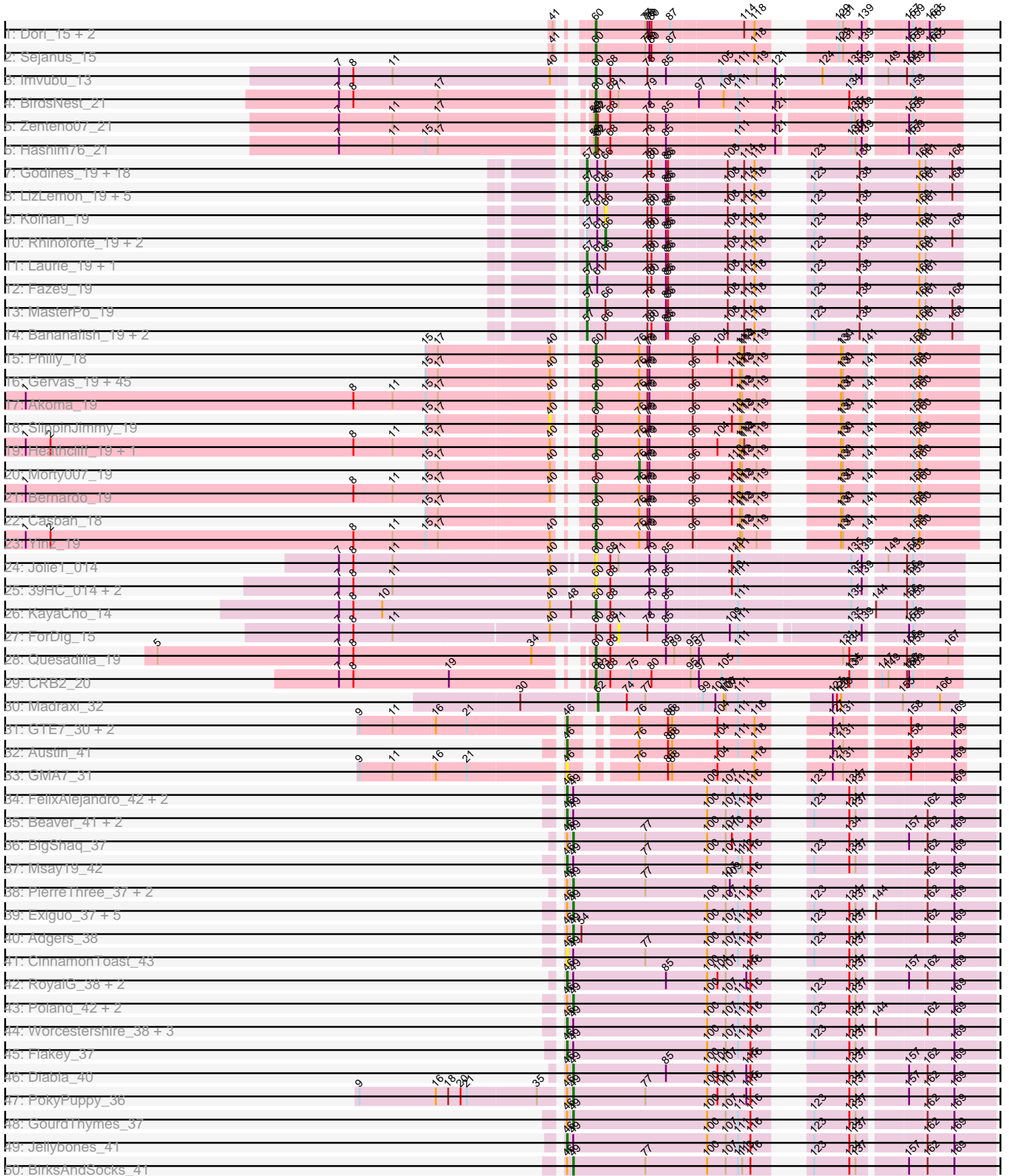
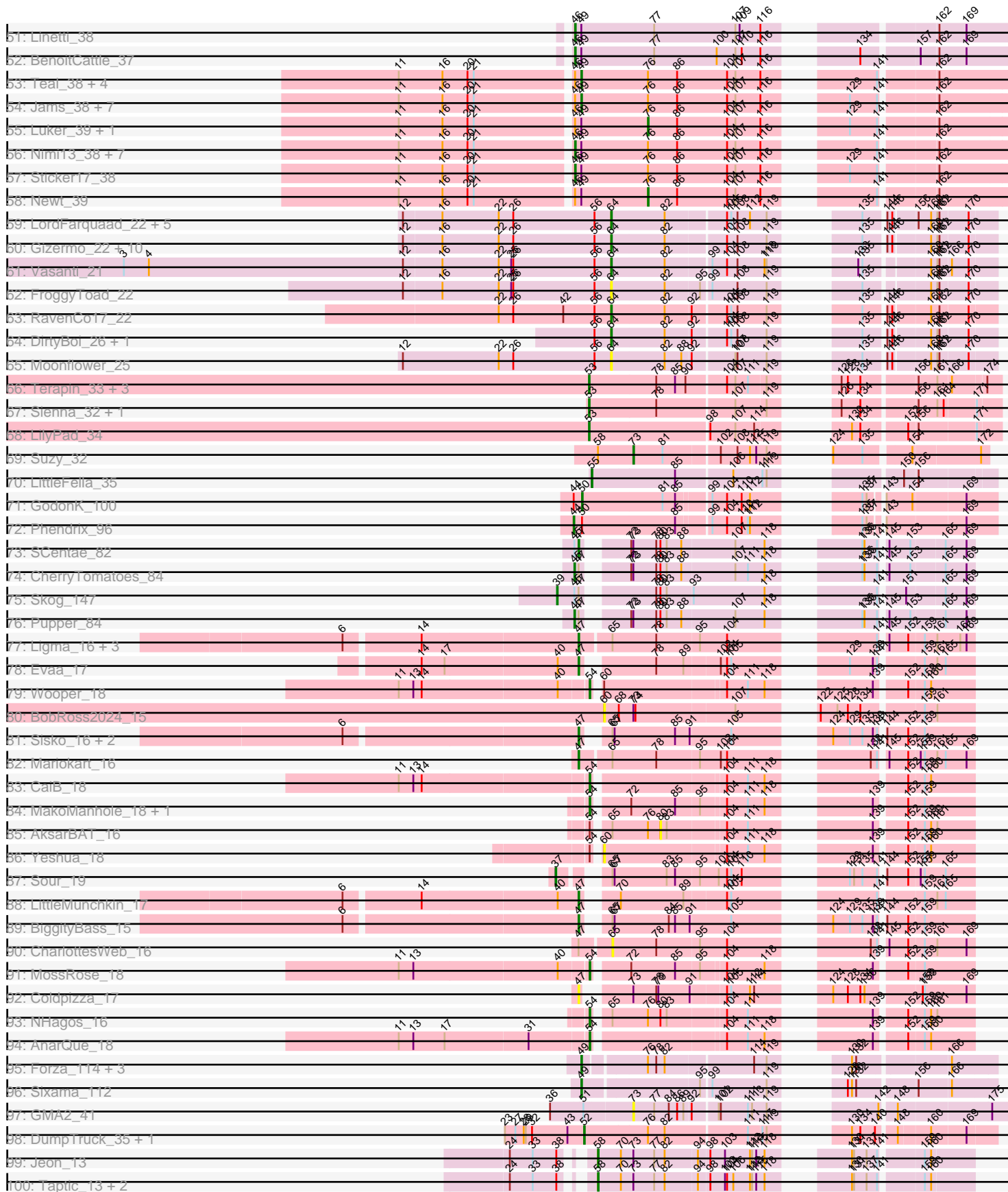


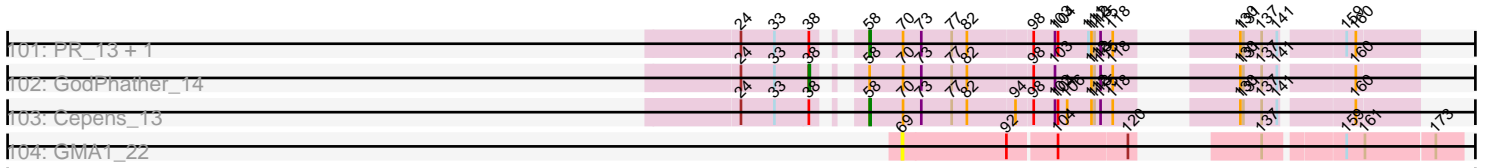
Pham 224253



Pham 224253



# Pham 224253



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 224253 Report

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

Pham number 224253 has 254 members, 33 are drafts.

Phages represented in each track:

- Track 1 : Dori\_15, Mask\_15, Mao1\_14
- Track 2 : Sejanus\_15
- Track 3 : Imvubu\_13
- Track 4 : BirdsNest\_21
- Track 5 : Zenteno07\_21
- Track 6 : Hashim76\_21
- Track 7 : Godines\_19, Brownie5\_19, Boyle\_19, Arbiter\_19, Kheth\_19, Ares\_19, Qyrzula\_18, Rosebush\_19, Eaglehorse\_19, Glass\_19, Sabella\_19, Allegro\_19, Tres\_19, FrenchFry\_19, West99\_19, Lars\_19, Hedgerow\_19, Kaleb\_19, Tinciduntolum\_20
- Track 8 : LizLemon\_19, ItsyBitsy1\_19, Holeinone\_19, Lephleur\_19, Calamitous\_19, Phantasmagoria\_19
- Track 9 : Kolhan\_19
- Track 10 : Rhinoforte\_19, Opia\_19, Coffee\_19
- Track 11 : Laurie\_19, Vic9\_00019
- Track 12 : Faze9\_19
- Track 13 : MasterPo\_19
- Track 14 : Bananafish\_19, Blocker23\_19, TA17A\_19
- Track 15 : Philly\_18
- Track 16 : Gervas\_19, OrangeOswald\_19, Abinghost\_19, Ben11\_18, Jackstina\_18, HarveySr\_19, GlenHope\_20, Neos5\_19, Marlia\_19, Nozo\_19, Athena\_20, ChaChing\_19, Mortcellus\_18, Tydolla\_19, Corofin\_19, LestyG\_19, TinyTerror\_19, SynergyX\_19, Olivio\_18, Yahalom\_19, Rita1961\_19, Marley1013\_19, Baloo\_19, RagingRooster\_19, Chandler\_19, Briakila\_19, Chalmers\_19, MmasiCarm\_19, Kronus\_18, Audrey\_19, Deenasa\_19, Glubnar\_19, Chentzyk\_18, Daisy\_19, Obutu\_19, Pipefish\_19, Phaedrus\_18, Shenandoah\_19, Halfpint\_18, RomaT\_19, Phlyer\_19, Phayeta\_19, Kamiyu\_19, Compostia\_20, Gadget\_20, SwainyDoc\_19
- Track 17 : Akoma\_19
- Track 18 : SlippinJimmy\_19
- Track 19 : Heathcliff\_19, Devonte\_19
- Track 20 : Morty007\_19
- Track 21 : Bernardo\_19
- Track 22 : Casbah\_18
- Track 23 : Yinz\_19
- Track 24 : Jolie1\_014
- Track 25 : 39HC\_014, Hosp\_012, 40BC\_014
- Track 26 : KayaCho\_14

- Track 27 : ForDig\_15
- Track 28 : Quesadilla\_19
- Track 29 : CRB2\_20
- Track 30 : Madraxi\_32
- Track 31 : GTE7\_30, HayZem\_40, Amore2\_41
- Track 32 : Austin\_41
- Track 33 : GMA7\_31
- Track 34 : FelixAlejandro\_42, Butterball\_41, Sombrero\_37
- Track 35 : Beaver\_41, Ekhein\_38, Hotorobo\_37
- Track 36 : BigShaq\_37
- Track 37 : Msay19\_42
- Track 38 : PierreThree\_37, Dakiti\_37, Chelms\_37
- Track 39 : Exiguo\_37, Lizzo\_37, Breezic\_37, Sam12\_37, RemRem\_38, Monty\_36
- Track 40 : Adgers\_38
- Track 41 : CinnamonToast\_43
- Track 42 : RoyalG\_38, SteveFrench\_37, Eggsie\_37
- Track 43 : Poland\_42, Gorko\_37, Boneham\_41
- Track 44 : Worcestershire\_38, John316\_41, Squibbles\_37, CathyBurgh\_37
- Track 45 : Flakey\_37
- Track 46 : Diabla\_40
- Track 47 : PokyPuppy\_36
- Track 48 : GourdThymes\_37
- Track 49 : Jellybones\_41
- Track 50 : BirksAndSocks\_41
- Track 51 : Linetti\_38
- Track 52 : BenoitCattle\_37
- Track 53 : Teal\_38, Woes\_38, Hail2Pitt\_38, GalacticEye\_38, Damp\_38
- Track 54 : Jams\_38, Minos\_39, Berries\_38, Shelley\_38, Charianelly\_38, Bianmat\_38, MrWormie\_38, Lidong\_38
- Track 55 : Luker\_39, Kaseim\_39
- Track 56 : Nimi13\_38, Anamika\_38, Harambe\_38, Lahirium\_38, Guillaume\_38, Hello\_38, Neoevie\_38, Jormungandr\_38
- Track 57 : Sticker17\_38
- Track 58 : Newt\_39
- Track 59 : LordFarquaad\_22, Yeet412\_22, Bjaner7\_22, Attis\_22, SoilAssassin\_22, Sahara\_21
- Track 60 : Gizermo\_22, Savage\_22, Haley23\_22, GemG\_22, Ebert\_22, Cynthia\_22, Sproutie\_22, Whiteclaw\_22, Mocha12\_22, Clap\_22, TuertoX\_22
- Track 61 : Vasanti\_21
- Track 62 : FroggyToad\_22
- Track 63 : RavenCo17\_22
- Track 64 : DirtyBoi\_26, Hedwig\_26
- Track 65 : Moonflower\_25
- Track 66 : Terapin\_33, BiteSize\_32, Djokovic\_32, Beyoncage\_32
- Track 67 : Sienna\_32, Madi\_32
- Track 68 : LilyPad\_34
- Track 69 : Suzy\_32
- Track 70 : LittleFella\_35
- Track 71 : GodonK\_100
- Track 72 : Phendrix\_96
- Track 73 : SCentae\_82
- Track 74 : CherryTomatoes\_84
- Track 75 : Skog\_147

- Track 76 : Pupper\_84
- Track 77 : Ligma\_16, Fresco\_16, Axumite\_16, Shatter\_16
- Track 78 : Evaa\_17
- Track 79 : Wooper\_18
- Track 80 : BobRoss2024\_15
- Track 81 : Sisko\_16, Yago84\_16, AnClar\_16
- Track 82 : Mariokart\_16
- Track 83 : CaiB\_18
- Track 84 : MakoManhole\_18, CloverMinnie\_18
- Track 85 : AksarBAT\_16
- Track 86 : Yeshua\_18
- Track 87 : Sour\_19
- Track 88 : LittleMunchkin\_17
- Track 89 : BiggityBass\_15
- Track 90 : CharlottesWeb\_16
- Track 91 : MossRose\_18
- Track 92 : Coldpizza\_17
- Track 93 : NHagos\_16
- Track 94 : AnarQue\_18
- Track 95 : Forza\_114, BlueNGold\_113, Boopy\_114, Mareelih\_112
- Track 96 : Sixama\_112
- Track 97 : GMA2\_41
- Track 98 : DumpTruck\_35, Xenia2\_36
- Track 99 : Jeon\_13
- Track 100 : Taptic\_13, Argie\_14, Megabear\_13
- Track 101 : PR\_13, D12\_13
- Track 102 : GodPhather\_14
- Track 103 : Cepens\_13
- Track 104 : GMA1\_22

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

The start number called the most often in the published annotations is 60, it was called in 55 of the 221 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 39HC\_014, 40BC\_014, Abinghost\_19, Akoma\_19, Athena\_20, Audrey\_19, Baloo\_19, Ben11\_18, Bernardo\_19, BirdsNest\_21, BobRoss2024\_15, Briakila\_19, CRB2\_20, Casbah\_18, ChaChing\_19, Chalmers\_19, Chandler\_19, Chentzyk\_18, Compostia\_20, Corofin\_19, Daisy\_19, Deenasa\_19, Devonte\_19, Dori\_15, Gadget\_20, Gervas\_19, GlenHope\_20, Glubnar\_19, Halfpint\_18, HarveySr\_19, Hashim76\_21, Heathcliff\_19, Hosp\_012, Imvubu\_13, Jackstina\_18, Jolie1\_014, Kamiyu\_19, KayaCho\_14, Kronus\_18, LestyG\_19, Mao1\_14, Marley1013\_19, Marlia\_19, Mask\_15, MmasiCarm\_19, Mortcellus\_18, Neos5\_19, Nozo\_19, Obutu\_19, Olivio\_18, OrangeOswald\_19, Phaedrus\_18, Phayeta\_19, Philly\_18, Phlyer\_19, Pipefish\_19, Quesadilla\_19, RagingRooster\_19, Rita1961\_19, RomaT\_19, Sejanus\_15, Shenandoah\_19, SwainyDoc\_19, SynergyX\_19, TinyTerror\_19, Tydolla\_19, Yahalom\_19, Yeshua\_18, Yinz\_19, Zenteno07\_21,

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

- ForDig\_15, Morty007\_19, SlippinJimmy\_19, Wooper\_18,

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

- Adgers\_38, AksarBAT\_16, Allegro\_19, Amore2\_41, AnClar\_16, Anamika\_38, AnarQue\_18, Arbiter\_19, Ares\_19, Argie\_14, Attis\_22, Austin\_41, Axumite\_16, Bananafish\_19, Beaver\_41, BenoitCattle\_37, Berries\_38, Beyoncage\_32, Bianmat\_38, BigShaq\_37, BiggityBass\_15, BirksAndSocks\_41, BiteSize\_32, Bjaner7\_22, Blocker23\_19, BlueNGold\_113, Boneham\_41, Boopy\_114, Boyle\_19, Breezic\_37, Brownie5\_19, Butterball\_41, CaiB\_18, Calamitous\_19, CathyBurgh\_37, Cepens\_13, Charianelly\_38, CharlottesWeb\_16, Chelms\_37, CherryTomatoes\_84, CinnamonToast\_43, Clap\_22, CloverMinnie\_18, Coffee\_19, Coldpizza\_17, Cynthia\_22, D12\_13, Dakiti\_37, Damp\_38, Diabla\_40, DirtyBoi\_26, Djokovic\_32, DumpTruck\_35, Eaglehorse\_19, Ebert\_22, Eggsie\_37, Ekhein\_38, Evaa\_17, Exiguo\_37, Faze9\_19, FelixAlejandro\_42, Flakey\_37, Forza\_114, FrenchFry\_19, Fresco\_16, FroggyToad\_22, GMA1\_22, GMA2\_41, GMA7\_31, GTE7\_30, GalacticEye\_38, GemG\_22, Gizermo\_22, Glass\_19, GodPhather\_14, Godines\_19, GodonK\_100, Gorko\_37, GourdThymes\_37, Guillaume\_38, Hail2Pitt\_38, Haley23\_22, Harambe\_38, HayZem\_40, Hedgerow\_19, Hedwig\_26, Hello\_38, Holeinone\_19, Hotorobo\_37, ItsyBitsy1\_19, Jams\_38, Jellybones\_41, Jeon\_13, John316\_41, Jormungandr\_38, Kaleb\_19, Kaseim\_39, Kheth\_19, Kolhan\_19, Lahirium\_38, Lars\_19, Laurie\_19, Lephleur\_19, Lidong\_38, Ligma\_16, LilyPad\_34, Linetti\_38, LittleFella\_35, LittleMunchkin\_17, LizLemon\_19, Lizzo\_37, LordFarquaad\_22, Luker\_39, Madi\_32, Madraxi\_32, MakoManhole\_18, Mareelih\_112, Mariokart\_16, MasterPo\_19, Megabear\_13, Minos\_39, Mocha12\_22, Monty\_36, Moonflower\_25, MossRose\_18, MrWormie\_38, Msay19\_42, NHagos\_16, Neovie\_38, Newt\_39, Nimi13\_38, Opia\_19, PR\_13, Phantasmagoria\_19, Phendrix\_96, PierreThree\_37, PokyPuppy\_36, Poland\_42, Pupper\_84, Qyrzula\_18, RavenCo17\_22, RemRem\_38, Rhinoforte\_19, Rosebush\_19, RoyalG\_38, SCentae\_82, Sabella\_19, Sahara\_21, Sam12\_37, Savage\_22, Shatter\_16, Shelley\_38, Sienna\_32, Sisko\_16, Sixama\_112, Skog\_147, SoilAssassin\_22, Sombrero\_37, Sour\_19, Sproutie\_22, Squibbles\_37, SteveFrench\_37, Sticker17\_38, Suzy\_32, TA17A\_19, Taptic\_13, Teal\_38, Terapin\_33, Tinciduntolum\_20, Tres\_19, TuertoX\_22, Vasanti\_21, Vic9\_00019, West99\_19, Whiteclaw\_22, Woes\_38, Worcestershire\_38, Xenia2\_36, Yago84\_16, Yeet412\_22,

### Summary by start number:

Start 37:

- Found in 1 of 254 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 221
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sour\_19 (DR),

Start 38:

- Found in 8 of 254 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 1 of 221
- Called 12.5% of time when present
- Phage (with cluster) where this start called: GodPhather\_14 (W),

Start 39:

- Found in 1 of 254 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 221
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Skog\_147 (DO),

#### Start 40:

- Found in 65 of 254 ( 25.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 1.5% of time when present
- Phage (with cluster) where this start called: SlippinJimmy\_19 (B3),

#### Start 44:

- Found in 2 of 254 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 221
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Phendrix\_96 (DK),

#### Start 45:

- Found in 4 of 254 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 2 of 221
- Called 50.0% of time when present
- Phage (with cluster) where this start called: CherryTomatoes\_84 (DO), Pupper\_84 (DO),

#### Start 46:

- Found in 67 of 254 ( 26.4% ) of genes in pham
- Manual Annotations of this start: 27 of 221
- Called 49.3% of time when present
- Phage (with cluster) where this start called: Amore2\_41 (CS1), Anamika\_38 (CS3), Austin\_41 (CS1), Beaver\_41 (CS2), BenoitCattle\_37 (CS2), Butterball\_41 (CS2), CathyBurgh\_37 (CS2), CinnamonToast\_43 (CS2), Eggsie\_37 (CS2), Ekhein\_38 (CS2), FelixAlejandro\_42 (CS2), Flakey\_37 (CS2), GMA7\_31 (CS1), GTE7\_30 (CS1), Guillaume\_38 (CS3), Harambe\_38 (CS3), HayZem\_40 (CS1), Hello\_38 (CS3), Hotorobo\_37 (CS2), Jellybones\_41 (CS2), John316\_41 (CS2), Jormungandr\_38 (CS3), Lahirium\_38 (CS3), Linetti\_38 (CS2), Msay19\_42 (CS2), Neoevie\_38 (CS3), Nimi13\_38 (CS3), RoyalG\_38 (CS2), Sombrero\_37 (CS2), Squibbles\_37 (CS2), SteveFrench\_37 (CS2), Sticker17\_38 (CS3), Worcestershire\_38 (CS2),

#### Start 47:

- Found in 17 of 254 ( 6.7% ) of genes in pham
- Manual Annotations of this start: 12 of 221
- Called 76.5% of time when present
- Phage (with cluster) where this start called: AnClar\_16 (DR), Axumite\_16 (DR), BiggityBass\_15 (DR), Coldpizza\_17 (DR), Evaa\_17 (DR), Fresco\_16 (DR), Ligma\_16 (DR), LittleMunchkin\_17 (DR), Mariokart\_16 (DR), SCentae\_82 (DO), Shatter\_16 (DR), Sisko\_16 (DR), Yago84\_16 (DR),

#### Start 49:

- Found in 67 of 254 ( 26.4% ) of genes in pham
- Manual Annotations of this start: 36 of 221
- Called 53.7% of time when present
- Phage (with cluster) where this start called: Adgers\_38 (CS2), Berries\_38 (CS3), Bianmat\_38 (CS3), BigShaq\_37 (CS2), BirksAndSocks\_41 (CS2), BlueNGold\_113 (DS), Boneham\_41 (CS2), Boopy\_114 (DS), Breezic\_37 (CS2), Charianelly\_38 (CS3), Chelms\_37 (CS2), Dakiti\_37 (CS2), Damp\_38 (CS3), Diabla\_40 (CS2), Exiguo\_37 (CS2), Forza\_114 (DS), GalacticEye\_38 (CS3), Gorko\_37 (CS2),



GourdThymes\_37 (CS2), Hail2Pitt\_38 (CS3), Jams\_38 (CS3), Lidong\_38 (CS3), Lizzo\_37 (CS2), Mareelih\_112 (DS), Minos\_39 (CS3), Monty\_36 (CS2), MrWormie\_38 (CS3), PierreThree\_37 (CS2), PokyPuppy\_36 (CS2), Poland\_42 (CS2), RemRem\_38 (CS2), Sam12\_37 (CS2), Shelley\_38 (CS3), Sixama\_112 (DS), Teal\_38 (CS3), Woes\_38 (CS3),

Start 50:

- Found in 2 of 254 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 221
- Called 50.0% of time when present
- Phage (with cluster) where this start called: GodonK\_100 (DK),

Start 52:

- Found in 2 of 254 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 2 of 221
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DumpTruck\_35 (DV), Xenia2\_36 (DV),

Start 53:

- Found in 7 of 254 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 7 of 221
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beyoncage\_32 (DG1), BiteSize\_32 (DG1), Djokovic\_32 (DG1), LilyPad\_34 (DG1), Madi\_32 (DG1), Sienna\_32 (DG1), Terapin\_33 (DG1),

Start 54:

- Found in 10 of 254 ( 3.9% ) of genes in pham
- Manual Annotations of this start: 7 of 221
- Called 70.0% of time when present
- Phage (with cluster) where this start called: AnarQue\_18 (DR), CaiB\_18 (DR), CloverMinnie\_18 (DR), MakoManhole\_18 (DR), MossRose\_18 (DR), NHagos\_16 (DR), Wooper\_18 (DR),

Start 55:

- Found in 1 of 254 ( 0.4% ) of genes in pham
- Manual Annotations of this start: 1 of 221
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LittleFella\_35 (DG2),

Start 57:

- Found in 36 of 254 ( 14.2% ) of genes in pham
- Manual Annotations of this start: 31 of 221
- Called 88.9% of time when present
- Phage (with cluster) where this start called: Allegro\_19 (B2), Arbitrator\_19 (B2), Ares\_19 (B2), Bananafish\_19 (B2), Blocker23\_19 (B2), Boyle\_19 (B2), Brownie5\_19 (B2), Calamitous\_19 (B2), Eaglehorse\_19 (B2), Faze9\_19 (B2), FrenchFry\_19 (B2), Glass\_19 (B2), Godines\_19 (B2), Hedgerow\_19 (B2), Holeinone\_19 (B2), ItsyBitsy1\_19 (B2), Kaleb\_19 (B2), Kheth\_19 (B2), Lars\_19 (B2), Laurie\_19 (B2), Lephleur\_19 (B2), LizLemon\_19 (B2), MasterPo\_19 (B2), Phantasmagoria\_19 (B2), Qyrzula\_18 (B2), Rosebush\_19 (B2), Sabella\_19 (B2), TA17A\_19 (B2), Tinciduntolum\_20 (B2), Tres\_19 (B2), Vic9\_00019 (B2), West99\_19 (B2),

Start 58:

- Found in 9 of 254 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 7 of 221
- Called 77.8% of time when present
- Phage (with cluster) where this start called: Argie\_14 (W), Cepens\_13 (W), D12\_13 (W), Jeon\_13 (W), Megabear\_13 (W), PR\_13 (W), Taptic\_13 (W),

Start 60:

- Found in 74 of 254 ( 29.1% ) of genes in pham
- Manual Annotations of this start: 55 of 221
- Called 94.6% of time when present
- Phage (with cluster) where this start called: 39HC\_014 (B6), 40BC\_014 (B6), Abinghost\_19 (B3), Akoma\_19 (B3), Athena\_20 (B3), Audrey\_19 (B3), Baloo\_19 (B3), Ben11\_18 (B3), Bernardo\_19 (B3), BirdsNest\_21 (B13), BobRoss2024\_15 (DR), Briakila\_19 (B3), CRB2\_20 (B9), Casbah\_18 (B3), ChaChing\_19 (B3), Chalmers\_19 (B3), Chandler\_19 (B3), Chentzyk\_18 (B3), Compostia\_20 (B3), Corofin\_19 (B3), Daisy\_19 (B3), Deenasa\_19 (B3), Devonte\_19 (B3), Dori\_15 (AD), Gadget\_20 (B3), Gervas\_19 (B3), GlenHope\_20 (B3), Glubnar\_19 (B3), Halfpint\_18 (B3), HarveySr\_19 (B3), Hashim76\_21 (B13), Heathcliff\_19 (B3), Hosp\_012 (B6), Imvubu\_13 (B10), Jackstina\_18 (B3), Jolie1\_014 (B6), Kamiyu\_19 (B3), KayaCho\_14 (B6), Kronus\_18 (B3), LestyG\_19 (B3), Mao1\_14 (AD), Marley1013\_19 (B3), Marlia\_19 (B3), Mask\_15 (AD), MmasiCarm\_19 (B3), Mortcellus\_18 (B3), Neos5\_19 (B3), Nozo\_19 (B3), Obutu\_19 (B3), Olivio\_18 (B3), OrangeOswald\_19 (B3), Phaedrus\_18 (B3), Phayeta\_19 (B3), Philly\_18 (B3), Phlyer\_19 (B3), Pipefish\_19 (B3), Quesadilla\_19 (B9), RagingRooster\_19 (B3), Rita1961\_19 (B3), RomaT\_19 (B3), Sejanus\_15 (AD), Shenandoah\_19 (B3), SwainyDoc\_19 (B3), SynergyX\_19 (B3), TinyTerror\_19 (B3), Tydolla\_19 (B3), Yahalom\_19 (B3), Yeshua\_18 (DR), Yinz\_19 (B3), Zenteno07\_21 (B13),

Start 62:

- Found in 3 of 254 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 221
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Madraxi\_32 (CF),

Start 64:

- Found in 23 of 254 ( 9.1% ) of genes in pham
- Manual Annotations of this start: 21 of 221
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Attis\_22 (CZ2), Bjanes7\_22 (CZ2), Clap\_22 (CZ2), Cynthia\_22 (CZ2), DirtyBoi\_26 (DB), Ebert\_22 (CZ2), FroggyToad\_22 (CZ2), GemG\_22 (CZ2), Gizermo\_22 (CZ2), Haley23\_22 (CZ2), Hedwig\_26 (DB), LordFarquaad\_22 (CZ2), Mocha12\_22 (CZ2), Moonflower\_25 (DB), RavenCo17\_22 (CZ8), Sahara\_21 (CZ2), Savage\_22 (CZ2), SoilAssassin\_22 (CZ2), Sproutie\_22 (CZ2), TuertoX\_22 (CZ2), Vasanti\_21 (CZ2), Whiteclaw\_22 (CZ2), Yeet412\_22 (CZ2),

Start 65:

- Found in 13 of 254 ( 5.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 7.7% of time when present
- Phage (with cluster) where this start called: CharlottesWeb\_16 (DR),

Start 66:

- Found in 35 of 254 ( 13.8% ) of genes in pham
- Manual Annotations of this start: 3 of 221
- Called 11.4% of time when present
- Phage (with cluster) where this start called: Coffee\_19 (B2), Kolhan\_19 (B2), Opia\_19 (B2), Rhinoforte\_19 (B2),

Start 69:

- Found in 1 of 254 ( 0.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GMA1\_22 (singleton),

Start 71:

- Found in 3 of 254 ( 1.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 33.3% of time when present
- Phage (with cluster) where this start called: ForDig\_15 (B6),

Start 73:

- Found in 15 of 254 ( 5.9% ) of genes in pham
- Manual Annotations of this start: 1 of 221
- Called 13.3% of time when present
- Phage (with cluster) where this start called: GMA2\_41 (DS), Suzy\_32 (DG1),

Start 76:

- Found in 93 of 254 ( 36.6% ) of genes in pham
- Manual Annotations of this start: 3 of 221
- Called 4.3% of time when present
- Phage (with cluster) where this start called: Kaseim\_39 (CS3), Luker\_39 (CS3), Morty007\_19 (B3), Newt\_39 (CS3),

Start 80:

- Found in 40 of 254 ( 15.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.5% of time when present
- Phage (with cluster) where this start called: AksarBAT\_16 (DR),

**Summary by clusters:**

There are 23 clusters represented in this pham: DO, CZ8, DK, CZ2, DB, singleton, B13, B10, DV, DR, DS, CS1, CS3, CS2, AD, CF, DG2, DG1, W, B6, B2, B3, B9,

Info for manual annotations of cluster AD:

- Start number 60 was manually annotated 4 times for cluster AD.

Info for manual annotations of cluster B10:

- Start number 60 was manually annotated 1 time for cluster B10.

Info for manual annotations of cluster B13:

- Start number 60 was manually annotated 3 times for cluster B13.

Info for manual annotations of cluster B2:

- Start number 57 was manually annotated 31 times for cluster B2.
- Start number 66 was manually annotated 3 times for cluster B2.

Info for manual annotations of cluster B3:

- Start number 60 was manually annotated 44 times for cluster B3.
- Start number 76 was manually annotated 1 time for cluster B3.

Info for manual annotations of cluster B6:

- Start number 60 was manually annotated 1 time for cluster B6.

Info for manual annotations of cluster B9:

- Start number 60 was manually annotated 2 times for cluster B9.

Info for manual annotations of cluster CF:

- Start number 62 was manually annotated 1 time for cluster CF.

Info for manual annotations of cluster CS1:

- Start number 46 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 46 was manually annotated 15 times for cluster CS2.
- Start number 49 was manually annotated 18 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 46 was manually annotated 9 times for cluster CS3.
- Start number 49 was manually annotated 13 times for cluster CS3.
- Start number 76 was manually annotated 2 times for cluster CS3.

Info for manual annotations of cluster CZ2:

- Start number 64 was manually annotated 18 times for cluster CZ2.

Info for manual annotations of cluster CZ8:

- Start number 64 was manually annotated 1 time for cluster CZ8.

Info for manual annotations of cluster DB:

- Start number 64 was manually annotated 2 times for cluster DB.

Info for manual annotations of cluster DG1:

- Start number 53 was manually annotated 7 times for cluster DG1.
- Start number 73 was manually annotated 1 time for cluster DG1.

Info for manual annotations of cluster DG2:

- Start number 55 was manually annotated 1 time for cluster DG2.

Info for manual annotations of cluster DK:

- Start number 44 was manually annotated 1 time for cluster DK.
- Start number 50 was manually annotated 1 time for cluster DK.

Info for manual annotations of cluster DO:

- Start number 39 was manually annotated 1 time for cluster DO.
- Start number 45 was manually annotated 2 times for cluster DO.
- Start number 47 was manually annotated 1 time for cluster DO.

Info for manual annotations of cluster DR:

- Start number 37 was manually annotated 1 time for cluster DR.
- Start number 47 was manually annotated 11 times for cluster DR.
- Start number 54 was manually annotated 7 times for cluster DR.

Info for manual annotations of cluster DS:

- Start number 49 was manually annotated 5 times for cluster DS.

Info for manual annotations of cluster DV:

- Start number 52 was manually annotated 2 times for cluster DV.

Info for manual annotations of cluster W:

- Start number 38 was manually annotated 1 time for cluster W.
- Start number 58 was manually annotated 7 times for cluster W.

### **Gene Information:**

Gene: 39HC\_014 Start: 14058, Stop: 14567, Start Num: 60

Candidate Starts for 39HC\_014:

(7, 13695), (8, 13716), (11, 13773), (40, 13998), (Start: 60 @14058 has 55 MA's), (68, 14079), (79, 14136), (85, 14160), (110, 14250), (111, 14259), (135, 14421), (139, 14436), (156, 14487), (159, 14496),

Gene: 40BC\_014 Start: 14058, Stop: 14567, Start Num: 60

Candidate Starts for 40BC\_014:

(7, 13695), (8, 13716), (11, 13773), (40, 13998), (Start: 60 @14058 has 55 MA's), (68, 14079), (79, 14136), (85, 14160), (110, 14250), (111, 14259), (135, 14421), (139, 14436), (156, 14487), (159, 14496),

Gene: Abinghost\_19 Start: 15461, Stop: 15940, Start Num: 60

Candidate Starts for Abinghost\_19:

(15, 15254), (17, 15272), (40, 15431), (Start: 60 @15461 has 55 MA's), (Start: 76 @15524 has 3 MA's), (78, 15536), (79, 15539), (96, 15599), (110, 15653), (112, 15665), (113, 15668), (119, 15689), (130, 15758), (131, 15761), (141, 15794), (159, 15848), (160, 15857),

Gene: Adgers\_38 Start: 40339, Stop: 40881, Start Num: 49

Candidate Starts for Adgers\_38:

(Start: 46 @40330 has 27 MA's), (Start: 49 @40339 has 36 MA's), (Start: 54 @40351 has 7 MA's), (100, 40534), (107, 40561), (111, 40579), (116, 40597), (123, 40636), (134, 40687), (137, 40696), (162, 40783), (169, 40822),

Gene: Akoma\_19 Start: 15461, Stop: 15940, Start Num: 60

Candidate Starts for Akoma\_19:

(1, 14672), (8, 15149), (11, 15206), (15, 15254), (17, 15272), (40, 15431), (Start: 60 @15461 has 55 MA's), (Start: 76 @15524 has 3 MA's), (78, 15536), (79, 15539), (96, 15599), (112, 15665), (113, 15668), (119, 15689), (130, 15758), (131, 15761), (141, 15794), (159, 15848), (160, 15857),

Gene: AksarBAT\_16 Start: 13812, Stop: 14186, Start Num: 80

Candidate Starts for AksarBAT\_16:

(Start: 54 @13725 has 7 MA's), (65, 13743), (Start: 76 @13794 has 3 MA's), (80, 13812), (83, 13821), (104, 13899), (111, 13929), (139, 14055), (152, 14094), (159, 14115), (160, 14124), (161, 14133),

Gene: Allegro\_19 Start: 16678, Stop: 17160, Start Num: 57

Candidate Starts for Allegro\_19:

(Start: 57 @16678 has 31 MA's), (61, 16693), (Start: 66 @16705 has 3 MA's), (78, 16765), (80, 16771), (85, 16792), (86, 16795), (108, 16876), (114, 16900), (118, 16915), (123, 16948), (138, 17014), (160, 17101), (161, 17107), (168, 17146),

Gene: Amore2\_41 Start: 40831, Stop: 41301, Start Num: 46

Candidate Starts for Amore2\_41:

(9, 40549), (11, 40597), (16, 40657), (21, 40702), (Start: 46 @40831 has 27 MA's), (Start: 76 @40903 has 3 MA's), (86, 40945), (88, 40951), (104, 41014), (111, 41044), (118, 41068), (127, 41128), (131, 41143), (158, 41227), (169, 41287),

Gene: AnClar\_16 Start: 14634, Stop: 15104, Start Num: 47

Candidate Starts for AnClar\_16:

(6, 14310), (Start: 47 @14634 has 12 MA's), (65, 14655), (67, 14658), (85, 14745), (91, 14766), (105, 14823), (124, 14916), (129, 14940), (135, 14958), (139, 14973), (141, 14979), (144, 14982), (152, 15012), (159, 15033),

Gene: Anamika\_38 Start: 42711, Stop: 43259, Start Num: 46

Candidate Starts for Anamika\_38:

(11, 42471), (16, 42534), (20, 42570), (21, 42579), (Start: 46 @42711 has 27 MA's), (Start: 49 @42720 has 36 MA's), (Start: 76 @42816 has 3 MA's), (86, 42858), (104, 42930), (107, 42942), (116, 42978), (141, 43092), (162, 43164),

Gene: AnarQue\_18 Start: 15267, Stop: 15728, Start Num: 54

Candidate Starts for AnarQue\_18:

(11, 15003), (13, 15024), (17, 15069), (31, 15186), (Start: 54 @15267 has 7 MA's), (104, 15441), (111, 15471), (118, 15495), (139, 15597), (152, 15636), (159, 15657), (160, 15666),

Gene: Arbiter\_19 Start: 16765, Stop: 17247, Start Num: 57

Candidate Starts for Arbiter\_19:

(Start: 57 @16765 has 31 MA's), (61, 16780), (Start: 66 @16792 has 3 MA's), (78, 16852), (80, 16858), (85, 16879), (86, 16882), (108, 16963), (114, 16987), (118, 17002), (123, 17035), (138, 17101), (160, 17188), (161, 17194), (168, 17233),

Gene: Ares\_19 Start: 16678, Stop: 17160, Start Num: 57

Candidate Starts for Ares\_19:

(Start: 57 @16678 has 31 MA's), (61, 16693), (Start: 66 @16705 has 3 MA's), (78, 16765), (80, 16771), (85, 16792), (86, 16795), (108, 16876), (114, 16900), (118, 16915), (123, 16948), (138, 17014), (160, 17101), (161, 17107), (168, 17146),

Gene: Argie\_14 Start: 14794, Stop: 15258, Start Num: 58

Candidate Starts for Argie\_14:

(24, 14704), (33, 14737), (Start: 38 @14770 has 1 MA's), (Start: 58 @14794 has 7 MA's), (70, 14827), (Start: 73 @14845 has 1 MA's), (77, 14875), (82, 14890), (94, 14935), (98, 14950), (103, 14971), (104, 14974), (106, 14983), (112, 15007), (113, 15010), (115, 15016), (118, 15028), (130, 15100), (131, 15103), (137, 15121), (141, 15136), (159, 15190), (160, 15199),

Gene: Athena\_20 Start: 16224, Stop: 16703, Start Num: 60

Candidate Starts for Athena\_20:

(15, 16017), (17, 16035), (40, 16194), (Start: 60 @16224 has 55 MA's), (Start: 76 @16287 has 3 MA's), (78, 16299), (79, 16302), (96, 16362), (110, 16416), (112, 16428), (113, 16431), (119, 16452), (130,

16521), (131, 16524), (141, 16557), (159, 16611), (160, 16620),

Gene: Attis\_22 Start: 18967, Stop: 19413, Start Num: 64

Candidate Starts for Attis\_22:

(12, 18670), (16, 18724), (22, 18805), (26, 18826), (56, 18943), (Start: 64 @18967 has 21 MA's), (82, 19042), (104, 19123), (105, 19129), (108, 19138), (112, 19156), (119, 19180), (135, 19243), (144, 19270), (146, 19276), (156, 19306), (160, 19324), (161, 19333), (162, 19336), (170, 19375),

Gene: Audrey\_19 Start: 15461, Stop: 15940, Start Num: 60

Candidate Starts for Audrey\_19:

(15, 15254), (17, 15272), (40, 15431), (Start: 60 @15461 has 55 MA's), (Start: 76 @15524 has 3 MA's), (78, 15536), (79, 15539), (96, 15599), (110, 15653), (112, 15665), (113, 15668), (119, 15689), (130, 15758), (131, 15761), (141, 15794), (159, 15848), (160, 15857),

Gene: Austin\_41 Start: 40831, Stop: 41301, Start Num: 46

Candidate Starts for Austin\_41:

(Start: 46 @40831 has 27 MA's), (Start: 76 @40903 has 3 MA's), (86, 40945), (88, 40951), (104, 41014), (111, 41044), (118, 41068), (127, 41128), (131, 41143), (158, 41227), (169, 41287),

Gene: Axumite\_16 Start: 13799, Stop: 14290, Start Num: 47

Candidate Starts for Axumite\_16:

(6, 13475), (14, 13577), (Start: 47 @13799 has 12 MA's), (65, 13841), (78, 13904), (95, 13964), (104, 14003), (141, 14165), (145, 14171), (152, 14198), (159, 14219), (161, 14237), (167, 14270), (169, 14279),

Gene: Baloo\_19 Start: 15458, Stop: 15937, Start Num: 60

Candidate Starts for Baloo\_19:

(15, 15251), (17, 15269), (40, 15428), (Start: 60 @15458 has 55 MA's), (Start: 76 @15521 has 3 MA's), (78, 15533), (79, 15536), (96, 15596), (110, 15650), (112, 15662), (113, 15665), (119, 15686), (130, 15755), (131, 15758), (141, 15791), (159, 15845), (160, 15854),

Gene: Bananafish\_19 Start: 16675, Stop: 17157, Start Num: 57

Candidate Starts for Bananafish\_19:

(Start: 57 @16675 has 31 MA's), (Start: 66 @16702 has 3 MA's), (78, 16762), (80, 16768), (85, 16789), (86, 16792), (108, 16873), (114, 16897), (118, 16912), (123, 16945), (138, 17011), (160, 17098), (161, 17104), (168, 17143),

Gene: Beaver\_41 Start: 42216, Stop: 42767, Start Num: 46

Candidate Starts for Beaver\_41:

(Start: 46 @42216 has 27 MA's), (Start: 49 @42225 has 36 MA's), (100, 42420), (107, 42447), (111, 42465), (116, 42483), (123, 42522), (134, 42573), (137, 42582), (162, 42669), (169, 42708),

Gene: Ben11\_18 Start: 15285, Stop: 15764, Start Num: 60

Candidate Starts for Ben11\_18:

(15, 15078), (17, 15096), (40, 15255), (Start: 60 @15285 has 55 MA's), (Start: 76 @15348 has 3 MA's), (78, 15360), (79, 15363), (96, 15423), (110, 15477), (112, 15489), (113, 15492), (119, 15513), (130, 15582), (131, 15585), (141, 15618), (159, 15672), (160, 15681),

Gene: BenoitCattle\_37 Start: 40274, Stop: 40825, Start Num: 46

Candidate Starts for BenoitCattle\_37:

(Start: 46 @40274 has 27 MA's), (Start: 49 @40283 has 36 MA's), (77, 40388), (100, 40478), (107, 40505), (110, 40514), (116, 40541), (134, 40631), (157, 40703), (162, 40727), (169, 40766),

Gene: Bernardo\_19 Start: 15460, Stop: 15939, Start Num: 60

Candidate Starts for Bernardo\_19:

(1, 14671), (8, 15148), (11, 15205), (15, 15253), (17, 15271), (40, 15430), (Start: 60 @15460 has 55 MA's), (Start: 76 @15523 has 3 MA's), (78, 15535), (79, 15538), (96, 15598), (110, 15652), (112, 15664), (113, 15667), (119, 15688), (130, 15757), (131, 15760), (141, 15793), (159, 15847), (160, 15856),

Gene: Berries\_38 Start: 42691, Stop: 43230, Start Num: 49

Candidate Starts for Berries\_38:

(11, 42442), (16, 42505), (20, 42541), (21, 42550), (Start: 46 @42682 has 27 MA's), (Start: 49 @42691 has 36 MA's), (Start: 76 @42787 has 3 MA's), (86, 42829), (104, 42901), (107, 42913), (116, 42949), (129, 43024), (141, 43063), (162, 43135),

Gene: Beyoncage\_32 Start: 27977, Stop: 28465, Start Num: 53

Candidate Starts for Beyoncage\_32:

(Start: 53 @27977 has 7 MA's), (78, 28073), (85, 28100), (90, 28115), (104, 28169), (107, 28181), (111, 28199), (119, 28223), (126, 28256), (128, 28265), (134, 28283), (156, 28355), (161, 28382), (166, 28400), (174, 28445),

Gene: Bianmat\_38 Start: 42731, Stop: 43270, Start Num: 49

Candidate Starts for Bianmat\_38:

(11, 42482), (16, 42545), (20, 42581), (21, 42590), (Start: 46 @42722 has 27 MA's), (Start: 49 @42731 has 36 MA's), (Start: 76 @42827 has 3 MA's), (86, 42869), (104, 42941), (107, 42953), (116, 42989), (129, 43064), (141, 43103), (162, 43175),

Gene: BigShaq\_37 Start: 40288, Stop: 40830, Start Num: 49

Candidate Starts for BigShaq\_37:

(Start: 46 @40279 has 27 MA's), (Start: 49 @40288 has 36 MA's), (77, 40393), (100, 40483), (107, 40510), (110, 40519), (116, 40546), (134, 40636), (157, 40708), (162, 40732), (169, 40771),

Gene: BiggityBass\_15 Start: 13731, Stop: 14201, Start Num: 47

Candidate Starts for BiggityBass\_15:

(6, 13407), (Start: 47 @13731 has 12 MA's), (65, 13752), (67, 13755), (84, 13833), (85, 13842), (91, 13863), (105, 13920), (124, 14013), (129, 14037), (135, 14055), (139, 14070), (141, 14076), (144, 14079), (152, 14109), (159, 14130),

Gene: BirdsNest\_21 Start: 14755, Stop: 15255, Start Num: 60

Candidate Starts for BirdsNest\_21:

(7, 14425), (8, 14446), (17, 14569), (Start: 60 @14755 has 55 MA's), (68, 14773), (71, 14785), (79, 14830), (97, 14896), (106, 14932), (111, 14953), (121, 15007), (134, 15109), (159, 15187),

Gene: BirksAndSocks\_41 Start: 42203, Stop: 42745, Start Num: 49

Candidate Starts for BirksAndSocks\_41:

(Start: 46 @42194 has 27 MA's), (Start: 49 @42203 has 36 MA's), (77, 42308), (100, 42398), (107, 42425), (111, 42443), (113, 42449), (116, 42461), (123, 42500), (134, 42551), (137, 42560), (157, 42623), (162, 42647), (169, 42686),

Gene: BiteSize\_32 Start: 27977, Stop: 28465, Start Num: 53

Candidate Starts for BiteSize\_32:

(Start: 53 @27977 has 7 MA's), (78, 28073), (85, 28100), (90, 28115), (104, 28169), (107, 28181), (111, 28199), (119, 28223), (126, 28256), (128, 28265), (134, 28283), (156, 28355), (161, 28382), (166, 28400), (174, 28445),



Gene: Bjaner7\_22 Start: 18967, Stop: 19413, Start Num: 64

Candidate Starts for Bjaner7\_22:

(12, 18670), (16, 18724), (22, 18805), (26, 18826), (56, 18943), (Start: 64 @18967 has 21 MA's), (82, 19042), (104, 19123), (105, 19129), (108, 19138), (112, 19156), (119, 19180), (135, 19243), (144, 19270), (146, 19276), (156, 19306), (160, 19324), (161, 19333), (162, 19336), (170, 19375),

Gene: Blocker23\_19 Start: 16795, Stop: 17277, Start Num: 57

Candidate Starts for Blocker23\_19:

(Start: 57 @16795 has 31 MA's), (Start: 66 @16822 has 3 MA's), (78, 16882), (80, 16888), (85, 16909), (86, 16912), (108, 16993), (114, 17017), (118, 17032), (123, 17065), (138, 17131), (160, 17218), (161, 17224), (168, 17263),

Gene: BlueNGold\_113 Start: 70121, Stop: 70600, Start Num: 49

Candidate Starts for BlueNGold\_113:

(Start: 49 @70121 has 36 MA's), (Start: 76 @70202 has 3 MA's), (78, 70214), (82, 70226), (114, 70346), (119, 70364), (130, 70412), (132, 70418), (166, 70538),

Gene: BobRoss2024\_15 Start: 13617, Stop: 14072, Start Num: 60

Candidate Starts for BobRoss2024\_15:

(Start: 60 @13617 has 55 MA's), (68, 13638), (Start: 73 @13659 has 1 MA's), (74, 13662), (107, 13800), (122, 13869), (125, 13893), (128, 13908), (134, 13926), (159, 14004), (161, 14019),

Gene: Boneham\_41 Start: 42202, Stop: 42744, Start Num: 49

Candidate Starts for Boneham\_41:

(Start: 46 @42193 has 27 MA's), (Start: 49 @42202 has 36 MA's), (100, 42397), (107, 42424), (111, 42442), (116, 42460), (123, 42499), (134, 42550), (137, 42559), (169, 42685),

Gene: Boopy\_114 Start: 70133, Stop: 70612, Start Num: 49

Candidate Starts for Boopy\_114:

(Start: 49 @70133 has 36 MA's), (Start: 76 @70214 has 3 MA's), (78, 70226), (82, 70238), (114, 70358), (119, 70376), (130, 70424), (132, 70430), (166, 70550),

Gene: Boyle\_19 Start: 16796, Stop: 17278, Start Num: 57

Candidate Starts for Boyle\_19:

(Start: 57 @16796 has 31 MA's), (61, 16811), (Start: 66 @16823 has 3 MA's), (78, 16883), (80, 16889), (85, 16910), (86, 16913), (108, 16994), (114, 17018), (118, 17033), (123, 17066), (138, 17132), (160, 17219), (161, 17225), (168, 17264),

Gene: Breezic\_37 Start: 40191, Stop: 40733, Start Num: 49

Candidate Starts for Breezic\_37:

(Start: 46 @40182 has 27 MA's), (Start: 49 @40191 has 36 MA's), (100, 40386), (107, 40413), (111, 40431), (116, 40449), (123, 40488), (134, 40539), (137, 40548), (144, 40566), (162, 40635), (169, 40674),

Gene: Briakila\_19 Start: 16226, Stop: 16705, Start Num: 60

Candidate Starts for Briakila\_19:

(15, 16019), (17, 16037), (40, 16196), (Start: 60 @16226 has 55 MA's), (Start: 76 @16289 has 3 MA's), (78, 16301), (79, 16304), (96, 16364), (110, 16418), (112, 16430), (113, 16433), (119, 16454), (130, 16523), (131, 16526), (141, 16559), (159, 16613), (160, 16622),

Gene: Brownie5\_19 Start: 16795, Stop: 17277, Start Num: 57

Candidate Starts for Brownie5\_19:

(Start: 57 @16795 has 31 MA's), (61, 16810), (Start: 66 @16822 has 3 MA's), (78, 16882), (80, 16888), (85, 16909), (86, 16912), (108, 16993), (114, 17017), (118, 17032), (123, 17065), (138, 17131), (160, 17218), (161, 17224), (168, 17263),

Gene: Butterball\_41 Start: 42193, Stop: 42744, Start Num: 46

Candidate Starts for Butterball\_41:

(Start: 46 @42193 has 27 MA's), (Start: 49 @42202 has 36 MA's), (100, 42397), (107, 42424), (111, 42442), (116, 42460), (123, 42499), (134, 42550), (137, 42559), (169, 42685),

Gene: CRB2\_20 Start: 17008, Stop: 17514, Start Num: 60

Candidate Starts for CRB2\_20:

(7, 16678), (8, 16699), (19, 16837), (Start: 60 @17008 has 55 MA's), (63, 17014), (68, 17026), (75, 17056), (80, 17086), (95, 17140), (97, 17149), (105, 17182), (134, 17368), (135, 17371), (147, 17404), (149, 17413), (156, 17437), (157, 17440), (159, 17446),

Gene: CaiB\_18 Start: 15252, Stop: 15713, Start Num: 54

Candidate Starts for CaiB\_18:

(11, 14988), (13, 15009), (14, 15021), (Start: 54 @15252 has 7 MA's), (104, 15426), (111, 15456), (118, 15480), (152, 15621), (159, 15642), (160, 15651),

Gene: Calamitous\_19 Start: 16675, Stop: 17157, Start Num: 57

Candidate Starts for Calamitous\_19:

(Start: 57 @16675 has 31 MA's), (61, 16690), (Start: 66 @16702 has 3 MA's), (78, 16762), (85, 16789), (86, 16792), (108, 16873), (114, 16897), (118, 16912), (123, 16945), (138, 17011), (160, 17098), (161, 17104), (168, 17143),

Gene: Casbah\_18 Start: 15313, Stop: 15792, Start Num: 60

Candidate Starts for Casbah\_18:

(15, 15106), (17, 15124), (Start: 60 @15313 has 55 MA's), (Start: 76 @15376 has 3 MA's), (78, 15388), (79, 15391), (96, 15451), (110, 15505), (112, 15517), (113, 15520), (119, 15541), (130, 15610), (131, 15613), (141, 15646), (159, 15700), (160, 15709),

Gene: CathyBurgh\_37 Start: 41036, Stop: 41587, Start Num: 46

Candidate Starts for CathyBurgh\_37:

(Start: 46 @41036 has 27 MA's), (Start: 49 @41045 has 36 MA's), (100, 41240), (107, 41267), (111, 41285), (116, 41303), (123, 41342), (134, 41393), (137, 41402), (144, 41420), (162, 41489), (169, 41528),

Gene: Cepens\_13 Start: 14518, Stop: 14982, Start Num: 58

Candidate Starts for Cepens\_13:

(24, 14428), (33, 14461), (Start: 38 @14494 has 1 MA's), (Start: 58 @14518 has 7 MA's), (70, 14551), (Start: 73 @14569 has 1 MA's), (77, 14599), (82, 14614), (94, 14659), (98, 14674), (103, 14695), (104, 14698), (106, 14707), (112, 14731), (113, 14734), (115, 14740), (118, 14752), (130, 14824), (131, 14827), (137, 14845), (141, 14860), (160, 14923),

Gene: ChaChing\_19 Start: 15476, Stop: 15955, Start Num: 60

Candidate Starts for ChaChing\_19:

(15, 15269), (17, 15287), (40, 15446), (Start: 60 @15476 has 55 MA's), (Start: 76 @15539 has 3 MA's), (78, 15551), (79, 15554), (96, 15614), (110, 15668), (112, 15680), (113, 15683), (119, 15704), (130, 15773), (131, 15776), (141, 15809), (159, 15863), (160, 15872),

Gene: Chalmers\_19 Start: 16269, Stop: 16748, Start Num: 60

Candidate Starts for Chalmers\_19:

(15, 16062), (17, 16080), (40, 16239), (Start: 60 @16269 has 55 MA's), (Start: 76 @16332 has 3 MA's), (78, 16344), (79, 16347), (96, 16407), (110, 16461), (112, 16473), (113, 16476), (119, 16497), (130, 16566), (131, 16569), (141, 16602), (159, 16656), (160, 16665),

Gene: Chandler\_19 Start: 16235, Stop: 16714, Start Num: 60

Candidate Starts for Chandler\_19:

(15, 16028), (17, 16046), (40, 16205), (Start: 60 @16235 has 55 MA's), (Start: 76 @16298 has 3 MA's), (78, 16310), (79, 16313), (96, 16373), (110, 16427), (112, 16439), (113, 16442), (119, 16463), (130, 16532), (131, 16535), (141, 16568), (159, 16622), (160, 16631),

Gene: Charianelly\_38 Start: 42441, Stop: 42980, Start Num: 49

Candidate Starts for Charianelly\_38:

(11, 42192), (16, 42255), (20, 42291), (21, 42300), (Start: 46 @42432 has 27 MA's), (Start: 49 @42441 has 36 MA's), (Start: 76 @42537 has 3 MA's), (86, 42579), (104, 42651), (107, 42663), (116, 42699), (129, 42774), (141, 42813), (162, 42885),

Gene: CharlottesWeb\_16 Start: 13751, Stop: 14200, Start Num: 65

Candidate Starts for CharlottesWeb\_16:

(Start: 47 @13709 has 12 MA's), (65, 13751), (78, 13814), (95, 13874), (104, 13913), (138, 14066), (141, 14075), (145, 14081), (152, 14108), (159, 14129), (161, 14147), (169, 14189),

Gene: Chelms\_37 Start: 40291, Stop: 40833, Start Num: 49

Candidate Starts for Chelms\_37:

(Start: 46 @40282 has 27 MA's), (Start: 49 @40291 has 36 MA's), (77, 40396), (107, 40513), (109, 40519), (116, 40549), (162, 40735), (169, 40774),

Gene: Chentzyk\_18 Start: 15331, Stop: 15810, Start Num: 60

Candidate Starts for Chentzyk\_18:

(15, 15124), (17, 15142), (40, 15301), (Start: 60 @15331 has 55 MA's), (Start: 76 @15394 has 3 MA's), (78, 15406), (79, 15409), (96, 15469), (110, 15523), (112, 15535), (113, 15538), (119, 15559), (130, 15628), (131, 15631), (141, 15664), (159, 15718), (160, 15727),

Gene: CherryTomatoes\_84 Start: 32399, Stop: 32872, Start Num: 45

Candidate Starts for CherryTomatoes\_84:

(Start: 45 @32399 has 2 MA's), (Start: 47 @32405 has 12 MA's), (72, 32453), (Start: 73 @32456 has 1 MA's), (78, 32489), (80, 32495), (83, 32504), (88, 32525), (107, 32600), (111, 32618), (118, 32642), (135, 32729), (136, 32732), (141, 32750), (145, 32756), (153, 32786), (165, 32831), (169, 32861),

Gene: CinnamonToast\_43 Start: 42247, Stop: 42798, Start Num: 46

Candidate Starts for CinnamonToast\_43:

(Start: 46 @42247 has 27 MA's), (Start: 49 @42256 has 36 MA's), (77, 42361), (100, 42451), (107, 42478), (111, 42496), (116, 42514), (123, 42553), (134, 42604), (137, 42613), (169, 42739),

Gene: Clap\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for Clap\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: CloverMinnie\_18 Start: 15192, Stop: 15653, Start Num: 54

Candidate Starts for CloverMinnie\_18:

(Start: 54 @15192 has 7 MA's), (72, 15237), (85, 15300), (95, 15333), (104, 15366), (111, 15396), (118, 15420), (139, 15522), (152, 15561), (159, 15582),

Gene: Coffee\_19 Start: 16819, Stop: 17274, Start Num: 66

Candidate Starts for Coffee\_19:

(Start: 57 @16792 has 31 MA's), (61, 16807), (Start: 66 @16819 has 3 MA's), (78, 16879), (80, 16885), (85, 16906), (86, 16909), (108, 16990), (114, 17014), (118, 17029), (123, 17062), (138, 17128), (160, 17215), (161, 17221), (168, 17260),

Gene: Coldpizza\_17 Start: 15775, Stop: 16236, Start Num: 47

Candidate Starts for Coldpizza\_17:

(Start: 47 @15775 has 12 MA's), (Start: 73 @15823 has 1 MA's), (78, 15856), (79, 15859), (91, 15904), (104, 15949), (105, 15955), (112, 15982), (114, 15988), (124, 16048), (128, 16069), (134, 16087), (136, 16093), (158, 16162), (159, 16165), (169, 16225),

Gene: Compostia\_20 Start: 15894, Stop: 16373, Start Num: 60

Candidate Starts for Compostia\_20:

(15, 15687), (17, 15705), (40, 15864), (Start: 60 @15894 has 55 MA's), (Start: 76 @15957 has 3 MA's), (78, 15969), (79, 15972), (96, 16032), (110, 16086), (112, 16098), (113, 16101), (119, 16122), (130, 16191), (131, 16194), (141, 16227), (159, 16281), (160, 16290),

Gene: Corofin\_19 Start: 15486, Stop: 15965, Start Num: 60

Candidate Starts for Corofin\_19:

(15, 15279), (17, 15297), (40, 15456), (Start: 60 @15486 has 55 MA's), (Start: 76 @15549 has 3 MA's), (78, 15561), (79, 15564), (96, 15624), (110, 15678), (112, 15690), (113, 15693), (119, 15714), (130, 15783), (131, 15786), (141, 15819), (159, 15873), (160, 15882),

Gene: Cynthia\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for Cynthia\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: D12\_13 Start: 14511, Stop: 14975, Start Num: 58

Candidate Starts for D12\_13:

(24, 14421), (33, 14454), (Start: 38 @14487 has 1 MA's), (Start: 58 @14511 has 7 MA's), (70, 14544), (Start: 73 @14562 has 1 MA's), (77, 14592), (82, 14607), (98, 14667), (103, 14688), (104, 14691), (111, 14721), (112, 14724), (113, 14727), (115, 14733), (118, 14745), (130, 14817), (131, 14820), (137, 14838), (141, 14853), (159, 14907), (160, 14916),

Gene: Daisy\_19 Start: 15482, Stop: 15961, Start Num: 60

Candidate Starts for Daisy\_19:

(15, 15275), (17, 15293), (40, 15452), (Start: 60 @15482 has 55 MA's), (Start: 76 @15545 has 3 MA's), (78, 15557), (79, 15560), (96, 15620), (110, 15674), (112, 15686), (113, 15689), (119, 15710), (130, 15779), (131, 15782), (141, 15815), (159, 15869), (160, 15878),

Gene: Dakiti\_37 Start: 41159, Stop: 41701, Start Num: 49

Candidate Starts for Dakiti\_37:

(Start: 46 @41150 has 27 MA's), (Start: 49 @41159 has 36 MA's), (77, 41264), (107, 41381), (109, 41387), (116, 41417), (162, 41603), (169, 41642),

Gene: Damp\_38 Start: 41605, Stop: 42144, Start Num: 49

Candidate Starts for Damp\_38:

(11, 41356), (16, 41419), (20, 41455), (21, 41464), (Start: 46 @41596 has 27 MA's), (Start: 49 @41605 has 36 MA's), (Start: 76 @41701 has 3 MA's), (86, 41743), (104, 41815), (107, 41827), (116, 41863),

(141, 41977), (162, 42049),

Gene: Deenasa\_19 Start: 16224, Stop: 16703, Start Num: 60

Candidate Starts for Deenasa\_19:

(15, 16017), (17, 16035), (40, 16194), (Start: 60 @16224 has 55 MA's), (Start: 76 @16287 has 3 MA's), (78, 16299), (79, 16302), (96, 16362), (110, 16416), (112, 16428), (113, 16431), (119, 16452), (130, 16521), (131, 16524), (141, 16557), (159, 16611), (160, 16620),

Gene: Devonte\_19 Start: 15461, Stop: 15940, Start Num: 60

Candidate Starts for Devonte\_19:

(1, 14672), (2, 14708), (8, 15149), (11, 15206), (15, 15254), (17, 15272), (40, 15431), (Start: 60 @15461 has 55 MA's), (Start: 76 @15524 has 3 MA's), (78, 15536), (79, 15539), (96, 15599), (104, 15632), (112, 15665), (113, 15668), (114, 15671), (119, 15689), (130, 15758), (131, 15761), (141, 15794), (159, 15848), (160, 15857),

Gene: Diabla\_40 Start: 42040, Stop: 42582, Start Num: 49

Candidate Starts for Diabla\_40:

(Start: 46 @42031 has 27 MA's), (Start: 49 @42040 has 36 MA's), (85, 42175), (100, 42235), (104, 42250), (107, 42262), (115, 42292), (116, 42298), (134, 42388), (137, 42397), (157, 42460), (162, 42484), (169, 42523),

Gene: DirtyBoi\_26 Start: 21617, Stop: 22063, Start Num: 64

Candidate Starts for DirtyBoi\_26:

(56, 21593), (Start: 64 @21617 has 21 MA's), (82, 21692), (92, 21728), (104, 21773), (105, 21779), (108, 21788), (119, 21830), (135, 21893), (144, 21920), (146, 21926), (160, 21974), (161, 21983), (162, 21986), (170, 22025),

Gene: Djokovic\_32 Start: 27976, Stop: 28464, Start Num: 53

Candidate Starts for Djokovic\_32:

(Start: 53 @27976 has 7 MA's), (78, 28072), (85, 28099), (90, 28114), (104, 28168), (107, 28180), (111, 28198), (119, 28222), (126, 28255), (128, 28264), (134, 28282), (156, 28354), (161, 28381), (166, 28399), (174, 28444),

Gene: Dori\_15 Start: 12459, Stop: 12911, Start Num: 60

Candidate Starts for Dori\_15:

(41, 12435), (Start: 60 @12459 has 55 MA's), (77, 12528), (78, 12531), (79, 12534), (80, 12537), (87, 12564), (114, 12666), (118, 12681), (129, 12750), (131, 12756), (139, 12783), (157, 12837), (159, 12843), (163, 12864), (165, 12870),

Gene: DumpTruck\_35 Start: 30398, Stop: 30886, Start Num: 52

Candidate Starts for DumpTruck\_35:

(23, 30284), (27, 30299), (28, 30311), (29, 30314), (32, 30323), (43, 30374), (Start: 52 @30398 has 2 MA's), (Start: 76 @30488 has 3 MA's), (82, 30512), (111, 30626), (117, 30644), (119, 30650), (130, 30698), (134, 30710), (140, 30731), (148, 30755), (160, 30797), (169, 30845),

Gene: Eaglehorse\_19 Start: 16699, Stop: 17181, Start Num: 57

Candidate Starts for Eaglehorse\_19:

(Start: 57 @16699 has 31 MA's), (61, 16714), (Start: 66 @16726 has 3 MA's), (78, 16786), (80, 16792), (85, 16813), (86, 16816), (108, 16897), (114, 16921), (118, 16936), (123, 16969), (138, 17035), (160, 17122), (161, 17128), (168, 17167),

Gene: Ebert\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for Ebert\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: Eggsie\_37 Start: 40300, Stop: 40851, Start Num: 46

Candidate Starts for Eggsie\_37:

(Start: 46 @40300 has 27 MA's), (Start: 49 @40309 has 36 MA's), (85, 40444), (100, 40504), (104, 40519), (107, 40531), (115, 40561), (116, 40567), (134, 40657), (137, 40666), (157, 40729), (162, 40753), (169, 40792),

Gene: Ekhein\_38 Start: 40164, Stop: 40715, Start Num: 46

Candidate Starts for Ekhein\_38:

(Start: 46 @40164 has 27 MA's), (Start: 49 @40173 has 36 MA's), (100, 40368), (107, 40395), (111, 40413), (116, 40431), (123, 40470), (134, 40521), (137, 40530), (162, 40617), (169, 40656),

Gene: Evaa\_17 Start: 15092, Stop: 15559, Start Num: 47

Candidate Starts for Evaa\_17:

(14, 14870), (17, 14903), (40, 15062), (Start: 47 @15092 has 12 MA's), (78, 15176), (89, 15215), (102, 15263), (104, 15272), (105, 15278), (129, 15395), (139, 15428), (141, 15434), (159, 15488), (161, 15506), (165, 15518),

Gene: Exiguo\_37 Start: 40185, Stop: 40727, Start Num: 49

Candidate Starts for Exiguo\_37:

(Start: 46 @40176 has 27 MA's), (Start: 49 @40185 has 36 MA's), (100, 40380), (107, 40407), (111, 40425), (116, 40443), (123, 40482), (134, 40533), (137, 40542), (144, 40560), (162, 40629), (169, 40668),

Gene: Faze9\_19 Start: 16792, Stop: 17274, Start Num: 57

Candidate Starts for Faze9\_19:

(Start: 57 @16792 has 31 MA's), (61, 16807), (78, 16879), (80, 16885), (85, 16906), (86, 16909), (108, 16990), (114, 17014), (118, 17029), (123, 17062), (138, 17128), (160, 17215), (161, 17221),

Gene: FelixAlejandro\_42 Start: 42391, Stop: 42942, Start Num: 46

Candidate Starts for FelixAlejandro\_42:

(Start: 46 @42391 has 27 MA's), (Start: 49 @42400 has 36 MA's), (100, 42595), (107, 42622), (111, 42640), (116, 42658), (123, 42697), (134, 42748), (137, 42757), (169, 42883),

Gene: Flakey\_37 Start: 41040, Stop: 41591, Start Num: 46

Candidate Starts for Flakey\_37:

(Start: 46 @41040 has 27 MA's), (Start: 49 @41049 has 36 MA's), (100, 41244), (107, 41271), (111, 41289), (116, 41307), (123, 41346), (134, 41397), (137, 41406), (169, 41532),

Gene: ForDig\_15 Start: 14090, Stop: 14554, Start Num: 71

Candidate Starts for ForDig\_15:

(7, 13697), (8, 13718), (11, 13775), (40, 13997), (Start: 60 @14057 has 55 MA's), (68, 14078), (71, 14090), (78, 14132), (85, 14159), (109, 14246), (111, 14258), (135, 14408), (139, 14423), (157, 14477), (159, 14483),

Gene: Forza\_114 Start: 70049, Stop: 70528, Start Num: 49

Candidate Starts for Forza\_114:

(Start: 49 @70049 has 36 MA's), (Start: 76 @70130 has 3 MA's), (78, 70142), (82, 70154), (114, 70274), (119, 70292), (130, 70340), (132, 70346), (166, 70466),

Gene: FrenchFry\_19 Start: 16795, Stop: 17277, Start Num: 57

Candidate Starts for FrenchFry\_19:

(Start: 57 @16795 has 31 MA's), (61, 16810), (Start: 66 @16822 has 3 MA's), (78, 16882), (80, 16888), (85, 16909), (86, 16912), (108, 16993), (114, 17017), (118, 17032), (123, 17065), (138, 17131), (160, 17218), (161, 17224), (168, 17263),

Gene: Fresco\_16 Start: 13799, Stop: 14290, Start Num: 47

Candidate Starts for Fresco\_16:

(6, 13475), (14, 13577), (Start: 47 @13799 has 12 MA's), (65, 13841), (78, 13904), (95, 13964), (104, 14003), (141, 14165), (145, 14171), (152, 14198), (159, 14219), (161, 14237), (167, 14270), (169, 14279),

Gene: FroggyToad\_22 Start: 19039, Stop: 19485, Start Num: 64

Candidate Starts for FroggyToad\_22:

(12, 18742), (16, 18796), (22, 18877), (25, 18895), (26, 18898), (56, 19015), (Start: 64 @19039 has 21 MA's), (82, 19114), (95, 19162), (99, 19174), (108, 19210), (119, 19252), (135, 19315), (160, 19396), (161, 19405), (162, 19408), (170, 19447),

Gene: GMA1\_22 Start: 18858, Stop: 19307, Start Num: 69

Candidate Starts for GMA1\_22:

(69, 18858), (92, 18960), (104, 19005), (120, 19071), (137, 19128), (159, 19197), (161, 19215), (173, 19281),

Gene: GMA2\_41 Start: 42741, Stop: 43205, Start Num: 73

Candidate Starts for GMA2\_41:

(36, 42633), (51, 42678), (Start: 73 @42741 has 1 MA's), (77, 42771), (84, 42792), (86, 42804), (89, 42813), (92, 42822), (101, 42855), (102, 42858), (111, 42897), (113, 42903), (119, 42924), (142, 43008), (148, 43026), (175, 43155),

Gene: GMA7\_31 Start: 35045, Stop: 35515, Start Num: 46

Candidate Starts for GMA7\_31:

(9, 34763), (11, 34811), (16, 34871), (21, 34916), (Start: 46 @35045 has 27 MA's), (Start: 76 @35117 has 3 MA's), (86, 35159), (88, 35165), (104, 35228), (118, 35282), (127, 35342), (131, 35357), (158, 35441), (169, 35501),

Gene: GTE7\_30 Start: 35076, Stop: 35546, Start Num: 46

Candidate Starts for GTE7\_30:

(9, 34794), (11, 34842), (16, 34902), (21, 34947), (Start: 46 @35076 has 27 MA's), (Start: 76 @35148 has 3 MA's), (86, 35190), (88, 35196), (104, 35259), (111, 35289), (118, 35313), (127, 35373), (131, 35388), (158, 35472), (169, 35532),

Gene: Gadget\_20 Start: 15465, Stop: 15944, Start Num: 60

Candidate Starts for Gadget\_20:

(15, 15258), (17, 15276), (40, 15435), (Start: 60 @15465 has 55 MA's), (Start: 76 @15528 has 3 MA's), (78, 15540), (79, 15543), (96, 15603), (110, 15657), (112, 15669), (113, 15672), (119, 15693), (130, 15762), (131, 15765), (141, 15798), (159, 15852), (160, 15861),

Gene: GalacticEye\_38 Start: 42403, Stop: 42942, Start Num: 49

Candidate Starts for GalacticEye\_38:

(11, 42154), (16, 42217), (20, 42253), (21, 42262), (Start: 46 @42394 has 27 MA's), (Start: 49 @42403 has 36 MA's), (Start: 76 @42499 has 3 MA's), (86, 42541), (104, 42613), (107, 42625), (116, 42661), (141, 42775), (162, 42847),

Gene: GemG\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for GemG\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: Gervas\_19 Start: 15444, Stop: 15923, Start Num: 60

Candidate Starts for Gervas\_19:

(15, 15237), (17, 15255), (40, 15414), (Start: 60 @15444 has 55 MA's), (Start: 76 @15507 has 3 MA's), (78, 15519), (79, 15522), (96, 15582), (110, 15636), (112, 15648), (113, 15651), (119, 15672), (130, 15741), (131, 15744), (141, 15777), (159, 15831), (160, 15840),

Gene: Gizermo\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for Gizermo\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: Glass\_19 Start: 16795, Stop: 17277, Start Num: 57

Candidate Starts for Glass\_19:

(Start: 57 @16795 has 31 MA's), (61, 16810), (Start: 66 @16822 has 3 MA's), (78, 16882), (80, 16888), (85, 16909), (86, 16912), (108, 16993), (114, 17017), (118, 17032), (123, 17065), (138, 17131), (160, 17218), (161, 17224), (168, 17263),

Gene: GlenHope\_20 Start: 15451, Stop: 15930, Start Num: 60

Candidate Starts for GlenHope\_20:

(15, 15244), (17, 15262), (40, 15421), (Start: 60 @15451 has 55 MA's), (Start: 76 @15514 has 3 MA's), (78, 15526), (79, 15529), (96, 15589), (110, 15643), (112, 15655), (113, 15658), (119, 15679), (130, 15748), (131, 15751), (141, 15784), (159, 15838), (160, 15847),

Gene: Glubnar\_19 Start: 15466, Stop: 15945, Start Num: 60

Candidate Starts for Glubnar\_19:

(15, 15259), (17, 15277), (40, 15436), (Start: 60 @15466 has 55 MA's), (Start: 76 @15529 has 3 MA's), (78, 15541), (79, 15544), (96, 15604), (110, 15658), (112, 15670), (113, 15673), (119, 15694), (130, 15763), (131, 15766), (141, 15799), (159, 15853), (160, 15862),

Gene: GodPhather\_14 Start: 14752, Stop: 15240, Start Num: 38

Candidate Starts for GodPhather\_14:

(24, 14686), (33, 14719), (Start: 38 @14752 has 1 MA's), (Start: 58 @14776 has 7 MA's), (70, 14809), (Start: 73 @14827 has 1 MA's), (77, 14857), (82, 14872), (98, 14932), (103, 14953), (112, 14989), (113, 14992), (115, 14998), (118, 15010), (130, 15082), (131, 15085), (137, 15103), (141, 15118), (160, 15181),

Gene: Godines\_19 Start: 16690, Stop: 17172, Start Num: 57

Candidate Starts for Godines\_19:

(Start: 57 @16690 has 31 MA's), (61, 16705), (Start: 66 @16717 has 3 MA's), (78, 16777), (80, 16783), (85, 16804), (86, 16807), (108, 16888), (114, 16912), (118, 16927), (123, 16960), (138, 17026), (160, 17113), (161, 17119), (168, 17158),

Gene: GodonK\_100 Start: 60673, Stop: 61158, Start Num: 50

Candidate Starts for GodonK\_100:

(Start: 44 @60661 has 1 MA's), (Start: 50 @60673 has 1 MA's), (81, 60787), (85, 60805), (99, 60847), (104, 60868), (110, 60889), (112, 60901), (135, 60985), (137, 60991), (143, 61006), (154, 61042),



(169, 61114),

Gene: Gorko\_37 Start: 40177, Stop: 40719, Start Num: 49

Candidate Starts for Gorko\_37:

(Start: 46 @40168 has 27 MA's), (Start: 49 @40177 has 36 MA's), (100, 40372), (107, 40399), (111, 40417), (116, 40435), (123, 40474), (134, 40525), (137, 40534), (169, 40660),

Gene: GourdThymes\_37 Start: 41051, Stop: 41593, Start Num: 49

Candidate Starts for GourdThymes\_37:

(Start: 46 @41042 has 27 MA's), (Start: 49 @41051 has 36 MA's), (100, 41246), (107, 41273), (111, 41291), (116, 41309), (123, 41348), (134, 41399), (137, 41408), (162, 41495), (169, 41534),

Gene: Guillaume\_38 Start: 42444, Stop: 42992, Start Num: 46

Candidate Starts for Guillaume\_38:

(11, 42204), (16, 42267), (20, 42303), (21, 42312), (Start: 46 @42444 has 27 MA's), (Start: 49 @42453 has 36 MA's), (Start: 76 @42549 has 3 MA's), (86, 42591), (104, 42663), (107, 42675), (116, 42711), (141, 42825), (162, 42897),

Gene: Hail2Pitt\_38 Start: 42929, Stop: 43468, Start Num: 49

Candidate Starts for Hail2Pitt\_38:

(11, 42680), (16, 42743), (20, 42779), (21, 42788), (Start: 46 @42920 has 27 MA's), (Start: 49 @42929 has 36 MA's), (Start: 76 @43025 has 3 MA's), (86, 43067), (104, 43139), (107, 43151), (116, 43187), (141, 43301), (162, 43373),

Gene: Haley23\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for Haley23\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: Halfpint\_18 Start: 15286, Stop: 15765, Start Num: 60

Candidate Starts for Halfpint\_18:

(15, 15079), (17, 15097), (40, 15256), (Start: 60 @15286 has 55 MA's), (Start: 76 @15349 has 3 MA's), (78, 15361), (79, 15364), (96, 15424), (110, 15478), (112, 15490), (113, 15493), (119, 15514), (130, 15583), (131, 15586), (141, 15619), (159, 15673), (160, 15682),

Gene: Harambe\_38 Start: 42711, Stop: 43259, Start Num: 46

Candidate Starts for Harambe\_38:

(11, 42471), (16, 42534), (20, 42570), (21, 42579), (Start: 46 @42711 has 27 MA's), (Start: 49 @42720 has 36 MA's), (Start: 76 @42816 has 3 MA's), (86, 42858), (104, 42930), (107, 42942), (116, 42978), (141, 43092), (162, 43164),

Gene: HarveySr\_19 Start: 15438, Stop: 15917, Start Num: 60

Candidate Starts for HarveySr\_19:

(15, 15231), (17, 15249), (40, 15408), (Start: 60 @15438 has 55 MA's), (Start: 76 @15501 has 3 MA's), (78, 15513), (79, 15516), (96, 15576), (110, 15630), (112, 15642), (113, 15645), (119, 15666), (130, 15735), (131, 15738), (141, 15771), (159, 15825), (160, 15834),

Gene: Hashim76\_21 Start: 14998, Stop: 15492, Start Num: 60

Candidate Starts for Hashim76\_21:

(7, 14668), (11, 14746), (15, 14794), (17, 14812), (59, 14995), (Start: 60 @14998 has 55 MA's), (Start: 62 @15001 has 1 MA's), (68, 15016), (78, 15070), (85, 15097), (111, 15196), (121, 15250), (135, 15349), (137, 15355), (139, 15364), (157, 15418), (159, 15424),

Gene: HayZem\_40 Start: 40828, Stop: 41298, Start Num: 46

Candidate Starts for HayZem\_40:

(9, 40546), (11, 40594), (16, 40654), (21, 40699), (Start: 46 @40828 has 27 MA's), (Start: 76 @40900 has 3 MA's), (86, 40942), (88, 40948), (104, 41011), (111, 41041), (118, 41065), (127, 41125), (131, 41140), (158, 41224), (169, 41284),

Gene: Heathcliff\_19 Start: 15423, Stop: 15902, Start Num: 60

Candidate Starts for Heathcliff\_19:

(1, 14634), (2, 14670), (8, 15111), (11, 15168), (15, 15216), (17, 15234), (40, 15393), (Start: 60 @15423 has 55 MA's), (Start: 76 @15486 has 3 MA's), (78, 15498), (79, 15501), (96, 15561), (104, 15594), (112, 15627), (113, 15630), (114, 15633), (119, 15651), (130, 15720), (131, 15723), (141, 15756), (159, 15810), (160, 15819),

Gene: Hedgerow\_19 Start: 16777, Stop: 17259, Start Num: 57

Candidate Starts for Hedgerow\_19:

(Start: 57 @16777 has 31 MA's), (61, 16792), (Start: 66 @16804 has 3 MA's), (78, 16864), (80, 16870), (85, 16891), (86, 16894), (108, 16975), (114, 16999), (118, 17014), (123, 17047), (138, 17113), (160, 17200), (161, 17206), (168, 17245),

Gene: Hedwig\_26 Start: 21613, Stop: 22059, Start Num: 64

Candidate Starts for Hedwig\_26:

(56, 21589), (Start: 64 @21613 has 21 MA's), (82, 21688), (92, 21724), (104, 21769), (105, 21775), (108, 21784), (119, 21826), (135, 21889), (144, 21916), (146, 21922), (160, 21970), (161, 21979), (162, 21982), (170, 22021),

Gene: Hello\_38 Start: 42673, Stop: 43221, Start Num: 46

Candidate Starts for Hello\_38:

(11, 42433), (16, 42496), (20, 42532), (21, 42541), (Start: 46 @42673 has 27 MA's), (Start: 49 @42682 has 36 MA's), (Start: 76 @42778 has 3 MA's), (86, 42820), (104, 42892), (107, 42904), (116, 42940), (141, 43054), (162, 43126),

Gene: Holeinone\_19 Start: 16677, Stop: 17159, Start Num: 57

Candidate Starts for Holeinone\_19:

(Start: 57 @16677 has 31 MA's), (61, 16692), (Start: 66 @16704 has 3 MA's), (78, 16764), (85, 16791), (86, 16794), (108, 16875), (114, 16899), (118, 16914), (123, 16947), (138, 17013), (160, 17100), (161, 17106), (168, 17145),

Gene: Hosp\_012 Start: 12260, Stop: 12769, Start Num: 60

Candidate Starts for Hosp\_012:

(7, 11897), (8, 11918), (11, 11975), (40, 12200), (Start: 60 @12260 has 55 MA's), (68, 12281), (79, 12338), (85, 12362), (110, 12452), (111, 12461), (135, 12623), (139, 12638), (156, 12689), (159, 12698),

Gene: Hotorobo\_37 Start: 41047, Stop: 41598, Start Num: 46

Candidate Starts for Hotorobo\_37:

(Start: 46 @41047 has 27 MA's), (Start: 49 @41056 has 36 MA's), (100, 41251), (107, 41278), (111, 41296), (116, 41314), (123, 41353), (134, 41404), (137, 41413), (162, 41500), (169, 41539),

Gene: Imvubu\_13 Start: 13034, Stop: 13525, Start Num: 60

Candidate Starts for Imvubu\_13:

(7, 12686), (8, 12707), (11, 12764), (40, 12989), (Start: 60 @13034 has 55 MA's), (68, 13052), (78, 13106), (85, 13133), (105, 13208), (111, 13232), (119, 13259), (121, 13286), (124, 13340), (135,

13382), (139, 13397), (149, 13424), (156, 13448), (159, 13457),

Gene: ItsyBitsy1\_19 Start: 16669, Stop: 17151, Start Num: 57

Candidate Starts for ItsyBitsy1\_19:

(Start: 57 @16669 has 31 MA's), (61, 16684), (Start: 66 @16696 has 3 MA's), (78, 16756), (85, 16783), (86, 16786), (108, 16867), (114, 16891), (118, 16906), (123, 16939), (138, 17005), (160, 17092), (161, 17098), (168, 17137),

Gene: Jackstina\_18 Start: 15387, Stop: 15866, Start Num: 60

Candidate Starts for Jackstina\_18:

(15, 15180), (17, 15198), (40, 15357), (Start: 60 @15387 has 55 MA's), (Start: 76 @15450 has 3 MA's), (78, 15462), (79, 15465), (96, 15525), (110, 15579), (112, 15591), (113, 15594), (119, 15615), (130, 15684), (131, 15687), (141, 15720), (159, 15774), (160, 15783),

Gene: Jams\_38 Start: 41891, Stop: 42430, Start Num: 49

Candidate Starts for Jams\_38:

(11, 41642), (16, 41705), (20, 41741), (21, 41750), (Start: 46 @41882 has 27 MA's), (Start: 49 @41891 has 36 MA's), (Start: 76 @41987 has 3 MA's), (86, 42029), (104, 42101), (107, 42113), (116, 42149), (129, 42224), (141, 42263), (162, 42335),

Gene: Jellybones\_41 Start: 42252, Stop: 42803, Start Num: 46

Candidate Starts for Jellybones\_41:

(Start: 46 @42252 has 27 MA's), (Start: 49 @42261 has 36 MA's), (100, 42456), (107, 42483), (111, 42501), (116, 42519), (123, 42558), (134, 42609), (137, 42618), (162, 42705), (169, 42744),

Gene: Jeon\_13 Start: 14518, Stop: 14982, Start Num: 58

Candidate Starts for Jeon\_13:

(24, 14428), (33, 14461), (Start: 38 @14494 has 1 MA's), (Start: 58 @14518 has 7 MA's), (70, 14551), (Start: 73 @14569 has 1 MA's), (77, 14599), (82, 14614), (94, 14659), (98, 14674), (103, 14695), (112, 14731), (113, 14734), (115, 14740), (118, 14752), (130, 14824), (131, 14827), (137, 14845), (141, 14860), (159, 14914), (160, 14923),

Gene: John316\_41 Start: 42205, Stop: 42756, Start Num: 46

Candidate Starts for John316\_41:

(Start: 46 @42205 has 27 MA's), (Start: 49 @42214 has 36 MA's), (100, 42409), (107, 42436), (111, 42454), (116, 42472), (123, 42511), (134, 42562), (137, 42571), (144, 42589), (162, 42658), (169, 42697),

Gene: Jolie1\_014 Start: 14030, Stop: 14539, Start Num: 60

Candidate Starts for Jolie1\_014:

(7, 13676), (8, 13697), (11, 13754), (40, 13979), (Start: 60 @14030 has 55 MA's), (68, 14051), (71, 14063), (79, 14108), (85, 14132), (110, 14222), (111, 14231), (135, 14393), (139, 14408), (149, 14435), (156, 14459), (159, 14468),

Gene: Jormungandr\_38 Start: 42426, Stop: 42974, Start Num: 46

Candidate Starts for Jormungandr\_38:

(11, 42186), (16, 42249), (20, 42285), (21, 42294), (Start: 46 @42426 has 27 MA's), (Start: 49 @42435 has 36 MA's), (Start: 76 @42531 has 3 MA's), (86, 42573), (104, 42645), (107, 42657), (116, 42693), (141, 42807), (162, 42879),

Gene: Kaleb\_19 Start: 16795, Stop: 17277, Start Num: 57

Candidate Starts for Kaleb\_19:

(Start: 57 @16795 has 31 MA's), (61, 16810), (Start: 66 @16822 has 3 MA's), (78, 16882), (80, 16888), (85, 16909), (86, 16912), (108, 16993), (114, 17017), (118, 17032), (123, 17065), (138, 17131), (160, 17218), (161, 17224), (168, 17263),

Gene: Kamiyu\_19 Start: 15432, Stop: 15911, Start Num: 60

Candidate Starts for Kamiyu\_19:

(15, 15225), (17, 15243), (40, 15402), (Start: 60 @15432 has 55 MA's), (Start: 76 @15495 has 3 MA's), (78, 15507), (79, 15510), (96, 15570), (110, 15624), (112, 15636), (113, 15639), (119, 15660), (130, 15729), (131, 15732), (141, 15765), (159, 15819), (160, 15828),

Gene: Kaseim\_39 Start: 41972, Stop: 42415, Start Num: 76

Candidate Starts for Kaseim\_39:

(11, 41627), (16, 41690), (20, 41726), (21, 41735), (Start: 46 @41867 has 27 MA's), (Start: 49 @41876 has 36 MA's), (Start: 76 @41972 has 3 MA's), (86, 42014), (104, 42086), (107, 42098), (116, 42134), (129, 42209), (141, 42248), (162, 42320),

Gene: KayaCho\_14 Start: 14048, Stop: 14557, Start Num: 60

Candidate Starts for KayaCho\_14:

(7, 13679), (8, 13700), (10, 13742), (40, 13982), (48, 14012), (Start: 60 @14048 has 55 MA's), (68, 14069), (79, 14126), (85, 14150), (111, 14249), (135, 14411), (144, 14435), (156, 14477), (159, 14486),

Gene: Kheth\_19 Start: 16678, Stop: 17160, Start Num: 57

Candidate Starts for Kheth\_19:

(Start: 57 @16678 has 31 MA's), (61, 16693), (Start: 66 @16705 has 3 MA's), (78, 16765), (80, 16771), (85, 16792), (86, 16795), (108, 16876), (114, 16900), (118, 16915), (123, 16948), (138, 17014), (160, 17101), (161, 17107), (168, 17146),

Gene: Kolhan\_19 Start: 16702, Stop: 17157, Start Num: 66

Candidate Starts for Kolhan\_19:

(Start: 57 @16675 has 31 MA's), (61, 16690), (Start: 66 @16702 has 3 MA's), (78, 16762), (80, 16768), (85, 16789), (86, 16792), (108, 16873), (114, 16897), (118, 16912), (123, 16945), (138, 17011), (160, 17098), (161, 17104),

Gene: Kronus\_18 Start: 16044, Stop: 16523, Start Num: 60

Candidate Starts for Kronus\_18:

(15, 15837), (17, 15855), (40, 16014), (Start: 60 @16044 has 55 MA's), (Start: 76 @16107 has 3 MA's), (78, 16119), (79, 16122), (96, 16182), (110, 16236), (112, 16248), (113, 16251), (119, 16272), (130, 16341), (131, 16344), (141, 16377), (159, 16431), (160, 16440),

Gene: Lahirium\_38 Start: 42948, Stop: 43496, Start Num: 46

Candidate Starts for Lahirium\_38:

(11, 42708), (16, 42771), (20, 42807), (21, 42816), (Start: 46 @42948 has 27 MA's), (Start: 49 @42957 has 36 MA's), (Start: 76 @43053 has 3 MA's), (86, 43095), (104, 43167), (107, 43179), (116, 43215), (141, 43329), (162, 43401),

Gene: Lars\_19 Start: 16795, Stop: 17277, Start Num: 57

Candidate Starts for Lars\_19:

(Start: 57 @16795 has 31 MA's), (61, 16810), (Start: 66 @16822 has 3 MA's), (78, 16882), (80, 16888), (85, 16909), (86, 16912), (108, 16993), (114, 17017), (118, 17032), (123, 17065), (138, 17131), (160, 17218), (161, 17224), (168, 17263),

Gene: Laurie\_19 Start: 16673, Stop: 17155, Start Num: 57

Candidate Starts for Laurie\_19:

(Start: 57 @16673 has 31 MA's), (61, 16688), (Start: 66 @16700 has 3 MA's), (78, 16760), (80, 16766), (85, 16787), (86, 16790), (108, 16871), (114, 16895), (118, 16910), (123, 16943), (138, 17009), (160, 17096), (161, 17102),

Gene: Lephleur\_19 Start: 16675, Stop: 17157, Start Num: 57

Candidate Starts for Lephleur\_19:

(Start: 57 @16675 has 31 MA's), (61, 16690), (Start: 66 @16702 has 3 MA's), (78, 16762), (85, 16789), (86, 16792), (108, 16873), (114, 16897), (118, 16912), (123, 16945), (138, 17011), (160, 17098), (161, 17104), (168, 17143),

Gene: LestyG\_19 Start: 15465, Stop: 15944, Start Num: 60

Candidate Starts for LestyG\_19:

(15, 15258), (17, 15276), (40, 15435), (Start: 60 @15465 has 55 MA's), (Start: 76 @15528 has 3 MA's), (78, 15540), (79, 15543), (96, 15603), (110, 15657), (112, 15669), (113, 15672), (119, 15693), (130, 15762), (131, 15765), (141, 15798), (159, 15852), (160, 15861),

Gene: Lidong\_38 Start: 42691, Stop: 43230, Start Num: 49

Candidate Starts for Lidong\_38:

(11, 42442), (16, 42505), (20, 42541), (21, 42550), (Start: 46 @42682 has 27 MA's), (Start: 49 @42691 has 36 MA's), (Start: 76 @42787 has 3 MA's), (86, 42829), (104, 42901), (107, 42913), (116, 42949), (129, 43024), (141, 43063), (162, 43135),

Gene: Ligma\_16 Start: 13799, Stop: 14290, Start Num: 47

Candidate Starts for Ligma\_16:

(6, 13475), (14, 13577), (Start: 47 @13799 has 12 MA's), (65, 13841), (78, 13904), (95, 13964), (104, 14003), (141, 14165), (145, 14171), (152, 14198), (159, 14219), (161, 14237), (167, 14270), (169, 14279),

Gene: LilyPad\_34 Start: 28783, Stop: 29271, Start Num: 53

Candidate Starts for LilyPad\_34:

(Start: 53 @28783 has 7 MA's), (98, 28951), (107, 28987), (114, 29014), (130, 29077), (134, 29089), (152, 29149), (156, 29161), (171, 29239),

Gene: Linetti\_38 Start: 41276, Stop: 41827, Start Num: 46

Candidate Starts for Linetti\_38:

(Start: 46 @41276 has 27 MA's), (Start: 49 @41285 has 36 MA's), (77, 41390), (107, 41507), (109, 41513), (116, 41543), (162, 41729), (169, 41768),

Gene: LittleFella\_35 Start: 30587, Stop: 31063, Start Num: 55

Candidate Starts for LittleFella\_35:

(Start: 55 @30587 has 1 MA's), (85, 30704), (106, 30782), (117, 30821), (119, 30827), (150, 30941), (156, 30959),

Gene: LittleMunchkin\_17 Start: 15243, Stop: 15710, Start Num: 47

Candidate Starts for LittleMunchkin\_17:

(6, 14919), (14, 15021), (40, 15213), (Start: 47 @15243 has 12 MA's), (70, 15276), (89, 15366), (104, 15423), (105, 15429), (141, 15585), (159, 15639), (161, 15657), (165, 15669),

Gene: LizLemon\_19 Start: 16795, Stop: 17277, Start Num: 57

Candidate Starts for LizLemon\_19:

(Start: 57 @16795 has 31 MA's), (61, 16810), (Start: 66 @16822 has 3 MA's), (78, 16882), (85, 16909), (86, 16912), (108, 16993), (114, 17017), (118, 17032), (123, 17065), (138, 17131), (160, 17218), (161,

17224), (168, 17263),

Gene: Lizzo\_37 Start: 41045, Stop: 41587, Start Num: 49

Candidate Starts for Lizzo\_37:

(Start: 46 @41036 has 27 MA's), (Start: 49 @41045 has 36 MA's), (100, 41240), (107, 41267), (111, 41285), (116, 41303), (123, 41342), (134, 41393), (137, 41402), (144, 41420), (162, 41489), (169, 41528),

Gene: LordFarquaad\_22 Start: 18967, Stop: 19413, Start Num: 64

Candidate Starts for LordFarquaad\_22:

(12, 18670), (16, 18724), (22, 18805), (26, 18826), (56, 18943), (Start: 64 @18967 has 21 MA's), (82, 19042), (104, 19123), (105, 19129), (108, 19138), (112, 19156), (119, 19180), (135, 19243), (144, 19270), (146, 19276), (156, 19306), (160, 19324), (161, 19333), (162, 19336), (170, 19375),

Gene: Luker\_39 Start: 43006, Stop: 43449, Start Num: 76

Candidate Starts for Luker\_39:

(11, 42661), (16, 42724), (20, 42760), (21, 42769), (Start: 46 @42901 has 27 MA's), (Start: 49 @42910 has 36 MA's), (Start: 76 @43006 has 3 MA's), (86, 43048), (104, 43120), (107, 43132), (116, 43168), (129, 43243), (141, 43282), (162, 43354),

Gene: Madi\_32 Start: 27977, Stop: 28465, Start Num: 53

Candidate Starts for Madi\_32:

(Start: 53 @27977 has 7 MA's), (78, 28073), (107, 28181), (119, 28223), (126, 28256), (134, 28283), (156, 28355), (161, 28382), (164, 28391), (171, 28433),

Gene: Madraxi\_32 Start: 29919, Stop: 30368, Start Num: 62

Candidate Starts for Madraxi\_32:

(30, 29811), (Start: 62 @29919 has 1 MA's), (74, 29961), (77, 29988), (99, 30066), (103, 30084), (106, 30096), (107, 30099), (111, 30117), (127, 30195), (128, 30201), (130, 30207), (155, 30288), (166, 30342),

Gene: MakoManhole\_18 Start: 15270, Stop: 15731, Start Num: 54

Candidate Starts for MakoManhole\_18:

(Start: 54 @15270 has 7 MA's), (72, 15315), (85, 15378), (95, 15411), (104, 15444), (111, 15474), (118, 15498), (139, 15600), (152, 15639), (159, 15660),

Gene: Mao1\_14 Start: 12855, Stop: 13307, Start Num: 60

Candidate Starts for Mao1\_14:

(41, 12831), (Start: 60 @12855 has 55 MA's), (77, 12924), (78, 12927), (79, 12930), (80, 12933), (87, 12960), (114, 13062), (118, 13077), (129, 13146), (131, 13152), (139, 13179), (157, 13233), (159, 13239), (163, 13260), (165, 13266),

Gene: Mareelih\_112 Start: 69551, Stop: 70030, Start Num: 49

Candidate Starts for Mareelih\_112:

(Start: 49 @69551 has 36 MA's), (Start: 76 @69632 has 3 MA's), (78, 69644), (82, 69656), (114, 69776), (119, 69794), (130, 69842), (132, 69848), (166, 69968),

Gene: Mariokart\_16 Start: 13708, Stop: 14199, Start Num: 47

Candidate Starts for Mariokart\_16:

(Start: 47 @13708 has 12 MA's), (65, 13750), (78, 13813), (95, 13873), (102, 13903), (104, 13912), (138, 14065), (141, 14074), (145, 14080), (152, 14107), (157, 14122), (159, 14128), (161, 14146), (165, 14158), (169, 14188),

Gene: Marley1013\_19 Start: 16245, Stop: 16724, Start Num: 60

Candidate Starts for Marley1013\_19:

(15, 16038), (17, 16056), (40, 16215), (Start: 60 @16245 has 55 MA's), (Start: 76 @16308 has 3 MA's), (78, 16320), (79, 16323), (96, 16383), (110, 16437), (112, 16449), (113, 16452), (119, 16473), (130, 16542), (131, 16545), (141, 16578), (159, 16632), (160, 16641),

Gene: Marlia\_19 Start: 15447, Stop: 15926, Start Num: 60

Candidate Starts for Marlia\_19:

(15, 15240), (17, 15258), (40, 15417), (Start: 60 @15447 has 55 MA's), (Start: 76 @15510 has 3 MA's), (78, 15522), (79, 15525), (96, 15585), (110, 15639), (112, 15651), (113, 15654), (119, 15675), (130, 15744), (131, 15747), (141, 15780), (159, 15834), (160, 15843),

Gene: Mask\_15 Start: 12856, Stop: 13308, Start Num: 60

Candidate Starts for Mask\_15:

(41, 12832), (Start: 60 @12856 has 55 MA's), (77, 12925), (78, 12928), (79, 12931), (80, 12934), (87, 12961), (114, 13063), (118, 13078), (129, 13147), (131, 13153), (139, 13180), (157, 13234), (159, 13240), (163, 13261), (165, 13267),

Gene: MasterPo\_19 Start: 16675, Stop: 17157, Start Num: 57

Candidate Starts for MasterPo\_19:

(Start: 57 @16675 has 31 MA's), (Start: 66 @16702 has 3 MA's), (78, 16762), (85, 16789), (86, 16792), (108, 16873), (114, 16897), (118, 16912), (123, 16945), (138, 17011), (160, 17098), (161, 17104), (168, 17143),

Gene: Megabear\_13 Start: 14461, Stop: 14925, Start Num: 58

Candidate Starts for Megabear\_13:

(24, 14371), (33, 14404), (Start: 38 @14437 has 1 MA's), (Start: 58 @14461 has 7 MA's), (70, 14494), (Start: 73 @14512 has 1 MA's), (77, 14542), (82, 14557), (94, 14602), (98, 14617), (103, 14638), (104, 14641), (106, 14650), (112, 14674), (113, 14677), (115, 14683), (118, 14695), (130, 14767), (131, 14770), (137, 14788), (141, 14803), (159, 14857), (160, 14866),

Gene: Minos\_39 Start: 42433, Stop: 42972, Start Num: 49

Candidate Starts for Minos\_39:

(11, 42184), (16, 42247), (20, 42283), (21, 42292), (Start: 46 @42424 has 27 MA's), (Start: 49 @42433 has 36 MA's), (Start: 76 @42529 has 3 MA's), (86, 42571), (104, 42643), (107, 42655), (116, 42691), (129, 42766), (141, 42805), (162, 42877),

Gene: MmasiCarm\_19 Start: 15458, Stop: 15937, Start Num: 60

Candidate Starts for MmasiCarm\_19:

(15, 15251), (17, 15269), (40, 15428), (Start: 60 @15458 has 55 MA's), (Start: 76 @15521 has 3 MA's), (78, 15533), (79, 15536), (96, 15596), (110, 15650), (112, 15662), (113, 15665), (119, 15686), (130, 15755), (131, 15758), (141, 15791), (159, 15845), (160, 15854),

Gene: Mocha12\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for Mocha12\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: Monty\_36 Start: 40195, Stop: 40737, Start Num: 49

Candidate Starts for Monty\_36:

(Start: 46 @40186 has 27 MA's), (Start: 49 @40195 has 36 MA's), (100, 40390), (107, 40417), (111, 40435), (116, 40453), (123, 40492), (134, 40543), (137, 40552), (144, 40570), (162, 40639), (169,

40678),

Gene: Moonflower\_25 Start: 21714, Stop: 22160, Start Num: 64

Candidate Starts for Moonflower\_25:

(12, 21414), (22, 21552), (26, 21573), (56, 21690), (Start: 64 @21714 has 21 MA's), (82, 21789), (88, 21813), (92, 21825), (107, 21882), (108, 21885), (119, 21927), (135, 21990), (144, 22017), (146, 22023), (160, 22071), (161, 22080), (162, 22083), (170, 22122),

Gene: Mortcellus\_18 Start: 16099, Stop: 16578, Start Num: 60

Candidate Starts for Mortcellus\_18:

(15, 15892), (17, 15910), (40, 16069), (Start: 60 @16099 has 55 MA's), (Start: 76 @16162 has 3 MA's), (78, 16174), (79, 16177), (96, 16237), (110, 16291), (112, 16303), (113, 16306), (119, 16327), (130, 16396), (131, 16399), (141, 16432), (159, 16486), (160, 16495),

Gene: Morty007\_19 Start: 16308, Stop: 16724, Start Num: 76

Candidate Starts for Morty007\_19:

(15, 16038), (17, 16056), (40, 16215), (Start: 60 @16245 has 55 MA's), (Start: 76 @16308 has 3 MA's), (78, 16320), (79, 16323), (96, 16383), (110, 16437), (112, 16449), (113, 16452), (119, 16473), (130, 16542), (131, 16545), (141, 16578), (159, 16632), (160, 16641),

Gene: MossRose\_18 Start: 15249, Stop: 15710, Start Num: 54

Candidate Starts for MossRose\_18:

(11, 14985), (13, 15006), (40, 15210), (Start: 54 @15249 has 7 MA's), (72, 15294), (85, 15357), (95, 15390), (104, 15423), (118, 15477), (139, 15579), (152, 15618), (159, 15639),

Gene: MrWormie\_38 Start: 41594, Stop: 42133, Start Num: 49

Candidate Starts for MrWormie\_38:

(11, 41345), (16, 41408), (20, 41444), (21, 41453), (Start: 46 @41585 has 27 MA's), (Start: 49 @41594 has 36 MA's), (Start: 76 @41690 has 3 MA's), (86, 41732), (104, 41804), (107, 41816), (116, 41852), (129, 41927), (141, 41966), (162, 42038),

Gene: Msay19\_42 Start: 42382, Stop: 42933, Start Num: 46

Candidate Starts for Msay19\_42:

(Start: 46 @42382 has 27 MA's), (Start: 49 @42391 has 36 MA's), (77, 42496), (100, 42586), (107, 42613), (111, 42631), (113, 42637), (116, 42649), (123, 42688), (134, 42739), (137, 42748), (162, 42835), (169, 42874),

Gene: NHagos\_16 Start: 13728, Stop: 14189, Start Num: 54

Candidate Starts for NHagos\_16:

(Start: 54 @13728 has 7 MA's), (65, 13746), (Start: 76 @13797 has 3 MA's), (80, 13815), (83, 13824), (104, 13902), (111, 13932), (139, 14058), (152, 14097), (159, 14118), (160, 14127), (161, 14136),

Gene: Neoevie\_38 Start: 42687, Stop: 43235, Start Num: 46

Candidate Starts for Neoevie\_38:

(11, 42447), (16, 42510), (20, 42546), (21, 42555), (Start: 46 @42687 has 27 MA's), (Start: 49 @42696 has 36 MA's), (Start: 76 @42792 has 3 MA's), (86, 42834), (104, 42906), (107, 42918), (116, 42954), (141, 43068), (162, 43140),

Gene: Neos5\_19 Start: 16253, Stop: 16732, Start Num: 60

Candidate Starts for Neos5\_19:

(15, 16046), (17, 16064), (40, 16223), (Start: 60 @16253 has 55 MA's), (Start: 76 @16316 has 3 MA's), (78, 16328), (79, 16331), (96, 16391), (110, 16445), (112, 16457), (113, 16460), (119, 16481), (130, 16550), (131, 16553), (141, 16586), (159, 16640), (160, 16649),



Gene: Newt\_39 Start: 43020, Stop: 43463, Start Num: 76

Candidate Starts for Newt\_39:

(11, 42675), (16, 42738), (20, 42774), (21, 42783), (Start: 46 @42915 has 27 MA's), (Start: 49 @42924 has 36 MA's), (Start: 76 @43020 has 3 MA's), (86, 43062), (104, 43134), (107, 43146), (116, 43182), (141, 43296), (162, 43368),

Gene: Nimi13\_38 Start: 42433, Stop: 42981, Start Num: 46

Candidate Starts for Nimi13\_38:

(11, 42193), (16, 42256), (20, 42292), (21, 42301), (Start: 46 @42433 has 27 MA's), (Start: 49 @42442 has 36 MA's), (Start: 76 @42538 has 3 MA's), (86, 42580), (104, 42652), (107, 42664), (116, 42700), (141, 42814), (162, 42886),

Gene: Nozo\_19 Start: 16223, Stop: 16702, Start Num: 60

Candidate Starts for Nozo\_19:

(15, 16016), (17, 16034), (40, 16193), (Start: 60 @16223 has 55 MA's), (Start: 76 @16286 has 3 MA's), (78, 16298), (79, 16301), (96, 16361), (110, 16415), (112, 16427), (113, 16430), (119, 16451), (130, 16520), (131, 16523), (141, 16556), (159, 16610), (160, 16619),

Gene: Obutu\_19 Start: 15456, Stop: 15935, Start Num: 60

Candidate Starts for Obutu\_19:

(15, 15249), (17, 15267), (40, 15426), (Start: 60 @15456 has 55 MA's), (Start: 76 @15519 has 3 MA's), (78, 15531), (79, 15534), (96, 15594), (110, 15648), (112, 15660), (113, 15663), (119, 15684), (130, 15753), (131, 15756), (141, 15789), (159, 15843), (160, 15852),

Gene: Olivio\_18 Start: 15310, Stop: 15789, Start Num: 60

Candidate Starts for Olivio\_18:

(15, 15103), (17, 15121), (40, 15280), (Start: 60 @15310 has 55 MA's), (Start: 76 @15373 has 3 MA's), (78, 15385), (79, 15388), (96, 15448), (110, 15502), (112, 15514), (113, 15517), (119, 15538), (130, 15607), (131, 15610), (141, 15643), (159, 15697), (160, 15706),

Gene: Opia\_19 Start: 16702, Stop: 17157, Start Num: 66

Candidate Starts for Opia\_19:

(Start: 57 @16675 has 31 MA's), (61, 16690), (Start: 66 @16702 has 3 MA's), (78, 16762), (80, 16768), (85, 16789), (86, 16792), (108, 16873), (114, 16897), (118, 16912), (123, 16945), (138, 17011), (160, 17098), (161, 17104), (168, 17143),

Gene: OrangeOswald\_19 Start: 15461, Stop: 15940, Start Num: 60

Candidate Starts for OrangeOswald\_19:

(15, 15254), (17, 15272), (40, 15431), (Start: 60 @15461 has 55 MA's), (Start: 76 @15524 has 3 MA's), (78, 15536), (79, 15539), (96, 15599), (110, 15653), (112, 15665), (113, 15668), (119, 15689), (130, 15758), (131, 15761), (141, 15794), (159, 15848), (160, 15857),

Gene: PR\_13 Start: 14488, Stop: 14952, Start Num: 58

Candidate Starts for PR\_13:

(24, 14398), (33, 14431), (Start: 38 @14464 has 1 MA's), (Start: 58 @14488 has 7 MA's), (70, 14521), (Start: 73 @14539 has 1 MA's), (77, 14569), (82, 14584), (98, 14644), (103, 14665), (104, 14668), (111, 14698), (112, 14701), (113, 14704), (115, 14710), (118, 14722), (130, 14794), (131, 14797), (137, 14815), (141, 14830), (159, 14884), (160, 14893),

Gene: Phaedrus\_18 Start: 15379, Stop: 15858, Start Num: 60

Candidate Starts for Phaedrus\_18:

(15, 15172), (17, 15190), (40, 15349), (Start: 60 @15379 has 55 MA's), (Start: 76 @15442 has 3 MA's), (78, 15454), (79, 15457), (96, 15517), (110, 15571), (112, 15583), (113, 15586), (119, 15607), (130, 15676), (131, 15679), (141, 15712), (159, 15766), (160, 15775),

Gene: Phantasmagoria\_19 Start: 16675, Stop: 17157, Start Num: 57

Candidate Starts for Phantasmagoria\_19:

(Start: 57 @16675 has 31 MA's), (61, 16690), (Start: 66 @16702 has 3 MA's), (78, 16762), (85, 16789), (86, 16792), (108, 16873), (114, 16897), (118, 16912), (123, 16945), (138, 17011), (160, 17098), (161, 17104), (168, 17143),

Gene: Phayeta\_19 Start: 15337, Stop: 15816, Start Num: 60

Candidate Starts for Phayeta\_19:

(15, 15130), (17, 15148), (40, 15307), (Start: 60 @15337 has 55 MA's), (Start: 76 @15400 has 3 MA's), (78, 15412), (79, 15415), (96, 15475), (110, 15529), (112, 15541), (113, 15544), (119, 15565), (130, 15634), (131, 15637), (141, 15670), (159, 15724), (160, 15733),

Gene: Phendrix\_96 Start: 60904, Stop: 61401, Start Num: 44

Candidate Starts for Phendrix\_96:

(Start: 44 @60904 has 1 MA's), (Start: 50 @60916 has 1 MA's), (85, 61048), (99, 61090), (104, 61111), (110, 61132), (111, 61141), (112, 61144), (135, 61228), (137, 61234), (143, 61249), (169, 61357),

Gene: Philly\_18 Start: 15327, Stop: 15806, Start Num: 60

Candidate Starts for Philly\_18:

(15, 15120), (17, 15138), (40, 15297), (Start: 60 @15327 has 55 MA's), (Start: 76 @15390 has 3 MA's), (78, 15402), (79, 15405), (96, 15465), (104, 15498), (112, 15531), (113, 15534), (114, 15537), (119, 15555), (130, 15624), (131, 15627), (141, 15660), (159, 15714), (160, 15723),

Gene: Phlyer\_19 Start: 16196, Stop: 16675, Start Num: 60

Candidate Starts for Phlyer\_19:

(15, 15989), (17, 16007), (40, 16166), (Start: 60 @16196 has 55 MA's), (Start: 76 @16259 has 3 MA's), (78, 16271), (79, 16274), (96, 16334), (110, 16388), (112, 16400), (113, 16403), (119, 16424), (130, 16493), (131, 16496), (141, 16529), (159, 16583), (160, 16592),

Gene: PierreThree\_37 Start: 41156, Stop: 41698, Start Num: 49

Candidate Starts for PierreThree\_37:

(Start: 46 @41147 has 27 MA's), (Start: 49 @41156 has 36 MA's), (77, 41261), (107, 41378), (109, 41384), (116, 41414), (162, 41600), (169, 41639),

Gene: Pipefish\_19 Start: 16345, Stop: 16824, Start Num: 60

Candidate Starts for Pipefish\_19:

(15, 16138), (17, 16156), (40, 16315), (Start: 60 @16345 has 55 MA's), (Start: 76 @16408 has 3 MA's), (78, 16420), (79, 16423), (96, 16483), (110, 16537), (112, 16549), (113, 16552), (119, 16573), (130, 16642), (131, 16645), (141, 16678), (159, 16732), (160, 16741),

Gene: PokyPuppy\_36 Start: 41099, Stop: 41641, Start Num: 49

Candidate Starts for PokyPuppy\_36:

(9, 40805), (16, 40916), (18, 40934), (20, 40952), (21, 40961), (35, 41060), (Start: 46 @41090 has 27 MA's), (Start: 49 @41099 has 36 MA's), (77, 41204), (100, 41294), (104, 41309), (107, 41321), (115, 41351), (116, 41357), (134, 41447), (137, 41456), (157, 41519), (162, 41543), (169, 41582),

Gene: Poland\_42 Start: 42370, Stop: 42912, Start Num: 49

Candidate Starts for Poland\_42:

(Start: 46 @42361 has 27 MA's), (Start: 49 @42370 has 36 MA's), (100, 42565), (107, 42592), (111, 42610), (116, 42628), (123, 42667), (134, 42718), (137, 42727), (169, 42853),

Gene: Pupper\_84 Start: 32583, Stop: 33056, Start Num: 45

Candidate Starts for Pupper\_84:

(Start: 45 @32583 has 2 MA's), (Start: 47 @32589 has 12 MA's), (72, 32637), (Start: 73 @32640 has 1 MA's), (78, 32673), (80, 32679), (83, 32688), (88, 32709), (107, 32784), (118, 32826), (135, 32913), (136, 32916), (141, 32934), (145, 32940), (153, 32970), (165, 33015), (169, 33045),

Gene: Quesadilla\_19 Start: 16834, Stop: 17340, Start Num: 60

Candidate Starts for Quesadilla\_19:

(5, 16240), (7, 16504), (8, 16525), (34, 16783), (Start: 60 @16834 has 55 MA's), (68, 16852), (85, 16933), (89, 16945), (95, 16966), (97, 16975), (111, 17032), (131, 17185), (134, 17194), (156, 17263), (159, 17272), (167, 17320),

Gene: Qyrzula\_18 Start: 16765, Stop: 17247, Start Num: 57

Candidate Starts for Qyrzula\_18:

(Start: 57 @16765 has 31 MA's), (61, 16780), (Start: 66 @16792 has 3 MA's), (78, 16852), (80, 16858), (85, 16879), (86, 16882), (108, 16963), (114, 16987), (118, 17002), (123, 17035), (138, 17101), (160, 17188), (161, 17194), (168, 17233),

Gene: RagingRooster\_19 Start: 15462, Stop: 15941, Start Num: 60

Candidate Starts for RagingRooster\_19:

(15, 15255), (17, 15273), (40, 15432), (Start: 60 @15462 has 55 MA's), (Start: 76 @15525 has 3 MA's), (78, 15537), (79, 15540), (96, 15600), (110, 15654), (112, 15666), (113, 15669), (119, 15690), (130, 15759), (131, 15762), (141, 15795), (159, 15849), (160, 15858),

Gene: RavenCo17\_22 Start: 19866, Stop: 20312, Start Num: 64

Candidate Starts for RavenCo17\_22:

(22, 19707), (26, 19728), (42, 19800), (56, 19845), (Start: 64 @19866 has 21 MA's), (82, 19941), (92, 19977), (104, 20022), (105, 20028), (108, 20037), (119, 20079), (135, 20142), (144, 20169), (146, 20175), (160, 20223), (162, 20235), (170, 20274),

Gene: RemRem\_38 Start: 40185, Stop: 40727, Start Num: 49

Candidate Starts for RemRem\_38:

(Start: 46 @40176 has 27 MA's), (Start: 49 @40185 has 36 MA's), (100, 40380), (107, 40407), (111, 40425), (116, 40443), (123, 40482), (134, 40533), (137, 40542), (144, 40560), (162, 40629), (169, 40668),

Gene: Rhinoforte\_19 Start: 16819, Stop: 17274, Start Num: 66

Candidate Starts for Rhinoforte\_19:

(Start: 57 @16792 has 31 MA's), (61, 16807), (Start: 66 @16819 has 3 MA's), (78, 16879), (80, 16885), (85, 16906), (86, 16909), (108, 16990), (114, 17014), (118, 17029), (123, 17062), (138, 17128), (160, 17215), (161, 17221), (168, 17260),

Gene: Rita1961\_19 Start: 15457, Stop: 15936, Start Num: 60

Candidate Starts for Rita1961\_19:

(15, 15250), (17, 15268), (40, 15427), (Start: 60 @15457 has 55 MA's), (Start: 76 @15520 has 3 MA's), (78, 15532), (79, 15535), (96, 15595), (110, 15649), (112, 15661), (113, 15664), (119, 15685), (130, 15754), (131, 15757), (141, 15790), (159, 15844), (160, 15853),

Gene: RomaT\_19 Start: 16243, Stop: 16722, Start Num: 60

Candidate Starts for RomaT\_19:

(15, 16036), (17, 16054), (40, 16213), (Start: 60 @16243 has 55 MA's), (Start: 76 @16306 has 3 MA's), (78, 16318), (79, 16321), (96, 16381), (110, 16435), (112, 16447), (113, 16450), (119, 16471), (130, 16540), (131, 16543), (141, 16576), (159, 16630), (160, 16639),

Gene: Rosebush\_19 Start: 16792, Stop: 17274, Start Num: 57

Candidate Starts for Rosebush\_19:

(Start: 57 @16792 has 31 MA's), (61, 16807), (Start: 66 @16819 has 3 MA's), (78, 16879), (80, 16885), (85, 16906), (86, 16909), (108, 16990), (114, 17014), (118, 17029), (123, 17062), (138, 17128), (160, 17215), (161, 17221), (168, 17260),

Gene: RoyalG\_38 Start: 40643, Stop: 41194, Start Num: 46

Candidate Starts for RoyalG\_38:

(Start: 46 @40643 has 27 MA's), (Start: 49 @40652 has 36 MA's), (85, 40787), (100, 40847), (104, 40862), (107, 40874), (115, 40904), (116, 40910), (134, 41000), (137, 41009), (157, 41072), (162, 41096), (169, 41135),

Gene: SCentae\_82 Start: 32263, Stop: 32730, Start Num: 47

Candidate Starts for SCentae\_82:

(Start: 45 @32257 has 2 MA's), (Start: 47 @32263 has 12 MA's), (72, 32311), (Start: 73 @32314 has 1 MA's), (78, 32347), (80, 32353), (83, 32362), (88, 32383), (107, 32458), (118, 32500), (135, 32587), (136, 32590), (141, 32608), (145, 32614), (153, 32644), (165, 32689), (169, 32719),

Gene: Sabella\_19 Start: 16678, Stop: 17160, Start Num: 57

Candidate Starts for Sabella\_19:

(Start: 57 @16678 has 31 MA's), (61, 16693), (Start: 66 @16705 has 3 MA's), (78, 16765), (80, 16771), (85, 16792), (86, 16795), (108, 16876), (114, 16900), (118, 16915), (123, 16948), (138, 17014), (160, 17101), (161, 17107), (168, 17146),

Gene: Sahara\_21 Start: 18646, Stop: 19092, Start Num: 64

Candidate Starts for Sahara\_21:

(12, 18349), (16, 18403), (22, 18484), (26, 18505), (56, 18622), (Start: 64 @18646 has 21 MA's), (82, 18721), (104, 18802), (105, 18808), (108, 18817), (112, 18835), (119, 18859), (135, 18922), (144, 18949), (146, 18955), (156, 18985), (160, 19003), (161, 19012), (162, 19015), (170, 19054),

Gene: Sam12\_37 Start: 40185, Stop: 40727, Start Num: 49

Candidate Starts for Sam12\_37:

(Start: 46 @40176 has 27 MA's), (Start: 49 @40185 has 36 MA's), (100, 40380), (107, 40407), (111, 40425), (116, 40443), (123, 40482), (134, 40533), (137, 40542), (144, 40560), (162, 40629), (169, 40668),

Gene: Savage\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for Savage\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: Sejanus\_15 Start: 13789, Stop: 14241, Start Num: 60

Candidate Starts for Sejanus\_15:

(41, 13765), (Start: 60 @13789 has 55 MA's), (77, 13858), (79, 13864), (80, 13867), (87, 13894), (118, 14011), (129, 14080), (131, 14086), (139, 14113), (157, 14167), (159, 14173), (163, 14194), (165, 14200),

Gene: Shatter\_16 Start: 13799, Stop: 14290, Start Num: 47

Candidate Starts for Shatter\_16:

(6, 13475), (14, 13577), (Start: 47 @13799 has 12 MA's), (65, 13841), (78, 13904), (95, 13964), (104, 14003), (141, 14165), (145, 14171), (152, 14198), (159, 14219), (161, 14237), (167, 14270), (169, 14279),

Gene: Shelley\_38 Start: 41918, Stop: 42457, Start Num: 49

Candidate Starts for Shelley\_38:

(11, 41669), (16, 41732), (20, 41768), (21, 41777), (Start: 46 @41909 has 27 MA's), (Start: 49 @41918 has 36 MA's), (Start: 76 @42014 has 3 MA's), (86, 42056), (104, 42128), (107, 42140), (116, 42176), (129, 42251), (141, 42290), (162, 42362),

Gene: Shenandoah\_19 Start: 15440, Stop: 15919, Start Num: 60

Candidate Starts for Shenandoah\_19:

(15, 15233), (17, 15251), (40, 15410), (Start: 60 @15440 has 55 MA's), (Start: 76 @15503 has 3 MA's), (78, 15515), (79, 15518), (96, 15578), (110, 15632), (112, 15644), (113, 15647), (119, 15668), (130, 15737), (131, 15740), (141, 15773), (159, 15827), (160, 15836),

Gene: Sienna\_32 Start: 27977, Stop: 28465, Start Num: 53

Candidate Starts for Sienna\_32:

(Start: 53 @27977 has 7 MA's), (78, 28073), (107, 28181), (119, 28223), (126, 28256), (134, 28283), (156, 28355), (161, 28382), (164, 28391), (171, 28433),

Gene: Sisko\_16 Start: 14142, Stop: 14612, Start Num: 47

Candidate Starts for Sisko\_16:

(6, 13818), (Start: 47 @14142 has 12 MA's), (65, 14163), (67, 14166), (85, 14253), (91, 14274), (105, 14331), (124, 14424), (129, 14448), (135, 14466), (139, 14481), (141, 14487), (144, 14490), (152, 14520), (159, 14541),

Gene: Sixama\_112 Start: 69586, Stop: 70068, Start Num: 49

Candidate Starts for Sixama\_112:

(Start: 49 @69586 has 36 MA's), (95, 69742), (99, 69754), (119, 69832), (128, 69874), (130, 69880), (132, 69886), (156, 69961), (166, 70006),

Gene: Skog\_147 Start: 61646, Stop: 62143, Start Num: 39

Candidate Starts for Skog\_147:

(Start: 39 @61646 has 1 MA's), (Start: 45 @61670 has 2 MA's), (Start: 47 @61676 has 12 MA's), (78, 61760), (80, 61766), (83, 61775), (93, 61811), (118, 61913), (141, 62021), (151, 62051), (165, 62102), (169, 62132),

Gene: SlippinJimmy\_19 Start: 16196, Stop: 16705, Start Num: 40

Candidate Starts for SlippinJimmy\_19:

(15, 16019), (17, 16037), (40, 16196), (Start: 60 @16226 has 55 MA's), (Start: 76 @16289 has 3 MA's), (78, 16301), (79, 16304), (96, 16364), (110, 16418), (112, 16430), (113, 16433), (119, 16454), (130, 16523), (131, 16526), (141, 16559), (159, 16613), (160, 16622),

Gene: SoilAssassin\_22 Start: 18967, Stop: 19413, Start Num: 64

Candidate Starts for SoilAssassin\_22:

(12, 18670), (16, 18724), (22, 18805), (26, 18826), (56, 18943), (Start: 64 @18967 has 21 MA's), (82, 19042), (104, 19123), (105, 19129), (108, 19138), (112, 19156), (119, 19180), (135, 19243), (144, 19270), (146, 19276), (156, 19306), (160, 19324), (161, 19333), (162, 19336), (170, 19375),

Gene: Sombrero\_37 Start: 40178, Stop: 40729, Start Num: 46

Candidate Starts for Sombrero\_37:

(Start: 46 @40178 has 27 MA's), (Start: 49 @40187 has 36 MA's), (100, 40382), (107, 40409), (111, 40427), (116, 40445), (123, 40484), (134, 40535), (137, 40544), (169, 40670),

Gene: Sour\_19 Start: 15570, Stop: 16061, Start Num: 37

Candidate Starts for Sour\_19:

(Start: 37 @15570 has 1 MA's), (65, 15612), (67, 15615), (83, 15690), (85, 15702), (95, 15735), (101, 15762), (104, 15774), (105, 15780), (110, 15795), (129, 15897), (131, 15903), (135, 15915), (141, 15936), (144, 15939), (152, 15969), (157, 15984), (159, 15990), (165, 16020),

Gene: Sproutie\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for Sproutie\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: Squibbles\_37 Start: 41039, Stop: 41590, Start Num: 46

Candidate Starts for Squibbles\_37:

(Start: 46 @41039 has 27 MA's), (Start: 49 @41048 has 36 MA's), (100, 41243), (107, 41270), (111, 41288), (116, 41306), (123, 41345), (134, 41396), (137, 41405), (144, 41423), (162, 41492), (169, 41531),

Gene: SteveFrench\_37 Start: 40883, Stop: 41434, Start Num: 46

Candidate Starts for SteveFrench\_37:

(Start: 46 @40883 has 27 MA's), (Start: 49 @40892 has 36 MA's), (85, 41027), (100, 41087), (104, 41102), (107, 41114), (115, 41144), (116, 41150), (134, 41240), (137, 41249), (157, 41312), (162, 41336), (169, 41375),

Gene: Sticker17\_38 Start: 42424, Stop: 42972, Start Num: 46

Candidate Starts for Sticker17\_38:

(11, 42184), (16, 42247), (20, 42283), (21, 42292), (Start: 46 @42424 has 27 MA's), (Start: 49 @42433 has 36 MA's), (Start: 76 @42529 has 3 MA's), (86, 42571), (104, 42643), (107, 42655), (116, 42691), (129, 42766), (141, 42805), (162, 42877),

Gene: Suzy\_32 Start: 29154, Stop: 29561, Start Num: 73

Candidate Starts for Suzy\_32:

(Start: 58 @29103 has 7 MA's), (Start: 73 @29154 has 1 MA's), (81, 29196), (102, 29271), (108, 29295), (112, 29313), (115, 29322), (119, 29337), (124, 29358), (135, 29400), (154, 29457), (172, 29550),

Gene: SwainyDoc\_19 Start: 15459, Stop: 15938, Start Num: 60

Candidate Starts for SwainyDoc\_19:

(15, 15252), (17, 15270), (40, 15429), (Start: 60 @15459 has 55 MA's), (Start: 76 @15522 has 3 MA's), (78, 15534), (79, 15537), (96, 15597), (110, 15651), (112, 15663), (113, 15666), (119, 15687), (130, 15756), (131, 15759), (141, 15792), (159, 15846), (160, 15855),

Gene: SynergyX\_19 Start: 15462, Stop: 15941, Start Num: 60

Candidate Starts for SynergyX\_19:

(15, 15255), (17, 15273), (40, 15432), (Start: 60 @15462 has 55 MA's), (Start: 76 @15525 has 3 MA's), (78, 15537), (79, 15540), (96, 15600), (110, 15654), (112, 15666), (113, 15669), (119, 15690), (130, 15759), (131, 15762), (141, 15795), (159, 15849), (160, 15858),

Gene: TA17A\_19 Start: 16675, Stop: 17157, Start Num: 57

Candidate Starts for TA17A\_19:

(Start: 57 @16675 has 31 MA's), (Start: 66 @16702 has 3 MA's), (78, 16762), (80, 16768), (85, 16789), (86, 16792), (108, 16873), (114, 16897), (118, 16912), (123, 16945), (138, 17011), (160, 17098), (161, 17104), (168, 17143),

Gene: Taptic\_13 Start: 14461, Stop: 14925, Start Num: 58

Candidate Starts for Taptic\_13:

(24, 14371), (33, 14404), (Start: 38 @14437 has 1 MA's), (Start: 58 @14461 has 7 MA's), (70, 14494), (Start: 73 @14512 has 1 MA's), (77, 14542), (82, 14557), (94, 14602), (98, 14617), (103, 14638), (104, 14641), (106, 14650), (112, 14674), (113, 14677), (115, 14683), (118, 14695), (130, 14767), (131, 14770), (137, 14788), (141, 14803), (159, 14857), (160, 14866),

Gene: Teal\_38 Start: 42901, Stop: 43440, Start Num: 49

Candidate Starts for Teal\_38:

(11, 42652), (16, 42715), (20, 42751), (21, 42760), (Start: 46 @42892 has 27 MA's), (Start: 49 @42901 has 36 MA's), (Start: 76 @42997 has 3 MA's), (86, 43039), (104, 43111), (107, 43123), (116, 43159), (141, 43273), (162, 43345),

Gene: Terapin\_33 Start: 27978, Stop: 28466, Start Num: 53

Candidate Starts for Terapin\_33:

(Start: 53 @27978 has 7 MA's), (78, 28074), (85, 28101), (90, 28116), (104, 28170), (107, 28182), (111, 28200), (119, 28224), (126, 28257), (128, 28266), (134, 28284), (156, 28356), (161, 28383), (166, 28401), (174, 28446),

Gene: Tinciduntolum\_20 Start: 16794, Stop: 17276, Start Num: 57

Candidate Starts for Tinciduntolum\_20:

(Start: 57 @16794 has 31 MA's), (61, 16809), (Start: 66 @16821 has 3 MA's), (78, 16881), (80, 16887), (85, 16908), (86, 16911), (108, 16992), (114, 17016), (118, 17031), (123, 17064), (138, 17130), (160, 17217), (161, 17223), (168, 17262),

Gene: TinyTerror\_19 Start: 15461, Stop: 15940, Start Num: 60

Candidate Starts for TinyTerror\_19:

(15, 15254), (17, 15272), (40, 15431), (Start: 60 @15461 has 55 MA's), (Start: 76 @15524 has 3 MA's), (78, 15536), (79, 15539), (96, 15599), (110, 15653), (112, 15665), (113, 15668), (119, 15689), (130, 15758), (131, 15761), (141, 15794), (159, 15848), (160, 15857),

Gene: Tres\_19 Start: 16675, Stop: 17157, Start Num: 57

Candidate Starts for Tres\_19:

(Start: 57 @16675 has 31 MA's), (61, 16690), (Start: 66 @16702 has 3 MA's), (78, 16762), (80, 16768), (85, 16789), (86, 16792), (108, 16873), (114, 16897), (118, 16912), (123, 16945), (138, 17011), (160, 17098), (161, 17104), (168, 17143),

Gene: TuertoX\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for TuertoX\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: Tydolla\_19 Start: 16199, Stop: 16678, Start Num: 60

Candidate Starts for Tydolla\_19:

(15, 15992), (17, 16010), (40, 16169), (Start: 60 @16199 has 55 MA's), (Start: 76 @16262 has 3 MA's), (78, 16274), (79, 16277), (96, 16337), (110, 16391), (112, 16403), (113, 16406), (119, 16427), (130, 16496), (131, 16499), (141, 16532), (159, 16586), (160, 16595),

Gene: Vasanti\_21 Start: 18528, Stop: 18974, Start Num: 64

Candidate Starts for Vasanti\_21:

(3, 17829), (4, 17865), (12, 18231), (16, 18285), (22, 18366), (25, 18384), (26, 18387), (56, 18504), (Start: 64 @18528 has 21 MA's), (82, 18603), (99, 18663), (104, 18684), (108, 18699), (118, 18738), (119, 18741), (133, 18798), (135, 18804), (160, 18885), (161, 18894), (162, 18897), (166, 18912), (170, 18936),

Gene: Vic9\_00019 Start: 17115, Stop: 17597, Start Num: 57

Candidate Starts for Vic9\_00019:

(Start: 57 @17115 has 31 MA's), (61, 17130), (Start: 66 @17142 has 3 MA's), (78, 17202), (80, 17208), (85, 17229), (86, 17232), (108, 17313), (114, 17337), (118, 17352), (123, 17385), (138, 17451), (160, 17538), (161, 17544),

Gene: West99\_19 Start: 16795, Stop: 17277, Start Num: 57

Candidate Starts for West99\_19:

(Start: 57 @16795 has 31 MA's), (61, 16810), (Start: 66 @16822 has 3 MA's), (78, 16882), (80, 16888), (85, 16909), (86, 16912), (108, 16993), (114, 17017), (118, 17032), (123, 17065), (138, 17131), (160, 17218), (161, 17224), (168, 17263),

Gene: Whiteclaw\_22 Start: 18974, Stop: 19420, Start Num: 64

Candidate Starts for Whiteclaw\_22:

(12, 18677), (16, 18731), (22, 18812), (26, 18833), (56, 18950), (Start: 64 @18974 has 21 MA's), (82, 19049), (104, 19130), (108, 19145), (119, 19187), (135, 19250), (144, 19277), (146, 19283), (160, 19331), (161, 19340), (162, 19343), (170, 19382),

Gene: Woes\_38 Start: 42952, Stop: 43491, Start Num: 49

Candidate Starts for Woes\_38:

(11, 42703), (16, 42766), (20, 42802), (21, 42811), (Start: 46 @42943 has 27 MA's), (Start: 49 @42952 has 36 MA's), (Start: 76 @43048 has 3 MA's), (86, 43090), (104, 43162), (107, 43174), (116, 43210), (141, 43324), (162, 43396),

Gene: Wooper\_18 Start: 15258, Stop: 15719, Start Num: 54

Candidate Starts for Wooper\_18:

(11, 14994), (13, 15015), (14, 15027), (40, 15219), (Start: 54 @15258 has 7 MA's), (Start: 60 @15264 has 55 MA's), (104, 15432), (111, 15462), (118, 15486), (139, 15588), (152, 15627), (159, 15648), (160, 15657),

Gene: Worcestershire\_38 Start: 40178, Stop: 40729, Start Num: 46

Candidate Starts for Worcestershire\_38:

(Start: 46 @40178 has 27 MA's), (Start: 49 @40187 has 36 MA's), (100, 40382), (107, 40409), (111, 40427), (116, 40445), (123, 40484), (134, 40535), (137, 40544), (144, 40562), (162, 40631), (169, 40670),

Gene: Xenia2\_36 Start: 30443, Stop: 30931, Start Num: 52

Candidate Starts for Xenia2\_36:

(23, 30329), (27, 30344), (28, 30356), (29, 30359), (32, 30368), (43, 30419), (Start: 52 @30443 has 2 MA's), (Start: 76 @30533 has 3 MA's), (82, 30557), (111, 30671), (117, 30689), (119, 30695), (130, 30743), (134, 30755), (140, 30776), (148, 30800), (160, 30842), (169, 30890),

Gene: Yago84\_16 Start: 14151, Stop: 14621, Start Num: 47

Candidate Starts for Yago84\_16:

(6, 13827), (Start: 47 @14151 has 12 MA's), (65, 14172), (67, 14175), (85, 14262), (91, 14283), (105, 14340), (124, 14433), (129, 14457), (135, 14475), (139, 14490), (141, 14496), (144, 14499), (152,



14529), (159, 14550),

Gene: Yahalom\_19 Start: 15473, Stop: 15952, Start Num: 60

Candidate Starts for Yahalom\_19:

(15, 15266), (17, 15284), (40, 15443), (Start: 60 @15473 has 55 MA's), (Start: 76 @15536 has 3 MA's), (78, 15548), (79, 15551), (96, 15611), (110, 15665), (112, 15677), (113, 15680), (119, 15701), (130, 15770), (131, 15773), (141, 15806), (159, 15860), (160, 15869),

Gene: Yeet412\_22 Start: 18967, Stop: 19413, Start Num: 64

Candidate Starts for Yeet412\_22:

(12, 18670), (16, 18724), (22, 18805), (26, 18826), (56, 18943), (Start: 64 @18967 has 21 MA's), (82, 19042), (104, 19123), (105, 19129), (108, 19138), (112, 19156), (119, 19180), (135, 19243), (144, 19270), (146, 19276), (156, 19306), (160, 19324), (161, 19333), (162, 19336), (170, 19375),

Gene: Yeshua\_18 Start: 15241, Stop: 15696, Start Num: 60

Candidate Starts for Yeshua\_18:

(Start: 54 @15235 has 7 MA's), (Start: 60 @15241 has 55 MA's), (104, 15409), (111, 15439), (118, 15463), (139, 15565), (152, 15604), (159, 15625), (160, 15634),

Gene: Yinz\_19 Start: 15500, Stop: 15979, Start Num: 60

Candidate Starts for Yinz\_19:

(1, 14711), (2, 14747), (8, 15188), (11, 15245), (15, 15293), (17, 15311), (40, 15470), (Start: 60 @15500 has 55 MA's), (Start: 76 @15563 has 3 MA's), (78, 15575), (79, 15578), (96, 15638), (112, 15704), (113, 15707), (119, 15728), (130, 15797), (131, 15800), (141, 15833), (159, 15887), (160, 15896),

Gene: Zenteno07\_21 Start: 14952, Stop: 15446, Start Num: 60

Candidate Starts for Zenteno07\_21:

(7, 14622), (11, 14700), (17, 14766), (59, 14949), (Start: 60 @14952 has 55 MA's), (Start: 62 @14955 has 1 MA's), (68, 14970), (78, 15024), (85, 15051), (111, 15150), (121, 15204), (135, 15303), (137, 15309), (139, 15318), (157, 15372), (159, 15378),