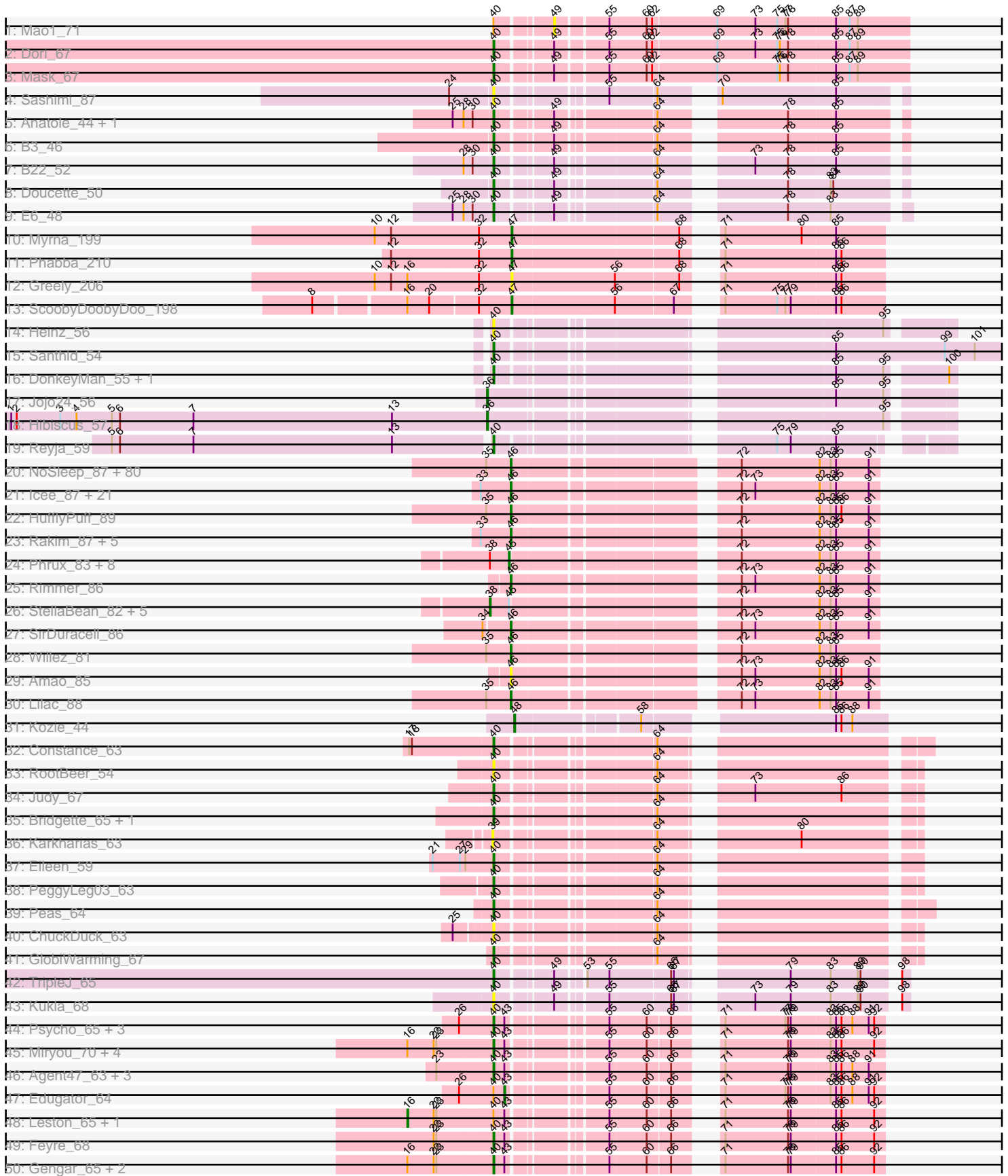
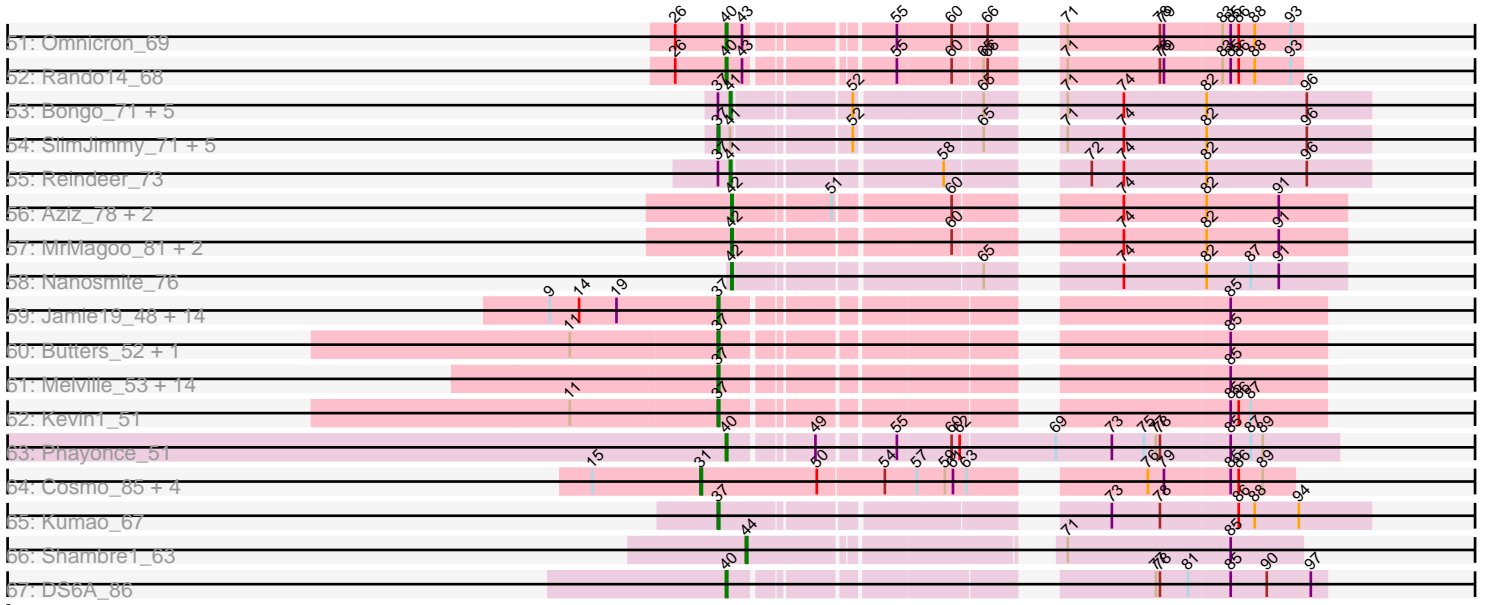


Pham 163323



Pham 163323



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 163323 Report

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

Pham number 163323 has 249 members, 25 are drafts.

Phages represented in each track:

- Track 1 : Mao1\_71
- Track 2 : Dori\_67
- Track 3 : Mask\_67
- Track 4 : Sashimi\_87
- Track 5 : Anatole\_44, E1\_44
- Track 6 : B3\_46
- Track 7 : B22\_52
- Track 8 : Doucette\_50
- Track 9 : E6\_48
- Track 10 : Myrna\_199
- Track 11 : Phabba\_210
- Track 12 : Greely\_206
- Track 13 : ScoobyDoobyDoo\_198
- Track 14 : Heinz\_56
- Track 15 : Santhid\_54
- Track 16 : DonkeyMan\_55, Tarzan\_57
- Track 17 : Jojo24\_56
- Track 18 : Hibiscus\_57
- Track 19 : Reyja\_59
- Track 20 : NoSleep\_87, GoldenSpark\_90, ABCat\_83, MPhalcon\_87, Bench\_89, MISSy\_87, Petra64142\_90, Filch\_87, Porky\_85, Elite2014\_85, Tarkin\_85, FireRed\_90, Palpatine\_88, Highbury\_85, Murica\_89, Maxxinista\_88, Czyszczone1\_87, Hopey\_86, Lilpickle\_85, Misfit\_87, Emmina\_86, Mosby\_82, NelitzaMV\_84, Pumpkin\_89, Dusk\_83, Contagion\_82, Pharsalus\_83, Terminus\_89, Command613\_88, Elph10\_86, BugsBunny\_86, ChosenOne\_86, AmericanBeauty\_93, Thresher\_88, Simpliphy\_85, Marshmallow\_84, Phaja\_84, Youngblood\_89, Stark\_87, Tomaszewski\_81, RiverMonster\_86, Cjw1\_86, TeardropMSU\_82, Ukulele\_81, Sassay\_81, Nimrod\_87, Kostya\_86, Policronamos\_90, Quallification\_87, TBrady12\_89, SophKB\_83, Paperbeatsrock\_85, Kanye\_83, Argent26\_90, Buck\_87, Lilizi\_87, Dumbo\_86, Nala\_88, Stank\_89, Holt\_91, GooberAzure\_89, DrDrey\_86, Xandras\_85, BadStone\_83, MadamMonkfish\_86, OrionPax\_85, Murphy\_86, Phaux\_88, xkcd\_89, Gemini\_91, Goku\_85, PhatBacter\_90, Bruin\_83, Miniwave\_81, Eureka\_85, HanKaySha\_86, Saints25\_85, JeTaime\_86, Tuco\_87, ShereKhan\_84, IHOP\_84
- Track 21 : Icee\_87, Adnama\_90, Traaww1\_82, Glexan\_85, Balomoji\_86, Gator\_84, Sotrice96\_87, Cookies\_83, Bask21\_86, Cactus\_89, Hoonter\_89, Wiggin\_88, Harella\_86, Asriel\_85, Barbarian\_85, Moldemort\_89, Flypotenuse\_82,

DoctorDiddles\_85, Daikon\_88, BigBubba\_86, ChotaBhai\_86, Pat3\_84

- Track 22 : HufflyPuff\_89
- Track 23 : Rakim\_87, Myrale\_86, Gage\_88, StolenFromERC\_89, Kimchi\_90, Goldilocks\_89
- Track 24 : Phrux\_83, CrystalP\_85, 244\_87, ShamWow\_86, BaboJay\_84, Manda\_88, Henry\_84, Inca\_83, YassJohnny\_83
- Track 25 : Rimmer\_86
- Track 26 : StellaBean\_82, Easy2Say\_87, Teaspoon\_83, Mindy\_85, Toto\_84, BilboSwaggins\_85
- Track 27 : SirDuracell\_86
- Track 28 : Willez\_81
- Track 29 : Amao\_85
- Track 30 : Lilac\_88
- Track 31 : Kozie\_44
- Track 32 : Constance\_63
- Track 33 : RootBeer\_54
- Track 34 : Judy\_67
- Track 35 : Bridgette\_65, Pucara\_59
- Track 36 : Karkharias\_63
- Track 37 : Eileen\_59
- Track 38 : PeggyLeg03\_63
- Track 39 : Peas\_64
- Track 40 : ChuckDuck\_63
- Track 41 : GlobiWarming\_67
- Track 42 : TripleJ\_65
- Track 43 : Kukla\_68
- Track 44 : Psycho\_65, Dadosky\_67, AlleyCat\_67, Larva\_66
- Track 45 : Miryou\_70, Waterfoul\_67, SoSeph\_66, Heftyboy\_66, Thyatira\_68
- Track 46 : Agent47\_63, InvictusManeo\_63, Kratio\_63, Collard\_63
- Track 47 : Edugator\_64
- Track 48 : Leston\_65, Guillsminger\_66
- Track 49 : Feyre\_68
- Track 50 : Gengar\_65, Paola\_65, OkiRoe\_66
- Track 51 : Omnicron\_69
- Track 52 : Rando14\_68
- Track 53 : Bongo\_71, IPhane7\_71, PegLeg\_70, Bricole\_70, LilhomieP\_71, Auspice\_71
- Track 54 : SlimJimmy\_71, Diminimus\_72, Dulcita\_72, TyDawg\_71, Skinny\_74, Glaske16\_73
- Track 55 : Reindeer\_73
- Track 56 : Aziz\_78, GenevaB15\_79, Estes\_80
- Track 57 : MrMagoo\_81, GardenSalsa\_80, Rey\_78
- Track 58 : Nanosmite\_76
- Track 59 : Jamie19\_48, ShrimpFriedEgg\_54, Nенаe\_54, Charlie\_50, Purgamenstris\_54, Raymond7\_48, Panchino\_47, BabeRuth\_55, Redi\_54, Andies\_47, PhancyPhin\_54, SpongeBob\_48, Bosection6\_50, Phrann\_51, Snekmaggedon\_48
- Track 60 : Butters\_52, Rubeelu\_52
- Track 61 : Melville\_53, Fulbright\_48, Parmesanjohn\_49, Phloss\_47, Magsby\_49, Schnauzer\_50, Gex\_49, Tapioca\_51, Silvafighter\_50, Chewbacca\_51, Pipsqueaks\_49, Smurph\_49, Xerxes\_49, Duplicity\_49, Carcharodon\_49
- Track 62 : Kevin1\_51
- Track 63 : Phayonce\_51

- Track 64 : Cosmo\_85, EniyanLRS\_81, Azrael100\_84, Wildcat\_85, MaryV\_85
- Track 65 : Kumao\_67
- Track 66 : Shambre1\_63
- Track 67 : DS6A\_86

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

The start number called the most often in the published annotations is 46, it was called in 107 of the 224 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ABCat\_83, Adnama\_90, Amao\_85, AmericanBeauty\_93, Argent26\_90, Asriel\_85, BadStone\_83, Balomoji\_86, Barbarian\_85, Bask21\_86, Bench\_89, BigBubba\_86, Bruin\_83, Buck\_87, BugsBunny\_86, Cactus\_89, ChosenOne\_86, ChotaBhai\_86, Cjw1\_86, Command613\_88, Contagion\_82, Cookies\_83, Czyszczonek\_87, Daikon\_88, DoctorDiddles\_85, DrDrey\_86, Dumbo\_86, Dusk\_83, Elite2014\_85, Elph10\_86, Emmina\_86, Eureka\_85, Filch\_87, FireRed\_90, Flypotenuse\_82, Gage\_88, Gator\_84, Gemini\_91, Glexan\_85, Goku\_85, GoldenSpark\_90, Goldilocks\_89, GooberAzure\_89, HanKaySha\_86, Harella\_86, Highbury\_85, Holt\_91, Hoonter\_89, Hopey\_86, HufflyPuff\_89, IHOP\_84, Icee\_87, JeTaime\_86, Kanye\_83, Kimchi\_90, Kostya\_86, Lilac\_88, Lilizi\_87, Lilpickle\_85, MISSy\_87, MPhalcon\_87, MadamMonkfish\_86, Marshmallow\_84, Maxxinista\_88, Miniwave\_81, Misfit\_87, Moldemort\_89, Mosby\_82, Murica\_89, Murphy\_86, Myrale\_86, Nala\_88, NelitzaMV\_84, Nimrod\_87, NoSleep\_87, OrionPax\_85, Palpatine\_88, Paperbeatsrock\_85, Pat3\_84, Petra64142\_90, Phaja\_84, Pharsalus\_83, PhatBacter\_90, Phaux\_88, Policronamos\_90, Porky\_85, Pumpkin\_89, Quallification\_87, Rakim\_87, Rimmer\_86, RiverMonster\_86, Saints25\_85, Sassay\_81, ShereKhan\_84, Simpliphy\_85, SirDuracell\_86, SophKB\_83, Sotrice96\_87, Stank\_89, Stark\_87, StolenFromERC\_89, TBrady12\_89, Tarkin\_85, TeardropMSU\_82, Terminus\_89, Thresher\_88, Tomaszewski\_81, Traaww1\_82, Tuco\_87, Ukulele\_81, Wiggin\_88, Willez\_81, Xandras\_85, Youngblood\_89, xkcd\_89,

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

- 

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

- 244\_87, Agent47\_63, AlleyCat\_67, Anatole\_44, Andies\_47, Auspice\_71, Aziz\_78, Azrael100\_84, B22\_52, B3\_46, BabeRuth\_55, BaboJay\_84, BilboSwaggins\_85, Bongo\_71, Bosection6\_50, Bricole\_70, Bridgette\_65, Butters\_52, Carcharodon\_49, Charlie\_50, Chewbacca\_51, ChuckDuck\_63, Collard\_63, Constance\_63, Cosmo\_85, CrystalP\_85, DS6A\_86, Dadosky\_67, Diminimus\_72, DonkeyMan\_55, Dori\_67, Doucette\_50, Dulcita\_72, Duplicity\_49, E1\_44, E6\_48, Easy2Say\_87, Edugator\_64, Eileen\_59, EniyanLRS\_81, Estes\_80, Feyre\_68, Fulbright\_48, GardenSalsa\_80, GenevaB15\_79, Gengar\_65, Gex\_49, Glaske16\_73, GlobiWarming\_67, Greely\_206, Guillsminger\_66, Heftyboy\_66, Heinz\_56, Henry\_84, Hibiscus\_57, IPhane7\_71, Inca\_83, InvictusManeo\_63, Jamie19\_48, Jojo24\_56, Judy\_67, Karkharias\_63, Kevin1\_51, Kozie\_44, Kratio\_63, Kukla\_68, Kumao\_67, Larva\_66, Leston\_65, LilhomieP\_71, Magsby\_49, Manda\_88, Mao1\_71, MaryV\_85, Mask\_67, Melville\_53, Mindy\_85, Miryou\_70, MrMagoo\_81, Myrna\_199, Nanosmite\_76, Nenae\_54, OkiRoe\_66, Omnicon\_69, Panchino\_47, Paola\_65, Parmesanjohn\_49, Peas\_64,

PegLeg\_70, PeggyLeg03\_63, Phabba\_210, PhancyPhin\_54, Phayonce\_51, Phloss\_47, Phrann\_51, Phrux\_83, Pipsqueaks\_49, Psycho\_65, Pucara\_59, Purgamenstris\_54, Rando14\_68, Raymond7\_48, Redi\_54, Reindeer\_73, Rey\_78, Reyja\_59, RootBeer\_54, Rubeelu\_52, Santhid\_54, Sashimi\_87, Schnauzer\_50, ScoobyDoobyDoo\_198, ShamWow\_86, Shambre1\_63, ShrimpFriedEgg\_54, Silvafighter\_50, Skinny\_74, SlimJimmy\_71, Smurph\_49, Snekmaggedon\_48, SoSeph\_66, SpongeBob\_48, StellaBean\_82, Tapioca\_51, Tarzan\_57, Teaspoon\_83, Thyatira\_68, Toto\_84, TripleJ\_65, TyDawg\_71, Waterfoul\_67, Wildcat\_85, Xerxes\_49, YassJohnny\_83,

### Summary by start number:

#### Start 16:

- Found in 12 of 249 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 2 of 224
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Guillsminger\_66 (K5), Leston\_65 (K5),

#### Start 31:

- Found in 5 of 249 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 5 of 224
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Azrael100\_84 (V), Cosmo\_85 (V), EniyanLRS\_81 (V), MaryV\_85 (V), Wildcat\_85 (V),

#### Start 36:

- Found in 2 of 249 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 2 of 224
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hibiscus\_57 (DY), Jojo24\_56 (DY),

#### Start 37:

- Found in 47 of 249 ( 18.9% ) of genes in pham
- Manual Annotations of this start: 38 of 224
- Called 85.1% of time when present
- Phage (with cluster) where this start called: Andies\_47 (N), BabeRuth\_55 (N), Bosection6\_50 (N), Butters\_52 (N), Carcharodon\_49 (N), Charlie\_50 (N), Chewbacca\_51 (N), Diminimus\_72 (M1), Dulcita\_72 (M1), Duplicity\_49 (N), Fulbright\_48 (N), Gex\_49 (N), Glaske16\_73 (M1), Jamie19\_48 (N), Kevin1\_51 (N), Kumao\_67 (singleton), Magsby\_49 (N), Melville\_53 (N), Nenae\_54 (N), Panchino\_47 (N), Parmesanjohn\_49 (N), PhancyPhin\_54 (N), Phloss\_47 (N), Phrann\_51 (N), Pipsqueaks\_49 (N), Purgamenstris\_54 (N), Raymond7\_48 (N), Redi\_54 (N), Rubeelu\_52 (N), Schnauzer\_50 (N), ShrimpFriedEgg\_54 (N), Silvafighter\_50 (N), Skinny\_74 (M1), SlimJimmy\_71 (M1), Smurph\_49 (N), Snekmaggedon\_48 (N), SpongeBob\_48 (N), Tapioca\_51 (N), TyDawg\_71 (M1), Xerxes\_49 (N),

#### Start 38:

- Found in 15 of 249 ( 6.0% ) of genes in pham
- Manual Annotations of this start: 3 of 224
- Called 40.0% of time when present
- Phage (with cluster) where this start called: BilboSwaggins\_85 (E), Easy2Say\_87 (E), Mindy\_85 (E), StellaBean\_82 (E), Teaspoon\_83 (E), Toto\_84 (E),

Start 39:

- Found in 1 of 249 ( 0.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Karkharias\_63 (FA),

Start 40:

- Found in 51 of 249 ( 20.5% ) of genes in pham
- Manual Annotations of this start: 38 of 224
- Called 92.2% of time when present
- Phage (with cluster) where this start called: Agent47\_63 (K5), AlleyCat\_67 (K5), Anatole\_44 (BV), B22\_52 (BW), B3\_46 (BV), Bridgette\_65 (FA), ChuckDuck\_63 (FA), Collard\_63 (K5), Constance\_63 (FA), DS6A\_86 (singleton), Dadosky\_67 (K5), DonkeyMan\_55 (DY), Dori\_67 (AD), Doucette\_50 (BW), E1\_44 (BV), E6\_48 (BW), Eileen\_59 (FA), Feyre\_68 (K5), Gengar\_65 (K5), GlobiWarming\_67 (FA), Heftyboy\_66 (K5), Heinz\_56 (DY), InvictusManeo\_63 (K5), Judy\_67 (FA), Kratio\_63 (K5), Kukla\_68 (FJ), Larva\_66 (K5), Mask\_67 (AD), Miryou\_70 (K5), OkiRoe\_66 (K5), Omnicron\_69 (K5), Paola\_65 (K5), Peas\_64 (FA), PeggyLeg03\_63 (FA), Phayonce\_51 (P5), Psycho\_65 (K5), Pucara\_59 (FA), Rando14\_68 (K5), Reyja\_59 (DY), RootBeer\_54 (FA), Santhid\_54 (DY), Sashimi\_87 (AY), SoSeph\_66 (K5), Tarzan\_57 (DY), Thyatira\_68 (K5), TripleJ\_65 (FJ), Waterfoul\_67 (K5),

Start 41:

- Found in 13 of 249 ( 5.2% ) of genes in pham
- Manual Annotations of this start: 7 of 224
- Called 53.8% of time when present
- Phage (with cluster) where this start called: Auspice\_71 (M1), Bongo\_71 (M1), Bricole\_70 (M1), IPhane7\_71 (M1), LilhomieP\_71 (M1), PegLeg\_70 (M1), Reindeer\_73 (M1),

Start 42:

- Found in 7 of 249 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 7 of 224
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aziz\_78 (M2), Estes\_80 (M2), GardenSalsa\_80 (M2), GenevaB15\_79 (M2), MrMagoo\_81 (M2), Nanosmite\_76 (M3), Rey\_78 (M2),

Start 43:

- Found in 22 of 249 ( 8.8% ) of genes in pham
- Manual Annotations of this start: 1 of 224
- Called 4.5% of time when present
- Phage (with cluster) where this start called: Edugator\_64 (K5),

Start 44:

- Found in 1 of 249 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 224
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Shambre1\_63 (singleton),

Start 45:

- Found in 15 of 249 ( 6.0% ) of genes in pham
- Manual Annotations of this start: 9 of 224

- Called 60.0% of time when present
- Phage (with cluster) where this start called: 244\_87 (E), BaboJay\_84 (E), CrystalP\_85 (E), Henry\_84 (E), Inca\_83 (E), Manda\_88 (E), Phrux\_83 (E), ShamWow\_86 (E), YassJohnny\_83 (E),

#### Start 46:

- Found in 115 of 249 ( 46.2% ) of genes in pham
- Manual Annotations of this start: 107 of 224
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ABCat\_83 (E), Adnama\_90 (E), Amao\_85 (E), AmericanBeauty\_93 (E), Argent26\_90 (E), Asriel\_85 (E), BadStone\_83 (E), Balomoji\_86 (E), Barbarian\_85 (E), Bask21\_86 (E), Bench\_89 (E), BigBubba\_86 (E), Bruin\_83 (E), Buck\_87 (E), BugsBunny\_86 (E), Cactus\_89 (E), ChosenOne\_86 (E), ChotaBhai\_86 (E), Cjw1\_86 (E), Command613\_88 (E), Contagion\_82 (E), Cookies\_83 (E), Czyszczonek\_87 (E), Daikon\_88 (E), DoctorDiddles\_85 (E), DrDrey\_86 (E), Dumbo\_86 (E), Dusk\_83 (E), Elite2014\_85 (E), Elph10\_86 (E), Emmina\_86 (E), Eureka\_85 (E), Filch\_87 (E), FireRed\_90 (E), Flypotenuse\_82 (E), Gage\_88 (E), Gator\_84 (E), Gemini\_91 (E), Glexan\_85 (E), Goku\_85 (E), GoldenSpark\_90 (E), Goldilocks\_89 (E), GooberAzure\_89 (E), HanKaySha\_86 (E), Harella\_86 (E), Highbury\_85 (E), Holt\_91 (E), Hoonter\_89 (E), Hopey\_86 (E), HufflyPuff\_89 (E), IHOP\_84 (E), Icee\_87 (E), JeTaime\_86 (E), Kanye\_83 (E), Kimchi\_90 (E), Kostya\_86 (E), Lilac\_88 (E), Lilizi\_87 (E), Lilpickle\_85 (E), MISSy\_87 (E), MPhalcon\_87 (E), MadamMonkfish\_86 (E), Marshmallow\_84 (E), Maxxinista\_88 (E), Miniwave\_81 (E), Misfit\_87 (E), Moldemort\_89 (E), Mosby\_82 (E), Murica\_89 (E), Murphy\_86 (E), Myrale\_86 (E), Nala\_88 (E), NelitzaMV\_84 (E), Nimrod\_87 (E), NoSleep\_87 (E), OrionPax\_85 (E), Palpatine\_88 (E), Paperbeatsrock\_85 (E), Pat3\_84 (E), Petra64142\_90 (E), Phaja\_84 (E), Pharsalus\_83 (E), PhatBacter\_90 (E), Phaux\_88 (E), Policronamos\_90 (E), Porky\_85 (E), Pumpkin\_89 (E), Quallification\_87 (E), Rakim\_87 (E), Rimmer\_86 (E), RiverMonster\_86 (E), Saints25\_85 (E), Sassay\_81 (E), ShereKhan\_84 (E), Simpliphy\_85 (E), SirDuracell\_86 (E), SophKB\_83 (E), Sotrice96\_87 (E), Stank\_89 (E), Stark\_87 (E), StolenFromERC\_89 (E), TBrady12\_89 (E), Tarkin\_85 (E), TeardropMSU\_82 (E), Terminus\_89 (E), Thresher\_88 (E), Tomaszewski\_81 (E), Traaww1\_82 (E), Tuco\_87 (E), Ukulele\_81 (E), Wiggin\_88 (E), Willez\_81 (E), Xandras\_85 (E), Youngblood\_89 (E), xkcd\_89 (E),

#### Start 47:

- Found in 4 of 249 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 3 of 224
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Greely\_206 (C2), Myrna\_199 (C2), Phabba\_210 (C2), ScoobyDoobyDoo\_198 (C2),

#### Start 48:

- Found in 1 of 249 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 224
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kozie\_44 (EI),

#### Start 49:

- Found in 12 of 249 ( 4.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 8.3% of time when present



- Phage (with cluster) where this start called: Mao1\_71 (AD),

### **Summary by clusters:**

There are 18 clusters represented in this pham: V, E, AD, P5, M2, EI, N, FA, BV, BW, M1, K5, DY, AY, C2, FJ, singleton, M3,

Info for manual annotations of cluster AD:

- Start number 40 was manually annotated 2 times for cluster AD.

Info for manual annotations of cluster BV:

- Start number 40 was manually annotated 3 times for cluster BV.

Info for manual annotations of cluster BW:

- Start number 40 was manually annotated 3 times for cluster BW.

Info for manual annotations of cluster C2:

- Start number 47 was manually annotated 3 times for cluster C2.

Info for manual annotations of cluster DY:

- Start number 36 was manually annotated 2 times for cluster DY.
- Start number 40 was manually annotated 3 times for cluster DY.

Info for manual annotations of cluster E:

- Start number 38 was manually annotated 3 times for cluster E.
- Start number 45 was manually annotated 9 times for cluster E.
- Start number 46 was manually annotated 107 times for cluster E.

Info for manual annotations of cluster EI:

- Start number 48 was manually annotated 1 time for cluster EI.

Info for manual annotations of cluster FA:

- Start number 40 was manually annotated 7 times for cluster FA.

Info for manual annotations of cluster FJ:

- Start number 40 was manually annotated 1 time for cluster FJ.

Info for manual annotations of cluster K5:

- Start number 16 was manually annotated 2 times for cluster K5.
- Start number 40 was manually annotated 17 times for cluster K5.
- Start number 43 was manually annotated 1 time for cluster K5.

Info for manual annotations of cluster M1:

- Start number 37 was manually annotated 6 times for cluster M1.
- Start number 41 was manually annotated 7 times for cluster M1.

Info for manual annotations of cluster M2:

- Start number 42 was manually annotated 6 times for cluster M2.

Info for manual annotations of cluster M3:

- Start number 42 was manually annotated 1 time for cluster M3.

Info for manual annotations of cluster N:

- Start number 37 was manually annotated 31 times for cluster N.

Info for manual annotations of cluster P5:

- Start number 40 was manually annotated 1 time for cluster P5.

Info for manual annotations of cluster V:

- Start number 31 was manually annotated 5 times for cluster V.

### **Gene Information:**

Gene: 244\_87 Start: 52340, Stop: 52702, Start Num: 45

Candidate Starts for 244\_87:

(Start: 38 @52319 has 3 MA's), (Start: 45 @52340 has 9 MA's), (72, 52553), (82, 52637), (83, 52649), (85, 52655), (91, 52691),

Gene: ABCat\_83 Start: 52732, Stop: 53094, Start Num: 46

Candidate Starts for ABCat\_83:

(35, 52705), (Start: 46 @52732 has 107 MA's), (72, 52945), (82, 53029), (83, 53041), (85, 53047), (91, 53083),

Gene: Adnama\_90 Start: 52618, Stop: 52980, Start Num: 46

Candidate Starts for Adnama\_90:

(33, 52585), (Start: 46 @52618 has 107 MA's), (72, 52831), (73, 52846), (82, 52915), (83, 52927), (85, 52933), (91, 52969),

Gene: Agent47\_63 Start: 45856, Stop: 46221, Start Num: 40

Candidate Starts for Agent47\_63:

(23, 45793), (Start: 40 @45856 has 38 MA's), (Start: 43 @45868 has 1 MA's), (55, 45958), (60, 45997), (66, 46021), (71, 46048), (78, 46117), (79, 46120), (83, 46162), (85, 46168), (86, 46174), (88, 46186), (91, 46204),

Gene: AlleyCat\_67 Start: 46184, Stop: 46549, Start Num: 40

Candidate Starts for AlleyCat\_67:

(26, 46148), (Start: 40 @46184 has 38 MA's), (Start: 43 @46196 has 1 MA's), (55, 46286), (60, 46325), (66, 46349), (71, 46376), (77, 46442), (78, 46445), (79, 46448), (83, 46490), (85, 46496), (86, 46502), (88, 46514), (91, 46532), (92, 46538),

Gene: Amao\_85 Start: 51813, Stop: 52175, Start Num: 46

Candidate Starts for Amao\_85:

(Start: 46 @51813 has 107 MA's), (72, 52026), (73, 52041), (82, 52110), (83, 52122), (85, 52128), (86, 52134), (91, 52164),

Gene: AmericanBeauty\_93 Start: 52901, Stop: 53263, Start Num: 46

Candidate Starts for AmericanBeauty\_93:

(35, 52874), (Start: 46 @52901 has 107 MA's), (72, 53114), (82, 53198), (83, 53210), (85, 53216), (91, 53252),

Gene: Anatole\_44 Start: 29853, Stop: 30233, Start Num: 40

Candidate Starts for Anatole\_44:

(25, 29811), (28, 29823), (30, 29832), (Start: 40 @29853 has 38 MA's), (49, 29907), (64, 30003), (78, 30117), (85, 30168),

Gene: Andies\_47 Start: 34063, Stop: 34455, Start Num: 37

Candidate Starts for Andies\_47:

(9, 33940), (14, 33961), (19, 33988), (Start: 37 @34063 has 38 MA's), (85, 34384),

Gene: Argent26\_90 Start: 52539, Stop: 52901, Start Num: 46

Candidate Starts for Argent26\_90:

(35, 52512), (Start: 46 @52539 has 107 MA's), (72, 52752), (82, 52836), (83, 52848), (85, 52854), (91, 52890),

Gene: Asriel\_85 Start: 50955, Stop: 51317, Start Num: 46

Candidate Starts for Asriel\_85:

(33, 50922), (Start: 46 @50955 has 107 MA's), (72, 51168), (73, 51183), (82, 51252), (83, 51264), (85, 51270), (91, 51306),

Gene: Auspice\_71 Start: 46676, Stop: 47095, Start Num: 41

Candidate Starts for Auspice\_71:

(Start: 37 @46667 has 38 MA's), (Start: 41 @46676 has 7 MA's), (52, 46754), (65, 46841), (71, 46871), (74, 46913), (82, 46973), (96, 47048),

Gene: Aziz\_78 Start: 48719, Stop: 49120, Start Num: 42

Candidate Starts for Aziz\_78:

(Start: 42 @48719 has 7 MA's), (51, 48785), (60, 48863), (74, 48956), (82, 49016), (91, 49070),

Gene: Azrael100\_84 Start: 52399, Stop: 52803, Start Num: 31

Candidate Starts for Azrael100\_84:

(15, 52318), (Start: 31 @52399 has 5 MA's), (50, 52486), (54, 52534), (57, 52558), (59, 52579), (61, 52585), (63, 52594), (76, 52696), (79, 52708), (85, 52756), (86, 52762), (89, 52780),

Gene: B22\_52 Start: 33281, Stop: 33661, Start Num: 40

Candidate Starts for B22\_52:

(28, 33251), (30, 33260), (Start: 40 @33281 has 38 MA's), (49, 33335), (64, 33431), (73, 33509), (78, 33545), (85, 33596),

Gene: B3\_46 Start: 30516, Stop: 30896, Start Num: 40

Candidate Starts for B3\_46:

(Start: 40 @30516 has 38 MA's), (49, 30570), (64, 30666), (78, 30780), (85, 30831),

Gene: BabeRuth\_55 Start: 35784, Stop: 36176, Start Num: 37

Candidate Starts for BabeRuth\_55:

(9, 35661), (14, 35682), (19, 35709), (Start: 37 @35784 has 38 MA's), (85, 36105),

Gene: BaboJay\_84 Start: 52341, Stop: 52703, Start Num: 45

Candidate Starts for BaboJay\_84:

(Start: 38 @52320 has 3 MA's), (Start: 45 @52341 has 9 MA's), (72, 52554), (82, 52638), (83, 52650), (85, 52656), (91, 52692),

Gene: BadStone\_83 Start: 52301, Stop: 52663, Start Num: 46

Candidate Starts for BadStone\_83:

(35, 52274), (Start: 46 @52301 has 107 MA's), (72, 52514), (82, 52598), (83, 52610), (85, 52616), (91, 52652),

Gene: Balomoji\_86 Start: 52725, Stop: 53087, Start Num: 46

Candidate Starts for Balomoji\_86:

(33, 52692), (Start: 46 @52725 has 107 MA's), (72, 52938), (73, 52953), (82, 53022), (83, 53034), (85, 53040), (91, 53076),

Gene: Barbarian\_85 Start: 50955, Stop: 51317, Start Num: 46

Candidate Starts for Barbarian\_85:

(33, 50922), (Start: 46 @50955 has 107 MA's), (72, 51168), (73, 51183), (82, 51252), (83, 51264), (85, 51270), (91, 51306),

Gene: Bask21\_86 Start: 51578, Stop: 51940, Start Num: 46

Candidate Starts for Bask21\_86:

(33, 51545), (Start: 46 @51578 has 107 MA's), (72, 51791), (73, 51806), (82, 51875), (83, 51887), (85, 51893), (91, 51929),

Gene: Bench\_89 Start: 52396, Stop: 52758, Start Num: 46

Candidate Starts for Bench\_89:

(35, 52369), (Start: 46 @52396 has 107 MA's), (72, 52609), (82, 52693), (83, 52705), (85, 52711), (91, 52747),

Gene: BigBubba\_86 Start: 51971, Stop: 52333, Start Num: 46

Candidate Starts for BigBubba\_86:

(33, 51938), (Start: 46 @51971 has 107 MA's), (72, 52184), (73, 52199), (82, 52268), (83, 52280), (85, 52286), (91, 52322),

Gene: BilboSwaggins\_85 Start: 52677, Stop: 53060, Start Num: 38

Candidate Starts for BilboSwaggins\_85:

(Start: 38 @52677 has 3 MA's), (Start: 45 @52698 has 9 MA's), (72, 52911), (82, 52995), (83, 53007), (85, 53013), (91, 53049),

Gene: Bongo\_71 Start: 46680, Stop: 47099, Start Num: 41

Candidate Starts for Bongo\_71:

(Start: 37 @46671 has 38 MA's), (Start: 41 @46680 has 7 MA's), (52, 46758), (65, 46845), (71, 46875), (74, 46917), (82, 46977), (96, 47052),

Gene: Bosection6\_50 Start: 33529, Stop: 33921, Start Num: 37

Candidate Starts for Bosection6\_50:

(9, 33406), (14, 33427), (19, 33454), (Start: 37 @33529 has 38 MA's), (85, 33850),

Gene: Bricole\_70 Start: 46403, Stop: 46822, Start Num: 41

Candidate Starts for Bricole\_70:

(Start: 37 @46394 has 38 MA's), (Start: 41 @46403 has 7 MA's), (52, 46481), (65, 46568), (71, 46598), (74, 46640), (82, 46700), (96, 46775),

Gene: Bridgette\_65 Start: 40727, Stop: 41116, Start Num: 40

Candidate Starts for Bridgette\_65:

(Start: 40 @40727 has 38 MA's), (64, 40877),

Gene: Bruin\_83 Start: 51275, Stop: 51637, Start Num: 46

Candidate Starts for Bruin\_83:

(35, 51248), (Start: 46 @51275 has 107 MA's), (72, 51488), (82, 51572), (83, 51584), (85, 51590), (91, 51626),

Gene: Buck\_87 Start: 52980, Stop: 53342, Start Num: 46

Candidate Starts for Buck\_87:

(35, 52953), (Start: 46 @52980 has 107 MA's), (72, 53193), (82, 53277), (83, 53289), (85, 53295), (91, 53331),

Gene: BugsBunny\_86 Start: 52804, Stop: 53166, Start Num: 46

Candidate Starts for BugsBunny\_86:

(35, 52777), (Start: 46 @52804 has 107 MA's), (72, 53017), (82, 53101), (83, 53113), (85, 53119), (91, 53155),

Gene: Butters\_52 Start: 35124, Stop: 35516, Start Num: 37

Candidate Starts for Butters\_52:

(11, 35016), (Start: 37 @35124 has 38 MA's), (85, 35445),

Gene: Cactus\_89 Start: 51619, Stop: 51981, Start Num: 46

Candidate Starts for Cactus\_89:

(33, 51586), (Start: 46 @51619 has 107 MA's), (72, 51832), (73, 51847), (82, 51916), (83, 51928), (85, 51934), (91, 51970),

Gene: Carcharodon\_49 Start: 34516, Stop: 34908, Start Num: 37

Candidate Starts for Carcharodon\_49:

(Start: 37 @34516 has 38 MA's), (85, 34837),

Gene: Charlie\_50 Start: 33268, Stop: 33660, Start Num: 37

Candidate Starts for Charlie\_50:

(9, 33145), (14, 33166), (19, 33193), (Start: 37 @33268 has 38 MA's), (85, 33589),

Gene: Chewbacca\_51 Start: 34516, Stop: 34908, Start Num: 37

Candidate Starts for Chewbacca\_51:

(Start: 37 @34516 has 38 MA's), (85, 34837),

Gene: ChosenOne\_86 Start: 51756, Stop: 52118, Start Num: 46

Candidate Starts for ChosenOne\_86:

(35, 51729), (Start: 46 @51756 has 107 MA's), (72, 51969), (82, 52053), (83, 52065), (85, 52071), (91, 52107),

Gene: ChotaBhai\_86 Start: 51943, Stop: 52305, Start Num: 46

Candidate Starts for ChotaBhai\_86:

(33, 51910), (Start: 46 @51943 has 107 MA's), (72, 52156), (73, 52171), (82, 52240), (83, 52252), (85, 52258), (91, 52294),

Gene: ChuckDuck\_63 Start: 40338, Stop: 40727, Start Num: 40

Candidate Starts for ChuckDuck\_63:

(25, 40302), (Start: 40 @40338 has 38 MA's), (64, 40488),

Gene: Cjw1\_86 Start: 53450, Stop: 53812, Start Num: 46

Candidate Starts for Cjw1\_86:

(35, 53423), (Start: 46 @53450 has 107 MA's), (72, 53663), (82, 53747), (83, 53759), (85, 53765), (91, 53801),

Gene: Collard\_63 Start: 45817, Stop: 46182, Start Num: 40

Candidate Starts for Collard\_63:

(23, 45754), (Start: 40 @45817 has 38 MA's), (Start: 43 @45829 has 1 MA's), (55, 45919), (60, 45958), (66, 45982), (71, 46009), (78, 46078), (79, 46081), (83, 46123), (85, 46129), (86, 46135), (88, 46147), (91, 46165),

Gene: Command613\_88 Start: 52795, Stop: 53157, Start Num: 46

Candidate Starts for Command613\_88:

(35, 52768), (Start: 46 @52795 has 107 MA's), (72, 53008), (82, 53092), (83, 53104), (85, 53110), (91, 53146),

Gene: Constance\_63 Start: 40957, Stop: 41358, Start Num: 40

Candidate Starts for Constance\_63:

(17, 40867), (18, 40870), (Start: 40 @40957 has 38 MA's), (64, 41107),

Gene: Contagion\_82 Start: 51556, Stop: 51918, Start Num: 46

Candidate Starts for Contagion\_82:

(35, 51529), (Start: 46 @51556 has 107 MA's), (72, 51769), (82, 51853), (83, 51865), (85, 51871), (91, 51907),

Gene: Cookies\_83 Start: 51800, Stop: 52162, Start Num: 46

Candidate Starts for Cookies\_83:

(33, 51767), (Start: 46 @51800 has 107 MA's), (72, 52013), (73, 52028), (82, 52097), (83, 52109), (85, 52115), (91, 52151),

Gene: Cosmo\_85 Start: 52400, Stop: 52804, Start Num: 31

Candidate Starts for Cosmo\_85:

(15, 52319), (Start: 31 @52400 has 5 MA's), (50, 52487), (54, 52535), (57, 52559), (59, 52580), (61, 52586), (63, 52595), (76, 52697), (79, 52709), (85, 52757), (86, 52763), (89, 52781),

Gene: CrystalP\_85 Start: 52698, Stop: 53060, Start Num: 45

Candidate Starts for CrystalP\_85:

(Start: 38 @52677 has 3 MA's), (Start: 45 @52698 has 9 MA's), (72, 52911), (82, 52995), (83, 53007), (85, 53013), (91, 53049),

Gene: Czyszczone1\_87 Start: 52259, Stop: 52621, Start Num: 46

Candidate Starts for Czyszczone1\_87:

(35, 52232), (Start: 46 @52259 has 107 MA's), (72, 52472), (82, 52556), (83, 52568), (85, 52574), (91, 52610),

Gene: DS6A\_86 Start: 55827, Stop: 56213, Start Num: 40

Candidate Starts for DS6A\_86:

(Start: 40 @55827 has 38 MA's), (77, 56088), (78, 56091), (81, 56112), (85, 56142), (90, 56169), (97, 56202),

Gene: Dadosky\_67 Start: 46186, Stop: 46551, Start Num: 40

Candidate Starts for Dadosky\_67:

(26, 46150), (Start: 40 @46186 has 38 MA's), (Start: 43 @46198 has 1 MA's), (55, 46288), (60, 46327), (66, 46351), (71, 46378), (77, 46444), (78, 46447), (79, 46450), (83, 46492), (85, 46498), (86, 46504), (88, 46516), (91, 46534), (92, 46540),

Gene: Daikon\_88 Start: 52746, Stop: 53108, Start Num: 46

Candidate Starts for Daikon\_88:

(33, 52713), (Start: 46 @52746 has 107 MA's), (72, 52959), (73, 52974), (82, 53043), (83, 53055), (85, 53061), (91, 53097),

Gene: Diminimus\_72 Start: 46666, Stop: 47094, Start Num: 37

Candidate Starts for Diminimus\_72:

(Start: 37 @46666 has 38 MA's), (Start: 41 @46675 has 7 MA's), (52, 46753), (65, 46840), (71, 46870), (74, 46912), (82, 46972), (96, 47047),

Gene: DoctorDiddles\_85 Start: 51987, Stop: 52349, Start Num: 46

Candidate Starts for DoctorDiddles\_85:

(33, 51954), (Start: 46 @51987 has 107 MA's), (72, 52200), (73, 52215), (82, 52284), (83, 52296), (85, 52302), (91, 52338),

Gene: DonkeyMan\_55 Start: 37973, Stop: 38404, Start Num: 40

Candidate Starts for DonkeyMan\_55:

(Start: 40 @37973 has 38 MA's), (85, 38288), (95, 38339), (100, 38396),

Gene: Dori\_67 Start: 52520, Stop: 52948, Start Num: 40

Candidate Starts for Dori\_67:

(Start: 40 @52520 has 38 MA's), (49, 52574), (55, 52625), (60, 52664), (62, 52670), (69, 52739), (73, 52781), (75, 52805), (76, 52808), (78, 52817), (85, 52868), (87, 52883), (89, 52892),

Gene: Doucette\_50 Start: 32710, Stop: 33090, Start Num: 40

Candidate Starts for Doucette\_50:

(Start: 40 @32710 has 38 MA's), (49, 32764), (64, 32860), (78, 32974), (83, 33019), (84, 33022),

Gene: DrDrey\_86 Start: 53178, Stop: 53540, Start Num: 46

Candidate Starts for DrDrey\_86:

(35, 53151), (Start: 46 @53178 has 107 MA's), (72, 53391), (82, 53475), (83, 53487), (85, 53493), (91, 53529),

Gene: Dulcita\_72 Start: 46667, Stop: 47095, Start Num: 37

Candidate Starts for Dulcita\_72:

(Start: 37 @46667 has 38 MA's), (Start: 41 @46676 has 7 MA's), (52, 46754), (65, 46841), (71, 46871), (74, 46913), (82, 46973), (96, 47048),

Gene: Dumbo\_86 Start: 51661, Stop: 52023, Start Num: 46

Candidate Starts for Dumbo\_86:

(35, 51634), (Start: 46 @51661 has 107 MA's), (72, 51874), (82, 51958), (83, 51970), (85, 51976), (91, 52012),

Gene: Duplicity\_49 Start: 34525, Stop: 34917, Start Num: 37

Candidate Starts for Duplicity\_49:

(Start: 37 @34525 has 38 MA's), (85, 34846),

Gene: Dusk\_83 Start: 51961, Stop: 52323, Start Num: 46

Candidate Starts for Dusk\_83:

(35, 51934), (Start: 46 @51961 has 107 MA's), (72, 52174), (82, 52258), (83, 52270), (85, 52276), (91, 52312),

Gene: E1\_44 Start: 29853, Stop: 30233, Start Num: 40

Candidate Starts for E1\_44:

(25, 29811), (28, 29823), (30, 29832), (Start: 40 @29853 has 38 MA's), (49, 29907), (64, 30003), (78, 30117), (85, 30168),

Gene: E6\_48 Start: 32434, Stop: 32817, Start Num: 40

Candidate Starts for E6\_48:

(25, 32392), (28, 32404), (30, 32413), (Start: 40 @32434 has 38 MA's), (49, 32488), (64, 32584), (78, 32698), (83, 32743),

Gene: Easy2Say\_87 Start: 53142, Stop: 53525, Start Num: 38

Candidate Starts for Easy2Say\_87:

(Start: 38 @53142 has 3 MA's), (Start: 45 @53163 has 9 MA's), (72, 53376), (82, 53460), (83, 53472), (85, 53478), (91, 53514),

Gene: Edugator\_64 Start: 47616, Stop: 47969, Start Num: 43

Candidate Starts for Edugator\_64:

(26, 47568), (Start: 40 @47604 has 38 MA's), (Start: 43 @47616 has 1 MA's), (55, 47706), (60, 47745), (66, 47769), (71, 47796), (77, 47862), (78, 47865), (79, 47868), (83, 47910), (85, 47916), (86, 47922), (88, 47934), (91, 47952), (92, 47958),

Gene: Eileen\_59 Start: 38213, Stop: 38605, Start Num: 40

Candidate Starts for Eileen\_59:

(21, 38147), (27, 38177), (29, 38183), (Start: 40 @38213 has 38 MA's), (64, 38363),

Gene: Elite2014\_85 Start: 51755, Stop: 52117, Start Num: 46

Candidate Starts for Elite2014\_85:

(35, 51728), (Start: 46 @51755 has 107 MA's), (72, 51968), (82, 52052), (83, 52064), (85, 52070), (91, 52106),

Gene: Elph10\_86 Start: 51757, Stop: 52119, Start Num: 46

Candidate Starts for Elph10\_86:

(35, 51730), (Start: 46 @51757 has 107 MA's), (72, 51970), (82, 52054), (83, 52066), (85, 52072), (91, 52108),

Gene: Emmina\_86 Start: 51659, Stop: 52021, Start Num: 46

Candidate Starts for Emmina\_86:

(35, 51632), (Start: 46 @51659 has 107 MA's), (72, 51872), (82, 51956), (83, 51968), (85, 51974), (91, 52010),

Gene: EniyanLRS\_81 Start: 52139, Stop: 52543, Start Num: 31

Candidate Starts for EniyanLRS\_81:

(15, 52058), (Start: 31 @52139 has 5 MA's), (50, 52226), (54, 52274), (57, 52298), (59, 52319), (61, 52325), (63, 52334), (76, 52436), (79, 52448), (85, 52496), (86, 52502), (89, 52520),

Gene: Estes\_80 Start: 49066, Stop: 49467, Start Num: 42

Candidate Starts for Estes\_80:

(Start: 42 @49066 has 7 MA's), (51, 49132), (60, 49210), (74, 49303), (82, 49363), (91, 49417),

Gene: Eureka\_85 Start: 52671, Stop: 53033, Start Num: 46

Candidate Starts for Eureka\_85:

(35, 52644), (Start: 46 @52671 has 107 MA's), (72, 52884), (82, 52968), (83, 52980), (85, 52986), (91, 53022),

Gene: Feyre\_68 Start: 49578, Stop: 49943, Start Num: 40

Candidate Starts for Feyre\_68:

(22, 49515), (23, 49518), (Start: 40 @49578 has 38 MA's), (Start: 43 @49590 has 1 MA's), (55, 49680), (60, 49719), (66, 49743), (71, 49770), (78, 49839), (79, 49842), (85, 49890), (86, 49896), (92,



49932),

Gene: Filch\_87 Start: 51684, Stop: 52046, Start Num: 46

Candidate Starts for Filch\_87:

(35, 51657), (Start: 46 @51684 has 107 MA's), (72, 51897), (82, 51981), (83, 51993), (85, 51999), (91, 52035),

Gene: FireRed\_90 Start: 53249, Stop: 53611, Start Num: 46

Candidate Starts for FireRed\_90:

(35, 53222), (Start: 46 @53249 has 107 MA's), (72, 53462), (82, 53546), (83, 53558), (85, 53564), (91, 53600),

Gene: Flypotenuse\_82 Start: 51609, Stop: 51971, Start Num: 46

Candidate Starts for Flypotenuse\_82:

(33, 51576), (Start: 46 @51609 has 107 MA's), (72, 51822), (73, 51837), (82, 51906), (83, 51918), (85, 51924), (91, 51960),

Gene: Fulbright\_48 Start: 33605, Stop: 33997, Start Num: 37

Candidate Starts for Fulbright\_48:

(Start: 37 @33605 has 38 MA's), (85, 33926),

Gene: Gage\_88 Start: 52402, Stop: 52764, Start Num: 46

Candidate Starts for Gage\_88:

(33, 52369), (Start: 46 @52402 has 107 MA's), (72, 52615), (82, 52699), (83, 52711), (85, 52717), (91, 52753),

Gene: GardenSalsa\_80 Start: 49270, Stop: 49671, Start Num: 42

Candidate Starts for GardenSalsa\_80:

(Start: 42 @49270 has 7 MA's), (60, 49414), (74, 49507), (82, 49567), (91, 49621),

Gene: Gator\_84 Start: 52452, Stop: 52814, Start Num: 46

Candidate Starts for Gator\_84:

(33, 52419), (Start: 46 @52452 has 107 MA's), (72, 52665), (73, 52680), (82, 52749), (83, 52761), (85, 52767), (91, 52803),

Gene: Gemini\_91 Start: 53056, Stop: 53418, Start Num: 46

Candidate Starts for Gemini\_91:

(35, 53029), (Start: 46 @53056 has 107 MA's), (72, 53269), (82, 53353), (83, 53365), (85, 53371), (91, 53407),

Gene: GenevaB15\_79 Start: 48719, Stop: 49120, Start Num: 42

Candidate Starts for GenevaB15\_79:

(Start: 42 @48719 has 7 MA's), (51, 48785), (60, 48863), (74, 48956), (82, 49016), (91, 49070),

Gene: Gengar\_65 Start: 47565, Stop: 47930, Start Num: 40

Candidate Starts for Gengar\_65:

(Start: 16 @47475 has 2 MA's), (22, 47502), (23, 47505), (Start: 40 @47565 has 38 MA's), (Start: 43 @47577 has 1 MA's), (55, 47667), (60, 47706), (66, 47730), (71, 47757), (78, 47826), (79, 47829), (85, 47877), (86, 47883), (92, 47919),

Gene: Gex\_49 Start: 34532, Stop: 34924, Start Num: 37

Candidate Starts for Gex\_49:

(Start: 37 @34532 has 38 MA's), (85, 34853),

Gene: Glaske16\_73 Start: 47145, Stop: 47573, Start Num: 37

Candidate Starts for Glaske16\_73:

(Start: 37 @47145 has 38 MA's), (Start: 41 @47154 has 7 MA's), (52, 47232), (65, 47319), (71, 47349), (74, 47391), (82, 47451), (96, 47526),

Gene: Glexan\_85 Start: 52739, Stop: 53101, Start Num: 46

Candidate Starts for Glexan\_85:

(33, 52706), (Start: 46 @52739 has 107 MA's), (72, 52952), (73, 52967), (82, 53036), (83, 53048), (85, 53054), (91, 53090),

Gene: GlobiWarming\_67 Start: 40113, Stop: 40502, Start Num: 40

Candidate Starts for GlobiWarming\_67:

(Start: 40 @40113 has 38 MA's), (64, 40263),

Gene: Goku\_85 Start: 52400, Stop: 52762, Start Num: 46

Candidate Starts for Goku\_85:

(35, 52373), (Start: 46 @52400 has 107 MA's), (72, 52613), (82, 52697), (83, 52709), (85, 52715), (91, 52751),

Gene: GoldenSpark\_90 Start: 52539, Stop: 52901, Start Num: 46

Candidate Starts for GoldenSpark\_90:

(35, 52512), (Start: 46 @52539 has 107 MA's), (72, 52752), (82, 52836), (83, 52848), (85, 52854), (91, 52890),

Gene: Goldilocks\_89 Start: 51897, Stop: 52259, Start Num: 46

Candidate Starts for Goldilocks\_89:

(33, 51864), (Start: 46 @51897 has 107 MA's), (72, 52110), (82, 52194), (83, 52206), (85, 52212), (91, 52248),

Gene: GooberAzure\_89 Start: 52539, Stop: 52901, Start Num: 46

Candidate Starts for GooberAzure\_89:

(35, 52512), (Start: 46 @52539 has 107 MA's), (72, 52752), (82, 52836), (83, 52848), (85, 52854), (91, 52890),

Gene: Greely\_206 Start: 116895, Stop: 117263, Start Num: 47

Candidate Starts for Greely\_206:

(10, 116745), (12, 116763), (Start: 16 @116781 has 2 MA's), (32, 116859), (Start: 47 @116895 has 3 MA's), (56, 117006), (68, 117072), (71, 117090), (85, 117210), (86, 117216),

Gene: Guillsminger\_66 Start: 47417, Stop: 47872, Start Num: 16

Candidate Starts for Guillsminger\_66:

(Start: 16 @47417 has 2 MA's), (22, 47444), (23, 47447), (Start: 40 @47507 has 38 MA's), (Start: 43 @47519 has 1 MA's), (55, 47609), (60, 47648), (66, 47672), (71, 47699), (78, 47768), (79, 47771), (85, 47819), (86, 47825), (92, 47861),

Gene: HanKaySha\_86 Start: 51837, Stop: 52199, Start Num: 46

Candidate Starts for HanKaySha\_86:

(35, 51810), (Start: 46 @51837 has 107 MA's), (72, 52050), (82, 52134), (83, 52146), (85, 52152), (91, 52188),

Gene: Harella\_86 Start: 53255, Stop: 53617, Start Num: 46

Candidate Starts for Harella\_86:

(33, 53222), (Start: 46 @53255 has 107 MA's), (72, 53468), (73, 53483), (82, 53552), (83, 53564), (85, 53570), (91, 53606),

Gene: Heftyboy\_66 Start: 47886, Stop: 48251, Start Num: 40

Candidate Starts for Heftyboy\_66:

(Start: 16 @47796 has 2 MA's), (22, 47823), (23, 47826), (Start: 40 @47886 has 38 MA's), (Start: 43 @47898 has 1 MA's), (55, 47988), (60, 48027), (66, 48051), (71, 48078), (78, 48147), (79, 48150), (83, 48192), (85, 48198), (86, 48204), (92, 48240),

Gene: Heinz\_56 Start: 36903, Stop: 37334, Start Num: 40

Candidate Starts for Heinz\_56:

(Start: 40 @36903 has 38 MA's), (95, 37269),

Gene: Henry\_84 Start: 52138, Stop: 52500, Start Num: 45

Candidate Starts for Henry\_84:

(Start: 38 @52117 has 3 MA's), (Start: 45 @52138 has 9 MA's), (72, 52351), (82, 52435), (83, 52447), (85, 52453), (91, 52489),

Gene: Hibiscus\_57 Start: 36872, Stop: 37315, Start Num: 36

Candidate Starts for Hibiscus\_57:

(1, 36347), (2, 36353), (3, 36401), (4, 36419), (5, 36458), (6, 36467), (7, 36548), (13, 36767), (Start: 36 @36872 has 2 MA's), (95, 37250),

Gene: Highbury\_85 Start: 51828, Stop: 52190, Start Num: 46

Candidate Starts for Highbury\_85:

(35, 51801), (Start: 46 @51828 has 107 MA's), (72, 52041), (82, 52125), (83, 52137), (85, 52143), (91, 52179),

Gene: Holt\_91 Start: 52953, Stop: 53315, Start Num: 46

Candidate Starts for Holt\_91:

(35, 52926), (Start: 46 @52953 has 107 MA's), (72, 53166), (82, 53250), (83, 53262), (85, 53268), (91, 53304),

Gene: Hoonter\_89 Start: 52399, Stop: 52761, Start Num: 46

Candidate Starts for Hoonter\_89:

(33, 52366), (Start: 46 @52399 has 107 MA's), (72, 52612), (73, 52627), (82, 52696), (83, 52708), (85, 52714), (91, 52750),

Gene: Hokey\_86 Start: 52369, Stop: 52731, Start Num: 46

Candidate Starts for Hokey\_86:

(35, 52342), (Start: 46 @52369 has 107 MA's), (72, 52582), (82, 52666), (83, 52678), (85, 52684), (91, 52720),

Gene: HufflyPuff\_89 Start: 53202, Stop: 53564, Start Num: 46

Candidate Starts for HufflyPuff\_89:

(35, 53175), (Start: 46 @53202 has 107 MA's), (72, 53415), (82, 53499), (83, 53511), (85, 53517), (86, 53523), (91, 53553),

Gene: IHOP\_84 Start: 52301, Stop: 52663, Start Num: 46

Candidate Starts for IHOP\_84:

(35, 52274), (Start: 46 @52301 has 107 MA's), (72, 52514), (82, 52598), (83, 52610), (85, 52616), (91, 52652),

Gene: IPhane7\_71 Start: 46680, Stop: 47099, Start Num: 41

Candidate Starts for IPhane7\_71:

(Start: 37 @46671 has 38 MA's), (Start: 41 @46680 has 7 MA's), (52, 46758), (65, 46845), (71, 46875), (74, 46917), (82, 46977), (96, 47052),

Gene: Icee\_87 Start: 52066, Stop: 52428, Start Num: 46

Candidate Starts for Icee\_87:

(33, 52033), (Start: 46 @52066 has 107 MA's), (72, 52279), (73, 52294), (82, 52363), (83, 52375), (85, 52381), (91, 52417),

Gene: Inca\_83 Start: 50790, Stop: 51152, Start Num: 45

Candidate Starts for Inca\_83:

(Start: 38 @50769 has 3 MA's), (Start: 45 @50790 has 9 MA's), (72, 51003), (82, 51087), (83, 51099), (85, 51105), (91, 51141),

Gene: InvictusManeo\_63 Start: 45860, Stop: 46225, Start Num: 40

Candidate Starts for InvictusManeo\_63:

(23, 45797), (Start: 40 @45860 has 38 MA's), (Start: 43 @45872 has 1 MA's), (55, 45962), (60, 46001), (66, 46025), (71, 46052), (78, 46121), (79, 46124), (83, 46166), (85, 46172), (86, 46178), (88, 46190), (91, 46208),

Gene: Jamie19\_48 Start: 34075, Stop: 34467, Start Num: 37

Candidate Starts for Jamie19\_48:

(9, 33952), (14, 33973), (19, 34000), (Start: 37 @34075 has 38 MA's), (85, 34396),

Gene: JeTaime\_86 Start: 53018, Stop: 53380, Start Num: 46

Candidate Starts for JeTaime\_86:

(35, 52991), (Start: 46 @53018 has 107 MA's), (72, 53231), (82, 53315), (83, 53327), (85, 53333), (91, 53369),

Gene: Jojo24\_56 Start: 37218, Stop: 37661, Start Num: 36

Candidate Starts for Jojo24\_56:

(Start: 36 @37218 has 2 MA's), (85, 37545), (95, 37596),

Gene: Judy\_67 Start: 41178, Stop: 41567, Start Num: 40

Candidate Starts for Judy\_67:

(Start: 40 @41178 has 38 MA's), (64, 41328), (73, 41403), (86, 41496),

Gene: Kanye\_83 Start: 51885, Stop: 52247, Start Num: 46

Candidate Starts for Kanye\_83:

(35, 51858), (Start: 46 @51885 has 107 MA's), (72, 52098), (82, 52182), (83, 52194), (85, 52200), (91, 52236),

Gene: Karkharias\_63 Start: 39837, Stop: 40226, Start Num: 39

Candidate Starts for Karkharias\_63:

(39, 39837), (64, 39987), (80, 40113),

Gene: Kevin1\_51 Start: 34560, Stop: 34952, Start Num: 37

Candidate Starts for Kevin1\_51:

(11, 34452), (Start: 37 @34560 has 38 MA's), (85, 34881), (86, 34887), (87, 34896),

Gene: Kimchi\_90 Start: 52405, Stop: 52767, Start Num: 46

Candidate Starts for Kimchi\_90:

(33, 52372), (Start: 46 @52405 has 107 MA's), (72, 52618), (82, 52702), (83, 52714), (85, 52720), (91, 52756),

Gene: Kostya\_86 Start: 52403, Stop: 52765, Start Num: 46

Candidate Starts for Kostya\_86:

(35, 52376), (Start: 46 @52403 has 107 MA's), (72, 52616), (82, 52700), (83, 52712), (85, 52718), (91, 52754),

Gene: Kozie\_44 Start: 32286, Stop: 32642, Start Num: 48

Candidate Starts for Kozie\_44:

(Start: 48 @32286 has 1 MA's), (58, 32409), (85, 32586), (86, 32592), (88, 32604),

Gene: Kratio\_63 Start: 45599, Stop: 45964, Start Num: 40

Candidate Starts for Kratio\_63:

(23, 45536), (Start: 40 @45599 has 38 MA's), (Start: 43 @45611 has 1 MA's), (55, 45701), (60, 45740), (66, 45764), (71, 45791), (78, 45860), (79, 45863), (83, 45905), (85, 45911), (86, 45917), (88, 45929), (91, 45947),

Gene: Kukla\_68 Start: 40006, Stop: 40383, Start Num: 40

Candidate Starts for Kukla\_68:

(Start: 40 @40006 has 38 MA's), (49, 40060), (55, 40108), (66, 40171), (67, 40174), (73, 40231), (79, 40270), (83, 40312), (89, 40342), (90, 40345), (98, 40375),

Gene: Kumao\_67 Start: 47222, Stop: 47653, Start Num: 37

Candidate Starts for Kumao\_67:

(Start: 37 @47222 has 38 MA's), (73, 47462), (78, 47498), (86, 47555), (88, 47567), (94, 47600),

Gene: Larva\_66 Start: 47058, Stop: 47423, Start Num: 40

Candidate Starts for Larva\_66:

(26, 47022), (Start: 40 @47058 has 38 MA's), (Start: 43 @47070 has 1 MA's), (55, 47160), (60, 47199), (66, 47223), (71, 47250), (77, 47316), (78, 47319), (79, 47322), (83, 47364), (85, 47370), (86, 47376), (88, 47388), (91, 47406), (92, 47412),

Gene: Leston\_65 Start: 47546, Stop: 48001, Start Num: 16

Candidate Starts for Leston\_65:

(Start: 16 @47546 has 2 MA's), (22, 47573), (23, 47576), (Start: 40 @47636 has 38 MA's), (Start: 43 @47648 has 1 MA's), (55, 47738), (60, 47777), (66, 47801), (71, 47828), (78, 47897), (79, 47900), (85, 47948), (86, 47954), (92, 47990),

Gene: Lilac\_88 Start: 52154, Stop: 52516, Start Num: 46

Candidate Starts for Lilac\_88:

(35, 52127), (Start: 46 @52154 has 107 MA's), (72, 52367), (73, 52382), (82, 52451), (83, 52463), (85, 52469), (91, 52505),

Gene: LilhomieP\_71 Start: 47159, Stop: 47578, Start Num: 41

Candidate Starts for LilhomieP\_71:

(Start: 37 @47150 has 38 MA's), (Start: 41 @47159 has 7 MA's), (52, 47237), (65, 47324), (71, 47354), (74, 47396), (82, 47456), (96, 47531),

Gene: Lilizi\_87 Start: 51867, Stop: 52229, Start Num: 46

Candidate Starts for Lilizi\_87:

(35, 51840), (Start: 46 @51867 has 107 MA's), (72, 52080), (82, 52164), (83, 52176), (85, 52182), (91, 52218),

Gene: Lilpickle\_85 Start: 51755, Stop: 52117, Start Num: 46

Candidate Starts for Lilpickle\_85:

(35, 51728), (Start: 46 @51755 has 107 MA's), (72, 51968), (82, 52052), (83, 52064), (85, 52070), (91, 52106),

Gene: MISSy\_87 Start: 52261, Stop: 52623, Start Num: 46

Candidate Starts for MISSy\_87:

(35, 52234), (Start: 46 @52261 has 107 MA's), (72, 52474), (82, 52558), (83, 52570), (85, 52576), (91, 52612),

Gene: MPhalcon\_87 Start: 52254, Stop: 52616, Start Num: 46

Candidate Starts for MPhalcon\_87:

(35, 52227), (Start: 46 @52254 has 107 MA's), (72, 52467), (82, 52551), (83, 52563), (85, 52569), (91, 52605),

Gene: MadamMonkfish\_86 Start: 51482, Stop: 51844, Start Num: 46

Candidate Starts for MadamMonkfish\_86:

(35, 51455), (Start: 46 @51482 has 107 MA's), (72, 51695), (82, 51779), (83, 51791), (85, 51797), (91, 51833),

Gene: Magsby\_49 Start: 34533, Stop: 34925, Start Num: 37

Candidate Starts for Magsby\_49:

(Start: 37 @34533 has 38 MA's), (85, 34854),

Gene: Manda\_88 Start: 53750, Stop: 54112, Start Num: 45

Candidate Starts for Manda\_88:

(Start: 38 @53729 has 3 MA's), (Start: 45 @53750 has 9 MA's), (72, 53963), (82, 54047), (83, 54059), (85, 54065), (91, 54101),

Gene: Mao1\_71 Start: 51034, Stop: 51408, Start Num: 49

Candidate Starts for Mao1\_71:

(Start: 40 @50980 has 38 MA's), (49, 51034), (55, 51085), (60, 51124), (62, 51130), (69, 51199), (73, 51241), (75, 51265), (77, 51274), (78, 51277), (85, 51328), (87, 51343), (89, 51352),

Gene: Marshmallow\_84 Start: 53031, Stop: 53393, Start Num: 46

Candidate Starts for Marshmallow\_84:

(35, 53004), (Start: 46 @53031 has 107 MA's), (72, 53244), (82, 53328), (83, 53340), (85, 53346), (91, 53382),

Gene: MaryV\_85 Start: 52221, Stop: 52625, Start Num: 31

Candidate Starts for MaryV\_85:

(15, 52140), (Start: 31 @52221 has 5 MA's), (50, 52308), (54, 52356), (57, 52380), (59, 52401), (61, 52407), (63, 52416), (76, 52518), (79, 52530), (85, 52578), (86, 52584), (89, 52602),

Gene: Mask\_67 Start: 53263, Stop: 53691, Start Num: 40

Candidate Starts for Mask\_67:

(Start: 40 @53263 has 38 MA's), (49, 53317), (55, 53368), (60, 53407), (62, 53413), (69, 53482), (75, 53548), (76, 53551), (78, 53560), (85, 53611), (87, 53626), (89, 53635),

Gene: Maxxinista\_88 Start: 52127, Stop: 52489, Start Num: 46

Candidate Starts for Maxxinista\_88:

(35, 52100), (Start: 46 @52127 has 107 MA's), (72, 52340), (82, 52424), (83, 52436), (85, 52442), (91, 52478),

Gene: Melville\_53 Start: 34517, Stop: 34909, Start Num: 37

Candidate Starts for Melville\_53:

(Start: 37 @34517 has 38 MA's), (85, 34838),

Gene: Mindy\_85 Start: 51283, Stop: 51666, Start Num: 38

Candidate Starts for Mindy\_85:

(Start: 38 @51283 has 3 MA's), (Start: 45 @51304 has 9 MA's), (72, 51517), (82, 51601), (83, 51613), (85, 51619), (91, 51655),

Gene: Miniwave\_81 Start: 51799, Stop: 52161, Start Num: 46

Candidate Starts for Miniwave\_81:

(35, 51772), (Start: 46 @51799 has 107 MA's), (72, 52012), (82, 52096), (83, 52108), (85, 52114), (91, 52150),

Gene: Miryou\_70 Start: 50262, Stop: 50627, Start Num: 40

Candidate Starts for Miryou\_70:

(Start: 16 @50172 has 2 MA's), (22, 50199), (23, 50202), (Start: 40 @50262 has 38 MA's), (Start: 43 @50274 has 1 MA's), (55, 50364), (60, 50403), (66, 50427), (71, 50454), (78, 50523), (79, 50526), (83, 50568), (85, 50574), (86, 50580), (92, 50616),

Gene: Misfit\_87 Start: 53273, Stop: 53635, Start Num: 46

Candidate Starts for Misfit\_87:

(35, 53246), (Start: 46 @53273 has 107 MA's), (72, 53486), (82, 53570), (83, 53582), (85, 53588), (91, 53624),

Gene: Moldemort\_89 Start: 52218, Stop: 52580, Start Num: 46

Candidate Starts for Moldemort\_89:

(33, 52185), (Start: 46 @52218 has 107 MA's), (72, 52431), (73, 52446), (82, 52515), (83, 52527), (85, 52533), (91, 52569),

Gene: Mosby\_82 Start: 51556, Stop: 51918, Start Num: 46

Candidate Starts for Mosby\_82:

(35, 51529), (Start: 46 @51556 has 107 MA's), (72, 51769), (82, 51853), (83, 51865), (85, 51871), (91, 51907),

Gene: MrMagoo\_81 Start: 49270, Stop: 49671, Start Num: 42

Candidate Starts for MrMagoo\_81:

(Start: 42 @49270 has 7 MA's), (60, 49414), (74, 49507), (82, 49567), (91, 49621),

Gene: Murica\_89 Start: 53202, Stop: 53564, Start Num: 46

Candidate Starts for Murica\_89:

(35, 53175), (Start: 46 @53202 has 107 MA's), (72, 53415), (82, 53499), (83, 53511), (85, 53517), (91, 53553),

Gene: Murphy\_86 Start: 52639, Stop: 53001, Start Num: 46

Candidate Starts for Murphy\_86:

(35, 52612), (Start: 46 @52639 has 107 MA's), (72, 52852), (82, 52936), (83, 52948), (85, 52954), (91, 52990),

Gene: Myrale\_86 Start: 52762, Stop: 53124, Start Num: 46

Candidate Starts for Myrale\_86:

(33, 52729), (Start: 46 @52762 has 107 MA's), (72, 52975), (82, 53059), (83, 53071), (85, 53077), (91, 53113),

Gene: Myrna\_199 Start: 116281, Stop: 116649, Start Num: 47

Candidate Starts for Myrna\_199:

(10, 116131), (12, 116149), (32, 116245), (Start: 47 @116281 has 3 MA's), (68, 116458), (71, 116476), (80, 116560), (85, 116596),

Gene: Nala\_88 Start: 52763, Stop: 53125, Start Num: 46

Candidate Starts for Nala\_88:

(35, 52736), (Start: 46 @52763 has 107 MA's), (72, 52976), (82, 53060), (83, 53072), (85, 53078), (91, 53114),

Gene: Nanosmite\_76 Start: 48317, Stop: 48718, Start Num: 42

Candidate Starts for Nanosmite\_76:

(Start: 42 @48317 has 7 MA's), (65, 48482), (74, 48554), (82, 48614), (87, 48647), (91, 48668),

Gene: NelitzaMV\_84 Start: 51845, Stop: 52207, Start Num: 46

Candidate Starts for NelitzaMV\_84:

(35, 51818), (Start: 46 @51845 has 107 MA's), (72, 52058), (82, 52142), (83, 52154), (85, 52160), (91, 52196),

Gene: Nenae\_54 Start: 35786, Stop: 36178, Start Num: 37

Candidate Starts for Nenae\_54:

(9, 35663), (14, 35684), (19, 35711), (Start: 37 @35786 has 38 MA's), (85, 36107),

Gene: Nimrod\_87 Start: 53466, Stop: 53828, Start Num: 46

Candidate Starts for Nimrod\_87:

(35, 53439), (Start: 46 @53466 has 107 MA's), (72, 53679), (82, 53763), (83, 53775), (85, 53781), (91, 53817),

Gene: NoSleep\_87 Start: 52100, Stop: 52462, Start Num: 46

Candidate Starts for NoSleep\_87:

(35, 52073), (Start: 46 @52100 has 107 MA's), (72, 52313), (82, 52397), (83, 52409), (85, 52415), (91, 52451),

Gene: OkiRoe\_66 Start: 47934, Stop: 48299, Start Num: 40

Candidate Starts for OkiRoe\_66:

(Start: 16 @47844 has 2 MA's), (22, 47871), (23, 47874), (Start: 40 @47934 has 38 MA's), (Start: 43 @47946 has 1 MA's), (55, 48036), (60, 48075), (66, 48099), (71, 48126), (78, 48195), (79, 48198), (85, 48246), (86, 48252), (92, 48288),

Gene: Omnicron\_69 Start: 48055, Stop: 48420, Start Num: 40

Candidate Starts for Omnicron\_69:

(26, 48019), (Start: 40 @48055 has 38 MA's), (Start: 43 @48067 has 1 MA's), (55, 48157), (60, 48196), (66, 48220), (71, 48247), (78, 48316), (79, 48319), (83, 48361), (85, 48367), (86, 48373), (88, 48385), (93, 48412),

Gene: OrionPax\_85 Start: 51851, Stop: 52213, Start Num: 46

Candidate Starts for OrionPax\_85:

(35, 51824), (Start: 46 @51851 has 107 MA's), (72, 52064), (82, 52148), (83, 52160), (85, 52166), (91, 52202),



Gene: Palpatine\_88 Start: 53229, Stop: 53591, Start Num: 46

Candidate Starts for Palpatine\_88:

(35, 53202), (Start: 46 @53229 has 107 MA's), (72, 53442), (82, 53526), (83, 53538), (85, 53544), (91, 53580),

Gene: Panchino\_47 Start: 35421, Stop: 35813, Start Num: 37

Candidate Starts for Panchino\_47:

(9, 35298), (14, 35319), (19, 35346), (Start: 37 @35421 has 38 MA's), (85, 35742),

Gene: Paola\_65 Start: 47507, Stop: 47872, Start Num: 40

Candidate Starts for Paola\_65:

(Start: 16 @47417 has 2 MA's), (22, 47444), (23, 47447), (Start: 40 @47507 has 38 MA's), (Start: 43 @47519 has 1 MA's), (55, 47609), (60, 47648), (66, 47672), (71, 47699), (78, 47768), (79, 47771), (85, 47819), (86, 47825), (92, 47861),

Gene: Paperbeatsrock\_85 Start: 52477, Stop: 52839, Start Num: 46

Candidate Starts for Paperbeatsrock\_85:

(35, 52450), (Start: 46 @52477 has 107 MA's), (72, 52690), (82, 52774), (83, 52786), (85, 52792), (91, 52828),

Gene: Parmesanjohn\_49 Start: 34536, Stop: 34928, Start Num: 37

Candidate Starts for Parmesanjohn\_49:

(Start: 37 @34536 has 38 MA's), (85, 34857),

Gene: Pat3\_84 Start: 50872, Stop: 51234, Start Num: 46

Candidate Starts for Pat3\_84:

(33, 50839), (Start: 46 @50872 has 107 MA's), (72, 51085), (73, 51100), (82, 51169), (83, 51181), (85, 51187), (91, 51223),

Gene: Peas\_64 Start: 41595, Stop: 41996, Start Num: 40

Candidate Starts for Peas\_64:

(Start: 40 @41595 has 38 MA's), (64, 41745),

Gene: PegLeg\_70 Start: 46420, Stop: 46839, Start Num: 41

Candidate Starts for PegLeg\_70:

(Start: 37 @46411 has 38 MA's), (Start: 41 @46420 has 7 MA's), (52, 46498), (65, 46585), (71, 46615), (74, 46657), (82, 46717), (96, 46792),

Gene: PeggyLeg03\_63 Start: 40587, Stop: 40976, Start Num: 40

Candidate Starts for PeggyLeg03\_63:

(Start: 40 @40587 has 38 MA's), (64, 40737),

Gene: Petra64142\_90 Start: 53696, Stop: 54058, Start Num: 46

Candidate Starts for Petra64142\_90:

(35, 53669), (Start: 46 @53696 has 107 MA's), (72, 53909), (82, 53993), (83, 54005), (85, 54011), (91, 54047),

Gene: Phabba\_210 Start: 116249, Stop: 116617, Start Num: 47

Candidate Starts for Phabba\_210:

(12, 116117), (32, 116213), (Start: 47 @116249 has 3 MA's), (68, 116426), (71, 116444), (85, 116564), (86, 116570),

Gene: Phaja\_84 Start: 52303, Stop: 52665, Start Num: 46  
Candidate Starts for Phaja\_84:  
(35, 52276), (Start: 46 @52303 has 107 MA's), (72, 52516), (82, 52600), (83, 52612), (85, 52618), (91, 52654),

Gene: PhancyPhin\_54 Start: 35780, Stop: 36172, Start Num: 37  
Candidate Starts for PhancyPhin\_54:  
(9, 35657), (14, 35678), (19, 35705), (Start: 37 @35780 has 38 MA's), (85, 36101),

Gene: Pharsalus\_83 Start: 52277, Stop: 52639, Start Num: 46  
Candidate Starts for Pharsalus\_83:  
(35, 52250), (Start: 46 @52277 has 107 MA's), (72, 52490), (82, 52574), (83, 52586), (85, 52592), (91, 52628),

Gene: PhatBacter\_90 Start: 53249, Stop: 53611, Start Num: 46  
Candidate Starts for PhatBacter\_90:  
(35, 53222), (Start: 46 @53249 has 107 MA's), (72, 53462), (82, 53546), (83, 53558), (85, 53564), (91, 53600),

Gene: Phaux\_88 Start: 53244, Stop: 53606, Start Num: 46  
Candidate Starts for Phaux\_88:  
(35, 53217), (Start: 46 @53244 has 107 MA's), (72, 53457), (82, 53541), (83, 53553), (85, 53559), (91, 53595),

Gene: Phayonce\_51 Start: 37143, Stop: 37571, Start Num: 40  
Candidate Starts for Phayonce\_51:  
(Start: 40 @37143 has 38 MA's), (49, 37197), (55, 37248), (60, 37287), (62, 37293), (69, 37362), (73, 37404), (75, 37428), (77, 37437), (78, 37440), (85, 37491), (87, 37506), (89, 37515),

Gene: Phloss\_47 Start: 33943, Stop: 34335, Start Num: 37  
Candidate Starts for Phloss\_47:  
(Start: 37 @33943 has 38 MA's), (85, 34264),

Gene: Phrann\_51 Start: 36063, Stop: 36455, Start Num: 37  
Candidate Starts for Phrann\_51:  
(9, 35940), (14, 35961), (19, 35988), (Start: 37 @36063 has 38 MA's), (85, 36384),

Gene: Phrux\_83 Start: 51798, Stop: 52160, Start Num: 45  
Candidate Starts for Phrux\_83:  
(Start: 38 @51777 has 3 MA's), (Start: 45 @51798 has 9 MA's), (72, 52011), (82, 52095), (83, 52107), (85, 52113), (91, 52149),

Gene: Pipsqueaks\_49 Start: 34513, Stop: 34905, Start Num: 37  
Candidate Starts for Pipsqueaks\_49:  
(Start: 37 @34513 has 38 MA's), (85, 34834),

Gene: Policronamos\_90 Start: 53244, Stop: 53606, Start Num: 46  
Candidate Starts for Policronamos\_90:  
(35, 53217), (Start: 46 @53244 has 107 MA's), (72, 53457), (82, 53541), (83, 53553), (85, 53559), (91, 53595),

Gene: Porky\_85 Start: 51667, Stop: 52029, Start Num: 46  
Candidate Starts for Porky\_85:

(35, 51640), (Start: 46 @51667 has 107 MA's), (72, 51880), (82, 51964), (83, 51976), (85, 51982), (91, 52018),

Gene: Psycho\_65 Start: 46183, Stop: 46548, Start Num: 40

Candidate Starts for Psycho\_65:

(26, 46147), (Start: 40 @46183 has 38 MA's), (Start: 43 @46195 has 1 MA's), (55, 46285), (60, 46324), (66, 46348), (71, 46375), (77, 46441), (78, 46444), (79, 46447), (83, 46489), (85, 46495), (86, 46501), (88, 46513), (91, 46531), (92, 46537),

Gene: Pucara\_59 Start: 40031, Stop: 40420, Start Num: 40

Candidate Starts for Pucara\_59:

(Start: 40 @40031 has 38 MA's), (64, 40181),

Gene: Pumpkin\_89 Start: 52895, Stop: 53257, Start Num: 46

Candidate Starts for Pumpkin\_89:

(35, 52868), (Start: 46 @52895 has 107 MA's), (72, 53108), (82, 53192), (83, 53204), (85, 53210), (91, 53246),

Gene: Purgamenstris\_54 Start: 35784, Stop: 36176, Start Num: 37

Candidate Starts for Purgamenstris\_54:

(9, 35661), (14, 35682), (19, 35709), (Start: 37 @35784 has 38 MA's), (85, 36105),

Gene: Quallification\_87 Start: 52885, Stop: 53247, Start Num: 46

Candidate Starts for Quallification\_87:

(35, 52858), (Start: 46 @52885 has 107 MA's), (72, 53098), (82, 53182), (83, 53194), (85, 53200), (91, 53236),

Gene: Rakim\_87 Start: 52214, Stop: 52576, Start Num: 46

Candidate Starts for Rakim\_87:

(33, 52181), (Start: 46 @52214 has 107 MA's), (72, 52427), (82, 52511), (83, 52523), (85, 52529), (91, 52565),

Gene: Rando14\_68 Start: 46839, Stop: 47204, Start Num: 40

Candidate Starts for Rando14\_68:

(26, 46803), (Start: 40 @46839 has 38 MA's), (Start: 43 @46851 has 1 MA's), (55, 46941), (60, 46980), (65, 47001), (66, 47004), (71, 47031), (78, 47100), (79, 47103), (83, 47145), (85, 47151), (86, 47157), (88, 47169), (93, 47196),

Gene: Raymond7\_48 Start: 35572, Stop: 35964, Start Num: 37

Candidate Starts for Raymond7\_48:

(9, 35449), (14, 35470), (19, 35497), (Start: 37 @35572 has 38 MA's), (85, 35893),

Gene: Redi\_54 Start: 35783, Stop: 36175, Start Num: 37

Candidate Starts for Redi\_54:

(9, 35660), (14, 35681), (19, 35708), (Start: 37 @35783 has 38 MA's), (85, 36104),

Gene: Reindeer\_73 Start: 47812, Stop: 48231, Start Num: 41

Candidate Starts for Reindeer\_73:

(Start: 37 @47803 has 38 MA's), (Start: 41 @47812 has 7 MA's), (58, 47950), (72, 48025), (74, 48049), (82, 48109), (96, 48184),

Gene: Rey\_78 Start: 48943, Stop: 49344, Start Num: 42

Candidate Starts for Rey\_78:

(Start: 42 @48943 has 7 MA's), (60, 49087), (74, 49180), (82, 49240), (91, 49294),

Gene: Reyja\_59 Start: 38515, Stop: 38931, Start Num: 40

Candidate Starts for Reyja\_59:

(5, 38104), (6, 38113), (7, 38194), (13, 38413), (Start: 40 @38515 has 38 MA's), (75, 38767), (79, 38782), (85, 38830),

Gene: Rimmer\_86 Start: 52254, Stop: 52616, Start Num: 46

Candidate Starts for Rimmer\_86:

(Start: 46 @52254 has 107 MA's), (72, 52467), (73, 52482), (82, 52551), (83, 52563), (85, 52569), (91, 52605),

Gene: RiverMonster\_86 Start: 52415, Stop: 52777, Start Num: 46

Candidate Starts for RiverMonster\_86:

(35, 52388), (Start: 46 @52415 has 107 MA's), (72, 52628), (82, 52712), (83, 52724), (85, 52730), (91, 52766),

Gene: RootBeer\_54 Start: 36912, Stop: 37301, Start Num: 40

Candidate Starts for RootBeer\_54:

(Start: 40 @36912 has 38 MA's), (64, 37062),

Gene: Rubeelu\_52 Start: 35124, Stop: 35516, Start Num: 37

Candidate Starts for Rubeelu\_52:

(11, 35016), (Start: 37 @35124 has 38 MA's), (85, 35445),

Gene: Saints25\_85 Start: 51828, Stop: 52190, Start Num: 46

Candidate Starts for Saints25\_85:

(35, 51801), (Start: 46 @51828 has 107 MA's), (72, 52041), (82, 52125), (83, 52137), (85, 52143), (91, 52179),

Gene: Santhid\_54 Start: 36000, Stop: 36518, Start Num: 40

Candidate Starts for Santhid\_54:

(Start: 40 @36000 has 38 MA's), (85, 36315), (99, 36435), (101, 36468),

Gene: Sashimi\_87 Start: 47693, Stop: 48073, Start Num: 40

Candidate Starts for Sashimi\_87:

(24, 47648), (Start: 40 @47693 has 38 MA's), (55, 47795), (64, 47843), (70, 47885), (85, 48008),

Gene: Sassay\_81 Start: 50518, Stop: 50880, Start Num: 46

Candidate Starts for Sassay\_81:

(35, 50491), (Start: 46 @50518 has 107 MA's), (72, 50731), (82, 50815), (83, 50827), (85, 50833), (91, 50869),

Gene: Schnauzer\_50 Start: 34536, Stop: 34928, Start Num: 37

Candidate Starts for Schnauzer\_50:

(Start: 37 @34536 has 38 MA's), (85, 34857),

Gene: ScoobyDoobyDoo\_198 Start: 114464, Stop: 114832, Start Num: 47

Candidate Starts for ScoobyDoobyDoo\_198:

(8, 114260), (Start: 16 @114353 has 2 MA's), (20, 114377), (32, 114428), (Start: 47 @114464 has 3 MA's), (56, 114575), (67, 114635), (71, 114659), (75, 114716), (77, 114725), (79, 114731), (85, 114779), (86, 114785),

Gene: ShamWow\_86 Start: 52698, Stop: 53060, Start Num: 45  
Candidate Starts for ShamWow\_86:  
(Start: 38 @52677 has 3 MA's), (Start: 45 @52698 has 9 MA's), (72, 52911), (82, 52995), (83, 53007),  
(85, 53013), (91, 53049),

Gene: Shambre1\_63 Start: 40417, Stop: 40782, Start Num: 44  
Candidate Starts for Shambre1\_63:  
(Start: 44 @40417 has 1 MA's), (71, 40609), (85, 40729),

Gene: ShereKhan\_84 Start: 52810, Stop: 53172, Start Num: 46  
Candidate Starts for ShereKhan\_84:  
(35, 52783), (Start: 46 @52810 has 107 MA's), (72, 53023), (82, 53107), (83, 53119), (85, 53125), (91,  
53161),

Gene: ShrimpFriedEgg\_54 Start: 35783, Stop: 36175, Start Num: 37  
Candidate Starts for ShrimpFriedEgg\_54:  
(9, 35660), (14, 35681), (19, 35708), (Start: 37 @35783 has 38 MA's), (85, 36104),

Gene: Silvafighter\_50 Start: 34509, Stop: 34901, Start Num: 37  
Candidate Starts for Silvafighter\_50:  
(Start: 37 @34509 has 38 MA's), (85, 34830),

Gene: Simpliphy\_85 Start: 51818, Stop: 52180, Start Num: 46  
Candidate Starts for Simpliphy\_85:  
(35, 51791), (Start: 46 @51818 has 107 MA's), (72, 52031), (82, 52115), (83, 52127), (85, 52133), (91,  
52169),

Gene: SirDuracell\_86 Start: 51469, Stop: 51831, Start Num: 46  
Candidate Starts for SirDuracell\_86:  
(34, 51442), (Start: 46 @51469 has 107 MA's), (72, 51682), (73, 51697), (82, 51766), (83, 51778), (85,  
51784), (91, 51820),

Gene: Skinny\_74 Start: 47579, Stop: 48007, Start Num: 37  
Candidate Starts for Skinny\_74:  
(Start: 37 @47579 has 38 MA's), (Start: 41 @47588 has 7 MA's), (52, 47666), (65, 47753), (71,  
47783), (74, 47825), (82, 47885), (96, 47960),

Gene: SlimJimmy\_71 Start: 47135, Stop: 47563, Start Num: 37  
Candidate Starts for SlimJimmy\_71:  
(Start: 37 @47135 has 38 MA's), (Start: 41 @47144 has 7 MA's), (52, 47222), (65, 47309), (71,  
47339), (74, 47381), (82, 47441), (96, 47516),

Gene: Smurph\_49 Start: 34536, Stop: 34928, Start Num: 37  
Candidate Starts for Smurph\_49:  
(Start: 37 @34536 has 38 MA's), (85, 34857),

Gene: Snekmaggedon\_48 Start: 34075, Stop: 34467, Start Num: 37  
Candidate Starts for Snekmaggedon\_48:  
(9, 33952), (14, 33973), (19, 34000), (Start: 37 @34075 has 38 MA's), (85, 34396),

Gene: SoSeph\_66 Start: 47886, Stop: 48251, Start Num: 40  
Candidate Starts for SoSeph\_66:

(Start: 16 @47796 has 2 MA's), (22, 47823), (23, 47826), (Start: 40 @47886 has 38 MA's), (Start: 43 @47898 has 1 MA's), (55, 47988), (60, 48027), (66, 48051), (71, 48078), (78, 48147), (79, 48150), (83, 48192), (85, 48198), (86, 48204), (92, 48240),

Gene: SophKB\_83 Start: 51496, Stop: 51858, Start Num: 46

Candidate Starts for SophKB\_83:

(35, 51469), (Start: 46 @51496 has 107 MA's), (72, 51709), (82, 51793), (83, 51805), (85, 51811), (91, 51847),

Gene: Sotrice96\_87 Start: 52362, Stop: 52724, Start Num: 46

Candidate Starts for Sotrice96\_87:

(33, 52329), (Start: 46 @52362 has 107 MA's), (72, 52575), (73, 52590), (82, 52659), (83, 52671), (85, 52677), (91, 52713),

Gene: SpongeBob\_48 Start: 34075, Stop: 34467, Start Num: 37

Candidate Starts for SpongeBob\_48:

(9, 33952), (14, 33973), (19, 34000), (Start: 37 @34075 has 38 MA's), (85, 34396),

Gene: Stank\_89 Start: 52757, Stop: 53119, Start Num: 46

Candidate Starts for Stank\_89:

(35, 52730), (Start: 46 @52757 has 107 MA's), (72, 52970), (82, 53054), (83, 53066), (85, 53072), (91, 53108),

Gene: Stark\_87 Start: 52298, Stop: 52660, Start Num: 46

Candidate Starts for Stark\_87:

(35, 52271), (Start: 46 @52298 has 107 MA's), (72, 52511), (82, 52595), (83, 52607), (85, 52613), (91, 52649),

Gene: StellaBean\_82 Start: 52001, Stop: 52384, Start Num: 38

Candidate Starts for StellaBean\_82:

(Start: 38 @52001 has 3 MA's), (Start: 45 @52022 has 9 MA's), (72, 52235), (82, 52319), (83, 52331), (85, 52337), (91, 52373),

Gene: StolenFromERC\_89 Start: 52402, Stop: 52764, Start Num: 46

Candidate Starts for StolenFromERC\_89:

(33, 52369), (Start: 46 @52402 has 107 MA's), (72, 52615), (82, 52699), (83, 52711), (85, 52717), (91, 52753),

Gene: TBrady12\_89 Start: 52238, Stop: 52600, Start Num: 46

Candidate Starts for TBrady12\_89:

(35, 52211), (Start: 46 @52238 has 107 MA's), (72, 52451), (82, 52535), (83, 52547), (85, 52553), (91, 52589),

Gene: Tapioca\_51 Start: 34502, Stop: 34894, Start Num: 37

Candidate Starts for Tapioca\_51:

(Start: 37 @34502 has 38 MA's), (85, 34823),

Gene: Tarkin\_85 Start: 52486, Stop: 52848, Start Num: 46

Candidate Starts for Tarkin\_85:

(35, 52459), (Start: 46 @52486 has 107 MA's), (72, 52699), (82, 52783), (83, 52795), (85, 52801), (91, 52837),

Gene: Tarzan\_57 Start: 37228, Stop: 37659, Start Num: 40

Candidate Starts for Tarzan\_57:

(Start: 40 @37228 has 38 MA's), (85, 37543), (95, 37594), (100, 37651),

Gene: TeardropMSU\_82 Start: 51486, Stop: 51848, Start Num: 46

Candidate Starts for TeardropMSU\_82:

(35, 51459), (Start: 46 @51486 has 107 MA's), (72, 51699), (82, 51783), (83, 51795), (85, 51801), (91, 51837),

Gene: Teaspoon\_83 Start: 52320, Stop: 52703, Start Num: 38

Candidate Starts for Teaspoon\_83:

(Start: 38 @52320 has 3 MA's), (Start: 45 @52341 has 9 MA's), (72, 52554), (82, 52638), (83, 52650), (85, 52656), (91, 52692),

Gene: Terminus\_89 Start: 53273, Stop: 53635, Start Num: 46

Candidate Starts for Terminus\_89:

(35, 53246), (Start: 46 @53273 has 107 MA's), (72, 53486), (82, 53570), (83, 53582), (85, 53588), (91, 53624),

Gene: Thresher\_88 Start: 53357, Stop: 53719, Start Num: 46

Candidate Starts for Thresher\_88:

(35, 53330), (Start: 46 @53357 has 107 MA's), (72, 53570), (82, 53654), (83, 53666), (85, 53672), (91, 53708),

Gene: Thyatira\_68 Start: 49878, Stop: 50243, Start Num: 40

Candidate Starts for Thyatira\_68:

(Start: 16 @49788 has 2 MA's), (22, 49815), (23, 49818), (Start: 40 @49878 has 38 MA's), (Start: 43 @49890 has 1 MA's), (55, 49980), (60, 50019), (66, 50043), (71, 50070), (78, 50139), (79, 50142), (83, 50184), (85, 50190), (86, 50196), (92, 50232),

Gene: Tomaszewski\_81 Start: 51649, Stop: 52011, Start Num: 46

Candidate Starts for Tomaszewski\_81:

(35, 51622), (Start: 46 @51649 has 107 MA's), (72, 51862), (82, 51946), (83, 51958), (85, 51964), (91, 52000),

Gene: Toto\_84 Start: 52677, Stop: 53060, Start Num: 38

Candidate Starts for Toto\_84:

(Start: 38 @52677 has 3 MA's), (Start: 45 @52698 has 9 MA's), (72, 52911), (82, 52995), (83, 53007), (85, 53013), (91, 53049),

Gene: Traaww1\_82 Start: 51784, Stop: 52146, Start Num: 46

Candidate Starts for Traaww1\_82:

(33, 51751), (Start: 46 @51784 has 107 MA's), (72, 51997), (73, 52012), (82, 52081), (83, 52093), (85, 52099), (91, 52135),

Gene: TripleJ\_65 Start: 39433, Stop: 39810, Start Num: 40

Candidate Starts for TripleJ\_65:

(Start: 40 @39433 has 38 MA's), (49, 39487), (53, 39511), (55, 39535), (66, 39598), (67, 39601), (79, 39697), (83, 39739), (89, 39769), (90, 39772), (98, 39802),

Gene: Tuco\_87 Start: 53245, Stop: 53607, Start Num: 46

Candidate Starts for Tuco\_87:

(35, 53218), (Start: 46 @53245 has 107 MA's), (72, 53458), (82, 53542), (83, 53554), (85, 53560), (91, 53596),

Gene: TyDawg\_71 Start: 46671, Stop: 47099, Start Num: 37

Candidate Starts for TyDawg\_71:

(Start: 37 @46671 has 38 MA's), (Start: 41 @46680 has 7 MA's), (52, 46758), (65, 46845), (71, 46875), (74, 46917), (82, 46977), (96, 47052),

Gene: Ukulele\_81 Start: 51631, Stop: 51993, Start Num: 46

Candidate Starts for Ukulele\_81:

(35, 51604), (Start: 46 @51631 has 107 MA's), (72, 51844), (82, 51928), (83, 51940), (85, 51946), (91, 51982),

Gene: Waterfoul\_67 Start: 47948, Stop: 48313, Start Num: 40

Candidate Starts for Waterfoul\_67:

(Start: 16 @47858 has 2 MA's), (22, 47885), (23, 47888), (Start: 40 @47948 has 38 MA's), (Start: 43 @47960 has 1 MA's), (55, 48050), (60, 48089), (66, 48113), (71, 48140), (78, 48209), (79, 48212), (83, 48254), (85, 48260), (86, 48266), (92, 48302),

Gene: Wiggin\_88 Start: 52185, Stop: 52547, Start Num: 46

Candidate Starts for Wiggin\_88:

(33, 52152), (Start: 46 @52185 has 107 MA's), (72, 52398), (73, 52413), (82, 52482), (83, 52494), (85, 52500), (91, 52536),

Gene: Wildcat\_85 Start: 52231, Stop: 52635, Start Num: 31

Candidate Starts for Wildcat\_85:

(15, 52150), (Start: 31 @52231 has 5 MA's), (50, 52318), (54, 52366), (57, 52390), (59, 52411), (61, 52417), (63, 52426), (76, 52528), (79, 52540), (85, 52588), (86, 52594), (89, 52612),

Gene: Willez\_81 Start: 50518, Stop: 50880, Start Num: 46

Candidate Starts for Willez\_81:

(35, 50491), (Start: 46 @50518 has 107 MA's), (72, 50731), (82, 50815), (83, 50827), (85, 50833),

Gene: Xandras\_85 Start: 51730, Stop: 52092, Start Num: 46

Candidate Starts for Xandras\_85:

(35, 51703), (Start: 46 @51730 has 107 MA's), (72, 51943), (82, 52027), (83, 52039), (85, 52045), (91, 52081),

Gene: Xerxes\_49 Start: 34533, Stop: 34925, Start Num: 37

Candidate Starts for Xerxes\_49:

(Start: 37 @34533 has 38 MA's), (85, 34854),

Gene: YassJohnny\_83 Start: 51649, Stop: 52011, Start Num: 45

Candidate Starts for YassJohnny\_83:

(Start: 38 @51628 has 3 MA's), (Start: 45 @51649 has 9 MA's), (72, 51862), (82, 51946), (83, 51958), (85, 51964), (91, 52000),

Gene: Youngblood\_89 Start: 53200, Stop: 53562, Start Num: 46

Candidate Starts for Youngblood\_89:

(35, 53173), (Start: 46 @53200 has 107 MA's), (72, 53413), (82, 53497), (83, 53509), (85, 53515), (91, 53551),

Gene: xkcd\_89 Start: 53387, Stop: 53749, Start Num: 46

Candidate Starts for xkcd\_89:



(35, 53360), (Start: 46 @53387 has 107 MA's), (72, 53600), (82, 53684), (83, 53696), (85, 53702), (91, 53738),