start Num: 4

Candidate Starts for Lilizi\_132:

(1, 71078), (2, 71072), (Start: 4 @71021 has 21 MA's), (11, 70949), (16, 70910), (Start: 17 @70907 has 2 MA's), (20, 70868), (31, 70718), (33, 70691), (37, 70571), (42, 70511), (44, 70487), (45, 70484),

Gene: Lilpickle\_132 Start: 70641, Stop: 70183, Start Num: 12

Candidate Starts for Lilpickle\_132:

(Start: 12 @70641 has 85 MA's), (18, 70602), (20, 70572), (31, 70422), (32, 70401), (33, 70395), (34, 70353), (37, 70281), (39, 70260), (42, 70221), (44, 70197), (45, 70194),

Gene: MISSy\_134 Start: 71556, Stop: 71098, Start Num: 12

Candidate Starts for MISSy\_134:

(Start: 12 @71556 has 85 MA's), (18, 71517), (20, 71487), (31, 71337), (32, 71316), (33, 71310), (34, 71268), (37, 71196), (38, 71187), (39, 71175), (42, 71136), (44, 71112), (45, 71109),

Gene: MPhalcon\_133 Start: 70974, Stop: 70516, Start Num: 12

Candidate Starts for MPhalcon\_133:

(Start: 12 @70974 has 85 MA's), (18, 70935), (20, 70905), (31, 70755), (32, 70734), (33, 70728), (34, 70686), (37, 70614), (38, 70605), (39, 70593), (42, 70554), (44, 70530), (45, 70527),

Gene: MadamMonkfish\_132 Start: 70650, Stop: 70192, Start Num: 12

Candidate Starts for MadamMonkfish\_132:

(Start: 12 @70650 has 85 MA's), (18, 70611), (20, 70581), (31, 70431), (32, 70410), (33, 70404), (34, 70362), (37, 70290), (38, 70281), (39, 70269), (42, 70230), (44, 70206), (45, 70203),

Gene: Manda\_133 Start: 71091, Stop: 70615, Start Num: 12

Candidate Starts for Manda\_133:

(Start: 12 @71091 has 85 MA's), (20, 71022), (21, 71019), (31, 70872), (33, 70845), (37, 70713), (42, 70653), (44, 70629), (45, 70626),

Gene: Marshmallow\_133 Start: 71835, Stop: 71377, Start Num: 12

Candidate Starts for Marshmallow\_133:

(Start: 12 @71835 has 85 MA's), (18, 71796), (20, 71766), (31, 71616), (32, 71595), (33, 71589), (34, 71547), (37, 71475), (38, 71466), (39, 71454), (42, 71415), (44, 71391), (45, 71388),

Gene: Maxxinista\_134 Start: 70603, Stop: 70145, Start Num: 12

Candidate Starts for Maxxinista\_134:

(Start: 12 @70603 has 85 MA's), (18, 70564), (20, 70534), (31, 70384), (32, 70363), (33, 70357), (34, 70315), (37, 70243), (38, 70234), (39, 70222), (42, 70183), (44, 70159), (45, 70156),

Gene: Mindy\_135 Start: 70999, Stop: 70535, Start Num: 12

Candidate Starts for Mindy\_135:

(Start: 12 @70999 has 85 MA's), (18, 70960), (20, 70930), (31, 70780), (33, 70753), (37, 70633), (38, 70624), (39, 70612), (42, 70573), (44, 70549), (45, 70546),

Gene: Minerva\_224 Start: 105833, Stop: 105375, Start Num: 13

Candidate Starts for Minerva\_224:

(9, 105845), (Start: 13 @105833 has 25 MA's), (20, 105767), (23, 105740), (31, 105617), (32, 105596), (33, 105590), (37, 105470), (38, 105461), (42, 105410), (43, 105389), (44, 105386),

Gene: Misfit\_132 Start: 71848, Stop: 71390, Start Num: 12

Candidate Starts for Misfit\_132:

(Start: 12 @71848 has 85 MA's), (18, 71809), (20, 71779), (31, 71629), (32, 71608), (33, 71602), (34, 71560), (37, 71488), (38, 71479), (39, 71467), (42, 71428), (44, 71404), (45, 71401),

Gene: Moldemort\_134 Start: 70901, Stop: 70353, Start Num: 4

Candidate Starts for Moldemort\_134:

(1, 70958), (2, 70952), (Start: 4 @70901 has 21 MA's), (11, 70829), (16, 70790), (Start: 17 @70787 has 2 MA's), (20, 70748), (31, 70598), (33, 70571), (37, 70451), (42, 70391), (44, 70367), (45, 70364),

Gene: Mosby\_129 Start: 70212, Stop: 69754, Start Num: 12

Candidate Starts for Mosby\_129:

(Start: 12 @70212 has 85 MA's), (18, 70173), (20, 70143), (31, 69993), (32, 69972), (33, 69966), (34, 69924), (37, 69852), (38, 69843), (39, 69831), (42, 69792), (44, 69768), (45, 69765),

Gene: Murica\_136 Start: 72551, Stop: 72093, Start Num: 12

Candidate Starts for Murica\_136:

(Start: 12 @72551 has 85 MA's), (20, 72482), (21, 72479), (31, 72332), (33, 72305), (34, 72263), (37, 72191), (38, 72182), (39, 72170), (42, 72131), (44, 72107), (45, 72104),

Gene: Murphy\_131 Start: 70977, Stop: 70519, Start Num: 12

Candidate Starts for Murphy\_131:

(Start: 12 @70977 has 85 MA's), (18, 70938), (20, 70908), (31, 70758), (32, 70737), (33, 70731), (34, 70689), (37, 70617), (38, 70608), (39, 70596), (42, 70557), (44, 70533), (45, 70530),

Gene: Nala\_134 Start: 71263, Stop: 70805, Start Num: 12

Candidate Starts for Nala\_134:

(Start: 12 @71263 has 85 MA's), (18, 71224), (20, 71194), (31, 71044), (32, 71023), (33, 71017), (34, 70975), (37, 70903), (39, 70882), (42, 70843), (44, 70819), (45, 70816),

Gene: NelitzaMV\_130 Start: 69306, Stop: 68842, Start Num: 12

Candidate Starts for NelitzaMV\_130:

(Start: 12 @69306 has 85 MA's), (18, 69267), (20, 69237), (31, 69087), (33, 69060), (37, 68940), (38, 68931), (39, 68919), (42, 68880), (44, 68856), (45, 68853),

Gene: NihilNomen\_228 Start: 106600, Stop: 106148, Start Num: 13

Candidate Starts for NihilNomen\_228:

(9, 106612), (Start: 13 @106600 has 25 MA's), (20, 106534), (23, 106507), (29, 106408), (31, 106384), (33, 106357), (34, 106315), (37, 106243), (38, 106234), (42, 106183), (43, 106162), (44, 106159),

Gene: Nimrod\_132 Start: 71762, Stop: 71304, Start Num: 12

Candidate Starts for Nimrod\_132:

(Start: 12 @71762 has 85 MA's), (18, 71723), (20, 71693), (31, 71543), (32, 71522), (33, 71516), (34, 71474), (37, 71402), (38, 71393), (39, 71381), (42, 71342), (44, 71318), (45, 71315),

Gene: NoSleep\_131 Start: 70046, Stop: 69612, Start Num: 17

Candidate Starts for NoSleep\_131:

(1, 70217), (2, 70211), (Start: 4 @70160 has 21 MA's), (11, 70088), (16, 70049), (Start: 17 @70046 has 2 MA's), (20, 70007), (31, 69857), (33, 69830), (37, 69710), (38, 69701), (39, 69689), (42, 69650), (44, 69626), (45, 69623),

Gene: Omega\_228 Start: 108207, Stop: 107749, Start Num: 13

Candidate Starts for Omega\_228:

(8, 108258), (10, 108216), (Start: 13 @108207 has 25 MA's), (20, 108141), (23, 108114), (29, 108015), (31, 107991), (33, 107964), (37, 107844), (38, 107835), (42, 107784), (43, 107763), (44, 107760),

Gene: OrionPax\_128 Start: 70208, Stop: 69750, Start Num: 12

Candidate Starts for OrionPax\_128:

(Start: 12 @70208 has 85 MA's), (18, 70169), (20, 70139), (31, 69989), (32, 69968), (33, 69962), (34, 69920), (37, 69848), (38, 69839), (39, 69827), (42, 69788), (44, 69764), (45, 69761),

Gene: Palpatine\_132 Start: 71768, Stop: 71310, Start Num: 12

Candidate Starts for Palpatine\_132:

(Start: 12 @71768 has 85 MA's), (18, 71729), (20, 71699), (31, 71549), (32, 71528), (33, 71522), (34, 71480), (37, 71408), (38, 71399), (39, 71387), (42, 71348), (44, 71324), (45, 71321),

Gene: Pat3\_131 Start: 70546, Stop: 69986, Start Num: 4

Candidate Starts for Pat3\_131:

(1, 70603), (2, 70597), (Start: 4 @70546 has 21 MA's), (11, 70474), (16, 70435), (Start: 17 @70432 has 2 MA's), (20, 70393), (31, 70243), (32, 70222), (33, 70216), (37, 70084), (39, 70063), (42, 70024), (44, 70000), (45, 69997),

Gene: Petra64142\_134 Start: 71392, Stop: 70934, Start Num: 12

Candidate Starts for Petra64142\_134:

(Start: 12 @71392 has 85 MA's), (18, 71353), (20, 71323), (31, 71173), (32, 71152), (33, 71146), (34, 71104), (37, 71032), (38, 71023), (39, 71011), (42, 70972), (44, 70948), (45, 70945),

Gene: Phaja\_136 Start: 71150, Stop: 70692, Start Num: 12

Candidate Starts for Phaja\_136:

(Start: 12 @71150 has 85 MA's), (18, 71111), (20, 71081), (31, 70931), (32, 70910), (33, 70904), (34, 70862), (37, 70790), (38, 70781), (39, 70769), (42, 70730), (44, 70706), (45, 70703),

Gene: PhatBacter\_135 Start: 71291, Stop: 70833, Start Num: 12

Candidate Starts for PhatBacter\_135:

(Start: 12 @71291 has 85 MA's), (20, 71222), (21, 71219), (31, 71072), (33, 71045), (34, 71003), (37, 70931), (38, 70922), (39, 70910), (42, 70871), (44, 70847), (45, 70844),

Gene: Phaux\_134 Start: 71917, Stop: 71459, Start Num: 12

Candidate Starts for Phaux\_134:

(Start: 12 @71917 has 85 MA's), (20, 71848), (21, 71845), (31, 71698), (33, 71671), (34, 71629), (37, 71557), (38, 71548), (39, 71536), (42, 71497), (44, 71473), (45, 71470),

Gene: Phoebus\_224 Start: 109850, Stop: 109398, Start Num: 13

Candidate Starts for Phoebus\_224:

(9, 109862), (Start: 13 @109850 has 25 MA's), (20, 109784), (23, 109757), (29, 109658), (31, 109634), (33, 109607), (34, 109565), (37, 109493), (38, 109484), (42, 109433), (43, 109412), (44, 109409),

Gene: Phrux\_128 Start: 69995, Stop: 69537, Start Num: 12

Candidate Starts for Phrux\_128:

(Start: 12 @69995 has 85 MA's), (18, 69956), (20, 69926), (31, 69776), (32, 69755), (33, 69749), (34, 69707), (37, 69635), (38, 69626), (39, 69614), (42, 69575), (44, 69551), (45, 69548),

Gene: Policronamos\_135 Start: 71621, Stop: 71163, Start Num: 12

Candidate Starts for Policronamos\_135:

(Start: 12 @71621 has 85 MA's), (20, 71552), (21, 71549), (31, 71402), (33, 71375), (34, 71333), (37, 71261), (38, 71252), (39, 71240), (42, 71201), (44, 71177), (45, 71174),

Gene: Porky\_133 Start: 71114, Stop: 70680, Start Num: 17

Candidate Starts for Porky\_133:

(Start: 4 @71228 has 21 MA's), (16, 71117), (Start: 17 @71114 has 2 MA's), (20, 71075), (31, 70925), (33, 70898), (37, 70778), (40, 70748), (42, 70718), (44, 70694), (45, 70691),

Gene: Pound\_216 Start: 106092, Stop: 105640, Start Num: 13

Candidate Starts for Pound\_216:

(8, 106143), (Start: 13 @106092 has 25 MA's), (20, 106026), (23, 105999), (29, 105900), (31, 105876), (33, 105849), (34, 105807), (37, 105735), (38, 105726), (42, 105675), (43, 105654), (44, 105651),

Gene: Pumpkin\_132 Start: 70271, Stop: 69813, Start Num: 12

Candidate Starts for Pumpkin\_132:

(Start: 12 @70271 has 85 MA's), (18, 70232), (20, 70202), (31, 70052), (32, 70031), (33, 70025), (34, 69983), (37, 69911), (38, 69902), (39, 69890), (42, 69851), (44, 69827), (45, 69824),

Gene: Rakim\_133 Start: 70829, Stop: 70365, Start Num: 12

Candidate Starts for Rakim\_133:

(Start: 12 @70829 has 85 MA's), (18, 70790), (20, 70760), (31, 70610), (33, 70583), (37, 70463), (38, 70454), (39, 70442), (42, 70403), (44, 70379), (45, 70376),

Gene: Rimmer\_129 Start: 70730, Stop: 70272, Start Num: 12

Candidate Starts for Rimmer\_129:

(Start: 12 @70730 has 85 MA's), (18, 70691), (20, 70661), (31, 70511), (32, 70490), (33, 70484), (34, 70442), (37, 70370), (39, 70349), (42, 70310), (44, 70286), (45, 70283),

Gene: RiverMonster\_131 Start: 70890, Stop: 70432, Start Num: 12

Candidate Starts for RiverMonster\_131:



(Start: 12 @70890 has 85 MA's), (18, 70851), (20, 70821), (31, 70671), (32, 70650), (33, 70644), (34, 70602), (37, 70530), (38, 70521), (39, 70509), (42, 70470), (44, 70446), (45, 70443),

Gene: Saints25\_128 Start: 69055, Stop: 68591, Start Num: 12

Candidate Starts for Saints25\_128:

(Start: 12 @69055 has 85 MA's), (18, 69016), (20, 68986), (31, 68836), (33, 68809), (37, 68689), (40, 68659), (42, 68629), (44, 68605), (45, 68602),

Gene: Sassay\_127 Start: 69174, Stop: 68716, Start Num: 12

Candidate Starts for Sassay\_127:

(Start: 12 @69174 has 85 MA's), (18, 69135), (20, 69105), (31, 68955), (32, 68934), (33, 68928), (34, 68886), (37, 68814), (38, 68805), (39, 68793), (42, 68754), (44, 68730), (45, 68727),

Gene: Schatzie\_217 Start: 106558, Stop: 106100, Start Num: 13

Candidate Starts for Schatzie\_217:

(9, 106570), (Start: 13 @106558 has 25 MA's), (20, 106492), (23, 106465), (29, 106366), (31, 106342), (33, 106315), (37, 106195), (38, 106186), (42, 106135), (43, 106114),

Gene: ShamWow\_132 Start: 71707, Stop: 71249, Start Num: 12

Candidate Starts for ShamWow\_132:

(Start: 12 @71707 has 85 MA's), (18, 71668), (20, 71638), (31, 71488), (32, 71467), (33, 71461), (34, 71419), (37, 71347), (38, 71338), (39, 71326), (42, 71287), (44, 71263), (45, 71260),

Gene: Simpliphy\_131 Start: 70461, Stop: 70003, Start Num: 12

Candidate Starts for Simpliphy\_131:

(Start: 12 @70461 has 85 MA's), (18, 70422), (20, 70392), (31, 70242), (32, 70221), (33, 70215), (34, 70173), (37, 70101), (38, 70092), (39, 70080), (42, 70041), (44, 70017), (45, 70014),

Gene: SirDuracell\_135 Start: 71323, Stop: 70847, Start Num: 12

Candidate Starts for SirDuracell\_135:

(Start: 12 @71323 has 85 MA's), (20, 71254), (21, 71251), (31, 71104), (33, 71077), (37, 70945), (42, 70885), (44, 70861), (45, 70858),

Gene: SophKB\_130 Start: 70806, Stop: 70348, Start Num: 12

Candidate Starts for SophKB\_130:

(Start: 12 @70806 has 85 MA's), (18, 70767), (20, 70737), (31, 70587), (32, 70566), (33, 70560), (34, 70518), (37, 70446), (38, 70437), (39, 70425), (42, 70386), (44, 70362), (45, 70359),

Gene: Sotrice96\_137 Start: 72007, Stop: 71543, Start Num: 12

Candidate Starts for Sotrice96\_137:

(Start: 12 @72007 has 85 MA's), (18, 71968), (20, 71938), (31, 71788), (33, 71761), (37, 71641), (40, 71611), (42, 71581), (44, 71557), (45, 71554),

Gene: SpeedDemon\_1630 Start: 91078, Stop: 90608, Start Num: 14

Candidate Starts for SpeedDemon\_1630:

(Start: 14 @91078 has 1 MA's), (15, 91054), (19, 91030), (20, 91006), (24, 90958), (26, 90919), (27, 90898), (30, 90856), (36, 90742), (40, 90670),

Gene: Squint\_224 Start: 105830, Stop: 105378, Start Num: 13

Candidate Starts for Squint\_224:

(7, 105884), (Start: 13 @105830 has 25 MA's), (20, 105764), (23, 105737), (29, 105638), (31, 105614), (33, 105587), (34, 105545), (37, 105473), (38, 105464), (41, 105416), (42, 105413), (43, 105392), (44, 105389),

Gene: Stank\_135 Start: 71586, Stop: 71038, Start Num: 4

Candidate Starts for Stank\_135:

(1, 71643), (2, 71637), (Start: 4 @71586 has 21 MA's), (11, 71514), (16, 71475), (Start: 17 @71472 has 2 MA's), (20, 71433), (31, 71283), (33, 71256), (37, 71136), (42, 71076), (44, 71052), (45, 71049),

Gene: Stark\_130 Start: 70709, Stop: 70251, Start Num: 12

Candidate Starts for Stark\_130:

(Start: 12 @70709 has 85 MA's), (18, 70670), (20, 70640), (31, 70490), (32, 70469), (33, 70463), (34, 70421), (37, 70349), (39, 70328), (42, 70289), (44, 70265), (45, 70262),

Gene: StolenFromERC\_134 Start: 70931, Stop: 70383, Start Num: 4

Candidate Starts for StolenFromERC\_134:

(1, 70988), (2, 70982), (Start: 4 @70931 has 21 MA's), (11, 70859), (16, 70820), (Start: 17 @70817 has 2 MA's), (20, 70778), (31, 70628), (33, 70601), (37, 70481), (42, 70421), (44, 70397), (45, 70394),

Gene: Superphikiman\_225 Start: 105649, Stop: 105197, Start Num: 13

Candidate Starts for Superphikiman\_225:

(7, 105703), (Start: 13 @105649 has 25 MA's), (20, 105583), (23, 105556), (29, 105457), (31, 105433), (33, 105406), (34, 105364), (37, 105292), (38, 105283), (42, 105232), (43, 105211), (44, 105208),

Gene: TBrady12\_136 Start: 71023, Stop: 70475, Start Num: 4

Candidate Starts for TBrady12\_136:

(1, 71080), (2, 71074), (Start: 4 @71023 has 21 MA's), (11, 70951), (16, 70912), (Start: 17 @70909 has 2 MA's), (20, 70870), (31, 70720), (33, 70693), (37, 70573), (40, 70543), (42, 70513), (44, 70489), (45, 70486),

Gene: Tarkin\_130 Start: 71598, Stop: 71056, Start Num: 4

Candidate Starts for Tarkin\_130:

(1, 71655), (2, 71649), (Start: 4 @71598 has 21 MA's), (11, 71526), (16, 71487), (Start: 17 @71484 has 2 MA's), (20, 71445), (31, 71295), (32, 71274), (33, 71268), (34, 71226), (37, 71154), (39, 71133), (42, 71094), (44, 71070), (45, 71067),

Gene: TeardropMSU\_133 Start: 70875, Stop: 70417, Start Num: 12

Candidate Starts for TeardropMSU\_133:

(Start: 12 @70875 has 85 MA's), (18, 70836), (20, 70806), (31, 70656), (32, 70635), (33, 70629), (34, 70587), (37, 70515), (38, 70506), (39, 70494), (42, 70455), (44, 70431), (45, 70428),

Gene: Terminus\_135 Start: 71848, Stop: 71390, Start Num: 12

Candidate Starts for Terminus\_135:

(Start: 12 @71848 has 85 MA's), (18, 71809), (20, 71779), (31, 71629), (32, 71608), (33, 71602), (34, 71560), (37, 71488), (38, 71479), (39, 71467), (42, 71428), (44, 71404), (45, 71401),

Gene: ThreeRngTarjay\_226 Start: 109071, Stop: 108619, Start Num: 13

Candidate Starts for ThreeRngTarjay\_226:

(9, 109083), (Start: 13 @109071 has 25 MA's), (20, 109005), (23, 108978), (29, 108879), (31, 108855), (32, 108834), (33, 108828), (34, 108786), (37, 108714), (38, 108705), (42, 108654), (43, 108633), (44, 108630),

Gene: Thresher\_134 Start: 71775, Stop: 71311, Start Num: 12

Candidate Starts for Thresher\_134:

(Start: 12 @71775 has 85 MA's), (18, 71736), (20, 71706), (31, 71556), (33, 71529), (37, 71409), (38, 71400), (39, 71388), (42, 71349), (44, 71325), (45, 71322),

Gene: Tomaszewski\_126 Start: 70386, Stop: 69928, Start Num: 12

Candidate Starts for Tomaszewski\_126:

(Start: 12 @70386 has 85 MA's), (18, 70347), (20, 70317), (31, 70167), (32, 70146), (33, 70140), (34, 70098), (37, 70026), (38, 70017), (39, 70005), (42, 69966), (44, 69942), (45, 69939),

Gene: Toto\_130 Start: 71707, Stop: 71249, Start Num: 12

Candidate Starts for Toto\_130:

(Start: 12 @71707 has 85 MA's), (18, 71668), (20, 71638), (31, 71488), (32, 71467), (33, 71461), (34, 71419), (37, 71347), (38, 71338), (39, 71326), (42, 71287), (44, 71263), (45, 71260),

Gene: Traaww1\_128 Start: 70255, Stop: 69797, Start Num: 12

Candidate Starts for Traaww1\_128:

(Start: 12 @70255 has 85 MA's), (18, 70216), (20, 70186), (31, 70036), (32, 70015), (33, 70009), (34, 69967), (37, 69895), (38, 69886), (39, 69874), (42, 69835), (44, 69811), (45, 69808),

Gene: Tuco\_138 Start: 72934, Stop: 72476, Start Num: 12

Candidate Starts for Tuco\_138:

(Start: 12 @72934 has 85 MA's), (18, 72895), (20, 72865), (31, 72715), (32, 72694), (33, 72688), (34, 72646), (37, 72574), (38, 72565), (39, 72553), (42, 72514), (44, 72490), (45, 72487),

Gene: Ukulele\_127 Start: 70270, Stop: 69812, Start Num: 12

Candidate Starts for Ukulele\_127:

(Start: 12 @70270 has 85 MA's), (18, 70231), (20, 70201), (31, 70051), (32, 70030), (33, 70024), (34, 69982), (37, 69910), (38, 69901), (39, 69889), (42, 69850), (44, 69826), (45, 69823),

Gene: Wiggin\_135 Start: 70932, Stop: 70468, Start Num: 12

Candidate Starts for Wiggin\_135:

(Start: 12 @70932 has 85 MA's), (18, 70893), (20, 70863), (31, 70713), (33, 70686), (37, 70566), (40, 70536), (42, 70506), (44, 70482), (45, 70479),

Gene: Willez\_128 Start: 69661, Stop: 69101, Start Num: 4

Candidate Starts for Willez\_128:

(1, 69718), (2, 69712), (Start: 4 @69661 has 21 MA's), (11, 69589), (16, 69550), (Start: 17 @69547 has 2 MA's), (20, 69508), (21, 69505), (31, 69358), (33, 69331), (37, 69199), (42, 69139), (44, 69115), (45, 69112),

Gene: Xandras\_132 Start: 70840, Stop: 70292, Start Num: 4

Candidate Starts for Xandras\_132:

(1, 70897), (2, 70891), (Start: 4 @70840 has 21 MA's), (11, 70768), (16, 70729), (Start: 17 @70726 has 2 MA's), (20, 70687), (31, 70537), (33, 70510), (37, 70390), (42, 70330), (44, 70306), (45, 70303),

Gene: YassJohnny\_128 Start: 69195, Stop: 68737, Start Num: 12

Candidate Starts for YassJohnny\_128:

(Start: 12 @69195 has 85 MA's), (20, 69126), (21, 69123), (31, 68976), (33, 68949), (34, 68907), (37, 68835), (38, 68826), (39, 68814), (42, 68775), (44, 68751), (45, 68748),

Gene: Yeet\_219 Start: 106651, Stop: 106199, Start Num: 13

Candidate Starts for Yeet\_219:

(9, 106663), (Start: 13 @106651 has 25 MA's), (20, 106585), (23, 106558), (29, 106459), (31, 106435), (33, 106408), (34, 106366), (37, 106294), (38, 106285), (42, 106234), (43, 106213),

Gene: Youngblood\_136 Start: 71345, Stop: 70887, Start Num: 12

Candidate Starts for Youngblood\_136:

(Start: 12 @71345 has 85 MA's), (18, 71306), (20, 71276), (31, 71126), (32, 71105), (33, 71099), (34, 71057), (37, 70985), (38, 70976), (39, 70964), (42, 70925), (44, 70901), (45, 70898),