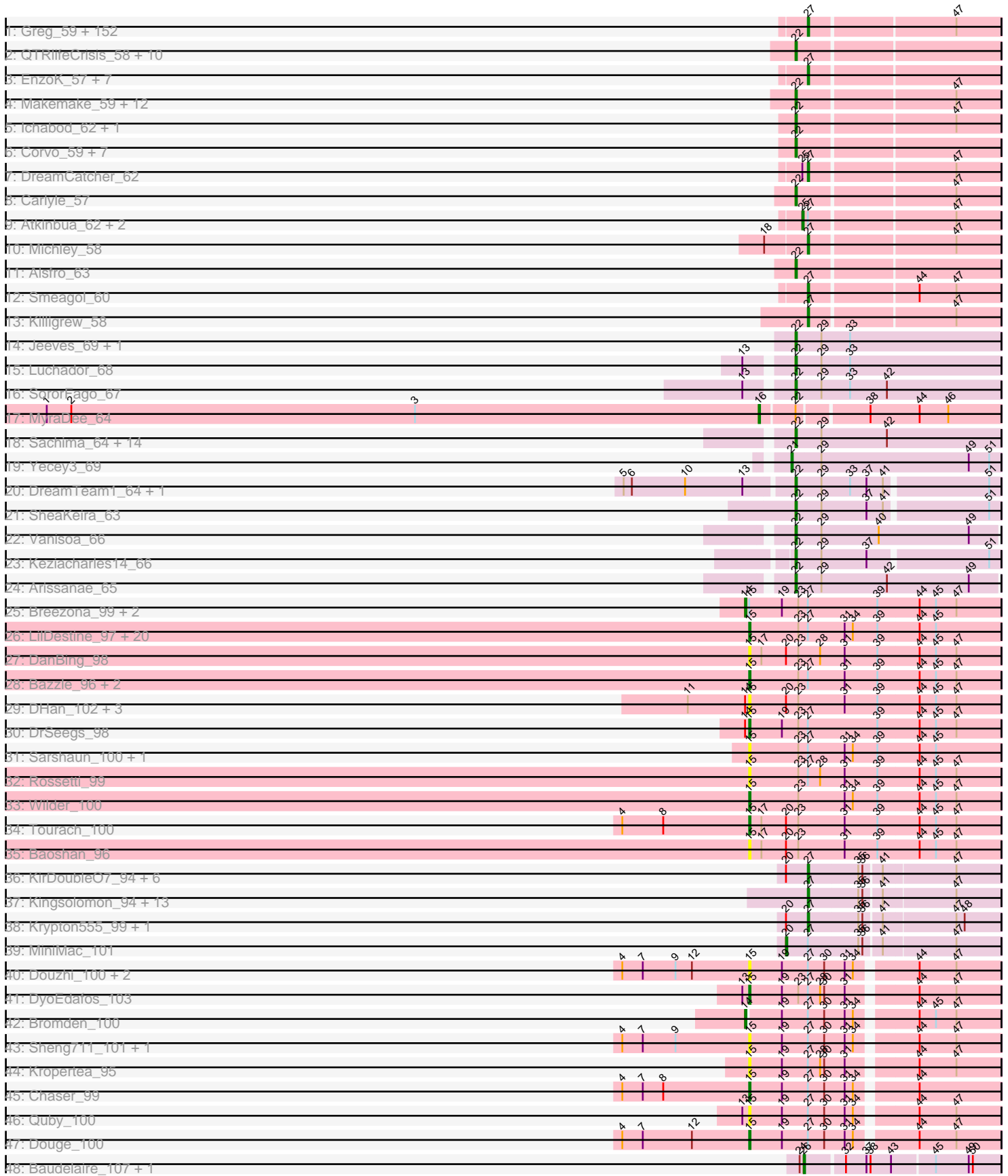


Pham 224220



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 224220 Report

This analysis was run 03/28/25 on database version 593.

Pham number 224220 has 307 members, 51 are drafts.

Phages represented in each track:

- Track 1 : Greg\_59, Jerm2\_59, Kykar\_58, Nhonho\_57, KBG\_59, Fushigi\_55, StewieG\_55, NEHalo\_56, Hermia\_58, HermioneGrange\_59, Papez\_61, MrGordo\_58, Magnar\_56, BarrowTuph\_58, Ciao\_57, Watermelon\_59, Paphu\_57, Hope4ever\_60, Forsytheast\_57, Kugel\_58, Dussy\_60, Swole\_59, GrecoEtereo\_58, DrFeelGood\_56, McSinger\_57, Sagefire\_60, Gyzlar\_54, Seabiscuit\_62, JuliaChild\_59, Rohr\_59, Smairt\_61, Kanely\_60, Abbyshoes\_61, Fajezeel\_59, Mkhuseleli\_56, Jorgensen\_59, Perseus\_58, RidgeCB\_58, Fascinus\_54, Inyanga\_53, BigPaolini\_57, Rutherford\_59, Rhynn\_56, Bigchung\_57, Crispicous1\_55, Solon\_56, Sanya\_54, SwissCheese\_59, CactusRose\_56, Museum\_59, Marcell\_55, Oogway\_57, Sibs6\_60, Dexes\_58, JackSparrow\_61, Rufus\_59, Fenn\_61, Monet\_61, Slagathor\_60, Buttons\_56, Raid\_57, Zeeculate\_56, Tripl3t\_60, Big3\_57, BeesKnees\_61, Marge\_57, Violet\_56, BK1\_52, Gandalf20\_61, AFIS\_55, Zephyr\_59, Levia\_54, Chanagan\_54, Hami1\_53, Wheeler\_58, Eyeball\_59, BPBi3s31\_60, PinkPlastic\_58, Sumter\_54, Snazzy\_57, PacerPaul\_58, Trouble\_60, Magnito\_57, Altman\_61, McGuire\_60, TheloniousMonk\_59, IgnatiusPatJac\_58, Squee\_59, Tasp14\_61, Arlo\_56, Edtherson\_57, Bob3\_57, Lopton\_58, Petruchio\_57, GMonster\_54, Applejack\_53, ConceptII\_61, Briton15\_62, Phlippers\_56, Pippin\_59, Aeneas\_61, MPlant7149\_57, Francis47\_57, Ajay\_59, Abrogate\_570, Burton\_58, Blue\_57, Peterson\_62, Kenmech\_63, Niza\_60, Treddle\_59, A6\_52, Molly\_59, Tote\_54, Moose\_57, Espresso\_57, Petp2012\_59, Payneful\_58, PhineBark\_58, Mule\_56, Rajelicia\_59, Adahisdi\_58, PascalRango\_58, Ringer\_58, BigMau\_60, Bigfoot\_52, Wilkins\_57, Topgun\_57, HanShotFirst\_59, Bruns\_57, ILeeKay\_61, Marchy\_53, Naira\_61, Nerujay\_60, HarryOW\_57, LunarLander\_61, Marsha\_57, ShortQueendom\_51, PattyP\_60, Target\_59, Maroc7\_56, Agaliana\_53, Arcanine\_60, Bxb1\_53, Zeuska\_57, PhrostyMug\_58, TwoPeat\_60, Acme\_59, Iqorha\_53, BaconJack\_63, BluSpix\_56, Lamina13\_60, Lesedi\_54
- Track 2 : QTRlifeCrisis\_58, PSullivan\_58, Froghopper\_55, Marco3\_61, Manatee\_59, Pita2\_61, Scowl\_59, Anglerfish\_59, Paraselene\_56, Sunshine924\_60, Euphoria\_56
- Track 3 : EnzoK\_57, Alvin\_57, Parliament\_58, Barriga\_59, Teodoridan\_56, Gompeii16\_57, Bircsak\_57, Mryolo\_55
- Track 4 : Makemake\_59, ProMouse\_58, Homines\_50, KyMonks1A\_61, SarFire\_55, KSSJEB\_58, DD5\_57, Turj99\_56, LilBib\_58, Sorpresa\_56, Lockley\_56, Thor\_55, Sandaddy\_55
- Track 5 : Ichabod\_62, U2\_57
- Track 6 : Corvo\_59, MaryBeth\_57, SkiPole\_63, Switzer\_59, MetalQZJ\_56, Pepe\_55, STLscum\_61, Dynamix\_60
- Track 7 : DreamCatcher\_62

- Track 8 : Carlyle\_57
- Track 9 : Atkinbua\_62, Pinto\_59, Rubeus\_58
- Track 10 : Michley\_58
- Track 11 : Alsfro\_63
- Track 12 : Smeagol\_60
- Track 13 : Killigrew\_58
- Track 14 : Jeeves\_69, Gail\_67
- Track 15 : Luchador\_68
- Track 16 : SororFago\_67
- Track 17 : MyraDee\_64
- Track 18 : Sachima\_64, Phaeder\_68, Tubs\_68, Lilleskat\_64, Beemo\_69, Catalina\_70, RyeScarlet\_70, EdogawaKiddo\_66, Pioneer\_69, PackMan\_67, Aliter\_69, Phonnegut\_69, HortumSL17\_69, Onglai\_66, Myxus\_68
- Track 19 : Yecey3\_69
- Track 20 : DreamTeam1\_64, Charm\_64
- Track 21 : SheaKeira\_63
- Track 22 : Vanisoa\_66
- Track 23 : Keziacharles14\_66
- Track 24 : Arissanae\_65
- Track 25 : Breezona\_99, Miley16\_99, Winky\_99
- Track 26 : LilDestine\_97, Faith1\_99, Loadrie\_98, BobsGarage\_98, BigCheese\_99, GuuelaD\_96, Finemlucis\_100, Kahlid\_98, Lewan\_100, Itos\_99, Vetrix\_97, Netyap\_98, Gabriela\_99, SoJulia\_101, MkaliMitinis3\_101, Wigglewiggle\_99, Rumpelstiltskin\_95, Zakai\_100, Gardann\_99, Underpass\_89, Nicholasp3\_99
- Track 27 : DanBing\_98
- Track 28 : Bazzle\_96, Archie\_96, Crossroads\_99
- Track 29 : DHan\_102, ZhongYanYuan\_96, Hafay\_100, Claus\_99
- Track 30 : DrSeegs\_98
- Track 31 : Sarshaun\_100, Soap141\_99
- Track 32 : Rossetti\_99
- Track 33 : Wilder\_100
- Track 34 : Tourach\_100
- Track 35 : Baoshan\_96
- Track 36 : KirDoubleO7\_94, BourbonZero\_97, MiniLon\_101, Ellson\_95, DuncansLeg\_97, Lolly9\_96, LiyuLake\_95
- Track 37 : Kingsolomon\_94, Jubie\_95, TriFive\_96, Snenia\_95, Jobypre\_96, MsGreen\_96, Finnry\_96, Clautastrophe\_94, Bellis\_94, Nicholas\_94, Moostard\_93, Samty\_95, Lumos\_96, Red305\_97
- Track 38 : Krypton555\_99, Whirlwind\_98
- Track 39 : MiniMac\_101
- Track 40 : Douzhi\_100, BrainDrainer\_101, FarmResident\_101
- Track 41 : DyoEdafos\_103
- Track 42 : Bromden\_100
- Track 43 : Sheng711\_101, PYPDinur\_100
- Track 44 : Kropertea\_95
- Track 45 : Chaser\_99
- Track 46 : Quby\_100
- Track 47 : Douge\_100
- Track 48 : Baudelaire\_107, Aegeus\_107

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

The start number called the most often in the published annotations is 27, it was called in 163 of the 256 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- A6\_52, AFIS\_55, Abbyshoes\_61, Abrogate\_570, Acme\_59, Adahisdi\_58, Aeneas\_61, Agaliana\_53, Ajay\_59, Altman\_61, Alvin\_57, Applejack\_53, Arcanine\_60, Arlo\_56, BK1\_52, BPBiEbs31\_60, BaconJack\_63, Barriga\_59, BarrowTuph\_58, BeesKnees\_61, Bellis\_94, Big3\_57, BigMau\_60, BigPaolini\_57, Bigchung1\_57, Bigfoot\_52, Bircsak\_57, BluSpix\_56, Blue\_57, Bob3\_57, BourbonZero\_97, Briton15\_62, Bruns\_57, Burton\_58, Buttons\_56, Bxb1\_53, CactusRose\_56, Chanagan\_54, Ciao\_57, Clautastrophe\_94, ConceptII\_61, Crispicous1\_55, Dexes\_58, DrFeelGood\_56, DreamCatcher\_62, DuncansLeg\_97, Dussy\_60, Edtherson\_57, Ellson\_95, EnzoK\_57, Espresso\_57, Eyeball\_59, Fajezeel\_59, Fascinus\_54, Fenn\_61, Finnry\_96, Forsytheast\_57, Francis47\_57, Fushigi\_55, GMonster\_54, Gandalf20\_61, Gompeii16\_57, GrecoEtereo\_58, Greg\_59, Gyzlar\_54, Hami1\_53, HanShotFirst\_59, HarryOW\_57, Hermia\_58, HermioneGrange\_59, Hope4ever\_60, ILeeKay\_61, IgnatiusPatJac\_58, Inyanga\_53, Iqorha\_53, JackSparrow\_61, Jerm2\_59, Jobypre\_96, Jorgensen\_59, Jubie\_95, JuliaChild\_59, KBG\_59, Kanely\_60, Kenmech\_63, Killigrew\_58, Kingsolomon\_94, KirDoubleO7\_94, Krypton555\_99, Kugel\_58, Kykar\_58, Lamina13\_60, Lesedi\_54, Levia\_54, LiyuLake\_95, Lolly9\_96, Lopton\_58, Lumos\_96, LunarLander\_61, MPlant7149\_57, Magnar\_56, Magnito\_57, Marcell\_55, Marchy\_53, Marge\_57, Maroc7\_56, Marsha\_57, McGuire\_60, McSinger\_57, Michley\_58, MiniLon\_101, Mkhuse1i\_56, Molly\_59, Monet\_61, Moose\_57, Moostard\_93, MrGordo\_58, Mryolo\_55, MsGreen\_96, Mule\_56, Museum\_59, NEHalo\_56, Naira\_61, Nerujay\_60, Nhonho\_57, Nicholas\_94, Niza\_60, Oogway\_57, PacerPaul\_58, Papez\_61, Paphu\_57, Parliament\_58, PascalRango\_58, PattyP\_60, Payneful\_58, Perseus\_58, Peterson\_62, Petp2012\_59, Petruchio\_57, PhineBark\_58, Phlippers\_56, PhrostyMug\_58, PinkPlastic\_58, Pippin\_59, Raid\_57, Rajelicia\_59, Red305\_97, Rhynn\_56, RidgeCB\_58, Ringer\_58, Rohr\_59, Rufus\_59, Rutherferd\_59, Sagefire\_60, Samty\_95, Sanya\_54, Seabiscuit\_62, ShortQueendom\_51, Sibs6\_60, Slagathor\_60, Smairt\_61, Smeagol\_60, Snazzy\_57, Snenia\_95, Solon\_56, Squee\_59, StewieG\_55, Sumter\_54, SwissCheese\_59, Swole\_59, Target\_59, Tasp14\_61, Teodoridan\_56, TheloniousMonk\_59, Topgun\_57, Tote\_54, Treddle\_59, TriFive\_96, Tripl3t\_60, Trouble\_60, TwoPeat\_60, Violet\_56, Watermelon\_59, Wheeler\_58, Whirlwind\_98, Wilkins\_57, Zeeculate\_56, Zephyr\_59, Zeuska\_57,

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

- Archie\_96, Atkinbua\_62, Bazzle\_96, BigCheese\_99, BobsGarage\_98, BrainDrainer\_101, Breezona\_99, Bromden\_100, Chaser\_99, Crossroads\_99, Douge\_100, Douzhi\_100, DrSeegs\_98, DyoEdafos\_103, Faith1\_99, FarmResident\_101, Finemlucis\_100, Gabriela\_99, Gardann\_99, GuuelaD\_96, Itos\_99, Kahlid\_98, Kropertea\_95, Lewan\_100, LilDestine\_97, Loadrie\_98, Miley16\_99, MiniMac\_101, MkaliMitinis3\_101, Netyap\_98, Nicholasp3\_99, PYPDinur\_100, Pinto\_59, Quby\_100, Rossetti\_99, Rubeus\_58, Rumpelstiltskin\_95, Sarshaun\_100, Sheng711\_101, SoJulia\_101, Soap141\_99, Underpass\_89, Vetrix\_97, Wigglewiggle\_99, Winky\_99, Zakai\_100,

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

- Aegeus\_107, Aliter\_69, Alsfro\_63, Anglerfish\_59, Arissanae\_65, Baoshan\_96, Baudelaire\_107, Beemo\_69, Carlyle\_57, Catalina\_70, Charm\_64, Claus\_99, Corvo\_59, DD5\_57, DHan\_102, DanBing\_98, DreamTeam1\_64, Dynamix\_60,

EdogawaKiddo\_66, Euphoria\_56, Froghopper\_55, Gail\_67, Hafay\_100, Homines\_50, HortumSL17\_69, Ichabod\_62, Jeeves\_69, KSSJEB\_58, Keziacharles14\_66, KyMonks1A\_61, LilBib\_58, Lilleskat\_64, Lockley\_56, Luchador\_68, Makemake\_59, Manatee\_59, Marco3\_61, MaryBeth\_57, MetalQZJ\_56, MyraDee\_64, Myxus\_68, Onglai\_66, PSullivan\_58, PackMan\_67, Paraselene\_56, Pepe\_55, Phaeder\_68, Phonnegut\_69, Pioneer\_69, Pita2\_61, ProMouse\_58, QTRlifeCrisis\_58, RyeScarlet\_70, STLscum\_61, Sachima\_64, Sandaddy\_55, SarFire\_55, Scowl\_59, SheaKeira\_63, SkiPole\_63, SororFago\_67, Sorpresa\_56, Sunshine924\_60, Switzer\_59, Thor\_55, Tourach\_100, Tubs\_68, Turj99\_56, U2\_57, Vanisoa\_66, Wilder\_100, Yecey3\_69, ZhongYanYuan\_96,

### Summary by start number:

#### Start 14:

- Found in 9 of 307 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 4 of 256
- Called 44.4% of time when present
- Phage (with cluster) where this start called: Breezona\_99 (L2), Bromden\_100 (L4), Miley16\_99 (L2), Winky\_99 (L2),

#### Start 15:

- Found in 49 of 307 ( 16.0% ) of genes in pham
- Manual Annotations of this start: 28 of 256
- Called 93.9% of time when present
- Phage (with cluster) where this start called: Archie\_96 (L2), Baoshan\_96 (L2), Bazzle\_96 (L2), BigCheese\_99 (L2), BobsGarage\_98 (L2), BrainDrainer\_101 (L4), Chaser\_99 (L4), Claus\_99 (L2), Crossroads\_99 (L2), DHan\_102 (L2), DanBing\_98 (L2), Douge\_100 (L4), Douzhi\_100 (L4), DrSeegs\_98 (L2), DyoEdafos\_103 (L4), Faith1\_99 (L2), FarmResident\_101 (L4), Finemlucis\_100 (L2), Gabriela\_99 (L2), Gardann\_99 (L2), GuuelaD\_96 (L2), Hafay\_100 (L2), Itos\_99 (L2), Kahlid\_98 (L2), Kropertea\_95 (L4), Lewan\_100 (L2), LilDestine\_97 (L2), Loadrie\_98 (L2), MkaliMitinis3\_101 (L2), Netyap\_98 (L2), Nicholasp3\_99 (L2), PYPDinur\_100 (L4), Quby\_100 (L4), Rossetti\_99 (L2), Rumpelstiltskin\_95 (L2), Sarshaun\_100 (L2), Sheng711\_101 (L4), SoJulia\_101 (L2), Soap141\_99 (L2), Tourach\_100 (L2), Underpass\_89 (L2), Vetrix\_97 (L2), Wigglewiggle\_99 (L2), Wilder\_100 (L2), Zakai\_100 (L2), ZhongYanYuan\_96 (L2),

#### Start 16:

- Found in 1 of 307 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 256
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MyraDee\_64 (A18),

#### Start 20:

- Found in 17 of 307 ( 5.5% ) of genes in pham
- Manual Annotations of this start: 1 of 256
- Called 5.9% of time when present
- Phage (with cluster) where this start called: MiniMac\_101 (L3),

#### Start 21:

- Found in 1 of 307 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 256
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Yecey3\_69 (A9),

#### Start 22:

- Found in 62 of 307 ( 20.2% ) of genes in pham
- Manual Annotations of this start: 53 of 256
- Called 98.4% of time when present
- Phage (with cluster) where this start called: Aliter\_69 (A9), Alsfro\_63 (A1), Anglerfish\_59 (A1), Arissanae\_65 (A9), Beemo\_69 (A9), Carlyle\_57 (A1), Catalina\_70 (A9), Charm\_64 (A9), Corvo\_59 (A1), DD5\_57 (A1), DreamTeam1\_64 (A9), Dynamix\_60 (A1), EdogawaKiddo\_66 (A9), Euphoria\_56 (A1), Froghopper\_55 (A1), Gail\_67 (A14), Homines\_50 (A1), HortumSL17\_69 (A9), Ichabod\_62 (A1), Jeeves\_69 (A14), KSSJEB\_58 (A1), Keziacharles14\_66 (A9), KyMonks1A\_61 (A1), LilBib\_58 (A1), Lilleskat\_64 (A9), Lockley\_56 (A1), Luchador\_68 (A14), Makemake\_59 (A1), Manatee\_59 (A1), Marco3\_61 (A1), MaryBeth\_57 (A1), MetalQZJ\_56 (A1), Myxus\_68 (A9), Onglai\_66 (A9), PSullivan\_58 (A1), PackMan\_67 (A9), Paraselene\_56 (A1), Pepe\_55 (A1), Phaeder\_68 (A9), Phonnegut\_69 (A9), Pioneer\_69 (A9), Pita2\_61 (A1), ProMouse\_58 (A1), QTRlifeCrisis\_58 (A1), RyeScarlet\_70 (A9), STLscum\_61 (A1), Sachima\_64 (A9), Sandaddy\_55 (A1), SarFire\_55 (A1), Scowl\_59 (A1), SheaKeira\_63 (A9), SkiPole\_63 (A1), SororFago\_67 (A14), Sorpresa\_56 (A1), Sunshine924\_60 (A1), Switzer\_59 (A1), Thor\_55 (A1), Tubs\_68 (A9), Turj99\_56 (A1), U2\_57 (A1), Vanisoa\_66 (A9),

#### Start 25:

- Found in 4 of 307 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 3 of 256
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Atkinbua\_62 (A1), Pinto\_59 (A1), Rubeus\_58 (A1),

#### Start 26:

- Found in 2 of 307 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 2 of 256
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aegeus\_107 (L5), Baudelaire\_107 (L5),

#### Start 27:

- Found in 234 of 307 ( 76.2% ) of genes in pham
- Manual Annotations of this start: 163 of 256
- Called 80.3% of time when present
- Phage (with cluster) where this start called: A6\_52 (A1), AFIS\_55 (A1), Abbyshoes\_61 (A1), Abrogate\_570 (A1), Acme\_59 (A1), Adahisdi\_58 (A1), Aeneas\_61 (A1), Agaliana\_53 (A1), Ajay\_59 (A1), Altman\_61 (A1), Alvin\_57 (A1), Applejack\_53 (A1), Arcanine\_60 (A1), Arlo\_56 (A1), BK1\_52 (A1), BPBiEbs31\_60 (A1), BaconJack\_63 (A1), Barriga\_59 (A1), BarrowTuph\_58 (A1), BeesKnees\_61 (A1), Bellis\_94 (L3), Big3\_57 (A1), BigMau\_60 (A1), BigPaolini\_57 (A1), Bigchungu\_57 (A1), Bigfoot\_52 (A1), Bircsak\_57 (A1), BluSpix\_56 (A1), Blue\_57 (A1), Bob3\_57 (A1), BourbonZero\_97 (L3), Briton15\_62 (A1), Bruns\_57 (A1), Burton\_58 (A1), Buttons\_56 (A1), Bxb1\_53 (A1), CactusRose\_56 (A1), Chanagan\_54 (A1), Ciao\_57 (A1), Clautastrophe\_94 (L3), ConceptII\_61 (A1), Crispicous1\_55 (A1), Dexes\_58 (A1), DrFeelGood\_56 (A1), DreamCatcher\_62 (A1), DuncansLeg\_97 (L3), Dussy\_60 (A1), Edtherson\_57 (A1), Ellson\_95 (L3), EnzoK\_57 (A1), Espresso\_57 (A1), Eyeball\_59 (A1), Fajezeel\_59 (A1), Fascinus\_54 (A1), Fenn\_61 (A1), Finnry\_96 (L3), Forsytheast\_57 (A1), Francis47\_57 (A1), Fushigi\_55 (A1), GMonster\_54 (A1),

Gandalf20\_61 (A1), Gompeii16\_57 (A1), GrecoEtereo\_58 (A1), Greg\_59 (A1), Gyzlar\_54 (A1), Hami1\_53 (A1), HanShotFirst\_59 (A1), HarryOW\_57 (A1), Hermia\_58 (A1), HermioneGrange\_59 (A1), Hope4ever\_60 (A1), ILeeKay\_61 (A1), IgnatiusPatJac\_58 (A1), Inyanga\_53 (A1), Iqorha\_53 (A1), JackSparrow\_61 (A1), Jerm2\_59 (A1), Jobypre\_96 (L3), Jorgensen\_59 (A1), Jubie\_95 (L3), JuliaChild\_59 (A1), KBG\_59 (A1), Kanely\_60 (A1), Kenmech\_63 (A1), Killigrew\_58 (A1), Kingsolomon\_94 (L3), KirDoubleO7\_94 (L3), Krypton555\_99 (L3), Kugel\_58 (A1), Kykar\_58 (A1), Lamina13\_60 (A1), Lesedi\_54 (A1), Levia\_54 (A1), LiyuLake\_95 (L3), Lolly9\_96 (L3), Lopton\_58 (A1), Lumos\_96 (L3), LunarLander\_61 (A1), MPlant7149\_57 (A1), Magnar\_56 (A1), Magnito\_57 (A1), Marcell\_55 (A1), Marchy\_53 (A1), Marge\_57 (A1), Maroc7\_56 (A1), Marsha\_57 (A1), McGuire\_60 (A1), McSinger\_57 (A1), Michley\_58 (A1), MiniLon\_101 (L3), Mkhuseleli\_56 (A1), Molly\_59 (A1), Monet\_61 (A1), Moose\_57 (A1), Moostard\_93 (L3), MrGordo\_58 (A1), Mryolo\_55 (A1), MsGreen\_96 (L3), Mule\_56 (A1), Museum\_59 (A1), NEHalo\_56 (A1), Naira\_61 (A1), Nerujay\_60 (A1), Nhonho\_57 (A1), Nicholas\_94 (L3), Niza\_60 (A1), Oogway\_57 (A1), PacerPaul\_58 (A1), Papez\_61 (A1), Paphu\_57 (A1), Parliament\_58 (A1), PascalRango\_58 (A1), PattyP\_60 (A1), Payneful\_58 (A1), Perseus\_58 (A1), Peterson\_62 (A1), Petp2012\_59 (A1), Petruccio\_57 (A1), PhineBark\_58 (A1), Phlippers\_56 (A1), PhrostyMug\_58 (A1), PinkPlastic\_58 (A1), Pippin\_59 (A1), Raid\_57 (A1), Rajelicia\_59 (A1), Red305\_97 (L3), Rhynn\_56 (A1), RidgeCB\_58 (A1), Ringer\_58 (A1), Rohr\_59 (A1), Rufus\_59 (A1), Rutherford\_59 (A1), Sagefire\_60 (A1), Samty\_95 (L3), Sanya\_54 (A1), Seabiscuit\_62 (A1), ShortQueendom\_51 (A1), Sibs6\_60 (A1), Slagathor\_60 (A1), Smairt\_61 (A1), Smeagol\_60 (A1), Snazzy\_57 (A1), Snenia\_95 (L3), Solon\_56 (A1), Squee\_59 (A1), StewieG\_55 (A1), Sumter\_54 (A1), SwissCheese\_59 (A1), Swole\_59 (A1), Target\_59 (A1), Tasp14\_61 (A1), Teodoridan\_56 (A1), TheloniousMonk\_59 (A1), Topgun\_57 (A1), Tote\_54 (A1), Treddle\_59 (A1), TriFive\_96 (L3), Tripl3t\_60 (A1), Trouble\_60 (A1), TwoPeat\_60 (A1), Violet\_56 (A1), Watermelon\_59 (A1), Wheeler\_58 (A1), Whirlwind\_98 (L3), Wilkins\_57 (A1), Zeeculate\_56 (A1), Zephyr\_59 (A1), Zeuska\_57 (A1),

### Summary by clusters:

There are 8 clusters represented in this pham: A14, A18, A1, L4, L5, L2, L3, A9,

Info for manual annotations of cluster A1:

- Start number 22 was manually annotated 33 times for cluster A1.
- Start number 25 was manually annotated 3 times for cluster A1.
- Start number 27 was manually annotated 147 times for cluster A1.

Info for manual annotations of cluster A14:

- Start number 22 was manually annotated 4 times for cluster A14.

Info for manual annotations of cluster A18:

- Start number 16 was manually annotated 1 time for cluster A18.

Info for manual annotations of cluster A9:

- Start number 21 was manually annotated 1 time for cluster A9.
- Start number 22 was manually annotated 16 times for cluster A9.

Info for manual annotations of cluster L2:

- Start number 14 was manually annotated 3 times for cluster L2.
- Start number 15 was manually annotated 25 times for cluster L2.

Info for manual annotations of cluster L3:

- Start number 20 was manually annotated 1 time for cluster L3.
- Start number 27 was manually annotated 16 times for cluster L3.

Info for manual annotations of cluster L4:

- Start number 14 was manually annotated 1 time for cluster L4.
- Start number 15 was manually annotated 3 times for cluster L4.

Info for manual annotations of cluster L5:

- Start number 26 was manually annotated 2 times for cluster L5.

**Gene Information:**

Gene: A6\_52 Start: 38092, Stop: 37958, Start Num: 27

Candidate Starts for A6\_52:

(Start: 27 @38092 has 163 MA's), (47, 37990),

Gene: AFIS\_55 Start: 38799, Stop: 38665, Start Num: 27

Candidate Starts for AFIS\_55:

(Start: 27 @38799 has 163 MA's), (47, 38697),

Gene: Abbysshoes\_61 Start: 40860, Stop: 40726, Start Num: 27

Candidate Starts for Abbysshoes\_61:

(Start: 27 @40860 has 163 MA's), (47, 40758),

Gene: Abrogate\_570 Start: 40665, Stop: 40531, Start Num: 27

Candidate Starts for Abrogate\_570:

(Start: 27 @40665 has 163 MA's), (47, 40563),

Gene: Acme\_59 Start: 39262, Stop: 39128, Start Num: 27

Candidate Starts for Acme\_59:

(Start: 27 @39262 has 163 MA's), (47, 39160),

Gene: Adahisdi\_58 Start: 40395, Stop: 40261, Start Num: 27

Candidate Starts for Adahisdi\_58:

(Start: 27 @40395 has 163 MA's), (47, 40293),

Gene: Aegeus\_107 Start: 62949, Stop: 63086, Start Num: 26

Candidate Starts for Aegeus\_107:

(24, 62946), (Start: 26 @62949 has 2 MA's), (32, 62976), (37, 62991), (38, 62994), (43, 63009), (45, 63039), (49, 63063), (50, 63066),

Gene: Aeneas\_61 Start: 41102, Stop: 40968, Start Num: 27

Candidate Starts for Aeneas\_61:

(Start: 27 @41102 has 163 MA's), (47, 41000),

Gene: Agaliana\_53 Start: 37073, Stop: 36939, Start Num: 27

Candidate Starts for Agaliana\_53:

(Start: 27 @37073 has 163 MA's), (47, 36971),



Gene: Ajay\_59 Start: 40476, Stop: 40342, Start Num: 27  
Candidate Starts for Ajay\_59:  
(Start: 27 @40476 has 163 MA's), (47, 40374),

Gene: Aliter\_69 Start: 40655, Stop: 40506, Start Num: 22  
Candidate Starts for Aliter\_69:  
(Start: 22 @40655 has 53 MA's), (29, 40637), (42, 40589),

Gene: Alsfro\_63 Start: 40052, Stop: 39909, Start Num: 22  
Candidate Starts for Alsfro\_63:  
(Start: 22 @40052 has 53 MA's),

Gene: Altman\_61 Start: 40582, Stop: 40448, Start Num: 27  
Candidate Starts for Altman\_61:  
(Start: 27 @40582 has 163 MA's), (47, 40480),

Gene: Alvin\_57 Start: 39789, Stop: 39655, Start Num: 27  
Candidate Starts for Alvin\_57:  
(Start: 27 @39789 has 163 MA's),

Gene: Anglerfish\_59 Start: 40711, Stop: 40568, Start Num: 22  
Candidate Starts for Anglerfish\_59:  
(Start: 22 @40711 has 53 MA's),

Gene: Applejack\_53 Start: 36632, Stop: 36498, Start Num: 27  
Candidate Starts for Applejack\_53:  
(Start: 27 @36632 has 163 MA's), (47, 36530),

Gene: Arcanine\_60 Start: 40322, Stop: 40188, Start Num: 27  
Candidate Starts for Arcanine\_60:  
(Start: 27 @40322 has 163 MA's), (47, 40220),

Gene: Archie\_96 Start: 60983, Stop: 61165, Start Num: 15  
Candidate Starts for Archie\_96:  
(Start: 15 @60983 has 28 MA's), (23, 61019), (Start: 27 @61025 has 163 MA's), (31, 61052), (39, 61076), (44, 61106), (45, 61118), (47, 61133),

Gene: Arissanae\_65 Start: 40920, Stop: 40774, Start Num: 22  
Candidate Starts for Arissanae\_65:  
(Start: 22 @40920 has 53 MA's), (29, 40902), (42, 40854), (49, 40794),

Gene: Arlo\_56 Start: 38792, Stop: 38658, Start Num: 27  
Candidate Starts for Arlo\_56:  
(Start: 27 @38792 has 163 MA's), (47, 38690),

Gene: Atkinbua\_62 Start: 40268, Stop: 40131, Start Num: 25  
Candidate Starts for Atkinbua\_62:  
(Start: 25 @40268 has 3 MA's), (Start: 27 @40265 has 163 MA's), (47, 40163),

Gene: BK1\_52 Start: 38092, Stop: 37958, Start Num: 27  
Candidate Starts for BK1\_52:  
(Start: 27 @38092 has 163 MA's), (47, 37990),

Gene: BPBiibs31\_60 Start: 40754, Stop: 40620, Start Num: 27  
Candidate Starts for BPBiibs31\_60:  
(Start: 27 @40754 has 163 MA's), (47, 40652),

Gene: BaconJack\_63 Start: 41853, Stop: 41719, Start Num: 27  
Candidate Starts for BaconJack\_63:  
(Start: 27 @41853 has 163 MA's), (47, 41751),

Gene: Baoshan\_96 Start: 61599, Stop: 61781, Start Num: 15  
Candidate Starts for Baoshan\_96:  
(Start: 15 @61599 has 28 MA's), (17, 61608), (Start: 20 @61626 has 1 MA's), (23, 61635), (31, 61668),  
(39, 61692), (44, 61722), (45, 61734), (47, 61749),

Gene: Barriga\_59 Start: 38979, Stop: 38845, Start Num: 27  
Candidate Starts for Barriga\_59:  
(Start: 27 @38979 has 163 MA's),

Gene: BarrowTuph\_58 Start: 39907, Stop: 39773, Start Num: 27  
Candidate Starts for BarrowTuph\_58:  
(Start: 27 @39907 has 163 MA's), (47, 39805),

Gene: Baudelaire\_107 Start: 62949, Stop: 63086, Start Num: 26  
Candidate Starts for Baudelaire\_107:  
(24, 62946), (Start: 26 @62949 has 2 MA's), (32, 62976), (37, 62991), (38, 62994), (43, 63009), (45,  
63039), (49, 63063), (50, 63066),

Gene: Bazzle\_96 Start: 61539, Stop: 61721, Start Num: 15  
Candidate Starts for Bazzle\_96:  
(Start: 15 @61539 has 28 MA's), (23, 61575), (Start: 27 @61581 has 163 MA's), (31, 61608), (39,  
61632), (44, 61662), (45, 61674), (47, 61689),

Gene: Beemo\_69 Start: 40825, Stop: 40676, Start Num: 22  
Candidate Starts for Beemo\_69:  
(Start: 22 @40825 has 53 MA's), (29, 40807), (42, 40759),

Gene: BeesKnees\_61 Start: 39847, Stop: 39713, Start Num: 27  
Candidate Starts for BeesKnees\_61:  
(Start: 27 @39847 has 163 MA's), (47, 39745),

Gene: Bellis\_94 Start: 61101, Stop: 61235, Start Num: 27  
Candidate Starts for Bellis\_94:  
(Start: 27 @61101 has 163 MA's), (35, 61137), (36, 61140), (41, 61152), (47, 61203),

Gene: Big3\_57 Start: 40553, Stop: 40419, Start Num: 27  
Candidate Starts for Big3\_57:  
(Start: 27 @40553 has 163 MA's), (47, 40451),

Gene: BigCheese\_99 Start: 61757, Stop: 61939, Start Num: 15  
Candidate Starts for BigCheese\_99:  
(Start: 15 @61757 has 28 MA's), (23, 61793), (Start: 27 @61799 has 163 MA's), (31, 61826), (34,  
61832), (39, 61850), (44, 61880), (45, 61892),

Gene: BigMau\_60 Start: 39207, Stop: 39073, Start Num: 27

Candidate Starts for BigMau\_60:  
(Start: 27 @39207 has 163 MA's), (47, 39105),

Gene: BigPaolini\_57 Start: 38390, Stop: 38256, Start Num: 27  
Candidate Starts for BigPaolini\_57:  
(Start: 27 @38390 has 163 MA's), (47, 38288),

Gene: Bigchungi\_57 Start: 39152, Stop: 39018, Start Num: 27  
Candidate Starts for Bigchungi\_57:  
(Start: 27 @39152 has 163 MA's), (47, 39050),

Gene: Bigfoot\_52 Start: 39345, Stop: 39211, Start Num: 27  
Candidate Starts for Bigfoot\_52:  
(Start: 27 @39345 has 163 MA's), (47, 39243),

Gene: Bircsak\_57 Start: 40580, Stop: 40446, Start Num: 27  
Candidate Starts for Bircsak\_57:  
(Start: 27 @40580 has 163 MA's),

Gene: BluSpix\_56 Start: 35839, Stop: 35705, Start Num: 27  
Candidate Starts for BluSpix\_56:  
(Start: 27 @35839 has 163 MA's), (47, 35737),

Gene: Blue\_57 Start: 40422, Stop: 40288, Start Num: 27  
Candidate Starts for Blue\_57:  
(Start: 27 @40422 has 163 MA's), (47, 40320),

Gene: Bob3\_57 Start: 38473, Stop: 38339, Start Num: 27  
Candidate Starts for Bob3\_57:  
(Start: 27 @38473 has 163 MA's), (47, 38371),

Gene: BobsGarage\_98 Start: 61757, Stop: 61939, Start Num: 15  
Candidate Starts for BobsGarage\_98:  
(Start: 15 @61757 has 28 MA's), (23, 61793), (Start: 27 @61799 has 163 MA's), (31, 61826), (34, 61832), (39, 61850), (44, 61880), (45, 61892),

Gene: BourbonZero\_97 Start: 61299, Stop: 61433, Start Num: 27  
Candidate Starts for BourbonZero\_97:  
(Start: 20 @61284 has 1 MA's), (Start: 27 @61299 has 163 MA's), (35, 61335), (36, 61338), (41, 61350), (47, 61401),

Gene: BrainDrainer\_101 Start: 61531, Stop: 61704, Start Num: 15  
Candidate Starts for BrainDrainer\_101:  
(4, 61438), (7, 61453), (9, 61477), (12, 61489), (Start: 15 @61531 has 28 MA's), (19, 61555), (Start: 27 @61573 has 163 MA's), (30, 61585), (31, 61600), (34, 61606), (44, 61645), (47, 61672),

Gene: Breezona\_99 Start: 61842, Stop: 62027, Start Num: 14  
Candidate Starts for Breezona\_99:  
(Start: 14 @61842 has 4 MA's), (Start: 15 @61845 has 28 MA's), (19, 61869), (23, 61881), (Start: 27 @61887 has 163 MA's), (39, 61938), (44, 61968), (45, 61980), (47, 61995),

Gene: Briton15\_62 Start: 40265, Stop: 40131, Start Num: 27  
Candidate Starts for Briton15\_62:

(Start: 27 @40265 has 163 MA's), (47, 40163),

Gene: Bromden\_100 Start: 62267, Stop: 62440, Start Num: 14

Candidate Starts for Bromden\_100:

(Start: 14 @62267 has 4 MA's), (19, 62291), (Start: 27 @62309 has 163 MA's), (30, 62321), (31, 62336), (34, 62342), (44, 62381), (45, 62393), (47, 62408),

Gene: Bruns\_57 Start: 38964, Stop: 38830, Start Num: 27

Candidate Starts for Bruns\_57:

(Start: 27 @38964 has 163 MA's), (47, 38862),

Gene: Burton\_58 Start: 40146, Stop: 40012, Start Num: 27

Candidate Starts for Burton\_58:

(Start: 27 @40146 has 163 MA's), (47, 40044),

Gene: Buttons\_56 Start: 37913, Stop: 37779, Start Num: 27

Candidate Starts for Buttons\_56:

(Start: 27 @37913 has 163 MA's), (47, 37811),

Gene: Bxb1\_53 Start: 38664, Stop: 38530, Start Num: 27

Candidate Starts for Bxb1\_53:

(Start: 27 @38664 has 163 MA's), (47, 38562),

Gene: CactusRose\_56 Start: 39341, Stop: 39207, Start Num: 27

Candidate Starts for CactusRose\_56:

(Start: 27 @39341 has 163 MA's), (47, 39239),

Gene: Carlyle\_57 Start: 37358, Stop: 37215, Start Num: 22

Candidate Starts for Carlyle\_57:

(Start: 22 @37358 has 53 MA's), (47, 37247),

Gene: Catalina\_70 Start: 40728, Stop: 40579, Start Num: 22

Candidate Starts for Catalina\_70:

(Start: 22 @40728 has 53 MA's), (29, 40710), (42, 40662),

Gene: Chanagan\_54 Start: 37998, Stop: 37864, Start Num: 27

Candidate Starts for Chanagan\_54:

(Start: 27 @37998 has 163 MA's), (47, 37896),

Gene: Charm\_64 Start: 40061, Stop: 39918, Start Num: 22

Candidate Starts for Charm\_64:

(5, 40181), (6, 40175), (10, 40136), (13, 40094), (Start: 22 @40061 has 53 MA's), (29, 40043), (33, 40022), (37, 40010), (41, 39998), (51, 39926),

Gene: Chaser\_99 Start: 60883, Stop: 61056, Start Num: 15

Candidate Starts for Chaser\_99:

(4, 60790), (7, 60805), (8, 60820), (Start: 15 @60883 has 28 MA's), (19, 60907), (Start: 27 @60925 has 163 MA's), (30, 60937), (31, 60952), (34, 60958), (44, 60997),

Gene: Ciao\_57 Start: 39371, Stop: 39237, Start Num: 27

Candidate Starts for Ciao\_57:

(Start: 27 @39371 has 163 MA's), (47, 39269),

Gene: Claus\_99 Start: 61500, Stop: 61682, Start Num: 15  
Candidate Starts for Claus\_99:  
(11, 61455), (Start: 14 @61497 has 4 MA's), (Start: 15 @61500 has 28 MA's), (Start: 20 @61527 has 1 MA's), (23, 61536), (31, 61569), (39, 61593), (44, 61623), (45, 61635), (47, 61650),

Gene: Clautastrophe\_94 Start: 61096, Stop: 61230, Start Num: 27  
Candidate Starts for Clautastrophe\_94:  
(Start: 27 @61096 has 163 MA's), (35, 61132), (36, 61135), (41, 61147), (47, 61198),

Gene: ConceptII\_61 Start: 41437, Stop: 41303, Start Num: 27  
Candidate Starts for ConceptII\_61:  
(Start: 27 @41437 has 163 MA's), (47, 41335),

Gene: Corvo\_59 Start: 40902, Stop: 40759, Start Num: 22  
Candidate Starts for Corvo\_59:  
(Start: 22 @40902 has 53 MA's),

Gene: Crispicous1\_55 Start: 38394, Stop: 38260, Start Num: 27  
Candidate Starts for Crispicous1\_55:  
(Start: 27 @38394 has 163 MA's), (47, 38292),

Gene: Crossroads\_99 Start: 61475, Stop: 61657, Start Num: 15  
Candidate Starts for Crossroads\_99:  
(Start: 15 @61475 has 28 MA's), (23, 61511), (Start: 27 @61517 has 163 MA's), (31, 61544), (39, 61568), (44, 61598), (45, 61610), (47, 61625),

Gene: DD5\_57 Start: 40238, Stop: 40095, Start Num: 22  
Candidate Starts for DD5\_57:  
(Start: 22 @40238 has 53 MA's), (47, 40127),

Gene: DHan\_102 Start: 61776, Stop: 61958, Start Num: 15  
Candidate Starts for DHan\_102:  
(11, 61731), (Start: 14 @61773 has 4 MA's), (Start: 15 @61776 has 28 MA's), (Start: 20 @61803 has 1 MA's), (23, 61812), (31, 61845), (39, 61869), (44, 61899), (45, 61911), (47, 61926),

Gene: DanBing\_98 Start: 61291, Stop: 61473, Start Num: 15  
Candidate Starts for DanBing\_98:  
(Start: 15 @61291 has 28 MA's), (17, 61300), (Start: 20 @61318 has 1 MA's), (23, 61327), (28, 61342), (31, 61360), (39, 61384), (44, 61414), (45, 61426), (47, 61441),

Gene: Dexes\_58 Start: 40275, Stop: 40141, Start Num: 27  
Candidate Starts for Dexes\_58:  
(Start: 27 @40275 has 163 MA's), (47, 40173),

Gene: Douge\_100 Start: 60951, Stop: 61124, Start Num: 15  
Candidate Starts for Douge\_100:  
(4, 60858), (7, 60873), (12, 60909), (Start: 15 @60951 has 28 MA's), (19, 60975), (Start: 27 @60993 has 163 MA's), (30, 61005), (31, 61020), (34, 61026), (44, 61065), (47, 61092),

Gene: Douzhi\_100 Start: 61220, Stop: 61393, Start Num: 15  
Candidate Starts for Douzhi\_100:  
(4, 61127), (7, 61142), (9, 61166), (12, 61178), (Start: 15 @61220 has 28 MA's), (19, 61244), (Start: 27 @61262 has 163 MA's), (30, 61274), (31, 61289), (34, 61295), (44, 61334), (47, 61361),

Gene: DrFeelGood\_56 Start: 39234, Stop: 39100, Start Num: 27

Candidate Starts for DrFeelGood\_56:

(Start: 27 @39234 has 163 MA's), (47, 39132),

Gene: DrSeegs\_98 Start: 61845, Stop: 62027, Start Num: 15

Candidate Starts for DrSeegs\_98:

(Start: 14 @61842 has 4 MA's), (Start: 15 @61845 has 28 MA's), (19, 61869), (23, 61881), (Start: 27 @61887 has 163 MA's), (39, 61938), (44, 61968), (45, 61980), (47, 61995),

Gene: DreamCatcher\_62 Start: 40897, Stop: 40763, Start Num: 27

Candidate Starts for DreamCatcher\_62:

(Start: 25 @40900 has 3 MA's), (Start: 27 @40897 has 163 MA's), (47, 40795),

Gene: DreamTeam1\_64 Start: 39893, Stop: 39750, Start Num: 22

Candidate Starts for DreamTeam1\_64:

(5, 40013), (6, 40007), (10, 39968), (13, 39926), (Start: 22 @39893 has 53 MA's), (29, 39875), (33, 39854), (37, 39842), (41, 39830), (51, 39758),

Gene: DuncansLeg\_97 Start: 61287, Stop: 61421, Start Num: 27

Candidate Starts for DuncansLeg\_97:

(Start: 20 @61272 has 1 MA's), (Start: 27 @61287 has 163 MA's), (35, 61323), (36, 61326), (41, 61338), (47, 61389),

Gene: Dussy\_60 Start: 40880, Stop: 40746, Start Num: 27

Candidate Starts for Dussy\_60:

(Start: 27 @40880 has 163 MA's), (47, 40778),

Gene: Dynamix\_60 Start: 39645, Stop: 39502, Start Num: 22

Candidate Starts for Dynamix\_60:

(Start: 22 @39645 has 53 MA's),

Gene: DyoEdafos\_103 Start: 61511, Stop: 61684, Start Num: 15

Candidate Starts for DyoEdafos\_103:

(13, 61508), (Start: 15 @61511 has 28 MA's), (19, 61535), (23, 61547), (Start: 27 @61553 has 163 MA's), (28, 61562), (30, 61565), (31, 61580), (44, 61625), (47, 61652),

Gene: EdogawaKiddo\_66 Start: 40695, Stop: 40546, Start Num: 22

Candidate Starts for EdogawaKiddo\_66:

(Start: 22 @40695 has 53 MA's), (29, 40677), (42, 40629),

Gene: Edtherson\_57 Start: 39654, Stop: 39520, Start Num: 27

Candidate Starts for Edtherson\_57:

(Start: 27 @39654 has 163 MA's), (47, 39552),

Gene: Ellson\_95 Start: 61602, Stop: 61736, Start Num: 27

Candidate Starts for Ellson\_95:

(Start: 20 @61587 has 1 MA's), (Start: 27 @61602 has 163 MA's), (35, 61638), (36, 61641), (41, 61653), (47, 61704),

Gene: EnzoK\_57 Start: 37486, Stop: 37352, Start Num: 27

Candidate Starts for EnzoK\_57:

(Start: 27 @37486 has 163 MA's),

Gene: Espresso\_57 Start: 40290, Stop: 40156, Start Num: 27

Candidate Starts for Espresso\_57:

(Start: 27 @40290 has 163 MA's), (47, 40188),

Gene: Euphoria\_56 Start: 39547, Stop: 39404, Start Num: 22

Candidate Starts for Euphoria\_56:

(Start: 22 @39547 has 53 MA's),

Gene: Eyeball\_59 Start: 39749, Stop: 39615, Start Num: 27

Candidate Starts for Eyeball\_59:

(Start: 27 @39749 has 163 MA's), (47, 39647),

Gene: Faith1\_99 Start: 61400, Stop: 61582, Start Num: 15

Candidate Starts for Faith1\_99:

(Start: 15 @61400 has 28 MA's), (23, 61436), (Start: 27 @61442 has 163 MA's), (31, 61469), (34, 61475), (39, 61493), (44, 61523), (45, 61535),

Gene: Fajezeel\_59 Start: 39720, Stop: 39586, Start Num: 27

Candidate Starts for Fajezeel\_59:

(Start: 27 @39720 has 163 MA's), (47, 39618),

Gene: FarmResident\_101 Start: 61107, Stop: 61280, Start Num: 15

Candidate Starts for FarmResident\_101:

(4, 61014), (7, 61029), (9, 61053), (12, 61065), (Start: 15 @61107 has 28 MA's), (19, 61131), (Start: 27 @61149 has 163 MA's), (30, 61161), (31, 61176), (34, 61182), (44, 61221), (47, 61248),

Gene: Fascinus\_54 Start: 39859, Stop: 39725, Start Num: 27

Candidate Starts for Fascinus\_54:

(Start: 27 @39859 has 163 MA's), (47, 39757),

Gene: Fenn\_61 Start: 41648, Stop: 41514, Start Num: 27

Candidate Starts for Fenn\_61:

(Start: 27 @41648 has 163 MA's), (47, 41546),

Gene: Finemlucis\_100 Start: 62460, Stop: 62642, Start Num: 15

Candidate Starts for Finemlucis\_100:

(Start: 15 @62460 has 28 MA's), (23, 62496), (Start: 27 @62502 has 163 MA's), (31, 62529), (34, 62535), (39, 62553), (44, 62583), (45, 62595),

Gene: Finnry\_96 Start: 61449, Stop: 61583, Start Num: 27

Candidate Starts for Finnry\_96:

(Start: 27 @61449 has 163 MA's), (35, 61485), (36, 61488), (41, 61500), (47, 61551),

Gene: Forsytheast\_57 Start: 39132, Stop: 38998, Start Num: 27

Candidate Starts for Forsytheast\_57:

(Start: 27 @39132 has 163 MA's), (47, 39030),

Gene: Francis47\_57 Start: 40917, Stop: 40783, Start Num: 27

Candidate Starts for Francis47\_57:

(Start: 27 @40917 has 163 MA's), (47, 40815),

Gene: Froghopper\_55 Start: 38579, Stop: 38436, Start Num: 22

Candidate Starts for Froghopper\_55:  
(Start: 22 @38579 has 53 MA's),

Gene: Fushigi\_55 Start: 38393, Stop: 38259, Start Num: 27  
Candidate Starts for Fushigi\_55:  
(Start: 27 @38393 has 163 MA's), (47, 38291),

Gene: GMonster\_54 Start: 38356, Stop: 38222, Start Num: 27  
Candidate Starts for GMonster\_54:  
(Start: 27 @38356 has 163 MA's), (47, 38254),

Gene: Gabriela\_99 Start: 60746, Stop: 60928, Start Num: 15  
Candidate Starts for Gabriela\_99:  
(Start: 15 @60746 has 28 MA's), (23, 60782), (Start: 27 @60788 has 163 MA's), (31, 60815), (34, 60821), (39, 60839), (44, 60869), (45, 60881),

Gene: Gail\_67 Start: 41407, Stop: 41258, Start Num: 22  
Candidate Starts for Gail\_67:  
(Start: 22 @41407 has 53 MA's), (29, 41389), (33, 41368),

Gene: Gandalf20\_61 Start: 41575, Stop: 41441, Start Num: 27  
Candidate Starts for Gandalf20\_61:  
(Start: 27 @41575 has 163 MA's), (47, 41473),

Gene: Gardann\_99 Start: 61193, Stop: 61375, Start Num: 15  
Candidate Starts for Gardann\_99:  
(Start: 15 @61193 has 28 MA's), (23, 61229), (Start: 27 @61235 has 163 MA's), (31, 61262), (34, 61268), (39, 61286), (44, 61316), (45, 61328),

Gene: Gompeii16\_57 Start: 40581, Stop: 40447, Start Num: 27  
Candidate Starts for Gompeii16\_57:  
(Start: 27 @40581 has 163 MA's),

Gene: GrecoEtereo\_58 Start: 39479, Stop: 39345, Start Num: 27  
Candidate Starts for GrecoEtereo\_58:  
(Start: 27 @39479 has 163 MA's), (47, 39377),

Gene: Greg\_59 Start: 39720, Stop: 39586, Start Num: 27  
Candidate Starts for Greg\_59:  
(Start: 27 @39720 has 163 MA's), (47, 39618),

Gene: GuuelaD\_96 Start: 61359, Stop: 61541, Start Num: 15  
Candidate Starts for GuuelaD\_96:  
(Start: 15 @61359 has 28 MA's), (23, 61395), (Start: 27 @61401 has 163 MA's), (31, 61428), (34, 61434), (39, 61452), (44, 61482), (45, 61494),

Gene: Gyzlar\_54 Start: 37793, Stop: 37659, Start Num: 27  
Candidate Starts for Gyzlar\_54:  
(Start: 27 @37793 has 163 MA's), (47, 37691),

Gene: Hafay\_100 Start: 61495, Stop: 61677, Start Num: 15  
Candidate Starts for Hafay\_100:



(11, 61450), (Start: 14 @61492 has 4 MA's), (Start: 15 @61495 has 28 MA's), (Start: 20 @61522 has 1 MA's), (23, 61531), (31, 61564), (39, 61588), (44, 61618), (45, 61630), (47, 61645),

Gene: Hami1\_53 Start: 34833, Stop: 34699, Start Num: 27  
Candidate Starts for Hami1\_53:  
(Start: 27 @34833 has 163 MA's), (47, 34731),

Gene: HanShotFirst\_59 Start: 40295, Stop: 40161, Start Num: 27  
Candidate Starts for HanShotFirst\_59:  
(Start: 27 @40295 has 163 MA's), (47, 40193),

Gene: HarryOW\_57 Start: 38977, Stop: 38843, Start Num: 27  
Candidate Starts for HarryOW\_57:  
(Start: 27 @38977 has 163 MA's), (47, 38875),

Gene: Hermia\_58 Start: 40152, Stop: 40018, Start Num: 27  
Candidate Starts for Hermia\_58:  
(Start: 27 @40152 has 163 MA's), (47, 40050),

Gene: HermioneGrange\_59 Start: 39701, Stop: 39567, Start Num: 27  
Candidate Starts for HermioneGrange\_59:  
(Start: 27 @39701 has 163 MA's), (47, 39599),

Gene: Homines\_50 Start: 35670, Stop: 35527, Start Num: 22  
Candidate Starts for Homines\_50:  
(Start: 22 @35670 has 53 MA's), (47, 35559),

Gene: Hope4ever\_60 Start: 40461, Stop: 40327, Start Num: 27  
Candidate Starts for Hope4ever\_60:  
(Start: 27 @40461 has 163 MA's), (47, 40359),

Gene: HortumSL17\_69 Start: 40727, Stop: 40578, Start Num: 22  
Candidate Starts for HortumSL17\_69:  
(Start: 22 @40727 has 53 MA's), (29, 40709), (42, 40661),

Gene: ILeeKay\_61 Start: 40319, Stop: 40185, Start Num: 27  
Candidate Starts for ILeeKay\_61:  
(Start: 27 @40319 has 163 MA's), (47, 40217),

Gene: Ichabod\_62 Start: 41147, Stop: 41004, Start Num: 22  
Candidate Starts for Ichabod\_62:  
(Start: 22 @41147 has 53 MA's), (47, 41036),

Gene: IgnatiusPatJac\_58 Start: 39784, Stop: 39650, Start Num: 27  
Candidate Starts for IgnatiusPatJac\_58:  
(Start: 27 @39784 has 163 MA's), (47, 39682),

Gene: Inyanga\_53 Start: 38018, Stop: 37884, Start Num: 27  
Candidate Starts for Inyanga\_53:  
(Start: 27 @38018 has 163 MA's), (47, 37916),

Gene: Iqorha\_53 Start: 38017, Stop: 37883, Start Num: 27  
Candidate Starts for Iqorha\_53:

(Start: 27 @38017 has 163 MA's), (47, 37915),

Gene: Itos\_99 Start: 60306, Stop: 60488, Start Num: 15

Candidate Starts for Itos\_99:

(Start: 15 @60306 has 28 MA's), (23, 60342), (Start: 27 @60348 has 163 MA's), (31, 60375), (34, 60381), (39, 60399), (44, 60429), (45, 60441),

Gene: JackSparrow\_61 Start: 40371, Stop: 40237, Start Num: 27

Candidate Starts for JackSparrow\_61:

(Start: 27 @40371 has 163 MA's), (47, 40269),

Gene: Jeeves\_69 Start: 40401, Stop: 40252, Start Num: 22

Candidate Starts for Jeeves\_69:

(Start: 22 @40401 has 53 MA's), (29, 40383), (33, 40362),

Gene: Jerm2\_59 Start: 39956, Stop: 39822, Start Num: 27

Candidate Starts for Jerm2\_59:

(Start: 27 @39956 has 163 MA's), (47, 39854),

Gene: Jobypre\_96 Start: 61096, Stop: 61230, Start Num: 27

Candidate Starts for Jobypre\_96:

(Start: 27 @61096 has 163 MA's), (35, 61132), (36, 61135), (41, 61147), (47, 61198),

Gene: Jorgensen\_59 Start: 39780, Stop: 39646, Start Num: 27

Candidate Starts for Jorgensen\_59:

(Start: 27 @39780 has 163 MA's), (47, 39678),

Gene: Jubie\_95 Start: 61231, Stop: 61365, Start Num: 27

Candidate Starts for Jubie\_95:

(Start: 27 @61231 has 163 MA's), (35, 61267), (36, 61270), (41, 61282), (47, 61333),

Gene: JuliaChild\_59 Start: 39638, Stop: 39504, Start Num: 27

Candidate Starts for JuliaChild\_59:

(Start: 27 @39638 has 163 MA's), (47, 39536),

Gene: KBG\_59 Start: 41762, Stop: 41628, Start Num: 27

Candidate Starts for KBG\_59:

(Start: 27 @41762 has 163 MA's), (47, 41660),

Gene: KSSJEB\_58 Start: 39422, Stop: 39279, Start Num: 22

Candidate Starts for KSSJEB\_58:

(Start: 22 @39422 has 53 MA's), (47, 39311),

Gene: Kahlid\_98 Start: 61111, Stop: 61293, Start Num: 15

Candidate Starts for Kahlid\_98:

(Start: 15 @61111 has 28 MA's), (23, 61147), (Start: 27 @61153 has 163 MA's), (31, 61180), (34, 61186), (39, 61204), (44, 61234), (45, 61246),

Gene: Kanely\_60 Start: 40359, Stop: 40225, Start Num: 27

Candidate Starts for Kanely\_60:

(Start: 27 @40359 has 163 MA's), (47, 40257),

Gene: Kenmech\_63 Start: 42006, Stop: 41872, Start Num: 27

Candidate Starts for Kenmech\_63:  
(Start: 27 @42006 has 163 MA's), (47, 41904),

Gene: Keziacharles14\_66 Start: 41498, Stop: 41355, Start Num: 22  
Candidate Starts for Keziacharles14\_66:  
(Start: 22 @41498 has 53 MA's), (29, 41480), (37, 41447), (51, 41363),

Gene: Killigrew\_58 Start: 40539, Stop: 40405, Start Num: 27  
Candidate Starts for Killigrew\_58:  
(Start: 27 @40539 has 163 MA's), (47, 40437),

Gene: Kingsolomon\_94 Start: 61205, Stop: 61339, Start Num: 27  
Candidate Starts for Kingsolomon\_94:  
(Start: 27 @61205 has 163 MA's), (35, 61241), (36, 61244), (41, 61256), (47, 61307),

Gene: KirDoubleO7\_94 Start: 61289, Stop: 61423, Start Num: 27  
Candidate Starts for KirDoubleO7\_94:  
(Start: 20 @61274 has 1 MA's), (Start: 27 @61289 has 163 MA's), (35, 61325), (36, 61328), (41, 61340), (47, 61391),

Gene: Kropertea\_95 Start: 60713, Stop: 60886, Start Num: 15  
Candidate Starts for Kropertea\_95:  
(Start: 15 @60713 has 28 MA's), (19, 60737), (Start: 27 @60755 has 163 MA's), (28, 60764), (30, 60767), (31, 60782), (44, 60827), (47, 60854),

Gene: Krypton555\_99 Start: 61780, Stop: 61914, Start Num: 27  
Candidate Starts for Krypton555\_99:  
(Start: 20 @61765 has 1 MA's), (Start: 27 @61780 has 163 MA's), (35, 61816), (36, 61819), (41, 61831), (47, 61882), (48, 61888),

Gene: Kugel\_58 Start: 40607, Stop: 40473, Start Num: 27  
Candidate Starts for Kugel\_58:  
(Start: 27 @40607 has 163 MA's), (47, 40505),

Gene: KyMonks1A\_61 Start: 40000, Stop: 39857, Start Num: 22  
Candidate Starts for KyMonks1A\_61:  
(Start: 22 @40000 has 53 MA's), (47, 39889),

Gene: Kykar\_58 Start: 39437, Stop: 39303, Start Num: 27  
Candidate Starts for Kykar\_58:  
(Start: 27 @39437 has 163 MA's), (47, 39335),

Gene: Lamina13\_60 Start: 39739, Stop: 39605, Start Num: 27  
Candidate Starts for Lamina13\_60:  
(Start: 27 @39739 has 163 MA's), (47, 39637),

Gene: Lesedi\_54 Start: 38344, Stop: 38210, Start Num: 27  
Candidate Starts for Lesedi\_54:  
(Start: 27 @38344 has 163 MA's), (47, 38242),

Gene: Levia\_54 Start: 39458, Stop: 39324, Start Num: 27  
Candidate Starts for Levia\_54:  
(Start: 27 @39458 has 163 MA's), (47, 39356),

Gene: Lewan\_100 Start: 61399, Stop: 61581, Start Num: 15

Candidate Starts for Lewan\_100:

(Start: 15 @61399 has 28 MA's), (23, 61435), (Start: 27 @61441 has 163 MA's), (31, 61468), (34, 61474), (39, 61492), (44, 61522), (45, 61534),

Gene: LilBib\_58 Start: 41131, Stop: 40988, Start Num: 22

Candidate Starts for LilBib\_58:

(Start: 22 @41131 has 53 MA's), (47, 41020),

Gene: LilDestine\_97 Start: 61070, Stop: 61252, Start Num: 15

Candidate Starts for LilDestine\_97:

(Start: 15 @61070 has 28 MA's), (23, 61106), (Start: 27 @61112 has 163 MA's), (31, 61139), (34, 61145), (39, 61163), (44, 61193), (45, 61205),

Gene: Lilleskat\_64 Start: 40511, Stop: 40362, Start Num: 22

Candidate Starts for Lilleskat\_64:

(Start: 22 @40511 has 53 MA's), (29, 40493), (42, 40445),

Gene: LiyuLake\_95 Start: 61362, Stop: 61496, Start Num: 27

Candidate Starts for LiyuLake\_95:

(Start: 20 @61347 has 1 MA's), (Start: 27 @61362 has 163 MA's), (35, 61398), (36, 61401), (41, 61413), (47, 61464),

Gene: Loadrie\_98 Start: 61561, Stop: 61743, Start Num: 15

Candidate Starts for Loadrie\_98:

(Start: 15 @61561 has 28 MA's), (23, 61597), (Start: 27 @61603 has 163 MA's), (31, 61630), (34, 61636), (39, 61654), (44, 61684), (45, 61696),

Gene: Lockley\_56 Start: 39400, Stop: 39257, Start Num: 22

Candidate Starts for Lockley\_56:

(Start: 22 @39400 has 53 MA's), (47, 39289),

Gene: Lolly9\_96 Start: 61453, Stop: 61587, Start Num: 27

Candidate Starts for Lolly9\_96:

(Start: 20 @61438 has 1 MA's), (Start: 27 @61453 has 163 MA's), (35, 61489), (36, 61492), (41, 61504), (47, 61555),

Gene: Lopton\_58 Start: 41812, Stop: 41678, Start Num: 27

Candidate Starts for Lopton\_58:

(Start: 27 @41812 has 163 MA's), (47, 41710),

Gene: Luchador\_68 Start: 41978, Stop: 41829, Start Num: 22

Candidate Starts for Luchador\_68:

(13, 42008), (Start: 22 @41978 has 53 MA's), (29, 41960), (33, 41939),

Gene: Lumos\_96 Start: 61093, Stop: 61227, Start Num: 27

Candidate Starts for Lumos\_96:

(Start: 27 @61093 has 163 MA's), (35, 61129), (36, 61132), (41, 61144), (47, 61195),

Gene: LunarLander\_61 Start: 39641, Stop: 39507, Start Num: 27

Candidate Starts for LunarLander\_61:

(Start: 27 @39641 has 163 MA's), (47, 39539),

Gene: MPlant7149\_57 Start: 38517, Stop: 38383, Start Num: 27  
Candidate Starts for MPlant7149\_57:  
(Start: 27 @38517 has 163 MA's), (47, 38415),

Gene: Magnar\_56 Start: 39959, Stop: 39825, Start Num: 27  
Candidate Starts for Magnar\_56:  
(Start: 27 @39959 has 163 MA's), (47, 39857),

Gene: Magnito\_57 Start: 39684, Stop: 39550, Start Num: 27  
Candidate Starts for Magnito\_57:  
(Start: 27 @39684 has 163 MA's), (47, 39582),

Gene: Makemake\_59 Start: 40359, Stop: 40216, Start Num: 22  
Candidate Starts for Makemake\_59:  
(Start: 22 @40359 has 53 MA's), (47, 40248),

Gene: Manatee\_59 Start: 40057, Stop: 39914, Start Num: 22  
Candidate Starts for Manatee\_59:  
(Start: 22 @40057 has 53 MA's),

Gene: Marcell\_55 Start: 38966, Stop: 38832, Start Num: 27  
Candidate Starts for Marcell\_55:  
(Start: 27 @38966 has 163 MA's), (47, 38864),

Gene: Marchy\_53 Start: 37054, Stop: 36920, Start Num: 27  
Candidate Starts for Marchy\_53:  
(Start: 27 @37054 has 163 MA's), (47, 36952),

Gene: Marco3\_61 Start: 41738, Stop: 41595, Start Num: 22  
Candidate Starts for Marco3\_61:  
(Start: 22 @41738 has 53 MA's),

Gene: Marge\_57 Start: 39855, Stop: 39721, Start Num: 27  
Candidate Starts for Marge\_57:  
(Start: 27 @39855 has 163 MA's), (47, 39753),

Gene: Maroc7\_56 Start: 40254, Stop: 40120, Start Num: 27  
Candidate Starts for Maroc7\_56:  
(Start: 27 @40254 has 163 MA's), (47, 40152),

Gene: Marsha\_57 Start: 40396, Stop: 40262, Start Num: 27  
Candidate Starts for Marsha\_57:  
(Start: 27 @40396 has 163 MA's), (47, 40294),

Gene: MaryBeth\_57 Start: 40279, Stop: 40136, Start Num: 22  
Candidate Starts for MaryBeth\_57:  
(Start: 22 @40279 has 53 MA's),

Gene: McGuire\_60 Start: 39619, Stop: 39485, Start Num: 27  
Candidate Starts for McGuire\_60:  
(Start: 27 @39619 has 163 MA's), (47, 39517),

Gene: McSinger\_57 Start: 39589, Stop: 39455, Start Num: 27  
Candidate Starts for McSinger\_57:  
(Start: 27 @39589 has 163 MA's), (47, 39487),

Gene: MetalQZJ\_56 Start: 40279, Stop: 40136, Start Num: 22  
Candidate Starts for MetalQZJ\_56:  
(Start: 22 @40279 has 53 MA's),

Gene: Michley\_58 Start: 39990, Stop: 39856, Start Num: 27  
Candidate Starts for Michley\_58:  
(18, 40020), (Start: 27 @39990 has 163 MA's), (47, 39888),

Gene: Miley16\_99 Start: 61842, Stop: 62027, Start Num: 14  
Candidate Starts for Miley16\_99:  
(Start: 14 @61842 has 4 MA's), (Start: 15 @61845 has 28 MA's), (19, 61869), (23, 61881), (Start: 27 @61887 has 163 MA's), (39, 61938), (44, 61968), (45, 61980), (47, 61995),

Gene: MiniLon\_101 Start: 61454, Stop: 61588, Start Num: 27  
Candidate Starts for MiniLon\_101:  
(Start: 20 @61439 has 1 MA's), (Start: 27 @61454 has 163 MA's), (35, 61490), (36, 61493), (41, 61505), (47, 61556),

Gene: MiniMac\_101 Start: 61434, Stop: 61583, Start Num: 20  
Candidate Starts for MiniMac\_101:  
(Start: 20 @61434 has 1 MA's), (Start: 27 @61449 has 163 MA's), (35, 61485), (36, 61488), (41, 61500), (47, 61551),

Gene: MkaliMitinis3\_101 Start: 61525, Stop: 61707, Start Num: 15  
Candidate Starts for MkaliMitinis3\_101:  
(Start: 15 @61525 has 28 MA's), (23, 61561), (Start: 27 @61567 has 163 MA's), (31, 61594), (34, 61600), (39, 61618), (44, 61648), (45, 61660),

Gene: Mkhuseli\_56 Start: 38717, Stop: 38583, Start Num: 27  
Candidate Starts for Mkhuseli\_56:  
(Start: 27 @38717 has 163 MA's), (47, 38615),

Gene: Molly\_59 Start: 38935, Stop: 38801, Start Num: 27  
Candidate Starts for Molly\_59:  
(Start: 27 @38935 has 163 MA's), (47, 38833),

Gene: Monet\_61 Start: 41021, Stop: 40887, Start Num: 27  
Candidate Starts for Monet\_61:  
(Start: 27 @41021 has 163 MA's), (47, 40919),

Gene: Moose\_57 Start: 39132, Stop: 38998, Start Num: 27  
Candidate Starts for Moose\_57:  
(Start: 27 @39132 has 163 MA's), (47, 39030),

Gene: Moostard\_93 Start: 61200, Stop: 61334, Start Num: 27  
Candidate Starts for Moostard\_93:  
(Start: 27 @61200 has 163 MA's), (35, 61236), (36, 61239), (41, 61251), (47, 61302),

Gene: MrGordo\_58 Start: 39793, Stop: 39659, Start Num: 27

Candidate Starts for MrGordo\_58:  
(Start: 27 @39793 has 163 MA's), (47, 39691),

Gene: Mryolo\_55 Start: 39838, Stop: 39704, Start Num: 27  
Candidate Starts for Mryolo\_55:  
(Start: 27 @39838 has 163 MA's),

Gene: MsGreen\_96 Start: 61095, Stop: 61229, Start Num: 27  
Candidate Starts for MsGreen\_96:  
(Start: 27 @61095 has 163 MA's), (35, 61131), (36, 61134), (41, 61146), (47, 61197),

Gene: Mule\_56 Start: 38388, Stop: 38254, Start Num: 27  
Candidate Starts for Mule\_56:  
(Start: 27 @38388 has 163 MA's), (47, 38286),

Gene: Museum\_59 Start: 40085, Stop: 39951, Start Num: 27  
Candidate Starts for Museum\_59:  
(Start: 27 @40085 has 163 MA's), (47, 39983),

Gene: MyraDee\_64 Start: 37954, Stop: 37787, Start Num: 16  
Candidate Starts for MyraDee\_64:  
(1, 38476), (2, 38458), (3, 38206), (Start: 16 @37954 has 1 MA's), (Start: 22 @37930 has 53 MA's),  
(38, 37882), (44, 37846), (46, 37825),

Gene: Myxus\_68 Start: 40727, Stop: 40578, Start Num: 22  
Candidate Starts for Myxus\_68:  
(Start: 22 @40727 has 53 MA's), (29, 40709), (42, 40661),

Gene: NEHalo\_56 Start: 39867, Stop: 39733, Start Num: 27  
Candidate Starts for NEHalo\_56:  
(Start: 27 @39867 has 163 MA's), (47, 39765),

Gene: Naira\_61 Start: 41695, Stop: 41561, Start Num: 27  
Candidate Starts for Naira\_61:  
(Start: 27 @41695 has 163 MA's), (47, 41593),

Gene: Nerujay\_60 Start: 40434, Stop: 40300, Start Num: 27  
Candidate Starts for Nerujay\_60:  
(Start: 27 @40434 has 163 MA's), (47, 40332),

Gene: Netyap\_98 Start: 61401, Stop: 61583, Start Num: 15  
Candidate Starts for Netyap\_98:  
(Start: 15 @61401 has 28 MA's), (23, 61437), (Start: 27 @61443 has 163 MA's), (31, 61470), (34,  
61476), (39, 61494), (44, 61524), (45, 61536),

Gene: Nhonho\_57 Start: 40780, Stop: 40646, Start Num: 27  
Candidate Starts for Nhonho\_57:  
(Start: 27 @40780 has 163 MA's), (47, 40678),

Gene: Nicholas\_94 Start: 61205, Stop: 61339, Start Num: 27  
Candidate Starts for Nicholas\_94:  
(Start: 27 @61205 has 163 MA's), (35, 61241), (36, 61244), (41, 61256), (47, 61307),

Gene: Nicholasp3\_99 Start: 61193, Stop: 61375, Start Num: 15  
Candidate Starts for Nicholasp3\_99:  
(Start: 15 @61193 has 28 MA's), (23, 61229), (Start: 27 @61235 has 163 MA's), (31, 61262), (34, 61268), (39, 61286), (44, 61316), (45, 61328),

Gene: Niza\_60 Start: 41442, Stop: 41308, Start Num: 27  
Candidate Starts for Niza\_60:  
(Start: 27 @41442 has 163 MA's), (47, 41340),

Gene: Onglai\_66 Start: 38931, Stop: 38782, Start Num: 22  
Candidate Starts for Onglai\_66:  
(Start: 22 @38931 has 53 MA's), (29, 38913), (42, 38865),

Gene: Oogway\_57 Start: 39790, Stop: 39656, Start Num: 27  
Candidate Starts for Oogway\_57:  
(Start: 27 @39790 has 163 MA's), (47, 39688),

Gene: PSullivan\_58 Start: 38828, Stop: 38685, Start Num: 22  
Candidate Starts for PSullivan\_58:  
(Start: 22 @38828 has 53 MA's),

Gene: PYPDinur\_100 Start: 61783, Stop: 61956, Start Num: 15  
Candidate Starts for PYPDinur\_100:  
(4, 61690), (7, 61705), (9, 61729), (Start: 15 @61783 has 28 MA's), (19, 61807), (Start: 27 @61825 has 163 MA's), (30, 61837), (31, 61852), (34, 61858), (44, 61897), (47, 61924),

Gene: PacerPaul\_58 Start: 40284, Stop: 40150, Start Num: 27  
Candidate Starts for PacerPaul\_58:  
(Start: 27 @40284 has 163 MA's), (47, 40182),

Gene: PackMan\_67 Start: 40602, Stop: 40453, Start Num: 22  
Candidate Starts for PackMan\_67:  
(Start: 22 @40602 has 53 MA's), (29, 40584), (42, 40536),

Gene: Papez\_61 Start: 41812, Stop: 41678, Start Num: 27  
Candidate Starts for Papez\_61:  
(Start: 27 @41812 has 163 MA's), (47, 41710),

Gene: Paphu\_57 Start: 39421, Stop: 39287, Start Num: 27  
Candidate Starts for Paphu\_57:  
(Start: 27 @39421 has 163 MA's), (47, 39319),

Gene: Paraselene\_56 Start: 40336, Stop: 40193, Start Num: 22  
Candidate Starts for Paraselene\_56:  
(Start: 22 @40336 has 53 MA's),

Gene: Parliament\_58 Start: 40049, Stop: 39915, Start Num: 27  
Candidate Starts for Parliament\_58:  
(Start: 27 @40049 has 163 MA's),

Gene: PascalRango\_58 Start: 40088, Stop: 39954, Start Num: 27  
Candidate Starts for PascalRango\_58:  
(Start: 27 @40088 has 163 MA's), (47, 39986),



Gene: PattyP\_60 Start: 40478, Stop: 40344, Start Num: 27  
Candidate Starts for PattyP\_60:  
(Start: 27 @40478 has 163 MA's), (47, 40376),

Gene: Payneful\_58 Start: 39771, Stop: 39637, Start Num: 27  
Candidate Starts for Payneful\_58:  
(Start: 27 @39771 has 163 MA's), (47, 39669),

Gene: Pepe\_55 Start: 38549, Stop: 38406, Start Num: 22  
Candidate Starts for Pepe\_55:  
(Start: 22 @38549 has 53 MA's),

Gene: Perseus\_58 Start: 40793, Stop: 40659, Start Num: 27  
Candidate Starts for Perseus\_58:  
(Start: 27 @40793 has 163 MA's), (47, 40691),

Gene: Peterson\_62 Start: 42031, Stop: 41897, Start Num: 27  
Candidate Starts for Peterson\_62:  
(Start: 27 @42031 has 163 MA's), (47, 41929),

Gene: Petp2012\_59 Start: 40827, Stop: 40693, Start Num: 27  
Candidate Starts for Petp2012\_59:  
(Start: 27 @40827 has 163 MA's), (47, 40725),

Gene: Petruccio\_57 Start: 39237, Stop: 39103, Start Num: 27  
Candidate Starts for Petruccio\_57:  
(Start: 27 @39237 has 163 MA's), (47, 39135),

Gene: Phaeder\_68 Start: 40602, Stop: 40453, Start Num: 22  
Candidate Starts for Phaeder\_68:  
(Start: 22 @40602 has 53 MA's), (29, 40584), (42, 40536),

Gene: PhineBark\_58 Start: 40476, Stop: 40342, Start Num: 27  
Candidate Starts for PhineBark\_58:  
(Start: 27 @40476 has 163 MA's), (47, 40374),

Gene: Phlippers\_56 Start: 40591, Stop: 40457, Start Num: 27  
Candidate Starts for Phlippers\_56:  
(Start: 27 @40591 has 163 MA's), (47, 40489),

Gene: Phonnegut\_69 Start: 40824, Stop: 40675, Start Num: 22  
Candidate Starts for Phonnegut\_69:  
(Start: 22 @40824 has 53 MA's), (29, 40806), (42, 40758),

Gene: PhrostyMug\_58 Start: 40562, Stop: 40428, Start Num: 27  
Candidate Starts for PhrostyMug\_58:  
(Start: 27 @40562 has 163 MA's), (47, 40460),

Gene: PinkPlastic\_58 Start: 39549, Stop: 39415, Start Num: 27  
Candidate Starts for PinkPlastic\_58:  
(Start: 27 @39549 has 163 MA's), (47, 39447),

Gene: Pinto\_59 Start: 40150, Stop: 40013, Start Num: 25  
Candidate Starts for Pinto\_59:  
(Start: 25 @40150 has 3 MA's), (Start: 27 @40147 has 163 MA's), (47, 40045),

Gene: Pioneer\_69 Start: 40824, Stop: 40675, Start Num: 22  
Candidate Starts for Pioneer\_69:  
(Start: 22 @40824 has 53 MA's), (29, 40806), (42, 40758),

Gene: Pippin\_59 Start: 39764, Stop: 39630, Start Num: 27  
Candidate Starts for Pippin\_59:  
(Start: 27 @39764 has 163 MA's), (47, 39662),

Gene: Pita2\_61 Start: 40325, Stop: 40182, Start Num: 22  
Candidate Starts for Pita2\_61:  
(Start: 22 @40325 has 53 MA's),

Gene: ProMouse\_58 Start: 40099, Stop: 39956, Start Num: 22  
Candidate Starts for ProMouse\_58:  
(Start: 22 @40099 has 53 MA's), (47, 39988),

Gene: QTRlifeCrisis\_58 Start: 40342, Stop: 40199, Start Num: 22  
Candidate Starts for QTRlifeCrisis\_58:  
(Start: 22 @40342 has 53 MA's),

Gene: Quby\_100 Start: 61112, Stop: 61285, Start Num: 15  
Candidate Starts for Quby\_100:  
(13, 61109), (Start: 15 @61112 has 28 MA's), (19, 61136), (Start: 27 @61154 has 163 MA's), (30, 61166), (31, 61181), (34, 61187), (44, 61226), (47, 61253),

Gene: Raid\_57 Start: 39512, Stop: 39378, Start Num: 27  
Candidate Starts for Raid\_57:  
(Start: 27 @39512 has 163 MA's), (47, 39410),

Gene: Rajelicia\_59 Start: 40856, Stop: 40722, Start Num: 27  
Candidate Starts for Rajelicia\_59:  
(Start: 27 @40856 has 163 MA's), (47, 40754),

Gene: Red305\_97 Start: 61096, Stop: 61230, Start Num: 27  
Candidate Starts for Red305\_97:  
(Start: 27 @61096 has 163 MA's), (35, 61132), (36, 61135), (41, 61147), (47, 61198),

Gene: Rhynn\_56 Start: 38880, Stop: 38746, Start Num: 27  
Candidate Starts for Rhynn\_56:  
(Start: 27 @38880 has 163 MA's), (47, 38778),

Gene: RidgeCB\_58 Start: 40123, Stop: 39989, Start Num: 27  
Candidate Starts for RidgeCB\_58:  
(Start: 27 @40123 has 163 MA's), (47, 40021),

Gene: Ringer\_58 Start: 41030, Stop: 40896, Start Num: 27  
Candidate Starts for Ringer\_58:  
(Start: 27 @41030 has 163 MA's), (47, 40928),

Gene: Rohr\_59 Start: 40002, Stop: 39868, Start Num: 27

Candidate Starts for Rohr\_59:

(Start: 27 @40002 has 163 MA's), (47, 39900),

Gene: Rossetti\_99 Start: 61561, Stop: 61743, Start Num: 15

Candidate Starts for Rossetti\_99:

(Start: 15 @61561 has 28 MA's), (23, 61597), (Start: 27 @61603 has 163 MA's), (28, 61612), (31, 61630), (39, 61654), (44, 61684), (45, 61696), (47, 61711),

Gene: Rubeus\_58 Start: 37943, Stop: 37806, Start Num: 25

Candidate Starts for Rubeus\_58:

(Start: 25 @37943 has 3 MA's), (Start: 27 @37940 has 163 MA's), (47, 37838),

Gene: Rufus\_59 Start: 39468, Stop: 39334, Start Num: 27

Candidate Starts for Rufus\_59:

(Start: 27 @39468 has 163 MA's), (47, 39366),

Gene: Rumpelstiltskin\_95 Start: 60986, Stop: 61168, Start Num: 15

Candidate Starts for Rumpelstiltskin\_95:

(Start: 15 @60986 has 28 MA's), (23, 61022), (Start: 27 @61028 has 163 MA's), (31, 61055), (34, 61061), (39, 61079), (44, 61109), (45, 61121),

Gene: Rutherford\_59 Start: 40099, Stop: 39965, Start Num: 27

Candidate Starts for Rutherford\_59:

(Start: 27 @40099 has 163 MA's), (47, 39997),

Gene: RyeScarlet\_70 Start: 40799, Stop: 40650, Start Num: 22

Candidate Starts for RyeScarlet\_70:

(Start: 22 @40799 has 53 MA's), (29, 40781), (42, 40733),

Gene: STLscum\_61 Start: 40923, Stop: 40780, Start Num: 22

Candidate Starts for STLscum\_61:

(Start: 22 @40923 has 53 MA's),

Gene: Sachima\_64 Start: 40628, Stop: 40479, Start Num: 22

Candidate Starts for Sachima\_64:

(Start: 22 @40628 has 53 MA's), (29, 40610), (42, 40562),

Gene: Sagefire\_60 Start: 40676, Stop: 40542, Start Num: 27

Candidate Starts for Sagefire\_60:

(Start: 27 @40676 has 163 MA's), (47, 40574),

Gene: Samty\_95 Start: 61193, Stop: 61327, Start Num: 27

Candidate Starts for Samty\_95:

(Start: 27 @61193 has 163 MA's), (35, 61229), (36, 61232), (41, 61244), (47, 61295),

Gene: Sandaddy\_55 Start: 39509, Stop: 39366, Start Num: 22

Candidate Starts for Sandaddy\_55:

(Start: 22 @39509 has 53 MA's), (47, 39398),

Gene: Sanya\_54 Start: 39790, Stop: 39656, Start Num: 27

Candidate Starts for Sanya\_54:

(Start: 27 @39790 has 163 MA's), (47, 39688),

Gene: SarFire\_55 Start: 39071, Stop: 38928, Start Num: 22

Candidate Starts for SarFire\_55:

(Start: 22 @39071 has 53 MA's), (47, 38960),

Gene: Sarshaun\_100 Start: 62153, Stop: 62335, Start Num: 15

Candidate Starts for Sarshaun\_100:

(Start: 15 @62153 has 28 MA's), (23, 62189), (Start: 27 @62195 has 163 MA's), (31, 62222), (34, 62228), (39, 62246), (44, 62276), (45, 62288),

Gene: Scowl\_59 Start: 39900, Stop: 39757, Start Num: 22

Candidate Starts for Scowl\_59:

(Start: 22 @39900 has 53 MA's),

Gene: Seabiscuit\_62 Start: 39881, Stop: 39747, Start Num: 27

Candidate Starts for Seabiscuit\_62:

(Start: 27 @39881 has 163 MA's), (47, 39779),

Gene: SheaKeira\_63 Start: 39912, Stop: 39769, Start Num: 22

Candidate Starts for SheaKeira\_63:

(Start: 22 @39912 has 53 MA's), (29, 39894), (37, 39861), (41, 39849), (51, 39777),

Gene: Sheng711\_101 Start: 61307, Stop: 61480, Start Num: 15

Candidate Starts for Sheng711\_101:

(4, 61214), (7, 61229), (9, 61253), (Start: 15 @61307 has 28 MA's), (19, 61331), (Start: 27 @61349 has 163 MA's), (30, 61361), (31, 61376), (34, 61382), (44, 61421), (47, 61448),

Gene: ShortQueendom\_51 Start: 36829, Stop: 36695, Start Num: 27

Candidate Starts for ShortQueendom\_51:

(Start: 27 @36829 has 163 MA's), (47, 36727),

Gene: Sibs6\_60 Start: 38579, Stop: 38445, Start Num: 27

Candidate Starts for Sibs6\_60:

(Start: 27 @38579 has 163 MA's), (47, 38477),

Gene: SkiPole\_63 Start: 40593, Stop: 40450, Start Num: 22

Candidate Starts for SkiPole\_63:

(Start: 22 @40593 has 53 MA's),

Gene: Slagathor\_60 Start: 40909, Stop: 40775, Start Num: 27

Candidate Starts for Slagathor\_60:

(Start: 27 @40909 has 163 MA's), (47, 40807),

Gene: Smairt\_61 Start: 41555, Stop: 41421, Start Num: 27

Candidate Starts for Smairt\_61:

(Start: 27 @41555 has 163 MA's), (47, 41453),

Gene: Smeagol\_60 Start: 41059, Stop: 40925, Start Num: 27

Candidate Starts for Smeagol\_60:

(Start: 27 @41059 has 163 MA's), (44, 40984), (47, 40957),

Gene: Snazzy\_57 Start: 39444, Stop: 39310, Start Num: 27

Candidate Starts for Snazzy\_57:

(Start: 27 @39444 has 163 MA's), (47, 39342),

Gene: Snenia\_95 Start: 61097, Stop: 61231, Start Num: 27

Candidate Starts for Snenia\_95:

(Start: 27 @61097 has 163 MA's), (35, 61133), (36, 61136), (41, 61148), (47, 61199),

Gene: SoJulia\_101 Start: 62917, Stop: 63099, Start Num: 15

Candidate Starts for SoJulia\_101:

(Start: 15 @62917 has 28 MA's), (23, 62953), (Start: 27 @62959 has 163 MA's), (31, 62986), (34, 62992), (39, 63010), (44, 63040), (45, 63052),

Gene: Soap141\_99 Start: 62153, Stop: 62335, Start Num: 15

Candidate Starts for Soap141\_99:

(Start: 15 @62153 has 28 MA's), (23, 62189), (Start: 27 @62195 has 163 MA's), (31, 62222), (34, 62228), (39, 62246), (44, 62276), (45, 62288),

Gene: Solon\_56 Start: 39316, Stop: 39182, Start Num: 27

Candidate Starts for Solon\_56:

(Start: 27 @39316 has 163 MA's), (47, 39214),

Gene: SororFago\_67 Start: 41621, Stop: 41472, Start Num: 22

Candidate Starts for SororFago\_67:

(13, 41651), (Start: 22 @41621 has 53 MA's), (29, 41603), (33, 41582), (42, 41555),

Gene: Sorpresa\_56 Start: 39511, Stop: 39368, Start Num: 22

Candidate Starts for Sorpresa\_56:

(Start: 22 @39511 has 53 MA's), (47, 39400),

Gene: Squee\_59 Start: 40162, Stop: 40028, Start Num: 27

Candidate Starts for Squee\_59:

(Start: 27 @40162 has 163 MA's), (47, 40060),

Gene: StewieG\_55 Start: 36836, Stop: 36702, Start Num: 27

Candidate Starts for StewieG\_55:

(Start: 27 @36836 has 163 MA's), (47, 36734),

Gene: Sumter\_54 Start: 40052, Stop: 39918, Start Num: 27

Candidate Starts for Sumter\_54:

(Start: 27 @40052 has 163 MA's), (47, 39950),

Gene: Sunshine924\_60 Start: 39199, Stop: 39056, Start Num: 22

Candidate Starts for Sunshine924\_60:

(Start: 22 @39199 has 53 MA's),

Gene: SwissCheese\_59 Start: 39632, Stop: 39498, Start Num: 27

Candidate Starts for SwissCheese\_59:

(Start: 27 @39632 has 163 MA's), (47, 39530),

Gene: Switzer\_59 Start: 41665, Stop: 41522, Start Num: 22

Candidate Starts for Switzer\_59:

(Start: 22 @41665 has 53 MA's),

Gene: Swole\_59 Start: 39113, Stop: 38979, Start Num: 27

Candidate Starts for Swole\_59:  
(Start: 27 @39113 has 163 MA's), (47, 39011),

Gene: Target\_59 Start: 38402, Stop: 38268, Start Num: 27  
Candidate Starts for Target\_59:  
(Start: 27 @38402 has 163 MA's), (47, 38300),

Gene: Tasp14\_61 Start: 40363, Stop: 40229, Start Num: 27  
Candidate Starts for Tasp14\_61:  
(Start: 27 @40363 has 163 MA's), (47, 40261),

Gene: Teodoridan\_56 Start: 39136, Stop: 39002, Start Num: 27  
Candidate Starts for Teodoridan\_56:  
(Start: 27 @39136 has 163 MA's),

Gene: TheloniousMonk\_59 Start: 41765, Stop: 41631, Start Num: 27  
Candidate Starts for TheloniousMonk\_59:  
(Start: 27 @41765 has 163 MA's), (47, 41663),

Gene: Thor\_55 Start: 38429, Stop: 38286, Start Num: 22  
Candidate Starts for Thor\_55:  
(Start: 22 @38429 has 53 MA's), (47, 38318),

Gene: Topgun\_57 Start: 39202, Stop: 39068, Start Num: 27  
Candidate Starts for Topgun\_57:  
(Start: 27 @39202 has 163 MA's), (47, 39100),

Gene: Tote\_54 Start: 36380, Stop: 36246, Start Num: 27  
Candidate Starts for Tote\_54:  
(Start: 27 @36380 has 163 MA's), (47, 36278),

Gene: Tourach\_100 Start: 62232, Stop: 62414, Start Num: 15  
Candidate Starts for Tourach\_100:  
(4, 62139), (8, 62169), (Start: 15 @62232 has 28 MA's), (17, 62241), (Start: 20 @62259 has 1 MA's),  
(23, 62268), (31, 62301), (39, 62325), (44, 62355), (45, 62367), (47, 62382),

Gene: Treddle\_59 Start: 40533, Stop: 40399, Start Num: 27  
Candidate Starts for Treddle\_59:  
(Start: 27 @40533 has 163 MA's), (47, 40431),

Gene: TriFive\_96 Start: 61209, Stop: 61343, Start Num: 27  
Candidate Starts for TriFive\_96:  
(Start: 27 @61209 has 163 MA's), (35, 61245), (36, 61248), (41, 61260), (47, 61311),

Gene: Tripl3t\_60 Start: 41504, Stop: 41370, Start Num: 27  
Candidate Starts for Tripl3t\_60:  
(Start: 27 @41504 has 163 MA's), (47, 41402),

Gene: Trouble\_60 Start: 40856, Stop: 40722, Start Num: 27  
Candidate Starts for Trouble\_60:  
(Start: 27 @40856 has 163 MA's), (47, 40754),

Gene: Tubs\_68 Start: 40602, Stop: 40453, Start Num: 22

Candidate Starts for Tubs\_68:  
(Start: 22 @40602 has 53 MA's), (29, 40584), (42, 40536),

Gene: Turj99\_56 Start: 40896, Stop: 40753, Start Num: 22  
Candidate Starts for Turj99\_56:  
(Start: 22 @40896 has 53 MA's), (47, 40785),

Gene: TwoPeat\_60 Start: 39599, Stop: 39465, Start Num: 27  
Candidate Starts for TwoPeat\_60:  
(Start: 27 @39599 has 163 MA's), (47, 39497),

Gene: U2\_57 Start: 40613, Stop: 40470, Start Num: 22  
Candidate Starts for U2\_57:  
(Start: 22 @40613 has 53 MA's), (47, 40502),

Gene: Underpass\_89 Start: 56229, Stop: 56411, Start Num: 15  
Candidate Starts for Underpass\_89:  
(Start: 15 @56229 has 28 MA's), (23, 56265), (Start: 27 @56271 has 163 MA's), (31, 56298), (34, 56304), (39, 56322), (44, 56352), (45, 56364),

Gene: Vanisoa\_66 Start: 41485, Stop: 41339, Start Num: 22  
Candidate Starts for Vanisoa\_66:  
(Start: 22 @41485 has 53 MA's), (29, 41467), (40, 41425), (49, 41359),

Gene: Vetric\_97 Start: 61015, Stop: 61197, Start Num: 15  
Candidate Starts for Vetric\_97:  
(Start: 15 @61015 has 28 MA's), (23, 61051), (Start: 27 @61057 has 163 MA's), (31, 61084), (34, 61090), (39, 61108), (44, 61138), (45, 61150),

Gene: Violet\_56 Start: 40459, Stop: 40325, Start Num: 27  
Candidate Starts for Violet\_56:  
(Start: 27 @40459 has 163 MA's), (47, 40357),

Gene: Watermelon\_59 Start: 39819, Stop: 39685, Start Num: 27  
Candidate Starts for Watermelon\_59:  
(Start: 27 @39819 has 163 MA's), (47, 39717),

Gene: Wheeler\_58 Start: 39624, Stop: 39490, Start Num: 27  
Candidate Starts for Wheeler\_58:  
(Start: 27 @39624 has 163 MA's), (47, 39522),

Gene: Whirlwind\_98 Start: 61608, Stop: 61742, Start Num: 27  
Candidate Starts for Whirlwind\_98:  
(Start: 20 @61593 has 1 MA's), (Start: 27 @61608 has 163 MA's), (35, 61644), (36, 61647), (41, 61659), (47, 61710), (48, 61716),

Gene: Wigglewigggle\_99 Start: 61323, Stop: 61505, Start Num: 15  
Candidate Starts for Wigglewigggle\_99:  
(Start: 15 @61323 has 28 MA's), (23, 61359), (Start: 27 @61365 has 163 MA's), (31, 61392), (34, 61398), (39, 61416), (44, 61446), (45, 61458),

Gene: Wilder\_100 Start: 61159, Stop: 61341, Start Num: 15  
Candidate Starts for Wilder\_100:

(Start: 15 @61159 has 28 MA's), (23, 61195), (31, 61228), (34, 61234), (39, 61252), (44, 61282), (45, 61294), (47, 61309),

Gene: Wilkins\_57 Start: 39132, Stop: 38998, Start Num: 27

Candidate Starts for Wilkins\_57:

(Start: 27 @39132 has 163 MA's), (47, 39030),

Gene: Winky\_99 Start: 61842, Stop: 62027, Start Num: 14

Candidate Starts for Winky\_99:

(Start: 14 @61842 has 4 MA's), (Start: 15 @61845 has 28 MA's), (19, 61869), (23, 61881), (Start: 27 @61887 has 163 MA's), (39, 61938), (44, 61968), (45, 61980), (47, 61995),

Gene: Yecey3\_69 Start: 40709, Stop: 40557, Start Num: 21

Candidate Starts for Yecey3\_69:

(Start: 21 @40709 has 1 MA's), (29, 40688), (49, 40580), (51, 40565),

Gene: Zakai\_100 Start: 61802, Stop: 61984, Start Num: 15

Candidate Starts for Zakai\_100:

(Start: 15 @61802 has 28 MA's), (23, 61838), (Start: 27 @61844 has 163 MA's), (31, 61871), (34, 61877), (39, 61895), (44, 61925), (45, 61937),

Gene: Zeeculate\_56 Start: 40569, Stop: 40435, Start Num: 27

Candidate Starts for Zeeculate\_56:

(Start: 27 @40569 has 163 MA's), (47, 40467),

Gene: Zephyr\_59 Start: 39575, Stop: 39441, Start Num: 27

Candidate Starts for Zephyr\_59:

(Start: 27 @39575 has 163 MA's), (47, 39473),

Gene: Zeuska\_57 Start: 40195, Stop: 40061, Start Num: 27

Candidate Starts for Zeuska\_57:

(Start: 27 @40195 has 163 MA's), (47, 40093),

Gene: ZhongYanYuan\_96 Start: 61296, Stop: 61478, Start Num: 15

Candidate Starts for ZhongYanYuan\_96:

(11, 61251), (Start: 14 @61293 has 4 MA's), (Start: 15 @61296 has 28 MA's), (Start: 20 @61323 has 1 MA's), (23, 61332), (31, 61365), (39, 61389), (44, 61419), (45, 61431), (47, 61446),