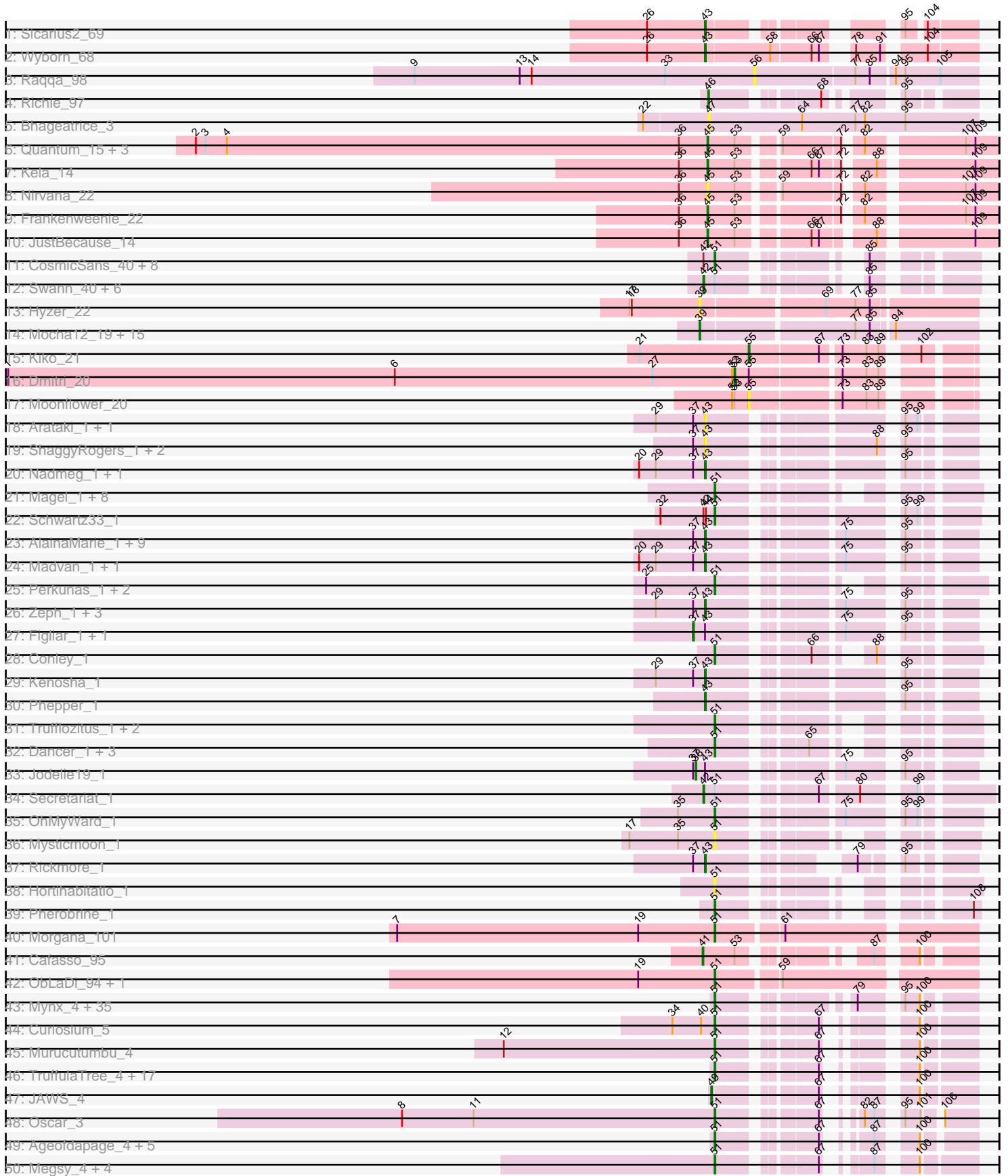
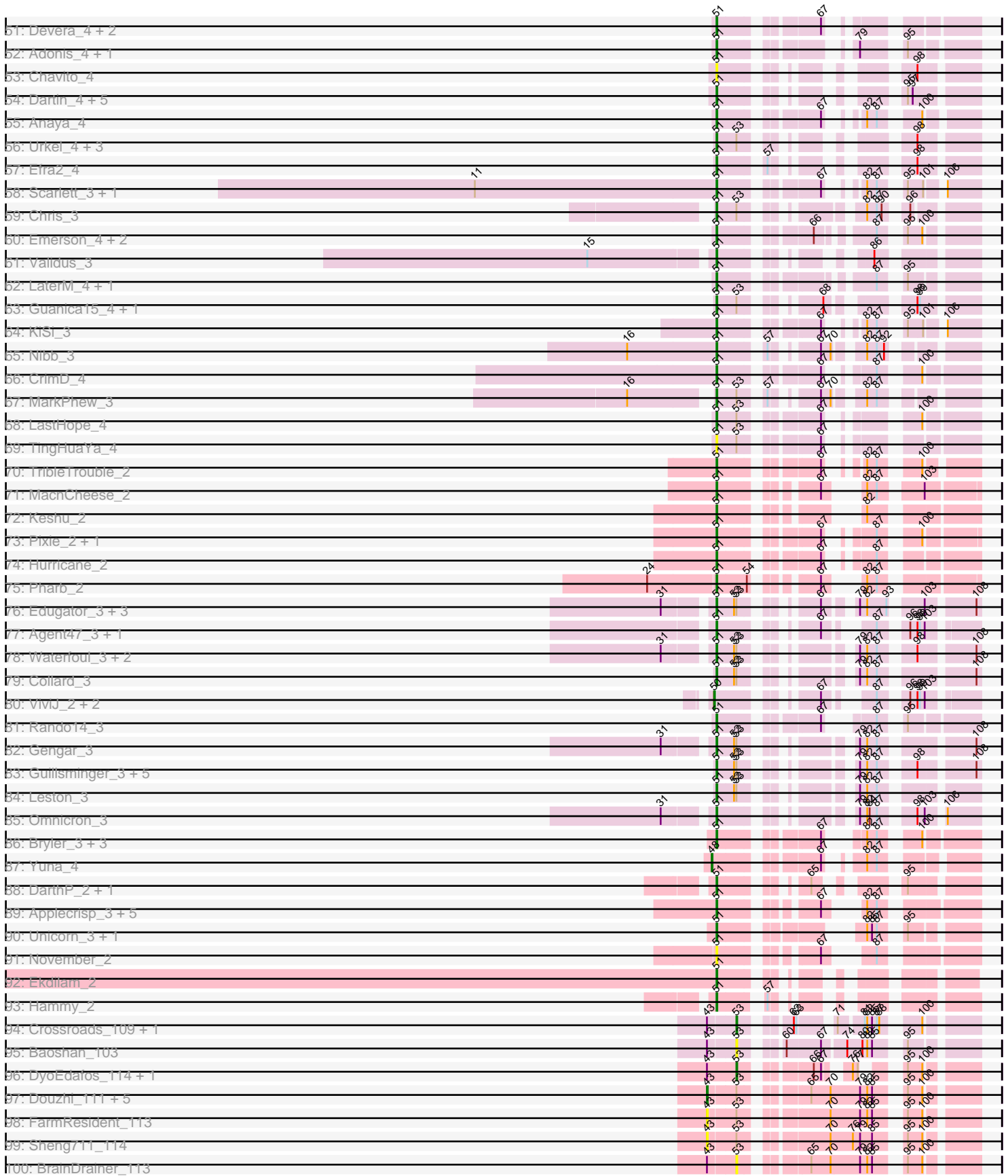


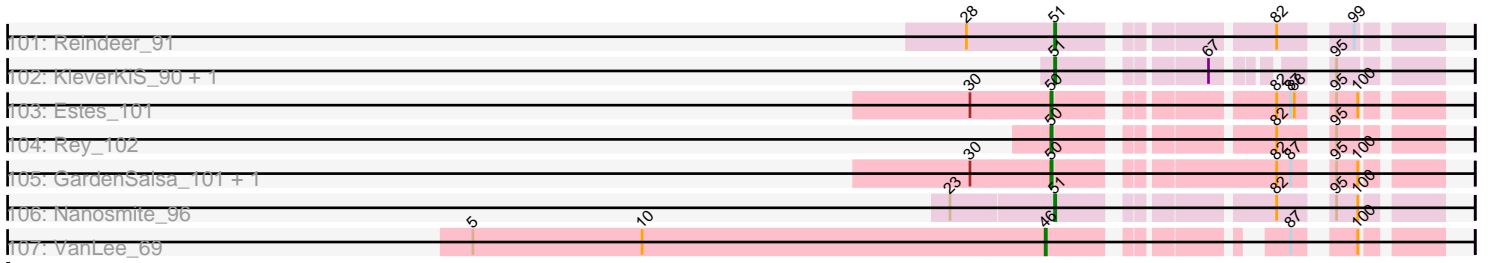
Pham 215772



Pham 215772



Pham 215772



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 215772 Report

This analysis was run 02/22/25 on database version 588.

Pham number 215772 has 283 members, 45 are drafts.

Phages represented in each track:

- Track 1 : Sicarius2\_69
- Track 2 : Wyborn\_68
- Track 3 : Raqqa\_98
- Track 4 : Richie\_97
- Track 5 : Bhageatrice\_3
- Track 6 : Quantum\_15, EhyElimayoE\_16, Satis\_16, Kradal\_16
- Track 7 : Kela\_14
- Track 8 : Nirvana\_22
- Track 9 : Frankenweenie\_22
- Track 10 : JustBecause\_14
- Track 11 : CosmicSans\_40, Rhodalysa\_40, BobbyDazzler\_40, Krishelle\_40, Lillie\_40, TWAMP\_40, Bonanza\_40, RER2\_33, Hiro\_40
- Track 12 : Swann\_40, Rasputin\_40, Bradshaw\_40, Alpacados\_39, Gollum\_40, Phrankenstein\_40, PhailMary\_39
- Track 13 : Hyzer\_22
- Track 14 : Mocha12\_19, Gizermo\_19, Attis\_19, Whiteclaw\_19, SoilAssassin\_19, Clap\_19, GemG\_19, TuertoX\_19, Sproutie\_19, Haley23\_19, Savage\_19, Bjanes7\_19, Cynthia\_19, Ebert\_19, Yeet412\_19, LordFarquaad\_19
- Track 15 : Kiko\_21
- Track 16 : Dmitri\_20
- Track 17 : Moonflower\_20
- Track 18 : Arataki\_1, Demure\_1
- Track 19 : ShaggyRogers\_1, BetterYeti\_1, Gusicorn\_1
- Track 20 : Nadmeg\_1, Burley\_1
- Track 21 : Magel\_1, Capybara\_1, NoPickles\_1, Gravy\_1, Odesza\_1, Gill\_1, Roney\_1, Tanis\_1, Kerry\_1
- Track 22 : Schwartz33\_1
- Track 23 : AlainaMarie\_1, Citrus\_1, MajinBuu\_1, Aflac\_1, BluerMoon\_1, EndAve\_1, Chickenjars\_1, Duffington\_1, OlgasClover\_1, TenaciousP\_1
- Track 24 : Madvan\_1, Runhaar\_1
- Track 25 : Perkunas\_1, Talon44\_1, Petite\_1
- Track 26 : Zeph\_1, Eddiemania\_1, Hydrus\_1, Vardy\_1
- Track 27 : Figliar\_1, Nithya\_1
- Track 28 : Conley\_1
- Track 29 : Kenosha\_1
- Track 30 : Phepper\_1
- Track 31 : Trufflozitus\_1, Captrips\_1, Avazak\_1

- Track 32 : Dancer\_1, Artorias\_1, JulesRay\_1, FortCran\_1
- Track 33 : Jodelie19\_1
- Track 34 : Secretariat\_1
- Track 35 : OhMyWard\_1
- Track 36 : Mysticmoon\_1
- Track 37 : Rickmore\_1
- Track 38 : Hortihabitatio\_1
- Track 39 : Pherobrine\_1
- Track 40 : Morgana\_101
- Track 41 : Cafasso\_95
- Track 42 : ObLaDi\_94, Aleemily\_93
- Track 43 : Mynx\_4, Atiba\_4, Durfee\_4, Boiiii\_4, Blizzard\_4, Homura\_4, Clipper\_4, CaseJules\_4, BGlluviae\_4, CheetoDust\_4, Twitch\_4, Topper\_4, Ganymede\_4, Piatt\_4, Veliki\_4, Lunahalos\_4, Dalmuri\_4, Belladonna\_4, ShiaSurprise\_4, QuincyRose\_4, Jarvi\_4, Llorens\_4, Asayake\_4, BEEST\_4, Hyperbowlee\_4, Jeckyll\_4, Capricorn\_4, Rosmarinus\_4, Spock\_4, Peel\_4, Tachez\_4, MacKat\_4, CREW\_4, Padfoot\_4, Inky\_4, Zavala\_4
- Track 44 : Curiosium\_5
- Track 45 : Murucutumbu\_4
- Track 46 : TruffulaTree\_4, BarrelRoll\_4, Adephagia\_4, Joy99\_4, Slimphazie\_4, CallaLilly\_4, Apocalypse\_4, Zabiza\_4, BaghaKamala\_4, Bern\_4, Bella96\_4, YoureAdopted\_4, HedwigODU\_4, ActinUp\_4, MeaningOfLife\_4, Ramen\_4, Jayhawk\_4, Rapunzel97\_4
- Track 47 : JAWS\_4
- Track 48 : Oscar\_3
- Track 49 : Ageofdapage\_4, Beezoo\_4, Angelica\_4, Pokerus\_4, Deby\_4, Sulley\_4
- Track 50 : Megsy\_4, Prithvi\_4, LindNT\_4, TaiwanKao\_4, TreyKay\_4
- Track 51 : Devera\_4, Illumine\_4, Dole\_4
- Track 52 : Adonis\_4, Tiri\_4
- Track 53 : Chavito\_4
- Track 54 : Dartin\_4, Shaobing\_4, Niklas\_4, Peanam\_4, Richo\_4, McMater\_4
- Track 55 : Anaya\_4
- Track 56 : Urkel\_4, DrHayes\_4, TiniBug\_4, SamuelLPlaqson\_4
- Track 57 : Efra2\_4
- Track 58 : Scarlett\_3, LeMond\_3
- Track 59 : Chris\_3
- Track 60 : Emerson\_4, Padpat\_4, AlishaPH\_4
- Track 61 : Validus\_3
- Track 62 : LaterM\_4, Stinson\_4
- Track 63 : Guanica15\_4, Yunkel11\_4
- Track 64 : KiSi\_3
- Track 65 : Nibb\_3
- Track 66 : CrimD\_4
- Track 67 : MarkPhew\_3
- Track 68 : LastHope\_4
- Track 69 : TingHuaYa\_4
- Track 70 : TribbleTrouble\_2
- Track 71 : MacnCheese\_2
- Track 72 : Keshu\_2
- Track 73 : Pixie\_2, TBond007\_2
- Track 74 : Hurricane\_2
- Track 75 : Pharb\_2
- Track 76 : Edugator\_3, AlleyCat\_3, Psycho\_3, Dadosky\_3

- Track 77 : Agent47\_3, InvictusManeo\_3
- Track 78 : Waterfoul\_3, SoSeph\_3, Heftyboy\_3
- Track 79 : Collard\_3
- Track 80 : ViviJ\_2, Neighly\_3, Kratio\_2
- Track 81 : Rando14\_3
- Track 82 : Gengar\_3
- Track 83 : Guillsminger\_3, Thyatira\_3, Miryou\_3, OkiRoe\_3, Feyre\_3, Paola\_3
- Track 84 : Leston\_3
- Track 85 : Omnicron\_3
- Track 86 : Bryler\_3, Phrank\_3, Tierra\_3, Cain\_3
- Track 87 : Yuna\_4
- Track 88 : DarthP\_2, Amohnition\_2
- Track 89 : Applecrisp\_3, Ellie\_2, ShedlockHolmes\_2, Fefferhead\_2, Lea83\_2, Amgine\_2
- Track 90 : Unicorn\_3, PhelpsODU\_3
- Track 91 : November\_2
- Track 92 : Ekdilam\_2
- Track 93 : Hammy\_2
- Track 94 : Crossroads\_109, MkaliMitinis3\_109
- Track 95 : Baoshan\_103
- Track 96 : DyoEdafos\_114, Kropertea\_105
- Track 97 : Douzhi\_111, PYPDinur\_112, Chaser\_110, Bromden\_112, Quby\_111, Douge\_111
- Track 98 : FarmResident\_113
- Track 99 : Sheng711\_114
- Track 100 : BrainDrainer\_113
- Track 101 : Reindeer\_91
- Track 102 : KleverKiS\_90, SlimJimmy\_90
- Track 103 : Estes\_101
- Track 104 : Rey\_102
- Track 105 : GardenSalsa\_101, MrMagoo\_102
- Track 106 : Nanosmite\_96
- Track 107 : VanLee\_69

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

The start number called the most often in the published annotations is 51, it was called in 166 of the 238 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ActinUp\_4, Adephagia\_4, Adonis\_4, Agent47\_3, Ageofdapage\_4, Aleemily\_93, AlishaPH\_4, AlleyCat\_3, Amgine\_2, Amohnition\_2, Anaya\_4, Angelica\_4, Apocalypse\_4, Applecrisp\_3, Artorias\_1, Asayake\_4, Atiba\_4, Avazak\_1, BEEST\_4, BGlluviae\_4, BaghaKamala\_4, BarrelRoll\_4, Beezoo\_4, Bella96\_4, Belladonna\_4, Bern\_4, Blizzard\_4, BobbyDazzler\_40, Boiiii\_4, Bonanza\_40, Bryler\_3, CREW\_4, Cain\_3, CallaLilly\_4, Capricorn\_4, Captrips\_1, Copybara\_1, CaseJules\_4, Chavito\_4, CheetoDust\_4, Chris\_3, Clipper\_4, Collard\_3, Conley\_1, CosmicSans\_40, CrimD\_4, Curiosium\_5, Dadosky\_3, Dalmuri\_4, Dancer\_1, DarthP\_2, Dartin\_4, Deby\_4, Devera\_4, Dole\_4, DrHayes\_4, Durfee\_4, Edugator\_3, Efra2\_4, Ekdilam\_2, Ellie\_2, Emerson\_4, Fefferhead\_2, Feyre\_3, FortCran\_1, Ganymede\_4, Gengar\_3, Gill\_1,

Gravy\_1, Guanica15\_4, Guillsminger\_3, Hammy\_2, HedwigODU\_4, Heftyboy\_3, Hiro\_40, Homura\_4, Hortihabitatio\_1, Hurricane\_2, Hyperbowlee\_4, Illumine\_4, Inky\_4, InvictusManeo\_3, Jarvi\_4, Jayhawk\_4, Jeckyll\_4, Joy99\_4, JulesRay\_1, Kerry\_1, Keshu\_2, KiSi\_3, KleverKiS\_90, Krishelle\_40, LastHope\_4, LaterM\_4, LeMond\_3, Lea83\_2, Leston\_3, Lillie\_40, LindNT\_4, Llorens\_4, Lunahalos\_4, MacKat\_4, MacnCheese\_2, Magel\_1, MarkPhew\_3, McMater\_4, MeaningOfLife\_4, Megsy\_4, Miryou\_3, Morgana\_101, Murucutumbu\_4, Mynx\_4, Mysticmoon\_1, Nanosmite\_96, Nibb\_3, Niklas\_4, NoPickles\_1, November\_2, ObLaDi\_94, Odesza\_1, OhMyWard\_1, OkiRoe\_3, Omnicron\_3, Oscar\_3, Padfoot\_4, Padpat\_4, Paola\_3, Peanam\_4, Peel\_4, Perkunas\_1, Petito\_1, Pharb\_2, PhelpsODU\_3, Pherobrine\_1, Phrank\_3, Piatt\_4, Pixie\_2, Pokerus\_4, Prithvi\_4, Psycho\_3, QuincyRose\_4, RER2\_33, Ramen\_4, Rando14\_3, Rapunzel97\_4, Reindeer\_91, Rhodalysa\_40, Richo\_4, Roney\_1, Rosmarinus\_4, SamuelLPlaqson\_4, Scarlett\_3, Schwartz33\_1, Shaobing\_4, ShedlockHolmes\_2, ShiaSurprise\_4, SlimJimmy\_90, Slimphazie\_4, SoSeph\_3, Spock\_4, Stinson\_4, Sulley\_4, TBond007\_2, TWAMP\_40, Tachez\_4, TaiwanKao\_4, Talon44\_1, Tanis\_1, Thyatira\_3, Tierra\_3, TingHuaYa\_4, TiniBug\_4, Tiri\_4, Topper\_4, TreyKay\_4, TribbleTrouble\_2, Trufflozitus\_1, TruffulaTree\_4, Twitch\_4, Unicorn\_3, Urkel\_4, Validus\_3, Veliki\_4, Waterfoul\_3, YoureAdopted\_4, Yunkel11\_4, Zabiza\_4, Zavala\_4,

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

- Alpacados\_39, Bradshaw\_40, Gollum\_40, PhailMary\_39, Phrankenstein\_40, Rasputin\_40, Secretariat\_1, Swann\_40,

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

- Aflac\_1, AlainaMarie\_1, Arataki\_1, Attis\_19, Baoshan\_103, BetterYeti\_1, Bhageatrice\_3, Bjaner7\_19, BluerMoon\_1, BrainDrainer\_113, Bromden\_112, Burley\_1, Cafasso\_95, Chaser\_110, Chikenjars\_1, Citrus\_1, Clap\_19, Crossroads\_109, Cynthia\_19, Demure\_1, Dmitri\_20, Douge\_111, Douzhi\_111, Duffington\_1, DyoEdafos\_114, Ebert\_19, Eddiemania\_1, EhyElimayoE\_16, EndAve\_1, Estes\_101, FarmResident\_113, Figliar\_1, Frankenweenie\_22, GardenSalsa\_101, GemG\_19, Gizermo\_19, Gusicorn\_1, Haley23\_19, Hydrus\_1, Hyzer\_22, JAWS\_4, Jodelie19\_1, JustBecause\_14, Kela\_14, Kenosha\_1, Kiko\_21, Kradal\_16, Kratio\_2, Kropertea\_105, LordFarquaad\_19, Madvan\_1, MajinBuu\_1, MkaliMinitis3\_109, Mocha12\_19, Moonflower\_20, MrMagoo\_102, Nadmeg\_1, Neighly\_3, Nirvana\_22, Nithya\_1, OlgasClover\_1, PYPDinur\_112, Phepper\_1, Quantum\_15, Quby\_111, Raqqa\_98, Rey\_102, Richie\_97, Rickmore\_1, Runhaar\_1, Satis\_16, Savage\_19, ShaggyRogers\_1, Sheng711\_114, Sicarius2\_69, SoilAssassin\_19, Sproutie\_19, TenaciousP\_1, TuertoX\_19, VanLee\_69, Vardy\_1, ViviJ\_2, Whiteclaw\_19, Wyborn\_68, Yeet412\_19, Yuna\_4, Zeph\_1,

### Summary by start number:

Start 37:

- Found in 28 of 283 ( 9.9% ) of genes in pham
- Manual Annotations of this start: 2 of 238
- Called 7.1% of time when present
- Phage (with cluster) where this start called: Figliar\_1 (DJ), Nithya\_1 (DJ),

Start 38:

- Found in 1 of 283 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 238
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Jodelie19\_1 (DJ),

#### Start 39:

- Found in 17 of 283 ( 6.0% ) of genes in pham
- Manual Annotations of this start: 16 of 238
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Attis\_19 (CZ2), Bjanes7\_19 (CZ2), Clap\_19 (CZ2), Cynthia\_19 (CZ2), Ebert\_19 (CZ2), GemG\_19 (CZ2), Gizermo\_19 (CZ2), Haley23\_19 (CZ2), Hyzer\_22 (CZ1), LordFarquaad\_19 (CZ2), Mocha12\_19 (CZ2), Savage\_19 (CZ2), SoilAssassin\_19 (CZ2), Sproutie\_19 (CZ2), TuertoX\_19 (CZ2), Whiteclaw\_19 (CZ2), Yeet412\_19 (CZ2),

#### Start 41:

- Found in 1 of 283 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 238
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cafasso\_95 (DZ),

#### Start 42:

- Found in 18 of 283 ( 6.4% ) of genes in pham
- Manual Annotations of this start: 8 of 238
- Called 44.4% of time when present
- Phage (with cluster) where this start called: Alpacados\_39 (CA), Bradshaw\_40 (CA), Gollum\_40 (CA), PhailMary\_39 (CA), Phrankenstein\_40 (CA), Rasputin\_40 (CA), Secretariat\_1 (DJ), Swann\_40 (CA),

#### Start 43:

- Found in 45 of 283 ( 15.9% ) of genes in pham
- Manual Annotations of this start: 23 of 238
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Aflac\_1 (DJ), AlainaMarie\_1 (DJ), Arataki\_1 (DJ), BetterYeti\_1 (DJ), BluerMoon\_1 (DJ), Bromden\_112 (L4), Burley\_1 (DJ), Chaser\_110 (L4), Chikenjars\_1 (DJ), Citrus\_1 (DJ), Demure\_1 (DJ), Douge\_111 (L4), Douzhi\_111 (L4), Duffington\_1 (DJ), Eddiemania\_1 (DJ), EndAve\_1 (DJ), FarmResident\_113 (L4), Gusicorn\_1 (DJ), Hydrus\_1 (DJ), Kenosha\_1 (DJ), Madvan\_1 (DJ), MajinBuu\_1 (DJ), Nadmeg\_1 (DJ), OlgasClover\_1 (DJ), PYPDinur\_112 (L4), Phepper\_1 (DJ), Quby\_111 (L4), Rickmore\_1 (DJ), Runhaar\_1 (DJ), ShaggyRogers\_1 (DJ), Sheng711\_114 (L4), Sicarius2\_69 (AO2), TenaciousP\_1 (DJ), Vardy\_1 (DJ), Wyborn\_68 (AO2), Zeph\_1 (DJ),

#### Start 45:

- Found in 8 of 283 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 7 of 238
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EhyElimayoE\_16 (BM), Frankenweenie\_22 (BM), JustBecause\_14 (BM), Kela\_14 (BM), Kradal\_16 (BM), Nirvana\_22 (BM), Quantum\_15 (BM), Satis\_16 (BM),

#### Start 46:

- Found in 2 of 283 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 2 of 238
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Richie\_97 (AY), VanLee\_69 (singleton),



Start 47:

- Found in 1 of 283 ( 0.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bhageatrice\_3 (AY),

Start 48:

- Found in 1 of 283 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 238
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Yuna\_4 (K6),

Start 49:

- Found in 1 of 283 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 238
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JAWS\_4 (K1),

Start 50:

- Found in 7 of 283 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 5 of 238
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Estes\_101 (M2), GardenSalsa\_101 (M2), Kratio\_2 (K5), MrMagoo\_102 (M2), Neighly\_3 (K3), Rey\_102 (M2), ViviJ\_2 (K5),

Start 51:

- Found in 196 of 283 ( 69.3% ) of genes in pham
- Manual Annotations of this start: 166 of 238
- Called 95.9% of time when present
- Phage (with cluster) where this start called: ActinUp\_4 (K1), Adephagia\_4 (K1), Adonis\_4 (K1), Agent47\_3 (K5), Ageofdapage\_4 (K1), Aleemily\_93 (DZ), AlishaPH\_4 (K1), AlleyCat\_3 (K5), Amgine\_2 (K6), Amohnition\_2 (K6), Anaya\_4 (K1), Angelica\_4 (K1), Apocalypse\_4 (K1), Applecrisp\_3 (K6), Artorias\_1 (DJ), Asayake\_4 (K1), Atiba\_4 (K1), Avazak\_1 (DJ), BEEST\_4 (K1), BGlluviae\_4 (K1), BaghaKamala\_4 (K1), BarrelRoll\_4 (K1), Beezoo\_4 (K1), Bella96\_4 (K1), Belladonna\_4 (K1), Bern\_4 (K1), Blizzard\_4 (K1), BobbyDazzler\_40 (CA), Boiivi\_4 (K1), Bonanza\_40 (CA), Bryler\_3 (K6), CREW\_4 (K1), Cain\_3 (K6), CallaLilly\_4 (K1), Capricorn\_4 (K1), Captrips\_1 (DJ), Capybara\_1 (DJ), CaseJules\_4 (K1), Chavito\_4 (K1), CheetoDust\_4 (K1), Chris\_3 (K1), Clipper\_4 (K1), Collard\_3 (K5), Conley\_1 (DJ), CosmicSans\_40 (CA), CrimD\_4 (K1), Curiosium\_5 (K1), Dadosky\_3 (K5), Dalmuri\_4 (K1), Dancer\_1 (DJ), DarthP\_2 (K6), Dartin\_4 (K1), Deby\_4 (K1), Devera\_4 (K1), Dole\_4 (K1), DrHayes\_4 (K1), Durfee\_4 (K1), Edugator\_3 (K5), Efra2\_4 (K1), Ekdilam\_2 (K6), Ellie\_2 (K6), Emerson\_4 (K1), Fefferhead\_2 (K6), Feyre\_3 (K5), FortCran\_1 (DJ), Ganymede\_4 (K1), Gengar\_3 (K5), Gill\_1 (DJ), Gravy\_1 (DJ), Guanica15\_4 (K1), Guillsminger\_3 (K5), Hammy\_2 (K6), HedwigODU\_4 (K1), Heftyboy\_3 (K5), Hiro\_40 (CA), Homura\_4 (K1), Hortihabitatio\_1 (DJ), Hurricane\_2 (K3), Hyperbowlee\_4 (K1), Illumine\_4 (K1), Inky\_4 (K1), InvictusManeo\_3 (K5), Jarvi\_4 (K1), Jayhawk\_4 (K1), Jeckyll\_4 (K1), Joy99\_4 (K1), JulesRay\_1 (DJ), Kerry\_1 (DJ), Keshu\_2 (K3), KiSi\_3 (K1), KleverKiS\_90 (M1), Krishelle\_40 (CA), LastHope\_4 (K1), LaterM\_4 (K1), LeMond\_3 (K1), Lea83\_2 (K3), Leston\_3 (K5), Lillie\_40 (CA), LindNT\_4 (K1), Llorens\_4 (K1), Lunahalos\_4 (K1), MacKat\_4 (K1), MacnCheese\_2 (K3), Magel\_1 (DJ), MarkPhew\_3 (K1), McMater\_4 (K1), MeaningOfLife\_4 (K1), Megsy\_4 (K1),

Miryou\_3 (K5), Morgana\_101 (DZ), Murucutumbu\_4 (K1), Mynx\_4 (K1), Mysticmoon\_1 (DJ), Nanosmite\_96 (M3), Nibb\_3 (K1), Niklas\_4 (K1), NoPickles\_1 (DJ), November\_2 (K6), ObLaDi\_94 (DZ), Odesza\_1 (DJ), OhMyWard\_1 (DJ), OkiRoe\_3 (K5), Omnicron\_3 (K5), Oscar\_3 (K1), Padfoot\_4 (K1), Padpat\_4 (K1), Paola\_3 (K5), Peanam\_4 (K1), Peel\_4 (K1), Perkunas\_1 (DJ), Petito\_1 (DJ), Pharb\_2 (K3), PhelpsODU\_3 (K6), Pherobrine\_1 (DJ), Phrank\_3 (K6), Piatt\_4 (K1), Pixie\_2 (K3), Pokerus\_4 (K1), Prithvi\_4 (K1), Psycho\_3 (K5), QuincyRose\_4 (K1), RER2\_33 (CA), Ramen\_4 (K1), Rando14\_3 (K5), Rapunzel97\_4 (K1), Reindeer\_91 (M1), Rhodalysa\_40 (CA), Richo\_4 (K1), Roney\_1 (DJ), Rosmarinus\_4 (K1), SamuelLPlaqson\_4 (K1), Scarlett\_3 (K1), Schwartz33\_1 (DJ), Shaobing\_4 (K1), ShedlockHolmes\_2 (K3), ShiaSurprise\_4 (K1), SlimJimmy\_90 (M1), Slimphazie\_4 (K1), SoSeph\_3 (K5), Spock\_4 (K1), Stinson\_4 (K1), Sulley\_4 (K1), TBond007\_2 (K3), TWAMP\_40 (CA), Tachez\_4 (K1), TaiwanKao\_4 (K1), Talon44\_1 (DJ), Tanis\_1 (DJ), Thyatira\_3 (K5), Tierra\_3 (K6), TingHuaYa\_4 (K1), TiniBug\_4 (K1), Tiri\_4 (K1), Topper\_4 (K1), TreyKay\_4 (K1), TribbleTrouble\_2 (K3), Trufflozitus\_1 (DJ), TruffulaTree\_4 (K1), Twitch\_4 (K1), Unicorn\_3 (K6), Urkel\_4 (K1), Validus\_3 (K1), Veliki\_4 (K1), Waterfoul\_3 (K5), YoureAdopted\_4 (K1), Yunkel11\_4 (K1), Zabiza\_4 (K1), Zavala\_4 (K1),

#### Start 53:

- Found in 51 of 283 ( 18.0% ) of genes in pham
- Manual Annotations of this start: 4 of 238
- Called 13.7% of time when present
- Phage (with cluster) where this start called: Baoshan\_103 (L2), BrainDrainer\_113 (L4), Crossroads\_109 (L2), Dmitri\_20 (DB), DyoEdafos\_114 (L4), Kropertea\_105 (L4), MkaliMitinis3\_109 (L2),

#### Start 55:

- Found in 3 of 283 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 238
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Kiko\_21 (DB), Moonflower\_20 (DB),

#### Start 56:

- Found in 1 of 283 ( 0.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Raqqa\_98 (AY),

### Summary by clusters:

There are 19 clusters represented in this pham: singleton, DJ, K5, CZ2, BM, CA, CZ1, DB, L4, K3, K1, M1, K6, M3, M2, AY, L2, DZ, AO2,

#### Info for manual annotations of cluster AO2:

- Start number 43 was manually annotated 2 times for cluster AO2.

#### Info for manual annotations of cluster AY:

- Start number 46 was manually annotated 1 time for cluster AY.

#### Info for manual annotations of cluster BM:

- Start number 45 was manually annotated 7 times for cluster BM.

Info for manual annotations of cluster CA:

- Start number 42 was manually annotated 7 times for cluster CA.
- Start number 51 was manually annotated 8 times for cluster CA.

Info for manual annotations of cluster CZ2:

- Start number 39 was manually annotated 16 times for cluster CZ2.

Info for manual annotations of cluster DB:

- Start number 53 was manually annotated 1 time for cluster DB.
- Start number 55 was manually annotated 1 time for cluster DB.

Info for manual annotations of cluster DJ:

- Start number 37 was manually annotated 2 times for cluster DJ.
- Start number 38 was manually annotated 1 time for cluster DJ.
- Start number 42 was manually annotated 1 time for cluster DJ.
- Start number 43 was manually annotated 18 times for cluster DJ.
- Start number 51 was manually annotated 18 times for cluster DJ.

Info for manual annotations of cluster DZ:

- Start number 41 was manually annotated 1 time for cluster DZ.
- Start number 51 was manually annotated 3 times for cluster DZ.

Info for manual annotations of cluster K1:

- Start number 49 was manually annotated 1 time for cluster K1.
- Start number 51 was manually annotated 93 times for cluster K1.

Info for manual annotations of cluster K3:

- Start number 51 was manually annotated 8 times for cluster K3.

Info for manual annotations of cluster K5:

- Start number 50 was manually annotated 1 time for cluster K5.
- Start number 51 was manually annotated 20 times for cluster K5.

Info for manual annotations of cluster K6:

- Start number 48 was manually annotated 1 time for cluster K6.
- Start number 51 was manually annotated 13 times for cluster K6.

Info for manual annotations of cluster L2:

- Start number 53 was manually annotated 2 times for cluster L2.

Info for manual annotations of cluster L4:

- Start number 43 was manually annotated 3 times for cluster L4.
- Start number 53 was manually annotated 1 time for cluster L4.

Info for manual annotations of cluster M1:

- Start number 51 was manually annotated 2 times for cluster M1.

Info for manual annotations of cluster M2:

- Start number 50 was manually annotated 4 times for cluster M2.

Info for manual annotations of cluster M3:

- Start number 51 was manually annotated 1 time for cluster M3.

**Gene Information:**

Gene: ActinUp\_4 Start: 727, Stop: 954, Start Num: 51

Candidate Starts for ActinUp\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: Adephagia\_4 Start: 727, Stop: 954, Start Num: 51

Candidate Starts for Adephagia\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: Adonis\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for Adonis\_4:

(Start: 51 @703 has 166 MA's), (79, 814), (95, 853),

Gene: Aflac\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for Aflac\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Agent47\_3 Start: 542, Stop: 754, Start Num: 51

Candidate Starts for Agent47\_3:

(Start: 51 @542 has 166 MA's), (67, 626), (87, 659), (96, 683), (98, 692), (99, 695), (103, 701),

Gene: Ageofdapage\_4 Start: 686, Stop: 904, Start Num: 51

Candidate Starts for Ageofdapage\_4:

(Start: 51 @686 has 166 MA's), (67, 782), (87, 812), (100, 848),

Gene: AlainaMarie\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for AlainaMarie\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Aleemily\_93 Start: 55208, Stop: 55504, Start Num: 51

Candidate Starts for Aleemily\_93:

(19, 55112), (Start: 51 @55208 has 166 MA's), (59, 55280),

Gene: AlishaPH\_4 Start: 726, Stop: 959, Start Num: 51

Candidate Starts for AlishaPH\_4:

(Start: 51 @726 has 166 MA's), (66, 813), (87, 867), (95, 885), (100, 903),

Gene: AlleyCat\_3 Start: 542, Stop: 772, Start Num: 51

Candidate Starts for AlleyCat\_3:

(31, 491), (Start: 51 @542 has 166 MA's), (52, 563), (Start: 53 @566 has 4 MA's), (67, 626), (79, 653), (82, 662), (93, 686), (103, 716), (108, 767),

Gene: Alpacados\_39 Start: 30016, Stop: 29783, Start Num: 42

Candidate Starts for Alpacados\_39:

(Start: 42 @30016 has 8 MA's), (Start: 51 @30004 has 166 MA's), (85, 29884),

Gene: Amgine\_2 Start: 192, Stop: 413, Start Num: 51

Candidate Starts for Amgine\_2:

(Start: 51 @192 has 166 MA's), (67, 282), (82, 300), (87, 312),

Gene: Amohnition\_2 Start: 207, Stop: 419, Start Num: 51

Candidate Starts for Amohnition\_2:

(Start: 51 @207 has 166 MA's), (65, 279), (95, 342),

Gene: Anaya\_4 Start: 727, Stop: 945, Start Num: 51

Candidate Starts for Anaya\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (82, 841), (87, 853), (100, 889),

Gene: Angelica\_4 Start: 727, Stop: 945, Start Num: 51

Candidate Starts for Angelica\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (87, 853), (100, 889),

Gene: Apocalypse\_4 Start: 727, Stop: 954, Start Num: 51

Candidate Starts for Apocalypse\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: Applecrisp\_3 Start: 522, Stop: 743, Start Num: 51

Candidate Starts for Applecrisp\_3:

(Start: 51 @522 has 166 MA's), (67, 612), (82, 630), (87, 642),

Gene: Arataki\_1 Start: 212, Stop: 469, Start Num: 43

Candidate Starts for Arataki\_1:

(29, 152), (Start: 37 @197 has 2 MA's), (Start: 43 @212 has 23 MA's), (95, 395), (99, 410),

Gene: Artorias\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Artorias\_1:

(Start: 51 @221 has 166 MA's), (65, 305),

Gene: Asayake\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Asayake\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Atiba\_4 Start: 703, Stop: 939, Start Num: 51

Candidate Starts for Atiba\_4:

(Start: 51 @703 has 166 MA's), (79, 826), (95, 865), (100, 883),

Gene: Attis\_19 Start: 17679, Stop: 18002, Start Num: 39

Candidate Starts for Attis\_19:

(Start: 39 @17679 has 16 MA's), (77, 17859), (85, 17877), (94, 17901),

Gene: Avazak\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Avazak\_1:

(Start: 51 @221 has 166 MA's),

Gene: BEEST\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for BEEST\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: BGlluviae\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for BGlluviae\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: BaghaKamala\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for BaghaKamala\_4:

(Start: 51 @703 has 166 MA's), (67, 799), (100, 868),

Gene: Baoshan\_103 Start: 63247, Stop: 63477, Start Num: 53

Candidate Starts for Baoshan\_103:

(Start: 43 @63214 has 23 MA's), (Start: 53 @63247 has 4 MA's), (60, 63283), (67, 63322), (74, 63349), (80, 63367), (82, 63373), (85, 63379), (95, 63403),

Gene: BarrelRoll\_4 Start: 727, Stop: 954, Start Num: 51

Candidate Starts for BarrelRoll\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: Beezoo\_4 Start: 724, Stop: 942, Start Num: 51

Candidate Starts for Beezoo\_4:

(Start: 51 @724 has 166 MA's), (67, 820), (87, 850), (100, 886),

Gene: Bella96\_4 Start: 691, Stop: 915, Start Num: 51

Candidate Starts for Bella96\_4:

(Start: 51 @691 has 166 MA's), (67, 787), (100, 853),

Gene: Belladonna\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Belladonna\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Bern\_4 Start: 687, Stop: 911, Start Num: 51

Candidate Starts for Bern\_4:

(Start: 51 @687 has 166 MA's), (67, 783), (100, 849),

Gene: BetterYeti\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for BetterYeti\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (88, 379), (95, 394),

Gene: Bhageatrice\_3 Start: 1708, Stop: 2037, Start Num: 47

Candidate Starts for Bhageatrice\_3:

(22, 1633), (47, 1708), (64, 1819), (77, 1885), (82, 1897), (95, 1948),

Gene: Bjaner7\_19 Start: 17679, Stop: 18002, Start Num: 39

Candidate Starts for Bjaner7\_19:

(Start: 39 @17679 has 16 MA's), (77, 17859), (85, 17877), (94, 17901),

Gene: Blizzard\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Blizzard\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: BluerMoon\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for BluerMoon\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: BobbyDazzler\_40 Start: 30078, Stop: 29857, Start Num: 51

Candidate Starts for BobbyDazzler\_40:

(Start: 42 @30090 has 8 MA's), (Start: 51 @30078 has 166 MA's), (85, 29958),

Gene: Boiiii\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Boiiii\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Bonanza\_40 Start: 30006, Stop: 29785, Start Num: 51  
Candidate Starts for Bonanza\_40:  
(Start: 42 @30018 has 8 MA's), (Start: 51 @30006 has 166 MA's), (85, 29886),

Gene: Bradshaw\_40 Start: 30044, Stop: 29811, Start Num: 42  
Candidate Starts for Bradshaw\_40:  
(Start: 42 @30044 has 8 MA's), (Start: 51 @30032 has 166 MA's), (85, 29912),

Gene: BrainDrainer\_113 Start: 63738, Stop: 63971, Start Num: 53  
Candidate Starts for BrainDrainer\_113:  
(Start: 43 @63705 has 23 MA's), (Start: 53 @63738 has 4 MA's), (65, 63798), (70, 63822), (79, 63858),  
(82, 63867), (85, 63873), (95, 63897), (100, 63915),

Gene: Bromden\_112 Start: 64818, Stop: 65084, Start Num: 43  
Candidate Starts for Bromden\_112:  
(Start: 43 @64818 has 23 MA's), (Start: 53 @64851 has 4 MA's), (65, 64911), (70, 64935), (79, 64971),  
(82, 64980), (85, 64986), (95, 65010), (100, 65028),

Gene: Bryler\_3 Start: 658, Stop: 882, Start Num: 51  
Candidate Starts for Bryler\_3:  
(Start: 51 @658 has 166 MA's), (67, 754), (82, 772), (87, 784), (100, 820),

Gene: Burley\_1 Start: 211, Stop: 468, Start Num: 43  
Candidate Starts for Burley\_1:  
(20, 130), (29, 151), (Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (95, 394),

Gene: CREW\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for CREW\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Cafasso\_95 Start: 55818, Stop: 56057, Start Num: 41  
Candidate Starts for Cafasso\_95:  
(Start: 41 @55818 has 1 MA's), (Start: 53 @55854 has 4 MA's), (87, 55965), (100, 56001),

Gene: Cain\_3 Start: 658, Stop: 882, Start Num: 51  
Candidate Starts for Cain\_3:  
(Start: 51 @658 has 166 MA's), (67, 754), (82, 772), (87, 784), (100, 820),

Gene: CallaLilly\_4 Start: 703, Stop: 930, Start Num: 51  
Candidate Starts for CallaLilly\_4:  
(Start: 51 @703 has 166 MA's), (67, 799), (100, 868),

Gene: Capricorn\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Capricorn\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Captrips\_1 Start: 221, Stop: 445, Start Num: 51  
Candidate Starts for Captrips\_1:  
(Start: 51 @221 has 166 MA's),

Gene: Capybara\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Capybara\_1:

(Start: 51 @221 has 166 MA's),

Gene: CaseJules\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for CaseJules\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Chaser\_110 Start: 63185, Stop: 63451, Start Num: 43

Candidate Starts for Chaser\_110:

(Start: 43 @63185 has 23 MA's), (Start: 53 @63218 has 4 MA's), (65, 63278), (70, 63302), (79, 63338), (82, 63347), (85, 63353), (95, 63377), (100, 63395),

Gene: Chavito\_4 Start: 744, Stop: 956, Start Num: 51

Candidate Starts for Chavito\_4:

(Start: 51 @744 has 166 MA's), (98, 891),

Gene: CheetoDust\_4 Start: 703, Stop: 939, Start Num: 51

Candidate Starts for CheetoDust\_4:

(Start: 51 @703 has 166 MA's), (79, 826), (95, 865), (100, 883),

Gene: Chikenjars\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for Chikenjars\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Chris\_3 Start: 662, Stop: 886, Start Num: 51

Candidate Starts for Chris\_3:

(Start: 51 @662 has 166 MA's), (Start: 53 @686 has 4 MA's), (82, 782), (87, 794), (90, 800), (96, 818),

Gene: Citrus\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for Citrus\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Clap\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for Clap\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Clipper\_4 Start: 703, Stop: 939, Start Num: 51

Candidate Starts for Clipper\_4:

(Start: 51 @703 has 166 MA's), (79, 826), (95, 865), (100, 883),

Gene: Collard\_3 Start: 516, Stop: 746, Start Num: 51

Candidate Starts for Collard\_3:

(Start: 51 @516 has 166 MA's), (52, 537), (Start: 53 @540 has 4 MA's), (79, 627), (82, 636), (87, 648), (108, 741),

Gene: Conley\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Conley\_1:

(Start: 51 @221 has 166 MA's), (66, 308), (88, 350),

Gene: CosmicSans\_40 Start: 30032, Stop: 29811, Start Num: 51

Candidate Starts for CosmicSans\_40:



(Start: 42 @30044 has 8 MA's), (Start: 51 @30032 has 166 MA's), (85, 29912),

Gene: CrimD\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for CrimD\_4:

(Start: 51 @703 has 166 MA's), (67, 799), (87, 832), (100, 868),

Gene: Crossroads\_109 Start: 63279, Stop: 63491, Start Num: 53

Candidate Starts for Crossroads\_109:

(Start: 43 @63246 has 23 MA's), (Start: 53 @63279 has 4 MA's), (62, 63321), (63, 63324), (71, 63357), (81, 63384), (82, 63387), (85, 63393), (87, 63399), (88, 63402), (100, 63435),

Gene: Curiosium\_5 Start: 989, Stop: 1216, Start Num: 51

Candidate Starts for Curiosium\_5:

(34, 938), (40, 974), (Start: 51 @989 has 166 MA's), (67, 1085), (100, 1154),

Gene: Cynthia\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for Cynthia\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Dadosky\_3 Start: 542, Stop: 772, Start Num: 51

Candidate Starts for Dadosky\_3:

(31, 491), (Start: 51 @542 has 166 MA's), (52, 563), (Start: 53 @566 has 4 MA's), (67, 626), (79, 653), (82, 662), (93, 686), (103, 716), (108, 767),

Gene: Dalmuri\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Dalmuri\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Dancer\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Dancer\_1:

(Start: 51 @221 has 166 MA's), (65, 305),

Gene: DarthP\_2 Start: 207, Stop: 419, Start Num: 51

Candidate Starts for DarthP\_2:

(Start: 51 @207 has 166 MA's), (65, 279), (95, 342),

Gene: Dartin\_4 Start: 742, Stop: 954, Start Num: 51

Candidate Starts for Dartin\_4:

(Start: 51 @742 has 166 MA's), (95, 877), (97, 883),

Gene: Deby\_4 Start: 727, Stop: 945, Start Num: 51

Candidate Starts for Deby\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (87, 853), (100, 889),

Gene: Demure\_1 Start: 212, Stop: 469, Start Num: 43

Candidate Starts for Demure\_1:

(29, 152), (Start: 37 @197 has 2 MA's), (Start: 43 @212 has 23 MA's), (95, 395), (99, 410),

Gene: Devera\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for Devera\_4:

(Start: 51 @703 has 166 MA's), (67, 799),

Gene: Dmitri\_20 Start: 19193, Stop: 19450, Start Num: 53

Candidate Starts for Dmitri\_20:

(1, 18281), (6, 18767), (27, 19091), (52, 19190), (Start: 53 @19193 has 4 MA's), (Start: 55 @19211 has 1 MA's), (73, 19316), (83, 19346), (89, 19361),

Gene: Dole\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for Dole\_4:

(Start: 51 @703 has 166 MA's), (67, 799),

Gene: Douge\_111 Start: 62989, Stop: 63255, Start Num: 43

Candidate Starts for Douge\_111:

(Start: 43 @62989 has 23 MA's), (Start: 53 @63022 has 4 MA's), (65, 63082), (70, 63106), (79, 63142), (82, 63151), (85, 63157), (95, 63181), (100, 63199),

Gene: Douzhi\_111 Start: 63394, Stop: 63660, Start Num: 43

Candidate Starts for Douzhi\_111:

(Start: 43 @63394 has 23 MA's), (Start: 53 @63427 has 4 MA's), (65, 63487), (70, 63511), (79, 63547), (82, 63556), (85, 63562), (95, 63586), (100, 63604),

Gene: DrHayes\_4 Start: 691, Stop: 903, Start Num: 51

Candidate Starts for DrHayes\_4:

(Start: 51 @691 has 166 MA's), (Start: 53 @715 has 4 MA's), (98, 838),

Gene: Duffington\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for Duffington\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Durfee\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Durfee\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: DyoEdafos\_114 Start: 63914, Stop: 64108, Start Num: 53

Candidate Starts for DyoEdafos\_114:

(Start: 43 @63878 has 23 MA's), (Start: 53 @63914 has 4 MA's), (66, 63977), (67, 63986), (76, 64004), (77, 64010), (95, 64034), (100, 64052),

Gene: Ebert\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for Ebert\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Eddiemania\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for Eddiemania\_1:

(29, 151), (Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Edugator\_3 Start: 542, Stop: 772, Start Num: 51

Candidate Starts for Edugator\_3:

(31, 491), (Start: 51 @542 has 166 MA's), (52, 563), (Start: 53 @566 has 4 MA's), (67, 626), (79, 653), (82, 662), (93, 686), (103, 716), (108, 767),

Gene: Efra2\_4 Start: 696, Stop: 908, Start Num: 51

Candidate Starts for Efra2\_4:

(Start: 51 @696 has 166 MA's), (57, 741), (98, 843),

Gene: EhyElimayoE\_16 Start: 8275, Stop: 8580, Start Num: 45

Candidate Starts for EhyElimayoE\_16:

(2, 7633), (3, 7645), (4, 7672), (36, 8239), (Start: 45 @8275 has 7 MA's), (Start: 53 @8308 has 4 MA's), (59, 8347), (72, 8416), (82, 8431), (107, 8539), (109, 8551),

Gene: Ekdilam\_2 Start: 206, Stop: 415, Start Num: 51

Candidate Starts for Ekdilam\_2:

(Start: 51 @206 has 166 MA's),

Gene: Ellie\_2 Start: 192, Stop: 413, Start Num: 51

Candidate Starts for Ellie\_2:

(Start: 51 @192 has 166 MA's), (67, 282), (82, 300), (87, 312),

Gene: Emerson\_4 Start: 727, Stop: 960, Start Num: 51

Candidate Starts for Emerson\_4:

(Start: 51 @727 has 166 MA's), (66, 814), (87, 868), (95, 886), (100, 904),

Gene: EndAve\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for EndAve\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Estes\_101 Start: 56269, Stop: 56514, Start Num: 50

Candidate Starts for Estes\_101:

(30, 56203), (Start: 50 @56269 has 5 MA's), (82, 56410), (87, 56422), (88, 56425), (95, 56440), (100, 56458),

Gene: FarmResident\_113 Start: 63407, Stop: 63673, Start Num: 43

Candidate Starts for FarmResident\_113:

(Start: 43 @63407 has 23 MA's), (Start: 53 @63440 has 4 MA's), (70, 63524), (79, 63560), (82, 63569), (85, 63575), (95, 63599), (100, 63617),

Gene: Fefferhead\_2 Start: 192, Stop: 413, Start Num: 51

Candidate Starts for Fefferhead\_2:

(Start: 51 @192 has 166 MA's), (67, 282), (82, 300), (87, 312),

Gene: Feyre\_3 Start: 517, Stop: 747, Start Num: 51

Candidate Starts for Feyre\_3:

(Start: 51 @517 has 166 MA's), (52, 538), (Start: 53 @541 has 4 MA's), (79, 628), (82, 637), (87, 649), (98, 682), (108, 742),

Gene: Figliar\_1 Start: 196, Stop: 468, Start Num: 37

Candidate Starts for Figliar\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: FortCran\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for FortCran\_1:

(Start: 51 @221 has 166 MA's), (65, 305),

Gene: Frankenweenie\_22 Start: 10117, Stop: 10422, Start Num: 45

Candidate Starts for Frankenweenie\_22:

(36, 10081), (Start: 45 @10117 has 7 MA's), (Start: 53 @10150 has 4 MA's), (72, 10258), (82, 10273), (107, 10381), (109, 10393),

Gene: Ganymede\_4 Start: 703, Stop: 939, Start Num: 51

Candidate Starts for Ganymede\_4:

(Start: 51 @703 has 166 MA's), (79, 826), (95, 865), (100, 883),

Gene: GardenSalsa\_101 Start: 56348, Stop: 56605, Start Num: 50

Candidate Starts for GardenSalsa\_101:

(30, 56282), (Start: 50 @56348 has 5 MA's), (82, 56501), (87, 56513), (95, 56531), (100, 56549),

Gene: GemG\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for GemG\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Gengar\_3 Start: 542, Stop: 772, Start Num: 51

Candidate Starts for Gengar\_3:

(31, 491), (Start: 51 @542 has 166 MA's), (52, 563), (Start: 53 @566 has 4 MA's), (79, 653), (82, 662), (87, 674), (108, 767),

Gene: Gill\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Gill\_1:

(Start: 51 @221 has 166 MA's),

Gene: Gizermo\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for Gizermo\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Gollum\_40 Start: 30042, Stop: 29809, Start Num: 42

Candidate Starts for Gollum\_40:

(Start: 42 @30042 has 8 MA's), (Start: 51 @30030 has 166 MA's), (85, 29910),

Gene: Gravy\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Gravy\_1:

(Start: 51 @221 has 166 MA's),

Gene: Guanica15\_4 Start: 699, Stop: 923, Start Num: 51

Candidate Starts for Guanica15\_4:

(Start: 51 @699 has 166 MA's), (Start: 53 @723 has 4 MA's), (68, 786), (98, 858), (99, 861),

Gene: Guillsminger\_3 Start: 517, Stop: 747, Start Num: 51

Candidate Starts for Guillsminger\_3:

(Start: 51 @517 has 166 MA's), (52, 538), (Start: 53 @541 has 4 MA's), (79, 628), (82, 637), (87, 649), (98, 682), (108, 742),

Gene: Gusicorn\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for Gusicorn\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (88, 379), (95, 394),

Gene: Haley23\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for Haley23\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Hammy\_2 Start: 207, Stop: 416, Start Num: 51

Candidate Starts for Hammy\_2:

(Start: 51 @207 has 166 MA's), (57, 249),

Gene: HedwigODU\_4 Start: 727, Stop: 954, Start Num: 51

Candidate Starts for HedwigODU\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: Heftyboy\_3 Start: 538, Stop: 768, Start Num: 51

Candidate Starts for Heftyboy\_3:

(31, 487), (Start: 51 @538 has 166 MA's), (52, 559), (Start: 53 @562 has 4 MA's), (79, 649), (82, 658), (87, 670), (98, 703), (108, 763),

Gene: Hiro\_40 Start: 30292, Stop: 30071, Start Num: 51

Candidate Starts for Hiro\_40:

(Start: 42 @30304 has 8 MA's), (Start: 51 @30292 has 166 MA's), (85, 30172),

Gene: Homura\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Homura\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Hortihabitatio\_1 Start: 220, Stop: 444, Start Num: 51

Candidate Starts for Hortihabitatio\_1:

(Start: 51 @220 has 166 MA's),

Gene: Hurricane\_2 Start: 191, Stop: 418, Start Num: 51

Candidate Starts for Hurricane\_2:

(Start: 51 @191 has 166 MA's), (67, 287), (87, 320),

Gene: Hydrus\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for Hydrus\_1:

(29, 151), (Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Hyperbowlee\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Hyperbowlee\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Hyzer\_22 Start: 21136, Stop: 21459, Start Num: 39

Candidate Starts for Hyzer\_22:

(17, 21049), (18, 21052), (Start: 39 @21136 has 16 MA's), (69, 21280), (77, 21316), (85, 21334),

Gene: Illumine\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for Illumine\_4:

(Start: 51 @703 has 166 MA's), (67, 799),

Gene: Inky\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Inky\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: InvictusManeo\_3 Start: 542, Stop: 754, Start Num: 51

Candidate Starts for InvictusManeo\_3:

(Start: 51 @542 has 166 MA's), (67, 626), (87, 659), (96, 683), (98, 692), (99, 695), (103, 701),

Gene: JAWS\_4 Start: 727, Stop: 954, Start Num: 49

Candidate Starts for JAWS\_4:

(Start: 49 @727 has 1 MA's), (67, 823), (100, 892),

Gene: Jarvi\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Jarvi\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Jayhawk\_4 Start: 727, Stop: 954, Start Num: 51  
Candidate Starts for Jayhawk\_4:  
(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: Jeckyll\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Jeckyll\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Jodelie19\_1 Start: 199, Stop: 468, Start Num: 38  
Candidate Starts for Jodelie19\_1:  
(Start: 37 @196 has 2 MA's), (Start: 38 @199 has 1 MA's), (Start: 43 @211 has 23 MA's), (75, 340),  
(95, 394),

Gene: Joy99\_4 Start: 703, Stop: 930, Start Num: 51  
Candidate Starts for Joy99\_4:  
(Start: 51 @703 has 166 MA's), (67, 799), (100, 868),

Gene: JulesRay\_1 Start: 221, Stop: 445, Start Num: 51  
Candidate Starts for JulesRay\_1:  
(Start: 51 @221 has 166 MA's), (65, 305),

Gene: JustBecause\_14 Start: 7426, Stop: 7731, Start Num: 45  
Candidate Starts for JustBecause\_14:  
(36, 7390), (Start: 45 @7426 has 7 MA's), (Start: 53 @7459 has 4 MA's), (66, 7534), (67, 7543), (88,  
7597), (109, 7702),

Gene: Kela\_14 Start: 7417, Stop: 7722, Start Num: 45  
Candidate Starts for Kela\_14:  
(36, 7381), (Start: 45 @7417 has 7 MA's), (Start: 53 @7450 has 4 MA's), (66, 7525), (67, 7534), (72,  
7558), (88, 7588), (109, 7693),

Gene: Kenosha\_1 Start: 212, Stop: 469, Start Num: 43  
Candidate Starts for Kenosha\_1:  
(29, 152), (Start: 37 @197 has 2 MA's), (Start: 43 @212 has 23 MA's), (95, 395),

Gene: Kerry\_1 Start: 221, Stop: 445, Start Num: 51  
Candidate Starts for Kerry\_1:  
(Start: 51 @221 has 166 MA's),

Gene: Keshu\_2 Start: 191, Stop: 412, Start Num: 51  
Candidate Starts for Keshu\_2:  
(Start: 51 @191 has 166 MA's), (82, 299),

Gene: KiSi\_3 Start: 624, Stop: 842, Start Num: 51  
Candidate Starts for KiSi\_3:  
(Start: 51 @624 has 166 MA's), (67, 720), (82, 738), (87, 750), (95, 768), (101, 786), (106, 801),

Gene: Kiko\_21 Start: 18413, Stop: 18652, Start Num: 55  
Candidate Starts for Kiko\_21:

(21, 18278), (Start: 55 @18413 has 1 MA's), (67, 18497), (73, 18518), (83, 18548), (89, 18563), (102, 18596),

Gene: KleverKiS\_90 Start: 54555, Stop: 54785, Start Num: 51

Candidate Starts for KleverKiS\_90:

(Start: 51 @54555 has 166 MA's), (67, 54651), (95, 54711),

Gene: Kradal\_16 Start: 8275, Stop: 8580, Start Num: 45

Candidate Starts for Kradal\_16:

(2, 7633), (3, 7645), (4, 7672), (36, 8239), (Start: 45 @8275 has 7 MA's), (Start: 53 @8308 has 4 MA's), (59, 8347), (72, 8416), (82, 8431), (107, 8539), (109, 8551),

Gene: Kratio\_2 Start: 299, Stop: 511, Start Num: 50

Candidate Starts for Kratio\_2:

(Start: 50 @299 has 5 MA's), (67, 383), (87, 416), (96, 440), (98, 449), (99, 452), (103, 458),

Gene: Krishelle\_40 Start: 30392, Stop: 30171, Start Num: 51

Candidate Starts for Krishelle\_40:

(Start: 42 @30404 has 8 MA's), (Start: 51 @30392 has 166 MA's), (85, 30272),

Gene: Kropertea\_105 Start: 63152, Stop: 63346, Start Num: 53

Candidate Starts for Kropertea\_105:

(Start: 43 @63116 has 23 MA's), (Start: 53 @63152 has 4 MA's), (66, 63215), (67, 63224), (76, 63242), (77, 63248), (95, 63272), (100, 63290),

Gene: LastHope\_4 Start: 698, Stop: 925, Start Num: 51

Candidate Starts for LastHope\_4:

(Start: 51 @698 has 166 MA's), (Start: 53 @722 has 4 MA's), (67, 794), (100, 863),

Gene: LaterM\_4 Start: 703, Stop: 936, Start Num: 51

Candidate Starts for LaterM\_4:

(Start: 51 @703 has 166 MA's), (87, 844), (95, 862),

Gene: LeMond\_3 Start: 624, Stop: 842, Start Num: 51

Candidate Starts for LeMond\_3:

(11, 324), (Start: 51 @624 has 166 MA's), (67, 720), (82, 738), (87, 750), (95, 768), (101, 786), (106, 801),

Gene: Lea83\_2 Start: 191, Stop: 418, Start Num: 51

Candidate Starts for Lea83\_2:

(Start: 51 @191 has 166 MA's), (67, 287), (82, 308), (87, 320),

Gene: Leston\_3 Start: 542, Stop: 772, Start Num: 51

Candidate Starts for Leston\_3:

(Start: 51 @542 has 166 MA's), (52, 563), (Start: 53 @566 has 4 MA's), (79, 653), (82, 662), (87, 674),

Gene: Lillie\_40 Start: 30032, Stop: 29811, Start Num: 51

Candidate Starts for Lillie\_40:

(Start: 42 @30044 has 8 MA's), (Start: 51 @30032 has 166 MA's), (85, 29912),

Gene: LindNT\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for LindNT\_4:

(Start: 51 @703 has 166 MA's), (67, 799), (87, 832), (100, 868),

Gene: Llorens\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Llorens\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: LordFarquaad\_19 Start: 17679, Stop: 18002, Start Num: 39

Candidate Starts for LordFarquaad\_19:

(Start: 39 @17679 has 16 MA's), (77, 17859), (85, 17877), (94, 17901),

Gene: Lunahalos\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Lunahalos\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: MacKat\_4 Start: 703, Stop: 939, Start Num: 51

Candidate Starts for MacKat\_4:

(Start: 51 @703 has 166 MA's), (79, 826), (95, 865), (100, 883),

Gene: MacnCheese\_2 Start: 194, Stop: 415, Start Num: 51

Candidate Starts for MacnCheese\_2:

(Start: 51 @194 has 166 MA's), (67, 284), (82, 302), (87, 314), (103, 356),

Gene: Madvan\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for Madvan\_1:

(20, 130), (29, 151), (Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Magel\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Magel\_1:

(Start: 51 @221 has 166 MA's),

Gene: MajinBuu\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for MajinBuu\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: MarkPhew\_3 Start: 565, Stop: 789, Start Num: 51

Candidate Starts for MarkPhew\_3:

(16, 475), (Start: 51 @565 has 166 MA's), (Start: 53 @589 has 4 MA's), (57, 610), (67, 649), (70, 661), (82, 685), (87, 697),

Gene: McMater\_4 Start: 742, Stop: 954, Start Num: 51

Candidate Starts for McMater\_4:

(Start: 51 @742 has 166 MA's), (95, 877), (97, 883),

Gene: MeaningOfLife\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for MeaningOfLife\_4:

(Start: 51 @703 has 166 MA's), (67, 799), (100, 868),

Gene: Megsy\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for Megsy\_4:

(Start: 51 @703 has 166 MA's), (67, 799), (87, 832), (100, 868),

Gene: Miryou\_3 Start: 517, Stop: 747, Start Num: 51

Candidate Starts for Miryou\_3:



(Start: 51 @517 has 166 MA's), (52, 538), (Start: 53 @541 has 4 MA's), (79, 628), (82, 637), (87, 649), (98, 682), (108, 742),

Gene: MkaliMitinis3\_109 Start: 63259, Stop: 63471, Start Num: 53

Candidate Starts for MkaliMitinis3\_109:

(Start: 43 @63226 has 23 MA's), (Start: 53 @63259 has 4 MA's), (62, 63301), (63, 63304), (71, 63337), (81, 63364), (82, 63367), (85, 63373), (87, 63379), (88, 63382), (100, 63415),

Gene: Mocha12\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for Mocha12\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Moonflower\_20 Start: 18958, Stop: 19197, Start Num: 55

Candidate Starts for Moonflower\_20:

(52, 18937), (Start: 53 @18940 has 4 MA's), (Start: 55 @18958 has 1 MA's), (73, 19063), (83, 19093), (89, 19108),

Gene: Morgana\_101 Start: 57610, Stop: 57906, Start Num: 51

Candidate Starts for Morgana\_101:

(7, 57211), (19, 57514), (Start: 51 @57610 has 166 MA's), (61, 57685),

Gene: MrMagoo\_102 Start: 56348, Stop: 56605, Start Num: 50

Candidate Starts for MrMagoo\_102:

(30, 56282), (Start: 50 @56348 has 5 MA's), (82, 56501), (87, 56513), (95, 56531), (100, 56549),

Gene: Murucutumbu\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for Murucutumbu\_4:

(12, 442), (Start: 51 @703 has 166 MA's), (67, 799), (100, 868),

Gene: Mynx\_4 Start: 703, Stop: 939, Start Num: 51

Candidate Starts for Mynx\_4:

(Start: 51 @703 has 166 MA's), (79, 826), (95, 865), (100, 883),

Gene: Mysticmoon\_1 Start: 220, Stop: 441, Start Num: 51

Candidate Starts for Mysticmoon\_1:

(17, 118), (35, 178), (Start: 51 @220 has 166 MA's),

Gene: Nadmeg\_1 Start: 212, Stop: 469, Start Num: 43

Candidate Starts for Nadmeg\_1:

(20, 131), (29, 152), (Start: 37 @197 has 2 MA's), (Start: 43 @212 has 23 MA's), (95, 395),

Gene: Nanosmite\_96 Start: 55870, Stop: 56115, Start Num: 51

Candidate Starts for Nanosmite\_96:

(23, 55789), (Start: 51 @55870 has 166 MA's), (82, 56011), (95, 56041), (100, 56059),

Gene: Neighly\_3 Start: 300, Stop: 512, Start Num: 50

Candidate Starts for Neighly\_3:

(Start: 50 @300 has 5 MA's), (67, 384), (87, 417), (96, 441), (98, 450), (99, 453), (103, 459),

Gene: Nibb\_3 Start: 602, Stop: 826, Start Num: 51

Candidate Starts for Nibb\_3:

(16, 491), (Start: 51 @602 has 166 MA's), (57, 647), (67, 686), (70, 698), (82, 722), (87, 734), (92, 743),

Gene: Niklas\_4 Start: 742, Stop: 954, Start Num: 51

Candidate Starts for Niklas\_4:

(Start: 51 @742 has 166 MA's), (95, 877), (97, 883),

Gene: Nirvana\_22 Start: 10337, Stop: 10642, Start Num: 45

Candidate Starts for Nirvana\_22:

(36, 10301), (Start: 45 @10337 has 7 MA's), (Start: 53 @10370 has 4 MA's), (59, 10409), (72, 10478), (82, 10493), (107, 10601), (109, 10613),

Gene: Nithya\_1 Start: 196, Stop: 468, Start Num: 37

Candidate Starts for Nithya\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: NoPickles\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for NoPickles\_1:

(Start: 51 @221 has 166 MA's),

Gene: November\_2 Start: 206, Stop: 427, Start Num: 51

Candidate Starts for November\_2:

(Start: 51 @206 has 166 MA's), (67, 296), (87, 326),

Gene: ObLaDi\_94 Start: 55454, Stop: 55750, Start Num: 51

Candidate Starts for ObLaDi\_94:

(19, 55358), (Start: 51 @55454 has 166 MA's), (59, 55526),

Gene: Odesza\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Odesza\_1:

(Start: 51 @221 has 166 MA's),

Gene: OhMyWard\_1 Start: 219, Stop: 473, Start Num: 51

Candidate Starts for OhMyWard\_1:

(35, 177), (Start: 51 @219 has 166 MA's), (75, 339), (95, 393), (99, 408),

Gene: OkiRoe\_3 Start: 517, Stop: 747, Start Num: 51

Candidate Starts for OkiRoe\_3:

(Start: 51 @517 has 166 MA's), (52, 538), (Start: 53 @541 has 4 MA's), (79, 628), (82, 637), (87, 649), (98, 682), (108, 742),

Gene: OlgasClover\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for OlgasClover\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Omnicron\_3 Start: 483, Stop: 713, Start Num: 51

Candidate Starts for Omnicron\_3:

(31, 432), (Start: 51 @483 has 166 MA's), (79, 594), (82, 603), (84, 606), (87, 615), (98, 648), (103, 657), (106, 672),

Gene: Oscar\_3 Start: 624, Stop: 842, Start Num: 51

Candidate Starts for Oscar\_3:

(8, 234), (11, 324), (Start: 51 @624 has 166 MA's), (67, 720), (82, 738), (87, 750), (95, 768), (101, 786), (106, 801),

Gene: PYPDinur\_112 Start: 63957, Stop: 64223, Start Num: 43  
Candidate Starts for PYPDinur\_112:  
(Start: 43 @63957 has 23 MA's), (Start: 53 @63990 has 4 MA's), (65, 64050), (70, 64074), (79, 64110),  
(82, 64119), (85, 64125), (95, 64149), (100, 64167),

Gene: Padfoot\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Padfoot\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Padpat\_4 Start: 727, Stop: 960, Start Num: 51  
Candidate Starts for Padpat\_4:  
(Start: 51 @727 has 166 MA's), (66, 814), (87, 868), (95, 886), (100, 904),

Gene: Paola\_3 Start: 517, Stop: 747, Start Num: 51  
Candidate Starts for Paola\_3:  
(Start: 51 @517 has 166 MA's), (52, 538), (Start: 53 @541 has 4 MA's), (79, 628), (82, 637), (87, 649),  
(98, 682), (108, 742),

Gene: Peanam\_4 Start: 742, Stop: 954, Start Num: 51  
Candidate Starts for Peanam\_4:  
(Start: 51 @742 has 166 MA's), (95, 877), (97, 883),

Gene: Peel\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Peel\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Perkunas\_1 Start: 221, Stop: 451, Start Num: 51  
Candidate Starts for Perkunas\_1:  
(25, 140), (Start: 51 @221 has 166 MA's),

Gene: Petito\_1 Start: 221, Stop: 445, Start Num: 51  
Candidate Starts for Petito\_1:  
(25, 140), (Start: 51 @221 has 166 MA's),

Gene: PhailMary\_39 Start: 30366, Stop: 30133, Start Num: 42  
Candidate Starts for PhailMary\_39:  
(Start: 42 @30366 has 8 MA's), (Start: 51 @30354 has 166 MA's), (85, 30234),

Gene: Pharb\_2 Start: 188, Stop: 406, Start Num: 51  
Candidate Starts for Pharb\_2:  
(24, 107), (Start: 51 @188 has 166 MA's), (54, 224), (67, 278), (82, 296), (87, 308),

Gene: PhelpsODU\_3 Start: 659, Stop: 880, Start Num: 51  
Candidate Starts for PhelpsODU\_3:  
(Start: 51 @659 has 166 MA's), (82, 776), (85, 782), (87, 788), (95, 806),

Gene: Phepper\_1 Start: 211, Stop: 468, Start Num: 43  
Candidate Starts for Phepper\_1:  
(Start: 43 @211 has 23 MA's), (95, 394),

Gene: Pherobrine\_1 Start: 220, Stop: 441, Start Num: 51  
Candidate Starts for Pherobrine\_1:  
(Start: 51 @220 has 166 MA's), (108, 433),

Gene: Phrank\_3 Start: 664, Stop: 888, Start Num: 51  
Candidate Starts for Phrank\_3:  
(Start: 51 @664 has 166 MA's), (67, 760), (82, 778), (87, 790), (100, 826),

Gene: Phrankenstein\_40 Start: 29990, Stop: 29757, Start Num: 42  
Candidate Starts for Phrankenstein\_40:  
(Start: 42 @29990 has 8 MA's), (Start: 51 @29978 has 166 MA's), (85, 29858),

Gene: Piatt\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Piatt\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Pixie\_2 Start: 191, Stop: 415, Start Num: 51  
Candidate Starts for Pixie\_2:  
(Start: 51 @191 has 166 MA's), (67, 287), (87, 320), (100, 356),

Gene: Pokerus\_4 Start: 703, Stop: 930, Start Num: 51  
Candidate Starts for Pokerus\_4:  
(Start: 51 @703 has 166 MA's), (67, 799), (87, 832), (100, 868),

Gene: Prithvi\_4 Start: 703, Stop: 930, Start Num: 51  
Candidate Starts for Prithvi\_4:  
(Start: 51 @703 has 166 MA's), (67, 799), (87, 832), (100, 868),

Gene: Psycho\_3 Start: 542, Stop: 772, Start Num: 51  
Candidate Starts for Psycho\_3:  
(31, 491), (Start: 51 @542 has 166 MA's), (52, 563), (Start: 53 @566 has 4 MA's), (67, 626), (79, 653),  
(82, 662), (93, 686), (103, 716), (108, 767),

Gene: Quantum\_15 Start: 8275, Stop: 8580, Start Num: 45  
Candidate Starts for Quantum\_15:  
(2, 7633), (3, 7645), (4, 7672), (36, 8239), (Start: 45 @8275 has 7 MA's), (Start: 53 @8308 has 4  
MA's), (59, 8347), (72, 8416), (82, 8431), (107, 8539), (109, 8551),

Gene: Quby\_111 Start: 63147, Stop: 63413, Start Num: 43  
Candidate Starts for Quby\_111:  
(Start: 43 @63147 has 23 MA's), (Start: 53 @63180 has 4 MA's), (65, 63240), (70, 63264), (79, 63300),  
(82, 63309), (85, 63315), (95, 63339), (100, 63357),

Gene: QuincyRose\_4 Start: 703, Stop: 939, Start Num: 51  
Candidate Starts for QuincyRose\_4:  
(Start: 51 @703 has 166 MA's), (79, 826), (95, 865), (100, 883),

Gene: RER2\_33 Start: 26904, Stop: 26683, Start Num: 51  
Candidate Starts for RER2\_33:  
(Start: 42 @26916 has 8 MA's), (Start: 51 @26904 has 166 MA's), (85, 26784),

Gene: Ramen\_4 Start: 727, Stop: 954, Start Num: 51  
Candidate Starts for Ramen\_4:  
(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: Rando14\_3 Start: 618, Stop: 842, Start Num: 51

Candidate Starts for Rando14\_3:  
(Start: 51 @618 has 166 MA's), (67, 714), (87, 744), (95, 762),

Gene: Rapunzel97\_4 Start: 727, Stop: 954, Start Num: 51  
Candidate Starts for Rapunzel97\_4:  
(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: Raqqa\_98 Start: 52973, Stop: 53242, Start Num: 56  
Candidate Starts for Raqqa\_98:  
(9, 52550), (13, 52682), (14, 52697), (33, 52865), (56, 52973), (77, 53096), (85, 53114), (94, 53141),  
(95, 53153), (105, 53195),

Gene: Rasputin\_40 Start: 30014, Stop: 29781, Start Num: 42  
Candidate Starts for Rasputin\_40:  
(Start: 42 @30014 has 8 MA's), (Start: 51 @30002 has 166 MA's), (85, 29882),

Gene: Reindeer\_91 Start: 55528, Stop: 55773, Start Num: 51  
Candidate Starts for Reindeer\_91:  
(28, 55456), (Start: 51 @55528 has 166 MA's), (82, 55669), (99, 55714),

Gene: Rey\_102 Start: 56267, Stop: 56512, Start Num: 50  
Candidate Starts for Rey\_102:  
(Start: 50 @56267 has 5 MA's), (82, 56408), (95, 56438),

Gene: Rhodalysa\_40 Start: 30032, Stop: 29811, Start Num: 51  
Candidate Starts for Rhodalysa\_40:  
(Start: 42 @30044 has 8 MA's), (Start: 51 @30032 has 166 MA's), (85, 29912),

Gene: Richie\_97 Start: 52968, Stop: 53210, Start Num: 46  
Candidate Starts for Richie\_97:  
(Start: 46 @52968 has 2 MA's), (68, 53073), (95, 53136),

Gene: Richo\_4 Start: 742, Stop: 954, Start Num: 51  
Candidate Starts for Richo\_4:  
(Start: 51 @742 has 166 MA's), (95, 877), (97, 883),

Gene: Rickmore\_1 Start: 211, Stop: 435, Start Num: 43  
Candidate Starts for Rickmore\_1:  
(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (79, 331), (95, 364),

Gene: Roney\_1 Start: 221, Stop: 445, Start Num: 51  
Candidate Starts for Roney\_1:  
(Start: 51 @221 has 166 MA's),

Gene: Rosmarinus\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Rosmarinus\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Runhaar\_1 Start: 211, Stop: 468, Start Num: 43  
Candidate Starts for Runhaar\_1:  
(20, 130), (29, 151), (Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: SamuelLPlaqson\_4 Start: 691, Stop: 903, Start Num: 51

Candidate Starts for SamuelLPlaqson\_4:

(Start: 51 @691 has 166 MA's), (Start: 53 @715 has 4 MA's), (98, 838),

Gene: Satis\_16 Start: 8271, Stop: 8576, Start Num: 45

Candidate Starts for Satis\_16:

(2, 7629), (3, 7641), (4, 7668), (36, 8235), (Start: 45 @8271 has 7 MA's), (Start: 53 @8304 has 4 MA's), (59, 8343), (72, 8412), (82, 8427), (107, 8535), (109, 8547),

Gene: Savage\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for Savage\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Scarlett\_3 Start: 624, Stop: 842, Start Num: 51

Candidate Starts for Scarlett\_3:

(11, 324), (Start: 51 @624 has 166 MA's), (67, 720), (82, 738), (87, 750), (95, 768), (101, 786), (106, 801),

Gene: Schwartz33\_1 Start: 220, Stop: 471, Start Num: 51

Candidate Starts for Schwartz33\_1:

(32, 157), (Start: 42 @208 has 8 MA's), (44, 211), (Start: 51 @220 has 166 MA's), (95, 394), (99, 409),

Gene: Secretariat\_1 Start: 244, Stop: 525, Start Num: 42

Candidate Starts for Secretariat\_1:

(Start: 42 @244 has 8 MA's), (Start: 51 @256 has 166 MA's), (67, 352), (80, 394), (99, 445),

Gene: ShaggyRogers\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for ShaggyRogers\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (88, 379), (95, 394),

Gene: Shaobing\_4 Start: 742, Stop: 954, Start Num: 51

Candidate Starts for Shaobing\_4:

(Start: 51 @742 has 166 MA's), (95, 877), (97, 883),

Gene: ShedlockHolmes\_2 Start: 191, Stop: 418, Start Num: 51

Candidate Starts for ShedlockHolmes\_2:

(Start: 51 @191 has 166 MA's), (67, 287), (82, 308), (87, 320),

Gene: Sheng711\_114 Start: 63567, Stop: 63833, Start Num: 43

Candidate Starts for Sheng711\_114:

(Start: 43 @63567 has 23 MA's), (Start: 53 @63600 has 4 MA's), (70, 63684), (76, 63711), (79, 63720), (85, 63735), (95, 63759), (100, 63777),

Gene: ShiaSurprise\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for ShiaSurprise\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Sicarius2\_69 Start: 42234, Stop: 42470, Start Num: 43

Candidate Starts for Sicarius2\_69:

(26, 42162), (Start: 43 @42234 has 23 MA's), (95, 42396), (104, 42414),

Gene: SlimJimmy\_90 Start: 55164, Stop: 55394, Start Num: 51

Candidate Starts for SlimJimmy\_90:

(Start: 51 @55164 has 166 MA's), (67, 55260), (95, 55320),

Gene: Slimphazie\_4 Start: 727, Stop: 954, Start Num: 51

Candidate Starts for Slimphazie\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: SoSeph\_3 Start: 538, Stop: 768, Start Num: 51

Candidate Starts for SoSeph\_3:

(31, 487), (Start: 51 @538 has 166 MA's), (52, 559), (Start: 53 @562 has 4 MA's), (79, 649), (82, 658), (87, 670), (98, 703), (108, 763),

Gene: SoilAssassin\_19 Start: 17679, Stop: 18002, Start Num: 39

Candidate Starts for SoilAssassin\_19:

(Start: 39 @17679 has 16 MA's), (77, 17859), (85, 17877), (94, 17901),

Gene: Spock\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Spock\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Sproutie\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for Sproutie\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Stinson\_4 Start: 703, Stop: 936, Start Num: 51

Candidate Starts for Stinson\_4:

(Start: 51 @703 has 166 MA's), (87, 844), (95, 862),

Gene: Sulley\_4 Start: 727, Stop: 945, Start Num: 51

Candidate Starts for Sulley\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (87, 853), (100, 889),

Gene: Swann\_40 Start: 30042, Stop: 29809, Start Num: 42

Candidate Starts for Swann\_40:

(Start: 42 @30042 has 8 MA's), (Start: 51 @30030 has 166 MA's), (85, 29910),

Gene: TBond007\_2 Start: 191, Stop: 415, Start Num: 51

Candidate Starts for TBond007\_2:

(Start: 51 @191 has 166 MA's), (67, 287), (87, 320), (100, 356),

Gene: TWAMP\_40 Start: 30032, Stop: 29811, Start Num: 51

Candidate Starts for TWAMP\_40:

(Start: 42 @30044 has 8 MA's), (Start: 51 @30032 has 166 MA's), (85, 29912),

Gene: Tachez\_4 Start: 703, Stop: 939, Start Num: 51

Candidate Starts for Tachez\_4:

(Start: 51 @703 has 166 MA's), (79, 826), (95, 865), (100, 883),

Gene: TaiwanKao\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for TaiwanKao\_4:

(Start: 51 @703 has 166 MA's), (67, 799), (87, 832), (100, 868),

Gene: Talon44\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Talon44\_1:

(25, 140), (Start: 51 @221 has 166 MA's),

Gene: Tanis\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Tanis\_1:

(Start: 51 @221 has 166 MA's),

Gene: TenaciousP\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for TenaciousP\_1:

(Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Thyatira\_3 Start: 517, Stop: 747, Start Num: 51

Candidate Starts for Thyatira\_3:

(Start: 51 @517 has 166 MA's), (52, 538), (Start: 53 @541 has 4 MA's), (79, 628), (82, 637), (87, 649), (98, 682), (108, 742),

Gene: Tierra\_3 Start: 665, Stop: 889, Start Num: 51

Candidate Starts for Tierra\_3:

(Start: 51 @665 has 166 MA's), (67, 761), (82, 779), (87, 791), (100, 827),

Gene: TingHuaYa\_4 Start: 698, Stop: 925, Start Num: 51

Candidate Starts for TingHuaYa\_4:

(Start: 51 @698 has 166 MA's), (Start: 53 @722 has 4 MA's), (67, 794),

Gene: TiniBug\_4 Start: 691, Stop: 903, Start Num: 51

Candidate Starts for TiniBug\_4:

(Start: 51 @691 has 166 MA's), (Start: 53 @715 has 4 MA's), (98, 838),

Gene: Tiri\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for Tiri\_4:

(Start: 51 @703 has 166 MA's), (79, 814), (95, 853),

Gene: Topper\_4 Start: 727, Stop: 963, Start Num: 51

Candidate Starts for Topper\_4:

(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: TreyKay\_4 Start: 703, Stop: 930, Start Num: 51

Candidate Starts for TreyKay\_4:

(Start: 51 @703 has 166 MA's), (67, 799), (87, 832), (100, 868),

Gene: TribbleTrouble\_2 Start: 194, Stop: 412, Start Num: 51

Candidate Starts for TribbleTrouble\_2:

(Start: 51 @194 has 166 MA's), (67, 290), (82, 308), (87, 320), (100, 356),

Gene: Trufflozitus\_1 Start: 221, Stop: 445, Start Num: 51

Candidate Starts for Trufflozitus\_1:

(Start: 51 @221 has 166 MA's),

Gene: TruffulaTree\_4 Start: 727, Stop: 954, Start Num: 51

Candidate Starts for TruffulaTree\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: TuertoX\_19 Start: 17686, Stop: 18009, Start Num: 39

Candidate Starts for TuertoX\_19:

(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),



Gene: Twitch\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Twitch\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: Unicorn\_3 Start: 659, Stop: 880, Start Num: 51  
Candidate Starts for Unicorn\_3:  
(Start: 51 @659 has 166 MA's), (82, 776), (85, 782), (87, 788), (95, 806),

Gene: Urkel\_4 Start: 691, Stop: 903, Start Num: 51  
Candidate Starts for Urkel\_4:  
(Start: 51 @691 has 166 MA's), (Start: 53 @715 has 4 MA's), (98, 838),

Gene: Validus\_3 Start: 477, Stop: 689, Start Num: 51  
Candidate Starts for Validus\_3:  
(15, 333), (Start: 51 @477 has 166 MA's), (86, 588),

Gene: VanLee\_69 Start: 43001, Stop: 43234, Start Num: 46  
Candidate Starts for VanLee\_69:  
(5, 42515), (10, 42659), (Start: 46 @43001 has 2 MA's), (87, 43142), (100, 43178),

Gene: Vardy\_1 Start: 211, Stop: 468, Start Num: 43  
Candidate Starts for Vardy\_1:  
(29, 151), (Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),

Gene: Veliki\_4 Start: 727, Stop: 963, Start Num: 51  
Candidate Starts for Veliki\_4:  
(Start: 51 @727 has 166 MA's), (79, 850), (95, 889), (100, 907),

Gene: ViviJ\_2 Start: 300, Stop: 512, Start Num: 50  
Candidate Starts for ViviJ\_2:  
(Start: 50 @300 has 5 MA's), (67, 384), (87, 417), (96, 441), (98, 450), (99, 453), (103, 459),

Gene: Waterfoul\_3 Start: 538, Stop: 768, Start Num: 51  
Candidate Starts for Waterfoul\_3:  
(31, 487), (Start: 51 @538 has 166 MA's), (52, 559), (Start: 53 @562 has 4 MA's), (79, 649), (82, 658),  
(87, 670), (98, 703), (108, 763),

Gene: Whiteclaw\_19 Start: 17686, Stop: 18009, Start Num: 39  
Candidate Starts for Whiteclaw\_19:  
(Start: 39 @17686 has 16 MA's), (77, 17866), (85, 17884), (94, 17908),

Gene: Wyborn\_68 Start: 42933, Stop: 43205, Start Num: 43  
Candidate Starts for Wyborn\_68:  
(26, 42861), (Start: 43 @42933 has 23 MA's), (58, 43008), (66, 43053), (67, 43062), (78, 43080), (91,  
43110), (104, 43146),

Gene: Yeet412\_19 Start: 17679, Stop: 18002, Start Num: 39  
Candidate Starts for Yeet412\_19:  
(Start: 39 @17679 has 16 MA's), (77, 17859), (85, 17877), (94, 17901),

Gene: YoureAdopted\_4 Start: 703, Stop: 930, Start Num: 51  
Candidate Starts for YoureAdopted\_4:

(Start: 51 @703 has 166 MA's), (67, 799), (100, 868),

Gene: Yuna\_4 Start: 807, Stop: 1034, Start Num: 48

Candidate Starts for Yuna\_4:

(Start: 48 @807 has 1 MA's), (67, 906), (82, 930), (87, 942),

Gene: Yunkel11\_4 Start: 699, Stop: 923, Start Num: 51

Candidate Starts for Yunkel11\_4:

(Start: 51 @699 has 166 MA's), (Start: 53 @723 has 4 MA's), (68, 786), (98, 858), (99, 861),

Gene: Zabiza\_4 Start: 727, Stop: 954, Start Num: 51

Candidate Starts for Zabiza\_4:

(Start: 51 @727 has 166 MA's), (67, 823), (100, 892),

Gene: Zavala\_4 Start: 703, Stop: 939, Start Num: 51

Candidate Starts for Zavala\_4:

(Start: 51 @703 has 166 MA's), (79, 826), (95, 865), (100, 883),

Gene: Zeph\_1 Start: 211, Stop: 468, Start Num: 43

Candidate Starts for Zeph\_1:

(29, 151), (Start: 37 @196 has 2 MA's), (Start: 43 @211 has 23 MA's), (75, 340), (95, 394),