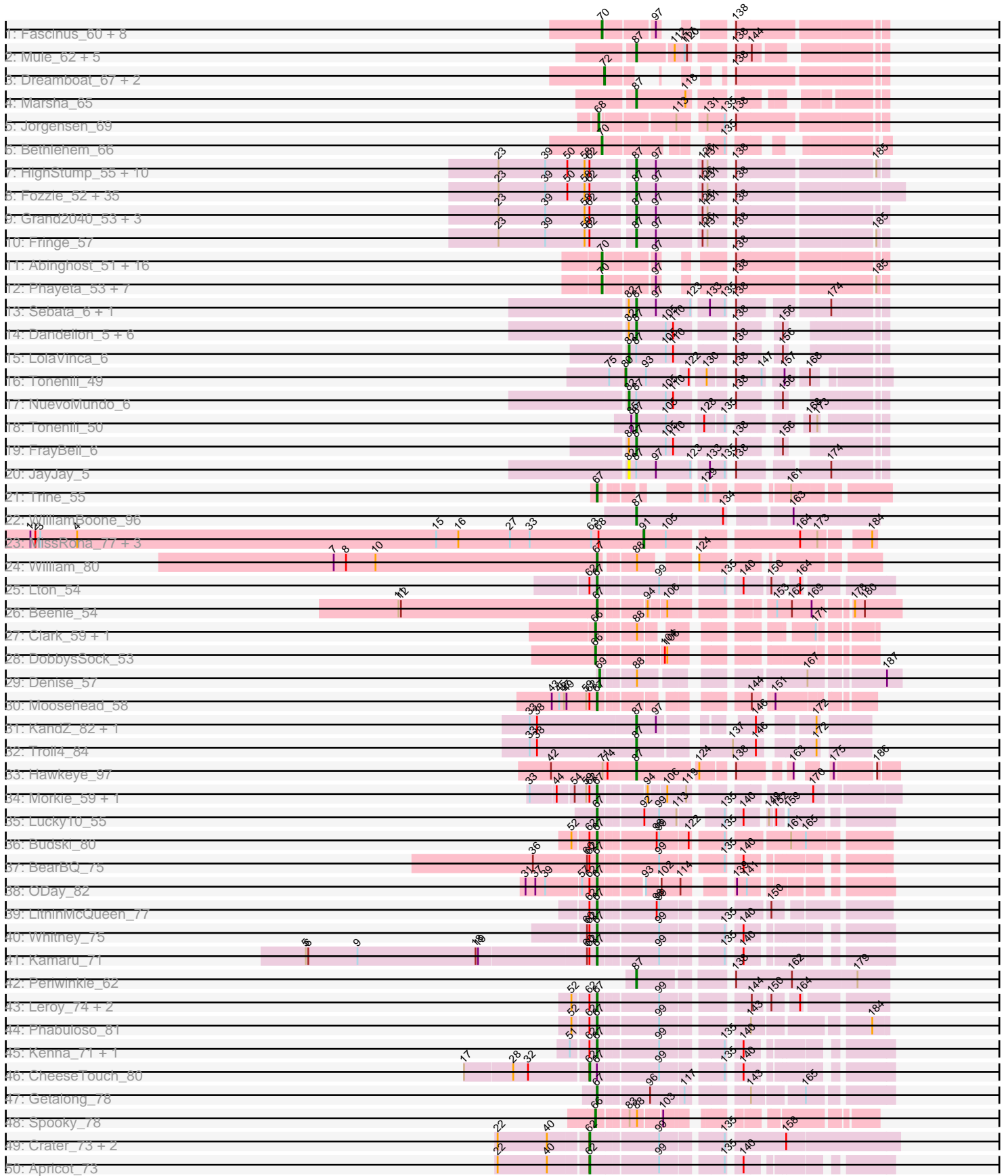


Pham 171130







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 171130 Report

This analysis was run 07/09/24 on database version 566.

Pham number 171130 has 368 members, 22 are drafts.

Phages represented in each track:

- Track 1 : Fascinus\_60, Paraselene\_66, Carlyle\_66, CactusRose\_66, Maroc7\_64, Blue\_65, Makemake\_71, Graduation\_70, Bigfoot\_58
- Track 2 : Mule\_62, Smairt\_67, Aeneas\_68, PhrostyMug\_65, Sunshine924\_70, BaconJack\_70
- Track 3 : Dreamboat\_67, PherrisBueller\_66, Jasper\_66
- Track 4 : Marsha\_65
- Track 5 : Jorgensen\_69
- Track 6 : Bethlehem\_66
- Track 7 : HighStump\_55, Kahve\_53, Childish\_53, Soile\_54, Nicole21\_54, DaddyDaniels\_55, Longacauda\_54, Craff\_56, Legolas\_55, Brilliant\_55, HenryJackson\_53
- Track 8 : Fozzie\_52, CamL\_53, Mosaic\_52, Sophia\_52, Serendipity\_53, Cosmolli16\_54, TallGrassMM\_53, Surely\_53, Chorkpop\_53, Squid\_53, Morgushi\_53, Held\_53, Solosis\_52, Timmi\_52, MitKao\_53, Maru\_53, Daffy\_53, Lasso\_53, Potter\_52, Samaymay\_53, QueenBeane\_53, Mana\_52, LeeLot\_53, Oosterbaan\_53, Hertubise\_53, Zelda\_53, Cannibal\_53, Kwadwo\_52, Thora\_53, Haleema\_52, TomBombadil\_53, SassyCat97\_52, Vortex\_53, Puhltonio\_53, Xavier\_52, Banjo\_52
- Track 9 : Grand2040\_53, Mesh1\_54, Lumine\_54, Giraffe\_54
- Track 10 : Fringe\_57
- Track 11 : Abinghost\_51, Neos5\_51, SynergyX\_51, Baloo\_51, GlenHope\_52, Audrey\_51, Nozo\_51, Daisy\_51, ChaChing\_51, Philly\_50, OrangeOswald\_51, Corofin\_51, Akoma\_51, Kamiyu\_51, Phlyer\_51, Athena\_52, Chandler\_51
- Track 12 : Phayeta\_53, Kronus\_51, Gervas\_52, Mortcellus\_51, Casbah\_51, MmasiCarm\_52, Obutu\_52, Rita1961\_52
- Track 13 : Sebata\_6, LinStu\_6
- Track 14 : Dandelion\_5, DTDevon\_6, Pier\_6, Tyke\_6, Specks\_6, Nappy\_5, Drazdys\_6
- Track 15 : LolaVinca\_6
- Track 16 : Tonenili\_49
- Track 17 : NuevoMundo\_6
- Track 18 : Tonenili\_50
- Track 19 : FrayBell\_6
- Track 20 : JayJay\_5
- Track 21 : Trine\_55
- Track 22 : WilliamBoone\_96
- Track 23 : MissRona\_77, Blueberry\_76, Azula\_77, Gambino\_79
- Track 24 : William\_80

- Track 25 : Lton\_54
- Track 26 : Beenie\_54
- Track 27 : Clark\_59, Samman98\_60
- Track 28 : DobbysSock\_53
- Track 29 : Denise\_57
- Track 30 : Moosehead\_58
- Track 31 : KandZ\_82, Helpful\_87
- Track 32 : Troll4\_84
- Track 33 : Hawkeye\_97
- Track 34 : Morkie\_59, PhorbPhlower\_55
- Track 35 : Lucky10\_55
- Track 36 : Budski\_80
- Track 37 : BearBQ\_75
- Track 38 : ODay\_82
- Track 39 : LitninMcQueen\_77
- Track 40 : Whitney\_75
- Track 41 : Kamaru\_71
- Track 42 : Periwinkle\_62
- Track 43 : Leroy\_74, Holliday\_79, OneDirection\_52
- Track 44 : Phabuloso\_81
- Track 45 : Kenna\_71, Lutum\_77
- Track 46 : CheeseTouch\_80
- Track 47 : Getalong\_78
- Track 48 : Spooky\_78
- Track 49 : Crater\_73, Horus\_75, Phistory\_72
- Track 50 : Apricot\_73
- Track 51 : Kuwabara\_76
- Track 52 : GMA2\_107
- Track 53 : DonkeyMan\_56, Tarzan\_58
- Track 54 : Heinz\_57
- Track 55 : DLane\_48, Mova\_53, MinionDave\_51, VRedHorse\_52, XFactor\_50, Hamulus\_53, Ardmore\_44, Moonbeam\_48, Batiatus\_50, Melissau88\_50, Emma\_52, Royals2015\_55, Phalconet\_51, CaptainTrips\_49, Tweety\_52, Madiba\_50
- Track 56 : Gandolph\_55, Polka14\_51
- Track 57 : JoeyJr\_73, PHappiness\_73, Leperchaun\_71, Empress\_71, Sassafras\_74, Doomphist\_76, Poenanya\_76, Nimbo\_65, Geralt\_66, Polka14\_77, Deb65\_66, RitaG\_73, Scottish\_71, OldBen\_70, Daenerys\_72, Dorothy\_74, KingMidas\_72, Inventum\_71, RedBird\_74
- Track 58 : Estave1\_55, Eish\_57, Whatsapiecost\_53
- Track 59 : RockyHorror\_53, Maravista\_54, Zerg\_52, Che8\_55, Firehouse51\_53, ArcusAngelus\_56, Chevrolet\_62, Doug\_55
- Track 60 : BuzzLyseyear\_44
- Track 61 : Dante\_53, Inventum\_47, DaWorst\_54, DaddyRickover\_52, Sassafras\_50
- Track 62 : Seabastian\_39, Ochi17\_37, Jinglebell\_38, OfUltron\_39, Yoshi\_44, Llama\_39, Modragons\_38, Oksu\_39, AlpineSix\_39
- Track 63 : PMC\_49, Boomer\_57, Rockne\_53
- Track 64 : Mozy\_62
- Track 65 : Bipolar\_49, SuperGrey\_52, Shauna1\_47, ShroomBoi\_52, KristaRAM\_51, Kenuha5\_50
- Track 66 : TDanisky\_60, Madiba\_63, Ogotogo\_57, Chuckly\_55, Phasih\_51, Minerva\_89, Optimus\_84, BAKA\_91, Mova\_66, EricMillard\_83, Sparkdehlily\_60, Aubs\_53, MadMen\_50

- Track 67 : GigiOuiOui\_49, OwlsT2W\_53, Doomphist\_52, Poenanya\_52, Cornucopia\_55, DotProduct\_48
- Track 68 : QuickMath\_66, Kimberlium\_67
- Track 69 : Phanphagia\_47, Donkeykong\_53
- Track 70 : SG4\_69, Hegedechwinu\_72
- Track 71 : Byougenkin\_50
- Track 72 : PhesterPhotato\_75
- Track 73 : Job42\_55
- Track 74 : Bobi\_72
- Track 75 : Pollywog\_50
- Track 76 : JalFarm20\_60
- Track 77 : Spikelee\_42
- Track 78 : SG4\_49
- Track 79 : Yoshi\_64
- Track 80 : Yoshi\_77
- Track 81 : Demsculpinboyz\_62
- Track 82 : Demsculpinboyz\_75
- Track 83 : Renaud18\_58, Taj\_56, Wee\_55, DeadP\_58
- Track 84 : Renaud18\_70
- Track 85 : Renaud18\_71
- Track 86 : ThetaBob\_69
- Track 87 : Bagrid\_146, ThreeRngTarjay\_140, Halley\_147, Pound\_137, Optimus\_136, DmpstrDiver\_146, Ejimix\_138, Phoebus\_145, BAKA\_145, EricMillard\_137, Hughesyang\_144, Constella\_139, Duke13\_141, Dallas\_146, Schatzie\_141
- Track 88 : Dallas\_89, Hughesyang\_90, DmpstrDiver\_90, ThreeRngTarjay\_87, Kalah2\_84, Yeet\_83, Zelink\_87, Dove\_77, Phoebus\_92, Schatzie\_85, Halley\_91, Bombitas\_78, Bagrid\_89, NihilNomen\_91, Beem\_90, JuicyJay\_87, Odette\_88, Constella\_75, HokkenD\_79
- Track 89 : Dove\_138, NihilNomen\_147, HokkenD\_138, Yeet\_139, Odette\_149, Klein\_143, Kalah2\_136, JuicyJay\_141, Redno2\_140, Beem\_147, KashFlow\_144, Bombitas\_133
- Track 90 : Courthouse\_78, MiaZeal\_83, Ariel\_82, Lucky2013\_80, Porcelain\_82, Squint\_83
- Track 91 : Minerva\_145, Wanda\_145
- Track 92 : Wanda\_94, Klein\_90
- Track 93 : Porcelain\_141, MiaZeal\_144, Lucky2013\_137
- Track 94 : Ejimix\_87
- Track 95 : Redno2\_84
- Track 96 : Bobby\_135
- Track 97 : Zelink\_140
- Track 98 : Thibault\_128
- Track 99 : Rando14\_64
- Track 100 : Douge\_117
- Track 101 : Smooch\_99
- Track 102 : MadKillah\_103
- Track 103 : Langerak\_53, Fishburne\_52, FirstPlacePfu\_54, Bartholomew\_52, Venti\_53, Kari\_52
- Track 104 : Polkaroo\_55
- Track 105 : BigNuz\_57
- Track 106 : Nazo\_58
- Track 107 : Phayonce\_59
- Track 108 : Purky\_63

- Track 109 : Purky\_64
- Track 110 : VasuNzinga\_8, Pringar\_6, Beelzebub\_8, Clarkson\_7
- Track 111 : RedRaider77\_9
- Track 112 : Gaia\_57
- Track 113 : Gaia\_56
- Track 114 : Gudmit\_51
- Track 115 : VanLee\_73
- Track 116 : GMA1\_52
- Track 117 : VanLee\_59
- Track 118 : GAL1\_58

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

The start number called the most often in the published annotations is 70, it was called in 134 of the 346 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abinghost\_51, Akoma\_51, ArcusAngelus\_56, Ardmore\_44, Ariel\_82, Athena\_52, Aubs\_53, Audrey\_51, BAKA\_91, Bagrid\_89, Baloo\_51, Batiatus\_50, Beelzebub\_8, Beem\_90, Bethlehem\_66, Bigfoot\_58, Bipolar\_49, Blue\_65, Bombitas\_78, Boomer\_57, CactusRose\_66, CaptainTrips\_49, Carlyle\_66, Casbah\_51, ChaChing\_51, Chandler\_51, Che8\_55, Chevrolet\_62, Chuckly\_55, Clarkson\_7, Constella\_75, Cornucopia\_55, Corofin\_51, Courthouse\_78, DLane\_48, DaWorst\_54, DaddyRickover\_52, Daisy\_51, Dallas\_89, Dante\_53, DeadP\_58, Demsculpinboyz\_62, DmpstrDiver\_90, Donkeykong\_53, Doomphist\_52, DotProduct\_48, Doug\_55, Dove\_77, Eish\_57, Emma\_52, EricMillard\_83, Estave1\_55, Fascinus\_60, Firehouse51\_53, Gandolph\_55, Gervas\_52, GigiOuiOui\_49, GlenHope\_52, Graduation\_70, Halley\_91, Hamulus\_53, HokkenD\_79, Hughesyang\_90, Inventum\_47, JalFarm20\_60, Job42\_55, JuicyJay\_87, Kalah2\_84, Kamiyu\_51, Kenuha5\_50, Klein\_90, KristaRAM\_51, Kronus\_51, Lucky2013\_80, MadMen\_50, Madiba\_50, Madiba\_63, Makemake\_71, Maravista\_54, Maroc7\_64, Melissauren88\_50, MiaZeal\_83, Minerva\_89, MinionDave\_51, MmasiCarm\_52, Moonbeam\_48, Mortcellus\_51, Mova\_53, Mova\_66, Mozy\_62, Neos5\_51, NihilNomen\_91, Nozo\_51, Obutu\_52, Odette\_88, Ogotogo\_57, Optimus\_84, OrangeOswald\_51, OwlsT2W\_53, PMC\_49, Paraselene\_66, Phalconet\_51, Phanphagia\_47, Phasih\_51, Phayeta\_53, Philly\_50, Phlyer\_51, Phoebus\_92, Poenanya\_52, Polka14\_51, Porcelain\_82, Pringar\_6, Renaud18\_58, Rita1961\_52, Rockne\_53, RockyHorror\_53, Royals2015\_55, SG4\_49, Sassafra\_50, Schatzie\_85, Shauna1\_47, ShroomBoi\_52, Sparkdehlily\_60, Squint\_83, SuperGrey\_52, SynergyX\_51, TDanisky\_60, Taj\_56, ThreeRngTarjay\_87, Tweety\_52, VRedHorse\_52, VasuNzinga\_8, Wanda\_94, Wee\_55, Whatsapiecost\_53, XFactor\_50, Yeet\_83, Yoshi\_64, Zelink\_87, Zerg\_52,

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

- Byougenkin\_50,

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

- Aeneas\_68, AlpineSix\_39, Apricot\_73, Azula\_77, BAKA\_145, BaconJack\_70, Bagrid\_146, Banjo\_52, Bartholomew\_52, BearBQ\_75, Beem\_147, Beenie\_54, BigNuz\_57, Blueberry\_76, Bobby\_135, Bobi\_72, Bombitas\_133, Brilliant\_55,

Budski\_80, BuzzLyseyear\_44, CamL\_53, Cannibal\_53, CheeseTouch\_80, Childish\_53, Chorkpop\_53, Clark\_59, Constella\_139, Cosmolli16\_54, Craff\_56, Crater\_73, DTDevon\_6, DaddyDaniels\_55, Daenerys\_72, Daffy\_53, Dallas\_146, Dandelion\_5, Deb65\_66, Demsculpinboyz\_75, Denise\_57, DmpstrDiver\_146, DobbysSock\_53, DonkeyMan\_56, Doomphist\_76, Dorothy\_74, Douge\_117, Dove\_138, Drazdys\_6, Dreamboat\_67, Duke13\_141, Ejimix\_138, Ejimix\_87, Empress\_71, EricMillard\_137, FirstPlacePfu\_54, Fishburne\_52, Fozzie\_52, FrayBell\_6, Fringe\_57, GAL1\_58, GMA1\_52, GMA2\_107, Gaia\_56, Gaia\_57, Gambino\_79, Geralt\_66, Getalong\_78, Giraffe\_54, Grand2040\_53, Gudmit\_51, Haleema\_52, Halley\_147, Hawkeye\_97, Hegedechwinu\_72, Heinz\_57, Held\_53, Helpful\_87, HenryJackson\_53, Hertubise\_53, HighStump\_55, HokkenD\_138, Holliday\_79, Horus\_75, Hughesyang\_144, Inventum\_71, Jasper\_66, JayJay\_5, Jinglebell\_38, JoeyJr\_73, Jorgensen\_69, JuicyJay\_141, Kahve\_53, Kalah2\_136, Kamaru\_71, KandZ\_82, Kari\_52, KashFlow\_144, Kenna\_71, Kimberlium\_67, KingMidas\_72, Klein\_143, Kuwabara\_76, Kwadwo\_52, Langerak\_53, Lasso\_53, LeeLot\_53, Legolas\_55, Leperchaun\_71, Leroy\_74, LinStu\_6, LitninMcQueen\_77, Llama\_39, LolaVinca\_6, Longacauda\_54, Lton\_54, Lucky10\_55, Lucky2013\_137, Lumine\_54, Lutum\_77, MadKillah\_103, Mana\_52, Marsha\_65, Maru\_53, Mesh1\_54, MiaZeal\_144, Minerva\_145, MissRona\_77, MitKao\_53, Modragons\_38, Moosehead\_58, Morgushi\_53, Morkie\_59, Mosaic\_52, Mule\_62, Nappy\_5, Nazo\_58, Nicole21\_54, NihilNomen\_147, Nimbo\_65, NuevoMundo\_6, ODay\_82, Ochi17\_37, Odette\_149, OfUltron\_39, Oksu\_39, OldBen\_70, OneDirection\_52, Oosterbaan\_53, Optimus\_136, PHappiness\_73, Periwinkle\_62, Phabuloso\_81, Phayonce\_59, PherrisBueller\_66, PhesterPhotato\_75, Phistory\_72, Phoebus\_145, PhorbesPhlower\_55, PhrostyMug\_65, Pier\_6, Poenanya\_76, Polka14\_77, Polkaroo\_55, Pollywog\_50, Porcelain\_141, Potter\_52, Pound\_137, Puhltonio\_53, Purky\_63, Purky\_64, QueenBeane\_53, QuickMath\_66, Rando14\_64, RedBird\_74, RedRaider77\_9, Redno2\_140, Redno2\_84, Renaud18\_70, Renaud18\_71, RitaG\_73, SG4\_69, Samaymay\_53, Samman98\_60, Sassafras\_74, SassyCat97\_52, Schatzie\_141, Scottish\_71, Seabastian\_39, Sebata\_6, Serendipity\_53, Smairt\_67, Smooch\_99, Soile\_54, Solosis\_52, Sophia\_52, Specks\_6, Spikelee\_42, Spooky\_78, Squid\_53, Sunshine924\_70, Surely\_53, TallGrassMM\_53, Tarzan\_58, ThetaBob\_69, Thibault\_128, Thora\_53, ThreeRngTarjay\_140, Timmi\_52, TomBombadil\_53, Tonenili\_49, Tonenili\_50, Trine\_55, Troll4\_84, Tyke\_6, VanLee\_59, VanLee\_73, Venti\_53, Vortex\_53, Wanda\_145, Whitney\_75, WilliamBoone\_96, William\_80, Xavier\_52, Yeet\_139, Yoshi\_44, Yoshi\_77, Zelda\_53, Zelink\_140,

### Summary by start number:

#### Start 13:

- Found in 1 of 368 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 346
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Purky\_63 (P6),

#### Start 54:

- Found in 23 of 368 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 7 of 346
- Called 39.1% of time when present
- Phage (with cluster) where this start called: AlpineSix\_39 (F1), Jinglebell\_38 (F1), Llama\_39 (F1), Modragons\_38 (F1), Ochi17\_37 (F1), OfUltron\_39 (F1), Oksu\_39 (F1), Seabastian\_39 (F1), Yoshi\_44 (F2),



Start 55:

- Found in 44 of 368 ( 12.0% ) of genes in pham
- Manual Annotations of this start: 1 of 346
- Called 2.3% of time when present
- Phage (with cluster) where this start called: Byougenkin\_50 (F1),

Start 58:

- Found in 54 of 368 ( 14.7% ) of genes in pham
- Manual Annotations of this start: 1 of 346
- Called 1.9% of time when present
- Phage (with cluster) where this start called: Spikelee\_42 (F1),

Start 62:

- Found in 74 of 368 ( 20.1% ) of genes in pham
- Manual Annotations of this start: 5 of 346
- Called 6.8% of time when present
- Phage (with cluster) where this start called: Apricot\_73 (DN3), CheeseTouch\_80 (DN1), Crater\_73 (DN3), Horus\_75 (DN1), Phistory\_72 (DN1),

Start 66:

- Found in 7 of 368 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 6 of 346
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Clark\_59 (CZ4), DobbysSock\_53 (CZ4), GAL1\_58 (singleton), Gudmit\_51 (singleton), Samman98\_60 (CZ4), Spooky\_78 (DN2), VanLee\_59 (singleton),

Start 67:

- Found in 39 of 368 ( 10.6% ) of genes in pham
- Manual Annotations of this start: 22 of 346
- Called 56.4% of time when present
- Phage (with cluster) where this start called: BearBQ\_75 (DN), Beenie\_54 (CZ4), Budski\_80 (DN), Getalong\_78 (DN1), Holliday\_79 (DN1), Kamaru\_71 (DN1), Kenna\_71 (DN1), Kuwabara\_76 (DN4), Leroy\_74 (DN1), LitninMcQueen\_77 (DN1), Lton\_54 (CZ), Lucky10\_55 (DH), Lutum\_77 (DN1), Moosehead\_58 (CZ6), Morkie\_59 (DH), ODay\_82 (DN), OneDirection\_52 (CZ6), Phabuloso\_81 (DN1), PhorbesPhlower\_55 (DH), Trine\_55 (CD), Whitney\_75 (DN1), William\_80 (CV),

Start 68:

- Found in 5 of 368 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 346
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Jorgensen\_69 (A1),

Start 69:

- Found in 2 of 368 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 2 of 346
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Denise\_57 (CZ5), Rando14\_64 (K5),

Start 70:

- Found in 141 of 368 ( 38.3% ) of genes in pham
- Manual Annotations of this start: 134 of 346

- Called 99.3% of time when present
- Phage (with cluster) where this start called: Abinghost\_51 (B3), Akoma\_51 (B3), ArcusAngelus\_56 (F1), Ardmore\_44 (F1), Ariel\_82 (J), Athena\_52 (B3), Aubs\_53 (F1), Audrey\_51 (B3), BAKA\_91 (J), Bagrid\_89 (J), Baloo\_51 (B3), Batiatus\_50 (F1), Beelzebub\_8 (S), Beem\_90 (J), Bethlehem\_66 (A1), Bigfoot\_58 (A1), Bipolar\_49 (F1), Blue\_65 (A1), Bombitas\_78 (J), Boomer\_57 (F1), CactusRose\_66 (A1), CaptainTrips\_49 (F1), Carlyle\_66 (A1), Casbah\_51 (B3), ChaChing\_51 (B3), Chandler\_51 (B3), Che8\_55 (F1), Chevrolet\_62 (F1), Chuckly\_55 (F1), Clarkson\_7 (S), Constella\_75 (J), Cornucopia\_55 (F1), Corofin\_51 (B3), Courthouse\_78 (J), DLane\_48 (F1), DaWorst\_54 (F1), DaddyRickover\_52 (F1), Daisy\_51 (B3), Dallas\_89 (J), Dante\_53 (F1), DeadP\_58 (F1), Demsculpinboyz\_62 (F2), DmpstrDiver\_90 (J), Donkeykong\_53 (F1), Doomphist\_52 (F1), DotProduct\_48 (F1), Doug\_55 (F1), Dove\_77 (J), Eish\_57 (F1), Emma\_52 (F1), EricMillard\_83 (J), Estave1\_55 (F1), Fascinus\_60 (A1), Firehouse51\_53 (F1), Gandolph\_55 (F1), Gervas\_52 (B3), GigiOuiOui\_49 (F1), GlenHope\_52 (B3), Graduation\_70 (A1), Halley\_91 (J), Hamulus\_53 (F1), HokkenD\_79 (J), Hughesyang\_90 (J), Inventum\_47 (F1), JalFarm20\_60 (F1), Job42\_55 (F1), JuicyJay\_87 (J), Kalah2\_84 (J), Kamiyu\_51 (B3), Kenuha5\_50 (F1), Klein\_90 (J), KristaRAM\_51 (F1), Kronus\_51 (B3), Lucky2013\_80 (J), MadMen\_50 (F1), Madiba\_50 (F1), Madiba\_63 (F1), Makemake\_71 (A1), Maravista\_54 (F1), Maroc7\_64 (A1), Melissauren88\_50 (F1), MiaZeal\_83 (J), Minerva\_89 (J), MinionDave\_51 (F1), MmasiCarm\_52 (B3), Moonbeam\_48 (F1), Mortcellus\_51 (B3), Mova\_53 (F1), Mova\_66 (F1), Mozy\_62 (F1), Neos5\_51 (B3), NihilNomen\_91 (J), Nozo\_51 (B3), Obutu\_52 (B3), Odette\_88 (J), Ogopogo\_57 (F1), Optimus\_84 (J), OrangeOswald\_51 (B3), OwlsT2W\_53 (F1), PMC\_49 (F1), Paraselene\_66 (A1), Phalconet\_51 (F1), Phanphagia\_47 (F1), Phasih\_51 (F1), Phayeta\_53 (B3), Philly\_50 (B3), Phlyer\_51 (B3), Phoebus\_92 (J), Poenanya\_52 (F1), Polka14\_51 (F1), Porcelain\_82 (J), Pringar\_6 (S), Renaud18\_58 (F4), Rita1961\_52 (B3), Rockne\_53 (F1), RockyHorror\_53 (F1), Royals2015\_55 (F1), SG4\_49 (F1), Sassafra\_50 (F1), Schatzie\_85 (J), Shauna1\_47 (F1), ShroomBoi\_52 (F1), Sparkdehlily\_60 (F1), Squint\_83 (J), SuperGrey\_52 (F1), SynergyX\_51 (B3), TDanisky\_60 (F1), Taj\_56 (F1), ThreeRngTarjay\_87 (J), Tweety\_52 (F1), VRedHorse\_52 (F1), VasuNzinga\_8 (S), Wanda\_94 (J), Wee\_55 (F1), Whatsapiecost\_53 (F1), XFactor\_50 (F1), Yeet\_83 (J), Yoshi\_64 (F2), Zelink\_87 (J), Zerg\_52 (F1),

#### Start 71:

- Found in 5 of 368 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 346
- Called 80.0% of time when present
- Phage (with cluster) where this start called: DonkeyMan\_56 (DY), Heinz\_57 (DY), Renaud18\_70 (F4), Tarzan\_58 (DY),

#### Start 72:

- Found in 6 of 368 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 5 of 346
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Demsculpinboyz\_75 (F2), Dreamboat\_67 (A1), Jasper\_66 (A1), PherrisBueller\_66 (A1), Yoshi\_77 (F2),

#### Start 73:

- Found in 2 of 368 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 346
- Called 50.0% of time when present

- Phage (with cluster) where this start called: BuzzLyseyear\_44 (F1),

#### Start 80:

- Found in 3 of 368 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 2 of 346
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Redno2\_84 (J), Tonenili\_49 (C1),

#### Start 82:

- Found in 13 of 368 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 2 of 346
- Called 23.1% of time when present
- Phage (with cluster) where this start called: JayJay\_5 (C1), LolaVinca\_6 (C1), NuevoMundo\_6 (C1),

#### Start 85:

- Found in 3 of 368 ( 0.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 66.7% of time when present
- Phage (with cluster) where this start called: GMA1\_52 (singleton), GMA2\_107 (DS),

#### Start 87:

- Found in 124 of 368 ( 33.7% ) of genes in pham
- Manual Annotations of this start: 115 of 346
- Called 96.8% of time when present
- Phage (with cluster) where this start called: Aeneas\_68 (A1), BaconJack\_70 (A1), Banjo\_52 (B1), Bartholomew\_52 (P1), BigNuz\_57 (P4), Bobi\_72 (F1), Brilliant\_55 (B1), CamL\_53 (B1), Cannibal\_53 (B1), Childish\_53 (B1), Chorkpop\_53 (B1), Cosmolli16\_54 (B1), Craff\_56 (B1), DTDevon\_6 (C1), DaddyDaniels\_55 (B1), Daenerys\_72 (F1), Daffy\_53 (B1), Dandelion\_5 (C1), Deb65\_66 (F1), Doomphist\_76 (F1), Dorothy\_74 (F1), Douge\_117 (L4), Drazdys\_6 (C1), Ejimix\_87 (J), Empress\_71 (F1), FirstPlacePfu\_54 (P1), Fishburne\_52 (P1), Fozzie\_52 (B1), FrayBell\_6 (C1), Fringe\_57 (B1), Gaia\_57 (X), Geralt\_66 (F1), Giraffe\_54 (B1), Grand2040\_53 (B1), Haleema\_52 (B1), Hawkeye\_97 (D2), Hegedechwinu\_72 (F1), Held\_53 (B1), Helpful\_87 (D1), HenryJackson\_53 (B1), Hertubise\_53 (B1), HighStump\_55 (B1), Inventum\_71 (F1), JoeyJr\_73 (F1), Kahve\_53 (B1), KandZ\_82 (D1), Kari\_52 (P1), Kimberlium\_67 (F1), KingMidas\_72 (F1), Kwadwo\_52 (B1), Langerak\_53 (P1), Lasso\_53 (B1), LeeLot\_53 (B1), Legolas\_55 (B1), Leperchaun\_71 (F1), LinStu\_6 (C1), Longacauda\_54 (B1), Lumine\_54 (B1), Mana\_52 (B1), Marsha\_65 (A1), Maru\_53 (B1), Mesh1\_54 (B1), MitKao\_53 (B1), Morgushi\_53 (B1), Mosaic\_52 (B1), Mule\_62 (A1), Nappy\_5 (C1), Nazo\_58 (P4), Nicole21\_54 (B1), Nimbo\_65 (F1), OldBen\_70 (F1), Oosterbaan\_53 (B1), PHappiness\_73 (F1), Periwinkle\_62 (DN1), Phayonce\_59 (P5), PhesterPotato\_75 (F1), PhrostyMug\_65 (A1), Pier\_6 (C1), Poenanya\_76 (F1), Polka14\_77 (F1), Polkaroo\_55 (P1), Pollywog\_50 (F1), Potter\_52 (B1), Puhltonio\_53 (B1), Purky\_64 (P6), QueenBeane\_53 (B1), QuickMath\_66 (F1), RedBird\_74 (F1), RedRaider77\_9 (S), Renaud18\_71 (F4), RitaG\_73 (F1), SG4\_69 (F1), Samaymay\_53 (B1), Sassafras\_74 (F1), SassyCat97\_52 (B1), Scottish\_71 (F1), Sebata\_6 (C1), Serendipity\_53 (B1), Smairt\_67 (A1), Smooch\_99 (O), Soile\_54 (B1), Solosis\_52 (B1), Sophia\_52 (B1), Specks\_6 (C1), Squid\_53 (B1), Sunshine924\_70 (A1), Surely\_53 (B1), TallGrassMM\_53 (B1), Thora\_53 (B1), Timmi\_52 (B1), TomBombadil\_53 (B1), Tonenili\_50 (C1), Troll4\_84 (D1), Tyke\_6 (C1), VanLee\_73 (singleton), Venti\_53 (P1), Vortex\_53 (B1), WilliamBoone\_96 (CQ1), Xavier\_52 (B1), Zelda\_53 (B1),

Start 89:

- Found in 1 of 368 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 346
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gaia\_56 (X),

Start 91:

- Found in 7 of 368 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 5 of 346
- Called 71.4% of time when present
- Phage (with cluster) where this start called: Azula\_77 (CV), Blueberry\_76 (CV), Gambino\_79 (CV), MissRona\_77 (CV), ThetaBob\_69 (F4),

Start 100:

- Found in 1 of 368 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 346
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MadKillah\_103 (O),

Start 160:

- Found in 35 of 368 ( 9.5% ) of genes in pham
- Manual Annotations of this start: 32 of 346
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BAKA\_145 (J), Bagrid\_146 (J), Beem\_147 (J), Bobby\_135 (J), Bombitas\_133 (J), Constella\_139 (J), Dallas\_146 (J), DmpstrDiver\_146 (J), Dove\_138 (J), Duke13\_141 (J), Ejimix\_138 (J), EricMillard\_137 (J), Halley\_147 (J), HokkenD\_138 (J), Hughesyang\_144 (J), JuicyJay\_141 (J), Kalah2\_136 (J), KashFlow\_144 (J), Klein\_143 (J), Lucky2013\_137 (J), MiaZeal\_144 (J), Minerva\_145 (J), NihilNomen\_147 (J), Odette\_149 (J), Optimus\_136 (J), Phoebus\_145 (J), Porcelain\_141 (J), Pound\_137 (J), Redno2\_140 (J), Schatzie\_141 (J), Thibault\_128 (J), ThreeRngTarjay\_140 (J), Wanda\_145 (J), Yeet\_139 (J), Zelink\_140 (J),

**Summary by clusters:**

There are 35 clusters represented in this pham: DN, singleton, DH, CZ6, CZ4, CZ5, K5, DY, DS, CV, A1, DN4, DN1, DN3, DN2, CQ1, P1, P6, P4, P5, J, O, CD, CZ, S, X, C1, F1, F2, F4, L4, B1, B3, D2, D1,

Info for manual annotations of cluster A1:

- Start number 68 was manually annotated 1 time for cluster A1.
- Start number 70 was manually annotated 10 times for cluster A1.
- Start number 72 was manually annotated 3 times for cluster A1.
- Start number 87 was manually annotated 7 times for cluster A1.

Info for manual annotations of cluster B1:

- Start number 87 was manually annotated 52 times for cluster B1.

Info for manual annotations of cluster B3:

- Start number 70 was manually annotated 25 times for cluster B3.

Info for manual annotations of cluster C1:

- Start number 80 was manually annotated 1 time for cluster C1.
- Start number 82 was manually annotated 2 times for cluster C1.
- Start number 87 was manually annotated 11 times for cluster C1.

Info for manual annotations of cluster CD:

- Start number 67 was manually annotated 1 time for cluster CD.

Info for manual annotations of cluster CQ1:

- Start number 87 was manually annotated 1 time for cluster CQ1.

Info for manual annotations of cluster CV:

- Start number 67 was manually annotated 1 time for cluster CV.
- Start number 91 was manually annotated 4 times for cluster CV.

Info for manual annotations of cluster CZ:

- Start number 67 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ4:

- Start number 66 was manually annotated 3 times for cluster CZ4.
- Start number 67 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster CZ5:

- Start number 69 was manually annotated 1 time for cluster CZ5.

Info for manual annotations of cluster CZ6:

- Start number 67 was manually annotated 2 times for cluster CZ6.

Info for manual annotations of cluster D1:

- Start number 87 was manually annotated 3 times for cluster D1.

Info for manual annotations of cluster D2:

- Start number 87 was manually annotated 1 time for cluster D2.

Info for manual annotations of cluster DH:

- Start number 67 was manually annotated 3 times for cluster DH.

Info for manual annotations of cluster DN:

- Start number 67 was manually annotated 3 times for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 62 was manually annotated 3 times for cluster DN1.
- Start number 67 was manually annotated 9 times for cluster DN1.
- Start number 87 was manually annotated 1 time for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 66 was manually annotated 1 time for cluster DN2.

Info for manual annotations of cluster DN3:

- Start number 62 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DN4:

- Start number 67 was manually annotated 1 time for cluster DN4.

Info for manual annotations of cluster DY:

- Start number 71 was manually annotated 1 time for cluster DY.

Info for manual annotations of cluster F1:

- Start number 54 was manually annotated 6 times for cluster F1.
- Start number 55 was manually annotated 1 time for cluster F1.
- Start number 58 was manually annotated 1 time for cluster F1.
- Start number 70 was manually annotated 64 times for cluster F1.
- Start number 73 was manually annotated 1 time for cluster F1.
- Start number 87 was manually annotated 24 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 54 was manually annotated 1 time for cluster F2.
- Start number 70 was manually annotated 2 times for cluster F2.
- Start number 72 was manually annotated 2 times for cluster F2.

Info for manual annotations of cluster F4:

- Start number 70 was manually annotated 1 time for cluster F4.
- Start number 71 was manually annotated 1 time for cluster F4.
- Start number 87 was manually annotated 1 time for cluster F4.
- Start number 91 was manually annotated 1 time for cluster F4.

Info for manual annotations of cluster J:

- Start number 70 was manually annotated 28 times for cluster J.
- Start number 80 was manually annotated 1 time for cluster J.
- Start number 87 was manually annotated 1 time for cluster J.
- Start number 160 was manually annotated 32 times for cluster J.

Info for manual annotations of cluster K5:

- Start number 69 was manually annotated 1 time for cluster K5.

Info for manual annotations of cluster O:

- Start number 87 was manually annotated 1 time for cluster O.
- Start number 100 was manually annotated 1 time for cluster O.

Info for manual annotations of cluster P1:

- Start number 87 was manually annotated 5 times for cluster P1.

Info for manual annotations of cluster P4:

- Start number 87 was manually annotated 2 times for cluster P4.

Info for manual annotations of cluster P5:

- Start number 87 was manually annotated 1 time for cluster P5.

Info for manual annotations of cluster P6:

- Start number 13 was manually annotated 1 time for cluster P6.
- Start number 87 was manually annotated 1 time for cluster P6.

Info for manual annotations of cluster S:

- Start number 70 was manually annotated 4 times for cluster S.
- Start number 87 was manually annotated 1 time for cluster S.

Info for manual annotations of cluster X:

- Start number 87 was manually annotated 1 time for cluster X.
- Start number 89 was manually annotated 1 time for cluster X.

**Gene Information:**

Gene: Abinghost\_51 Start: 45404, Stop: 45135, Start Num: 70

Candidate Starts for Abinghost\_51:

(Start: 70 @45404 has 134 MA's), (97, 45350), (138, 45302),

Gene: Aeneas\_68 Start: 44278, Stop: 44033, Start Num: 87

Candidate Starts for Aeneas\_68:

(Start: 87 @44278 has 115 MA's), (112, 44236), (117, 44224), (120, 44221), (138, 44182), (144, 44164),

Gene: Akoma\_51 Start: 45415, Stop: 45146, Start Num: 70

Candidate Starts for Akoma\_51:

(Start: 70 @45415 has 134 MA's), (97, 45361), (138, 45313),

Gene: AlpineSix\_39 Start: 31200, Stop: 31009, Start Num: 54

Candidate Starts for AlpineSix\_39:

(Start: 54 @31200 has 7 MA's), (101, 31110),

Gene: Apricot\_73 Start: 42951, Stop: 43250, Start Num: 62

Candidate Starts for Apricot\_73:

(22, 42846), (40, 42906), (Start: 62 @42951 has 5 MA's), (99, 43029), (135, 43095), (140, 43107),

Gene: ArcusAngelus\_56 Start: 38441, Stop: 38683, Start Num: 70

Candidate Starts for ArcusAngelus\_56:

(Start: 55 @38411 has 1 MA's), (Start: 70 @38441 has 134 MA's), (138, 38552),

Gene: Ardmore\_44 Start: 35217, Stop: 35447, Start Num: 70

Candidate Starts for Ardmore\_44:

(Start: 55 @35187 has 1 MA's), (Start: 70 @35217 has 134 MA's), (88, 35253), (135, 35313), (138, 35316),

Gene: Ariel\_82 Start: 49253, Stop: 48984, Start Num: 70

Candidate Starts for Ariel\_82:

(Start: 70 @49253 has 134 MA's), (97, 49199), (138, 49151),

Gene: Athena\_52 Start: 46162, Stop: 45893, Start Num: 70

Candidate Starts for Athena\_52:

(Start: 70 @46162 has 134 MA's), (97, 46108), (138, 46060),

Gene: Aubs\_53 Start: 37222, Stop: 37464, Start Num: 70

Candidate Starts for Aubs\_53:

(Start: 67 @37216 has 22 MA's), (Start: 70 @37222 has 134 MA's), (138, 37333),

Gene: Audrey\_51 Start: 45410, Stop: 45141, Start Num: 70

Candidate Starts for Audrey\_51:

(Start: 70 @45410 has 134 MA's), (97, 45356), (138, 45308),

Gene: Azula\_77 Start: 48141, Stop: 48380, Start Num: 91

Candidate Starts for Azula\_77:

(1, 47394), (2, 47400), (3, 47406), (4, 47451), (15, 47889), (16, 47916), (27, 47979), (33, 48003), (63, 48078), (Start: 68 @48087 has 1 MA's), (Start: 91 @48141 has 5 MA's), (105, 48168), (164, 48306), (173, 48327), (184, 48375),

Gene: BAKA\_145 Start: 76447, Stop: 76692, Start Num: 160

Candidate Starts for BAKA\_145:

(101, 76312), (136, 76387), (140, 76402), (Start: 160 @76447 has 32 MA's), (181, 76519), (182, 76522),

Gene: BAKA\_91 Start: 56921, Stop: 57199, Start Num: 70

Candidate Starts for BAKA\_91:

(Start: 67 @56915 has 22 MA's), (Start: 70 @56921 has 134 MA's), (138, 57032),

Gene: BaconJack\_70 Start: 45368, Stop: 45123, Start Num: 87

Candidate Starts for BaconJack\_70:

(Start: 87 @45368 has 115 MA's), (112, 45326), (117, 45314), (120, 45311), (138, 45272), (144, 45254),

Gene: Bagrid\_146 Start: 77142, Stop: 77387, Start Num: 160

Candidate Starts for Bagrid\_146:

(101, 77007), (136, 77082), (140, 77097), (Start: 160 @77142 has 32 MA's), (181, 77214), (182, 77217),

Gene: Bagrid\_89 Start: 55770, Stop: 56066, Start Num: 70

Candidate Starts for Bagrid\_89:

(Start: 70 @55770 has 134 MA's), (113, 55848), (131, 55875), (138, 55899),

Gene: Baloo\_51 Start: 45413, Stop: 45144, Start Num: 70

Candidate Starts for Baloo\_51:

(Start: 70 @45413 has 134 MA's), (97, 45359), (138, 45311),

Gene: Banjo\_52 Start: 47062, Stop: 46769, Start Num: 87

Candidate Starts for Banjo\_52:

(23, 47221), (39, 47164), (50, 47137), (Start: 58 @47116 has 1 MA's), (Start: 62 @47110 has 5 MA's), (Start: 87 @47062 has 115 MA's), (97, 47038), (126, 46990), (131, 46984), (138, 46960),

Gene: Bartholomew\_52 Start: 36036, Stop: 36263, Start Num: 87

Candidate Starts for Bartholomew\_52:

(Start: 54 @35973 has 7 MA's), (Start: 87 @36036 has 115 MA's), (140, 36135),

Gene: Batiatus\_50 Start: 37046, Stop: 37276, Start Num: 70

Candidate Starts for Batiatus\_50:

(Start: 55 @37016 has 1 MA's), (Start: 70 @37046 has 134 MA's), (88, 37082), (135, 37142), (138, 37145),

Gene: BearBQ\_75 Start: 45677, Stop: 45961, Start Num: 67

Candidate Starts for BearBQ\_75:

(36, 45602), (60, 45665), (Start: 62 @45668 has 5 MA's), (Start: 67 @45677 has 22 MA's), (99, 45743), (135, 45809), (140, 45821),



Gene: Beelzebub\_8 Start: 2535, Stop: 2807, Start Num: 70

Candidate Starts for Beelzebub\_8:

(Start: 70 @2535 has 134 MA's), (108, 2598), (138, 2640),

Gene: Beem\_90 Start: 56631, Stop: 56927, Start Num: 70

Candidate Starts for Beem\_90:

(Start: 70 @56631 has 134 MA's), (113, 56709), (131, 56736), (138, 56760),

Gene: Beem\_147 Start: 78045, Stop: 78290, Start Num: 160

Candidate Starts for Beem\_147:

(101, 77910), (140, 78000), (Start: 160 @78045 has 32 MA's), (181, 78117), (182, 78120),

Gene: Beenie\_54 Start: 39845, Stop: 40141, Start Num: 67

Candidate Starts for Beenie\_54:

(11, 39605), (12, 39608), (Start: 67 @39845 has 22 MA's), (94, 39893), (106, 39911), (153, 40007), (162, 40025), (169, 40049), (178, 40085), (180, 40097),

Gene: Bethlehem\_66 Start: 44024, Stop: 43779, Start Num: 70

Candidate Starts for Bethlehem\_66:

(Start: 70 @44024 has 134 MA's), (135, 43916),

Gene: BigNuz\_57 Start: 39875, Stop: 40117, Start Num: 87

Candidate Starts for BigNuz\_57:

(Start: 54 @39812 has 7 MA's), (Start: 87 @39875 has 115 MA's), (111, 39920), (127, 39941), (134, 39965), (178, 40085),

Gene: Bigfoot\_58 Start: 41545, Stop: 41276, Start Num: 70

Candidate Starts for Bigfoot\_58:

(Start: 70 @41545 has 134 MA's), (97, 41491), (138, 41443),

Gene: Bipolar\_49 Start: 36854, Stop: 37099, Start Num: 70

Candidate Starts for Bipolar\_49:

(36, 36770), (41, 36788), (57, 36830), (Start: 70 @36854 has 134 MA's), (138, 36965),

Gene: Blue\_65 Start: 43245, Stop: 42976, Start Num: 70

Candidate Starts for Blue\_65:

(Start: 70 @43245 has 134 MA's), (97, 43191), (138, 43143),

Gene: Blueberry\_76 Start: 48141, Stop: 48380, Start Num: 91

Candidate Starts for Blueberry\_76:

(1, 47394), (2, 47400), (3, 47406), (4, 47451), (15, 47889), (16, 47916), (27, 47979), (33, 48003), (63, 48078), (Start: 68 @48087 has 1 MA's), (Start: 91 @48141 has 5 MA's), (105, 48168), (164, 48306), (173, 48327), (184, 48375),

Gene: Bobby\_135 Start: 77882, Stop: 78160, Start Num: 160

Candidate Starts for Bobby\_135:

(101, 77747), (140, 77837), (Start: 160 @77882 has 32 MA's), (181, 77954), (182, 77957), (191, 78077),

Gene: Bobi\_72 Start: 44458, Stop: 44685, Start Num: 87

Candidate Starts for Bobi\_72:

(30, 44317), (Start: 54 @44383 has 7 MA's), (Start: 87 @44458 has 115 MA's), (140, 44557),

Gene: Bombitas\_78 Start: 53794, Stop: 54090, Start Num: 70  
Candidate Starts for Bombitas\_78:  
(Start: 70 @53794 has 134 MA's), (113, 53872), (131, 53899), (138, 53923),

Gene: Bombitas\_133 Start: 75456, Stop: 75701, Start Num: 160  
Candidate Starts for Bombitas\_133:  
(101, 75321), (140, 75411), (Start: 160 @75456 has 32 MA's), (181, 75528), (182, 75531),

Gene: Boomer\_57 Start: 38978, Stop: 39235, Start Num: 70  
Candidate Starts for Boomer\_57:  
(26, 38864), (29, 38876), (40, 38912), (61, 38963), (Start: 70 @38978 has 134 MA's), (138, 39089),  
(147, 39119),

Gene: Brilliant\_55 Start: 47604, Stop: 47335, Start Num: 87  
Candidate Starts for Brilliant\_55:  
(23, 47763), (39, 47706), (50, 47679), (Start: 58 @47658 has 1 MA's), (Start: 62 @47652 has 5 MA's),  
(Start: 87 @47604 has 115 MA's), (97, 47580), (126, 47532), (131, 47526), (138, 47502), (185,  
47346),

Gene: Budski\_80 Start: 45490, Stop: 45795, Start Num: 67  
Candidate Starts for Budski\_80:  
(52, 45463), (Start: 62 @45481 has 5 MA's), (Start: 67 @45490 has 22 MA's), (98, 45553), (99,  
45556), (122, 45589), (135, 45622), (161, 45685), (165, 45703),

Gene: BuzzLyseyear\_44 Start: 32289, Stop: 32008, Start Num: 73  
Candidate Starts for BuzzLyseyear\_44:  
(34, 32382), (36, 32379), (37, 32376), (53, 32331), (Start: 58 @32316 has 1 MA's), (65, 32304), (Start:  
73 @32289 has 1 MA's), (99, 32229), (125, 32187), (135, 32163), (155, 32115),

Gene: Byougenkin\_50 Start: 36870, Stop: 37133, Start Num: 55  
Candidate Starts for Byougenkin\_50:  
(Start: 55 @36870 has 1 MA's), (Start: 70 @36900 has 134 MA's), (81, 36924), (113, 36966), (133,  
36981), (135, 36999), (138, 37002),

Gene: CactusRose\_66 Start: 42565, Stop: 42296, Start Num: 70  
Candidate Starts for CactusRose\_66:  
(Start: 70 @42565 has 134 MA's), (97, 42511), (138, 42463),

Gene: CamL\_53 Start: 47369, Stop: 47076, Start Num: 87  
Candidate Starts for CamL\_53:  
(23, 47528), (39, 47471), (50, 47444), (Start: 58 @47423 has 1 MA's), (Start: 62 @47417 has 5 MA's),  
(Start: 87 @47369 has 115 MA's), (97, 47345), (126, 47297), (131, 47291), (138, 47267),

Gene: Cannibal\_53 Start: 47352, Stop: 47059, Start Num: 87  
Candidate Starts for Cannibal\_53:  
(23, 47511), (39, 47454), (50, 47427), (Start: 58 @47406 has 1 MA's), (Start: 62 @47400 has 5 MA's),  
(Start: 87 @47352 has 115 MA's), (97, 47328), (126, 47280), (131, 47274), (138, 47250),

Gene: CaptainTrips\_49 Start: 36066, Stop: 36296, Start Num: 70  
Candidate Starts for CaptainTrips\_49:  
(Start: 55 @36036 has 1 MA's), (Start: 70 @36066 has 134 MA's), (88, 36102), (135, 36162), (138,  
36165),

Gene: Carlyle\_66 Start: 41351, Stop: 41082, Start Num: 70  
Candidate Starts for Carlyle\_66:  
(Start: 70 @41351 has 134 MA's), (97, 41297), (138, 41249),

Gene: Casbah\_51 Start: 45725, Stop: 45456, Start Num: 70  
Candidate Starts for Casbah\_51:  
(Start: 70 @45725 has 134 MA's), (97, 45671), (138, 45623), (185, 45467),

Gene: ChaChing\_51 Start: 45427, Stop: 45158, Start Num: 70  
Candidate Starts for ChaChing\_51:  
(Start: 70 @45427 has 134 MA's), (97, 45373), (138, 45325),

Gene: Chandler\_51 Start: 46194, Stop: 45925, Start Num: 70  
Candidate Starts for Chandler\_51:  
(Start: 70 @46194 has 134 MA's), (97, 46140), (138, 46092),

Gene: Che8\_55 Start: 38308, Stop: 38550, Start Num: 70  
Candidate Starts for Che8\_55:  
(Start: 55 @38278 has 1 MA's), (Start: 70 @38308 has 134 MA's), (138, 38419),

Gene: CheeseTouch\_80 Start: 40886, Stop: 41182, Start Num: 62  
Candidate Starts for CheeseTouch\_80:  
(17, 40742), (28, 40799), (32, 40817), (Start: 62 @40886 has 5 MA's), (Start: 67 @40895 has 22 MA's), (99, 40961), (135, 41027), (140, 41039),

Gene: Chevrolet\_62 Start: 38442, Stop: 38684, Start Num: 70  
Candidate Starts for Chevrolet\_62:  
(Start: 55 @38412 has 1 MA's), (Start: 70 @38442 has 134 MA's), (138, 38553),

Gene: Childish\_53 Start: 47631, Stop: 47362, Start Num: 87  
Candidate Starts for Childish\_53:  
(23, 47790), (39, 47733), (50, 47706), (Start: 58 @47685 has 1 MA's), (Start: 62 @47679 has 5 MA's), (Start: 87 @47631 has 115 MA's), (97, 47607), (126, 47559), (131, 47553), (138, 47529), (185, 47373),

Gene: Chorkpop\_53 Start: 47108, Stop: 46815, Start Num: 87  
Candidate Starts for Chorkpop\_53:  
(23, 47267), (39, 47210), (50, 47183), (Start: 58 @47162 has 1 MA's), (Start: 62 @47156 has 5 MA's), (Start: 87 @47108 has 115 MA's), (97, 47084), (126, 47036), (131, 47030), (138, 47006),

Gene: Chuckly\_55 Start: 37799, Stop: 38041, Start Num: 70  
Candidate Starts for Chuckly\_55:  
(Start: 67 @37793 has 22 MA's), (Start: 70 @37799 has 134 MA's), (138, 37910),

Gene: Clark\_59 Start: 39693, Stop: 39938, Start Num: 66  
Candidate Starts for Clark\_59:  
(Start: 66 @39693 has 6 MA's), (88, 39732), (171, 39882),

Gene: Clarkson\_7 Start: 2311, Stop: 2583, Start Num: 70  
Candidate Starts for Clarkson\_7:  
(Start: 70 @2311 has 134 MA's), (108, 2374), (138, 2416),

Gene: Constella\_139 Start: 76698, Stop: 76943, Start Num: 160  
Candidate Starts for Constella\_139:  
(101, 76563), (136, 76638), (140, 76653), (Start: 160 @76698 has 32 MA's), (181, 76770), (182, 76773),

Gene: Constella\_75 Start: 50768, Stop: 51064, Start Num: 70  
Candidate Starts for Constella\_75:  
(Start: 70 @50768 has 134 MA's), (113, 50846), (131, 50873), (138, 50897),

Gene: Cornucopia\_55 Start: 38144, Stop: 38386, Start Num: 70  
Candidate Starts for Cornucopia\_55:  
(Start: 55 @38114 has 1 MA's), (Start: 70 @38144 has 134 MA's), (135, 38252),

Gene: Corofin\_51 Start: 45437, Stop: 45168, Start Num: 70  
Candidate Starts for Corofin\_51:  
(Start: 70 @45437 has 134 MA's), (97, 45383), (138, 45335),

Gene: Cosmolli16\_54 Start: 47811, Stop: 47542, Start Num: 87  
Candidate Starts for Cosmolli16\_54:  
(23, 47970), (39, 47913), (50, 47886), (Start: 58 @47865 has 1 MA's), (Start: 62 @47859 has 5 MA's),  
(Start: 87 @47811 has 115 MA's), (97, 47787), (126, 47739), (131, 47733), (138, 47709),

Gene: Courthouse\_78 Start: 48853, Stop: 48584, Start Num: 70  
Candidate Starts for Courthouse\_78:  
(Start: 70 @48853 has 134 MA's), (97, 48799), (138, 48751),

Gene: Craff\_56 Start: 48056, Stop: 47787, Start Num: 87  
Candidate Starts for Craff\_56:  
(23, 48215), (39, 48158), (50, 48131), (Start: 58 @48110 has 1 MA's), (Start: 62 @48104 has 5 MA's),  
(Start: 87 @48056 has 115 MA's), (97, 48032), (126, 47984), (131, 47978), (138, 47954), (185, 47798),

Gene: Crater\_73 Start: 43346, Stop: 43687, Start Num: 62  
Candidate Starts for Crater\_73:  
(22, 43241), (40, 43301), (Start: 62 @43346 has 5 MA's), (99, 43424), (135, 43490), (158, 43553),

Gene: DLane\_48 Start: 36148, Stop: 36381, Start Num: 70  
Candidate Starts for DLane\_48:  
(Start: 55 @36118 has 1 MA's), (Start: 70 @36148 has 134 MA's), (88, 36184), (135, 36244), (138, 36247),

Gene: DTDevon\_6 Start: 1888, Stop: 2115, Start Num: 87  
Candidate Starts for DTDevon\_6:  
(Start: 82 @1879 has 2 MA's), (Start: 87 @1888 has 115 MA's), (105, 1924), (110, 1933), (138, 1987),  
(156, 2026),

Gene: DaWorst\_54 Start: 38043, Stop: 38276, Start Num: 70  
Candidate Starts for DaWorst\_54:  
(Start: 55 @38013 has 1 MA's), (Start: 70 @38043 has 134 MA's), (81, 38067), (113, 38109), (133, 38124), (135, 38142), (138, 38145),

Gene: DaddyDaniels\_55 Start: 47588, Stop: 47319, Start Num: 87  
Candidate Starts for DaddyDaniels\_55:

(23, 47747), (39, 47690), (50, 47663), (Start: 58 @47642 has 1 MA's), (Start: 62 @47636 has 5 MA's), (Start: 87 @47588 has 115 MA's), (97, 47564), (126, 47516), (131, 47510), (138, 47486), (185, 47330),

Gene: DaddyRickover\_52 Start: 37670, Stop: 37903, Start Num: 70

Candidate Starts for DaddyRickover\_52:

(Start: 55 @37640 has 1 MA's), (Start: 70 @37670 has 134 MA's), (81, 37694), (113, 37736), (133, 37751), (135, 37769), (138, 37772),

Gene: Daenerys\_72 Start: 47067, Stop: 47294, Start Num: 87

Candidate Starts for Daenerys\_72:

(Start: 87 @47067 has 115 MA's), (140, 47166),

Gene: Daffy\_53 Start: 47094, Stop: 46801, Start Num: 87

Candidate Starts for Daffy\_53:

(23, 47253), (39, 47196), (50, 47169), (Start: 58 @47148 has 1 MA's), (Start: 62 @47142 has 5 MA's), (Start: 87 @47094 has 115 MA's), (97, 47070), (126, 47022), (131, 47016), (138, 46992),

Gene: Daisy\_51 Start: 45439, Stop: 45170, Start Num: 70

Candidate Starts for Daisy\_51:

(Start: 70 @45439 has 134 MA's), (97, 45385), (138, 45337),

Gene: Dallas\_89 Start: 55552, Stop: 55848, Start Num: 70

Candidate Starts for Dallas\_89:

(Start: 70 @55552 has 134 MA's), (113, 55630), (131, 55657), (138, 55681),

Gene: Dallas\_146 Start: 77512, Stop: 77757, Start Num: 160

Candidate Starts for Dallas\_146:

(101, 77377), (136, 77452), (140, 77467), (Start: 160 @77512 has 32 MA's), (181, 77584), (182, 77587),

Gene: Dandelion\_5 Start: 1888, Stop: 2115, Start Num: 87

Candidate Starts for Dandelion\_5:

(Start: 82 @1879 has 2 MA's), (Start: 87 @1888 has 115 MA's), (105, 1924), (110, 1933), (138, 1987), (156, 2026),

Gene: Dante\_53 Start: 37036, Stop: 37266, Start Num: 70

Candidate Starts for Dante\_53:

(Start: 55 @37006 has 1 MA's), (Start: 70 @37036 has 134 MA's), (81, 37060), (113, 37099), (133, 37114), (135, 37132), (138, 37135),

Gene: DeadP\_58 Start: 38932, Stop: 39159, Start Num: 70

Candidate Starts for DeadP\_58:

(Start: 55 @38902 has 1 MA's), (Start: 70 @38932 has 134 MA's), (88, 38965), (109, 38989), (135, 39022),

Gene: Deb65\_66 Start: 44788, Stop: 45015, Start Num: 87

Candidate Starts for Deb65\_66:

(Start: 87 @44788 has 115 MA's), (140, 44887),

Gene: Demsculpinboyz\_62 Start: 36874, Stop: 37140, Start Num: 70

Candidate Starts for Demsculpinboyz\_62:

(Start: 55 @36844 has 1 MA's), (Start: 70 @36874 has 134 MA's), (81, 36898), (122, 36940), (133, 36955), (135, 36973), (138, 36976),

Gene: Demsculpinboyz\_75 Start: 41100, Stop: 41363, Start Num: 72

Candidate Starts for Demsculpinboyz\_75:

(57, 41073), (Start: 72 @41100 has 5 MA's), (86, 41133), (Start: 91 @41145 has 5 MA's), (101, 41166), (119, 41190), (138, 41229),

Gene: Denise\_57 Start: 36623, Stop: 36913, Start Num: 69

Candidate Starts for Denise\_57:

(Start: 69 @36623 has 2 MA's), (88, 36659), (167, 36815), (187, 36896),

Gene: DmpstrDiver\_90 Start: 55966, Stop: 56262, Start Num: 70

Candidate Starts for DmpstrDiver\_90:

(Start: 70 @55966 has 134 MA's), (113, 56044), (131, 56071), (138, 56095),

Gene: DmpstrDiver\_146 Start: 77431, Stop: 77676, Start Num: 160

Candidate Starts for DmpstrDiver\_146:

(101, 77296), (136, 77371), (140, 77386), (Start: 160 @77431 has 32 MA's), (181, 77503), (182, 77506),

Gene: DobbysSock\_53 Start: 39107, Stop: 39373, Start Num: 66

Candidate Starts for DobbysSock\_53:

(Start: 66 @39107 has 6 MA's), (104, 39173), (106, 39176),

Gene: DonkeyMan\_56 Start: 38401, Stop: 38625, Start Num: 71

Candidate Starts for DonkeyMan\_56:

(Start: 71 @38401 has 2 MA's), (90, 38437), (148, 38530), (169, 38578),

Gene: Donkeykong\_53 Start: 39067, Stop: 39345, Start Num: 70

Candidate Starts for Donkeykong\_53:

(48, 39022), (57, 39043), (Start: 70 @39067 has 134 MA's), (138, 39178),

Gene: Doomphist\_76 Start: 46880, Stop: 47107, Start Num: 87

Candidate Starts for Doomphist\_76:

(Start: 87 @46880 has 115 MA's), (140, 46979),

Gene: Doomphist\_52 Start: 38179, Stop: 38421, Start Num: 70

Candidate Starts for Doomphist\_52:

(Start: 55 @38149 has 1 MA's), (Start: 70 @38179 has 134 MA's), (135, 38287),

Gene: Dorothy\_74 Start: 45505, Stop: 45732, Start Num: 87

Candidate Starts for Dorothy\_74:

(Start: 87 @45505 has 115 MA's), (140, 45604),

Gene: DotProduct\_48 Start: 36209, Stop: 36451, Start Num: 70

Candidate Starts for DotProduct\_48:

(Start: 55 @36179 has 1 MA's), (Start: 70 @36209 has 134 MA's), (135, 36317),

Gene: Doug\_55 Start: 38300, Stop: 38542, Start Num: 70

Candidate Starts for Doug\_55:

(Start: 55 @38270 has 1 MA's), (Start: 70 @38300 has 134 MA's), (138, 38411),

Gene: Douge\_117 Start: 64670, Stop: 64912, Start Num: 87  
Candidate Starts for Douge\_117:  
(Start: 87 @64670 has 115 MA's), (93, 64682), (146, 64778), (178, 64865), (185, 64886),

Gene: Dove\_138 Start: 73030, Stop: 73275, Start Num: 160  
Candidate Starts for Dove\_138:  
(101, 72895), (140, 72985), (Start: 160 @73030 has 32 MA's), (181, 73102), (182, 73105),

Gene: Dove\_77 Start: 52060, Stop: 52356, Start Num: 70  
Candidate Starts for Dove\_77:  
(Start: 70 @52060 has 134 MA's), (113, 52138), (131, 52165), (138, 52189),

Gene: Drazdys\_6 Start: 1888, Stop: 2115, Start Num: 87  
Candidate Starts for Drazdys\_6:  
(Start: 82 @1879 has 2 MA's), (Start: 87 @1888 has 115 MA's), (105, 1924), (110, 1933), (138, 1987),  
(156, 2026),

Gene: Dreamboat\_67 Start: 41780, Stop: 41553, Start Num: 72  
Candidate Starts for Dreamboat\_67:  
(Start: 72 @41780 has 5 MA's), (138, 41720),

Gene: Duke13\_141 Start: 74732, Stop: 74977, Start Num: 160  
Candidate Starts for Duke13\_141:  
(101, 74597), (136, 74672), (140, 74687), (Start: 160 @74732 has 32 MA's), (181, 74804), (182,  
74807),

Gene: Eish\_57 Start: 38353, Stop: 38628, Start Num: 70  
Candidate Starts for Eish\_57:  
(Start: 70 @38353 has 134 MA's), (138, 38464),

Gene: Ejimix\_87 Start: 57171, Stop: 57389, Start Num: 87  
Candidate Starts for Ejimix\_87:  
(Start: 80 @57159 has 2 MA's), (Start: 87 @57171 has 115 MA's), (135, 57258), (145, 57282),

Gene: Ejimix\_138 Start: 77580, Stop: 77825, Start Num: 160  
Candidate Starts for Ejimix\_138:  
(101, 77445), (136, 77520), (140, 77535), (Start: 160 @77580 has 32 MA's), (181, 77652), (182,  
77655),

Gene: Emma\_52 Start: 36405, Stop: 36638, Start Num: 70  
Candidate Starts for Emma\_52:  
(Start: 55 @36375 has 1 MA's), (Start: 70 @36405 has 134 MA's), (88, 36441), (135, 36501), (138,  
36504),

Gene: Empress\_71 Start: 45691, Stop: 45918, Start Num: 87  
Candidate Starts for Empress\_71:  
(Start: 87 @45691 has 115 MA's), (140, 45790),

Gene: EricMillard\_137 Start: 76084, Stop: 76329, Start Num: 160  
Candidate Starts for EricMillard\_137:  
(101, 75949), (136, 76024), (140, 76039), (Start: 160 @76084 has 32 MA's), (181, 76156), (182,  
76159),

Gene: EricMillard\_83 Start: 55716, Stop: 55994, Start Num: 70  
Candidate Starts for EricMillard\_83:  
(Start: 67 @55710 has 22 MA's), (Start: 70 @55716 has 134 MA's), (138, 55827),

Gene: Estave1\_55 Start: 37717, Stop: 37980, Start Num: 70  
Candidate Starts for Estave1\_55:  
(Start: 70 @37717 has 134 MA's), (138, 37828),

Gene: Fascinus\_60 Start: 42059, Stop: 41790, Start Num: 70  
Candidate Starts for Fascinus\_60:  
(Start: 70 @42059 has 134 MA's), (97, 42005), (138, 41957),

Gene: Firehouse51\_53 Start: 39958, Stop: 40203, Start Num: 70  
Candidate Starts for Firehouse51\_53:  
(Start: 55 @39928 has 1 MA's), (Start: 70 @39958 has 134 MA's), (138, 40069),

Gene: FirstPlacePfu\_54 Start: 36068, Stop: 36295, Start Num: 87  
Candidate Starts for FirstPlacePfu\_54:  
(Start: 54 @36005 has 7 MA's), (Start: 87 @36068 has 115 MA's), (140, 36167),

Gene: Fishburne\_52 Start: 36036, Stop: 36263, Start Num: 87  
Candidate Starts for Fishburne\_52:  
(Start: 54 @35973 has 7 MA's), (Start: 87 @36036 has 115 MA's), (140, 36135),

Gene: Fozzie\_52 Start: 47398, Stop: 47105, Start Num: 87  
Candidate Starts for Fozzie\_52:  
(23, 47557), (39, 47500), (50, 47473), (Start: 58 @47452 has 1 MA's), (Start: 62 @47446 has 5 MA's),  
(Start: 87 @47398 has 115 MA's), (97, 47374), (126, 47326), (131, 47320), (138, 47296),

Gene: FrayBell\_6 Start: 1888, Stop: 2115, Start Num: 87  
Candidate Starts for FrayBell\_6:  
(Start: 82 @1879 has 2 MA's), (Start: 87 @1888 has 115 MA's), (105, 1924), (110, 1933), (138, 1987),  
(156, 2026),

Gene: Fringe\_57 Start: 48533, Stop: 48264, Start Num: 87  
Candidate Starts for Fringe\_57:  
(23, 48692), (39, 48635), (Start: 58 @48587 has 1 MA's), (Start: 62 @48581 has 5 MA's), (Start: 87  
@48533 has 115 MA's), (97, 48509), (126, 48461), (131, 48455), (138, 48431), (185, 48275),

Gene: GAL1\_58 Start: 39448, Stop: 39708, Start Num: 66  
Candidate Starts for GAL1\_58:  
(Start: 66 @39448 has 6 MA's), (149, 39592),

Gene: GMA1\_52 Start: 32897, Stop: 33145, Start Num: 85  
Candidate Starts for GMA1\_52:  
(46, 32816), (52, 32828), (64, 32855), (77, 32882), (85, 32897),

Gene: GMA2\_107 Start: 94211, Stop: 93939, Start Num: 85  
Candidate Starts for GMA2\_107:  
(85, 94211), (161, 94031),

Gene: Gaia\_57 Start: 40635, Stop: 40414, Start Num: 87  
Candidate Starts for Gaia\_57:



(Start: 87 @40635 has 115 MA's), (93, 40623), (116, 40581), (178, 40443), (185, 40422),

Gene: Gaia\_56 Start: 40287, Stop: 40042, Start Num: 89

Candidate Starts for Gaia\_56:

(Start: 89 @40287 has 1 MA's), (121, 40230), (176, 40089),

Gene: Gambino\_79 Start: 48141, Stop: 48380, Start Num: 91

Candidate Starts for Gambino\_79:

(1, 47394), (2, 47400), (3, 47406), (4, 47451), (15, 47889), (16, 47916), (27, 47979), (33, 48003), (63, 48078), (Start: 68 @48087 has 1 MA's), (Start: 91 @48141 has 5 MA's), (105, 48168), (164, 48306), (173, 48327), (184, 48375),

Gene: Gandolph\_55 Start: 37415, Stop: 37660, Start Num: 70

Candidate Starts for Gandolph\_55:

(Start: 70 @37415 has 134 MA's), (135, 37523),

Gene: Geralt\_66 Start: 44787, Stop: 45014, Start Num: 87

Candidate Starts for Geralt\_66:

(Start: 87 @44787 has 115 MA's), (140, 44886),

Gene: Gervas\_52 Start: 45854, Stop: 45585, Start Num: 70

Candidate Starts for Gervas\_52:

(Start: 70 @45854 has 134 MA's), (97, 45800), (138, 45752), (185, 45596),

Gene: Getalong\_78 Start: 45864, Stop: 46163, Start Num: 67

Candidate Starts for Getalong\_78:

(Start: 67 @45864 has 22 MA's), (96, 45918), (117, 45957), (143, 46014), (165, 46071),

Gene: GigiOuiOui\_49 Start: 36354, Stop: 36596, Start Num: 70

Candidate Starts for GigiOuiOui\_49:

(Start: 55 @36324 has 1 MA's), (Start: 70 @36354 has 134 MA's), (135, 36462),

Gene: Giraffe\_54 Start: 47592, Stop: 47323, Start Num: 87

Candidate Starts for Giraffe\_54:

(23, 47751), (39, 47694), (Start: 58 @47646 has 1 MA's), (Start: 62 @47640 has 5 MA's), (Start: 87 @47592 has 115 MA's), (97, 47568), (126, 47520), (131, 47514), (138, 47490),

Gene: GlenHope\_52 Start: 45405, Stop: 45136, Start Num: 70

Candidate Starts for GlenHope\_52:

(Start: 70 @45405 has 134 MA's), (97, 45351), (138, 45303),

Gene: Graduation\_70 Start: 43891, Stop: 43622, Start Num: 70

Candidate Starts for Graduation\_70:

(Start: 70 @43891 has 134 MA's), (97, 43837), (138, 43789),

Gene: Grand2040\_53 Start: 47586, Stop: 47317, Start Num: 87

Candidate Starts for Grand2040\_53:

(23, 47745), (39, 47688), (Start: 58 @47640 has 1 MA's), (Start: 62 @47634 has 5 MA's), (Start: 87 @47586 has 115 MA's), (97, 47562), (126, 47514), (131, 47508), (138, 47484),

Gene: Gudmit\_51 Start: 32451, Stop: 32681, Start Num: 66

Candidate Starts for Gudmit\_51:

(Start: 66 @32451 has 6 MA's), (83, 32481), (88, 32490), (115, 32514), (171, 32625),

Gene: Haleema\_52 Start: 47090, Stop: 46797, Start Num: 87

Candidate Starts for Haleema\_52:

(23, 47249), (39, 47192), (50, 47165), (Start: 58 @47144 has 1 MA's), (Start: 62 @47138 has 5 MA's), (Start: 87 @47090 has 115 MA's), (97, 47066), (126, 47018), (131, 47012), (138, 46988),

Gene: Halley\_147 Start: 77896, Stop: 78141, Start Num: 160

Candidate Starts for Halley\_147:

(101, 77761), (136, 77836), (140, 77851), (Start: 160 @77896 has 32 MA's), (181, 77968), (182, 77971),

Gene: Halley\_91 Start: 56631, Stop: 56927, Start Num: 70

Candidate Starts for Halley\_91:

(Start: 70 @56631 has 134 MA's), (113, 56709), (131, 56736), (138, 56760),

Gene: Hamulus\_53 Start: 37796, Stop: 38026, Start Num: 70

Candidate Starts for Hamulus\_53:

(Start: 55 @37766 has 1 MA's), (Start: 70 @37796 has 134 MA's), (88, 37832), (135, 37892), (138, 37895),

Gene: Hawkeye\_97 Start: 61659, Stop: 61895, Start Num: 87

Candidate Starts for Hawkeye\_97:

(42, 61557), (Start: 71 @61620 has 2 MA's), (74, 61626), (Start: 87 @61659 has 115 MA's), (124, 61728), (138, 61758), (163, 61809), (175, 61830), (186, 61872),

Gene: Hegedechwinu\_72 Start: 43105, Stop: 43332, Start Num: 87

Candidate Starts for Hegedechwinu\_72:

(Start: 87 @43105 has 115 MA's), (140, 43204),

Gene: Heinz\_57 Start: 37331, Stop: 37591, Start Num: 71

Candidate Starts for Heinz\_57:

(Start: 71 @37331 has 2 MA's), (148, 37496), (169, 37544),

Gene: Held\_53 Start: 47095, Stop: 46802, Start Num: 87

Candidate Starts for Held\_53:

(23, 47254), (39, 47197), (50, 47170), (Start: 58 @47149 has 1 MA's), (Start: 62 @47143 has 5 MA's), (Start: 87 @47095 has 115 MA's), (97, 47071), (126, 47023), (131, 47017), (138, 46993),

Gene: Helpful\_87 Start: 60143, Stop: 60346, Start Num: 87

Candidate Starts for Helpful\_87:

(33, 60017), (38, 60026), (Start: 87 @60143 has 115 MA's), (97, 60167), (146, 60245), (172, 60296),

Gene: HenryJackson\_53 Start: 47620, Stop: 47351, Start Num: 87

Candidate Starts for HenryJackson\_53:

(23, 47779), (39, 47722), (50, 47695), (Start: 58 @47674 has 1 MA's), (Start: 62 @47668 has 5 MA's), (Start: 87 @47620 has 115 MA's), (97, 47596), (126, 47548), (131, 47542), (138, 47518), (185, 47362),

Gene: Hertubise\_53 Start: 47387, Stop: 47094, Start Num: 87

Candidate Starts for Hertubise\_53:

(23, 47546), (39, 47489), (50, 47462), (Start: 58 @47441 has 1 MA's), (Start: 62 @47435 has 5 MA's), (Start: 87 @47387 has 115 MA's), (97, 47363), (126, 47315), (131, 47309), (138, 47285),

Gene: HighStump\_55 Start: 48156, Stop: 47887, Start Num: 87  
Candidate Starts for HighStump\_55:  
(23, 48315), (39, 48258), (50, 48231), (Start: 58 @48210 has 1 MA's), (Start: 62 @48204 has 5 MA's),  
(Start: 87 @48156 has 115 MA's), (97, 48132), (126, 48084), (131, 48078), (138, 48054), (185,  
47898),

Gene: HokkenD\_138 Start: 77055, Stop: 77300, Start Num: 160  
Candidate Starts for HokkenD\_138:  
(101, 76920), (140, 77010), (Start: 160 @77055 has 32 MA's), (181, 77127), (182, 77130),

Gene: HokkenD\_79 Start: 54900, Stop: 55196, Start Num: 70  
Candidate Starts for HokkenD\_79:  
(Start: 70 @54900 has 134 MA's), (113, 54978), (131, 55005), (138, 55029),

Gene: Holliday\_79 Start: 47725, Stop: 48021, Start Num: 67  
Candidate Starts for Holliday\_79:  
(52, 47698), (Start: 62 @47716 has 5 MA's), (Start: 67 @47725 has 22 MA's), (99, 47791), (144,  
47878), (150, 47896), (164, 47923),

Gene: Horus\_75 Start: 45413, Stop: 45754, Start Num: 62  
Candidate Starts for Horus\_75:  
(22, 45308), (40, 45368), (Start: 62 @45413 has 5 MA's), (99, 45491), (135, 45557), (158, 45620),

Gene: Hughesyang\_90 Start: 56589, Stop: 56885, Start Num: 70  
Candidate Starts for Hughesyang\_90:  
(Start: 70 @56589 has 134 MA's), (113, 56667), (131, 56694), (138, 56718),

Gene: Hughesyang\_144 Start: 77666, Stop: 77911, Start Num: 160  
Candidate Starts for Hughesyang\_144:  
(101, 77531), (136, 77606), (140, 77621), (Start: 160 @77666 has 32 MA's), (181, 77738), (182,  
77741),

Gene: Inventum\_47 Start: 36162, Stop: 36395, Start Num: 70  
Candidate Starts for Inventum\_47:  
(Start: 55 @36132 has 1 MA's), (Start: 70 @36162 has 134 MA's), (81, 36186), (113, 36228), (133,  
36243), (135, 36261), (138, 36264),

Gene: Inventum\_71 Start: 45703, Stop: 45930, Start Num: 87  
Candidate Starts for Inventum\_71:  
(Start: 87 @45703 has 115 MA's), (140, 45802),

Gene: JalFarm20\_60 Start: 39595, Stop: 39840, Start Num: 70  
Candidate Starts for JalFarm20\_60:  
(57, 39571), (Start: 70 @39595 has 134 MA's), (138, 39706),

Gene: Jasper\_66 Start: 41666, Stop: 41439, Start Num: 72  
Candidate Starts for Jasper\_66:  
(Start: 72 @41666 has 5 MA's), (138, 41606),

Gene: JayJay\_5 Start: 1730, Stop: 1996, Start Num: 82  
Candidate Starts for JayJay\_5:  
(Start: 82 @1730 has 2 MA's), (Start: 87 @1739 has 115 MA's), (97, 1763), (123, 1805), (133, 1820),  
(135, 1838), (138, 1841), (174, 1937),

Gene: Jinglebell\_38 Start: 31199, Stop: 31008, Start Num: 54

Candidate Starts for Jinglebell\_38:

(Start: 54 @31199 has 7 MA's), (101, 31109),

Gene: Job42\_55 Start: 39394, Stop: 39636, Start Num: 70

Candidate Starts for Job42\_55:

(26, 39280), (29, 39292), (40, 39328), (61, 39379), (Start: 70 @39394 has 134 MA's), (138, 39505),

Gene: JoeyJr\_73 Start: 46692, Stop: 46919, Start Num: 87

Candidate Starts for JoeyJr\_73:

(Start: 87 @46692 has 115 MA's), (140, 46791),

Gene: Jorgensen\_69 Start: 42799, Stop: 42503, Start Num: 68

Candidate Starts for Jorgensen\_69:

(Start: 68 @42799 has 1 MA's), (113, 42721), (131, 42694), (135, 42673), (138, 42670),

Gene: JuicyJay\_141 Start: 79181, Stop: 79426, Start Num: 160

Candidate Starts for JuicyJay\_141:

(101, 79046), (140, 79136), (Start: 160 @79181 has 32 MA's), (181, 79253), (182, 79256),

Gene: JuicyJay\_87 Start: 57765, Stop: 58061, Start Num: 70

Candidate Starts for JuicyJay\_87:

(Start: 70 @57765 has 134 MA's), (113, 57843), (131, 57870), (138, 57894),

Gene: Kahve\_53 Start: 47617, Stop: 47348, Start Num: 87

Candidate Starts for Kahve\_53:

(23, 47776), (39, 47719), (50, 47692), (Start: 58 @47671 has 1 MA's), (Start: 62 @47665 has 5 MA's), (Start: 87 @47617 has 115 MA's), (97, 47593), (126, 47545), (131, 47539), (138, 47515), (185, 47359),

Gene: Kalah2\_84 Start: 55924, Stop: 56220, Start Num: 70

Candidate Starts for Kalah2\_84:

(Start: 70 @55924 has 134 MA's), (113, 56002), (131, 56029), (138, 56053),

Gene: Kalah2\_136 Start: 76787, Stop: 77032, Start Num: 160

Candidate Starts for Kalah2\_136:

(101, 76652), (140, 76742), (Start: 160 @76787 has 32 MA's), (181, 76859), (182, 76862),

Gene: Kamaru\_71 Start: 43317, Stop: 43604, Start Num: 67

Candidate Starts for Kamaru\_71:

(5, 42969), (6, 42972), (9, 43032), (18, 43176), (19, 43179), (60, 43305), (Start: 62 @43308 has 5 MA's), (Start: 67 @43317 has 22 MA's), (99, 43383), (135, 43449), (140, 43461),

Gene: Kamiyu\_51 Start: 45383, Stop: 45114, Start Num: 70

Candidate Starts for Kamiyu\_51:

(Start: 70 @45383 has 134 MA's), (97, 45329), (138, 45281),

Gene: KandZ\_82 Start: 59971, Stop: 60174, Start Num: 87

Candidate Starts for KandZ\_82:

(33, 59845), (38, 59854), (Start: 87 @59971 has 115 MA's), (97, 59995), (146, 60073), (172, 60124),

Gene: Kari\_52 Start: 36033, Stop: 36260, Start Num: 87

Candidate Starts for Kari\_52:

(Start: 54 @35970 has 7 MA's), (Start: 87 @36033 has 115 MA's), (140, 36132),

Gene: KashFlow\_144 Start: 76087, Stop: 76332, Start Num: 160

Candidate Starts for KashFlow\_144:

(101, 75952), (140, 76042), (Start: 160 @76087 has 32 MA's), (181, 76159), (182, 76162),

Gene: Kenna\_71 Start: 43390, Stop: 43677, Start Num: 67

Candidate Starts for Kenna\_71:

(51, 43363), (Start: 62 @43381 has 5 MA's), (Start: 67 @43390 has 22 MA's), (99, 43456), (135, 43522), (140, 43534),

Gene: Kenuha5\_50 Start: 36123, Stop: 36365, Start Num: 70

Candidate Starts for Kenuha5\_50:

(36, 36039), (41, 36057), (57, 36099), (Start: 70 @36123 has 134 MA's), (138, 36234),

Gene: Kimberlium\_67 Start: 43095, Stop: 43343, Start Num: 87

Candidate Starts for Kimberlium\_67:

(Start: 87 @43095 has 115 MA's), (122, 43158), (138, 43200),

Gene: KingMidas\_72 Start: 46106, Stop: 46333, Start Num: 87

Candidate Starts for KingMidas\_72:

(Start: 87 @46106 has 115 MA's), (140, 46205),

Gene: Klein\_143 Start: 75389, Stop: 75634, Start Num: 160

Candidate Starts for Klein\_143:

(101, 75254), (140, 75344), (Start: 160 @75389 has 32 MA's), (181, 75461), (182, 75464),

Gene: Klein\_90 Start: 55600, Stop: 55896, Start Num: 70

Candidate Starts for Klein\_90:

(Start: 67 @55594 has 22 MA's), (Start: 70 @55600 has 134 MA's), (113, 55678), (131, 55705), (138, 55729),

Gene: KristaRAM\_51 Start: 38223, Stop: 38468, Start Num: 70

Candidate Starts for KristaRAM\_51:

(36, 38139), (41, 38157), (57, 38199), (Start: 70 @38223 has 134 MA's), (138, 38334),

Gene: Kronus\_51 Start: 46457, Stop: 46188, Start Num: 70

Candidate Starts for Kronus\_51:

(Start: 70 @46457 has 134 MA's), (97, 46403), (138, 46355), (185, 46199),

Gene: Kuwabara\_76 Start: 45678, Stop: 45968, Start Num: 67

Candidate Starts for Kuwabara\_76:

(Start: 62 @45669 has 5 MA's), (Start: 67 @45678 has 22 MA's), (99, 45744), (135, 45810), (140, 45822), (149, 45843), (152, 45849), (159, 45858),

Gene: Kwadwo\_52 Start: 47069, Stop: 46776, Start Num: 87

Candidate Starts for Kwadwo\_52:

(23, 47228), (39, 47171), (50, 47144), (Start: 58 @47123 has 1 MA's), (Start: 62 @47117 has 5 MA's), (Start: 87 @47069 has 115 MA's), (97, 47045), (126, 46997), (131, 46991), (138, 46967),

Gene: Langerak\_53 Start: 36052, Stop: 36279, Start Num: 87

Candidate Starts for Langerak\_53:

(Start: 54 @35989 has 7 MA's), (Start: 87 @36052 has 115 MA's), (140, 36151),

Gene: Lasso\_53 Start: 47344, Stop: 47051, Start Num: 87

Candidate Starts for Lasso\_53:

(23, 47503), (39, 47446), (50, 47419), (Start: 58 @47398 has 1 MA's), (Start: 62 @47392 has 5 MA's), (Start: 87 @47344 has 115 MA's), (97, 47320), (126, 47272), (131, 47266), (138, 47242),

Gene: LeeLot\_53 Start: 47396, Stop: 47103, Start Num: 87

Candidate Starts for LeeLot\_53:

(23, 47555), (39, 47498), (50, 47471), (Start: 58 @47450 has 1 MA's), (Start: 62 @47444 has 5 MA's), (Start: 87 @47396 has 115 MA's), (97, 47372), (126, 47324), (131, 47318), (138, 47294),

Gene: Legolas\_55 Start: 48053, Stop: 47784, Start Num: 87

Candidate Starts for Legolas\_55:

(23, 48212), (39, 48155), (50, 48128), (Start: 58 @48107 has 1 MA's), (Start: 62 @48101 has 5 MA's), (Start: 87 @48053 has 115 MA's), (97, 48029), (126, 47981), (131, 47975), (138, 47951), (185, 47795),

Gene: Leperchaun\_71 Start: 45926, Stop: 46153, Start Num: 87

Candidate Starts for Leperchaun\_71:

(Start: 87 @45926 has 115 MA's), (140, 46025),

Gene: Leroy\_74 Start: 43665, Stop: 43955, Start Num: 67

Candidate Starts for Leroy\_74:

(52, 43638), (Start: 62 @43656 has 5 MA's), (Start: 67 @43665 has 22 MA's), (99, 43731), (144, 43818), (150, 43836), (164, 43863),

Gene: LinStu\_6 Start: 2738, Stop: 2995, Start Num: 87

Candidate Starts for LinStu\_6:

(Start: 82 @2729 has 2 MA's), (Start: 87 @2738 has 115 MA's), (97, 2762), (123, 2804), (133, 2819), (135, 2837), (138, 2840), (174, 2936),

Gene: LitninMcQueen\_77 Start: 44377, Stop: 44670, Start Num: 67

Candidate Starts for LitninMcQueen\_77:

(Start: 62 @44368 has 5 MA's), (Start: 67 @44377 has 22 MA's), (98, 44440), (99, 44443), (150, 44548),

Gene: Llama\_39 Start: 31198, Stop: 31007, Start Num: 54

Candidate Starts for Llama\_39:

(Start: 54 @31198 has 7 MA's), (101, 31108),

Gene: LolaVinca\_6 Start: 1879, Stop: 2115, Start Num: 82

Candidate Starts for LolaVinca\_6:

(Start: 82 @1879 has 2 MA's), (Start: 87 @1888 has 115 MA's), (105, 1924), (110, 1933), (138, 1987), (156, 2026),

Gene: Longacauda\_54 Start: 48016, Stop: 47747, Start Num: 87

Candidate Starts for Longacauda\_54:

(23, 48175), (39, 48118), (50, 48091), (Start: 58 @48070 has 1 MA's), (Start: 62 @48064 has 5 MA's), (Start: 87 @48016 has 115 MA's), (97, 47992), (126, 47944), (131, 47938), (138, 47914), (185, 47758),

Gene: Lton\_54 Start: 33162, Stop: 33458, Start Num: 67

Candidate Starts for Lton\_54:

(Start: 62 @33153 has 5 MA's), (Start: 67 @33162 has 22 MA's), (99, 33228), (135, 33294), (140, 33306), (150, 33333), (164, 33360),

Gene: Lucky10\_55 Start: 35945, Stop: 36226, Start Num: 67

Candidate Starts for Lucky10\_55:

(Start: 67 @35945 has 22 MA's), (92, 35993), (99, 36011), (113, 36032), (135, 36068), (140, 36080), (149, 36101), (152, 36107), (159, 36116),

Gene: Lucky2013\_137 Start: 73141, Stop: 73386, Start Num: 160

Candidate Starts for Lucky2013\_137:

(101, 73006), (136, 73081), (140, 73096), (Start: 160 @73141 has 32 MA's), (181, 73213), (182, 73216), (183, 73219),

Gene: Lucky2013\_80 Start: 49269, Stop: 49000, Start Num: 70

Candidate Starts for Lucky2013\_80:

(Start: 70 @49269 has 134 MA's), (97, 49215), (138, 49167),

Gene: Lumine\_54 Start: 47804, Stop: 47535, Start Num: 87

Candidate Starts for Lumine\_54:

(23, 47963), (39, 47906), (Start: 58 @47858 has 1 MA's), (Start: 62 @47852 has 5 MA's), (Start: 87 @47804 has 115 MA's), (97, 47780), (126, 47732), (131, 47726), (138, 47702),

Gene: Lutum\_77 Start: 44553, Stop: 44840, Start Num: 67

Candidate Starts for Lutum\_77:

(51, 44526), (Start: 62 @44544 has 5 MA's), (Start: 67 @44553 has 22 MA's), (99, 44619), (135, 44685), (140, 44697),

Gene: MadKillah\_103 Start: 62045, Stop: 61815, Start Num: 100

Candidate Starts for MadKillah\_103:

(78, 62096), (Start: 100 @62045 has 1 MA's), (107, 62033), (135, 61985), (138, 61982),

Gene: MadMen\_50 Start: 36869, Stop: 37144, Start Num: 70

Candidate Starts for MadMen\_50:

(Start: 67 @36863 has 22 MA's), (Start: 70 @36869 has 134 MA's), (138, 36980),

Gene: Madiba\_63 Start: 40537, Stop: 40815, Start Num: 70

Candidate Starts for Madiba\_63:

(Start: 67 @40531 has 22 MA's), (Start: 70 @40537 has 134 MA's), (138, 40648),

Gene: Madiba\_50 Start: 35664, Stop: 35894, Start Num: 70

Candidate Starts for Madiba\_50:

(Start: 55 @35634 has 1 MA's), (Start: 70 @35664 has 134 MA's), (88, 35700), (135, 35760), (138, 35763),

Gene: Makemake\_71 Start: 44586, Stop: 44317, Start Num: 70

Candidate Starts for Makemake\_71:

(Start: 70 @44586 has 134 MA's), (97, 44532), (138, 44484),

Gene: Mana\_52 Start: 47084, Stop: 46791, Start Num: 87

Candidate Starts for Mana\_52:

(23, 47243), (39, 47186), (50, 47159), (Start: 58 @47138 has 1 MA's), (Start: 62 @47132 has 5 MA's), (Start: 87 @47084 has 115 MA's), (97, 47060), (126, 47012), (131, 47006), (138, 46982),

Gene: Maravista\_54 Start: 38807, Stop: 39082, Start Num: 70

Candidate Starts for Maravista\_54:

(Start: 55 @38777 has 1 MA's), (Start: 70 @38807 has 134 MA's), (138, 38918),

Gene: Maroc7\_64 Start: 43049, Stop: 42780, Start Num: 70

Candidate Starts for Maroc7\_64:

(Start: 70 @43049 has 134 MA's), (97, 42995), (138, 42947),

Gene: Marsha\_65 Start: 43596, Stop: 43360, Start Num: 87

Candidate Starts for Marsha\_65:

(Start: 87 @43596 has 115 MA's), (118, 43536),

Gene: Maru\_53 Start: 47523, Stop: 47254, Start Num: 87

Candidate Starts for Maru\_53:

(23, 47682), (39, 47625), (50, 47598), (Start: 58 @47577 has 1 MA's), (Start: 62 @47571 has 5 MA's), (Start: 87 @47523 has 115 MA's), (97, 47499), (126, 47451), (131, 47445), (138, 47421),

Gene: Melissauren88\_50 Start: 36304, Stop: 36534, Start Num: 70

Candidate Starts for Melissauren88\_50:

(Start: 55 @36274 has 1 MA's), (Start: 70 @36304 has 134 MA's), (88, 36340), (135, 36400), (138, 36403),

Gene: Mesh1\_54 Start: 47616, Stop: 47323, Start Num: 87

Candidate Starts for Mesh1\_54:

(23, 47775), (39, 47718), (Start: 58 @47670 has 1 MA's), (Start: 62 @47664 has 5 MA's), (Start: 87 @47616 has 115 MA's), (97, 47592), (126, 47544), (131, 47538), (138, 47514),

Gene: MiaZeal\_144 Start: 74280, Stop: 74525, Start Num: 160

Candidate Starts for MiaZeal\_144:

(101, 74145), (136, 74220), (140, 74235), (Start: 160 @74280 has 32 MA's), (181, 74352), (182, 74355), (183, 74358),

Gene: MiaZeal\_83 Start: 49925, Stop: 49656, Start Num: 70

Candidate Starts for MiaZeal\_83:

(Start: 70 @49925 has 134 MA's), (97, 49871), (138, 49823),

Gene: Minerva\_145 Start: 76838, Stop: 77116, Start Num: 160

Candidate Starts for Minerva\_145:

(101, 76703), (140, 76793), (Start: 160 @76838 has 32 MA's), (181, 76910), (182, 76913), (189, 76955), (191, 77033),

Gene: Minerva\_89 Start: 56566, Stop: 56844, Start Num: 70

Candidate Starts for Minerva\_89:

(Start: 67 @56560 has 22 MA's), (Start: 70 @56566 has 134 MA's), (138, 56677),

Gene: MinionDave\_51 Start: 36841, Stop: 37071, Start Num: 70

Candidate Starts for MinionDave\_51:

(Start: 55 @36811 has 1 MA's), (Start: 70 @36841 has 134 MA's), (88, 36877), (135, 36937), (138, 36940),

Gene: MissRona\_77 Start: 48142, Stop: 48381, Start Num: 91

Candidate Starts for MissRona\_77:



(1, 47395), (2, 47401), (3, 47407), (4, 47452), (15, 47890), (16, 47917), (27, 47980), (33, 48004), (63, 48079), (Start: 68 @48088 has 1 MA's), (Start: 91 @48142 has 5 MA's), (105, 48169), (164, 48307), (173, 48328), (184, 48376),

Gene: MitKao\_53 Start: 47094, Stop: 46801, Start Num: 87

Candidate Starts for MitKao\_53:

(23, 47253), (39, 47196), (50, 47169), (Start: 58 @47148 has 1 MA's), (Start: 62 @47142 has 5 MA's), (Start: 87 @47094 has 115 MA's), (97, 47070), (126, 47022), (131, 47016), (138, 46992),

Gene: MmasiCarm\_52 Start: 45904, Stop: 45635, Start Num: 70

Candidate Starts for MmasiCarm\_52:

(Start: 70 @45904 has 134 MA's), (97, 45850), (138, 45802), (185, 45646),

Gene: Modragons\_38 Start: 31043, Stop: 30852, Start Num: 54

Candidate Starts for Modragons\_38:

(Start: 54 @31043 has 7 MA's), (101, 30953),

Gene: Moonbeam\_48 Start: 36361, Stop: 36591, Start Num: 70

Candidate Starts for Moonbeam\_48:

(Start: 55 @36331 has 1 MA's), (Start: 70 @36361 has 134 MA's), (88, 36397), (135, 36457), (138, 36460),

Gene: Moosehead\_58 Start: 34673, Stop: 34924, Start Num: 67

Candidate Starts for Moosehead\_58:

(43, 34622), (45, 34631), (47, 34637), (49, 34640), (59, 34661), (Start: 62 @34664 has 5 MA's), (Start: 67 @34673 has 22 MA's), (144, 34805), (151, 34823),

Gene: Morgushi\_53 Start: 47083, Stop: 46790, Start Num: 87

Candidate Starts for Morgushi\_53:

(23, 47242), (39, 47185), (50, 47158), (Start: 58 @47137 has 1 MA's), (Start: 62 @47131 has 5 MA's), (Start: 87 @47083 has 115 MA's), (97, 47059), (126, 47011), (131, 47005), (138, 46981),

Gene: Morkie\_59 Start: 36074, Stop: 36376, Start Num: 67

Candidate Starts for Morkie\_59:

(33, 36002), (44, 36032), (Start: 54 @36050 has 7 MA's), (59, 36062), (Start: 62 @36065 has 5 MA's), (Start: 67 @36074 has 22 MA's), (94, 36122), (106, 36140), (119, 36161), (170, 36284),

Gene: Mortcellus\_51 Start: 46511, Stop: 46242, Start Num: 70

Candidate Starts for Mortcellus\_51:

(Start: 70 @46511 has 134 MA's), (97, 46457), (138, 46409), (185, 46253),

Gene: Mosaic\_52 Start: 47088, Stop: 46795, Start Num: 87

Candidate Starts for Mosaic\_52:

(23, 47247), (39, 47190), (50, 47163), (Start: 58 @47142 has 1 MA's), (Start: 62 @47136 has 5 MA's), (Start: 87 @47088 has 115 MA's), (97, 47064), (126, 47016), (131, 47010), (138, 46986),

Gene: Mova\_53 Start: 36684, Stop: 36917, Start Num: 70

Candidate Starts for Mova\_53:

(Start: 55 @36654 has 1 MA's), (Start: 70 @36684 has 134 MA's), (88, 36720), (135, 36780), (138, 36783),

Gene: Mova\_66 Start: 41041, Stop: 41319, Start Num: 70

Candidate Starts for Mova\_66:

(Start: 67 @41035 has 22 MA's), (Start: 70 @41041 has 134 MA's), (138, 41152),

Gene: Mozy\_62 Start: 39946, Stop: 40173, Start Num: 70

Candidate Starts for Mozy\_62:

(Start: 55 @39916 has 1 MA's), (Start: 70 @39946 has 134 MA's), (81, 39970), (113, 40012), (133, 40027), (135, 40045), (138, 40048), (151, 40078),

Gene: Mule\_62 Start: 41651, Stop: 41406, Start Num: 87

Candidate Starts for Mule\_62:

(Start: 87 @41651 has 115 MA's), (112, 41609), (117, 41597), (120, 41594), (138, 41555), (144, 41537),

Gene: Nappy\_5 Start: 1734, Stop: 1961, Start Num: 87

Candidate Starts for Nappy\_5:

(Start: 82 @1725 has 2 MA's), (Start: 87 @1734 has 115 MA's), (105, 1770), (110, 1779), (138, 1833), (156, 1872),

Gene: Nazo\_58 Start: 40075, Stop: 40302, Start Num: 87

Candidate Starts for Nazo\_58:

(Start: 54 @40012 has 7 MA's), (Start: 87 @40075 has 115 MA's), (140, 40174), (172, 40237),

Gene: Neos5\_51 Start: 46209, Stop: 45940, Start Num: 70

Candidate Starts for Neos5\_51:

(Start: 70 @46209 has 134 MA's), (97, 46155), (138, 46107),

Gene: Nicole21\_54 Start: 47889, Stop: 47620, Start Num: 87

Candidate Starts for Nicole21\_54:

(23, 48048), (39, 47991), (50, 47964), (Start: 58 @47943 has 1 MA's), (Start: 62 @47937 has 5 MA's), (Start: 87 @47889 has 115 MA's), (97, 47865), (126, 47817), (131, 47811), (138, 47787), (185, 47631),

Gene: NihilNomen\_147 Start: 77126, Stop: 77371, Start Num: 160

Candidate Starts for NihilNomen\_147:

(101, 76991), (140, 77081), (Start: 160 @77126 has 32 MA's), (181, 77198), (182, 77201),

Gene: NihilNomen\_91 Start: 56718, Stop: 57014, Start Num: 70

Candidate Starts for NihilNomen\_91:

(Start: 70 @56718 has 134 MA's), (113, 56796), (131, 56823), (138, 56847),

Gene: Nimbo\_65 Start: 44790, Stop: 45017, Start Num: 87

Candidate Starts for Nimbo\_65:

(Start: 87 @44790 has 115 MA's), (140, 44889),

Gene: Nozo\_51 Start: 46173, Stop: 45904, Start Num: 70

Candidate Starts for Nozo\_51:

(Start: 70 @46173 has 134 MA's), (97, 46119), (138, 46071),

Gene: NuevoMundo\_6 Start: 1876, Stop: 2112, Start Num: 82

Candidate Starts for NuevoMundo\_6:

(Start: 82 @1876 has 2 MA's), (Start: 87 @1885 has 115 MA's), (105, 1921), (110, 1930), (138, 1984), (156, 2023),

Gene: ODay\_82 Start: 46976, Stop: 47251, Start Num: 67

Candidate Starts for ODay\_82:

(31, 46892), (37, 46904), (39, 46916), (57, 46958), (Start: 62 @46967 has 5 MA's), (Start: 67 @46976 has 22 MA's), (93, 47021), (102, 47036), (114, 47057), (139, 47099), (141, 47111),

Gene: Obutu\_52 Start: 45859, Stop: 45590, Start Num: 70

Candidate Starts for Obutu\_52:

(Start: 70 @45859 has 134 MA's), (97, 45805), (138, 45757), (185, 45601),

Gene: Ochi17\_37 Start: 30650, Stop: 30459, Start Num: 54

Candidate Starts for Ochi17\_37:

(Start: 54 @30650 has 7 MA's), (101, 30560),

Gene: Odette\_149 Start: 79269, Stop: 79514, Start Num: 160

Candidate Starts for Odette\_149:

(101, 79134), (140, 79224), (Start: 160 @79269 has 32 MA's), (181, 79341), (182, 79344),

Gene: Odette\_88 Start: 55760, Stop: 56056, Start Num: 70

Candidate Starts for Odette\_88:

(Start: 70 @55760 has 134 MA's), (113, 55838), (131, 55865), (138, 55889),

Gene: OfUltron\_39 Start: 31199, Stop: 31008, Start Num: 54

Candidate Starts for OfUltron\_39:

(Start: 54 @31199 has 7 MA's), (101, 31109),

Gene: Ogopogo\_57 Start: 37928, Stop: 38170, Start Num: 70

Candidate Starts for Ogopogo\_57:

(Start: 67 @37922 has 22 MA's), (Start: 70 @37928 has 134 MA's), (138, 38039),

Gene: Oksu\_39 Start: 31043, Stop: 30852, Start Num: 54

Candidate Starts for Oksu\_39:

(Start: 54 @31043 has 7 MA's), (101, 30953),

Gene: OldBen\_70 Start: 46182, Stop: 46409, Start Num: 87

Candidate Starts for OldBen\_70:

(Start: 87 @46182 has 115 MA's), (140, 46281),

Gene: OneDirection\_52 Start: 33066, Stop: 33362, Start Num: 67

Candidate Starts for OneDirection\_52:

(52, 33039), (Start: 62 @33057 has 5 MA's), (Start: 67 @33066 has 22 MA's), (99, 33132), (144, 33219), (150, 33237), (164, 33264),

Gene: Oosterbaan\_53 Start: 47374, Stop: 47081, Start Num: 87

Candidate Starts for Oosterbaan\_53:

(23, 47533), (39, 47476), (50, 47449), (Start: 58 @47428 has 1 MA's), (Start: 62 @47422 has 5 MA's), (Start: 87 @47374 has 115 MA's), (97, 47350), (126, 47302), (131, 47296), (138, 47272),

Gene: Optimus\_136 Start: 74406, Stop: 74651, Start Num: 160

Candidate Starts for Optimus\_136:

(101, 74271), (136, 74346), (140, 74361), (Start: 160 @74406 has 32 MA's), (181, 74478), (182, 74481),

Gene: Optimus\_84 Start: 55270, Stop: 55548, Start Num: 70

Candidate Starts for Optimus\_84:

(Start: 67 @55264 has 22 MA's), (Start: 70 @55270 has 134 MA's), (138, 55381),

Gene: OrangeOswald\_51 Start: 45414, Stop: 45145, Start Num: 70

Candidate Starts for OrangeOswald\_51:

(Start: 70 @45414 has 134 MA's), (97, 45360), (138, 45312),

Gene: OwlsT2W\_53 Start: 37646, Stop: 37888, Start Num: 70

Candidate Starts for OwlsT2W\_53:

(Start: 55 @37616 has 1 MA's), (Start: 70 @37646 has 134 MA's), (135, 37754),

Gene: PHappiness\_73 Start: 47011, Stop: 47238, Start Num: 87

Candidate Starts for PHappiness\_73:

(Start: 87 @47011 has 115 MA's), (140, 47110),

Gene: PMC\_49 Start: 37214, Stop: 37471, Start Num: 70

Candidate Starts for PMC\_49:

(26, 37100), (29, 37112), (40, 37148), (61, 37199), (Start: 70 @37214 has 134 MA's), (138, 37325), (147, 37355),

Gene: Paraselene\_66 Start: 43378, Stop: 43109, Start Num: 70

Candidate Starts for Paraselene\_66:

(Start: 70 @43378 has 134 MA's), (97, 43324), (138, 43276),

Gene: Periwinkle\_62 Start: 38089, Stop: 38367, Start Num: 87

Candidate Starts for Periwinkle\_62:

(Start: 87 @38089 has 115 MA's), (138, 38185), (162, 38251), (179, 38329),

Gene: Phabuloso\_81 Start: 45523, Stop: 45816, Start Num: 67

Candidate Starts for Phabuloso\_81:

(52, 45496), (Start: 62 @45514 has 5 MA's), (Start: 67 @45523 has 22 MA's), (99, 45589), (143, 45676), (184, 45799),

Gene: Phalconet\_51 Start: 36608, Stop: 36838, Start Num: 70

Candidate Starts for Phalconet\_51:

(Start: 55 @36578 has 1 MA's), (Start: 70 @36608 has 134 MA's), (88, 36644), (135, 36704), (138, 36707),

Gene: Phanphagia\_47 Start: 36555, Stop: 36800, Start Num: 70

Candidate Starts for Phanphagia\_47:

(48, 36510), (57, 36531), (Start: 70 @36555 has 134 MA's), (138, 36666),

Gene: Phasih\_51 Start: 37693, Stop: 37935, Start Num: 70

Candidate Starts for Phasih\_51:

(Start: 67 @37687 has 22 MA's), (Start: 70 @37693 has 134 MA's), (138, 37804),

Gene: Phayeta\_53 Start: 45741, Stop: 45472, Start Num: 70

Candidate Starts for Phayeta\_53:

(Start: 70 @45741 has 134 MA's), (97, 45687), (138, 45639), (185, 45483),

Gene: Phayonce\_59 Start: 40788, Stop: 41024, Start Num: 87

Candidate Starts for Phayonce\_59:

(21, 40608), (Start: 87 @40788 has 115 MA's), (135, 40881), (155, 40929), (173, 40959), (178, 40989), (185, 41010),

Gene: PherrisBueller\_66 Start: 41317, Stop: 41090, Start Num: 72

Candidate Starts for PherrisBueller\_66:

(Start: 72 @41317 has 5 MA's), (138, 41257),

Gene: PhesterPhotato\_75 Start: 45749, Stop: 45976, Start Num: 87

Candidate Starts for PhesterPhotato\_75:

(Start: 54 @45686 has 7 MA's), (Start: 87 @45749 has 115 MA's), (140, 45848),

Gene: Philly\_50 Start: 45265, Stop: 44996, Start Num: 70

Candidate Starts for Philly\_50:

(Start: 70 @45265 has 134 MA's), (97, 45211), (138, 45163),

Gene: Phistory\_72 Start: 42511, Stop: 42852, Start Num: 62

Candidate Starts for Phistory\_72:

(22, 42406), (40, 42466), (Start: 62 @42511 has 5 MA's), (99, 42589), (135, 42655), (158, 42718),

Gene: Phlyer\_51 Start: 46154, Stop: 45885, Start Num: 70

Candidate Starts for Phlyer\_51:

(Start: 70 @46154 has 134 MA's), (97, 46100), (138, 46052),

Gene: Phoebus\_92 Start: 57900, Stop: 58196, Start Num: 70

Candidate Starts for Phoebus\_92:

(Start: 70 @57900 has 134 MA's), (113, 57978), (131, 58005), (138, 58029),

Gene: Phoebus\_145 Start: 79020, Stop: 79265, Start Num: 160

Candidate Starts for Phoebus\_145:

(101, 78885), (136, 78960), (140, 78975), (Start: 160 @79020 has 32 MA's), (181, 79092), (182, 79095),

Gene: PhorbesPhlower\_55 Start: 35141, Stop: 35443, Start Num: 67

Candidate Starts for PhorbesPhlower\_55:

(33, 35069), (44, 35099), (Start: 54 @35117 has 7 MA's), (59, 35129), (Start: 62 @35132 has 5 MA's), (Start: 67 @35141 has 22 MA's), (94, 35189), (106, 35207), (119, 35228), (170, 35351),

Gene: PhrostyMug\_65 Start: 43825, Stop: 43580, Start Num: 87

Candidate Starts for PhrostyMug\_65:

(Start: 87 @43825 has 115 MA's), (112, 43783), (117, 43771), (120, 43768), (138, 43729), (144, 43711),

Gene: Pier\_6 Start: 1888, Stop: 2115, Start Num: 87

Candidate Starts for Pier\_6:

(Start: 82 @1879 has 2 MA's), (Start: 87 @1888 has 115 MA's), (105, 1924), (110, 1933), (138, 1987), (156, 2026),

Gene: Poenanya\_76 Start: 46880, Stop: 47107, Start Num: 87

Candidate Starts for Poenanya\_76:

(Start: 87 @46880 has 115 MA's), (140, 46979),

Gene: Poenanya\_52 Start: 38179, Stop: 38421, Start Num: 70

Candidate Starts for Poenanya\_52:

(Start: 55 @38149 has 1 MA's), (Start: 70 @38179 has 134 MA's), (135, 38287),

Gene: Polka14\_77 Start: 47670, Stop: 47897, Start Num: 87

Candidate Starts for Polka14\_77:

(Start: 87 @47670 has 115 MA's), (140, 47769),

Gene: Polka14\_51 Start: 36782, Stop: 37027, Start Num: 70

Candidate Starts for Polka14\_51:

(Start: 70 @36782 has 134 MA's), (135, 36890),

Gene: Polkaroo\_55 Start: 37375, Stop: 37602, Start Num: 87

Candidate Starts for Polkaroo\_55:

(Start: 54 @37312 has 7 MA's), (Start: 87 @37375 has 115 MA's), (140, 37474),

Gene: Pollywog\_50 Start: 37066, Stop: 37320, Start Num: 87

Candidate Starts for Pollywog\_50:

(Start: 67 @37018 has 22 MA's), (78, 37042), (Start: 87 @37066 has 115 MA's), (138, 37177),

Gene: Porcelain\_141 Start: 74087, Stop: 74332, Start Num: 160

Candidate Starts for Porcelain\_141:

(101, 73952), (136, 74027), (140, 74042), (Start: 160 @74087 has 32 MA's), (181, 74159), (182, 74162), (183, 74165),

Gene: Porcelain\_82 Start: 49925, Stop: 49656, Start Num: 70

Candidate Starts for Porcelain\_82:

(Start: 70 @49925 has 134 MA's), (97, 49871), (138, 49823),

Gene: Potter\_52 Start: 47105, Stop: 46812, Start Num: 87

Candidate Starts for Potter\_52:

(23, 47264), (39, 47207), (50, 47180), (Start: 58 @47159 has 1 MA's), (Start: 62 @47153 has 5 MA's), (Start: 87 @47105 has 115 MA's), (97, 47081), (126, 47033), (131, 47027), (138, 47003),

Gene: Pound\_137 Start: 76839, Stop: 77084, Start Num: 160

Candidate Starts for Pound\_137:

(101, 76704), (136, 76779), (140, 76794), (Start: 160 @76839 has 32 MA's), (181, 76911), (182, 76914),

Gene: Pringar\_6 Start: 1866, Stop: 2138, Start Num: 70

Candidate Starts for Pringar\_6:

(Start: 70 @1866 has 134 MA's), (108, 1929), (138, 1971),

Gene: Puhltonio\_53 Start: 47379, Stop: 47086, Start Num: 87

Candidate Starts for Puhltonio\_53:

(23, 47538), (39, 47481), (50, 47454), (Start: 58 @47433 has 1 MA's), (Start: 62 @47427 has 5 MA's), (Start: 87 @47379 has 115 MA's), (97, 47355), (126, 47307), (131, 47301), (138, 47277),

Gene: Purky\_63 Start: 41280, Stop: 41552, Start Num: 13

Candidate Starts for Purky\_63:

(Start: 13 @41280 has 1 MA's), (14, 41295), (20, 41364), (25, 41388), (35, 41421), (40, 41439), (76, 41517), (84, 41538),

Gene: Purky\_64 Start: 41545, Stop: 41862, Start Num: 87

Candidate Starts for Purky\_64:

(24, 41383), (79, 41530), (Start: 87 @41545 has 115 MA's), (142, 41677), (177, 41794), (188, 41848),

Gene: QueenBeane\_53 Start: 47369, Stop: 47076, Start Num: 87  
Candidate Starts for QueenBeane\_53:  
(23, 47528), (39, 47471), (50, 47444), (Start: 58 @47423 has 1 MA's), (Start: 62 @47417 has 5 MA's),  
(Start: 87 @47369 has 115 MA's), (97, 47345), (126, 47297), (131, 47291), (138, 47267),

Gene: QuickMath\_66 Start: 43318, Stop: 43566, Start Num: 87  
Candidate Starts for QuickMath\_66:  
(Start: 87 @43318 has 115 MA's), (122, 43381), (138, 43423),

Gene: Rando14\_64 Start: 42240, Stop: 42497, Start Num: 69  
Candidate Starts for Rando14\_64:  
(56, 42219), (Start: 69 @42240 has 2 MA's), (101, 42300), (138, 42360), (147, 42390), (173, 42435),

Gene: RedBird\_74 Start: 45372, Stop: 45599, Start Num: 87  
Candidate Starts for RedBird\_74:  
(Start: 87 @45372 has 115 MA's), (140, 45471),

Gene: RedRaider77\_9 Start: 2886, Stop: 3152, Start Num: 87  
Candidate Starts for RedRaider77\_9:  
(59, 2829), (Start: 87 @2886 has 115 MA's), (105, 2922), (135, 2982), (138, 2985), (185, 3141),

Gene: Redno2\_84 Start: 53253, Stop: 53483, Start Num: 80  
Candidate Starts for Redno2\_84:  
(Start: 80 @53253 has 2 MA's), (Start: 87 @53265 has 115 MA's), (135, 53352), (145, 53376),

Gene: Redno2\_140 Start: 75128, Stop: 75373, Start Num: 160  
Candidate Starts for Redno2\_140:  
(101, 74993), (140, 75083), (Start: 160 @75128 has 32 MA's), (181, 75200), (182, 75203),

Gene: Renaud18\_58 Start: 38221, Stop: 38445, Start Num: 70  
Candidate Starts for Renaud18\_58:  
(Start: 55 @38191 has 1 MA's), (Start: 70 @38221 has 134 MA's), (88, 38254), (109, 38278), (135, 38311),

Gene: Renaud18\_70 Start: 41973, Stop: 42221, Start Num: 71  
Candidate Starts for Renaud18\_70:  
(56, 41946), (Start: 71 @41973 has 2 MA's), (129, 42069), (135, 42093), (151, 42126),

Gene: Renaud18\_71 Start: 42261, Stop: 42503, Start Num: 87  
Candidate Starts for Renaud18\_71:  
(Start: 87 @42261 has 115 MA's), (95, 42276), (138, 42354), (166, 42414),

Gene: Rita1961\_52 Start: 45860, Stop: 45591, Start Num: 70  
Candidate Starts for Rita1961\_52:  
(Start: 70 @45860 has 134 MA's), (97, 45806), (138, 45758), (185, 45602),

Gene: RitaG\_73 Start: 46813, Stop: 47040, Start Num: 87  
Candidate Starts for RitaG\_73:  
(Start: 87 @46813 has 115 MA's), (140, 46912),

Gene: Rockne\_53 Start: 37214, Stop: 37471, Start Num: 70  
Candidate Starts for Rockne\_53:

(26, 37100), (29, 37112), (40, 37148), (61, 37199), (Start: 70 @37214 has 134 MA's), (138, 37325), (147, 37355),

Gene: RockyHorror\_53 Start: 37057, Stop: 37299, Start Num: 70  
Candidate Starts for RockyHorror\_53:  
(Start: 55 @37027 has 1 MA's), (Start: 70 @37057 has 134 MA's), (138, 37168),

Gene: Royals2015\_55 Start: 37315, Stop: 37545, Start Num: 70  
Candidate Starts for Royals2015\_55:  
(Start: 55 @37285 has 1 MA's), (Start: 70 @37315 has 134 MA's), (88, 37351), (135, 37411), (138, 37414),

Gene: SG4\_69 Start: 43478, Stop: 43705, Start Num: 87  
Candidate Starts for SG4\_69:  
(Start: 87 @43478 has 115 MA's), (140, 43577),

Gene: SG4\_49 Start: 36037, Stop: 36267, Start Num: 70  
Candidate Starts for SG4\_49:  
(Start: 54 @36004 has 7 MA's), (Start: 55 @36007 has 1 MA's), (Start: 70 @36037 has 134 MA's), (88, 36073), (135, 36133), (138, 36136),

Gene: Samaymay\_53 Start: 47369, Stop: 47076, Start Num: 87  
Candidate Starts for Samaymay\_53:  
(23, 47528), (39, 47471), (50, 47444), (Start: 58 @47423 has 1 MA's), (Start: 62 @47417 has 5 MA's), (Start: 87 @47369 has 115 MA's), (97, 47345), (126, 47297), (131, 47291), (138, 47267),

Gene: Samman98\_60 Start: 39796, Stop: 40041, Start Num: 66  
Candidate Starts for Samman98\_60:  
(Start: 66 @39796 has 6 MA's), (88, 39835), (171, 39985),

Gene: Sassafras\_74 Start: 45702, Stop: 45929, Start Num: 87  
Candidate Starts for Sassafras\_74:  
(Start: 87 @45702 has 115 MA's), (140, 45801),

Gene: Sassafras\_50 Start: 36161, Stop: 36394, Start Num: 70  
Candidate Starts for Sassafras\_50:  
(Start: 55 @36131 has 1 MA's), (Start: 70 @36161 has 134 MA's), (81, 36185), (113, 36227), (133, 36242), (135, 36260), (138, 36263),

Gene: SassyCat97\_52 Start: 47096, Stop: 46803, Start Num: 87  
Candidate Starts for SassyCat97\_52:  
(23, 47255), (39, 47198), (50, 47171), (Start: 58 @47150 has 1 MA's), (Start: 62 @47144 has 5 MA's), (Start: 87 @47096 has 115 MA's), (97, 47072), (126, 47024), (131, 47018), (138, 46994),

Gene: Schatzie\_85 Start: 55507, Stop: 55803, Start Num: 70  
Candidate Starts for Schatzie\_85:  
(Start: 70 @55507 has 134 MA's), (113, 55585), (131, 55612), (138, 55636),

Gene: Schatzie\_141 Start: 77688, Stop: 77933, Start Num: 160  
Candidate Starts for Schatzie\_141:  
(101, 77553), (136, 77628), (140, 77643), (Start: 160 @77688 has 32 MA's), (181, 77760), (182, 77763),



Gene: Scottish\_71 Start: 45361, Stop: 45588, Start Num: 87

Candidate Starts for Scottish\_71:

(Start: 87 @45361 has 115 MA's), (140, 45460),

Gene: Seabastian\_39 Start: 31199, Stop: 31008, Start Num: 54

Candidate Starts for Seabastian\_39:

(Start: 54 @31199 has 7 MA's), (101, 31109),

Gene: Sebata\_6 Start: 2738, Stop: 2995, Start Num: 87

Candidate Starts for Sebata\_6:

(Start: 82 @2729 has 2 MA's), (Start: 87 @2738 has 115 MA's), (97, 2762), (123, 2804), (133, 2819), (135, 2837), (138, 2840), (174, 2936),

Gene: Serendipity\_53 Start: 47393, Stop: 47100, Start Num: 87

Candidate Starts for Serendipity\_53:

(23, 47552), (39, 47495), (50, 47468), (Start: 58 @47447 has 1 MA's), (Start: 62 @47441 has 5 MA's), (Start: 87 @47393 has 115 MA's), (97, 47369), (126, 47321), (131, 47315), (138, 47291),

Gene: Shauna1\_47 Start: 36503, Stop: 36781, Start Num: 70

Candidate Starts for Shauna1\_47:

(36, 36419), (41, 36437), (57, 36479), (Start: 70 @36503 has 134 MA's), (138, 36614),

Gene: ShroomBoi\_52 Start: 36993, Stop: 37238, Start Num: 70

Candidate Starts for ShroomBoi\_52:

(36, 36909), (41, 36927), (57, 36969), (Start: 70 @36993 has 134 MA's), (138, 37104),

Gene: Smairt\_67 Start: 44819, Stop: 44574, Start Num: 87

Candidate Starts for Smairt\_67:

(Start: 87 @44819 has 115 MA's), (112, 44777), (117, 44765), (120, 44762), (138, 44723), (144, 44705),

Gene: Smooch\_99 Start: 62468, Stop: 62202, Start Num: 87

Candidate Starts for Smooch\_99:

(Start: 87 @62468 has 115 MA's), (105, 62432), (135, 62372), (138, 62369),

Gene: Soile\_54 Start: 47617, Stop: 47348, Start Num: 87

Candidate Starts for Soile\_54:

(23, 47776), (39, 47719), (50, 47692), (Start: 58 @47671 has 1 MA's), (Start: 62 @47665 has 5 MA's), (Start: 87 @47617 has 115 MA's), (97, 47593), (126, 47545), (131, 47539), (138, 47515), (185, 47359),

Gene: Solosis\_52 Start: 47090, Stop: 46797, Start Num: 87

Candidate Starts for Solosis\_52:

(23, 47249), (39, 47192), (50, 47165), (Start: 58 @47144 has 1 MA's), (Start: 62 @47138 has 5 MA's), (Start: 87 @47090 has 115 MA's), (97, 47066), (126, 47018), (131, 47012), (138, 46988),

Gene: Sophia\_52 Start: 47084, Stop: 46791, Start Num: 87

Candidate Starts for Sophia\_52:

(23, 47243), (39, 47186), (50, 47159), (Start: 58 @47138 has 1 MA's), (Start: 62 @47132 has 5 MA's), (Start: 87 @47084 has 115 MA's), (97, 47060), (126, 47012), (131, 47006), (138, 46982),

Gene: Sparkdehlily\_60 Start: 38797, Stop: 39039, Start Num: 70

Candidate Starts for Sparkdehlily\_60:

(Start: 67 @38791 has 22 MA's), (Start: 70 @38797 has 134 MA's), (138, 38908),

Gene: Specks\_6 Start: 1888, Stop: 2115, Start Num: 87

Candidate Starts for Specks\_6:

(Start: 82 @1879 has 2 MA's), (Start: 87 @1888 has 115 MA's), (105, 1924), (110, 1933), (138, 1987), (156, 2026),

Gene: Spikelee\_42 Start: 31774, Stop: 31466, Start Num: 58

Candidate Starts for Spikelee\_42:

(34, 31840), (36, 31837), (37, 31834), (53, 31789), (Start: 58 @31774 has 1 MA's), (65, 31762), (Start: 73 @31747 has 1 MA's), (99, 31687), (125, 31645), (135, 31621), (155, 31573),

Gene: Spooky\_78 Start: 45719, Stop: 45976, Start Num: 66

Candidate Starts for Spooky\_78:

(Start: 66 @45719 has 6 MA's), (83, 45749), (88, 45758), (103, 45782),

Gene: Squid\_53 Start: 47096, Stop: 46803, Start Num: 87

Candidate Starts for Squid\_53:

(23, 47255), (39, 47198), (50, 47171), (Start: 58 @47150 has 1 MA's), (Start: 62 @47144 has 5 MA's), (Start: 87 @47096 has 115 MA's), (97, 47072), (126, 47024), (131, 47018), (138, 46994),

Gene: Squint\_83 Start: 50044, Stop: 49775, Start Num: 70

Candidate Starts for Squint\_83:

(Start: 70 @50044 has 134 MA's), (97, 49990), (138, 49942),

Gene: Sunshine924\_70 Start: 43095, Stop: 42850, Start Num: 87

Candidate Starts for Sunshine924\_70:

(Start: 87 @43095 has 115 MA's), (112, 43053), (117, 43041), (120, 43038), (138, 42999), (144, 42981),

Gene: SuperGrey\_52 Start: 37962, Stop: 38207, Start Num: 70

Candidate Starts for SuperGrey\_52:

(36, 37878), (41, 37896), (57, 37938), (Start: 70 @37962 has 134 MA's), (138, 38073),

Gene: Surely\_53 Start: 47386, Stop: 47093, Start Num: 87

Candidate Starts for Surely\_53:

(23, 47545), (39, 47488), (50, 47461), (Start: 58 @47440 has 1 MA's), (Start: 62 @47434 has 5 MA's), (Start: 87 @47386 has 115 MA's), (97, 47362), (126, 47314), (131, 47308), (138, 47284),

Gene: SynergyX\_51 Start: 45415, Stop: 45146, Start Num: 70

Candidate Starts for SynergyX\_51:

(Start: 70 @45415 has 134 MA's), (97, 45361), (138, 45313),

Gene: TDanisky\_60 Start: 38797, Stop: 39039, Start Num: 70

Candidate Starts for TDanisky\_60:

(Start: 67 @38791 has 22 MA's), (Start: 70 @38797 has 134 MA's), (138, 38908),

Gene: Taj\_56 Start: 38142, Stop: 38369, Start Num: 70

Candidate Starts for Taj\_56:

(Start: 55 @38112 has 1 MA's), (Start: 70 @38142 has 134 MA's), (88, 38175), (109, 38199), (135, 38232),

Gene: TallGrassMM\_53 Start: 47000, Stop: 46707, Start Num: 87

Candidate Starts for TallGrassMM\_53:

(23, 47159), (39, 47102), (50, 47075), (Start: 58 @47054 has 1 MA's), (Start: 62 @47048 has 5 MA's), (Start: 87 @47000 has 115 MA's), (97, 46976), (126, 46928), (131, 46922), (138, 46898),

Gene: Tarzan\_58 Start: 37656, Stop: 37880, Start Num: 71

Candidate Starts for Tarzan\_58:

(Start: 71 @37656 has 2 MA's), (90, 37692), (148, 37785), (169, 37833),

Gene: ThetaBob\_69 Start: 42635, Stop: 42865, Start Num: 91

Candidate Starts for ThetaBob\_69:

(57, 42563), (Start: 72 @42590 has 5 MA's), (86, 42623), (Start: 91 @42635 has 5 MA's), (101, 42656), (119, 42680), (135, 42716), (138, 42719), (186, 42851),

Gene: Thibault\_128 Start: 74023, Stop: 74301, Start Num: 160

Candidate Starts for Thibault\_128:

(101, 73888), (140, 73978), (Start: 160 @74023 has 32 MA's), (181, 74095), (182, 74098), (189, 74140), (190, 74206), (191, 74218),

Gene: Thora\_53 Start: 47382, Stop: 47089, Start Num: 87

Candidate Starts for Thora\_53:

(23, 47541), (39, 47484), (50, 47457), (Start: 58 @47436 has 1 MA's), (Start: 62 @47430 has 5 MA's), (Start: 87 @47382 has 115 MA's), (97, 47358), (126, 47310), (131, 47304), (138, 47280),

Gene: ThreeRngTarjay\_140 Start: 77611, Stop: 77856, Start Num: 160

Candidate Starts for ThreeRngTarjay\_140:

(101, 77476), (136, 77551), (140, 77566), (Start: 160 @77611 has 32 MA's), (181, 77683), (182, 77686),

Gene: ThreeRngTarjay\_87 Start: 56792, Stop: 57088, Start Num: 70

Candidate Starts for ThreeRngTarjay\_87:

(Start: 70 @56792 has 134 MA's), (113, 56870), (131, 56897), (138, 56921),

Gene: Timmi\_52 Start: 47085, Stop: 46792, Start Num: 87

Candidate Starts for Timmi\_52:

(23, 47244), (39, 47187), (50, 47160), (Start: 58 @47139 has 1 MA's), (Start: 62 @47133 has 5 MA's), (Start: 87 @47085 has 115 MA's), (97, 47061), (126, 47013), (131, 47007), (138, 46983),

Gene: TomBombadil\_53 Start: 47370, Stop: 47077, Start Num: 87

Candidate Starts for TomBombadil\_53:

(23, 47529), (39, 47472), (50, 47445), (Start: 58 @47424 has 1 MA's), (Start: 62 @47418 has 5 MA's), (Start: 87 @47370 has 115 MA's), (97, 47346), (126, 47298), (131, 47292), (138, 47268),

Gene: Tonenili\_49 Start: 15568, Stop: 15810, Start Num: 80

Candidate Starts for Tonenili\_49:

(75, 15550), (Start: 80 @15568 has 2 MA's), (93, 15592), (122, 15634), (130, 15649), (138, 15670), (147, 15700), (157, 15718), (168, 15739),

Gene: Tonenili\_50 Start: 15803, Stop: 16036, Start Num: 87

Candidate Starts for Tonenili\_50:

(85, 15797), (Start: 87 @15803 has 115 MA's), (105, 15839), (128, 15875), (135, 15896), (168, 15962), (173, 15971),

Gene: Trine\_55 Start: 39935, Stop: 39684, Start Num: 67

Candidate Starts for Trine\_55:  
(Start: 67 @39935 has 22 MA's), (129, 39860), (161, 39788),

Gene: Troll4\_84 Start: 59937, Stop: 60161, Start Num: 87  
Candidate Starts for Troll4\_84:  
(33, 59811), (38, 59820), (Start: 87 @59937 has 115 MA's), (137, 60033), (146, 60060), (172, 60111),

Gene: Tweety\_52 Start: 37774, Stop: 38004, Start Num: 70  
Candidate Starts for Tweety\_52:  
(Start: 55 @37744 has 1 MA's), (Start: 70 @37774 has 134 MA's), (88, 37810), (135, 37870), (138, 37873),

Gene: Tyke\_6 Start: 1888, Stop: 2115, Start Num: 87  
Candidate Starts for Tyke\_6:  
(Start: 82 @1879 has 2 MA's), (Start: 87 @1888 has 115 MA's), (105, 1924), (110, 1933), (138, 1987), (156, 2026),

Gene: VRedHorse\_52 Start: 36525, Stop: 36758, Start Num: 70  
Candidate Starts for VRedHorse\_52:  
(Start: 55 @36495 has 1 MA's), (Start: 70 @36525 has 134 MA's), (88, 36561), (135, 36621), (138, 36624),

Gene: VanLee\_73 Start: 43882, Stop: 44154, Start Num: 87  
Candidate Starts for VanLee\_73:  
(Start: 87 @43882 has 115 MA's), (132, 43969), (134, 43987), (154, 44041),

Gene: VanLee\_59 Start: 39559, Stop: 39819, Start Num: 66  
Candidate Starts for VanLee\_59:  
(Start: 66 @39559 has 6 MA's),

Gene: VasuNzinga\_8 Start: 2535, Stop: 2807, Start Num: 70  
Candidate Starts for VasuNzinga\_8:  
(Start: 70 @2535 has 134 MA's), (108, 2598), (138, 2640),

Gene: Venti\_53 Start: 36036, Stop: 36263, Start Num: 87  
Candidate Starts for Venti\_53:  
(Start: 54 @35973 has 7 MA's), (Start: 87 @36036 has 115 MA's), (140, 36135),

Gene: Vortex\_53 Start: 47080, Stop: 46787, Start Num: 87  
Candidate Starts for Vortex\_53:  
(23, 47239), (39, 47182), (50, 47155), (Start: 58 @47134 has 1 MA's), (Start: 62 @47128 has 5 MA's), (Start: 87 @47080 has 115 MA's), (97, 47056), (126, 47008), (131, 47002), (138, 46978),

Gene: Wanda\_94 Start: 55909, Stop: 56205, Start Num: 70  
Candidate Starts for Wanda\_94:  
(Start: 67 @55903 has 22 MA's), (Start: 70 @55909 has 134 MA's), (113, 55987), (131, 56014), (138, 56038),

Gene: Wanda\_145 Start: 75318, Stop: 75596, Start Num: 160  
Candidate Starts for Wanda\_145:  
(101, 75183), (140, 75273), (Start: 160 @75318 has 32 MA's), (181, 75390), (182, 75393), (189, 75435), (191, 75513),

Gene: Wee\_55 Start: 38414, Stop: 38641, Start Num: 70  
Candidate Starts for Wee\_55:  
(Start: 55 @38384 has 1 MA's), (Start: 70 @38414 has 134 MA's), (88, 38447), (109, 38471), (135, 38504),

Gene: Whatsapiecost\_53 Start: 36689, Stop: 36931, Start Num: 70  
Candidate Starts for Whatsapiecost\_53:  
(Start: 70 @36689 has 134 MA's), (138, 36800),

Gene: Whitney\_75 Start: 45513, Stop: 45800, Start Num: 67  
Candidate Starts for Whitney\_75:  
(60, 45501), (Start: 62 @45504 has 5 MA's), (Start: 67 @45513 has 22 MA's), (99, 45579), (135, 45645), (140, 45657),

Gene: William\_80 Start: 49369, Stop: 49632, Start Num: 67  
Candidate Starts for William\_80:  
(7, 49048), (8, 49063), (10, 49099), (Start: 67 @49369 has 22 MA's), (88, 49405), (124, 49456),

Gene: WilliamBoone\_96 Start: 57383, Stop: 57652, Start Num: 87  
Candidate Starts for WilliamBoone\_96:  
(Start: 87 @57383 has 115 MA's), (134, 57488), (163, 57554),

Gene: XFactor\_50 Start: 36012, Stop: 36242, Start Num: 70  
Candidate Starts for XFactor\_50:  
(Start: 55 @35982 has 1 MA's), (Start: 70 @36012 has 134 MA's), (88, 36048), (135, 36108), (138, 36111),

Gene: Xavier\_52 Start: 47087, Stop: 46794, Start Num: 87  
Candidate Starts for Xavier\_52:  
(23, 47246), (39, 47189), (50, 47162), (Start: 58 @47141 has 1 MA's), (Start: 62 @47135 has 5 MA's), (Start: 87 @47087 has 115 MA's), (97, 47063), (126, 47015), (131, 47009), (138, 46985),

Gene: Yeet\_83 Start: 55009, Stop: 55305, Start Num: 70  
Candidate Starts for Yeet\_83:  
(Start: 70 @55009 has 134 MA's), (113, 55087), (131, 55114), (138, 55138),

Gene: Yeet\_139 Start: 77084, Stop: 77329, Start Num: 160  
Candidate Starts for Yeet\_139:  
(101, 76949), (140, 77039), (Start: 160 @77084 has 32 MA's), (181, 77156), (182, 77159),

Gene: Yoshi\_64 Start: 38747, Stop: 38995, Start Num: 70  
Candidate Starts for Yoshi\_64:  
(Start: 55 @38717 has 1 MA's), (Start: 70 @38747 has 134 MA's), (129, 38843), (135, 38867), (151, 38900),

Gene: Yoshi\_77 Start: 42854, Stop: 43129, Start Num: 72  
Candidate Starts for Yoshi\_77:  
(57, 42827), (Start: 72 @42854 has 5 MA's), (86, 42887), (Start: 91 @42899 has 5 MA's), (101, 42920), (119, 42944), (135, 42980), (138, 42983), (186, 43115),

Gene: Yoshi\_44 Start: 30151, Stop: 29960, Start Num: 54  
Candidate Starts for Yoshi\_44:  
(Start: 54 @30151 has 7 MA's), (101, 30061),

Gene: Zelda\_53 Start: 47424, Stop: 47131, Start Num: 87

Candidate Starts for Zelda\_53:

(23, 47583), (39, 47526), (50, 47499), (Start: 58 @47478 has 1 MA's), (Start: 62 @47472 has 5 MA's),  
(Start: 87 @47424 has 115 MA's), (97, 47400), (126, 47352), (131, 47346), (138, 47322),

Gene: Zelink\_87 Start: 57104, Stop: 57400, Start Num: 70

Candidate Starts for Zelink\_87:

(Start: 70 @57104 has 134 MA's), (113, 57182), (131, 57209), (138, 57233),

Gene: Zelink\_140 Start: 78130, Stop: 78408, Start Num: 160

Candidate Starts for Zelink\_140:

(101, 77995), (136, 78070), (140, 78085), (Start: 160 @78130 has 32 MA's), (181, 78202), (182,  
78205), (189, 78247), (191, 78325),

Gene: Zerg\_52 Start: 37166, Stop: 37408, Start Num: 70

Candidate Starts for Zerg\_52:

(Start: 55 @37136 has 1 MA's), (Start: 70 @37166 has 134 MA's), (138, 37277),