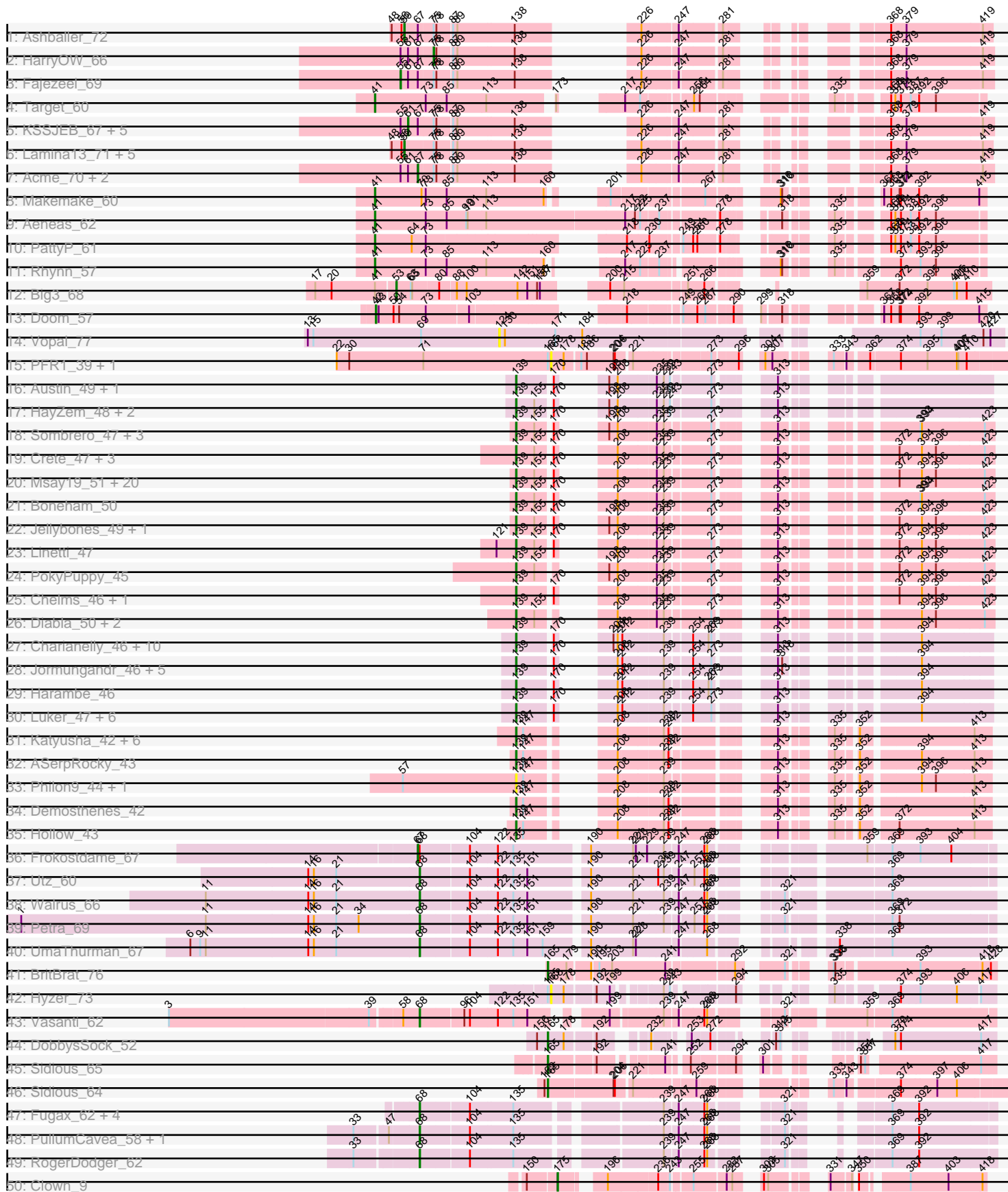
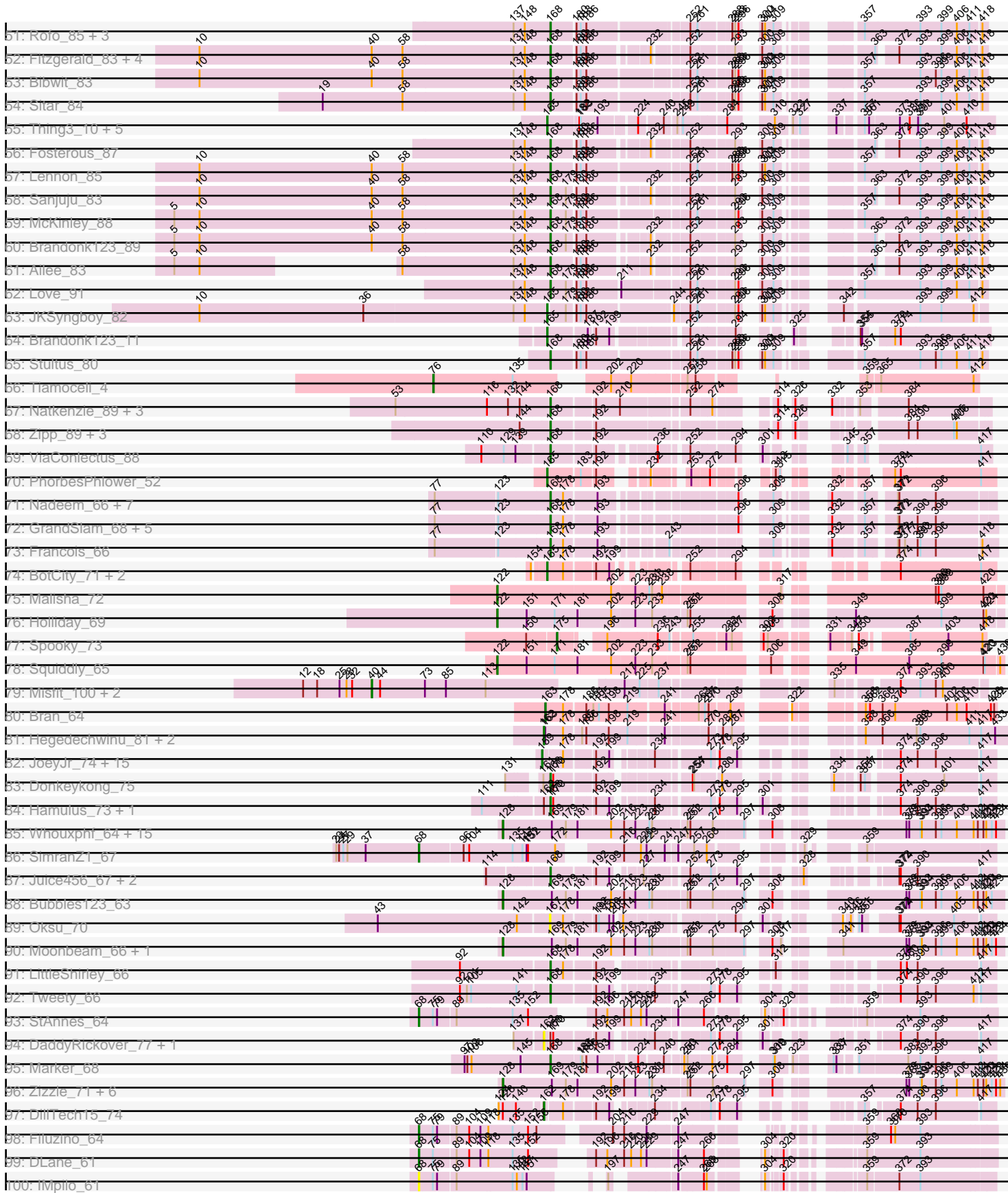


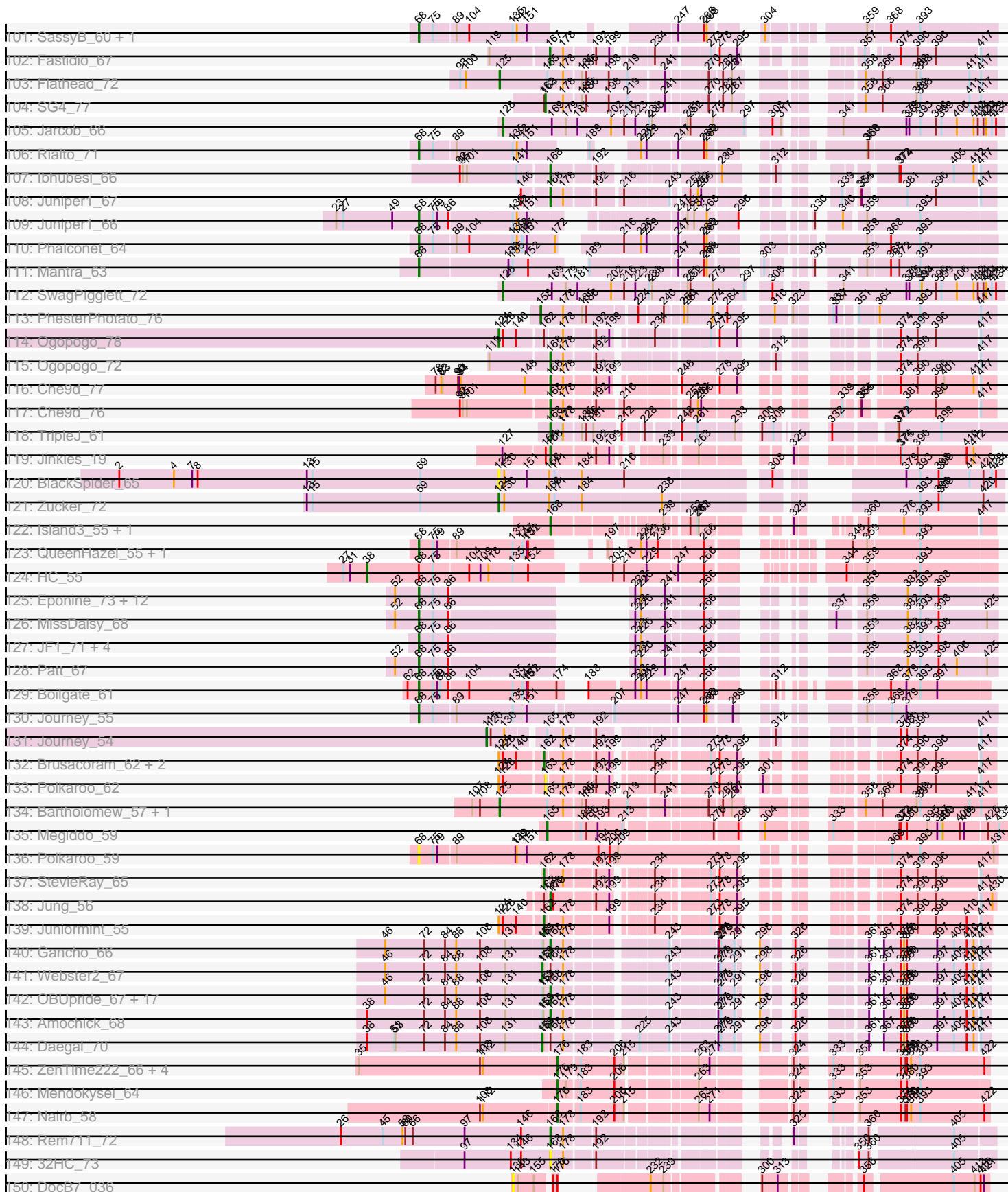
Pham 202598



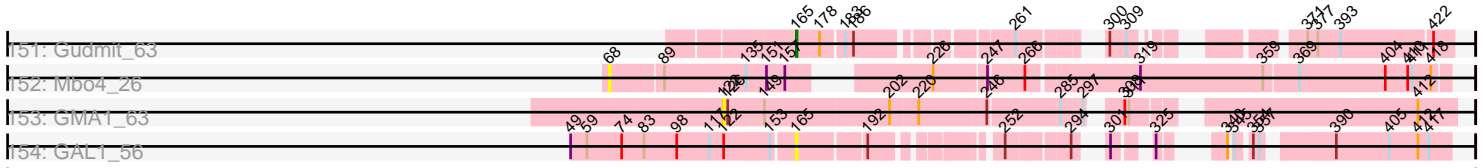
Pham 202598



Pham 202598



Pham 202598



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 202598 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202598 has 353 members, 37 are drafts.

Phages represented in each track:

- Track 1 : Ashballer\_72
- Track 2 : HarryOW\_66
- Track 3 : Fajezeel\_69
- Track 4 : Target\_60
- Track 5 : KSSJEB\_67, Wheeler\_71, Marchy\_62, Watermelon\_68, Trouble\_68, GrecoEtereo\_68
- Track 6 : Lamina13\_71, Pita2\_70, PSullivan\_67, Swole\_70, JuliaChild\_70, Tote\_65
- Track 7 : Acme\_70, Payneful\_66, Greg\_69
- Track 8 : Makemake\_60
- Track 9 : Aeneas\_62
- Track 10 : PattyP\_61
- Track 11 : Rhynn\_57
- Track 12 : Big3\_68
- Track 13 : Doom\_57
- Track 14 : Vopal\_77
- Track 15 : PFR1\_39, PFR2\_41
- Track 16 : Austin\_49, GMA7\_38
- Track 17 : HayZem\_48, GTE7\_37, Amore2\_49
- Track 18 : Sombrero\_47, CinnamonToast\_52, FelixAlejandro\_51, Butterball\_50
- Track 19 : Crete\_47, PierreThree\_46, BigShaq\_46, BenoitCattle\_47
- Track 20 : Msay19\_51, Hotorobo\_46, Flakey\_46, Squibbles\_46, Ekhein\_47, Gorko\_46, Exiguo\_46, CathyBurgh\_46, Poland\_51, Adgers\_48, John316\_50, GourdThymes\_46, Worcestershire\_47, Lizzo\_46, Beaver\_50, RemRem\_47, Sam12\_46, Barbochs\_47, BirksAndSocks\_51, Breezic\_46, Monty\_45
- Track 21 : Boneham\_50
- Track 22 : Jellybones\_49, Eggsie\_46
- Track 23 : Linetti\_47
- Track 24 : PokyPuppy\_45
- Track 25 : Chelms\_46, Dakiti\_47
- Track 26 : Diabla\_50, SteveFrench\_46, RoyalG\_47
- Track 27 : Charianelly\_46, Teal\_46, Jams\_46, Minos\_47, Bianmat\_46, Shelley\_46, Nimi13\_46, MrWormie\_46, Lidong\_46, Newt\_47, Kaseim\_46
- Track 28 : Jormungandr\_46, Anamika\_46, Sticker17\_46, Hail2Pitt\_45, Guillaume\_46, Lahirium\_46
- Track 29 : Harambe\_46
- Track 30 : Luker\_47, Berries\_46, Neoevie\_46, GalacticEye\_46, Hello\_46, Damp\_46, Woos\_46

- Track 31 : Katyusha\_42, Benczkowski14\_42, Kvothe\_42, Tredge\_43, Teech\_43, Teatealatte\_43, Niagara\_42
- Track 32 : ASerpRocky\_43
- Track 33 : Philon9\_44, Vitaenoi\_44
- Track 34 : Demosthenes\_42
- Track 35 : Hollow\_43
- Track 36 : Frokostdame\_67
- Track 37 : Utz\_60
- Track 38 : Walrus\_66
- Track 39 : Petra\_69
- Track 40 : UmaThurman\_67
- Track 41 : BritBrat\_76
- Track 42 : Hyzer\_73
- Track 43 : Vasanti\_62
- Track 44 : DobbysSock\_52
- Track 45 : Sidious\_65
- Track 46 : Sidious\_64
- Track 47 : Fugax\_62, Barb\_61, PinkCoffee\_61, ClamChowder\_61, KimmyK\_60
- Track 48 : PullumCavea\_58, Danyall\_60
- Track 49 : RogerDodger\_62
- Track 50 : Clown\_9
- Track 51 : Rofo\_85, Thing3\_86, Kamashten\_86, Galadriel\_86
- Track 52 : Fitzgerald\_83, Jabberwocky\_84, Sedona\_83, Keitabear\_83, BobBob\_87
- Track 53 : Bibwit\_83
- Track 54 : Sitar\_84
- Track 55 : Thing3\_10, Love\_11, Galadriel\_11, MoontowerMania\_8, Paries\_10, Kamashten\_10
- Track 56 : Fosterous\_87
- Track 57 : Lennon\_85
- Track 58 : Sanjuju\_83
- Track 59 : McKinley\_88
- Track 60 : Brandonk123\_89
- Track 61 : Ailee\_83
- Track 62 : Love\_91
- Track 63 : JKSyngboy\_82
- Track 64 : Brandonk123\_11
- Track 65 : Stultus\_80
- Track 66 : Tiamoceli\_4
- Track 67 : Natkenzie\_89, Scioto\_89, Sampson\_91, Abblin\_89
- Track 68 : Zipp\_89, Verity\_88, Delrey21\_89, DoctorFroggo\_89
- Track 69 : ViaConlectus\_88
- Track 70 : PhorbessPhlower\_52
- Track 71 : Nadeem\_66, Parada\_66, Brylie\_66, Mulch\_66, Bock\_68, NancyRae\_65, WheatThin\_65, BetterKatz\_66
- Track 72 : GrandSlam\_68, Ayotoya\_67, Hamood\_68, Chop\_68, Pimento\_69, DelRio\_67
- Track 73 : Francois\_66
- Track 74 : BotCity\_71, Getalong\_67, Asapag\_64
- Track 75 : Malisha\_72
- Track 76 : Holliday\_69
- Track 77 : Spooky\_73
- Track 78 : Squiddly\_65
- Track 79 : Misfit\_100, Bruin\_96, Terminus\_102

- Track 80 : Bran\_64
- Track 81 : Hegedechwinu\_81, JalFarm20\_88, Smooch\_24
- Track 82 : JoeyJr\_74, PHappiness\_74, Leperchaun\_72, Empress\_72, Scottish\_72, Sassafras\_75, OldBen\_71, Poenanya\_77, Nimbo\_66, Geralt\_67, Polka14\_78, RitaG\_74, Daenerys\_73, Doomphist\_77, KingMidas\_73, Inventum\_72
- Track 83 : Donkeykong\_75
- Track 84 : Hamulus\_73, LittleShirley\_73
- Track 85 : Whouxphf\_64, Blexus\_65, Maravista\_69, Ramsey\_66, Priscilla\_67, Koella\_61, MinionDave\_66, CaptainTrips\_65, Aubs\_67, Yorick\_66, DaWorst\_67, Spikelee\_74, Burwell21\_65, Fancypants\_70, NormanBulbieJr\_67, Cabrinians\_68
- Track 86 : SimranZ1\_67
- Track 87 : Juice456\_67, JalFarm20\_79, KristaRAM\_69
- Track 88 : Bubbles123\_63
- Track 89 : Oksu\_70
- Track 90 : Moonbeam\_66, Emma\_69
- Track 91 : LittleShirley\_66
- Track 92 : Tweety\_66
- Track 93 : StAnnes\_64
- Track 94 : DaddyRickover\_77, IMpilo\_63
- Track 95 : Marker\_68
- Track 96 : Zizzle\_71, Pippy\_66, Estave1\_72, Crumble\_62, BobaPhett\_71, ShowerHandel\_70, ByChance\_60
- Track 97 : DillTech15\_74
- Track 98 : Filuzino\_64
- Track 99 : DLane\_61
- Track 100 : IMpilo\_61
- Track 101 : SassyB\_60, PopTart\_60
- Track 102 : Fastidio\_67
- Track 103 : Flathead\_72
- Track 104 : SG4\_77
- Track 105 : Jarcob\_66
- Track 106 : Rialto\_71
- Track 107 : Ibhubesi\_66
- Track 108 : Juniper1\_67
- Track 109 : Juniper1\_66
- Track 110 : Phalconet\_64
- Track 111 : Mantra\_63
- Track 112 : SwagPigglett\_72
- Track 113 : PhesterPhotato\_76
- Track 114 : Ogopogo\_78
- Track 115 : Ogopogo\_72
- Track 116 : Che9d\_77
- Track 117 : Che9d\_76
- Track 118 : TripleJ\_61
- Track 119 : Jinkies\_19
- Track 120 : BlackSpider\_65
- Track 121 : Zucker\_72
- Track 122 : Island3\_55, Brujita\_55
- Track 123 : QueenHazel\_55, Xula\_54
- Track 124 : HC\_55
- Track 125 : Eponine\_73, Reptar3000\_68, Taquito\_70, Malthus\_72, Chancellor\_71, Cheetobro\_71, Slarp\_71, Fionnbharth\_71, Juliette\_73, Mitti\_71, Kraw\_72, SamScheppers\_69, Wintermute\_71

- Track 126 : MissDaisy\_68
- Track 127 : JF1\_71, Ruthiejr\_72, Y10\_68, OmniCritical\_70, Y2\_68
- Track 128 : Patt\_67
- Track 129 : Boilgate\_61
- Track 130 : Journey\_55
- Track 131 : Journey\_54
- Track 132 : Brusacoram\_62, Atcoo\_62, Thespis\_62
- Track 133 : Polkaroo\_62
- Track 134 : Bartholomew\_57, Venti\_58
- Track 135 : Megiddo\_59
- Track 136 : Polkaroo\_59
- Track 137 : StevieRay\_65
- Track 138 : Jung\_56
- Track 139 : Juniormint\_55
- Track 140 : Gancho\_66
- Track 141 : Webster2\_67
- Track 142 : OBUpride\_67, Giles\_62, Forge\_62, Evanesce\_66, Ein37\_67, HH92\_66, Kinbote\_65, LilHazelnut\_67, Dewey\_62, Hail\_62, Hadrien\_66, Gravaillia\_63, Wishmaker\_62, Ubuntu\_67, Luna22\_62, DeepSoil15\_67, Luke\_66, Amymech\_67
- Track 143 : Amochick\_68
- Track 144 : Daegal\_70
- Track 145 : ZenTime222\_66, Bernal13\_60, RonRayGun\_60, Ibrahim\_60, Whitty\_59
- Track 146 : Mendokysei\_64
- Track 147 : Nairb\_58
- Track 148 : Rem711\_72
- Track 149 : 32HC\_73
- Track 150 : DocB7\_036
- Track 151 : Gudmit\_63
- Track 152 : Mbo4\_26
- Track 153 : GMA1\_63
- Track 154 : GAL1\_56

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

The start number called the most often in the published annotations is 168, it was called in 79 of the 316 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 32HC\_73, Abblin\_89, Ailee\_83, Amochick\_68, Amymech\_67, Ayotoya\_67, BetterKatz\_66, Bibwit\_83, BobBob\_87, Bock\_68, Brandonk123\_89, Brujita\_55, Brylie\_66, Che9d\_76, Che9d\_77, Chop\_68, DeepSoil15\_67, DelRio\_67, Delrey21\_89, Dewey\_62, DoctorFroggo\_89, Donkeykong\_75, Ein37\_67, Evanesce\_66, Fitzgerald\_83, Forge\_62, Fosterous\_87, Francois\_66, Galadriel\_86, Gancho\_66, Giles\_62, GrandSlam\_68, Gravaillia\_63, HH92\_66, Hadrien\_66, Hail\_62, Hamood\_68, Hamulus\_73, Hyzer\_73, Ibhubes\_i\_66, Island3\_55, Jabberwocky\_84, JalFarm20\_79, Jinkies\_19, Juice456\_67, Jung\_56, Juniper1\_67, Kamashten\_86, Keitabear\_83, Kinbote\_65, KristaRAM\_69, Lennon\_85, LilHazelnut\_67, LittleShirley\_66, LittleShirley\_73, Love\_91, Luke\_66, Luna22\_62, Marker\_68, McKinley\_88, Mulch\_66, Nadeem\_66, NancyRae\_65, Natkenzie\_89, OBUpride\_67, Ogopogo\_72, PFR1\_39, PFR2\_41, Parada\_66, Pimento\_69,



Rem711\_72, Rofo\_85, Sampson\_91, Sanjuju\_83, Scioto\_89, Sedona\_83, Sitar\_84, Stultus\_80, Thing3\_86, TripleJ\_61, Tweety\_66, Ubuntu\_67, Verity\_88, ViaConlectus\_88, WheatThin\_65, Wishmaker\_62, Zipp\_89,

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

- DaddyRickover\_77, Daegal\_70, IMpilo\_63, Webster2\_67,

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

- ASerpRocky\_43, Acme\_70, Adgers\_48, Aeneas\_62, Amore2\_49, Anamika\_46, Asapag\_64, Ashballer\_72, Atcoo\_62, Aubs\_67, Austin\_49, Barb\_61, Barbochs\_47, Bartholomew\_57, Beaver\_50, Benczkowski14\_42, BenoitCattle\_47, Bernal13\_60, Berries\_46, Bianmat\_46, Big3\_68, BigShaq\_46, BirksAndSocks\_51, BlackSpider\_65, Blexus\_65, BobaPhett\_71, Boilgate\_61, Boneham\_50, BotCity\_71, Bran\_64, Brandonk123\_11, Breezic\_46, BritBrat\_76, Bruin\_96, Brusacoram\_62, Bubbles123\_63, Burwell21\_65, Butterball\_50, ByChance\_60, Cabrinians\_68, CaptainTrips\_65, CathyBurgh\_46, Chancellor\_71, Charianelly\_46, Cheetobro\_71, Chelms\_46, CinnamonToast\_52, ClamChowder\_61, Clown\_9, Crete\_47, Crumble\_62, DLane\_61, DaWorst\_67, Daenerys\_73, Dakiti\_47, Damp\_46, Danyall\_60, Demosthenes\_42, Diabla\_50, DillTech15\_74, DobbysSock\_52, DocB7\_036, Doom\_57, Doomphist\_77, Eggsie\_46, Ekhein\_47, Emma\_69, Empress\_72, Eponine\_73, Estave1\_72, Exiguo\_46, Fajezeel\_69, Fancypants\_70, Fastidio\_67, FelixAlejandro\_51, Filuzino\_64, Fionnbharth\_71, Flakey\_46, Flathead\_72, Frokostdame\_67, Fugax\_62, GAL1\_56, GMA1\_63, GMA7\_38, GTE7\_37, GalacticEye\_46, Galadriel\_11, Geralt\_67, Getalong\_67, Gorko\_46, GourdThymes\_46, GrecoEtereo\_68, Greg\_69, Gudmit\_63, Guillaume\_46, HC\_55, Hail2Pitt\_45, Harambe\_46, HarryOW\_66, HayZem\_48, Hegedechwinu\_81, Hello\_46, Holliday\_69, Hollow\_43, Hotorobo\_46, IMpilo\_61, Ibrahim\_60, Inventum\_72, JF1\_71, JKSyngboy\_82, JalFarm20\_88, Jams\_46, Jacob\_66, Jellybones\_49, JoeyJr\_74, John316\_50, Jormungandr\_46, Journey\_54, Journey\_55, JuliaChild\_70, Juliette\_73, Juniormint\_55, Juniper1\_66, KSSJEB\_67, Kamashten\_10, Kaseim\_46, Katyusha\_42, KimmyK\_60, KingMidas\_73, Koella\_61, Kraw\_72, Kvothe\_42, Lahirium\_46, Lamina13\_71, Leperchaun\_72, Lidong\_46, Linetti\_47, Lizzo\_46, Love\_11, Luker\_47, Makemake\_60, Malisha\_72, Malthus\_72, Mantra\_63, Maravista\_69, Marchy\_62, Mbo4\_26, Megiddo\_59, Mendokysei\_64, MinionDave\_66, Minos\_47, Misfit\_100, MissDaisy\_68, Mitti\_71, Monty\_45, Moonbeam\_66, MoontowerMania\_8, MrWormie\_46, Msay19\_51, Nairb\_58, Neeve\_46, Newt\_47, Niagara\_42, Nimbo\_66, Nimi13\_46, NormanBulbieJr\_67, Ogopogo\_78, Oksu\_70, OldBen\_71, OmniCritical\_70, PHappiness\_74, PSullivan\_67, Paries\_10, Patt\_67, PattyP\_61, Payneful\_66, Petra\_69, Phalconet\_64, PhesterPhotato\_76, Philon9\_44, PhorbesPhlower\_52, PierreThree\_46, PinkCoffee\_61, Pippy\_66, Pita2\_70, Poenanya\_77, PokyPuppy\_45, Poland\_51, Polka14\_78, Polkaroo\_59, Polkaroo\_62, PopTart\_60, Priscilla\_67, PullumCavea\_58, QueenHazel\_55, Ramsey\_66, RemRem\_47, Reptar3000\_68, Rhynn\_57, Rialto\_71, RitaG\_74, RogerDodger\_62, RonRayGun\_60, RoyalG\_47, Ruthiejr\_72, SG4\_77, Sam12\_46, SamScheppers\_69, Sassafras\_75, SassyB\_60, Scottish\_72, Shelley\_46, ShowerHandel\_70, Sidious\_64, Sidious\_65, SimranZ1\_67, Slarp\_71, Smooch\_24, Sombrero\_47, Spikelee\_74, Spooky\_73, Squibbles\_46, Squiddly\_65, StAnnes\_64, SteveFrench\_46, StevieRay\_65, Sticker17\_46, SwagPigglett\_72, Swole\_70, Taquito\_70, Target\_60, Teal\_46, Teatealatte\_43, Teech\_43, Terminus\_102, Thespis\_62, Thing3\_10, Tiamoceli\_4, Tote\_65, Tredge\_43, Trouble\_68, UmaThurman\_67, Utz\_60, Vasanti\_62, Venti\_58, Vitaenoi\_44, Vopal\_77, Walrus\_66, Watermelon\_68, Wheeler\_71, Whitty\_59, Whouxphf\_64, Wintermute\_71, Woes\_46, Worcestershire\_47, Xula\_54, Y10\_68, Y2\_68, Yorick\_66, ZenTime222\_66, Zizzle\_71,

Zucker\_72,

### Summary by start number:

#### Start 38:

- Found in 3 of 353 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 316
- Called 33.3% of time when present
- Phage (with cluster) where this start called: HC\_55 (I1),

#### Start 40:

- Found in 13 of 353 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 3 of 316
- Called 23.1% of time when present
- Phage (with cluster) where this start called: Bruin\_96 (E), Misfit\_100 (E), Terminus\_102 (E),

#### Start 41:

- Found in 6 of 353 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 5 of 316
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Aeneas\_62 (A1), Makemake\_60 (A1), PattyP\_61 (A1), Rhynn\_57 (A1), Target\_60 (A1),

#### Start 42:

- Found in 1 of 353 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 316
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Doom\_57 (A1),

#### Start 53:

- Found in 6 of 353 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 1 of 316
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Big3\_68 (A1),

#### Start 55:

- Found in 11 of 353 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 1 of 316
- Called 9.1% of time when present
- Phage (with cluster) where this start called: Fajezeel\_69 (A1),

#### Start 59:

- Found in 8 of 353 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 7 of 316
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Ashballer\_72 (A1), JuliaChild\_70 (A1), Lamina13\_71 (A1), PSullivan\_67 (A1), Pita2\_70 (A1), Swole\_70 (A1), Tote\_65 (A1),

#### Start 61:

- Found in 11 of 353 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 6 of 316
- Called 54.5% of time when present

- Phage (with cluster) where this start called: GrecoEtereo\_68 (A1), KSSJEB\_67 (A1), Marchy\_62 (A1), Trouble\_68 (A1), Watermelon\_68 (A1), Wheeler\_71 (A1),

#### Start 67:

- Found in 13 of 353 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 4 of 316
- Called 30.8% of time when present
- Phage (with cluster) where this start called: Acme\_70 (A1), Frokostdame\_67 (CV), Greg\_69 (A1), Payneful\_66 (A1),

#### Start 68:

- Found in 52 of 353 ( 14.7% ) of genes in pham
- Manual Annotations of this start: 46 of 316
- Called 96.2% of time when present
- Phage (with cluster) where this start called: Barb\_61 (DC1), Boilgate\_61 (K8), Chancellor\_71 (K4), Cheetobro\_71 (K4), ClamChowder\_61 (DC1), DLane\_61 (F1), Danyall\_60 (DC1), Eponine\_73 (K4), Filuzino\_64 (F1), Fionnbharth\_71 (K4), Fugax\_62 (DC1), IMpilo\_61 (F1), JF1\_71 (K4), Journey\_55 (N), Juliette\_73 (K4), Juniper1\_66 (F1), KimmyK\_60 (DC1), Kraw\_72 (K4), Malthus\_72 (K4), Mantra\_63 (F1), Mbo4\_26 (singleton), MissDaisy\_68 (K4), Mitti\_71 (K4), OmniCritical\_70 (K4), Patt\_67 (K4), Petra\_69 (CV), Phalconet\_64 (F1), PinkCoffee\_61 (DC1), Polkaroo\_59 (P1), PopTart\_60 (F1), PullumCavea\_58 (DC1), QueenHazel\_55 (I1), Reptar3000\_68 (K4), Rialto\_71 (F1), RogerDodger\_62 (DC1), Ruthiejr\_72 (K4), SamScheppers\_69 (K4), SassyB\_60 (F1), SimranZ1\_67 (F1), Slarp\_71 (K4), StAnnes\_64 (F1), Taquito\_70 (K4), UmaThurman\_67 (CV), Utz\_60 (CV), Vasanti\_62 (CZ2), Walrus\_66 (CV), Wintermute\_71 (K4), Xula\_54 (I1), Y10\_68 (K4), Y2\_68 (K4),

#### Start 75:

- Found in 53 of 353 ( 15.0% ) of genes in pham
- Manual Annotations of this start: 1 of 316
- Called 1.9% of time when present
- Phage (with cluster) where this start called: HarryOW\_66 (A1),

#### Start 76:

- Found in 1 of 353 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 316
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Tiamoceli\_4 (DE3),

#### Start 115:

- Found in 1 of 353 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 316
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Journey\_54 (N),

#### Start 122:

- Found in 11 of 353 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 3 of 316
- Called 36.4% of time when present
- Phage (with cluster) where this start called: GMA1\_63 (singleton), Holliday\_69 (DN1), Malisha\_72 (DN), Squiddly\_65 (DN2),

#### Start 124:

- Found in 10 of 353 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 2 of 316
- Called 40.0% of time when present
- Phage (with cluster) where this start called: BlackSpider\_65 (FN), Ogotogo\_78 (F1), Vopal\_77 (AY), Zucker\_72 (FN),

#### Start 125:

- Found in 3 of 353 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 3 of 316
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bartholomew\_57 (P1), Flathead\_72 (F1), Venti\_58 (P1),

#### Start 128:

- Found in 35 of 353 ( 9.9% ) of genes in pham
- Manual Annotations of this start: 28 of 316
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Aubs\_67 (F1), Blexus\_65 (F1), BobaPhett\_71 (F1), Bubbles123\_63 (F1), Burwell21\_65 (F1), ByChance\_60 (F1), Cabrinians\_68 (F1), CaptainTrips\_65 (F1), Crumble\_62 (F1), DaWorst\_67 (F1), Emma\_69 (F1), Estave1\_72 (F1), Fancypants\_70 (F1), Jarcob\_66 (F1), Koella\_61 (F1), Maravista\_69 (F1), MinionDave\_66 (F1), Moonbeam\_66 (F1), NormanBulbieJr\_67 (F1), Pippy\_66 (F1), Priscilla\_67 (F1), Ramsey\_66 (F1), ShowerHandel\_70 (F1), Spikelee\_74 (F1), SwagPigglett\_72 (F1), Whouxphf\_64 (F1), Yorick\_66 (F1), Zizzle\_71 (F1),

#### Start 136:

- Found in 1 of 353 ( 0.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DocB7\_036 (singleton),

#### Start 139:

- Found in 83 of 353 ( 23.5% ) of genes in pham
- Manual Annotations of this start: 67 of 316
- Called 97.6% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_43 (CS4), Adgers\_48 (CS2), Amore2\_49 (CS1), Anamika\_46 (CS3), Austin\_49 (CS1), Barbochs\_47 (CS2), Beaver\_50 (CS2), Benczkowski14\_42 (CS4), BenoitCattle\_47 (CS2), Berries\_46 (CS3), Bianmat\_46 (CS3), BigShaq\_46 (CS2), BirksAndSocks\_51 (CS2), Boneham\_50 (CS2), Breezic\_46 (CS2), Butterball\_50 (CS2), CathyBurgh\_46 (CS2), Charianelly\_46 (CS3), Chelms\_46 (CS2), CinnamonToast\_52 (CS2), Crete\_47 (CS2), Dakiti\_47 (CS2), Damp\_46 (CS3), Demosthenes\_42 (CS4), Diabla\_50 (CS2), Eggsie\_46 (CS2), Ekhein\_47 (CS2), Exiguo\_46 (CS2), FelixAlejandro\_51 (CS2), Flakey\_46 (CS2), GMA7\_38 (CS1), GTE7\_37 (CS1), GalacticEye\_46 (CS3), Gorko\_46 (CS2), GourdThymes\_46 (CS2), Guillaume\_46 (CS3), Hail2Pitt\_45 (CS3), Harambe\_46 (CS3), HayZem\_48 (CS1), Hello\_46 (CS3), Hollow\_43 (CS4), Hotorobo\_46 (CS2), Jams\_46 (CS3), Jellybones\_49 (CS2), John316\_50 (CS2), Jormungandr\_46 (CS3), Kaseim\_46 (CS3), Katyusha\_42 (CS4), Kvothe\_42 (CS4), Lahirium\_46 (CS3), Lidong\_46 (CS3), Linetti\_47 (CS2), Lizzo\_46 (CS2), Luker\_47 (CS3), Minos\_47 (CS3), Monty\_45 (CS2), MrWormie\_46 (CS3), Msay19\_51 (CS2), Neevie\_46 (CS3), Newt\_47 (CS3), Niagara\_42 (CS4), Nimi13\_46 (CS3), Philon9\_44 (CS4), PierreThree\_46 (CS2), PokyPuppy\_45 (CS2), Poland\_51 (CS2), RemRem\_47

(CS2), RoyalG\_47 (CS2), Sam12\_46 (CS2), Shelley\_46 (CS3), Sombrero\_47 (CS2), Squibbles\_46 (CS2), SteveFrench\_46 (CS2), Sticker17\_46 (CS3), Teal\_46 (CS3), Teatealatte\_43 (CS4), Teech\_43 (CS4), Tredge\_43 (CS4), Vitaenoi\_44 (CS4), Woes\_46 (CS3), Worcestershire\_47 (CS2),

Start 158:

- Found in 1 of 353 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 316
- Called 100.0% of time when present
- Phage (with cluster) where this start called: PhesterPhotato\_76 (F1),

Start 159:

- Found in 39 of 353 ( 11.0% ) of genes in pham
- Manual Annotations of this start: 18 of 316
- Called 46.2% of time when present
- Phage (with cluster) where this start called: Daegal\_70 (Q), Daenerys\_73 (F1), Doomphist\_77 (F1), Empress\_72 (F1), Geralt\_67 (F1), Inventum\_72 (F1), JoeyJr\_74 (F1), KingMidas\_73 (F1), Leperchaun\_72 (F1), Nimbo\_66 (F1), OldBen\_71 (F1), PHappiness\_74 (F1), Poenanya\_77 (F1), Polka14\_78 (F1), RitaG\_74 (F1), Sassafras\_75 (F1), Scottish\_72 (F1), Webster2\_67 (Q),

Start 162:

- Found in 17 of 353 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 9 of 316
- Called 64.7% of time when present
- Phage (with cluster) where this start called: Atcoo\_62 (P1), Brusacoram\_62 (P1), DaddyRickover\_77 (F1), DillTech15\_74 (F1), Hegedechwinu\_81 (F1), IMpilo\_63 (F1), JalFarm20\_88 (F1), Juniormint\_55 (P1), Smooch\_24 (O), StevieRay\_65 (P1), Thespis\_62 (P1),

Start 163:

- Found in 6 of 353 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 2 of 316
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Bran\_64 (EP), Polkaroo\_62 (P1), SG4\_77 (F1),

Start 165:

- Found in 26 of 353 ( 7.4% ) of genes in pham
- Manual Annotations of this start: 16 of 316
- Called 73.1% of time when present
- Phage (with cluster) where this start called: Asapag\_64 (DN1), BotCity\_71 (DN), Brandonk123\_11 (DE1), BritBrat\_76 (CY2), DobbysSock\_52 (CZ4), GAL1\_56 (singleton), Galadriel\_11 (DE1), Getalong\_67 (DN1), Gudmit\_63 (singleton), JKSyngboy\_82 (DE1), Kamashten\_10 (DE1), Love\_11 (DE1), Megiddo\_59 (P1), MoontowerMania\_8 (DE1), Paries\_10 (DE1), PhorbesPhlower\_52 (DH), Sidious\_64 (CZ7), Sidious\_65 (CZ7), Thing3\_10 (DE1),

Start 167:

- Found in 2 of 353 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 316
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fastidio\_67 (F1), Oksu\_70 (F1),

#### Start 168:

- Found in 91 of 353 ( 25.8% ) of genes in pham
- Manual Annotations of this start: 79 of 316
- Called 95.6% of time when present
- Phage (with cluster) where this start called: 32HC\_73 (Z), Abblin\_89 (DE4), Ailee\_83 (DE1), Amochick\_68 (Q), Amymech\_67 (Q), Ayotoya\_67 (DI), BetterKatz\_66 (DI), Bibwit\_83 (DE1), BobBob\_87 (DE1), Bock\_68 (DI), Brandonk123\_89 (DE1), Brujita\_55 (I1), Brylie\_66 (DI), Che9d\_76 (F2), Che9d\_77 (F2), Chop\_68 (DI), DeepSoil15\_67 (Q), DelRio\_67 (DI), Delrey21\_89 (DE4), Dewey\_62 (Q), DoctorFroggo\_89 (DE4), Donkeykong\_75 (F1), Ein37\_67 (Q), Evanesce\_66 (Q), Fitzgerald\_83 (DE1), Forge\_62 (Q), Fosterous\_87 (DE1), Francois\_66 (DI), Galadriel\_86 (DE1), Gancho\_66 (Q), Giles\_62 (Q), GrandSlam\_68 (DI), Gravallia\_63 (Q), HH92\_66 (Q), Hadrien\_66 (Q), Hail\_62 (Q), Hamood\_68 (DI), Hamulus\_73 (F1), Hyzer\_73 (CZ1), Ibhubesi\_66 (F1), Island3\_55 (I1), Jabberwocky\_84 (DE1), JalFarm20\_79 (F1), Jinkies\_19 (FL), Juice456\_67 (F1), Jung\_56 (P1), Juniper1\_67 (F1), Kamashten\_86 (DE1), Keitabear\_83 (DE1), Kinbote\_65 (Q), KristaRAM\_69 (F1), Lennon\_85 (DE1), LilHazelNut\_67 (Q), LittleShirley\_66 (F1), LittleShirley\_73 (F1), Love\_91 (DE1), Luke\_66 (Q), Luna22\_62 (Q), Marker\_68 (F1), McKinley\_88 (DE1), Mulch\_66 (DI), Nadeem\_66 (DI), NancyRae\_65 (DI), Natkenzie\_89 (DE4), OBUpride\_67 (Q), Ogopogo\_72 (F1), PFR1\_39 (BX), PFR2\_41 (BX), Parada\_66 (DI), Pimento\_69 (DI), Rem711\_72 (Z), Rofo\_85 (DE1), Sampson\_91 (DE4), Sanjuju\_83 (DE1), Scioto\_89 (DE4), Sedona\_83 (DE1), Sitar\_84 (DE1), Stultus\_80 (DE1), Thing3\_86 (DE1), TripleJ\_61 (FJ), Tweety\_66 (F1), Ubuntu\_67 (Q), Verity\_88 (DE4), ViaConlectus\_88 (DE4), WheatThin\_65 (DI), Wishmaker\_62 (Q), Zipp\_89 (DE4),

#### Start 175:

- Found in 2 of 353 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 2 of 316
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Clown\_9 (DC2), Spooky\_73 (DN2),

#### Start 176:

- Found in 8 of 353 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 7 of 316
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Bernal13\_60 (T), Ibrahim\_60 (T), Mendokysei\_64 (T), Nairb\_58 (T), RonRayGun\_60 (T), Whitty\_59 (T), ZenTime222\_66 (T),

#### Summary by clusters:

There are 40 clusters represented in this pham: DN, singleton, DH, DI, CZ2, CZ1, CZ7, CZ4, K4, FJ, K8, BX, FN, I1, FL, CV, A1, DN1, DN2, CS4, CS1, CS3, CS2, CY2, P1, E, O, N, Q, T, AY, Z, DC2, EP, DC1, F1, F2, DE1, DE3, DE4,

#### Info for manual annotations of cluster A1:

- Start number 41 was manually annotated 5 times for cluster A1.
- Start number 42 was manually annotated 1 time for cluster A1.
- Start number 53 was manually annotated 1 time for cluster A1.
- Start number 55 was manually annotated 1 time for cluster A1.
- Start number 59 was manually annotated 7 times for cluster A1.
- Start number 61 was manually annotated 6 times for cluster A1.

- Start number 67 was manually annotated 3 times for cluster A1.
- Start number 75 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster CS1:

- Start number 139 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 139 was manually annotated 31 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 139 was manually annotated 24 times for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 139 was manually annotated 9 times for cluster CS4.

Info for manual annotations of cluster CV:

- Start number 67 was manually annotated 1 time for cluster CV.
- Start number 68 was manually annotated 4 times for cluster CV.

Info for manual annotations of cluster CY2:

- Start number 165 was manually annotated 1 time for cluster CY2.

Info for manual annotations of cluster CZ2:

- Start number 68 was manually annotated 1 time for cluster CZ2.

Info for manual annotations of cluster CZ4:

- Start number 165 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster CZ7:

- Start number 165 was manually annotated 2 times for cluster CZ7.

Info for manual annotations of cluster DC1:

- Start number 68 was manually annotated 8 times for cluster DC1.

Info for manual annotations of cluster DC2:

- Start number 175 was manually annotated 1 time for cluster DC2.

Info for manual annotations of cluster DE1:

- Start number 165 was manually annotated 7 times for cluster DE1.
- Start number 168 was manually annotated 18 times for cluster DE1.

Info for manual annotations of cluster DE3:

- Start number 76 was manually annotated 1 time for cluster DE3.

Info for manual annotations of cluster DE4:

- Start number 168 was manually annotated 6 times for cluster DE4.

Info for manual annotations of cluster DH:

- Start number 165 was manually annotated 1 time for cluster DH.

Info for manual annotations of cluster DI:

- Start number 168 was manually annotated 15 times for cluster DI.

Info for manual annotations of cluster DN:

- Start number 122 was manually annotated 1 time for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 122 was manually annotated 1 time for cluster DN1.
- Start number 165 was manually annotated 2 times for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 122 was manually annotated 1 time for cluster DN2.
- Start number 175 was manually annotated 1 time for cluster DN2.

Info for manual annotations of cluster E:

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

Info for manual annotations of cluster EP:

- Start number 163 was manually annotated 1 time for cluster EP.

Info for manual annotations of cluster F1:

- Start number 68 was manually annotated 10 times for cluster F1.
- Start number 124 was manually annotated 1 time for cluster F1.
- Start number 125 was manually annotated 1 time for cluster F1.
- Start number 128 was manually annotated 28 times for cluster F1.
- Start number 158 was manually annotated 1 time for cluster F1.
- Start number 159 was manually annotated 16 times for cluster F1.
- Start number 162 was manually annotated 3 times for cluster F1.
- Start number 163 was manually annotated 1 time for cluster F1.
- Start number 167 was manually annotated 1 time for cluster F1.
- Start number 168 was manually annotated 12 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 168 was manually annotated 2 times for cluster F2.

Info for manual annotations of cluster FJ:

- Start number 168 was manually annotated 1 time for cluster FJ.

Info for manual annotations of cluster FL:

- Start number 168 was manually annotated 1 time for cluster FL.

Info for manual annotations of cluster FN:

- Start number 124 was manually annotated 1 time for cluster FN.

Info for manual annotations of cluster I1:

- Start number 38 was manually annotated 1 time for cluster I1.
- Start number 68 was manually annotated 2 times for cluster I1.
- Start number 168 was manually annotated 2 times for cluster I1.

Info for manual annotations of cluster K4:

- Start number 68 was manually annotated 19 times for cluster K4.

Info for manual annotations of cluster K8:



- Start number 68 was manually annotated 1 time for cluster K8.

Info for manual annotations of cluster N:

- Start number 68 was manually annotated 1 time for cluster N.
- Start number 115 was manually annotated 1 time for cluster N.

Info for manual annotations of cluster O:

- Start number 162 was manually annotated 1 time for cluster O.

Info for manual annotations of cluster P1:

- Start number 125 was manually annotated 2 times for cluster P1.
- Start number 162 was manually annotated 5 times for cluster P1.
- Start number 165 was manually annotated 1 time for cluster P1.
- Start number 168 was manually annotated 1 time for cluster P1.

Info for manual annotations of cluster Q:

- Start number 159 was manually annotated 2 times for cluster Q.
- Start number 168 was manually annotated 20 times for cluster Q.

Info for manual annotations of cluster T:

- Start number 176 was manually annotated 7 times for cluster T.

Info for manual annotations of cluster Z:

- Start number 168 was manually annotated 1 time for cluster Z.

### ***Gene Information:***

Gene: 32HC\_73 Start: 44576, Stop: 45244, Start Num: 168

Candidate Starts for 32HC\_73:

(97, 44408), (134, 44507), (146, 44528), (Start: 168 @44576 has 79 MA's), (178, 44603), (192, 44657), (350, 44987), (360, 45008), (405, 45161),

Gene: ASerpRocky\_43 Start: 45618, Stop: 44902, Start Num: 139

Candidate Starts for ASerpRocky\_43:

(Start: 139 @45618 has 67 MA's), (147, 45603), (208, 45501), (239, 45411), (242, 45405), (313, 45252), (335, 45189), (352, 45159), (394, 45048), (413, 44937),

Gene: Abblin\_89 Start: 59142, Stop: 59831, Start Num: 168

Candidate Starts for Abblin\_89:

(Start: 53 @58827 has 1 MA's), (116, 59016), (132, 59061), (144, 59085), (Start: 168 @59142 has 79 MA's), (192, 59223), (210, 59274), (252, 59400), (274, 59439), (314, 59517), (326, 59529), (332, 59550), (353, 59586), (384, 59667),

Gene: Acme\_70 Start: 44165, Stop: 43323, Start Num: 67

Candidate Starts for Acme\_70:

(Start: 55 @44201 has 1 MA's), (Start: 61 @44186 has 6 MA's), (Start: 67 @44165 has 4 MA's), (Start: 75 @44135 has 1 MA's), (78, 44132), (87, 44102), (89, 44093), (138, 43973), (226, 43865), (247, 43796), (281, 43721), (368, 43535), (379, 43505), (419, 43346),

Gene: Adgers\_48 Start: 44794, Stop: 44072, Start Num: 139

Candidate Starts for Adgers\_48:

(Start: 139 @44794 has 67 MA's), (155, 44755), (170, 44728), (208, 44677), (235, 44602), (239, 44587), (273, 44503), (313, 44428), (372, 44272), (394, 44224), (396, 44194), (423, 44092),

Gene: Aeneas\_62 Start: 42219, Stop: 41128, Start Num: 41

Candidate Starts for Aeneas\_62:

(Start: 41 @42219 has 5 MA's), (73, 42111), (85, 42066), (99, 42024), (101, 42021), (113, 41982), (217, 41694), (222, 41673), (225, 41664), (237, 41628), (278, 41526), (318, 41460), (335, 41406), (368, 41322), (370, 41313), (374, 41304), (387, 41283), (392, 41265), (396, 41229),

Gene: Ailee\_83 Start: 57588, Stop: 58286, Start Num: 168

Candidate Starts for Ailee\_83:

(5, 57051), (10, 57105), (58, 57276), (137, 57513), (148, 57537), (Start: 168 @57588 has 79 MA's), (180, 57636), (183, 57645), (186, 57657), (232, 57765), (252, 57825), (293, 57906), (300, 57921), (309, 57942), (363, 58074), (372, 58107), (393, 58149), (399, 58194), (406, 58227), (411, 58254), (418, 58275),

Gene: Amochick\_68 Start: 45397, Stop: 46059, Start Num: 168

Candidate Starts for Amochick\_68:

(Start: 38 @45019 has 1 MA's), (72, 45136), (84, 45181), (88, 45205), (108, 45256), (131, 45310), (Start: 159 @45385 has 18 MA's), (161, 45388), (Start: 168 @45397 has 79 MA's), (178, 45424), (243, 45598), (277, 45676), (279, 45682), (291, 45706), (298, 45715), (326, 45757), (361, 45841), (367, 45844), (374, 45877), (376, 45883), (380, 45889), (397, 45952), (405, 45988), (410, 46015), (412, 46030), (417, 46039),

Gene: Amore2\_49 Start: 45293, Stop: 44574, Start Num: 139

Candidate Starts for Amore2\_49:

(Start: 139 @45293 has 67 MA's), (155, 45254), (170, 45227), (198, 45194), (208, 45176), (235, 45101), (239, 45086), (243, 45077), (273, 45002), (313, 44927),

Gene: Amymech\_67 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Amymech\_67:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Anamika\_46 Start: 46699, Stop: 45980, Start Num: 139

Candidate Starts for Anamika\_46:

(Start: 139 @46699 has 67 MA's), (170, 46633), (208, 46582), (212, 46576), (239, 46492), (254, 46447), (273, 46408), (313, 46333), (318, 46324), (394, 46129),

Gene: Asapag\_64 Start: 39261, Stop: 39899, Start Num: 165

Candidate Starts for Asapag\_64:

(154, 39240), (Start: 165 @39261 has 16 MA's), (178, 39291), (192, 39345), (199, 39372), (252, 39474), (294, 39552), (374, 39705), (417, 39870),

Gene: Ashballer\_72 Start: 44821, Stop: 43955, Start Num: 59

Candidate Starts for Ashballer\_72:

(48, 44848), (56, 44827), (Start: 59 @44821 has 7 MA's), (Start: 67 @44794 has 4 MA's), (Start: 75 @44764 has 1 MA's), (78, 44761), (87, 44731), (89, 44722), (138, 44602), (226, 44494), (247, 44425), (281, 44350), (368, 44164), (379, 44134), (419, 43975),

Gene: Atcoo\_62 Start: 41875, Stop: 42537, Start Num: 162

Candidate Starts for Atcoo\_62:

(Start: 124 @41794 has 2 MA's), (Start: 128 @41803 has 28 MA's), (140, 41830), (Start: 162 @41875 has 9 MA's), (178, 41908), (192, 41962), (199, 41989), (234, 42049), (273, 42139), (278, 42151), (295, 42184), (374, 42349), (390, 42382), (396, 42418), (417, 42508),

Gene: Aubs\_67 Start: 44345, Stop: 45295, Start Num: 128

Candidate Starts for Aubs\_67:

(Start: 128 @44345 has 28 MA's), (169, 44447), (179, 44477), (181, 44498), (202, 44570), (216, 44594), (223, 44618), (231, 44648), (233, 44654), (251, 44720), (252, 44726), (275, 44774), (297, 44837), (308, 44867), (379, 45086), (385, 45092), (393, 45116), (394, 45119), (396, 45149), (399, 45161), (406, 45194), (412, 45230), (414, 45239), (420, 45251), (424, 45257), (429, 45269), (434, 45278),

Gene: Austin\_49 Start: 45293, Stop: 44574, Start Num: 139

Candidate Starts for Austin\_49:

(Start: 139 @45293 has 67 MA's), (170, 45227), (198, 45194), (208, 45176), (235, 45101), (239, 45086), (243, 45077), (273, 45002), (313, 44927),

Gene: Ayotoya\_67 Start: 43566, Stop: 44279, Start Num: 168

Candidate Starts for Ayotoya\_67:

(77, 43332), (123, 43461), (Start: 168 @43566 has 79 MA's), (178, 43593), (193, 43659), (296, 43884), (309, 43917), (332, 43971), (357, 44028), (371, 44079), (372, 44082), (390, 44121), (396, 44157),

Gene: Barb\_61 Start: 44265, Stop: 45221, Start Num: 68

Candidate Starts for Barb\_61:

(Start: 68 @44265 has 46 MA's), (104, 44361), (135, 44451), (239, 44721), (247, 44745), (266, 44790), (268, 44796), (321, 44895), (369, 45006), (392, 45060),

Gene: Barbochs\_47 Start: 44538, Stop: 43816, Start Num: 139

Candidate Starts for Barbochs\_47:

(Start: 139 @44538 has 67 MA's), (155, 44499), (170, 44472), (208, 44421), (235, 44346), (239, 44331), (273, 44247), (313, 44172), (372, 44016), (394, 43968), (396, 43938), (423, 43836),

Gene: Bartholomew\_57 Start: 37622, Stop: 38488, Start Num: 125

Candidate Starts for Bartholomew\_57:

(107, 37571), (108, 37586), (Start: 125 @37622 has 3 MA's), (Start: 165 @37721 has 16 MA's), (178, 37751), (185, 37784), (186, 37793), (198, 37841), (219, 37874), (241, 37943), (270, 38015), (282, 38039), (287, 38054), (358, 38225), (366, 38261), (389, 38327), (393, 38333), (411, 38438), (417, 38456),

Gene: Beaver\_50 Start: 46308, Stop: 45586, Start Num: 139

Candidate Starts for Beaver\_50:

(Start: 139 @46308 has 67 MA's), (155, 46269), (170, 46242), (208, 46191), (235, 46116), (239, 46101), (273, 46017), (313, 45942), (372, 45786), (394, 45738), (396, 45708), (423, 45606),

Gene: Benczkowski14\_42 Start: 45651, Stop: 44935, Start Num: 139

Candidate Starts for Benczkowski14\_42:

(Start: 139 @45651 has 67 MA's), (147, 45636), (208, 45534), (239, 45444), (242, 45438), (313, 45285), (335, 45222), (352, 45192), (413, 44970),

Gene: BenoitCattle\_47 Start: 44738, Stop: 44016, Start Num: 139

Candidate Starts for BenoitCattle\_47:

(Start: 139 @44738 has 67 MA's), (155, 44699), (170, 44672), (208, 44621), (235, 44546), (239, 44531), (273, 44447), (313, 44372), (372, 44216), (394, 44168), (396, 44138), (423, 44036),

Gene: Bernal13\_60 Start: 41221, Stop: 41958, Start Num: 176

Candidate Starts for Bernal13\_60:

(35, 40804), (108, 41062), (112, 41068), (Start: 176 @41221 has 7 MA's), (183, 41263), (206, 41335), (215, 41353), (263, 41479), (271, 41497), (324, 41611), (333, 41647), (353, 41692), (374, 41776), (378, 41785), (380, 41788), (388, 41797), (393, 41815), (422, 41947),

Gene: Berries\_46 Start: 46670, Stop: 45951, Start Num: 139

Candidate Starts for Berries\_46:

(Start: 139 @46670 has 67 MA's), (170, 46604), (208, 46553), (212, 46547), (239, 46463), (254, 46418), (273, 46379), (313, 46304), (394, 46100),

Gene: BetterKatz\_66 Start: 42765, Stop: 43475, Start Num: 168

Candidate Starts for BetterKatz\_66:

(77, 42531), (123, 42660), (Start: 168 @42765 has 79 MA's), (178, 42792), (193, 42858), (296, 43083), (309, 43116), (332, 43170), (357, 43227), (371, 43278), (372, 43281), (396, 43356),

Gene: Bianmat\_46 Start: 46710, Stop: 45991, Start Num: 139

Candidate Starts for Bianmat\_46:

(Start: 139 @46710 has 67 MA's), (170, 46644), (204, 46602), (208, 46593), (212, 46587), (239, 46503), (254, 46458), (269, 46425), (273, 46419), (313, 46344), (394, 46140),

Gene: Bibwit\_83 Start: 56952, Stop: 57692, Start Num: 168

Candidate Starts for Bibwit\_83:

(10, 56205), (Start: 40 @56574 has 3 MA's), (58, 56640), (137, 56877), (148, 56901), (Start: 168 @56952 has 79 MA's), (180, 57000), (183, 57009), (186, 57021), (252, 57213), (261, 57228), (288, 57288), (293, 57294), (296, 57297), (300, 57309), (304, 57315), (309, 57330), (357, 57441), (393, 57555), (396, 57588), (399, 57600), (406, 57633), (411, 57660), (418, 57681),

Gene: Big3\_68 Start: 44998, Stop: 44108, Start Num: 53

Candidate Starts for Big3\_68:

(17, 45160), (20, 45127), (Start: 41 @45037 has 5 MA's), (Start: 53 @44998 has 1 MA's), (63, 44968), (65, 44965), (80, 44911), (88, 44878), (100, 44857), (142, 44752), (151, 44731), (156, 44710), (157, 44704), (200, 44629), (215, 44599), (251, 44482), (266, 44449), (359, 44368), (372, 44302), (395, 44242), (405, 44185), (406, 44179), (410, 44158),

Gene: BigShaq\_46 Start: 44743, Stop: 44021, Start Num: 139

Candidate Starts for BigShaq\_46:

(Start: 139 @44743 has 67 MA's), (155, 44704), (170, 44677), (208, 44626), (235, 44551), (239, 44536), (273, 44452), (313, 44377), (372, 44221), (394, 44173), (396, 44143), (423, 44041),

Gene: BirksAndSocks\_51 Start: 46658, Stop: 45936, Start Num: 139

Candidate Starts for BirksAndSocks\_51:

(Start: 139 @46658 has 67 MA's), (155, 46619), (170, 46592), (208, 46541), (235, 46466), (239, 46451), (273, 46367), (313, 46292), (372, 46136), (394, 46088), (396, 46058), (423, 45956),

Gene: BlackSpider\_65 Start: 37958, Stop: 38857, Start Num: 124

Candidate Starts for BlackSpider\_65:

(2, 37145), (4, 37262), (7, 37301), (8, 37313), (13, 37547), (15, 37559), (69, 37790), (Start: 124 @37958 has 2 MA's), (130, 37967), (151, 38015), (166, 38063), (171, 38075), (184, 38129), (216, 38216), (308, 38489), (379, 38651), (393, 38681), (398, 38720), (399, 38726), (411, 38786), (420,

38816), (429, 38834), (434, 38843),

Gene: Blexus\_65 Start: 44521, Stop: 45471, Start Num: 128

Candidate Starts for Blexus\_65:

(Start: 128 @44521 has 28 MA's), (169, 44623), (179, 44653), (181, 44674), (202, 44746), (216, 44770), (223, 44794), (231, 44824), (233, 44830), (251, 44896), (252, 44902), (275, 44950), (297, 45013), (308, 45043), (379, 45262), (385, 45268), (393, 45292), (394, 45295), (396, 45325), (399, 45337), (406, 45370), (412, 45406), (414, 45415), (420, 45427), (424, 45433), (429, 45445), (434, 45454),

Gene: BobBob\_87 Start: 57791, Stop: 58489, Start Num: 168

Candidate Starts for BobBob\_87:

(10, 57044), (Start: 40 @57413 has 3 MA's), (58, 57479), (137, 57716), (148, 57740), (Start: 168 @57791 has 79 MA's), (180, 57839), (183, 57848), (186, 57860), (232, 57968), (252, 58028), (293, 58109), (300, 58124), (309, 58145), (363, 58277), (372, 58310), (393, 58352), (399, 58397), (406, 58430), (411, 58457), (418, 58478),

Gene: BobaPhett\_71 Start: 46777, Stop: 47727, Start Num: 128

Candidate Starts for BobaPhett\_71:

(Start: 128 @46777 has 28 MA's), (169, 46879), (179, 46909), (181, 46930), (202, 47002), (216, 47026), (223, 47050), (231, 47080), (233, 47086), (251, 47152), (252, 47158), (275, 47206), (297, 47269), (308, 47299), (379, 47518), (385, 47524), (393, 47548), (394, 47551), (396, 47581), (399, 47593), (406, 47626), (412, 47662), (414, 47671), (420, 47683), (424, 47689), (429, 47701), (434, 47710), (436, 47719),

Gene: Bock\_68 Start: 43009, Stop: 43719, Start Num: 168

Candidate Starts for Bock\_68:

(77, 42775), (123, 42904), (Start: 168 @43009 has 79 MA's), (178, 43036), (193, 43102), (296, 43327), (309, 43360), (332, 43414), (357, 43471), (371, 43522), (372, 43525), (396, 43600),

Gene: Boilgate\_61 Start: 43556, Stop: 44494, Start Num: 68

Candidate Starts for Boilgate\_61:

(62, 43532), (Start: 68 @43556 has 46 MA's), (Start: 75 @43583 has 1 MA's), (79, 43589), (81, 43595), (86, 43613), (104, 43652), (135, 43742), (147, 43763), (151, 43772), (152, 43775), (174, 43835), (188, 43853), (223, 43940), (226, 43952), (229, 43964), (247, 44021), (266, 44066), (312, 44141), (368, 44291), (379, 44321), (393, 44351), (397, 44387),

Gene: Boneham\_50 Start: 46562, Stop: 45840, Start Num: 139

Candidate Starts for Boneham\_50:

(Start: 139 @46562 has 67 MA's), (155, 46523), (170, 46496), (208, 46445), (235, 46370), (239, 46355), (273, 46271), (313, 46196), (393, 45995), (394, 45992), (423, 45860),

Gene: BotCity\_71 Start: 40937, Stop: 41575, Start Num: 165

Candidate Starts for BotCity\_71:

(154, 40916), (Start: 165 @40937 has 16 MA's), (178, 40967), (192, 41021), (199, 41048), (252, 41150), (294, 41228), (374, 41381), (417, 41546),

Gene: Bran\_64 Start: 40159, Stop: 40923, Start Num: 163

Candidate Starts for Bran\_64:

(Start: 163 @40159 has 2 MA's), (178, 40192), (186, 40234), (191, 40249), (195, 40261), (198, 40282), (219, 40315), (241, 40384), (263, 40441), (267, 40450), (270, 40456), (286, 40492), (322, 40573), (358, 40663), (362, 40672), (366, 40699), (370, 40726), (402, 40828), (406, 40849), (410, 40870), (428, 40915), (432, 40918),

Gene: Brandonk123\_89 Start: 57956, Stop: 58654, Start Num: 168

Candidate Starts for Brandonk123\_89:

(5, 57155), (10, 57209), (Start: 40 @57578 has 3 MA's), (58, 57644), (137, 57881), (148, 57905), (Start: 168 @57956 has 79 MA's), (179, 57989), (180, 58004), (186, 58025), (232, 58133), (252, 58193), (293, 58274), (300, 58289), (309, 58310), (363, 58442), (372, 58475), (393, 58517), (399, 58562), (406, 58595), (411, 58622), (418, 58643),

Gene: Brandonk123\_11 Start: 5315, Stop: 5971, Start Num: 165

Candidate Starts for Brandonk123\_11:

(Start: 165 @5315 has 16 MA's), (187, 5387), (192, 5399), (199, 5426), (252, 5552), (294, 5627), (325, 5675), (354, 5732), (355, 5735), (370, 5780), (374, 5789),

Gene: Breezic\_46 Start: 44551, Stop: 43829, Start Num: 139

Candidate Starts for Breezic\_46:

(Start: 139 @44551 has 67 MA's), (155, 44512), (170, 44485), (208, 44434), (235, 44359), (239, 44344), (273, 44260), (313, 44185), (372, 44029), (394, 43981), (396, 43951), (423, 43849),

Gene: BritBrat\_76 Start: 47469, Stop: 48248, Start Num: 165

Candidate Starts for BritBrat\_76:

(Start: 165 @47469 has 16 MA's), (179, 47505), (190, 47550), (195, 47562), (203, 47589), (241, 47703), (292, 47826), (321, 47892), (333, 47937), (336, 47940), (393, 48093), (418, 48222), (428, 48240),

Gene: Bruin\_96 Start: 57875, Stop: 58906, Start Num: 40

Candidate Starts for Bruin\_96:

(12, 57728), (18, 57758), (25, 57806), (28, 57821), (32, 57833), (Start: 40 @57875 has 3 MA's), (44, 57893), (73, 57989), (85, 58034), (113, 58118), (217, 58322), (225, 58352), (237, 58388), (335, 58625), (374, 58727), (393, 58769), (396, 58802), (400, 58817),

Gene: Brujita\_55 Start: 37346, Stop: 37996, Start Num: 168

Candidate Starts for Brujita\_55:

(Start: 168 @37346 has 79 MA's), (239, 37532), (252, 37568), (261, 37583), (263, 37586), (325, 37694), (360, 37760), (376, 37814), (393, 37844), (417, 37967),

Gene: Brusacoram\_62 Start: 40418, Stop: 41080, Start Num: 162

Candidate Starts for Brusacoram\_62:

(Start: 124 @40337 has 2 MA's), (Start: 128 @40346 has 28 MA's), (140, 40373), (Start: 162 @40418 has 9 MA's), (178, 40451), (192, 40505), (199, 40532), (234, 40592), (273, 40682), (278, 40694), (295, 40727), (374, 40892), (390, 40925), (396, 40961), (417, 41051),

Gene: Brylie\_66 Start: 42588, Stop: 43298, Start Num: 168

Candidate Starts for Brylie\_66:

(77, 42354), (123, 42483), (Start: 168 @42588 has 79 MA's), (178, 42615), (193, 42681), (296, 42906), (309, 42939), (332, 42993), (357, 43050), (371, 43101), (372, 43104), (396, 43179),

Gene: Bubbles123\_63 Start: 43534, Stop: 44484, Start Num: 128

Candidate Starts for Bubbles123\_63:

(Start: 128 @43534 has 28 MA's), (169, 43636), (179, 43666), (181, 43687), (202, 43759), (216, 43783), (223, 43807), (231, 43837), (233, 43843), (251, 43909), (252, 43915), (275, 43963), (297, 44026), (308, 44056), (379, 44275), (385, 44281), (393, 44305), (394, 44308), (396, 44338), (399, 44350), (406, 44383), (412, 44419), (414, 44428), (420, 44440), (424, 44446), (429, 44458),

Gene: Burwell21\_65 Start: 44099, Stop: 45049, Start Num: 128

Candidate Starts for Burwell21\_65:

(Start: 128 @44099 has 28 MA's), (169, 44201), (179, 44231), (181, 44252), (202, 44324), (216, 44348), (223, 44372), (231, 44402), (233, 44408), (251, 44474), (252, 44480), (275, 44528), (297, 44591), (308, 44621), (379, 44840), (385, 44846), (393, 44870), (394, 44873), (396, 44903), (399, 44915), (406, 44948), (412, 44984), (414, 44993), (420, 45005), (424, 45011), (429, 45023), (434, 45032),

Gene: Butterball\_50 Start: 46562, Stop: 45840, Start Num: 139

Candidate Starts for Butterball\_50:

(Start: 139 @46562 has 67 MA's), (155, 46523), (170, 46496), (198, 46463), (208, 46445), (235, 46370), (239, 46355), (273, 46271), (313, 46196), (393, 45995), (394, 45992), (423, 45860),

Gene: ByChance\_60 Start: 40119, Stop: 41069, Start Num: 128

Candidate Starts for ByChance\_60:

(Start: 128 @40119 has 28 MA's), (169, 40221), (179, 40251), (181, 40272), (202, 40344), (216, 40368), (223, 40392), (231, 40422), (233, 40428), (251, 40494), (252, 40500), (275, 40548), (297, 40611), (308, 40641), (379, 40860), (385, 40866), (393, 40890), (394, 40893), (396, 40923), (399, 40935), (406, 40968), (412, 41004), (414, 41013), (420, 41025), (424, 41031), (429, 41043), (434, 41052), (436, 41061),

Gene: Cabrinians\_68 Start: 44177, Stop: 45127, Start Num: 128

Candidate Starts for Cabrinians\_68:

(Start: 128 @44177 has 28 MA's), (169, 44279), (179, 44309), (181, 44330), (202, 44402), (216, 44426), (223, 44450), (231, 44480), (233, 44486), (251, 44552), (252, 44558), (275, 44606), (297, 44669), (308, 44699), (379, 44918), (385, 44924), (393, 44948), (394, 44951), (396, 44981), (399, 44993), (406, 45026), (412, 45062), (414, 45071), (420, 45083), (424, 45089), (429, 45101), (434, 45110),

Gene: CaptainTrips\_65 Start: 43912, Stop: 44862, Start Num: 128

Candidate Starts for CaptainTrips\_65:

(Start: 128 @43912 has 28 MA's), (169, 44014), (179, 44044), (181, 44065), (202, 44137), (216, 44161), (223, 44185), (231, 44215), (233, 44221), (251, 44287), (252, 44293), (275, 44341), (297, 44404), (308, 44434), (379, 44653), (385, 44659), (393, 44683), (394, 44686), (396, 44716), (399, 44728), (406, 44761), (412, 44797), (414, 44806), (420, 44818), (424, 44824), (429, 44836), (434, 44845),

Gene: CathyBurgh\_46 Start: 45128, Stop: 44406, Start Num: 139

Candidate Starts for CathyBurgh\_46:

(Start: 139 @45128 has 67 MA's), (155, 45089), (170, 45062), (208, 45011), (235, 44936), (239, 44921), (273, 44837), (313, 44762), (372, 44606), (394, 44558), (396, 44528), (423, 44426),

Gene: Chancellor\_71 Start: 43637, Stop: 44482, Start Num: 68

Candidate Starts for Chancellor\_71:

(52, 43586), (Start: 68 @43637 has 46 MA's), (Start: 75 @43664 has 1 MA's), (86, 43694), (223, 43922), (226, 43934), (241, 43982), (266, 44048), (359, 44222), (382, 44300), (393, 44327), (398, 44366),

Gene: Charianelly\_46 Start: 46420, Stop: 45701, Start Num: 139

Candidate Starts for Charianelly\_46:

(Start: 139 @46420 has 67 MA's), (170, 46354), (204, 46312), (208, 46303), (212, 46297), (239, 46213), (254, 46168), (269, 46135), (273, 46129), (313, 46054), (394, 45850),

Gene: Che9d\_77 Start: 43923, Stop: 44576, Start Num: 168

Candidate Starts for Che9d\_77:

(78, 43686), (82, 43698), (83, 43701), (90, 43734), (91, 43737), (94, 43740), (148, 43875), (Start: 168 @43923 has 79 MA's), (178, 43950), (192, 44004), (199, 44031), (248, 44124), (278, 44190), (295, 44223), (374, 44388), (390, 44421), (396, 44457), (401, 44475), (412, 44538), (417, 44547),

Gene: Che9d\_76 Start: 43217, Stop: 43891, Start Num: 168

Candidate Starts for Che9d\_76:

(92, 43040), (95, 43046), (101, 43055), (Start: 168 @43217 has 79 MA's), (178, 43244), (192, 43298), (216, 43346), (252, 43448), (262, 43463), (265, 43466), (339, 43619), (354, 43640), (355, 43643), (381, 43718), (396, 43772), (417, 43862),

Gene: Cheetobro\_71 Start: 43634, Stop: 44479, Start Num: 68

Candidate Starts for Cheetobro\_71:

(52, 43583), (Start: 68 @43634 has 46 MA's), (Start: 75 @43661 has 1 MA's), (86, 43691), (223, 43919), (226, 43931), (241, 43979), (266, 44045), (359, 44219), (382, 44297), (393, 44324), (398, 44363),

Gene: Chelms\_46 Start: 44743, Stop: 44021, Start Num: 139

Candidate Starts for Chelms\_46:

(Start: 139 @44743 has 67 MA's), (170, 44677), (208, 44626), (235, 44551), (239, 44536), (273, 44452), (313, 44377), (372, 44221), (394, 44173), (396, 44143), (423, 44041),

Gene: Chop\_68 Start: 43754, Stop: 44467, Start Num: 168

Candidate Starts for Chop\_68:

(77, 43520), (123, 43649), (Start: 168 @43754 has 79 MA's), (178, 43781), (193, 43847), (296, 44072), (309, 44105), (332, 44159), (357, 44216), (371, 44267), (372, 44270), (390, 44309), (396, 44345),

Gene: CinnamonToast\_52 Start: 46616, Stop: 45894, Start Num: 139

Candidate Starts for CinnamonToast\_52:

(Start: 139 @46616 has 67 MA's), (155, 46577), (170, 46550), (198, 46517), (208, 46499), (235, 46424), (239, 46409), (273, 46325), (313, 46250), (393, 46049), (394, 46046), (423, 45914),

Gene: ClamChowder\_61 Start: 44265, Stop: 45221, Start Num: 68

Candidate Starts for ClamChowder\_61:

(Start: 68 @44265 has 46 MA's), (104, 44361), (135, 44451), (239, 44721), (247, 44745), (266, 44790), (268, 44796), (321, 44895), (369, 45006), (392, 45060),

Gene: Clown\_9 Start: 5559, Stop: 6242, Start Num: 175

Candidate Starts for Clown\_9:

(150, 5499), (Start: 175 @5559 has 2 MA's), (196, 5628), (236, 5730), (243, 5751), (255, 5787), (283, 5847), (287, 5859), (302, 5883), (305, 5892), (331, 5964), (347, 6000), (350, 6003), (387, 6081), (403, 6162), (418, 6234),

Gene: Crete\_47 Start: 45009, Stop: 44287, Start Num: 139

Candidate Starts for Crete\_47:

(Start: 139 @45009 has 67 MA's), (155, 44970), (170, 44943), (208, 44892), (235, 44817), (239, 44802), (273, 44718), (313, 44643), (372, 44487), (394, 44439), (396, 44409), (423, 44307),

Gene: Crumble\_62 Start: 40074, Stop: 41024, Start Num: 128

Candidate Starts for Crumble\_62:

(Start: 128 @40074 has 28 MA's), (169, 40176), (179, 40206), (181, 40227), (202, 40299), (216, 40323), (223, 40347), (231, 40377), (233, 40383), (251, 40449), (252, 40455), (275, 40503), (297,



40566), (308, 40596), (379, 40815), (385, 40821), (393, 40845), (394, 40848), (396, 40878), (399, 40890), (406, 40923), (412, 40959), (414, 40968), (420, 40980), (424, 40986), (429, 40998), (434, 41007), (436, 41016),

Gene: DLane\_61 Start: 40914, Stop: 41870, Start Num: 68

Candidate Starts for DLane\_61:

(Start: 68 @40914 has 46 MA's), (Start: 75 @40941 has 1 MA's), (89, 40983), (104, 41010), (109, 41034), (118, 41049), (135, 41100), (152, 41133), (192, 41211), (196, 41235), (216, 41271), (220, 41286), (226, 41307), (229, 41319), (247, 41376), (266, 41421), (304, 41484), (320, 41505), (359, 41607), (393, 41712),

Gene: DaWorst\_67 Start: 43677, Stop: 44627, Start Num: 128

Candidate Starts for DaWorst\_67:

(Start: 128 @43677 has 28 MA's), (169, 43779), (179, 43809), (181, 43830), (202, 43902), (216, 43926), (223, 43950), (231, 43980), (233, 43986), (251, 44052), (252, 44058), (275, 44106), (297, 44169), (308, 44199), (379, 44418), (385, 44424), (393, 44448), (394, 44451), (396, 44481), (399, 44493), (406, 44526), (412, 44562), (414, 44571), (420, 44583), (424, 44589), (429, 44601), (434, 44610),

Gene: DaddyRickover\_77 Start: 47697, Stop: 48362, Start Num: 162

Candidate Starts for DaddyRickover\_77:

(137, 47643), (Start: 162 @47697 has 9 MA's), (Start: 168 @47706 has 79 MA's), (170, 47712), (192, 47787), (199, 47814), (234, 47874), (273, 47964), (278, 47976), (295, 48009), (301, 48024), (374, 48174), (390, 48207), (396, 48243), (417, 48333),

Gene: Daegal\_70 Start: 45947, Stop: 46621, Start Num: 159

Candidate Starts for Daegal\_70:

(Start: 38 @45581 has 1 MA's), (51, 45638), (Start: 53 @45641 has 1 MA's), (72, 45698), (84, 45743), (88, 45767), (108, 45818), (131, 45872), (Start: 159 @45947 has 18 MA's), (161, 45950), (Start: 168 @45959 has 79 MA's), (178, 45986), (225, 46106), (243, 46160), (277, 46238), (279, 46244), (291, 46268), (298, 46277), (326, 46319), (361, 46403), (367, 46406), (374, 46439), (376, 46445), (380, 46451), (397, 46514), (405, 46550), (410, 46577), (412, 46592), (417, 46601),

Gene: Daenerys\_73 Start: 47291, Stop: 47959, Start Num: 159

Candidate Starts for Daenerys\_73:

(Start: 159 @47291 has 18 MA's), (178, 47330), (192, 47384), (199, 47411), (234, 47471), (273, 47561), (278, 47573), (295, 47606), (374, 47771), (390, 47804), (396, 47840), (417, 47930),

Gene: Dakiti\_47 Start: 45611, Stop: 44889, Start Num: 139

Candidate Starts for Dakiti\_47:

(Start: 139 @45611 has 67 MA's), (170, 45545), (208, 45494), (235, 45419), (239, 45404), (273, 45320), (313, 45245), (372, 45089), (394, 45041), (396, 45011), (423, 44909),

Gene: Damp\_46 Start: 45584, Stop: 44865, Start Num: 139

Candidate Starts for Damp\_46:

(Start: 139 @45584 has 67 MA's), (170, 45518), (208, 45467), (212, 45461), (239, 45377), (254, 45332), (273, 45293), (313, 45218), (394, 45014),

Gene: Danyall\_60 Start: 44369, Stop: 45325, Start Num: 68

Candidate Starts for Danyall\_60:

(33, 44243), (47, 44309), (Start: 68 @44369 has 46 MA's), (104, 44465), (135, 44555), (239, 44825), (247, 44849), (266, 44894), (268, 44900), (321, 44999), (369, 45110), (392, 45164),

Gene: DeepSoil15\_67 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for DeepSoil15\_67:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: DelRio\_67 Start: 43775, Stop: 44485, Start Num: 168

Candidate Starts for DelRio\_67:

(77, 43541), (123, 43670), (Start: 168 @43775 has 79 MA's), (178, 43802), (193, 43868), (296, 44093), (309, 44126), (332, 44180), (357, 44237), (371, 44288), (372, 44291), (390, 44330), (396, 44366),

Gene: Delrey21\_89 Start: 60618, Stop: 61307, Start Num: 168

Candidate Starts for Delrey21\_89:

(144, 60561), (Start: 168 @60618 has 79 MA's), (192, 60699), (314, 60993), (326, 61005), (384, 61143), (390, 61161), (405, 61236), (406, 61242),

Gene: Demosthenes\_42 Start: 45591, Stop: 44875, Start Num: 139

Candidate Starts for Demosthenes\_42:

(Start: 139 @45591 has 67 MA's), (147, 45576), (208, 45474), (239, 45384), (242, 45378), (313, 45225), (335, 45162), (352, 45132), (413, 44910),

Gene: Dewey\_62 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Dewey\_62:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Diabla\_50 Start: 46492, Stop: 45770, Start Num: 139

Candidate Starts for Diabla\_50:

(Start: 139 @46492 has 67 MA's), (155, 46453), (208, 46375), (235, 46300), (239, 46285), (273, 46201), (313, 46126), (394, 45922), (396, 45892), (423, 45790),

Gene: DillTech15\_74 Start: 44613, Stop: 45275, Start Num: 162

Candidate Starts for DillTech15\_74:

(Start: 124 @44532 has 2 MA's), (Start: 128 @44541 has 28 MA's), (140, 44568), (Start: 162 @44613 has 9 MA's), (178, 44646), (192, 44700), (199, 44727), (234, 44787), (273, 44877), (278, 44889), (295, 44922), (357, 45039), (374, 45087), (390, 45120), (396, 45156), (417, 45246),

Gene: DobbysSock\_52 Start: 38487, Stop: 39110, Start Num: 165

Candidate Starts for DobbysSock\_52:

(156, 38466), (Start: 165 @38487 has 16 MA's), (178, 38517), (192, 38571), (232, 38640), (253, 38688), (272, 38721), (312, 38790), (315, 38799), (370, 38904), (374, 38913), (417, 39078),

Gene: DocB7\_036 Start: 37520, Stop: 36810, Start Num: 136

Candidate Starts for DocB7\_036:

(136, 37520), (143, 37511), (155, 37478), (170, 37451), (Start: 176 @37442 has 7 MA's), (232, 37337), (239, 37310), (300, 37184), (313, 37154), (356, 37052), (405, 36881), (413, 36839), (416, 36827), (421, 36821),

Gene: DoctorFroggo\_89 Start: 60618, Stop: 61307, Start Num: 168

Candidate Starts for DoctorFroggo\_89:

(144, 60561), (Start: 168 @60618 has 79 MA's), (192, 60699), (314, 60993), (326, 61005), (384, 61143), (390, 61161), (405, 61236), (406, 61242),

Gene: Donkeykong\_75 Start: 46725, Stop: 47396, Start Num: 168

Candidate Starts for Donkeykong\_75:

(131, 46662), (161, 46716), (Start: 168 @46725 has 79 MA's), (170, 46731), (192, 46806), (254, 46956), (257, 46959), (280, 47007), (334, 47109), (354, 47145), (357, 47154), (374, 47208), (401, 47295), (417, 47367),

Gene: Doom\_57 Start: 40834, Stop: 39845, Start Num: 42

Candidate Starts for Doom\_57:

(Start: 42 @40834 has 1 MA's), (43, 40828), (50, 40798), (54, 40786), (73, 40729), (103, 40645), (218, 40408), (249, 40312), (260, 40282), (267, 40270), (290, 40225), (299, 40213), (318, 40183), (367, 40060), (368, 40045), (372, 40030), (374, 40027), (392, 39988), (415, 39859),

Gene: Doomphist\_77 Start: 47104, Stop: 47772, Start Num: 159

Candidate Starts for Doomphist\_77:

(Start: 159 @47104 has 18 MA's), (178, 47143), (192, 47197), (199, 47224), (234, 47284), (273, 47374), (278, 47386), (295, 47419), (374, 47584), (390, 47617), (396, 47653), (417, 47743),

Gene: Eggsie\_46 Start: 44453, Stop: 43731, Start Num: 139

Candidate Starts for Eggsie\_46:

(Start: 139 @44453 has 67 MA's), (155, 44414), (170, 44387), (198, 44354), (208, 44336), (235, 44261), (239, 44246), (273, 44162), (313, 44087), (372, 43931), (394, 43883), (396, 43853), (423, 43751),

Gene: Ein37\_67 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Ein37\_67:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Ekhein\_47 Start: 44256, Stop: 43534, Start Num: 139

Candidate Starts for Ekhein\_47:

(Start: 139 @44256 has 67 MA's), (155, 44217), (170, 44190), (208, 44139), (235, 44064), (239, 44049), (273, 43965), (313, 43890), (372, 43734), (394, 43686), (396, 43656), (423, 43554),

Gene: Emma\_69 Start: 43700, Stop: 44650, Start Num: 128

Candidate Starts for Emma\_69:

(Start: 128 @43700 has 28 MA's), (169, 43802), (179, 43832), (181, 43853), (202, 43925), (216, 43949), (223, 43973), (231, 44003), (233, 44009), (251, 44075), (252, 44081), (275, 44129), (297, 44192), (308, 44222), (317, 44240), (341, 44306), (379, 44441), (385, 44447), (393, 44471), (394, 44474), (396, 44504), (399, 44516), (406, 44549), (412, 44585), (414, 44594), (420, 44606), (424, 44612), (429, 44624), (434, 44633),

Gene: Empress\_72 Start: 45915, Stop: 46583, Start Num: 159

Candidate Starts for Empress\_72:

(Start: 159 @45915 has 18 MA's), (178, 45954), (192, 46008), (199, 46035), (234, 46095), (273, 46185), (278, 46197), (295, 46230), (374, 46395), (390, 46428), (396, 46464), (417, 46554),

Gene: Eponine\_73 Start: 44480, Stop: 45325, Start Num: 68

Candidate Starts for Eponine\_73:

(52, 44429), (Start: 68 @44480 has 46 MA's), (Start: 75 @44507 has 1 MA's), (86, 44537), (223, 44765), (226, 44777), (241, 44825), (266, 44891), (359, 45065), (382, 45143), (393, 45170), (398, 45209),

Gene: Estave1\_72 Start: 46536, Stop: 47486, Start Num: 128

Candidate Starts for Estave1\_72:

(Start: 128 @46536 has 28 MA's), (169, 46638), (179, 46668), (181, 46689), (202, 46761), (216, 46785), (223, 46809), (231, 46839), (233, 46845), (251, 46911), (252, 46917), (275, 46965), (297, 47028), (308, 47058), (379, 47277), (385, 47283), (393, 47307), (394, 47310), (396, 47340), (399, 47352), (406, 47385), (412, 47421), (414, 47430), (420, 47442), (424, 47448), (429, 47460), (434, 47469), (436, 47478),

Gene: Evanesce\_66 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Evanesce\_66:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Exiguo\_46 Start: 44268, Stop: 43546, Start Num: 139

Candidate Starts for Exiguo\_46:

(Start: 139 @44268 has 67 MA's), (155, 44229), (170, 44202), (208, 44151), (235, 44076), (239, 44061), (273, 43977), (313, 43902), (372, 43746), (394, 43698), (396, 43668), (423, 43566),

Gene: Fajezeel\_69 Start: 43491, Stop: 42613, Start Num: 55

Candidate Starts for Fajezeel\_69:

(Start: 55 @43491 has 1 MA's), (Start: 61 @43476 has 6 MA's), (Start: 67 @43455 has 4 MA's), (Start: 75 @43425 has 1 MA's), (78, 43422), (87, 43392), (89, 43383), (138, 43263), (226, 43155), (247, 43086), (281, 43011), (368, 42825), (379, 42795), (419, 42636),

Gene: Fancypants\_70 Start: 44712, Stop: 45662, Start Num: 128

Candidate Starts for Fancypants\_70:

(Start: 128 @44712 has 28 MA's), (169, 44814), (179, 44844), (181, 44865), (202, 44937), (216, 44961), (223, 44985), (231, 45015), (233, 45021), (251, 45087), (252, 45093), (275, 45141), (297, 45204), (308, 45234), (379, 45453), (385, 45459), (393, 45483), (394, 45486), (396, 45516), (399, 45528), (406, 45561), (412, 45597), (414, 45606), (420, 45618), (424, 45624), (429, 45636), (434, 45645),

Gene: Fastidio\_67 Start: 41425, Stop: 42081, Start Num: 167

Candidate Starts for Fastidio\_67:

(119, 41311), (Start: 167 @41425 has 1 MA's), (178, 41452), (192, 41506), (199, 41533), (234, 41593), (273, 41683), (278, 41695), (295, 41728), (357, 41845), (374, 41893), (390, 41926), (396, 41962), (417, 42052),

Gene: FelixAlejandro\_51 Start: 46760, Stop: 46038, Start Num: 139

Candidate Starts for FelixAlejandro\_51:

(Start: 139 @46760 has 67 MA's), (155, 46721), (170, 46694), (198, 46661), (208, 46643), (235, 46568), (239, 46553), (273, 46469), (313, 46394), (393, 46193), (394, 46190), (423, 46058),

Gene: Filuzino\_64 Start: 41219, Stop: 42205, Start Num: 68

Candidate Starts for Filuzino\_64:

(Start: 68 @41219 has 46 MA's), (Start: 75 @41246 has 1 MA's), (79, 41252), (89, 41288), (104, 41315), (109, 41339), (118, 41354), (135, 41405), (152, 41438), (156, 41456), (204, 41585), (216,

41609), (229, 41657), (247, 41714), (359, 41942), (368, 41987), (370, 41996), (393, 42047),

Gene: Fionnbharth\_71 Start: 43878, Stop: 44723, Start Num: 68

Candidate Starts for Fionnbharth\_71:

(52, 43827), (Start: 68 @43878 has 46 MA's), (Start: 75 @43905 has 1 MA's), (86, 43935), (223, 44163), (226, 44175), (241, 44223), (266, 44289), (359, 44463), (382, 44541), (393, 44568), (398, 44607),

Gene: Fitzgerald\_83 Start: 58102, Stop: 58800, Start Num: 168

Candidate Starts for Fitzgerald\_83:

(10, 57355), (Start: 40 @57724 has 3 MA's), (58, 57790), (137, 58027), (148, 58051), (Start: 168 @58102 has 79 MA's), (180, 58150), (183, 58159), (186, 58171), (232, 58279), (252, 58339), (293, 58420), (300, 58435), (309, 58456), (363, 58588), (372, 58621), (393, 58663), (399, 58708), (406, 58741), (411, 58768), (418, 58789),

Gene: Flakey\_46 Start: 45132, Stop: 44410, Start Num: 139

Candidate Starts for Flakey\_46:

(Start: 139 @45132 has 67 MA's), (155, 45093), (170, 45066), (208, 45015), (235, 44940), (239, 44925), (273, 44841), (313, 44766), (372, 44610), (394, 44562), (396, 44532), (423, 44430),

Gene: Flathead\_72 Start: 45157, Stop: 46023, Start Num: 125

Candidate Starts for Flathead\_72:

(93, 45073), (100, 45085), (Start: 125 @45157 has 3 MA's), (Start: 165 @45256 has 16 MA's), (178, 45286), (185, 45319), (186, 45328), (198, 45376), (219, 45409), (241, 45478), (270, 45550), (282, 45574), (287, 45589), (358, 45760), (366, 45796), (389, 45862), (393, 45868), (411, 45973), (417, 45991),

Gene: Forge\_62 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Forge\_62:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Fosterous\_87 Start: 58250, Stop: 58948, Start Num: 168

Candidate Starts for Fosterous\_87:

(137, 58175), (148, 58199), (Start: 168 @58250 has 79 MA's), (180, 58298), (183, 58307), (186, 58319), (232, 58427), (252, 58487), (293, 58568), (300, 58583), (309, 58604), (363, 58736), (372, 58769), (393, 58811), (399, 58856), (406, 58889), (411, 58916), (418, 58937),

Gene: Francois\_66 Start: 42774, Stop: 43487, Start Num: 168

Candidate Starts for Francois\_66:

(77, 42540), (123, 42669), (Start: 168 @42774 has 79 MA's), (178, 42801), (193, 42867), (243, 42975), (309, 43125), (332, 43179), (357, 43236), (371, 43287), (372, 43290), (377, 43302), (390, 43329), (393, 43332), (396, 43365), (418, 43458),

Gene: Frokostdame\_67 Start: 43587, Stop: 44648, Start Num: 67

Candidate Starts for Frokostdame\_67:

(Start: 67 @43587 has 4 MA's), (Start: 68 @43590 has 46 MA's), (104, 43686), (Start: 122 @43743 has 3 MA's), (135, 43776), (190, 43920), (221, 44010), (223, 44016), (229, 44040), (239, 44073), (247, 44097), (266, 44142), (268, 44148), (359, 44388), (369, 44436), (393, 44493), (404, 44559),

Gene: Fugax\_62 Start: 44257, Stop: 45213, Start Num: 68

Candidate Starts for Fugax\_62:

(Start: 68 @44257 has 46 MA's), (104, 44353), (135, 44443), (239, 44713), (247, 44737), (266, 44782), (268, 44788), (321, 44887), (369, 44998), (392, 45052),

Gene: GAL1\_56 Start: 38270, Stop: 38929, Start Num: 165

Candidate Starts for GAL1\_56:

(49, 37952), (Start: 59 @37976 has 7 MA's), (74, 38027), (83, 38060), (98, 38108), (117, 38156), (Start: 122 @38177 has 3 MA's), (153, 38240), (Start: 165 @38270 has 16 MA's), (192, 38354), (252, 38495), (294, 38573), (301, 38588), (325, 38621), (340, 38660), (345, 38663), (354, 38678), (357, 38687), (390, 38768), (405, 38843), (412, 38885), (417, 38900),

Gene: GMA1\_63 Start: 37160, Stop: 38131, Start Num: 122

Candidate Starts for GMA1\_63:

(Start: 122 @37160 has 3 MA's), (126, 37166), (149, 37220), (202, 37400), (220, 37439), (246, 37535), (285, 37634), (297, 37667), (308, 37697), (311, 37703), (412, 38075),

Gene: GMA7\_38 Start: 39507, Stop: 38788, Start Num: 139

Candidate Starts for GMA7\_38:

(Start: 139 @39507 has 67 MA's), (170, 39441), (198, 39408), (208, 39390), (235, 39315), (239, 39300), (243, 39291), (273, 39216), (313, 39141),

Gene: GTE7\_37 Start: 39538, Stop: 38819, Start Num: 139

Candidate Starts for GTE7\_37:

(Start: 139 @39538 has 67 MA's), (155, 39499), (170, 39472), (198, 39439), (208, 39421), (235, 39346), (239, 39331), (243, 39322), (273, 39247), (313, 39172),

Gene: GalacticEye\_46 Start: 46382, Stop: 45663, Start Num: 139

Candidate Starts for GalacticEye\_46:

(Start: 139 @46382 has 67 MA's), (170, 46316), (208, 46265), (212, 46259), (239, 46175), (254, 46130), (273, 46091), (313, 46016), (394, 45812),

Gene: Galadriel\_86 Start: 58466, Stop: 59212, Start Num: 168

Candidate Starts for Galadriel\_86:

(137, 58391), (148, 58415), (Start: 168 @58466 has 79 MA's), (180, 58514), (183, 58523), (186, 58535), (252, 58733), (261, 58748), (288, 58808), (293, 58814), (296, 58817), (300, 58829), (304, 58835), (309, 58850), (357, 58961), (393, 59075), (399, 59120), (406, 59153), (411, 59180), (418, 59201),

Gene: Galadriel\_11 Start: 4990, Stop: 5733, Start Num: 165

Candidate Starts for Galadriel\_11:

(Start: 165 @4990 has 16 MA's), (182, 5050), (183, 5053), (193, 5089), (224, 5155), (240, 5200), (245, 5218), (249, 5224), (284, 5302), (310, 5362), (323, 5386), (327, 5395), (337, 5428), (357, 5467), (361, 5476), (373, 5536), (386, 5557), (391, 5575), (393, 5578), (401, 5629), (410, 5677),

Gene: Gancho\_66 Start: 44643, Stop: 45305, Start Num: 168

Candidate Starts for Gancho\_66:

(46, 44301), (72, 44382), (84, 44427), (88, 44451), (108, 44502), (131, 44556), (Start: 159 @44631 has 18 MA's), (161, 44634), (Start: 168 @44643 has 79 MA's), (178, 44670), (243, 44844), (277, 44922), (278, 44925), (279, 44928), (291, 44952), (298, 44961), (326, 45003), (361, 45087), (367, 45090), (374, 45123), (376, 45129), (380, 45135), (397, 45198), (405, 45234), (410, 45261), (412, 45276), (417, 45285),

Gene: Geralt\_67 Start: 45011, Stop: 45679, Start Num: 159

Candidate Starts for Geralt\_67:

(Start: 159 @45011 has 18 MA's), (178, 45050), (192, 45104), (199, 45131), (234, 45191), (273, 45281), (278, 45293), (295, 45326), (374, 45491), (390, 45524), (396, 45560), (417, 45650),

Gene: Getalong\_67 Start: 41639, Stop: 42277, Start Num: 165

Candidate Starts for Getalong\_67:

(154, 41618), (Start: 165 @41639 has 16 MA's), (178, 41669), (192, 41723), (199, 41750), (252, 41852), (294, 41930), (374, 42083), (417, 42248),

Gene: Giles\_62 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Giles\_62:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Gorko\_46 Start: 44260, Stop: 43538, Start Num: 139

Candidate Starts for Gorko\_46:

(Start: 139 @44260 has 67 MA's), (155, 44221), (170, 44194), (208, 44143), (235, 44068), (239, 44053), (273, 43969), (313, 43894), (372, 43738), (394, 43690), (396, 43660), (423, 43558),

Gene: GourdThymes\_46 Start: 45134, Stop: 44412, Start Num: 139

Candidate Starts for GourdThymes\_46:

(Start: 139 @45134 has 67 MA's), (155, 45095), (170, 45068), (208, 45017), (235, 44942), (239, 44927), (273, 44843), (313, 44768), (372, 44612), (394, 44564), (396, 44534), (423, 44432),

Gene: GrandSlam\_68 Start: 43754, Stop: 44467, Start Num: 168

Candidate Starts for GrandSlam\_68:

(77, 43520), (123, 43649), (Start: 168 @43754 has 79 MA's), (178, 43781), (193, 43847), (296, 44072), (309, 44105), (332, 44159), (357, 44216), (371, 44267), (372, 44270), (390, 44309), (396, 44345),

Gene: Gravaillia\_63 Start: 44924, Stop: 45586, Start Num: 168

Candidate Starts for Gravaillia\_63:

(46, 44582), (72, 44663), (84, 44708), (88, 44732), (108, 44783), (131, 44837), (Start: 159 @44912 has 18 MA's), (161, 44915), (Start: 168 @44924 has 79 MA's), (178, 44951), (243, 45125), (277, 45203), (279, 45209), (291, 45233), (298, 45242), (326, 45284), (361, 45368), (367, 45371), (374, 45404), (376, 45410), (380, 45416), (397, 45479), (405, 45515), (410, 45542), (412, 45557), (417, 45566),

Gene: GrecoEtereo\_68 Start: 43047, Stop: 42184, Start Num: 61

Candidate Starts for GrecoEtereo\_68:

(Start: 55 @43062 has 1 MA's), (Start: 61 @43047 has 6 MA's), (Start: 67 @43026 has 4 MA's), (Start: 75 @42996 has 1 MA's), (78, 42993), (87, 42963), (89, 42954), (138, 42834), (226, 42726), (247, 42657), (281, 42582), (368, 42396), (379, 42366), (419, 42207),

Gene: Greg\_69 Start: 43455, Stop: 42613, Start Num: 67

Candidate Starts for Greg\_69:

(Start: 55 @43491 has 1 MA's), (Start: 61 @43476 has 6 MA's), (Start: 67 @43455 has 4 MA's), (Start: 75 @43425 has 1 MA's), (78, 43422), (87, 43392), (89, 43383), (138, 43263), (226, 43155), (247, 43086), (281, 43011), (368, 42825), (379, 42795), (419, 42636),

Gene: Gudmit\_63 Start: 37864, Stop: 38583, Start Num: 165

Candidate Starts for Gudmit\_63:

(Start: 165 @37864 has 16 MA's), (178, 37894), (183, 37924), (186, 37936), (261, 38116), (300, 38197), (309, 38218), (371, 38380), (377, 38395), (393, 38425), (422, 38554),

Gene: Guillaume\_46 Start: 46432, Stop: 45713, Start Num: 139

Candidate Starts for Guillaume\_46:

(Start: 139 @46432 has 67 MA's), (170, 46366), (208, 46315), (212, 46309), (239, 46225), (254, 46180), (273, 46141), (313, 46066), (318, 46057), (394, 45862),

Gene: HC\_55 Start: 36568, Stop: 37686, Start Num: 38

Candidate Starts for HC\_55:

(27, 36517), (31, 36532), (Start: 38 @36568 has 1 MA's), (Start: 68 @36679 has 46 MA's), (Start: 75 @36709 has 1 MA's), (104, 36778), (109, 36802), (118, 36817), (135, 36868), (152, 36901), (204, 37048), (216, 37072), (229, 37120), (247, 37177), (266, 37222), (344, 37384), (359, 37423), (393, 37528),

Gene: HH92\_66 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for HH92\_66:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Hadrien\_66 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Hadrien\_66:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Hail\_62 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Hail\_62:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Hail2Pitt\_45 Start: 46908, Stop: 46189, Start Num: 139

Candidate Starts for Hail2Pitt\_45:

(Start: 139 @46908 has 67 MA's), (170, 46842), (208, 46791), (212, 46785), (239, 46701), (254, 46656), (273, 46617), (313, 46542), (318, 46533), (394, 46338),

Gene: Hamood\_68 Start: 43754, Stop: 44467, Start Num: 168

Candidate Starts for Hamood\_68:

(77, 43520), (123, 43649), (Start: 168 @43754 has 79 MA's), (178, 43781), (193, 43847), (296, 44072), (309, 44105), (332, 44159), (357, 44216), (371, 44267), (372, 44270), (390, 44309), (396, 44345),

Gene: Hamulus\_73 Start: 46052, Stop: 46708, Start Num: 168

Candidate Starts for Hamulus\_73:

(111, 45920), (Start: 162 @46043 has 9 MA's), (Start: 168 @46052 has 79 MA's), (170, 46058), (192, 46133), (199, 46160), (234, 46220), (273, 46310), (278, 46322), (295, 46355), (301, 46370), (374, 46520), (390, 46553), (396, 46589), (417, 46679),

Gene: Harambe\_46 Start: 46699, Stop: 45980, Start Num: 139



Candidate Starts for Harambe\_46:

(Start: 139 @46699 has 67 MA's), (170, 46633), (208, 46582), (212, 46576), (239, 46492), (254, 46447), (269, 46414), (273, 46408), (313, 46333), (394, 46129),

Gene: HarryOW\_66 Start: 43503, Stop: 42691, Start Num: 75

Candidate Starts for HarryOW\_66:

(Start: 55 @43569 has 1 MA's), (Start: 61 @43554 has 6 MA's), (Start: 67 @43533 has 4 MA's), (Start: 75 @43503 has 1 MA's), (78, 43500), (87, 43470), (89, 43461), (138, 43341), (226, 43233), (247, 43164), (281, 43089), (368, 42903), (379, 42873), (419, 42714),

Gene: HayZem\_48 Start: 45290, Stop: 44571, Start Num: 139

Candidate Starts for HayZem\_48:

(Start: 139 @45290 has 67 MA's), (155, 45251), (170, 45224), (198, 45191), (208, 45173), (235, 45098), (239, 45083), (243, 45074), (273, 44999), (313, 44924),

Gene: Hegedechwinu\_81 Start: 47355, Stop: 48155, Start Num: 162

Candidate Starts for Hegedechwinu\_81:

(Start: 162 @47355 has 9 MA's), (Start: 163 @47358 has 2 MA's), (178, 47391), (185, 47424), (186, 47433), (198, 47481), (219, 47514), (241, 47583), (270, 47655), (282, 47679), (287, 47694), (358, 47865), (366, 47901), (389, 47967), (393, 47973), (411, 48078), (417, 48096), (433, 48126),

Gene: Hello\_46 Start: 46661, Stop: 45942, Start Num: 139

Candidate Starts for Hello\_46:

(Start: 139 @46661 has 67 MA's), (170, 46595), (208, 46544), (212, 46538), (239, 46454), (254, 46409), (273, 46370), (313, 46295), (394, 46091),

Gene: Holliday\_69 Start: 42905, Stop: 43861, Start Num: 122

Candidate Starts for Holliday\_69:

(Start: 122 @42905 has 3 MA's), (151, 42965), (171, 43025), (181, 43070), (202, 43142), (223, 43190), (233, 43226), (251, 43292), (252, 43298), (308, 43439), (349, 43550), (399, 43733), (420, 43823), (424, 43829),

Gene: Hollow\_43 Start: 45997, Stop: 45281, Start Num: 139

Candidate Starts for Hollow\_43:

(Start: 139 @45997 has 67 MA's), (147, 45982), (208, 45880), (239, 45790), (242, 45784), (313, 45631), (335, 45568), (352, 45538), (372, 45475), (413, 45316),

Gene: Hotorobo\_46 Start: 45139, Stop: 44417, Start Num: 139

Candidate Starts for Hotorobo\_46:

(Start: 139 @45139 has 67 MA's), (155, 45100), (170, 45073), (208, 45022), (235, 44947), (239, 44932), (273, 44848), (313, 44773), (372, 44617), (394, 44569), (396, 44539), (423, 44437),

Gene: Hyzer\_73 Start: 48832, Stop: 49506, Start Num: 168

Candidate Starts for Hyzer\_73:

(Start: 165 @48829 has 16 MA's), (Start: 168 @48832 has 79 MA's), (178, 48859), (192, 48913), (199, 48940), (239, 49021), (243, 49030), (294, 49132), (335, 49216), (374, 49318), (393, 49354), (406, 49432), (417, 49477),

Gene: IMpilo\_63 Start: 41773, Stop: 42438, Start Num: 162

Candidate Starts for IMpilo\_63:

(137, 41719), (Start: 162 @41773 has 9 MA's), (Start: 168 @41782 has 79 MA's), (170, 41788), (192, 41863), (199, 41890), (234, 41950), (273, 42040), (278, 42052), (295, 42085), (301, 42100), (374, 42250), (390, 42283), (396, 42319), (417, 42409),

Gene: IMpilo\_61 Start: 40322, Stop: 41200, Start Num: 68

Candidate Starts for IMpilo\_61:

(Start: 68 @40322 has 46 MA's), (Start: 75 @40349 has 1 MA's), (79, 40355), (89, 40391), (135, 40508), (142, 40517), (147, 40529), (151, 40538), (197, 40604), (247, 40709), (266, 40754), (268, 40760), (304, 40817), (320, 40838), (359, 40940), (372, 41000), (393, 41045),

Gene: lbhubesi\_66 Start: 42310, Stop: 42972, Start Num: 168

Candidate Starts for lbhubesi\_66:

(92, 42133), (95, 42139), (101, 42148), (141, 42253), (Start: 168 @42310 has 79 MA's), (192, 42391), (280, 42583), (312, 42643), (372, 42781), (374, 42784), (405, 42892), (412, 42934), (417, 42943),

Gene: Ibrahim\_60 Start: 41425, Stop: 42162, Start Num: 176

Candidate Starts for Ibrahim\_60:

(35, 41008), (108, 41266), (112, 41272), (Start: 176 @41425 has 7 MA's), (183, 41467), (206, 41539), (215, 41557), (263, 41683), (271, 41701), (324, 41815), (333, 41851), (353, 41896), (374, 41980), (378, 41989), (380, 41992), (388, 42001), (393, 42019), (422, 42151),

Gene: Inventum\_72 Start: 45927, Stop: 46595, Start Num: 159

Candidate Starts for Inventum\_72:

(Start: 159 @45927 has 18 MA's), (178, 45966), (192, 46020), (199, 46047), (234, 46107), (273, 46197), (278, 46209), (295, 46242), (374, 46407), (390, 46440), (396, 46476), (417, 46566),

Gene: Island3\_55 Start: 37346, Stop: 37996, Start Num: 168

Candidate Starts for Island3\_55:

(Start: 168 @37346 has 79 MA's), (239, 37532), (252, 37568), (261, 37583), (263, 37586), (325, 37694), (360, 37760), (376, 37814), (393, 37844), (417, 37967),

Gene: JF1\_71 Start: 43844, Stop: 44689, Start Num: 68

Candidate Starts for JF1\_71:

(Start: 68 @43844 has 46 MA's), (Start: 75 @43871 has 1 MA's), (86, 43901), (223, 44129), (226, 44141), (241, 44189), (266, 44255), (359, 44429), (382, 44507), (393, 44534), (398, 44573),

Gene: JKSyngboy\_82 Start: 57242, Stop: 57988, Start Num: 165

Candidate Starts for JKSyngboy\_82:

(10, 56504), (36, 56852), (137, 57170), (148, 57194), (Start: 165 @57242 has 16 MA's), (179, 57275), (180, 57290), (183, 57299), (186, 57311), (244, 57479), (252, 57509), (261, 57524), (293, 57590), (296, 57593), (300, 57605), (304, 57611), (309, 57626), (342, 57704), (393, 57851), (399, 57896), (412, 57965),

Gene: Jabberwocky\_84 Start: 58563, Stop: 59261, Start Num: 168

Candidate Starts for Jabberwocky\_84:

(10, 57816), (Start: 40 @58185 has 3 MA's), (58, 58251), (137, 58488), (148, 58512), (Start: 168 @58563 has 79 MA's), (180, 58611), (183, 58620), (186, 58632), (232, 58740), (252, 58800), (293, 58881), (300, 58896), (309, 58917), (363, 59049), (372, 59082), (393, 59124), (399, 59169), (406, 59202), (411, 59229), (418, 59250),

Gene: JalFarm20\_88 Start: 49372, Stop: 50172, Start Num: 162

Candidate Starts for JalFarm20\_88:

(Start: 162 @49372 has 9 MA's), (Start: 163 @49375 has 2 MA's), (178, 49408), (185, 49441), (186, 49450), (198, 49498), (219, 49531), (241, 49600), (270, 49672), (282, 49696), (287, 49711), (358, 49882), (366, 49918), (389, 49984), (393, 49990), (411, 50095), (417, 50113), (433, 50143),

Gene: JalFarm20\_79 Start: 46369, Stop: 47022, Start Num: 168

Candidate Starts for JalFarm20\_79:

(114, 46255), (Start: 168 @46369 has 79 MA's), (192, 46450), (199, 46477), (227, 46516), (252, 46588), (273, 46624), (295, 46669), (328, 46732), (372, 46831), (374, 46834), (390, 46867), (417, 46993),

Gene: Jams\_46 Start: 45870, Stop: 45151, Start Num: 139

Candidate Starts for Jams\_46:

(Start: 139 @45870 has 67 MA's), (170, 45804), (204, 45762), (208, 45753), (212, 45747), (239, 45663), (254, 45618), (269, 45585), (273, 45579), (313, 45504), (394, 45300),

Gene: Jarcob\_66 Start: 44101, Stop: 45051, Start Num: 128

Candidate Starts for Jarcob\_66:

(Start: 128 @44101 has 28 MA's), (169, 44203), (179, 44233), (181, 44254), (202, 44326), (216, 44350), (223, 44374), (231, 44404), (233, 44410), (251, 44476), (252, 44482), (275, 44530), (297, 44593), (308, 44623), (317, 44641), (341, 44707), (379, 44842), (385, 44848), (393, 44872), (396, 44905), (399, 44917), (406, 44950), (412, 44986), (414, 44995), (420, 45007), (424, 45013), (429, 45025), (434, 45034),

Gene: Jellybones\_49 Start: 46241, Stop: 45519, Start Num: 139

Candidate Starts for Jellybones\_49:

(Start: 139 @46241 has 67 MA's), (155, 46202), (170, 46175), (198, 46142), (208, 46124), (235, 46049), (239, 46034), (273, 45950), (313, 45875), (372, 45719), (394, 45671), (396, 45641), (423, 45539),

Gene: Jinkies\_19 Start: 14524, Stop: 15195, Start Num: 168

Candidate Starts for Jinkies\_19:

(127, 14434), (164, 14518), (Start: 168 @14524 has 79 MA's), (192, 14608), (199, 14635), (239, 14701), (263, 14752), (325, 14863), (374, 15013), (375, 15016), (390, 15046), (410, 15148), (412, 15163),

Gene: JoeyJr\_74 Start: 46916, Stop: 47584, Start Num: 159

Candidate Starts for JoeyJr\_74:

(Start: 159 @46916 has 18 MA's), (178, 46955), (192, 47009), (199, 47036), (234, 47096), (273, 47186), (278, 47198), (295, 47231), (374, 47396), (390, 47429), (396, 47465), (417, 47555),

Gene: John316\_50 Start: 46297, Stop: 45575, Start Num: 139

Candidate Starts for John316\_50:

(Start: 139 @46297 has 67 MA's), (155, 46258), (170, 46231), (208, 46180), (235, 46105), (239, 46090), (273, 46006), (313, 45931), (372, 45775), (394, 45727), (396, 45697), (423, 45595),

Gene: Jormungandr\_46 Start: 46414, Stop: 45695, Start Num: 139

Candidate Starts for Jormungandr\_46:

(Start: 139 @46414 has 67 MA's), (170, 46348), (208, 46297), (212, 46291), (239, 46207), (254, 46162), (273, 46123), (313, 46048), (318, 46039), (394, 45844),

Gene: Journey\_55 Start: 36648, Stop: 37631, Start Num: 68

Candidate Starts for Journey\_55:

(Start: 68 @36648 has 46 MA's), (Start: 75 @36675 has 1 MA's), (89, 36717), (135, 36834), (151, 36864), (207, 37020), (247, 37143), (266, 37188), (268, 37194), (289, 37236), (359, 37362), (369, 37410), (379, 37437),

Gene: Journey\_54 Start: 35843, Stop: 36610, Start Num: 115

Candidate Starts for Journey\_54:

(Start: 115 @35843 has 1 MA's), (120, 35852), (130, 35879), (Start: 165 @35945 has 16 MA's), (178, 35975), (192, 36029), (312, 36281), (374, 36422), (380, 36434), (390, 36455), (417, 36581),

Gene: Juice456\_67 Start: 44325, Stop: 44978, Start Num: 168

Candidate Starts for Juice456\_67:

(114, 44211), (Start: 168 @44325 has 79 MA's), (192, 44406), (199, 44433), (227, 44472), (252, 44544), (273, 44580), (295, 44625), (328, 44688), (372, 44787), (374, 44790), (390, 44823), (417, 44949),

Gene: JuliaChild\_70 Start: 44385, Stop: 43519, Start Num: 59

Candidate Starts for JuliaChild\_70:

(48, 44412), (56, 44391), (Start: 59 @44385 has 7 MA's), (Start: 75 @44328 has 1 MA's), (78, 44325), (87, 44295), (89, 44286), (138, 44166), (226, 44058), (247, 43989), (281, 43914), (368, 43728), (379, 43698), (419, 43539),

Gene: Juliette\_73 Start: 43942, Stop: 44787, Start Num: 68

Candidate Starts for Juliette\_73:

(52, 43891), (Start: 68 @43942 has 46 MA's), (Start: 75 @43969 has 1 MA's), (86, 43999), (223, 44227), (226, 44239), (241, 44287), (266, 44353), (359, 44527), (382, 44605), (393, 44632), (398, 44671),

Gene: Jung\_56 Start: 37454, Stop: 38110, Start Num: 168

Candidate Starts for Jung\_56:

(Start: 162 @37445 has 9 MA's), (Start: 168 @37454 has 79 MA's), (170, 37460), (192, 37535), (199, 37562), (234, 37622), (273, 37712), (278, 37724), (295, 37757), (374, 37922), (390, 37955), (396, 37991), (417, 38081), (430, 38102),

Gene: Juniormint\_55 Start: 36637, Stop: 37290, Start Num: 162

Candidate Starts for Juniormint\_55:

(Start: 124 @36556 has 2 MA's), (Start: 128 @36565 has 28 MA's), (140, 36592), (Start: 162 @36637 has 9 MA's), (178, 36670), (199, 36751), (234, 36811), (273, 36901), (278, 36913), (295, 36946), (374, 37111), (390, 37144), (396, 37180), (410, 37246), (417, 37270),

Gene: Juniper1\_67 Start: 44073, Stop: 44747, Start Num: 168

Candidate Starts for Juniper1\_67:

(146, 44025), (Start: 168 @44073 has 79 MA's), (178, 44100), (192, 44154), (216, 44202), (243, 44280), (252, 44304), (262, 44319), (265, 44322), (339, 44475), (354, 44496), (355, 44499), (381, 44574), (396, 44628), (417, 44718),

Gene: Juniper1\_66 Start: 43088, Stop: 44041, Start Num: 68

Candidate Starts for Juniper1\_66:

(23, 42911), (27, 42926), (49, 43031), (Start: 68 @43088 has 46 MA's), (Start: 75 @43115 has 1 MA's), (79, 43121), (86, 43145), (135, 43274), (142, 43283), (151, 43304), (247, 43541), (251, 43553), (257, 43565), (268, 43592), (296, 43646), (330, 43712), (340, 43745), (359, 43781), (393, 43886),

Gene: KSSJEB\_67 Start: 42872, Stop: 42006, Start Num: 61

Candidate Starts for KSSJEB\_67:

(Start: 55 @42887 has 1 MA's), (Start: 61 @42872 has 6 MA's), (Start: 67 @42851 has 4 MA's), (Start: 75 @42818 has 1 MA's), (78, 42815), (87, 42785), (89, 42776), (138, 42656), (226, 42548), (247, 42479), (281, 42404), (368, 42218), (379, 42188), (419, 42029),

Gene: Kamashten\_86 Start: 58360, Stop: 59106, Start Num: 168

Candidate Starts for Kamashten\_86:

(137, 58285), (148, 58309), (Start: 168 @58360 has 79 MA's), (180, 58408), (183, 58417), (186, 58429), (252, 58627), (261, 58642), (288, 58702), (293, 58708), (296, 58711), (300, 58723), (304, 58729), (309, 58744), (357, 58855), (393, 58969), (399, 59014), (406, 59047), (411, 59074), (418, 59095),

Gene: Kamashten\_10 Start: 5311, Stop: 6054, Start Num: 165

Candidate Starts for Kamashten\_10:

(Start: 165 @5311 has 16 MA's), (182, 5371), (183, 5374), (193, 5410), (224, 5476), (240, 5521), (245, 5539), (249, 5545), (284, 5623), (310, 5683), (323, 5707), (327, 5716), (337, 5749), (357, 5788), (361, 5797), (373, 5857), (386, 5878), (391, 5896), (393, 5899), (401, 5950), (410, 5998),

Gene: Kaseim\_46 Start: 45855, Stop: 45136, Start Num: 139

Candidate Starts for Kaseim\_46:

(Start: 139 @45855 has 67 MA's), (170, 45789), (204, 45747), (208, 45738), (212, 45732), (239, 45648), (254, 45603), (269, 45570), (273, 45564), (313, 45489), (394, 45285),

Gene: Katyusha\_42 Start: 45651, Stop: 44935, Start Num: 139

Candidate Starts for Katyusha\_42:

(Start: 139 @45651 has 67 MA's), (147, 45636), (208, 45534), (239, 45444), (242, 45438), (313, 45285), (335, 45222), (352, 45192), (413, 44970),

Gene: Keitabear\_83 Start: 58873, Stop: 59571, Start Num: 168

Candidate Starts for Keitabear\_83:

(10, 58126), (Start: 40 @58495 has 3 MA's), (58, 58561), (137, 58798), (148, 58822), (Start: 168 @58873 has 79 MA's), (180, 58921), (183, 58930), (186, 58942), (232, 59050), (252, 59110), (293, 59191), (300, 59206), (309, 59227), (363, 59359), (372, 59392), (393, 59434), (399, 59479), (406, 59512), (411, 59539), (418, 59560),

Gene: KimmyK\_60 Start: 44699, Stop: 45655, Start Num: 68

Candidate Starts for KimmyK\_60:

(Start: 68 @44699 has 46 MA's), (104, 44795), (135, 44885), (239, 45155), (247, 45179), (266, 45224), (268, 45230), (321, 45329), (369, 45440), (392, 45494),

Gene: Kinbote\_65 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Kinbote\_65:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: KingMidas\_73 Start: 46330, Stop: 46998, Start Num: 159

Candidate Starts for KingMidas\_73:

(Start: 159 @46330 has 18 MA's), (178, 46369), (192, 46423), (199, 46450), (234, 46510), (273, 46600), (278, 46612), (295, 46645), (374, 46810), (390, 46843), (396, 46879), (417, 46969),

Gene: Koella\_61 Start: 40075, Stop: 41025, Start Num: 128

Candidate Starts for Koella\_61:

(Start: 128 @40075 has 28 MA's), (169, 40177), (179, 40207), (181, 40228), (202, 40300), (216, 40324), (223, 40348), (231, 40378), (233, 40384), (251, 40450), (252, 40456), (275, 40504), (297, 40567), (308, 40597), (379, 40816), (385, 40822), (393, 40846), (394, 40849), (396, 40879), (399, 40891), (406, 40924), (412, 40960), (414, 40969), (420, 40981), (424, 40987), (429, 40999), (434, 41008),

Gene: Kraw\_72 Start: 43630, Stop: 44475, Start Num: 68

Candidate Starts for Kraw\_72:

(52, 43579), (Start: 68 @43630 has 46 MA's), (Start: 75 @43657 has 1 MA's), (86, 43687), (223, 43915), (226, 43927), (241, 43975), (266, 44041), (359, 44215), (382, 44293), (393, 44320), (398, 44359),

Gene: KristaRAM\_69 Start: 44694, Stop: 45347, Start Num: 168

Candidate Starts for KristaRAM\_69:

(114, 44580), (Start: 168 @44694 has 79 MA's), (192, 44775), (199, 44802), (227, 44841), (252, 44913), (273, 44949), (295, 44994), (328, 45057), (372, 45156), (374, 45159), (390, 45192), (417, 45318),

Gene: Kvothe\_42 Start: 45550, Stop: 44834, Start Num: 139

Candidate Starts for Kvothe\_42:

(Start: 139 @45550 has 67 MA's), (147, 45535), (208, 45433), (239, 45343), (242, 45337), (313, 45184), (335, 45121), (352, 45091), (413, 44869),

Gene: Lahirium\_46 Start: 46936, Stop: 46217, Start Num: 139

Candidate Starts for Lahirium\_46:

(Start: 139 @46936 has 67 MA's), (170, 46870), (208, 46819), (212, 46813), (239, 46729), (254, 46684), (273, 46645), (313, 46570), (318, 46561), (394, 46366),

Gene: Lamina13\_71 Start: 44833, Stop: 43967, Start Num: 59

Candidate Starts for Lamina13\_71:

(48, 44860), (56, 44839), (Start: 59 @44833 has 7 MA's), (Start: 75 @44776 has 1 MA's), (78, 44773), (87, 44743), (89, 44734), (138, 44614), (226, 44506), (247, 44437), (281, 44362), (368, 44176), (379, 44146), (419, 43987),

Gene: Lennon\_85 Start: 59303, Stop: 60049, Start Num: 168

Candidate Starts for Lennon\_85:

(10, 58556), (Start: 40 @58925 has 3 MA's), (58, 58991), (137, 59228), (148, 59252), (Start: 168 @59303 has 79 MA's), (180, 59351), (183, 59360), (186, 59372), (252, 59570), (261, 59585), (288, 59645), (293, 59651), (296, 59654), (300, 59666), (304, 59672), (309, 59687), (357, 59798), (393, 59912), (399, 59957), (406, 59990), (411, 60017), (418, 60038),

Gene: Leperchaun\_72 Start: 46150, Stop: 46818, Start Num: 159

Candidate Starts for Leperchaun\_72:

(Start: 159 @46150 has 18 MA's), (178, 46189), (192, 46243), (199, 46270), (234, 46330), (273, 46420), (278, 46432), (295, 46465), (374, 46630), (390, 46663), (396, 46699), (417, 46789),

Gene: Lidong\_46 Start: 46670, Stop: 45951, Start Num: 139

Candidate Starts for Lidong\_46:

(Start: 139 @46670 has 67 MA's), (170, 46604), (204, 46562), (208, 46553), (212, 46547), (239, 46463), (254, 46418), (269, 46385), (273, 46379), (313, 46304), (394, 46100),

Gene: LilHazelnut\_67 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for LilHazelnut\_67:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Linetti\_47 Start: 45752, Stop: 45030, Start Num: 139

Candidate Starts for Linetti\_47:

(121, 45794), (Start: 139 @45752 has 67 MA's), (155, 45713), (170, 45686), (208, 45635), (235, 45560), (239, 45545), (273, 45461), (313, 45386), (372, 45230), (394, 45182), (396, 45152), (423, 45050),

Gene: LittleShirley\_66 Start: 43146, Stop: 43808, Start Num: 168

Candidate Starts for LittleShirley\_66:

(92, 42969), (Start: 168 @43146 has 79 MA's), (178, 43173), (192, 43227), (312, 43479), (374, 43620), (380, 43632), (390, 43653), (417, 43779),

Gene: LittleShirley\_73 Start: 45098, Stop: 45754, Start Num: 168

Candidate Starts for LittleShirley\_73:

(111, 44966), (Start: 162 @45089 has 9 MA's), (Start: 168 @45098 has 79 MA's), (170, 45104), (192, 45179), (199, 45206), (234, 45266), (273, 45356), (278, 45368), (295, 45401), (301, 45416), (374, 45566), (390, 45599), (396, 45635), (417, 45725),

Gene: Lizzo\_46 Start: 45128, Stop: 44406, Start Num: 139

Candidate Starts for Lizzo\_46:

(Start: 139 @45128 has 67 MA's), (155, 45089), (170, 45062), (208, 45011), (235, 44936), (239, 44921), (273, 44837), (313, 44762), (372, 44606), (394, 44558), (396, 44528), (423, 44426),

Gene: Love\_11 Start: 5310, Stop: 6053, Start Num: 165

Candidate Starts for Love\_11:

(Start: 165 @5310 has 16 MA's), (182, 5370), (183, 5373), (193, 5409), (224, 5475), (240, 5520), (245, 5538), (249, 5544), (284, 5622), (310, 5682), (323, 5706), (327, 5715), (337, 5748), (357, 5787), (361, 5796), (373, 5856), (386, 5877), (391, 5895), (393, 5898), (401, 5949), (410, 5997),

Gene: Love\_91 Start: 59114, Stop: 59854, Start Num: 168

Candidate Starts for Love\_91:

(137, 59039), (148, 59063), (Start: 168 @59114 has 79 MA's), (179, 59147), (180, 59162), (183, 59171), (186, 59183), (211, 59249), (252, 59375), (261, 59390), (293, 59456), (296, 59459), (300, 59471), (309, 59492), (357, 59603), (393, 59717), (399, 59762), (406, 59795), (411, 59822), (418, 59843),

Gene: Luke\_66 Start: 44871, Stop: 45533, Start Num: 168

Candidate Starts for Luke\_66:

(46, 44529), (72, 44610), (84, 44655), (88, 44679), (108, 44730), (131, 44784), (Start: 159 @44859 has 18 MA's), (161, 44862), (Start: 168 @44871 has 79 MA's), (178, 44898), (243, 45072), (277, 45150), (279, 45156), (291, 45180), (298, 45189), (326, 45231), (361, 45315), (367, 45318), (374, 45351), (376, 45357), (380, 45363), (397, 45426), (405, 45462), (410, 45489), (412, 45504), (417, 45513),

Gene: Luker\_47 Start: 46889, Stop: 46170, Start Num: 139

Candidate Starts for Luker\_47:

(Start: 139 @46889 has 67 MA's), (170, 46823), (208, 46772), (212, 46766), (239, 46682), (254, 46637), (273, 46598), (313, 46523), (394, 46319),

Gene: Luna22\_62 Start: 44900, Stop: 45562, Start Num: 168

Candidate Starts for Luna22\_62:

(46, 44558), (72, 44639), (84, 44684), (88, 44708), (108, 44759), (131, 44813), (Start: 159 @44888 has 18 MA's), (161, 44891), (Start: 168 @44900 has 79 MA's), (178, 44927), (243, 45101), (277, 45179), (279, 45185), (291, 45209), (298, 45218), (326, 45260), (361, 45344), (367, 45347), (374, 45380), (376, 45386), (380, 45392), (397, 45455), (405, 45491), (410, 45518), (412, 45533), (417, 45542),

Gene: Makemake\_60 Start: 41383, Stop: 40385, Start Num: 41

Candidate Starts for Makemake\_60:

(Start: 41 @41383 has 5 MA's), (70, 41284), (73, 41275), (85, 41230), (113, 41146), (160, 41023), (201, 40981), (267, 40816), (316, 40726), (318, 40723), (367, 40600), (368, 40585), (372, 40570), (374, 40567), (392, 40528), (415, 40399),

Gene: Malisha\_72 Start: 44709, Stop: 45665, Start Num: 122

Candidate Starts for Malisha\_72:

(Start: 122 @44709 has 3 MA's), (202, 44946), (223, 44994), (231, 45024), (233, 45030), (238, 45051), (317, 45261), (396, 45525), (398, 45531), (399, 45537), (420, 45627),

Gene: Malthus\_72 Start: 43630, Stop: 44475, Start Num: 68

Candidate Starts for Malthus\_72:

(52, 43579), (Start: 68 @43630 has 46 MA's), (Start: 75 @43657 has 1 MA's), (86, 43687), (223, 43915), (226, 43927), (241, 43975), (266, 44041), (359, 44215), (382, 44293), (393, 44320), (398, 44359),

Gene: Mantra\_63 Start: 41560, Stop: 42504, Start Num: 68

Candidate Starts for Mantra\_63:

(Start: 68 @41560 has 46 MA's), (133, 41737), (135, 41746), (152, 41779), (189, 41854), (247, 42025), (266, 42070), (268, 42076), (303, 42133), (330, 42184), (359, 42244), (368, 42289), (372, 42304), (393, 42349),

Gene: Maravista\_69 Start: 46025, Stop: 46975, Start Num: 128

Candidate Starts for Maravista\_69:

(Start: 128 @46025 has 28 MA's), (169, 46127), (179, 46157), (181, 46178), (202, 46250), (216, 46274), (223, 46298), (231, 46328), (233, 46334), (251, 46400), (252, 46406), (275, 46454), (297, 46517), (308, 46547), (379, 46766), (385, 46772), (393, 46796), (394, 46799), (396, 46829), (399, 46841), (406, 46874), (412, 46910), (414, 46919), (420, 46931), (424, 46937), (429, 46949), (434, 46958),

Gene: Marchy\_62 Start: 40457, Stop: 39594, Start Num: 61

Candidate Starts for Marchy\_62:

(Start: 55 @40472 has 1 MA's), (Start: 61 @40457 has 6 MA's), (Start: 67 @40436 has 4 MA's), (Start: 75 @40406 has 1 MA's), (78, 40403), (87, 40373), (89, 40364), (138, 40244), (226, 40136), (247, 40067), (281, 39992), (368, 39806), (379, 39776), (419, 39617),

Gene: Marker\_68 Start: 42811, Stop: 43545, Start Num: 168

Candidate Starts for Marker\_68:

(97, 42634), (102, 42640), (106, 42649), (145, 42754), (Start: 168 @42811 has 79 MA's), (183, 42868), (185, 42871), (186, 42880), (193, 42904), (224, 42970), (240, 43015), (250, 43042), (251, 43048), (274, 43096), (284, 43117), (309, 43174), (310, 43177), (323, 43201), (333, 43237), (337, 43243), (351, 43270), (383, 43369), (393, 43393), (396, 43426), (417, 43516),

Gene: Mbo4\_26 Start: 25859, Stop: 26965, Start Num: 68

Candidate Starts for Mbo4\_26:

(Start: 68 @25859 has 46 MA's), (89, 25931), (135, 26048), (151, 26078), (157, 26105), (226, 26255), (247, 26324), (266, 26369), (319, 26525), (359, 26705), (369, 26753), (404, 26876), (410, 26909), (411, 26915), (418, 26942),

Gene: McKinley\_88 Start: 58094, Stop: 58834, Start Num: 168

Candidate Starts for McKinley\_88:



(5, 57293), (10, 57347), (Start: 40 @57716 has 3 MA's), (58, 57782), (137, 58019), (148, 58043), (Start: 168 @58094 has 79 MA's), (179, 58127), (180, 58142), (183, 58151), (186, 58163), (252, 58355), (261, 58370), (293, 58436), (296, 58439), (300, 58451), (309, 58472), (357, 58583), (393, 58697), (399, 58742), (406, 58775), (411, 58802), (418, 58823),

Gene: Megiddo\_59 Start: 40265, Stop: 41059, Start Num: 165

Candidate Starts for Megiddo\_59:

(Start: 165 @40265 has 16 MA's), (183, 40325), (186, 40337), (193, 40361), (213, 40412), (276, 40568), (296, 40610), (304, 40628), (333, 40709), (372, 40829), (374, 40832), (380, 40844), (395, 40886), (397, 40907), (399, 40916), (400, 40919), (408, 40955), (409, 40964), (426, 41009), (435, 41033),

Gene: Mendokysej\_64 Start: 42338, Stop: 43075, Start Num: 176

Candidate Starts for Mendokysej\_64:

(Start: 176 @42338 has 7 MA's), (179, 42356), (183, 42380), (206, 42452), (263, 42596), (324, 42728), (333, 42764), (353, 42809), (374, 42893), (380, 42905), (393, 42932),

Gene: MinionDave\_66 Start: 44448, Stop: 45398, Start Num: 128

Candidate Starts for MinionDave\_66:

(Start: 128 @44448 has 28 MA's), (169, 44550), (179, 44580), (181, 44601), (202, 44673), (216, 44697), (223, 44721), (231, 44751), (233, 44757), (251, 44823), (252, 44829), (275, 44877), (297, 44940), (308, 44970), (379, 45189), (385, 45195), (393, 45219), (394, 45222), (396, 45252), (399, 45264), (406, 45297), (412, 45333), (414, 45342), (420, 45354), (424, 45360), (429, 45372), (434, 45381),

Gene: Minos\_47 Start: 46412, Stop: 45693, Start Num: 139

Candidate Starts for Minos\_47:

(Start: 139 @46412 has 67 MA's), (170, 46346), (204, 46304), (208, 46295), (212, 46289), (239, 46205), (254, 46160), (269, 46127), (273, 46121), (313, 46046), (394, 45842),

Gene: Misfit\_100 Start: 59873, Stop: 60904, Start Num: 40

Candidate Starts for Misfit\_100:

(12, 59726), (18, 59756), (25, 59804), (28, 59819), (32, 59831), (Start: 40 @59873 has 3 MA's), (44, 59891), (73, 59987), (85, 60032), (113, 60116), (217, 60320), (225, 60350), (237, 60386), (335, 60623), (374, 60725), (393, 60767), (396, 60800), (400, 60815),

Gene: MissDaisy\_68 Start: 42544, Stop: 43389, Start Num: 68

Candidate Starts for MissDaisy\_68:

(52, 42493), (Start: 68 @42544 has 46 MA's), (Start: 75 @42571 has 1 MA's), (86, 42601), (223, 42829), (226, 42841), (241, 42889), (266, 42955), (337, 43078), (359, 43129), (382, 43207), (393, 43234), (398, 43273), (425, 43372),

Gene: Mitti\_71 Start: 43785, Stop: 44630, Start Num: 68

Candidate Starts for Mitti\_71:

(52, 43734), (Start: 68 @43785 has 46 MA's), (Start: 75 @43812 has 1 MA's), (86, 43842), (223, 44070), (226, 44082), (241, 44130), (266, 44196), (359, 44370), (382, 44448), (393, 44475), (398, 44514),

Gene: Monty\_45 Start: 44278, Stop: 43556, Start Num: 139

Candidate Starts for Monty\_45:

(Start: 139 @44278 has 67 MA's), (155, 44239), (170, 44212), (208, 44161), (235, 44086), (239, 44071), (273, 43987), (313, 43912), (372, 43756), (394, 43708), (396, 43678), (423, 43576),

Gene: Moonbeam\_66 Start: 43629, Stop: 44579, Start Num: 128

Candidate Starts for Moonbeam\_66:

(Start: 128 @43629 has 28 MA's), (169, 43731), (179, 43761), (181, 43782), (202, 43854), (216, 43878), (223, 43902), (231, 43932), (233, 43938), (251, 44004), (252, 44010), (275, 44058), (297, 44121), (308, 44151), (317, 44169), (341, 44235), (379, 44370), (385, 44376), (393, 44400), (394, 44403), (396, 44433), (399, 44445), (406, 44478), (412, 44514), (414, 44523), (420, 44535), (424, 44541), (429, 44553), (434, 44562),

Gene: MoontowerMania\_8 Start: 4709, Stop: 5452, Start Num: 165

Candidate Starts for MoontowerMania\_8:

(Start: 165 @4709 has 16 MA's), (182, 4769), (183, 4772), (193, 4808), (224, 4874), (240, 4919), (245, 4937), (249, 4943), (284, 5021), (310, 5081), (323, 5105), (327, 5114), (337, 5147), (357, 5186), (361, 5195), (373, 5255), (386, 5276), (391, 5294), (393, 5297), (401, 5348), (410, 5396),

Gene: MrWormie\_46 Start: 45573, Stop: 44854, Start Num: 139

Candidate Starts for MrWormie\_46:

(Start: 139 @45573 has 67 MA's), (170, 45507), (204, 45465), (208, 45456), (212, 45450), (239, 45366), (254, 45321), (269, 45288), (273, 45282), (313, 45207), (394, 45003),

Gene: Msay19\_51 Start: 46751, Stop: 46029, Start Num: 139

Candidate Starts for Msay19\_51:

(Start: 139 @46751 has 67 MA's), (155, 46712), (170, 46685), (208, 46634), (235, 46559), (239, 46544), (273, 46460), (313, 46385), (372, 46229), (394, 46181), (396, 46151), (423, 46049),

Gene: Mulch\_66 Start: 42588, Stop: 43298, Start Num: 168

Candidate Starts for Mulch\_66:

(77, 42354), (123, 42483), (Start: 168 @42588 has 79 MA's), (178, 42615), (193, 42681), (296, 42906), (309, 42939), (332, 42993), (357, 43050), (371, 43101), (372, 43104), (396, 43179),

Gene: Nadeem\_66 Start: 42576, Stop: 43286, Start Num: 168

Candidate Starts for Nadeem\_66:

(77, 42342), (123, 42471), (Start: 168 @42576 has 79 MA's), (178, 42603), (193, 42669), (296, 42894), (309, 42927), (332, 42981), (357, 43038), (371, 43089), (372, 43092), (396, 43167),

Gene: Nairb\_58 Start: 41222, Stop: 41959, Start Num: 176

Candidate Starts for Nairb\_58:

(108, 41063), (112, 41069), (Start: 176 @41222 has 7 MA's), (183, 41264), (206, 41336), (215, 41354), (263, 41480), (271, 41498), (324, 41612), (333, 41648), (353, 41693), (374, 41777), (378, 41786), (380, 41789), (388, 41798), (393, 41816), (422, 41948),

Gene: NancyRae\_65 Start: 42526, Stop: 43239, Start Num: 168

Candidate Starts for NancyRae\_65:

(77, 42292), (123, 42421), (Start: 168 @42526 has 79 MA's), (178, 42553), (193, 42619), (296, 42844), (309, 42877), (332, 42931), (357, 42988), (371, 43039), (372, 43042), (396, 43117),

Gene: Natkenzie\_89 Start: 59142, Stop: 59831, Start Num: 168

Candidate Starts for Natkenzie\_89:

(Start: 53 @58827 has 1 MA's), (116, 59016), (132, 59061), (144, 59085), (Start: 168 @59142 has 79 MA's), (192, 59223), (210, 59274), (252, 59400), (274, 59439), (314, 59517), (326, 59529), (332, 59550), (353, 59586), (384, 59667),

Gene: Neoevie\_46 Start: 46675, Stop: 45956, Start Num: 139

Candidate Starts for Neoevie\_46:

(Start: 139 @46675 has 67 MA's), (170, 46609), (208, 46558), (212, 46552), (239, 46468), (254, 46423), (273, 46384), (313, 46309), (394, 46105),

Gene: Newt\_47 Start: 46903, Stop: 46184, Start Num: 139

Candidate Starts for Newt\_47:

(Start: 139 @46903 has 67 MA's), (170, 46837), (204, 46795), (208, 46786), (212, 46780), (239, 46696), (254, 46651), (269, 46618), (273, 46612), (313, 46537), (394, 46333),

Gene: Niagara\_42 Start: 45629, Stop: 44913, Start Num: 139

Candidate Starts for Niagara\_42:

(Start: 139 @45629 has 67 MA's), (147, 45614), (208, 45512), (239, 45422), (242, 45416), (313, 45263), (335, 45200), (352, 45170), (413, 44948),

Gene: Nimbo\_66 Start: 45014, Stop: 45682, Start Num: 159

Candidate Starts for Nimbo\_66:

(Start: 159 @45014 has 18 MA's), (178, 45053), (192, 45107), (199, 45134), (234, 45194), (273, 45284), (278, 45296), (295, 45329), (374, 45494), (390, 45527), (396, 45563), (417, 45653),

Gene: Nimi13\_46 Start: 46421, Stop: 45702, Start Num: 139

Candidate Starts for Nimi13\_46:

(Start: 139 @46421 has 67 MA's), (170, 46355), (204, 46313), (208, 46304), (212, 46298), (239, 46214), (254, 46169), (269, 46136), (273, 46130), (313, 46055), (394, 45851),

Gene: NormanBulbieJr\_67 Start: 44088, Stop: 45038, Start Num: 128

Candidate Starts for NormanBulbieJr\_67:

(Start: 128 @44088 has 28 MA's), (169, 44190), (179, 44220), (181, 44241), (202, 44313), (216, 44337), (223, 44361), (231, 44391), (233, 44397), (251, 44463), (252, 44469), (275, 44517), (297, 44580), (308, 44610), (379, 44829), (385, 44835), (393, 44859), (394, 44862), (396, 44892), (399, 44904), (406, 44937), (412, 44973), (414, 44982), (420, 44994), (424, 45000), (429, 45012), (434, 45021),

Gene: OBUpride\_67 Start: 44912, Stop: 45574, Start Num: 168

Candidate Starts for OBUpride\_67:

(46, 44570), (72, 44651), (84, 44696), (88, 44720), (108, 44771), (131, 44825), (Start: 159 @44900 has 18 MA's), (161, 44903), (Start: 168 @44912 has 79 MA's), (178, 44939), (243, 45113), (277, 45191), (279, 45197), (291, 45221), (298, 45230), (326, 45272), (361, 45356), (367, 45359), (374, 45392), (376, 45398), (380, 45404), (397, 45467), (405, 45503), (410, 45530), (412, 45545), (417, 45554),

Gene: Ogopogo\_78 Start: 45456, Stop: 46199, Start Num: 124

Candidate Starts for Ogopogo\_78:

(Start: 124 @45456 has 2 MA's), (Start: 128 @45465 has 28 MA's), (140, 45492), (Start: 162 @45537 has 9 MA's), (178, 45570), (192, 45624), (199, 45651), (234, 45711), (273, 45801), (278, 45813), (295, 45846), (374, 46011), (390, 46044), (396, 46080), (417, 46170),

Gene: Ogopogo\_72 Start: 43150, Stop: 43812, Start Num: 168

Candidate Starts for Ogopogo\_72:

(119, 43036), (Start: 168 @43150 has 79 MA's), (178, 43177), (192, 43231), (312, 43483), (374, 43624), (390, 43657), (417, 43783),

Gene: Oksu\_70 Start: 45599, Stop: 46261, Start Num: 167

Candidate Starts for Oksu\_70:

(43, 45245), (142, 45542), (Start: 167 @45599 has 1 MA's), (178, 45626), (192, 45680), (195, 45686), (199, 45707), (205, 45716), (214, 45725), (294, 45911), (301, 45926), (340, 45998), (346, 46007),

(351, 46013), (355, 46019), (372, 46070), (374, 46073), (405, 46181), (417, 46232),

Gene: OldBen\_71 Start: 46406, Stop: 47074, Start Num: 159

Candidate Starts for OldBen\_71:

(Start: 159 @46406 has 18 MA's), (178, 46445), (192, 46499), (199, 46526), (234, 46586), (273, 46676), (278, 46688), (295, 46721), (374, 46886), (390, 46919), (396, 46955), (417, 47045),

Gene: OmniCritical\_70 Start: 43718, Stop: 44563, Start Num: 68

Candidate Starts for OmniCritical\_70:

(Start: 68 @43718 has 46 MA's), (Start: 75 @43745 has 1 MA's), (86, 43775), (223, 44003), (226, 44015), (241, 44063), (266, 44129), (359, 44303), (382, 44381), (393, 44408), (398, 44447),

Gene: PFR1\_39 Start: 29215, Stop: 30003, Start Num: 168

Candidate Starts for PFR1\_39:

(22, 28762), (30, 28789), (71, 28948), (Start: 165 @29212 has 16 MA's), (Start: 168 @29215 has 79 MA's), (178, 29242), (183, 29272), (186, 29284), (204, 29341), (206, 29344), (221, 29371), (273, 29515), (296, 29563), (304, 29581), (307, 29593), (333, 29662), (343, 29683), (362, 29722), (374, 29779), (395, 29833), (406, 29896), (407, 29899), (410, 29917),

Gene: PFR2\_41 Start: 30784, Stop: 31572, Start Num: 168

Candidate Starts for PFR2\_41:

(22, 30331), (30, 30358), (71, 30517), (Start: 165 @30781 has 16 MA's), (Start: 168 @30784 has 79 MA's), (178, 30811), (183, 30841), (186, 30853), (204, 30910), (206, 30913), (221, 30940), (273, 31084), (296, 31132), (304, 31150), (307, 31162), (333, 31231), (343, 31252), (362, 31291), (374, 31348), (395, 31402), (406, 31465), (407, 31468), (410, 31486),

Gene: PHappiness\_74 Start: 47235, Stop: 47903, Start Num: 159

Candidate Starts for PHappiness\_74:

(Start: 159 @47235 has 18 MA's), (178, 47274), (192, 47328), (199, 47355), (234, 47415), (273, 47505), (278, 47517), (295, 47550), (374, 47715), (390, 47748), (396, 47784), (417, 47874),

Gene: PSullivan\_67 Start: 42452, Stop: 41586, Start Num: 59

Candidate Starts for PSullivan\_67:

(48, 42479), (56, 42458), (Start: 59 @42452 has 7 MA's), (Start: 75 @42395 has 1 MA's), (78, 42392), (87, 42362), (89, 42353), (138, 42233), (226, 42125), (247, 42056), (281, 41981), (368, 41795), (379, 41765), (419, 41606),

Gene: Parada\_66 Start: 42588, Stop: 43298, Start Num: 168

Candidate Starts for Parada\_66:

(77, 42354), (123, 42483), (Start: 168 @42588 has 79 MA's), (178, 42615), (193, 42681), (296, 42906), (309, 42939), (332, 42993), (357, 43050), (371, 43101), (372, 43104), (396, 43179),

Gene: Paries\_10 Start: 4991, Stop: 5734, Start Num: 165

Candidate Starts for Paries\_10:

(Start: 165 @4991 has 16 MA's), (182, 5051), (183, 5054), (193, 5090), (224, 5156), (240, 5201), (245, 5219), (249, 5225), (284, 5303), (310, 5363), (323, 5387), (327, 5396), (337, 5429), (357, 5468), (361, 5477), (373, 5537), (386, 5558), (391, 5576), (393, 5579), (401, 5630), (410, 5678),

Gene: Patt\_67 Start: 42268, Stop: 43113, Start Num: 68

Candidate Starts for Patt\_67:

(52, 42217), (Start: 68 @42268 has 46 MA's), (Start: 75 @42295 has 1 MA's), (86, 42325), (223, 42553), (226, 42565), (241, 42613), (266, 42679), (359, 42853), (382, 42931), (393, 42958), (398, 42997), (406, 43036), (425, 43096),

Gene: PattyP\_61 Start: 41484, Stop: 40504, Start Num: 41

Candidate Starts for PattyP\_61:

(Start: 41 @41484 has 5 MA's), (64, 41406), (73, 41376), (218, 41055), (230, 41013), (249, 40959), (254, 40938), (260, 40929), (278, 40893), (335, 40782), (368, 40698), (370, 40689), (374, 40680), (387, 40659), (392, 40641), (396, 40605),

Gene: Payneful\_66 Start: 43153, Stop: 42311, Start Num: 67

Candidate Starts for Payneful\_66:

(Start: 55 @43189 has 1 MA's), (Start: 61 @43174 has 6 MA's), (Start: 67 @43153 has 4 MA's), (Start: 75 @43123 has 1 MA's), (78, 43120), (87, 43090), (89, 43081), (138, 42961), (226, 42853), (247, 42784), (281, 42709), (368, 42523), (379, 42493), (419, 42334),

Gene: Petra\_69 Start: 42660, Stop: 43718, Start Num: 68

Candidate Starts for Petra\_69:

(1, 41811), (11, 42207), (14, 42426), (16, 42438), (21, 42486), (34, 42534), (Start: 68 @42660 has 46 MA's), (104, 42756), (Start: 122 @42813 has 3 MA's), (135, 42846), (151, 42876), (190, 42990), (221, 43080), (239, 43143), (247, 43167), (257, 43191), (266, 43212), (268, 43218), (321, 43317), (369, 43506), (372, 43518),

Gene: Phalconet\_64 Start: 40982, Stop: 41998, Start Num: 68

Candidate Starts for Phalconet\_64:

(Start: 68 @40982 has 46 MA's), (Start: 75 @41009 has 1 MA's), (89, 41051), (104, 41078), (135, 41168), (142, 41177), (147, 41189), (151, 41198), (172, 41258), (216, 41354), (226, 41390), (229, 41402), (247, 41459), (266, 41504), (268, 41510), (359, 41735), (368, 41780), (393, 41840),

Gene: PhesterPhotato\_76 Start: 45973, Stop: 46719, Start Num: 158

Candidate Starts for PhesterPhotato\_76:

(Start: 158 @45973 has 1 MA's), (178, 46012), (185, 46045), (186, 46054), (224, 46144), (240, 46189), (250, 46216), (251, 46222), (274, 46270), (284, 46291), (310, 46351), (323, 46375), (333, 46411), (337, 46417), (351, 46444), (364, 46483), (393, 46567), (417, 46690),

Gene: Philon9\_44 Start: 46927, Stop: 46214, Start Num: 139

Candidate Starts for Philon9\_44:

(57, 47170), (Start: 139 @46927 has 67 MA's), (147, 46912), (208, 46810), (239, 46720), (313, 46561), (335, 46498), (352, 46468), (394, 46357), (396, 46327), (413, 46246),

Gene: PhorbesPhlower\_52 Start: 33687, Stop: 34304, Start Num: 165

Candidate Starts for PhorbesPhlower\_52:

(Start: 165 @33687 has 16 MA's), (183, 33747), (192, 33771), (232, 33840), (253, 33888), (272, 33921), (312, 33990), (315, 33999), (370, 34104), (374, 34113), (417, 34278),

Gene: PierreThree\_46 Start: 45620, Stop: 44898, Start Num: 139

Candidate Starts for PierreThree\_46:

(Start: 139 @45620 has 67 MA's), (155, 45581), (170, 45554), (208, 45503), (235, 45428), (239, 45413), (273, 45329), (313, 45254), (372, 45098), (394, 45050), (396, 45020), (423, 44918),

Gene: Pimento\_69 Start: 42707, Stop: 43417, Start Num: 168

Candidate Starts for Pimento\_69:

(77, 42473), (123, 42602), (Start: 168 @42707 has 79 MA's), (178, 42734), (193, 42800), (296, 43025), (309, 43058), (332, 43112), (357, 43169), (371, 43220), (372, 43223), (390, 43262), (396, 43298),

Gene: PinkCoffee\_61 Start: 44274, Stop: 45227, Start Num: 68

Candidate Starts for PinkCoffee\_61:

(Start: 68 @44274 has 46 MA's), (104, 44370), (135, 44460), (239, 44727), (247, 44751), (266, 44796), (268, 44802), (321, 44901), (369, 45012), (392, 45066),

Gene: Pippy\_66 Start: 43387, Stop: 44337, Start Num: 128

Candidate Starts for Pippy\_66:

(Start: 128 @43387 has 28 MA's), (169, 43489), (179, 43519), (181, 43540), (202, 43612), (216, 43636), (223, 43660), (231, 43690), (233, 43696), (251, 43762), (252, 43768), (275, 43816), (297, 43879), (308, 43909), (379, 44128), (385, 44134), (393, 44158), (394, 44161), (396, 44191), (399, 44203), (406, 44236), (412, 44272), (414, 44281), (420, 44293), (424, 44299), (429, 44311), (434, 44320), (436, 44329),

Gene: Pita2\_70 Start: 43949, Stop: 43083, Start Num: 59

Candidate Starts for Pita2\_70:

(48, 43976), (56, 43955), (Start: 59 @43949 has 7 MA's), (Start: 75 @43892 has 1 MA's), (78, 43889), (87, 43859), (89, 43850), (138, 43730), (226, 43622), (247, 43553), (281, 43478), (368, 43292), (379, 43262), (419, 43103),

Gene: Poenanya\_77 Start: 47104, Stop: 47772, Start Num: 159

Candidate Starts for Poenanya\_77:

(Start: 159 @47104 has 18 MA's), (178, 47143), (192, 47197), (199, 47224), (234, 47284), (273, 47374), (278, 47386), (295, 47419), (374, 47584), (390, 47617), (396, 47653), (417, 47743),

Gene: PokyPuppy\_45 Start: 45563, Stop: 44841, Start Num: 139

Candidate Starts for PokyPuppy\_45:

(Start: 139 @45563 has 67 MA's), (155, 45524), (198, 45464), (208, 45446), (235, 45371), (239, 45356), (273, 45272), (313, 45197), (372, 45041), (394, 44993), (396, 44963), (423, 44861),

Gene: Poland\_51 Start: 46730, Stop: 46008, Start Num: 139

Candidate Starts for Poland\_51:

(Start: 139 @46730 has 67 MA's), (155, 46691), (170, 46664), (208, 46613), (235, 46538), (239, 46523), (273, 46439), (313, 46364), (372, 46208), (394, 46160), (396, 46130), (423, 46028),

Gene: Polka14\_78 Start: 47894, Stop: 48562, Start Num: 159

Candidate Starts for Polka14\_78:

(Start: 159 @47894 has 18 MA's), (178, 47933), (192, 47987), (199, 48014), (234, 48074), (273, 48164), (278, 48176), (295, 48209), (374, 48374), (390, 48407), (396, 48443), (417, 48533),

Gene: Polkaroo\_62 Start: 41192, Stop: 41851, Start Num: 163

Candidate Starts for Polkaroo\_62:

(Start: 124 @41102 has 2 MA's), (Start: 128 @41111 has 28 MA's), (Start: 163 @41192 has 2 MA's), (178, 41222), (192, 41276), (199, 41303), (234, 41363), (273, 41453), (278, 41465), (295, 41498), (301, 41513), (374, 41663), (390, 41696), (396, 41732), (417, 41822),

Gene: Polkaroo\_59 Start: 38517, Stop: 39569, Start Num: 68

Candidate Starts for Polkaroo\_59:

(Start: 68 @38517 has 46 MA's), (Start: 75 @38544 has 1 MA's), (79, 38550), (89, 38586), (Start: 139 @38709 has 67 MA's), (142, 38712), (151, 38733), (194, 38886), (200, 38910), (209, 38928), (369, 39351), (393, 39408), (431, 39561),

Gene: PopTart\_60 Start: 40607, Stop: 41515, Start Num: 68

Candidate Starts for PopTart\_60:

(Start: 68 @40607 has 46 MA's), (Start: 75 @40634 has 1 MA's), (89, 40676), (104, 40703), (135, 40793), (142, 40802), (151, 40823), (247, 40976), (266, 41021), (268, 41027), (304, 41090), (359, 41252), (368, 41297), (393, 41357),

Gene: Priscilla\_67 Start: 44187, Stop: 45137, Start Num: 128

Candidate Starts for Priscilla\_67:

(Start: 128 @44187 has 28 MA's), (169, 44289), (179, 44319), (181, 44340), (202, 44412), (216, 44436), (223, 44460), (231, 44490), (233, 44496), (251, 44562), (252, 44568), (275, 44616), (297, 44679), (308, 44709), (379, 44928), (385, 44934), (393, 44958), (394, 44961), (396, 44991), (399, 45003), (406, 45036), (412, 45072), (414, 45081), (420, 45093), (424, 45099), (429, 45111), (434, 45120),

Gene: PullumCavea\_58 Start: 44450, Stop: 45406, Start Num: 68

Candidate Starts for PullumCavea\_58:

(33, 44324), (47, 44390), (Start: 68 @44450 has 46 MA's), (104, 44546), (135, 44636), (239, 44906), (247, 44930), (266, 44975), (268, 44981), (321, 45080), (369, 45191), (392, 45245),

Gene: QueenHazel\_55 Start: 38490, Stop: 39401, Start Num: 68

Candidate Starts for QueenHazel\_55:

(Start: 68 @38490 has 46 MA's), (Start: 75 @38517 has 1 MA's), (79, 38523), (89, 38559), (135, 38676), (147, 38697), (151, 38706), (152, 38709), (197, 38772), (226, 38808), (229, 38820), (236, 38841), (266, 38922), (348, 39108), (359, 39138), (393, 39243),

Gene: Ramsey\_66 Start: 43916, Stop: 44866, Start Num: 128

Candidate Starts for Ramsey\_66:

(Start: 128 @43916 has 28 MA's), (169, 44018), (179, 44048), (181, 44069), (202, 44141), (216, 44165), (223, 44189), (231, 44219), (233, 44225), (251, 44291), (252, 44297), (275, 44345), (297, 44408), (308, 44438), (379, 44657), (385, 44663), (393, 44687), (394, 44690), (396, 44720), (399, 44732), (406, 44765), (412, 44801), (414, 44810), (420, 44822), (424, 44828), (429, 44840), (434, 44849),

Gene: Rem711\_72 Start: 44535, Stop: 45203, Start Num: 168

Candidate Starts for Rem711\_72:

(26, 44103), (45, 44193), (58, 44235), (60, 44241), (66, 44256), (97, 44367), (146, 44487), (Start: 168 @44535 has 79 MA's), (178, 44562), (192, 44616), (325, 44898), (360, 44967), (405, 45120),

Gene: RemRem\_47 Start: 44268, Stop: 43546, Start Num: 139

Candidate Starts for RemRem\_47:

(Start: 139 @44268 has 67 MA's), (155, 44229), (170, 44202), (208, 44151), (235, 44076), (239, 44061), (273, 43977), (313, 43902), (372, 43746), (394, 43698), (396, 43668), (423, 43566),

Gene: Reptar3000\_68 Start: 42257, Stop: 43102, Start Num: 68

Candidate Starts for Reptar3000\_68:

(52, 42206), (Start: 68 @42257 has 46 MA's), (Start: 75 @42284 has 1 MA's), (86, 42314), (223, 42542), (226, 42554), (241, 42602), (266, 42668), (359, 42842), (382, 42920), (393, 42947), (398, 42986),

Gene: Rhynn\_57 Start: 39880, Stop: 38906, Start Num: 41

Candidate Starts for Rhynn\_57:

(Start: 41 @39880 has 5 MA's), (73, 39772), (85, 39727), (113, 39643), (160, 39520), (217, 39466), (225, 39436), (237, 39400), (316, 39241), (318, 39238), (335, 39184), (374, 39082), (393, 39040), (396, 39007),

Gene: Rialto\_71 Start: 44794, Stop: 45717, Start Num: 68

Candidate Starts for Rialto\_71:

(Start: 68 @44794 has 46 MA's), (Start: 75 @44821 has 1 MA's), (89, 44863), (135, 44980), (142, 44989), (151, 45010), (189, 45076), (226, 45112), (229, 45124), (247, 45181), (266, 45226), (268, 45232), (359, 45457), (360, 45460),

Gene: RitaG\_74 Start: 47037, Stop: 47705, Start Num: 159

Candidate Starts for RitaG\_74:

(Start: 159 @47037 has 18 MA's), (178, 47076), (192, 47130), (199, 47157), (234, 47217), (273, 47307), (278, 47319), (295, 47352), (374, 47517), (390, 47550), (396, 47586), (417, 47676),

Gene: Rofo\_85 Start: 57833, Stop: 58579, Start Num: 168

Candidate Starts for Rofo\_85:

(137, 57758), (148, 57782), (Start: 168 @57833 has 79 MA's), (180, 57881), (183, 57890), (186, 57902), (252, 58100), (261, 58115), (288, 58175), (293, 58181), (296, 58184), (300, 58196), (304, 58202), (309, 58217), (357, 58328), (393, 58442), (399, 58487), (406, 58520), (411, 58547), (418, 58568),

Gene: RogerDodger\_62 Start: 44572, Stop: 45528, Start Num: 68

Candidate Starts for RogerDodger\_62:

(33, 44446), (Start: 68 @44572 has 46 MA's), (104, 44668), (135, 44758), (239, 45028), (247, 45052), (266, 45097), (268, 45103), (321, 45202), (369, 45313), (392, 45367),

Gene: RonRayGun\_60 Start: 41425, Stop: 42162, Start Num: 176

Candidate Starts for RonRayGun\_60:

(35, 41008), (108, 41266), (112, 41272), (Start: 176 @41425 has 7 MA's), (183, 41467), (206, 41539), (215, 41557), (263, 41683), (271, 41701), (324, 41815), (333, 41851), (353, 41896), (374, 41980), (378, 41989), (380, 41992), (388, 42001), (393, 42019), (422, 42151),

Gene: RoyalG\_47 Start: 45104, Stop: 44382, Start Num: 139

Candidate Starts for RoyalG\_47:

(Start: 139 @45104 has 67 MA's), (155, 45065), (208, 44987), (235, 44912), (239, 44897), (273, 44813), (313, 44738), (394, 44534), (396, 44504), (423, 44402),

Gene: Ruthiejr\_72 Start: 43729, Stop: 44574, Start Num: 68

Candidate Starts for Ruthiejr\_72:

(Start: 68 @43729 has 46 MA's), (Start: 75 @43756 has 1 MA's), (86, 43786), (223, 44014), (226, 44026), (241, 44074), (266, 44140), (359, 44314), (382, 44392), (393, 44419), (398, 44458),

Gene: SG4\_77 Start: 47569, Stop: 48366, Start Num: 163

Candidate Starts for SG4\_77:

(Start: 162 @47566 has 9 MA's), (Start: 163 @47569 has 2 MA's), (178, 47602), (185, 47635), (186, 47644), (198, 47692), (219, 47725), (241, 47794), (270, 47866), (282, 47890), (287, 47905), (358, 48076), (366, 48112), (389, 48178), (393, 48184), (411, 48289), (417, 48307),

Gene: Sam12\_46 Start: 44268, Stop: 43546, Start Num: 139

Candidate Starts for Sam12\_46:

(Start: 139 @44268 has 67 MA's), (155, 44229), (170, 44202), (208, 44151), (235, 44076), (239, 44061), (273, 43977), (313, 43902), (372, 43746), (394, 43698), (396, 43668), (423, 43566),

Gene: SamScheppers\_69 Start: 44109, Stop: 44954, Start Num: 68

Candidate Starts for SamScheppers\_69:



(52, 44058), (Start: 68 @44109 has 46 MA's), (Start: 75 @44136 has 1 MA's), (86, 44166), (223, 44394), (226, 44406), (241, 44454), (266, 44520), (359, 44694), (382, 44772), (393, 44799), (398, 44838),

Gene: Sampson\_91 Start: 59293, Stop: 59982, Start Num: 168

Candidate Starts for Sampson\_91:

(Start: 53 @58978 has 1 MA's), (116, 59167), (132, 59212), (144, 59236), (Start: 168 @59293 has 79 MA's), (192, 59374), (210, 59425), (252, 59551), (274, 59590), (314, 59668), (326, 59680), (332, 59701), (353, 59737), (384, 59818),

Gene: Sanjuju\_83 Start: 58188, Stop: 58886, Start Num: 168

Candidate Starts for Sanjuju\_83:

(10, 57441), (Start: 40 @57810 has 3 MA's), (58, 57876), (137, 58113), (148, 58137), (Start: 168 @58188 has 79 MA's), (179, 58221), (180, 58236), (186, 58257), (232, 58365), (252, 58425), (293, 58506), (300, 58521), (309, 58542), (363, 58674), (372, 58707), (393, 58749), (399, 58794), (406, 58827), (411, 58854), (418, 58875),

Gene: Sassafras\_75 Start: 45926, Stop: 46594, Start Num: 159

Candidate Starts for Sassafras\_75:

(Start: 159 @45926 has 18 MA's), (178, 45965), (192, 46019), (199, 46046), (234, 46106), (273, 46196), (278, 46208), (295, 46241), (374, 46406), (390, 46439), (396, 46475), (417, 46565),

Gene: SassyB\_60 Start: 40607, Stop: 41515, Start Num: 68

Candidate Starts for SassyB\_60:

(Start: 68 @40607 has 46 MA's), (Start: 75 @40634 has 1 MA's), (89, 40676), (104, 40703), (135, 40793), (142, 40802), (151, 40823), (247, 40976), (266, 41021), (268, 41027), (304, 41090), (359, 41252), (368, 41297), (393, 41357),

Gene: Scioto\_89 Start: 59143, Stop: 59832, Start Num: 168

Candidate Starts for Scioto\_89:

(Start: 53 @58828 has 1 MA's), (116, 59017), (132, 59062), (144, 59086), (Start: 168 @59143 has 79 MA's), (192, 59224), (210, 59275), (252, 59401), (274, 59440), (314, 59518), (326, 59530), (332, 59551), (353, 59587), (384, 59668),

Gene: Scottish\_72 Start: 45585, Stop: 46253, Start Num: 159

Candidate Starts for Scottish\_72:

(Start: 159 @45585 has 18 MA's), (178, 45624), (192, 45678), (199, 45705), (234, 45765), (273, 45855), (278, 45867), (295, 45900), (374, 46065), (390, 46098), (396, 46134), (417, 46224),

Gene: Sedona\_83 Start: 58685, Stop: 59383, Start Num: 168

Candidate Starts for Sedona\_83:

(10, 57938), (Start: 40 @58307 has 3 MA's), (58, 58373), (137, 58610), (148, 58634), (Start: 168 @58685 has 79 MA's), (180, 58733), (183, 58742), (186, 58754), (232, 58862), (252, 58922), (293, 59003), (300, 59018), (309, 59039), (363, 59171), (372, 59204), (393, 59246), (399, 59291), (406, 59324), (411, 59351), (418, 59372),

Gene: Shelley\_46 Start: 45897, Stop: 45178, Start Num: 139

Candidate Starts for Shelley\_46:

(Start: 139 @45897 has 67 MA's), (170, 45831), (204, 45789), (208, 45780), (212, 45774), (239, 45690), (254, 45645), (269, 45612), (273, 45606), (313, 45531), (394, 45327),

Gene: ShowerHandel\_70 Start: 44059, Stop: 45009, Start Num: 128

Candidate Starts for ShowerHandel\_70:

(Start: 128 @44059 has 28 MA's), (169, 44161), (179, 44191), (181, 44212), (202, 44284), (216, 44308), (223, 44332), (231, 44362), (233, 44368), (251, 44434), (252, 44440), (275, 44488), (297, 44551), (308, 44581), (379, 44800), (385, 44806), (393, 44830), (394, 44833), (396, 44863), (399, 44875), (406, 44908), (412, 44944), (414, 44953), (420, 44965), (424, 44971), (429, 44983), (434, 44992), (436, 45001),

Gene: Sidious\_65 Start: 45678, Stop: 46337, Start Num: 165

Candidate Starts for Sidious\_65:

(Start: 165 @45678 has 16 MA's), (192, 45762), (241, 45873), (252, 45903), (294, 45981), (301, 45996), (354, 46086), (357, 46095), (417, 46308),

Gene: Sidious\_64 Start: 44887, Stop: 45681, Start Num: 165

Candidate Starts for Sidious\_64:

(Start: 162 @44884 has 9 MA's), (Start: 165 @44887 has 16 MA's), (204, 45019), (206, 45022), (221, 45049), (259, 45166), (333, 45340), (343, 45361), (374, 45457), (397, 45532), (406, 45574),

Gene: SimranZ1\_67 Start: 43613, Stop: 44584, Start Num: 68

Candidate Starts for SimranZ1\_67:

(23, 43436), (24, 43442), (27, 43451), (29, 43460), (37, 43499), (Start: 68 @43613 has 46 MA's), (96, 43697), (104, 43709), (135, 43799), (147, 43820), (151, 43829), (152, 43832), (172, 43889), (216, 43985), (226, 44021), (229, 44033), (241, 44069), (247, 44090), (257, 44114), (268, 44141), (329, 44249), (359, 44324),

Gene: Sitar\_84 Start: 58707, Stop: 59453, Start Num: 168

Candidate Starts for Sitar\_84:

(19, 58224), (58, 58395), (137, 58632), (148, 58656), (Start: 168 @58707 has 79 MA's), (180, 58755), (183, 58764), (186, 58776), (252, 58974), (261, 58989), (288, 59049), (293, 59055), (296, 59058), (300, 59070), (304, 59076), (309, 59091), (357, 59202), (393, 59316), (399, 59361), (406, 59394), (411, 59421), (418, 59442),

Gene: Slarp\_71 Start: 43637, Stop: 44482, Start Num: 68

Candidate Starts for Slarp\_71:

(52, 43586), (Start: 68 @43637 has 46 MA's), (Start: 75 @43664 has 1 MA's), (86, 43694), (223, 43922), (226, 43934), (241, 43982), (266, 44048), (359, 44222), (382, 44300), (393, 44327), (398, 44366),

Gene: Smooch\_24 Start: 10992, Stop: 11792, Start Num: 162

Candidate Starts for Smooch\_24:

(Start: 162 @10992 has 9 MA's), (Start: 163 @10995 has 2 MA's), (178, 11028), (185, 11061), (186, 11070), (198, 11118), (219, 11151), (241, 11220), (270, 11292), (282, 11316), (287, 11331), (358, 11502), (366, 11538), (389, 11604), (393, 11610), (411, 11715), (417, 11733), (433, 11763),

Gene: Sombrero\_47 Start: 44639, Stop: 43917, Start Num: 139

Candidate Starts for Sombrero\_47:

(Start: 139 @44639 has 67 MA's), (155, 44600), (170, 44573), (198, 44540), (208, 44522), (235, 44447), (239, 44432), (273, 44348), (313, 44273), (393, 44072), (394, 44069), (423, 43937),

Gene: Spikelee\_74 Start: 45764, Stop: 46714, Start Num: 128

Candidate Starts for Spikelee\_74:

(Start: 128 @45764 has 28 MA's), (169, 45866), (179, 45896), (181, 45917), (202, 45989), (216, 46013), (223, 46037), (231, 46067), (233, 46073), (251, 46139), (252, 46145), (275, 46193), (297, 46256), (308, 46286), (379, 46505), (385, 46511), (393, 46535), (394, 46538), (396, 46568), (399, 46580), (406, 46613), (412, 46649), (414, 46658), (420, 46670), (424, 46676), (429, 46688), (434,

46697),

Gene: Spooky\_73 Start: 43405, Stop: 44088, Start Num: 175

Candidate Starts for Spooky\_73:

(150, 43345), (Start: 175 @43405 has 2 MA's), (196, 43474), (236, 43576), (243, 43597), (255, 43633), (283, 43693), (287, 43705), (302, 43729), (305, 43738), (331, 43810), (347, 43846), (350, 43849), (387, 43927), (403, 44008), (418, 44080),

Gene: Squibbles\_46 Start: 45131, Stop: 44409, Start Num: 139

Candidate Starts for Squibbles\_46:

(Start: 139 @45131 has 67 MA's), (155, 45092), (170, 45065), (208, 45014), (235, 44939), (239, 44924), (273, 44840), (313, 44765), (372, 44609), (394, 44561), (396, 44531), (423, 44429),

Gene: Squiddly\_65 Start: 43028, Stop: 43984, Start Num: 122

Candidate Starts for Squiddly\_65:

(Start: 122 @43028 has 3 MA's), (151, 43088), (171, 43148), (181, 43193), (202, 43265), (223, 43313), (233, 43349), (251, 43415), (252, 43421), (306, 43559), (349, 43673), (385, 43787), (399, 43856), (420, 43946), (423, 43949), (436, 43976),

Gene: StAnnes\_64 Start: 42680, Stop: 43636, Start Num: 68

Candidate Starts for StAnnes\_64:

(Start: 68 @42680 has 46 MA's), (Start: 75 @42707 has 1 MA's), (79, 42713), (89, 42749), (135, 42866), (152, 42899), (192, 42977), (196, 43001), (216, 43037), (220, 43052), (226, 43073), (229, 43085), (247, 43142), (266, 43187), (304, 43250), (320, 43271), (359, 43373), (393, 43478),

Gene: SteveFrench\_46 Start: 45344, Stop: 44622, Start Num: 139

Candidate Starts for SteveFrench\_46:

(Start: 139 @45344 has 67 MA's), (155, 45305), (208, 45227), (235, 45152), (239, 45137), (273, 45053), (313, 44978), (394, 44774), (396, 44744), (423, 44642),

Gene: StevieRay\_65 Start: 41652, Stop: 42314, Start Num: 162

Candidate Starts for StevieRay\_65:

(Start: 162 @41652 has 9 MA's), (178, 41685), (192, 41739), (199, 41766), (234, 41826), (273, 41916), (278, 41928), (295, 41961), (374, 42126), (390, 42159), (396, 42195), (417, 42285),

Gene: Sticker17\_46 Start: 46412, Stop: 45693, Start Num: 139

Candidate Starts for Sticker17\_46:

(Start: 139 @46412 has 67 MA's), (170, 46346), (208, 46295), (212, 46289), (239, 46205), (254, 46160), (273, 46121), (313, 46046), (318, 46037), (394, 45842),

Gene: Stultus\_80 Start: 56979, Stop: 57725, Start Num: 168

Candidate Starts for Stultus\_80:

(Start: 168 @56979 has 79 MA's), (180, 57027), (183, 57036), (186, 57048), (252, 57246), (261, 57261), (288, 57321), (293, 57327), (296, 57330), (300, 57342), (304, 57348), (309, 57363), (357, 57474), (393, 57588), (396, 57621), (399, 57633), (406, 57666), (411, 57693), (418, 57714),

Gene: SwagPiggett\_72 Start: 46406, Stop: 47356, Start Num: 128

Candidate Starts for SwagPiggett\_72:

(Start: 128 @46406 has 28 MA's), (169, 46508), (179, 46538), (181, 46559), (202, 46631), (216, 46655), (223, 46679), (231, 46709), (233, 46715), (251, 46781), (252, 46787), (275, 46835), (297, 46898), (308, 46928), (341, 47012), (379, 47147), (385, 47153), (393, 47177), (394, 47180), (396, 47210), (399, 47222), (406, 47255), (412, 47291), (414, 47300), (420, 47312), (424, 47318), (429, 47330), (434, 47339),

Gene: Swole\_70 Start: 43859, Stop: 42993, Start Num: 59

Candidate Starts for Swole\_70:

(48, 43886), (56, 43865), (Start: 59 @43859 has 7 MA's), (Start: 75 @43802 has 1 MA's), (78, 43799), (87, 43769), (89, 43760), (138, 43640), (226, 43532), (247, 43463), (281, 43388), (368, 43202), (379, 43172), (419, 43013),

Gene: Taquito\_70 Start: 43842, Stop: 44687, Start Num: 68

Candidate Starts for Taquito\_70:

(52, 43791), (Start: 68 @43842 has 46 MA's), (Start: 75 @43869 has 1 MA's), (86, 43899), (223, 44127), (226, 44139), (241, 44187), (266, 44253), (359, 44427), (382, 44505), (393, 44532), (398, 44571),

Gene: Target\_60 Start: 39423, Stop: 38428, Start Num: 41

Candidate Starts for Target\_60:

(Start: 41 @39423 has 5 MA's), (73, 39315), (85, 39270), (113, 39186), (173, 39063), (217, 39009), (225, 38979), (256, 38886), (264, 38874), (335, 38706), (368, 38622), (370, 38613), (374, 38604), (387, 38583), (392, 38565), (396, 38529),

Gene: Teal\_46 Start: 46880, Stop: 46161, Start Num: 139

Candidate Starts for Teal\_46:

(Start: 139 @46880 has 67 MA's), (170, 46814), (204, 46772), (208, 46763), (212, 46757), (239, 46673), (254, 46628), (269, 46595), (273, 46589), (313, 46514), (394, 46310),

Gene: Teatealatte\_43 Start: 45553, Stop: 44837, Start Num: 139

Candidate Starts for Teatealatte\_43:

(Start: 139 @45553 has 67 MA's), (147, 45538), (208, 45436), (239, 45346), (242, 45340), (313, 45187), (335, 45124), (352, 45094), (413, 44872),

Gene: Teech\_43 Start: 45354, Stop: 44638, Start Num: 139

Candidate Starts for Teech\_43:

(Start: 139 @45354 has 67 MA's), (147, 45339), (208, 45237), (239, 45147), (242, 45141), (313, 44988), (335, 44925), (352, 44895), (413, 44673),

Gene: Terminus\_102 Start: 59873, Stop: 60904, Start Num: 40

Candidate Starts for Terminus\_102:

(12, 59726), (18, 59756), (25, 59804), (28, 59819), (32, 59831), (Start: 40 @59873 has 3 MA's), (44, 59891), (73, 59987), (85, 60032), (113, 60116), (217, 60320), (225, 60350), (237, 60386), (335, 60623), (374, 60725), (393, 60767), (396, 60800), (400, 60815),

Gene: Thespis\_62 Start: 40418, Stop: 41080, Start Num: 162

Candidate Starts for Thespis\_62:

(Start: 124 @40337 has 2 MA's), (Start: 128 @40346 has 28 MA's), (140, 40373), (Start: 162 @40418 has 9 MA's), (178, 40451), (192, 40505), (199, 40532), (234, 40592), (273, 40682), (278, 40694), (295, 40727), (374, 40892), (390, 40925), (396, 40961), (417, 41051),

Gene: Thing3\_86 Start: 58360, Stop: 59106, Start Num: 168

Candidate Starts for Thing3\_86:

(137, 58285), (148, 58309), (Start: 168 @58360 has 79 MA's), (180, 58408), (183, 58417), (186, 58429), (252, 58627), (261, 58642), (288, 58702), (293, 58708), (296, 58711), (300, 58723), (304, 58729), (309, 58744), (357, 58855), (393, 58969), (399, 59014), (406, 59047), (411, 59074), (418, 59095),

Gene: Thing3\_10 Start: 5311, Stop: 6054, Start Num: 165

Candidate Starts for Thing3\_10:

(Start: 165 @5311 has 16 MA's), (182, 5371), (183, 5374), (193, 5410), (224, 5476), (240, 5521), (245, 5539), (249, 5545), (284, 5623), (310, 5683), (323, 5707), (327, 5716), (337, 5749), (357, 5788), (361, 5797), (373, 5857), (386, 5878), (391, 5896), (393, 5899), (401, 5950), (410, 5998),

Gene: Tiamoceli\_4 Start: 2479, Stop: 3267, Start Num: 76

Candidate Starts for Tiamoceli\_4:

(Start: 76 @2479 has 1 MA's), (135, 2644), (202, 2791), (220, 2833), (251, 2935), (258, 2950), (359, 3043), (365, 3067), (412, 3259),

Gene: Tote\_65 Start: 41126, Stop: 40260, Start Num: 59

Candidate Starts for Tote\_65:

(48, 41153), (56, 41132), (Start: 59 @41126 has 7 MA's), (Start: 75 @41069 has 1 MA's), (78, 41066), (87, 41036), (89, 41027), (138, 40907), (226, 40799), (247, 40730), (281, 40655), (368, 40469), (379, 40439), (419, 40280),

Gene: Tredge\_43 Start: 45553, Stop: 44837, Start Num: 139

Candidate Starts for Tredge\_43:

(Start: 139 @45553 has 67 MA's), (147, 45538), (208, 45436), (239, 45346), (242, 45340), (313, 45187), (335, 45124), (352, 45094), (413, 44872),

Gene: TripleJ\_61 Start: 37250, Stop: 37999, Start Num: 168

Candidate Starts for TripleJ\_61:

(Start: 168 @37250 has 79 MA's), (177, 37274), (178, 37277), (185, 37310), (186, 37319), (191, 37334), (212, 37382), (228, 37415), (248, 37466), (261, 37499), (293, 37565), (300, 37580), (309, 37601), (332, 37655), (371, 37763), (372, 37766), (399, 37853),

Gene: Trouble\_68 Start: 43948, Stop: 43082, Start Num: 61

Candidate Starts for Trouble\_68:

(Start: 55 @43963 has 1 MA's), (Start: 61 @43948 has 6 MA's), (Start: 67 @43927 has 4 MA's), (Start: 75 @43894 has 1 MA's), (78, 43891), (87, 43861), (89, 43852), (138, 43732), (226, 43624), (247, 43555), (281, 43480), (368, 43294), (379, 43264), (419, 43105),

Gene: Tweety\_66 Start: 43468, Stop: 44124, Start Num: 168

Candidate Starts for Tweety\_66:

(92, 43291), (101, 43306), (105, 43315), (141, 43411), (Start: 168 @43468 has 79 MA's), (192, 43549), (199, 43576), (234, 43636), (273, 43726), (278, 43738), (295, 43771), (374, 43936), (390, 43969), (396, 44005), (412, 44086), (417, 44095),

Gene: Ubuntu\_67 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Ubuntu\_67:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: UmaThurman\_67 Start: 42612, Stop: 43637, Start Num: 68

Candidate Starts for UmaThurman\_67:

(6, 42123), (9, 42144), (11, 42156), (14, 42375), (16, 42387), (21, 42435), (Start: 68 @42612 has 46 MA's), (104, 42708), (Start: 122 @42765 has 3 MA's), (135, 42798), (151, 42828), (Start: 159 @42861 has 18 MA's), (190, 42942), (221, 43032), (223, 43038), (247, 43119), (268, 43170), (338, 43326), (369, 43425),

Gene: Utz\_60 Start: 42126, Stop: 43184, Start Num: 68

Candidate Starts for Utz\_60:

(14, 41889), (16, 41901), (21, 41949), (Start: 68 @42126 has 46 MA's), (104, 42222), (Start: 122 @42279 has 3 MA's), (135, 42312), (151, 42342), (190, 42456), (221, 42546), (236, 42597), (239, 42609), (247, 42633), (257, 42657), (266, 42678), (268, 42684), (369, 42972),

Gene: Vasanti\_62 Start: 41618, Stop: 42619, Start Num: 68

Candidate Starts for Vasanti\_62:

(3, 41102), (39, 41525), (58, 41585), (Start: 68 @41618 has 46 MA's), (96, 41702), (104, 41714), (Start: 122 @41771 has 3 MA's), (135, 41804), (151, 41834), (199, 41948), (239, 42044), (247, 42068), (266, 42113), (268, 42119), (321, 42218), (359, 42359), (369, 42407),

Gene: Venti\_58 Start: 37622, Stop: 38488, Start Num: 125

Candidate Starts for Venti\_58:

(107, 37571), (108, 37586), (Start: 125 @37622 has 3 MA's), (Start: 165 @37721 has 16 MA's), (178, 37751), (185, 37784), (186, 37793), (198, 37841), (219, 37874), (241, 37943), (270, 38015), (282, 38039), (287, 38054), (358, 38225), (366, 38261), (389, 38327), (393, 38333), (411, 38438), (417, 38456),

Gene: Verity\_88 Start: 60390, Stop: 61079, Start Num: 168

Candidate Starts for Verity\_88:

(144, 60333), (Start: 168 @60390 has 79 MA's), (192, 60471), (314, 60765), (326, 60777), (384, 60915), (390, 60933), (405, 61008), (406, 61014),

Gene: ViaConlectus\_88 Start: 58070, Stop: 58717, Start Num: 168

Candidate Starts for ViaConlectus\_88:

(110, 57944), (129, 57989), (Start: 139 @58013 has 67 MA's), (Start: 168 @58070 has 79 MA's), (192, 58151), (236, 58247), (252, 58292), (294, 58370), (301, 58385), (345, 58460), (357, 58484), (417, 58697),

Gene: Vitaenoi\_44 Start: 46926, Stop: 46213, Start Num: 139

Candidate Starts for Vitaenoi\_44:

(57, 47169), (Start: 139 @46926 has 67 MA's), (147, 46911), (208, 46809), (239, 46719), (313, 46560), (335, 46497), (352, 46467), (394, 46356), (396, 46326), (413, 46245),

Gene: Vopal\_77 Start: 43204, Stop: 44103, Start Num: 124

Candidate Starts for Vopal\_77:

(13, 42793), (15, 42805), (69, 43036), (Start: 124 @43204 has 2 MA's), (130, 43213), (171, 43321), (184, 43375), (393, 43927), (399, 43972), (420, 44062), (427, 44077),

Gene: Walrus\_66 Start: 42197, Stop: 43261, Start Num: 68

Candidate Starts for Walrus\_66:

(11, 41744), (14, 41963), (16, 41975), (21, 42023), (Start: 68 @42197 has 46 MA's), (104, 42293), (Start: 122 @42350 has 3 MA's), (135, 42383), (151, 42413), (190, 42527), (221, 42617), (239, 42680), (247, 42704), (266, 42749), (268, 42755), (321, 42854), (369, 43043),

Gene: Watermelon\_68 Start: 43252, Stop: 42389, Start Num: 61

Candidate Starts for Watermelon\_68:

(Start: 55 @43267 has 1 MA's), (Start: 61 @43252 has 6 MA's), (Start: 67 @43231 has 4 MA's), (Start: 75 @43201 has 1 MA's), (78, 43198), (87, 43168), (89, 43159), (138, 43039), (226, 42931), (247, 42862), (281, 42787), (368, 42601), (379, 42571), (419, 42412),

Gene: Webster2\_67 Start: 44904, Stop: 45578, Start Num: 159

Candidate Starts for Webster2\_67:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: WheatThin\_65 Start: 42576, Stop: 43286, Start Num: 168

Candidate Starts for WheatThin\_65:

(77, 42342), (123, 42471), (Start: 168 @42576 has 79 MA's), (178, 42603), (193, 42669), (296, 42894), (309, 42927), (332, 42981), (357, 43038), (371, 43089), (372, 43092), (396, 43167),

Gene: Wheeler\_71 Start: 44519, Stop: 43659, Start Num: 61

Candidate Starts for Wheeler\_71:

(Start: 55 @44534 has 1 MA's), (Start: 61 @44519 has 6 MA's), (Start: 67 @44498 has 4 MA's), (Start: 75 @44468 has 1 MA's), (78, 44465), (87, 44435), (89, 44426), (138, 44306), (226, 44198), (247, 44129), (281, 44054), (368, 43868), (379, 43838), (419, 43679),

Gene: Whitty\_59 Start: 41222, Stop: 41959, Start Num: 176

Candidate Starts for Whitty\_59:

(35, 40805), (108, 41063), (112, 41069), (Start: 176 @41222 has 7 MA's), (183, 41264), (206, 41336), (215, 41354), (263, 41480), (271, 41498), (324, 41612), (333, 41648), (353, 41693), (374, 41777), (378, 41786), (380, 41789), (388, 41798), (393, 41816), (422, 41948),

Gene: Whouxphf\_64 Start: 43966, Stop: 44916, Start Num: 128

Candidate Starts for Whouxphf\_64:

(Start: 128 @43966 has 28 MA's), (169, 44068), (179, 44098), (181, 44119), (202, 44191), (216, 44215), (223, 44239), (231, 44269), (233, 44275), (251, 44341), (252, 44347), (275, 44395), (297, 44458), (308, 44488), (379, 44707), (385, 44713), (393, 44737), (394, 44740), (396, 44770), (399, 44782), (406, 44815), (412, 44851), (414, 44860), (420, 44872), (424, 44878), (429, 44890), (434, 44899),

Gene: Wintermute\_71 Start: 43867, Stop: 44712, Start Num: 68

Candidate Starts for Wintermute\_71:

(52, 43816), (Start: 68 @43867 has 46 MA's), (Start: 75 @43894 has 1 MA's), (86, 43924), (223, 44152), (226, 44164), (241, 44212), (266, 44278), (359, 44452), (382, 44530), (393, 44557), (398, 44596),

Gene: Wishmaker\_62 Start: 44916, Stop: 45578, Start Num: 168

Candidate Starts for Wishmaker\_62:

(46, 44574), (72, 44655), (84, 44700), (88, 44724), (108, 44775), (131, 44829), (Start: 159 @44904 has 18 MA's), (161, 44907), (Start: 168 @44916 has 79 MA's), (178, 44943), (243, 45117), (277, 45195), (279, 45201), (291, 45225), (298, 45234), (326, 45276), (361, 45360), (367, 45363), (374, 45396), (376, 45402), (380, 45408), (397, 45471), (405, 45507), (410, 45534), (412, 45549), (417, 45558),

Gene: Woes\_46 Start: 46931, Stop: 46212, Start Num: 139

Candidate Starts for Woes\_46:

(Start: 139 @46931 has 67 MA's), (170, 46865), (208, 46814), (212, 46808), (239, 46724), (254, 46679), (273, 46640), (313, 46565), (394, 46361),

Gene: Worcestershire\_47 Start: 44270, Stop: 43548, Start Num: 139

Candidate Starts for Worcestershire\_47:

(Start: 139 @44270 has 67 MA's), (155, 44231), (170, 44204), (208, 44153), (235, 44078), (239, 44063), (273, 43979), (313, 43904), (372, 43748), (394, 43700), (396, 43670), (423, 43568),

Gene: Xula\_54 Start: 38111, Stop: 39022, Start Num: 68

Candidate Starts for Xula\_54:

(Start: 68 @38111 has 46 MA's), (Start: 75 @38138 has 1 MA's), (79, 38144), (89, 38180), (135, 38297), (147, 38318), (151, 38327), (152, 38330), (197, 38393), (226, 38429), (229, 38441), (236, 38462), (266, 38543), (348, 38729), (359, 38759), (393, 38864),

Gene: Y10\_68 Start: 43844, Stop: 44689, Start Num: 68

Candidate Starts for Y10\_68:

(Start: 68 @43844 has 46 MA's), (Start: 75 @43871 has 1 MA's), (86, 43901), (223, 44129), (226, 44141), (241, 44189), (266, 44255), (359, 44429), (382, 44507), (393, 44534), (398, 44573),

Gene: Y2\_68 Start: 43844, Stop: 44689, Start Num: 68

Candidate Starts for Y2\_68:

(Start: 68 @43844 has 46 MA's), (Start: 75 @43871 has 1 MA's), (86, 43901), (223, 44129), (226, 44141), (241, 44189), (266, 44255), (359, 44429), (382, 44507), (393, 44534), (398, 44573),

Gene: Yorick\_66 Start: 44206, Stop: 45156, Start Num: 128

Candidate Starts for Yorick\_66:

(Start: 128 @44206 has 28 MA's), (169, 44308), (179, 44338), (181, 44359), (202, 44431), (216, 44455), (223, 44479), (231, 44509), (233, 44515), (251, 44581), (252, 44587), (275, 44635), (297, 44698), (308, 44728), (379, 44947), (385, 44953), (393, 44977), (394, 44980), (396, 45010), (399, 45022), (406, 45055), (412, 45091), (414, 45100), (420, 45112), (424, 45118), (429, 45130), (434, 45139),

Gene: ZenTime222\_66 Start: 42173, Stop: 42910, Start Num: 176

Candidate Starts for ZenTime222\_66:

(35, 41756), (108, 42014), (112, 42020), (Start: 176 @42173 has 7 MA's), (183, 42215), (206, 42287), (215, 42305), (263, 42431), (271, 42449), (324, 42563), (333, 42599), (353, 42644), (374, 42728), (378, 42737), (380, 42740), (388, 42749), (393, 42767), (422, 42899),

Gene: Zipp\_89 Start: 60361, Stop: 61050, Start Num: 168

Candidate Starts for Zipp\_89:

(144, 60304), (Start: 168 @60361 has 79 MA's), (192, 60442), (314, 60736), (326, 60748), (384, 60886), (390, 60904), (405, 60979), (406, 60985),

Gene: Zizzle\_71 Start: 45692, Stop: 46642, Start Num: 128

Candidate Starts for Zizzle\_71:

(Start: 128 @45692 has 28 MA's), (169, 45794), (179, 45824), (181, 45845), (202, 45917), (216, 45941), (223, 45965), (231, 45995), (233, 46001), (251, 46067), (252, 46073), (275, 46121), (297, 46184), (308, 46214), (379, 46433), (385, 46439), (393, 46463), (394, 46466), (396, 46496), (399, 46508), (406, 46541), (412, 46577), (414, 46586), (420, 46598), (424, 46604), (429, 46616), (434, 46625), (436, 46634),

Gene: Zucker\_72 Start: 42192, Stop: 43091, Start Num: 124

Candidate Starts for Zucker\_72:

(13, 41781), (15, 41793), (69, 42024), (Start: 124 @42192 has 2 MA's), (130, 42201), (166, 42297), (171, 42309), (184, 42363), (238, 42531), (393, 42915), (398, 42954), (399, 42960), (420, 43050),