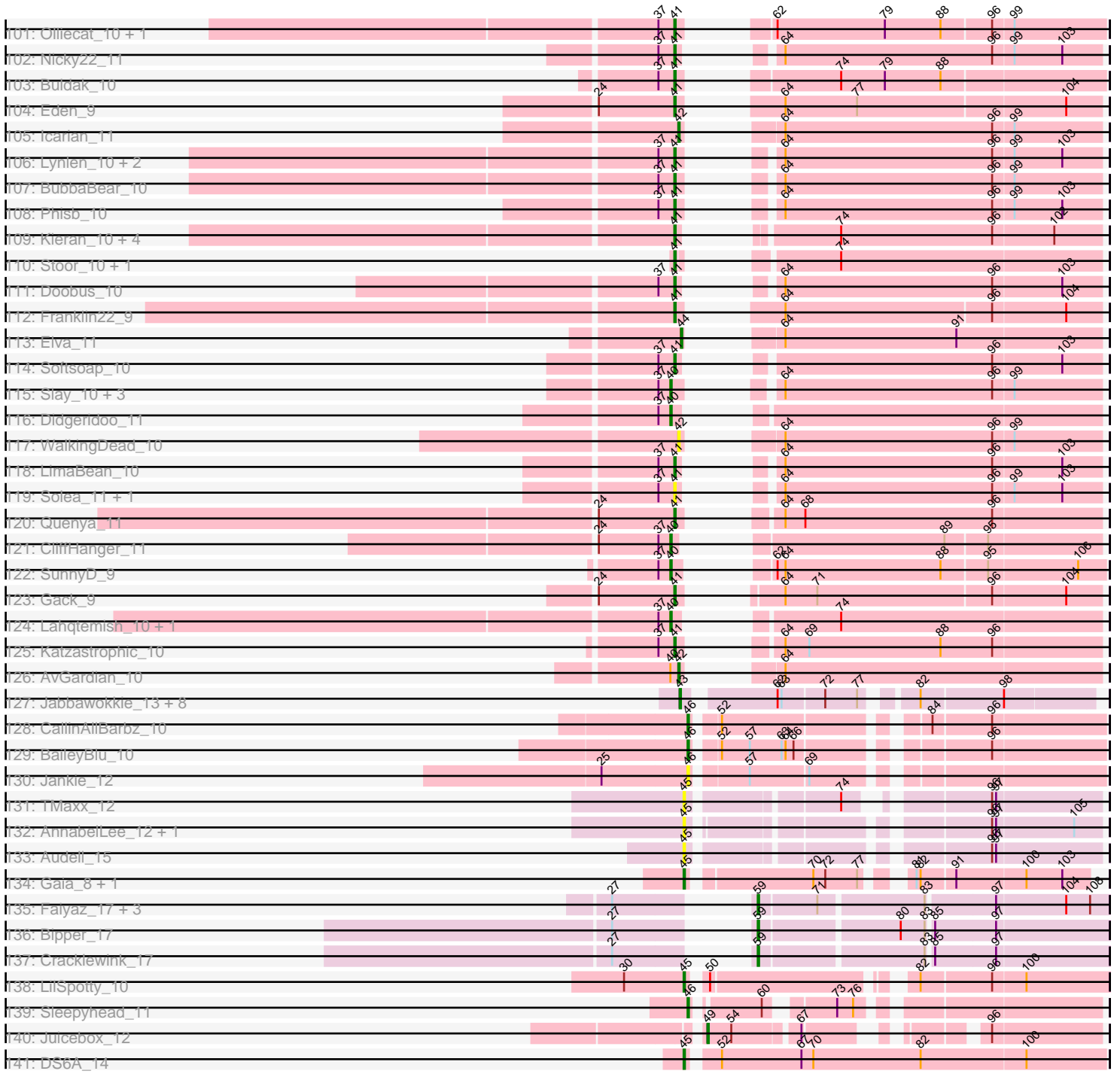






Pham 222776



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 222776 Report

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

Pham number 222776 has 313 members, 74 are drafts.

Phages represented in each track:

- Track 1 : Orcanus\_11, Westrich\_12
- Track 2 : KendraB23\_12, Toad24\_12
- Track 3 : Eesa\_11
- Track 4 : Gravel\_12, Pelletreau\_12
- Track 5 : TaylorSipht\_11
- Track 6 : Cygnet\_11
- Track 7 : LittleTokyo\_11
- Track 8 : Melons\_12, Polka\_11, Cote\_12, Coral\_11
- Track 9 : Kuleana\_11
- Track 10 : Bible12\_12, Colusalem\_11, Jerole\_12
- Track 11 : Amelia\_12, Bedetta\_12, Lunar\_12, HannahPhantana\_12
- Track 12 : Daob\_12, OtsoOtso\_11
- Track 13 : Antrice\_11
- Track 14 : Zhuangyuan\_13
- Track 15 : Kepler\_11
- Track 16 : Glotell\_10, KHumphrey\_10
- Track 17 : Andrew\_11
- Track 18 : PhluffyCoco\_10, DanHam62\_10, HamCheese\_10, Camara\_10, RedFox\_10
- Track 19 : StuartMinion\_10
- Track 20 : Juno112\_10, AmiCi24\_10, Atlantica\_10
- Track 21 : Leona\_10, Rattail\_10
- Track 22 : Babushka\_10
- Track 23 : Renna12\_11
- Track 24 : BruceLethal\_9
- Track 25 : PHL060L00\_09, Lauchelly\_9
- Track 26 : SKKY\_9
- Track 27 : PHL010M04\_09
- Track 28 : P101A\_9, P100.1\_9, P105\_9, DrParker\_9
- Track 29 : Wizzo\_9
- Track 30 : Enoki\_9, PAS50\_9, P100D\_9, PHL067M10\_09
- Track 31 : P104B\_9, LilBandit\_9
- Track 32 : PHL111M01\_09, P9.1\_9
- Track 33 : PHL071N05\_09, P108C\_9, P14.4\_9, Enochoraptor\_9, Pirate\_9, Aquarius\_9
- Track 34 : MrAK\_9
- Track 35 : Attacne\_9

- Track 36 : Cota\_9, Keiki\_9
- Track 37 : Supernova\_9
- Track 38 : P106I\_9, P106L\_9, P106M\_9, P106C\_9, P106A\_9
- Track 39 : P107A\_9
- Track 40 : Solid\_9, P104A\_9, Procrass1\_9, MEAK\_9
- Track 41 : PHL113M01\_09
- Track 42 : Kubed\_9, PHL112N00\_09
- Track 43 : P107C\_9, ATCC29399BC\_9
- Track 44 : PHL114L00\_09
- Track 45 : P100A\_9
- Track 46 : Ouroboros\_9
- Track 47 : ATCC29399BT\_9
- Track 48 : QueenBey\_9
- Track 49 : Stormborn\_9
- Track 50 : Rileysaurus\_9
- Track 51 : Moyashi\_9
- Track 52 : Leviosa\_9
- Track 53 : PA6\_9
- Track 54 : P1.1\_9
- Track 55 : PAD20\_9
- Track 56 : PHL037M02\_09
- Track 57 : AikoCarson\_10, Emalyn\_10, Amok\_10, BillDoor\_13, Yarn\_10, Yakult\_12, AndPeggy\_10
- Track 58 : Agatha\_11, GoldHunter\_12, Burnsey\_11
- Track 59 : Elliott\_11, Cozz\_11, Nina\_12, Axym\_11, Starburst\_12, Carsonalex\_12, MunkgeeRoachy\_11, Sopespian\_11, RedBaron\_12, Socotra\_12, Typhonomachy\_12, PsychoKiller\_11
- Track 60 : Nodigi\_13, Hexbug\_13, Orla\_13
- Track 61 : Bavidard\_11, Feastonyeet\_10, Vine\_12, KayGee\_11, BigChungus\_10, Elinal\_12, Yucky\_13
- Track 62 : Quasar\_11
- Track 63 : ChocoMunchkin\_11, CanesSauce\_11
- Track 64 : SteamedHams\_13, Tolls\_13, GTE2\_09
- Track 65 : Mayweather\_12, CherryonLim\_12, MAnor\_11, SheckWes\_10, Pons\_11
- Track 66 : Jamzy\_14, GiKK\_14, Button\_12
- Track 67 : Lauer\_10
- Track 68 : ChickenTender\_13
- Track 69 : Biskit\_12, SweatNTears\_13, Buttrmlkdreams\_11, Troje\_11, Yummy\_12, MScarn\_13, SketchMex\_10, Blondies\_11, Horseradish\_12
- Track 70 : Azira\_13, Nibbles\_13, Survivors\_13, Zareef\_15, MaVan\_13
- Track 71 : RanchParmCat\_14, Margaret\_14
- Track 72 : Dre3\_11, Cleo\_11, Gibbous\_11
- Track 73 : SummitAcademy\_10, PotPie\_11
- Track 74 : HippoPololi\_13
- Track 75 : Fribs8\_12
- Track 76 : Posh\_12, Wrigley\_12, Pytheas\_12, BeeGee\_12, LonelyBoi\_12, Jablanski\_12
- Track 77 : Cashline\_12
- Track 78 : Pollux\_12, Bradissa\_12, Floral\_12, BritBrat\_12, Confidence\_12, EMSquaredA\_12, EnalisNailo\_12, Lilas\_12, Marteena\_12
- Track 79 : Angelique\_12
- Track 80 : Lucky10\_10, Morkie\_10, PhorbesPhlower\_10
- Track 81 : Ecliptus\_11, ODay\_11

- Track 82 : BearBQ\_11, MortyNRick\_11, Birdsong\_11
- Track 83 : Crater\_11, Apricot\_11
- Track 84 : Kuwabara\_11
- Track 85 : Keelan\_41
- Track 86 : Guey18\_48, Volt\_45, Fryberger\_43, Ronaldo\_46, Ziko\_46
- Track 87 : DirtyBubble\_10, Stromboli\_10, BabyYoda\_10
- Track 88 : Jovita\_10, QMacho\_11, Eula\_10
- Track 89 : Teagster\_9, Shayna\_9
- Track 90 : BAjuniper\_10
- Track 91 : Vitas\_9, Brahms\_9, Bernstein\_9, Rollins\_9, Coltrane\_9, Armstrong\_9, Skylord\_9, Clayda5\_9
- Track 92 : Cashington\_10
- Track 93 : Abigail\_10, Burritobowl\_10, Albright\_10, Johnathan\_10, Avocadoman\_10, Bengal\_10
- Track 94 : FlameThrower\_10, Celaena\_10, Bachaco\_10
- Track 95 : Arroyo\_11
- Track 96 : Kate33\_10, IndyLu\_10
- Track 97 : DickRichards\_10, CroZenni\_10, PhigPhack\_10, SansAfet\_10
- Track 98 : MsUbiquitous\_10, CupcakePrincess\_10, Jabb\_10, TukTuk\_10
- Track 99 : Akino08\_18, Loviatar\_18
- Track 100 : BabyDaisy\_11
- Track 101 : Olliecat\_10, Squircl\_10
- Track 102 : Nicky22\_11
- Track 103 : Buldak\_10
- Track 104 : Eden\_9
- Track 105 : Icarian\_11
- Track 106 : Lynlen\_10, Albedo\_10, Kenzers\_10
- Track 107 : BubbaBear\_10
- Track 108 : Phisb\_10
- Track 109 : Kieran\_10, ChiliPepper\_10, Sharkboy\_10, Dismas\_10, Rona\_10
- Track 110 : Stoor\_10, SanaSana\_11
- Track 111 : Doobus\_10
- Track 112 : Franklin22\_9
- Track 113 : Elva\_11
- Track 114 : Softsoap\_10
- Track 115 : Slay\_10, Finalfrontier\_11, SarBear\_10, Swervy\_10
- Track 116 : Didgeridoo\_11
- Track 117 : WalkingDead\_10
- Track 118 : LimaBean\_10
- Track 119 : Solea\_11, Milomuff\_11
- Track 120 : Quenya\_11
- Track 121 : CliffHanger\_11
- Track 122 : SunnyD\_9
- Track 123 : Gack\_9
- Track 124 : Lahqtemish\_10, PastaFagioli\_10
- Track 125 : Katzastrophic\_10
- Track 126 : AvGardian\_10
- Track 127 : Jabbawokkie\_13, Avani\_12, Demsculpinboyz\_12, Yoshi\_12, Soul22\_12, Che9d\_12, Blarby\_13, Zapner\_13, SilverChicken\_12
- Track 128 : CallinAllBarbz\_10
- Track 129 : BaileyBlu\_10
- Track 130 : Jankie\_12
- Track 131 : TMaxx\_12

- Track 132 : AnnabelLee\_12, Neuville\_12
- Track 133 : Audell\_15
- Track 134 : Gaia\_8, Nebkiss\_8
- Track 135 : Faiyaz\_17, Hilltopfarm\_17, AuntGwenStacy\_17, Typha\_17
- Track 136 : Bipper\_17
- Track 137 : Cracklewink\_17
- Track 138 : LilSpotty\_10
- Track 139 : Sleepyhead\_11
- Track 140 : Juicebox\_12
- Track 141 : DS6A\_14

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

The start number called the most often in the published annotations is 41, it was called in 101 of the 239 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abigail\_10, Agatha\_11, AikoCarson\_10, Albedo\_10, Albright\_10, Amok\_10, AndPeggy\_10, Armstrong\_9, Arroyo\_11, Avocadoman\_10, Axym\_11, Azira\_13, Bachaco\_10, Bavidard\_11, Bengal\_10, Bernstein\_9, BigChungus\_10, BillDoor\_13, Biskit\_12, Blondies\_11, Brahms\_9, BubbaBear\_10, Buldak\_10, Burnsey\_11, Burritobowl\_10, Button\_12, Buttrmlkdreams\_11, Carsonalex\_12, Cashington\_10, Celaena\_10, CherryonLim\_12, ChickenTender\_13, ChiliPepper\_10, Clayda5\_9, Cleo\_11, Coltrane\_9, Cozz\_11, CroZenni\_10, CupcakePrincess\_10, DickRichards\_10, Dismas\_10, Doobus\_10, Dre3\_11, Eden\_9, Elinal\_12, Elliott\_11, Emalyn\_10, Eula\_10, Feastonyeet\_10, FlameThrower\_10, Franklin22\_9, Fribs8\_12, GTE2\_09, Gack\_9, GiKK\_14, Gibbous\_11, GoldHunter\_12, Hexbug\_13, HippoPololi\_13, Horseradish\_12, Jabb\_10, Jamzy\_14, Johnathan\_10, Jovita\_10, Katzastrophic\_10, KayGee\_11, Kenzers\_10, Kieran\_10, LimaBean\_10, Lynlen\_10, MAnor\_11, MScarn\_13, MaVan\_13, Margaret\_14, Mayweather\_12, Milomuff\_11, MsUbiquitous\_10, MunkgeeRoachy\_11, Nibbles\_13, Nicky22\_11, Nina\_12, Nodigi\_13, Olliecat\_10, Orla\_13, PhigPhack\_10, Phisb\_10, Pons\_11, PotPie\_11, PsychoKiller\_11, QMacho\_11, Quasar\_11, Quenya\_11, RanchParmCat\_14, RedBaron\_12, Rollins\_9, Rona\_10, SanaSana\_11, SansAfet\_10, Sharkboy\_10, SheckWes\_10, SketchMex\_10, Skylord\_9, Socotra\_12, Softsoap\_10, Solea\_11, Sopespian\_11, Squiracle\_10, Starburst\_12, SteamedHams\_13, Stoor\_10, SummitAcademy\_10, Survivors\_13, SweatNTears\_13, Tolls\_13, Troje\_11, TukTuk\_10, Typhonmarchy\_12, Vine\_12, Vitas\_9, Yakult\_12, Yarn\_10, Yucky\_13, Yummy\_12, Zareef\_15,

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

- CanesSauce\_11, ChocoMunchkin\_11, Lauer\_10,

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

- ATCC29399BC\_9, ATCC29399BT\_9, Akino08\_18, Amelia\_12, AmiCi24\_10, Andrew\_11, Angelique\_12, AnnabelLee\_12, Antrice\_11, Apricot\_11, Aquarius\_9, Atlantica\_10, Attacne\_9, Audell\_15, AuntGwenStacy\_17, AvGardian\_10, Avani\_12, BAjuniper\_10, Babushka\_10, BabyDaisy\_11, BabyYoda\_10, BaileyBlu\_10, BearBQ\_11, Bedetta\_12, BeeGee\_12, Bibble12\_12, Bipper\_17, Birdsong\_11, Blarby\_13, Bradissa\_12, BritBrat\_12, BruceLethal\_9, CallinAllBarbz\_10, Camara\_10,

Cashline\_12, Che9d\_12, CliffHanger\_11, Colusalem\_11, Confidence\_12, Coral\_11, Cota\_9, Cote\_12, Cracklewink\_17, Crater\_11, Cygnet\_11, DS6A\_14, DanHam62\_10, Daob\_12, Demsculpinboyz\_12, Didgeridoo\_11, DirtyBubble\_10, DrParker\_9, EMSquaredA\_12, Ecliptus\_11, Eesa\_11, Elva\_11, EnalisNailo\_12, Enochoraptor\_9, Enoki\_9, Faiyaz\_17, Finalfrontier\_11, Floral\_12, Fryberger\_43, Gaia\_8, Glotell\_10, Gravel\_12, Guey18\_48, HamCheese\_10, HannahPhantana\_12, Hilltopfarm\_17, Icarian\_11, IndyLu\_10, Jabbawokkie\_13, Jablanski\_12, Jankie\_12, Jerole\_12, Juicebox\_12, Juno112\_10, KHumphrey\_10, Kate33\_10, Keelan\_41, Keiki\_9, KendraB23\_12, Kepler\_11, Kubed\_9, Kuleana\_11, Kuwabara\_11, Lahqtemish\_10, Lauchelly\_9, Leona\_10, Leviosa\_9, LilBandit\_9, LilSpotty\_10, Lilas\_12, LittleTokyo\_11, LonelyBoi\_12, Loviatar\_18, Lucky10\_10, Lunar\_12, MEAK\_9, Marteena\_12, Melons\_12, Morkie\_10, MortyNRick\_11, Moyashi\_9, MrAK\_9, Nebkiss\_8, Neuville\_12, ODay\_11, Orcanus\_11, OtsoOtso\_11, Ouroboros\_9, P1.1\_9, P100.1\_9, P100A\_9, P100D\_9, P101A\_9, P104A\_9, P104B\_9, P105\_9, P106A\_9, P106C\_9, P106I\_9, P106L\_9, P106M\_9, P107A\_9, P107C\_9, P108C\_9, P14.4\_9, P9.1\_9, PA6\_9, PAD20\_9, PAS50\_9, PHL010M04\_09, PHL037M02\_09, PHL060L00\_09, PHL067M10\_09, PHL071N05\_09, PHL111M01\_09, PHL112N00\_09, PHL113M01\_09, PHL114L00\_09, PastaFagioli\_10, Pelletreau\_12, PhluffyCoco\_10, PhorbPhlower\_10, Pirate\_9, Polka\_11, Pollux\_12, Posh\_12, Procrass1\_9, Pytheas\_12, QueenBey\_9, Rattail\_10, RedFox\_10, Renna12\_11, Rileysaurus\_9, Ronaldo\_46, SKKY\_9, SarBear\_10, Shayna\_9, SilverChicken\_12, Slay\_10, Sleepyhead\_11, Solid\_9, Soul22\_12, Stormborn\_9, Stromboli\_10, StuartMinion\_10, SunnyD\_9, Supernova\_9, Swervy\_10, TMaxx\_12, TaylorSipht\_11, Teagster\_9, Toad24\_12, Typha\_17, Volt\_45, WalkingDead\_10, Westrich\_12, Wizzo\_9, Wrigley\_12, Yoshi\_12, Zapner\_13, Zhuangyuan\_13, Ziko\_46,

### Summary by start number:

#### Start 29:

- Found in 4 of 313 ( 1.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Akino08\_18 (EB), Loviatar\_18 (EB),

#### Start 33:

- Found in 1 of 313 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 239
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lauer\_10 (CT),

#### Start 37:

- Found in 67 of 313 ( 21.4% ) of genes in pham
- Manual Annotations of this start: 1 of 239
- Called 3.0% of time when present
- Phage (with cluster) where this start called: Daob\_12 (AS2), OtsoOtso\_11 (AS2),

#### Start 38:

- Found in 6 of 313 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 6 of 239
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fryberger\_43 (DP), Guey18\_48 (DP), Keelan\_41 (DP), Ronaldo\_46 (DP), Volt\_45 (DP), Ziko\_46 (DP),



Start 39:

- Found in 15 of 313 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 6 of 239
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Coral\_11 (AS2), Cote\_12 (AS2), Kepler\_11 (AS2), Kuleana\_11 (AS2), Melons\_12 (AS2), Polka\_11 (AS2),

Start 40:

- Found in 46 of 313 ( 14.7% ) of genes in pham
- Manual Annotations of this start: 16 of 239
- Called 41.3% of time when present
- Phage (with cluster) where this start called: Amelia\_12 (AS2), BAjuniper\_10 (EB), BabyDaisy\_11 (EB), Bedetta\_12 (AS2), CliffHanger\_11 (EB), Didgeridoo\_11 (EB), Finalfrontier\_11 (EB), HannahPhantana\_12 (AS2), IndyLu\_10 (EB), Kate33\_10 (EB), Lahqtemish\_10 (EB), Lunar\_12 (AS2), PastaFagioli\_10 (EB), SarBear\_10 (EB), Shayna\_9 (EB), Slay\_10 (EB), SunnyD\_9 (EB), Swervy\_10 (EB), Teagster\_9 (EB),

Start 41:

- Found in 127 of 313 ( 40.6% ) of genes in pham
- Manual Annotations of this start: 101 of 239
- Called 97.6% of time when present
- Phage (with cluster) where this start called: Abigail\_10 (EB), Agatha\_11 (CT), AikoCarson\_10 (CT), Albedo\_10 (EB), Albright\_10 (EB), Amok\_10 (CT), AndPeggy\_10 (CT), Armstrong\_9 (EB), Arroyo\_11 (EB), Avocadoman\_10 (EB), Axym\_11 (CT), Azira\_13 (CT), Bachaco\_10 (EB), Bavilard\_11 (CT), Bengal\_10 (EB), Bernstein\_9 (EB), BigChungus\_10 (CT), BillDoor\_13 (CT), Biskit\_12 (CT), Blondies\_11 (CT), Brahms\_9 (EB), BubbaBear\_10 (EB), Buldak\_10 (EB), Burnsey\_11 (CT), Burritobowl\_10 (EB), Button\_12 (CT), Buttrmlkdreams\_11 (CT), Carsonalex\_12 (CT), Cashington\_10 (EB), Celaena\_10 (EB), CherryonLim\_12 (CT), ChickenTender\_13 (CT), ChiliPepper\_10 (EB), Clayda5\_9 (EB), Cleo\_11 (CT), Coltrane\_9 (EB), Cozz\_11 (CT), CroZenni\_10 (EB), CupcakePrincess\_10 (EB), DickRichards\_10 (EB), Dismas\_10 (EB), Doobus\_10 (EB), Dre3\_11 (CT), Eden\_9 (EB), Elinal\_12 (CT), Elliott\_11 (CT), Emalyn\_10 (CT), Eula\_10 (EB), Feastonyeet\_10 (CT), FlameThrower\_10 (EB), Franklin22\_9 (EB), Fribs8\_12 (CT), GTE2\_09 (CT), Gack\_9 (EB), GiKK\_14 (CT), Gibbous\_11 (CT), GoldHunter\_12 (CT), Hexbug\_13 (CT), HippoPololi\_13 (CT), Horseradish\_12 (CT), Jabb\_10 (EB), Jamzy\_14 (CT), Johnathan\_10 (EB), Jovita\_10 (EB), Katzastrophic\_10 (EB), KayGee\_11 (CT), Kenzers\_10 (EB), Kieran\_10 (EB), LimaBean\_10 (EB), Lynlen\_10 (EB), MAnor\_11 (CT), MScarn\_13 (CT), MaVan\_13 (CT), Margaret\_14 (CT), Mayweather\_12 (CT), Milomuff\_11 (EB), MsUbiquitous\_10 (EB), MunkgeeRoachy\_11 (CT), Nibbles\_13 (CT), Nicky22\_11 (EB), Nina\_12 (CT), Nodigi\_13 (CT), Olliecat\_10 (EB), Orla\_13 (CT), PhigPhack\_10 (EB), Phisb\_10 (EB), Pons\_11 (CT), PotPie\_11 (CT), PsychoKiller\_11 (CT), QMacho\_11 (EB), Quasar\_11 (CT), Quenya\_11 (EB), RanchParmCat\_14 (CT), RedBaron\_12 (CT), Rollins\_9 (EB), Rona\_10 (EB), SanaSana\_11 (EB), SansAfet\_10 (EB), Sharkboy\_10 (EB), SheckWes\_10 (CT), SketchMex\_10 (CT), Skylord\_9 (EB), Socotra\_12 (CT), Softsoap\_10 (EB), Solea\_11 (EB), Sopespian\_11 (CT), Squircle\_10 (EB), Starburst\_12 (CT), SteamedHams\_13 (CT), Stoor\_10 (EB), SummitAcademy\_10 (CT), Survivors\_13 (CT), SweatNTears\_13 (CT), Tolls\_13 (CT), Troje\_11 (CT), TukTuk\_10 (EB), Typhonmarchy\_12 (CT), Vine\_12 (CT), Vitas\_9 (EB), Yakult\_12 (CT), Yarn\_10 (CT), Yucky\_13 (CT), Yummy\_12 (CT), Zareef\_15 (CT),

Start 42:

- Found in 49 of 313 ( 15.7% ) of genes in pham
- Manual Annotations of this start: 16 of 239
- Called 75.5% of time when present
- Phage (with cluster) where this start called: AmiCi24\_10 (AS3), Andrew\_11 (AS3), Antrice\_11 (AS2), Atlantica\_10 (AS3), AvGardian\_10 (EB), Babushka\_10 (AS3), BabyYoda\_10 (EB), Bibble12\_12 (AS2), Camara\_10 (AS3), Colusalem\_11 (AS2), Cygnet\_11 (AS2), DanHam62\_10 (AS3), DirtyBubble\_10 (EB), Eesa\_11 (AS1), Glotell\_10 (AS3), Gravel\_12 (AS1), HamCheese\_10 (AS3), Icarian\_11 (EB), Jerole\_12 (AS2), Juno112\_10 (AS3), KHumphrey\_10 (AS3), KendraB23\_12 (AS1), Leona\_10 (AS3), LittleTokyo\_11 (AS2), Orcanus\_11 (AS1), Pelletreau\_12 (AS1), PhluffyCoco\_10 (AS3), Rattail\_10 (AS3), RedFox\_10 (AS3), Renna12\_11 (AS3), Stromboli\_10 (EB), StuartMinion\_10 (AS3), TaylorSipht\_11 (AS1), Toad24\_12 (AS1), WalkingDead\_10 (EB), Westrich\_12 (AS1), Zhuangyuan\_13 (AS2),

#### Start 43:

- Found in 26 of 313 ( 8.3% ) of genes in pham
- Manual Annotations of this start: 24 of 239
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Angelique\_12 (CY1), Avani\_12 (F2), BeeGee\_12 (CY), Blarby\_13 (F), Bradissa\_12 (CY1), BritBrat\_12 (CY2), Cashline\_12 (CY), Che9d\_12 (F2), Confidence\_12 (CY1), Demsculpinboyz\_12 (F2), EMSquaredA\_12 (CY1), EnalisNailo\_12 (CY1), Floral\_12 (CY1), Jabbawokkie\_13 (F2), Jablanski\_12 (CY), Lilas\_12 (CY1), LonelyBoi\_12 (CY), Marteena\_12 (CY1), Pollux\_12 (CY1), Posh\_12 (CY), Pytheas\_12 (CY), SilverChicken\_12 (F2), Soul22\_12 (F2), Wrigley\_12 (CY), Yoshi\_12 (F2), Zapner\_13 (F2),

#### Start 44:

- Found in 1 of 313 ( 0.3% ) of genes in pham
- Manual Annotations of this start: 1 of 239
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Elva\_11 (EB),

#### Start 45:

- Found in 8 of 313 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 4 of 239
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AnnabelLee\_12 (FR), Audell\_15 (FR), DS6A\_14 (singleton), Gaia\_8 (X), LilSpotty\_10 (singleton), Nebkiss\_8 (X), Neuville\_12 (FR), TMaxx\_12 (FR),

#### Start 46:

- Found in 4 of 313 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 3 of 239
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BaileyBlu\_10 (FP), CallinAllBarbz\_10 (FP), Jankie\_12 (FP), Sleepyhead\_11 (singleton),

#### Start 47:

- Found in 9 of 313 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 8 of 239
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Apricot\_11 (DN3), BearBQ\_11 (DN), Birdsong\_11 (DN), Crater\_11 (DN3), Kuwabara\_11 (DN4), Lucky10\_10 (DH),

Morkie\_10 (DH), MortyNRick\_11 (DN), PhorbesPhlower\_10 (DH),

Start 48:

- Found in 5 of 313 ( 1.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 20.0% of time when present
- Phage (with cluster) where this start called: PHL037M02\_09 (BU),

Start 49:

- Found in 3 of 313 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 3 of 239
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ecliptus\_11 (DN), Juicebox\_12 (singleton), ODay\_11 (DN),

Start 51:

- Found in 65 of 313 ( 20.8% ) of genes in pham
- Manual Annotations of this start: 45 of 239
- Called 86.2% of time when present
- Phage (with cluster) where this start called: ATCC29399BC\_9 (BU), ATCC29399BT\_9 (BU), Aquarius\_9 (BU), Attacne\_9 (BU), BruceLethal\_9 (BU), Cota\_9 (BU), DrParker\_9 (BU), Enochoraptor\_9 (BU), Enoki\_9 (BU), Keiki\_9 (BU), Kubed\_9 (BU), Lauchelly\_9 (BU), Leviosa\_9 (BU), LilBandit\_9 (BU), MEAK\_9 (BU), Moyashi\_9 (BU), MrAK\_9 (BU), Ouroboros\_9 (BU), P1.1\_9 (BU), P100.1\_9 (BU), P100A\_9 (BU), P100D\_9 (BU), P101A\_9 (BU), P104A\_9 (BU), P104B\_9 (BU), P105\_9 (BU), P106A\_9 (BU), P106C\_9 (BU), P106I\_9 (BU), P106L\_9 (BU), P106M\_9 (BU), P107A\_9 (BU), P107C\_9 (BU), P108C\_9 (BU), P14.4\_9 (BU), P9.1\_9 (BU), PA6\_9 (BU), PAD20\_9 (BU), PAS50\_9 (BU), PHL010M04\_09 (BU), PHL060L00\_09 (BU), PHL067M10\_09 (BU), PHL071N05\_09 (BU), PHL111M01\_09 (BU), PHL112N00\_09 (BU), PHL113M01\_09 (BU), PHL114L00\_09 (BU), Pirate\_9 (BU), Procrass1\_9 (BU), QueenBey\_9 (BU), Rileysaurus\_9 (BU), SKKY\_9 (BU), Solid\_9 (BU), Stormborn\_9 (BU), Supernova\_9 (BU), Wizzo\_9 (BU),

Start 59:

- Found in 6 of 313 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 4 of 239
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AuntGwenStacy\_17 (Y), Bipper\_17 (Y), Cracklewink\_17 (Y), Faiyaz\_17 (Y), Hilltopfarm\_17 (Y), Typha\_17 (Y),

Start 63:

- Found in 116 of 313 ( 37.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 1.7% of time when present
- Phage (with cluster) where this start called: CanesSauce\_11 (CT), ChocoMunchkin\_11 (CT),

### Summary by clusters:

There are 21 clusters represented in this pham: DN, AS2, F2, AS3, DH, CY2, F, FR, FP, EB, BU, CY, DN3, Y, X, singleton, AS1, CY1, DN4, DP, CT,

Info for manual annotations of cluster AS1:

- Start number 42 was manually annotated 3 times for cluster AS1.

Info for manual annotations of cluster AS2:

- Start number 37 was manually annotated 1 time for cluster AS2.
- Start number 39 was manually annotated 6 times for cluster AS2.
- Start number 40 was manually annotated 3 times for cluster AS2.
- Start number 42 was manually annotated 1 time for cluster AS2.

Info for manual annotations of cluster AS3:

- Start number 42 was manually annotated 7 times for cluster AS3.

Info for manual annotations of cluster BU:

- Start number 51 was manually annotated 45 times for cluster BU.

Info for manual annotations of cluster CT:

- Start number 33 was manually annotated 1 time for cluster CT.
- Start number 41 was manually annotated 53 times for cluster CT.

Info for manual annotations of cluster CY:

- Start number 43 was manually annotated 7 times for cluster CY.

Info for manual annotations of cluster CY1:

- Start number 43 was manually annotated 9 times for cluster CY1.

Info for manual annotations of cluster CY2:

- Start number 43 was manually annotated 1 time for cluster CY2.

Info for manual annotations of cluster DH:

- Start number 47 was manually annotated 3 times for cluster DH.

Info for manual annotations of cluster DN:

- Start number 47 was manually annotated 2 times for cluster DN.
- Start number 49 was manually annotated 2 times for cluster DN.

Info for manual annotations of cluster DN3:

- Start number 47 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DN4:

- Start number 47 was manually annotated 1 time for cluster DN4.

Info for manual annotations of cluster DP:

- Start number 38 was manually annotated 6 times for cluster DP.

Info for manual annotations of cluster EB:

- Start number 40 was manually annotated 13 times for cluster EB.
- Start number 41 was manually annotated 48 times for cluster EB.
- Start number 42 was manually annotated 5 times for cluster EB.
- Start number 44 was manually annotated 1 time for cluster EB.

Info for manual annotations of cluster F2:

- Start number 43 was manually annotated 7 times for cluster F2.

Info for manual annotations of cluster FP:

- Start number 46 was manually annotated 2 times for cluster FP.

Info for manual annotations of cluster X:

- Start number 45 was manually annotated 2 times for cluster X.

Info for manual annotations of cluster Y:

- Start number 59 was manually annotated 4 times for cluster Y.

### **Gene Information:**

Gene: ATCC29399BC\_9 Start: 6452, Stop: 6742, Start Num: 51

Candidate Starts for ATCC29399BC\_9:

(Start: 51 @6452 has 45 MA's), (53, 6464), (55, 6470), (58, 6482), (62, 6500), (63, 6503), (67, 6518), (70, 6527), (71, 6530), (78, 6575), (84, 6617), (90, 6629), (103, 6713),

Gene: ATCC29399BT\_9 Start: 6448, Stop: 6738, Start Num: 51

Candidate Starts for ATCC29399BT\_9:

(48, 6442), (Start: 51 @6448 has 45 MA's), (55, 6466), (62, 6496), (67, 6514), (70, 6523), (71, 6526), (75, 6547), (84, 6613), (90, 6625), (93, 6649), (103, 6709),

Gene: Abigail\_10 Start: 7773, Stop: 8030, Start Num: 41

Candidate Starts for Abigail\_10:

(Start: 37 @7761 has 1 MA's), (Start: 41 @7773 has 101 MA's), (64, 7794), (96, 7950), (103, 8001),

Gene: Agatha\_11 Start: 7257, Stop: 7538, Start Num: 41

Candidate Starts for Agatha\_11:

(Start: 41 @7257 has 101 MA's),

Gene: AikoCarson\_10 Start: 6987, Stop: 7256, Start Num: 41

Candidate Starts for AikoCarson\_10:

(Start: 41 @6987 has 101 MA's),

Gene: Akino08\_18 Start: 7908, Stop: 8216, Start Num: 29

Candidate Starts for Akino08\_18:

(26, 7896), (29, 7908), (74, 8022), (96, 8136),

Gene: Albedo\_10 Start: 7645, Stop: 7905, Start Num: 41

Candidate Starts for Albedo\_10:

(Start: 37 @7633 has 1 MA's), (Start: 41 @7645 has 101 MA's), (64, 7669), (96, 7825), (99, 7840), (103, 7876),

Gene: Albright\_10 Start: 7654, Stop: 7911, Start Num: 41

Candidate Starts for Albright\_10:

(Start: 37 @7642 has 1 MA's), (Start: 41 @7654 has 101 MA's), (64, 7675), (96, 7831), (103, 7882),

Gene: Amelia\_12 Start: 8244, Stop: 8504, Start Num: 40

Candidate Starts for Amelia\_12:

(Start: 37 @8235 has 1 MA's), (Start: 39 @8241 has 6 MA's), (Start: 40 @8244 has 16 MA's), (Start: 42 @8250 has 16 MA's), (63, 8274), (74, 8319), (87, 8382), (91, 8394),

Gene: AmiCi24\_10 Start: 7655, Stop: 7909, Start Num: 42

Candidate Starts for AmiCi24\_10:

(6, 7397), (8, 7421), (10, 7457), (15, 7505), (32, 7619), (Start: 42 @7655 has 16 MA's), (63, 7679), (75, 7727), (77, 7736), (83, 7781), (91, 7799), (96, 7826),

Gene: Amok\_10 Start: 6987, Stop: 7256, Start Num: 41

Candidate Starts for Amok\_10:

(Start: 41 @6987 has 101 MA's),

Gene: AndPeggy\_10 Start: 7275, Stop: 7547, Start Num: 41

Candidate Starts for AndPeggy\_10:

(Start: 41 @7275 has 101 MA's),

Gene: Andrew\_11 Start: 8034, Stop: 8288, Start Num: 42

Candidate Starts for Andrew\_11:

(2, 7596), (3, 7704), (12, 7854), (16, 7905), (19, 7923), (32, 7998), (Start: 42 @8034 has 16 MA's), (63, 8058), (75, 8106), (83, 8160), (87, 8166), (91, 8178), (96, 8205),

Gene: Angelique\_12 Start: 8007, Stop: 8264, Start Num: 43

Candidate Starts for Angelique\_12:

(Start: 43 @8007 has 24 MA's), (69, 8088), (106, 8256),

Gene: AnnabelLee\_12 Start: 7464, Stop: 7730, Start Num: 45

Candidate Starts for AnnabelLee\_12:

(Start: 45 @7464 has 4 MA's), (96, 7650), (97, 7653), (105, 7710),

Gene: Antrice\_11 Start: 7990, Stop: 8244, Start Num: 42

Candidate Starts for Antrice\_11:

(32, 7954), (Start: 42 @7990 has 16 MA's), (63, 8014), (87, 8122), (94, 8155), (96, 8161),

Gene: Apricot\_11 Start: 7129, Stop: 7386, Start Num: 47

Candidate Starts for Apricot\_11:

(34, 7096), (Start: 47 @7129 has 8 MA's), (73, 7222), (78, 7243), (96, 7315), (97, 7318), (100, 7339), (104, 7369),

Gene: Aquarius\_9 Start: 6442, Stop: 6732, Start Num: 51

Candidate Starts for Aquarius\_9:

(Start: 51 @6442 has 45 MA's), (53, 6454), (55, 6460), (58, 6472), (62, 6490), (63, 6493), (67, 6508), (70, 6517), (71, 6520), (78, 6565), (84, 6607), (90, 6619),

Gene: Armstrong\_9 Start: 7425, Stop: 7688, Start Num: 41

Candidate Starts for Armstrong\_9:

(24, 7368), (Start: 41 @7425 has 101 MA's), (60, 7440), (64, 7455), (88, 7572), (100, 7632), (104, 7662),

Gene: Arroyo\_11 Start: 8124, Stop: 8381, Start Num: 41

Candidate Starts for Arroyo\_11:

(Start: 37 @8112 has 1 MA's), (Start: 41 @8124 has 101 MA's), (64, 8145), (95, 8298), (96, 8301), (99, 8316), (103, 8352),

Gene: Atlantica\_10 Start: 7655, Stop: 7909, Start Num: 42

Candidate Starts for Atlantica\_10:

(6, 7397), (8, 7421), (10, 7457), (15, 7505), (32, 7619), (Start: 42 @7655 has 16 MA's), (63, 7679), (75, 7727), (77, 7736), (83, 7781), (91, 7799), (96, 7826),

Gene: Attacne\_9 Start: 6453, Stop: 6743, Start Num: 51

Candidate Starts for Attacne\_9:

(Start: 51 @6453 has 45 MA's), (53, 6465), (55, 6471), (58, 6483), (62, 6501), (63, 6504), (67, 6519), (70, 6528), (71, 6531), (78, 6576), (90, 6630), (93, 6654),

Gene: Audell\_15 Start: 10801, Stop: 11070, Start Num: 45

Candidate Starts for Audell\_15:

(Start: 45 @10801 has 4 MA's), (96, 10990), (97, 10993),

Gene: AuntGwenStacy\_17 Start: 11749, Stop: 11997, Start Num: 59

Candidate Starts for AuntGwenStacy\_17:

(27, 11692), (Start: 59 @11749 has 4 MA's), (71, 11791), (83, 11866), (97, 11914), (104, 11965), (108, 11983),

Gene: AvGardian\_10 Start: 7705, Stop: 7968, Start Num: 42

Candidate Starts for AvGardian\_10:

(Start: 40 @7699 has 16 MA's), (Start: 42 @7705 has 16 MA's), (64, 7732),

Gene: Avani\_12 Start: 6948, Stop: 7220, Start Num: 43

Candidate Starts for Avani\_12:

(Start: 43 @6948 has 24 MA's), (62, 7008), (63, 7011), (72, 7041), (77, 7065), (82, 7095), (98, 7155),

Gene: Avocadoman\_10 Start: 7712, Stop: 7969, Start Num: 41

Candidate Starts for Avocadoman\_10:

(Start: 37 @7700 has 1 MA's), (Start: 41 @7712 has 101 MA's), (64, 7733), (96, 7889), (103, 7940),

Gene: Axym\_11 Start: 7257, Stop: 7538, Start Num: 41

Candidate Starts for Axym\_11:

(17, 7134), (Start: 41 @7257 has 101 MA's),

Gene: Azira\_13 Start: 8163, Stop: 8462, Start Num: 41

Candidate Starts for Azira\_13:

(Start: 40 @8160 has 16 MA's), (Start: 41 @8163 has 101 MA's), (72, 8265), (84, 8334), (96, 8376), (105, 8436), (106, 8439), (107, 8442),

Gene: BAjuniper\_10 Start: 7595, Stop: 7852, Start Num: 40

Candidate Starts for BAjuniper\_10:

(Start: 37 @7586 has 1 MA's), (Start: 40 @7595 has 16 MA's), (64, 7616), (95, 7769), (96, 7772), (102, 7817),

Gene: Babushka\_10 Start: 7703, Stop: 7957, Start Num: 42

Candidate Starts for Babushka\_10:

(6, 7445), (8, 7469), (10, 7505), (15, 7553), (32, 7667), (Start: 42 @7703 has 16 MA's), (63, 7727), (75, 7775), (83, 7829), (91, 7847), (96, 7874),

Gene: BabyDaisy\_11 Start: 7870, Stop: 8133, Start Num: 40

Candidate Starts for BabyDaisy\_11:

(Start: 37 @7861 has 1 MA's), (Start: 40 @7870 has 16 MA's),

Gene: BabyYoda\_10 Start: 7899, Stop: 8162, Start Num: 42

Candidate Starts for BabyYoda\_10:

(Start: 42 @7899 has 16 MA's), (61, 7911), (64, 7926), (88, 8043), (96, 8082), (99, 8097),

Gene: Bachaco\_10 Start: 7786, Stop: 8049, Start Num: 41

Candidate Starts for Bachaco\_10:

(Start: 37 @7774 has 1 MA's), (Start: 41 @7786 has 101 MA's), (64, 7813), (69, 7831), (88, 7930), (96, 7969),

Gene: BaileyBlu\_10 Start: 6510, Stop: 6782, Start Num: 46

Candidate Starts for BaileyBlu\_10:

(Start: 46 @6510 has 3 MA's), (52, 6525), (57, 6546), (63, 6570), (64, 6573), (66, 6579), (96, 6699),

Gene: Bavilard\_11 Start: 7809, Stop: 8081, Start Num: 41

Candidate Starts for Bavilard\_11:

(Start: 40 @7806 has 16 MA's), (Start: 41 @7809 has 101 MA's), (94, 7992), (96, 7998), (100, 8022),

Gene: BearBQ\_11 Start: 7129, Stop: 7386, Start Num: 47

Candidate Starts for BearBQ\_11:

(34, 7096), (Start: 47 @7129 has 8 MA's), (82, 7264), (94, 7309), (96, 7315), (97, 7318), (100, 7339),

Gene: Bedetta\_12 Start: 8244, Stop: 8504, Start Num: 40

Candidate Starts for Bedetta\_12:

(Start: 37 @8235 has 1 MA's), (Start: 39 @8241 has 6 MA's), (Start: 40 @8244 has 16 MA's), (Start: 42 @8250 has 16 MA's), (63, 8274), (74, 8319), (87, 8382), (91, 8394),

Gene: BeeGee\_12 Start: 8009, Stop: 8266, Start Num: 43

Candidate Starts for BeeGee\_12:

(Start: 43 @8009 has 24 MA's), (100, 8219), (106, 8258),

Gene: Bengal\_10 Start: 7654, Stop: 7911, Start Num: 41

Candidate Starts for Bengal\_10:

(Start: 37 @7642 has 1 MA's), (Start: 41 @7654 has 101 MA's), (64, 7675), (96, 7831), (103, 7882),

Gene: Bernstein\_9 Start: 7485, Stop: 7748, Start Num: 41

Candidate Starts for Bernstein\_9:

(24, 7428), (Start: 41 @7485 has 101 MA's), (60, 7500), (64, 7515), (88, 7632), (100, 7692), (104, 7722),

Gene: Bible12\_12 Start: 8253, Stop: 8507, Start Num: 42

Candidate Starts for Bible12\_12:

(Start: 37 @8238 has 1 MA's), (Start: 39 @8244 has 6 MA's), (Start: 40 @8247 has 16 MA's), (Start: 42 @8253 has 16 MA's), (63, 8277), (74, 8322), (87, 8385), (91, 8397),

Gene: BigChungus\_10 Start: 7054, Stop: 7326, Start Num: 41

Candidate Starts for BigChungus\_10:

(Start: 40 @7051 has 16 MA's), (Start: 41 @7054 has 101 MA's), (94, 7237), (96, 7243), (100, 7267),

Gene: BillDoor\_13 Start: 7240, Stop: 7512, Start Num: 41

Candidate Starts for BillDoor\_13:

(Start: 41 @7240 has 101 MA's),

Gene: Bipper\_17 Start: 11835, Stop: 12083, Start Num: 59

Candidate Starts for Bipper\_17:



(27, 11778), (Start: 59 @11835 has 4 MA's), (80, 11934), (83, 11952), (85, 11955), (97, 12000),

Gene: Birdsong\_11 Start: 7129, Stop: 7386, Start Num: 47

Candidate Starts for Birdsong\_11:

(34, 7096), (Start: 47 @7129 has 8 MA's), (82, 7264), (94, 7309), (96, 7315), (97, 7318), (100, 7339),

Gene: Biskit\_12 Start: 7241, Stop: 7519, Start Num: 41

Candidate Starts for Biskit\_12:

(Start: 41 @7241 has 101 MA's), (63, 7310), (81, 7382),

Gene: Blarby\_13 Start: 7472, Stop: 7744, Start Num: 43

Candidate Starts for Blarby\_13:

(Start: 43 @7472 has 24 MA's), (62, 7532), (63, 7535), (72, 7565), (77, 7589), (82, 7619), (98, 7679),

Gene: Blondies\_11 Start: 7236, Stop: 7505, Start Num: 41

Candidate Starts for Blondies\_11:

(Start: 41 @7236 has 101 MA's), (63, 7296), (81, 7368),

Gene: Bradissa\_12 Start: 8013, Stop: 8270, Start Num: 43

Candidate Starts for Bradissa\_12:

(Start: 43 @8013 has 24 MA's), (100, 8223), (106, 8262),

Gene: Brahms\_9 Start: 7425, Stop: 7688, Start Num: 41

Candidate Starts for Brahms\_9:

(24, 7368), (Start: 41 @7425 has 101 MA's), (60, 7440), (64, 7455), (88, 7572), (100, 7632), (104, 7662),

Gene: BritBrat\_12 Start: 8015, Stop: 8272, Start Num: 43

Candidate Starts for BritBrat\_12:

(Start: 43 @8015 has 24 MA's), (100, 8225), (106, 8264),

Gene: BruceLethal\_9 Start: 6441, Stop: 6731, Start Num: 51

Candidate Starts for BruceLethal\_9:

(48, 6435), (Start: 51 @6441 has 45 MA's), (53, 6453), (55, 6459), (62, 6489), (63, 6492), (67, 6507), (70, 6516), (71, 6519), (75, 6540), (78, 6564), (84, 6606), (90, 6618), (93, 6642),

Gene: BubbaBear\_10 Start: 7645, Stop: 7905, Start Num: 41

Candidate Starts for BubbaBear\_10:

(Start: 37 @7633 has 1 MA's), (Start: 41 @7645 has 101 MA's), (64, 7669), (96, 7825), (99, 7840),

Gene: Buldak\_10 Start: 7930, Stop: 8196, Start Num: 41

Candidate Starts for Buldak\_10:

(Start: 37 @7918 has 1 MA's), (Start: 41 @7930 has 101 MA's), (74, 8002), (79, 8035), (88, 8077),

Gene: Burnsey\_11 Start: 7258, Stop: 7539, Start Num: 41

Candidate Starts for Burnsey\_11:

(Start: 41 @7258 has 101 MA's),

Gene: Burritobowl\_10 Start: 7681, Stop: 7938, Start Num: 41

Candidate Starts for Burritobowl\_10:

(Start: 37 @7669 has 1 MA's), (Start: 41 @7681 has 101 MA's), (64, 7702), (96, 7858), (103, 7909),

Gene: Button\_12 Start: 7274, Stop: 7543, Start Num: 41

Candidate Starts for Button\_12:

(Start: 41 @7274 has 101 MA's), (52, 7289), (62, 7331), (104, 7514),

Gene: Buttrmlkdreams\_11 Start: 7235, Stop: 7504, Start Num: 41

Candidate Starts for Buttrmlkdreams\_11:

(Start: 41 @7235 has 101 MA's), (63, 7295), (81, 7367),

Gene: CallinAllBarbz\_10 Start: 6520, Stop: 6792, Start Num: 46

Candidate Starts for CallinAllBarbz\_10:

(Start: 46 @6520 has 3 MA's), (52, 6535), (84, 6667), (96, 6709),

Gene: Camara\_10 Start: 7656, Stop: 7910, Start Num: 42

Candidate Starts for Camara\_10:

(32, 7620), (Start: 42 @7656 has 16 MA's), (63, 7680), (74, 7725), (77, 7737), (83, 7782), (87, 7788), (91, 7800), (96, 7827),

Gene: CanesSauce\_11 Start: 7339, Stop: 7548, Start Num: 63

Candidate Starts for CanesSauce\_11:

(Start: 41 @7276 has 101 MA's), (63, 7339),

Gene: Carsonalex\_12 Start: 7314, Stop: 7595, Start Num: 41

Candidate Starts for Carsonalex\_12:

(17, 7191), (Start: 41 @7314 has 101 MA's),

Gene: Cashington\_10 Start: 7671, Stop: 7928, Start Num: 41

Candidate Starts for Cashington\_10:

(Start: 37 @7659 has 1 MA's), (Start: 41 @7671 has 101 MA's), (64, 7692), (96, 7848), (103, 7899),

Gene: Cashline\_12 Start: 7862, Stop: 8119, Start Num: 43

Candidate Starts for Cashline\_12:

(22, 7793), (Start: 43 @7862 has 24 MA's), (100, 8072), (106, 8111),

Gene: Celaena\_10 Start: 7723, Stop: 7986, Start Num: 41

Candidate Starts for Celaena\_10:

(Start: 37 @7711 has 1 MA's), (Start: 41 @7723 has 101 MA's), (64, 7750), (69, 7768), (88, 7867), (96, 7906),

Gene: Che9d\_12 Start: 6957, Stop: 7229, Start Num: 43

Candidate Starts for Che9d\_12:

(Start: 43 @6957 has 24 MA's), (62, 7017), (63, 7020), (72, 7050), (77, 7074), (82, 7104), (98, 7164),

Gene: CherryonLim\_12 Start: 7780, Stop: 8052, Start Num: 41

Candidate Starts for CherryonLim\_12:

(Start: 41 @7780 has 101 MA's), (Start: 51 @7792 has 45 MA's), (52, 7798), (94, 7963), (96, 7969), (100, 7993),

Gene: ChickenTender\_13 Start: 7300, Stop: 7581, Start Num: 41

Candidate Starts for ChickenTender\_13:

(17, 7177), (Start: 40 @7297 has 16 MA's), (Start: 41 @7300 has 101 MA's),

Gene: ChiliPepper\_10 Start: 7882, Stop: 8139, Start Num: 41

Candidate Starts for ChiliPepper\_10:

(Start: 41 @7882 has 101 MA's), (74, 7945), (96, 8059), (102, 8104),

Gene: ChocoMunchkin\_11 Start: 7339, Stop: 7548, Start Num: 63

Candidate Starts for ChocoMunchkin\_11:

(Start: 41 @7276 has 101 MA's), (63, 7339),

Gene: Clayda5\_9 Start: 7425, Stop: 7688, Start Num: 41

Candidate Starts for Clayda5\_9:

(24, 7368), (Start: 41 @7425 has 101 MA's), (60, 7440), (64, 7455), (88, 7572), (100, 7632), (104, 7662),

Gene: Cleo\_11 Start: 7463, Stop: 7762, Start Num: 41

Candidate Starts for Cleo\_11:

(Start: 41 @7463 has 101 MA's), (107, 7742),

Gene: CliffHanger\_11 Start: 7626, Stop: 7886, Start Num: 40

Candidate Starts for CliffHanger\_11:

(24, 7572), (Start: 37 @7617 has 1 MA's), (Start: 40 @7626 has 16 MA's), (89, 7773), (95, 7803),

Gene: Coltrane\_9 Start: 7425, Stop: 7688, Start Num: 41

Candidate Starts for Coltrane\_9:

(24, 7368), (Start: 41 @7425 has 101 MA's), (60, 7440), (64, 7455), (88, 7572), (100, 7632), (104, 7662),

Gene: Colusalem\_11 Start: 8089, Stop: 8343, Start Num: 42

Candidate Starts for Colusalem\_11:

(Start: 37 @8074 has 1 MA's), (Start: 39 @8080 has 6 MA's), (Start: 40 @8083 has 16 MA's), (Start: 42 @8089 has 16 MA's), (63, 8113), (74, 8158), (87, 8221), (91, 8233),

Gene: Confidence\_12 Start: 8009, Stop: 8266, Start Num: 43

Candidate Starts for Confidence\_12:

(Start: 43 @8009 has 24 MA's), (100, 8219), (106, 8258),

Gene: Coral\_11 Start: 8080, Stop: 8343, Start Num: 39

Candidate Starts for Coral\_11:

(Start: 37 @8074 has 1 MA's), (Start: 39 @8080 has 6 MA's), (Start: 40 @8083 has 16 MA's), (Start: 42 @8089 has 16 MA's), (63, 8113), (74, 8158), (87, 8221), (91, 8233),

Gene: Cota\_9 Start: 6460, Stop: 6750, Start Num: 51

Candidate Starts for Cota\_9:

(Start: 51 @6460 has 45 MA's), (53, 6472), (55, 6478), (58, 6490), (62, 6508), (63, 6511), (67, 6526), (70, 6535), (71, 6538), (75, 6559), (78, 6583), (84, 6625), (90, 6637), (92, 6652), (93, 6661),

Gene: Cote\_12 Start: 8241, Stop: 8504, Start Num: 39

Candidate Starts for Cote\_12:

(Start: 37 @8235 has 1 MA's), (Start: 39 @8241 has 6 MA's), (Start: 40 @8244 has 16 MA's), (Start: 42 @8250 has 16 MA's), (63, 8274), (74, 8319), (87, 8382), (91, 8394),

Gene: Cozz\_11 Start: 7258, Stop: 7539, Start Num: 41

Candidate Starts for Cozz\_11:

(17, 7135), (Start: 41 @7258 has 101 MA's),

Gene: Cracklewink\_17 Start: 11835, Stop: 12083, Start Num: 59

Candidate Starts for Cracklewink\_17:

(27, 11778), (Start: 59 @11835 has 4 MA's), (83, 11952), (85, 11955), (97, 12000),

Gene: Crater\_11 Start: 7129, Stop: 7386, Start Num: 47

Candidate Starts for Crater\_11:

(34, 7096), (Start: 47 @7129 has 8 MA's), (73, 7222), (78, 7243), (96, 7315), (97, 7318), (100, 7339), (104, 7369),

Gene: CroZenni\_10 Start: 7654, Stop: 7911, Start Num: 41

Candidate Starts for CroZenni\_10:

(Start: 37 @7642 has 1 MA's), (Start: 41 @7654 has 101 MA's), (64, 7675), (95, 7828), (96, 7831), (99, 7846), (103, 7882),

Gene: CupcakePrincess\_10 Start: 7631, Stop: 7951, Start Num: 41

Candidate Starts for CupcakePrincess\_10:

(Start: 37 @7619 has 1 MA's), (Start: 41 @7631 has 101 MA's), (64, 7715), (96, 7871), (99, 7886),

Gene: Cygnet\_11 Start: 8032, Stop: 8286, Start Num: 42

Candidate Starts for Cygnet\_11:

(Start: 42 @8032 has 16 MA's), (87, 8164), (94, 8197), (96, 8203),

Gene: DS6A\_14 Start: 10056, Stop: 10361, Start Num: 45

Candidate Starts for DS6A\_14:

(Start: 45 @10056 has 4 MA's), (52, 10074), (67, 10134), (70, 10143), (82, 10224), (100, 10302),

Gene: DanHam62\_10 Start: 7655, Stop: 7909, Start Num: 42

Candidate Starts for DanHam62\_10:

(32, 7619), (Start: 42 @7655 has 16 MA's), (63, 7679), (74, 7724), (77, 7736), (83, 7781), (87, 7787), (91, 7799), (96, 7826),

Gene: Daob\_12 Start: 8238, Stop: 8507, Start Num: 37

Candidate Starts for Daob\_12:

(Start: 37 @8238 has 1 MA's), (Start: 39 @8244 has 6 MA's), (Start: 40 @8247 has 16 MA's), (Start: 42 @8253 has 16 MA's), (63, 8277), (74, 8322), (87, 8385), (91, 8397),

Gene: Demsculpinboyz\_12 Start: 6948, Stop: 7220, Start Num: 43

Candidate Starts for Demsculpinboyz\_12:

(Start: 43 @6948 has 24 MA's), (62, 7008), (63, 7011), (72, 7041), (77, 7065), (82, 7095), (98, 7155),

Gene: DickRichards\_10 Start: 8148, Stop: 8405, Start Num: 41

Candidate Starts for DickRichards\_10:

(Start: 37 @8136 has 1 MA's), (Start: 41 @8148 has 101 MA's), (64, 8169), (95, 8322), (96, 8325), (99, 8340), (103, 8376),

Gene: Didgeridoo\_11 Start: 7870, Stop: 8133, Start Num: 40

Candidate Starts for Didgeridoo\_11:

(Start: 37 @7861 has 1 MA's), (Start: 40 @7870 has 16 MA's),

Gene: DirtyBubble\_10 Start: 7907, Stop: 8170, Start Num: 42

Candidate Starts for DirtyBubble\_10:

(Start: 42 @7907 has 16 MA's), (61, 7919), (64, 7934), (88, 8051), (96, 8090), (99, 8105),

Gene: Dismas\_10 Start: 7882, Stop: 8139, Start Num: 41

Candidate Starts for Dismas\_10:

(Start: 41 @7882 has 101 MA's), (74, 7945), (96, 8059), (102, 8104),

Gene: Doobus\_10 Start: 7885, Stop: 8142, Start Num: 41

Candidate Starts for Doobus\_10:

(Start: 37 @7873 has 1 MA's), (Start: 41 @7885 has 101 MA's), (64, 7906), (96, 8062), (103, 8113),

Gene: DrParker\_9 Start: 6467, Stop: 6757, Start Num: 51

Candidate Starts for DrParker\_9:

(Start: 51 @6467 has 45 MA's), (53, 6479), (55, 6485), (58, 6497), (62, 6515), (63, 6518), (67, 6533), (70, 6542), (71, 6545), (75, 6566), (78, 6590), (84, 6632), (90, 6644), (93, 6668), (103, 6728),

Gene: Dre3\_11 Start: 7410, Stop: 7709, Start Num: 41

Candidate Starts for Dre3\_11:

(Start: 41 @7410 has 101 MA's), (107, 7689),

Gene: EMSquaredA\_12 Start: 8015, Stop: 8272, Start Num: 43

Candidate Starts for EMSquaredA\_12:

(Start: 43 @8015 has 24 MA's), (100, 8225), (106, 8264),

Gene: Ecliptus\_11 Start: 6857, Stop: 7114, Start Num: 49

Candidate Starts for Ecliptus\_11:

(31, 6812), (Start: 49 @6857 has 3 MA's), (73, 6950), (78, 6971), (96, 7043), (97, 7046), (100, 7067), (104, 7097),

Gene: Eden\_9 Start: 7514, Stop: 7780, Start Num: 41

Candidate Starts for Eden\_9:

(24, 7457), (Start: 41 @7514 has 101 MA's), (64, 7547), (77, 7601), (104, 7754),

Gene: Eesa\_11 Start: 8248, Stop: 8502, Start Num: 42

Candidate Starts for Eesa\_11:

(1, 7771), (3, 7915), (16, 8119), (32, 8212), (35, 8230), (Start: 42 @8248 has 16 MA's), (63, 8272), (90, 8386), (91, 8392), (96, 8419),

Gene: Elinal\_12 Start: 7035, Stop: 7307, Start Num: 41

Candidate Starts for Elinal\_12:

(Start: 40 @7032 has 16 MA's), (Start: 41 @7035 has 101 MA's), (94, 7218), (96, 7224), (100, 7248),

Gene: Elliott\_11 Start: 7257, Stop: 7538, Start Num: 41

Candidate Starts for Elliott\_11:

(17, 7134), (Start: 41 @7257 has 101 MA's),

Gene: Elva\_11 Start: 7965, Stop: 8225, Start Num: 44

Candidate Starts for Elva\_11:

(Start: 44 @7965 has 1 MA's), (64, 7989), (91, 8118),

Gene: Emalyn\_10 Start: 6986, Stop: 7255, Start Num: 41

Candidate Starts for Emalyn\_10:

(Start: 41 @6986 has 101 MA's),

Gene: EnalisNailo\_12 Start: 8015, Stop: 8272, Start Num: 43

Candidate Starts for EnalisNailo\_12:

(Start: 43 @8015 has 24 MA's), (100, 8225), (106, 8264),

Gene: Enochoraptor\_9 Start: 6463, Stop: 6753, Start Num: 51  
Candidate Starts for Enochoraptor\_9:  
(Start: 51 @6463 has 45 MA's), (53, 6475), (55, 6481), (58, 6493), (62, 6511), (63, 6514), (67, 6529),  
(70, 6538), (71, 6541), (78, 6586), (84, 6628), (90, 6640),

Gene: Enoki\_9 Start: 6448, Stop: 6738, Start Num: 51  
Candidate Starts for Enoki\_9:  
(Start: 51 @6448 has 45 MA's), (53, 6460), (55, 6466), (58, 6478), (62, 6496), (63, 6499), (67, 6514),  
(70, 6523), (71, 6526), (78, 6571), (84, 6613), (90, 6625), (93, 6649),

Gene: Eula\_10 Start: 7652, Stop: 7912, Start Num: 41  
Candidate Starts for Eula\_10:  
(Start: 37 @7640 has 1 MA's), (Start: 41 @7652 has 101 MA's), (64, 7676), (96, 7832), (99, 7847),

Gene: Faiyaz\_17 Start: 11749, Stop: 11997, Start Num: 59  
Candidate Starts for Faiyaz\_17:  
(27, 11692), (Start: 59 @11749 has 4 MA's), (71, 11791), (83, 11866), (97, 11914), (104, 11965), (108,  
11983),

Gene: Feastonyeet\_10 Start: 7054, Stop: 7326, Start Num: 41  
Candidate Starts for Feastonyeet\_10:  
(Start: 40 @7051 has 16 MA's), (Start: 41 @7054 has 101 MA's), (94, 7237), (96, 7243), (100, 7267),

Gene: Finalfrontier\_11 Start: 8160, Stop: 8423, Start Num: 40  
Candidate Starts for Finalfrontier\_11:  
(Start: 37 @8151 has 1 MA's), (Start: 40 @8160 has 16 MA's), (64, 8187), (96, 8343), (99, 8358),

Gene: FlameThrower\_10 Start: 7611, Stop: 7874, Start Num: 41  
Candidate Starts for FlameThrower\_10:  
(Start: 37 @7599 has 1 MA's), (Start: 41 @7611 has 101 MA's), (64, 7638), (69, 7656), (88, 7755), (96,  
7794),

Gene: Floral\_12 Start: 8015, Stop: 8272, Start Num: 43  
Candidate Starts for Floral\_12:  
(Start: 43 @8015 has 24 MA's), (100, 8225), (106, 8264),

Gene: Franklin22\_9 Start: 7495, Stop: 7761, Start Num: 41  
Candidate Starts for Franklin22\_9:  
(Start: 41 @7495 has 101 MA's), (64, 7528), (96, 7681), (104, 7735),

Gene: Fribs8\_12 Start: 7976, Stop: 8275, Start Num: 41  
Candidate Starts for Fribs8\_12:  
(Start: 41 @7976 has 101 MA's), (72, 8078), (96, 8189), (105, 8249), (106, 8252), (107, 8255),

Gene: Fryberger\_43 Start: 16293, Stop: 16577, Start Num: 38  
Candidate Starts for Fryberger\_43:  
(36, 16287), (Start: 38 @16293 has 6 MA's), (58, 16350), (65, 16377), (86, 16458), (90, 16464),

Gene: GTE2\_09 Start: 6936, Stop: 7208, Start Num: 41  
Candidate Starts for GTE2\_09:  
(Start: 41 @6936 has 101 MA's), (63, 6999),

Gene: Gack\_9 Start: 7565, Stop: 7828, Start Num: 41

Candidate Starts for Gack\_9:

(24, 7508), (Start: 41 @7565 has 101 MA's), (64, 7595), (71, 7619), (96, 7748), (104, 7802),

Gene: Gaia\_8 Start: 7366, Stop: 7629, Start Num: 45

Candidate Starts for Gaia\_8:

(Start: 45 @7366 has 4 MA's), (70, 7450), (72, 7459), (77, 7483), (81, 7504), (82, 7507), (91, 7531), (100, 7582), (103, 7609),

Gene: GiKK\_14 Start: 7577, Stop: 7846, Start Num: 41

Candidate Starts for GiKK\_14:

(Start: 41 @7577 has 101 MA's), (52, 7592), (62, 7634), (104, 7817),

Gene: Gibbous\_11 Start: 7410, Stop: 7709, Start Num: 41

Candidate Starts for Gibbous\_11:

(Start: 41 @7410 has 101 MA's), (107, 7689),

Gene: Glotell\_10 Start: 7655, Stop: 7909, Start Num: 42

Candidate Starts for Glotell\_10:

(6, 7397), (8, 7421), (10, 7457), (15, 7505), (32, 7619), (Start: 42 @7655 has 16 MA's), (63, 7679), (75, 7727), (77, 7736), (83, 7781), (87, 7787), (91, 7799), (96, 7826),

Gene: GoldHunter\_12 Start: 7258, Stop: 7539, Start Num: 41

Candidate Starts for GoldHunter\_12:

(Start: 41 @7258 has 101 MA's),

Gene: Gravel\_12 Start: 8244, Stop: 8498, Start Num: 42

Candidate Starts for Gravel\_12:

(16, 8115), (32, 8208), (35, 8226), (Start: 42 @8244 has 16 MA's), (63, 8268), (90, 8382), (91, 8388), (97, 8418),

Gene: Guey18\_48 Start: 17486, Stop: 17770, Start Num: 38

Candidate Starts for Guey18\_48:

(36, 17480), (Start: 38 @17486 has 6 MA's), (58, 17543), (65, 17570), (86, 17651), (90, 17657),

Gene: HamCheese\_10 Start: 7655, Stop: 7909, Start Num: 42

Candidate Starts for HamCheese\_10:

(32, 7619), (Start: 42 @7655 has 16 MA's), (63, 7679), (74, 7724), (77, 7736), (83, 7781), (87, 7787), (91, 7799), (96, 7826),

Gene: HannahPhantana\_12 Start: 8247, Stop: 8507, Start Num: 40

Candidate Starts for HannahPhantana\_12:

(Start: 37 @8238 has 1 MA's), (Start: 39 @8244 has 6 MA's), (Start: 40 @8247 has 16 MA's), (Start: 42 @8253 has 16 MA's), (63, 8277), (74, 8322), (87, 8385), (91, 8397),

Gene: Hexbug\_13 Start: 8263, Stop: 8532, Start Num: 41

Candidate Starts for Hexbug\_13:

(Start: 41 @8263 has 101 MA's), (62, 8320),

Gene: Hilltopfarm\_17 Start: 11779, Stop: 12027, Start Num: 59

Candidate Starts for Hilltopfarm\_17:

(27, 11722), (Start: 59 @11779 has 4 MA's), (71, 11821), (83, 11896), (97, 11944), (104, 11995), (108, 12013),

Gene: HippoPololi\_13 Start: 8062, Stop: 8361, Start Num: 41  
Candidate Starts for HippoPololi\_13:  
(Start: 41 @8062 has 101 MA's), (Start: 51 @8083 has 45 MA's), (100, 8299), (107, 8341),

Gene: Horseradish\_12 Start: 7139, Stop: 7417, Start Num: 41  
Candidate Starts for Horseradish\_12:  
(Start: 41 @7139 has 101 MA's), (63, 7208), (81, 7280),

Gene: Icarian\_11 Start: 7889, Stop: 8152, Start Num: 42  
Candidate Starts for Icarian\_11:  
(Start: 42 @7889 has 16 MA's), (64, 7916), (96, 8072), (99, 8087),

Gene: IndyLu\_10 Start: 7694, Stop: 7957, Start Num: 40  
Candidate Starts for IndyLu\_10:  
(Start: 37 @7685 has 1 MA's), (Start: 40 @7694 has 16 MA's),

Gene: Jabb\_10 Start: 7631, Stop: 7951, Start Num: 41  
Candidate Starts for Jabb\_10:  
(Start: 37 @7619 has 1 MA's), (Start: 41 @7631 has 101 MA's), (64, 7715), (96, 7871), (99, 7886),

Gene: Jabbawokkie\_13 Start: 7471, Stop: 7743, Start Num: 43  
Candidate Starts for Jabbawokkie\_13:  
(Start: 43 @7471 has 24 MA's), (62, 7531), (63, 7534), (72, 7564), (77, 7588), (82, 7618), (98, 7678),

Gene: Jablanski\_12 Start: 7862, Stop: 8119, Start Num: 43  
Candidate Starts for Jablanski\_12:  
(Start: 43 @7862 has 24 MA's), (100, 8072), (106, 8111),

Gene: Jamzy\_14 Start: 7587, Stop: 7856, Start Num: 41  
Candidate Starts for Jamzy\_14:  
(Start: 41 @7587 has 101 MA's), (52, 7602), (62, 7644), (104, 7827),

Gene: Jankie\_12 Start: 6521, Stop: 6793, Start Num: 46  
Candidate Starts for Jankie\_12:  
(25, 6458), (Start: 46 @6521 has 3 MA's), (57, 6557), (69, 6599),

Gene: Jerole\_12 Start: 8250, Stop: 8504, Start Num: 42  
Candidate Starts for Jerole\_12:  
(Start: 37 @8235 has 1 MA's), (Start: 39 @8241 has 6 MA's), (Start: 40 @8244 has 16 MA's), (Start: 42 @8250 has 16 MA's), (63, 8274), (74, 8319), (87, 8382), (91, 8394),

Gene: Johnathan\_10 Start: 7654, Stop: 7911, Start Num: 41  
Candidate Starts for Johnathan\_10:  
(Start: 37 @7642 has 1 MA's), (Start: 41 @7654 has 101 MA's), (64, 7675), (96, 7831), (103, 7882),

Gene: Jovita\_10 Start: 7753, Stop: 8013, Start Num: 41  
Candidate Starts for Jovita\_10:  
(Start: 37 @7741 has 1 MA's), (Start: 41 @7753 has 101 MA's), (64, 7777), (96, 7933), (99, 7948),

Gene: Juicebox\_12 Start: 8597, Stop: 8833, Start Num: 49  
Candidate Starts for Juicebox\_12:  
(Start: 49 @8597 has 3 MA's), (54, 8615), (67, 8660), (96, 8753),



Gene: Juno112\_10 Start: 7656, Stop: 7910, Start Num: 42

Candidate Starts for Juno112\_10:

(6, 7398), (8, 7422), (10, 7458), (15, 7506), (32, 7620), (Start: 42 @7656 has 16 MA's), (63, 7680), (75, 7728), (77, 7737), (83, 7782), (91, 7800), (96, 7827),

Gene: KHumphrey\_10 Start: 7655, Stop: 7909, Start Num: 42

Candidate Starts for KHumphrey\_10:

(6, 7397), (8, 7421), (10, 7457), (15, 7505), (32, 7619), (Start: 42 @7655 has 16 MA's), (63, 7679), (75, 7727), (77, 7736), (83, 7781), (87, 7787), (91, 7799), (96, 7826),

Gene: Kate33\_10 Start: 7693, Stop: 7956, Start Num: 40

Candidate Starts for Kate33\_10:

(Start: 37 @7684 has 1 MA's), (Start: 40 @7693 has 16 MA's),

Gene: Katzastrophic\_10 Start: 7786, Stop: 8049, Start Num: 41

Candidate Starts for Katzastrophic\_10:

(Start: 37 @7774 has 1 MA's), (Start: 41 @7786 has 101 MA's), (64, 7813), (69, 7831), (88, 7930), (96, 7969),

Gene: KayGee\_11 Start: 7035, Stop: 7307, Start Num: 41

Candidate Starts for KayGee\_11:

(Start: 40 @7032 has 16 MA's), (Start: 41 @7035 has 101 MA's), (94, 7218), (96, 7224), (100, 7248),

Gene: Keelan\_41 Start: 16268, Stop: 16552, Start Num: 38

Candidate Starts for Keelan\_41:

(Start: 38 @16268 has 6 MA's), (58, 16325), (65, 16352), (86, 16433), (90, 16439),

Gene: Keiki\_9 Start: 6460, Stop: 6750, Start Num: 51

Candidate Starts for Keiki\_9:

(Start: 51 @6460 has 45 MA's), (53, 6472), (55, 6478), (58, 6490), (62, 6508), (63, 6511), (67, 6526), (70, 6535), (71, 6538), (75, 6559), (78, 6583), (84, 6625), (90, 6637), (92, 6652), (93, 6661),

Gene: KendraB23\_12 Start: 8245, Stop: 8499, Start Num: 42

Candidate Starts for KendraB23\_12:

(16, 8116), (18, 8131), (35, 8227), (Start: 42 @8245 has 16 MA's), (63, 8269), (90, 8383), (91, 8389), (97, 8419),

Gene: Kenzers\_10 Start: 7668, Stop: 7928, Start Num: 41

Candidate Starts for Kenzers\_10:

(Start: 37 @7656 has 1 MA's), (Start: 41 @7668 has 101 MA's), (64, 7692), (96, 7848), (99, 7863), (103, 7899),

Gene: Kepler\_11 Start: 8079, Stop: 8342, Start Num: 39

Candidate Starts for Kepler\_11:

(Start: 37 @8073 has 1 MA's), (Start: 39 @8079 has 6 MA's), (Start: 40 @8082 has 16 MA's), (Start: 42 @8088 has 16 MA's), (74, 8157), (87, 8220), (91, 8232),

Gene: Kieran\_10 Start: 7885, Stop: 8142, Start Num: 41

Candidate Starts for Kieran\_10:

(Start: 41 @7885 has 101 MA's), (74, 7948), (96, 8062), (102, 8107),

Gene: Kubed\_9 Start: 6450, Stop: 6740, Start Num: 51

Candidate Starts for Kubed\_9:

(Start: 51 @6450 has 45 MA's), (53, 6462), (55, 6468), (58, 6480), (62, 6498), (63, 6501), (67, 6516), (70, 6525), (71, 6528), (78, 6573), (84, 6615), (90, 6627), (92, 6642), (93, 6651),

Gene: Kuleana\_11 Start: 8039, Stop: 8302, Start Num: 39

Candidate Starts for Kuleana\_11:

(Start: 37 @8033 has 1 MA's), (Start: 39 @8039 has 6 MA's), (Start: 42 @8048 has 16 MA's), (62, 8069), (63, 8072), (75, 8120), (87, 8180), (91, 8192), (96, 8219),

Gene: Kuwabara\_11 Start: 7129, Stop: 7386, Start Num: 47

Candidate Starts for Kuwabara\_11:

(34, 7096), (Start: 47 @7129 has 8 MA's), (73, 7222), (78, 7243), (96, 7315), (97, 7318), (100, 7339), (104, 7369),

Gene: Lahqtemish\_10 Start: 7738, Stop: 8001, Start Num: 40

Candidate Starts for Lahqtemish\_10:

(Start: 37 @7729 has 1 MA's), (Start: 40 @7738 has 16 MA's), (74, 7807),

Gene: Lauchelly\_9 Start: 6445, Stop: 6735, Start Num: 51

Candidate Starts for Lauchelly\_9:

(Start: 51 @6445 has 45 MA's), (53, 6457), (55, 6463), (58, 6475), (62, 6493), (63, 6496), (67, 6511), (70, 6520), (71, 6523), (78, 6568), (84, 6610), (90, 6622), (93, 6646),

Gene: Lauer\_10 Start: 7057, Stop: 7356, Start Num: 33

Candidate Starts for Lauer\_10:

(5, 6820), (11, 6886), (13, 6907), (14, 6922), (17, 6961), (20, 7000), (21, 7015), (23, 7024), (Start: 33 @7057 has 1 MA's), (Start: 40 @7081 has 16 MA's), (Start: 41 @7084 has 101 MA's), (94, 7267), (96, 7273), (100, 7297),

Gene: Leona\_10 Start: 7706, Stop: 7960, Start Num: 42

Candidate Starts for Leona\_10:

(6, 7448), (8, 7472), (10, 7508), (15, 7556), (29, 7664), (32, 7670), (Start: 42 @7706 has 16 MA's), (63, 7730), (75, 7778), (77, 7787), (83, 7832), (91, 7850), (96, 7877),

Gene: Leviosa\_9 Start: 6466, Stop: 6756, Start Num: 51

Candidate Starts for Leviosa\_9:

(Start: 51 @6466 has 45 MA's), (55, 6484), (58, 6496), (62, 6514), (63, 6517), (67, 6532), (70, 6541), (71, 6544), (75, 6565), (78, 6589), (84, 6631), (90, 6643), (93, 6667), (103, 6727),

Gene: LilBandit\_9 Start: 6450, Stop: 6740, Start Num: 51

Candidate Starts for LilBandit\_9:

(Start: 51 @6450 has 45 MA's), (53, 6462), (55, 6468), (58, 6480), (62, 6498), (63, 6501), (67, 6516), (70, 6525), (71, 6528), (75, 6549), (78, 6573), (84, 6615), (90, 6627),

Gene: LilSpotty\_10 Start: 6830, Stop: 7105, Start Num: 45

Candidate Starts for LilSpotty\_10:

(30, 6785), (Start: 45 @6830 has 4 MA's), (50, 6839), (82, 6968), (96, 7019), (100, 7043),

Gene: Lilas\_12 Start: 8015, Stop: 8272, Start Num: 43

Candidate Starts for Lilas\_12:

(Start: 43 @8015 has 24 MA's), (100, 8225), (106, 8264),

Gene: LimaBean\_10 Start: 7654, Stop: 7911, Start Num: 41

Candidate Starts for LimaBean\_10:

(Start: 37 @7642 has 1 MA's), (Start: 41 @7654 has 101 MA's), (64, 7675), (96, 7831), (103, 7882),

Gene: LittleTokyo\_11 Start: 7988, Stop: 8242, Start Num: 42

Candidate Starts for LittleTokyo\_11:

(Start: 42 @7988 has 16 MA's), (74, 8057), (94, 8153), (96, 8159),

Gene: LonelyBoi\_12 Start: 7862, Stop: 8119, Start Num: 43

Candidate Starts for LonelyBoi\_12:

(Start: 43 @7862 has 24 MA's), (100, 8072), (106, 8111),

Gene: Loviatar\_18 Start: 7923, Stop: 8231, Start Num: 29

Candidate Starts for Loviatar\_18:

(26, 7911), (29, 7923), (74, 8037), (96, 8151),

Gene: Lucky10\_10 Start: 6338, Stop: 6595, Start Num: 47

Candidate Starts for Lucky10\_10:

(34, 6305), (Start: 47 @6338 has 8 MA's), (96, 6524), (100, 6548),

Gene: Lunar\_12 Start: 8244, Stop: 8504, Start Num: 40

Candidate Starts for Lunar\_12:

(Start: 37 @8235 has 1 MA's), (Start: 39 @8241 has 6 MA's), (Start: 40 @8244 has 16 MA's), (Start: 42 @8250 has 16 MA's), (63, 8274), (74, 8319), (87, 8382), (91, 8394),

Gene: Lynlen\_10 Start: 7668, Stop: 7928, Start Num: 41

Candidate Starts for Lynlen\_10:

(Start: 37 @7656 has 1 MA's), (Start: 41 @7668 has 101 MA's), (64, 7692), (96, 7848), (99, 7863), (103, 7899),

Gene: MAnor\_11 Start: 7025, Stop: 7297, Start Num: 41

Candidate Starts for MAnor\_11:

(Start: 41 @7025 has 101 MA's), (Start: 51 @7037 has 45 MA's), (52, 7043), (94, 7208), (96, 7214), (100, 7238),

Gene: MEAK\_9 Start: 6452, Stop: 6742, Start Num: 51

Candidate Starts for MEAK\_9:

(Start: 51 @6452 has 45 MA's), (53, 6464), (55, 6470), (58, 6482), (62, 6500), (63, 6503), (67, 6518), (70, 6527), (71, 6530), (78, 6575), (84, 6617), (90, 6629), (93, 6653), (103, 6713),

Gene: MScarn\_13 Start: 7235, Stop: 7504, Start Num: 41

Candidate Starts for MScarn\_13:

(Start: 41 @7235 has 101 MA's), (63, 7295), (81, 7367),

Gene: MaVan\_13 Start: 8163, Stop: 8462, Start Num: 41

Candidate Starts for MaVan\_13:

(Start: 40 @8160 has 16 MA's), (Start: 41 @8163 has 101 MA's), (72, 8265), (84, 8334), (96, 8376), (105, 8436), (106, 8439), (107, 8442),

Gene: Margaret\_14 Start: 7972, Stop: 8241, Start Num: 41

Candidate Starts for Margaret\_14:

(Start: 41 @7972 has 101 MA's), (52, 7987), (62, 8029),

Gene: Marteena\_12 Start: 8015, Stop: 8272, Start Num: 43

Candidate Starts for Marteena\_12:

(Start: 43 @8015 has 24 MA's), (100, 8225), (106, 8264),

Gene: Mayweather\_12 Start: 7658, Stop: 7930, Start Num: 41

Candidate Starts for Mayweather\_12:

(Start: 41 @7658 has 101 MA's), (Start: 51 @7670 has 45 MA's), (52, 7676), (94, 7841), (96, 7847), (100, 7871),

Gene: Melons\_12 Start: 8241, Stop: 8504, Start Num: 39

Candidate Starts for Melons\_12:

(Start: 37 @8235 has 1 MA's), (Start: 39 @8241 has 6 MA's), (Start: 40 @8244 has 16 MA's), (Start: 42 @8250 has 16 MA's), (63, 8274), (74, 8319), (87, 8382), (91, 8394),

Gene: Milomuff\_11 Start: 8040, Stop: 8297, Start Num: 41

Candidate Starts for Milomuff\_11:

(Start: 37 @8028 has 1 MA's), (Start: 41 @8040 has 101 MA's), (64, 8061), (96, 8217), (99, 8232), (103, 8268),

Gene: Morkie\_10 Start: 6300, Stop: 6557, Start Num: 47

Candidate Starts for Morkie\_10:

(34, 6267), (Start: 47 @6300 has 8 MA's), (96, 6486), (100, 6510),

Gene: MortyNRick\_11 Start: 7129, Stop: 7386, Start Num: 47

Candidate Starts for MortyNRick\_11:

(34, 7096), (Start: 47 @7129 has 8 MA's), (82, 7264), (94, 7309), (96, 7315), (97, 7318), (100, 7339),

Gene: Moyashi\_9 Start: 6470, Stop: 6760, Start Num: 51

Candidate Starts for Moyashi\_9:

(Start: 51 @6470 has 45 MA's), (53, 6482), (55, 6488), (62, 6518), (63, 6521), (67, 6536), (70, 6545), (71, 6548), (78, 6593), (90, 6647), (93, 6671),

Gene: MrAK\_9 Start: 6479, Stop: 6769, Start Num: 51

Candidate Starts for MrAK\_9:

(Start: 51 @6479 has 45 MA's), (53, 6491), (55, 6497), (58, 6509), (62, 6527), (63, 6530), (67, 6545), (70, 6554), (71, 6557), (78, 6602), (90, 6656), (93, 6680), (103, 6740),

Gene: MsUbiquitous\_10 Start: 7631, Stop: 7951, Start Num: 41

Candidate Starts for MsUbiquitous\_10:

(Start: 37 @7619 has 1 MA's), (Start: 41 @7631 has 101 MA's), (64, 7715), (96, 7871), (99, 7886),

Gene: MunkgeeRoachy\_11 Start: 7305, Stop: 7586, Start Num: 41

Candidate Starts for MunkgeeRoachy\_11:

(17, 7182), (Start: 41 @7305 has 101 MA's),

Gene: Nebkiss\_8 Start: 7367, Stop: 7630, Start Num: 45

Candidate Starts for Nebkiss\_8:

(Start: 45 @7367 has 4 MA's), (70, 7451), (72, 7460), (77, 7484), (81, 7505), (82, 7508), (91, 7532), (100, 7583), (103, 7610),

Gene: Neuville\_12 Start: 7464, Stop: 7730, Start Num: 45

Candidate Starts for Neuville\_12:

(Start: 45 @7464 has 4 MA's), (96, 7650), (97, 7653), (105, 7710),

Gene: Nibbles\_13 Start: 8163, Stop: 8462, Start Num: 41

Candidate Starts for Nibbles\_13:

(Start: 40 @8160 has 16 MA's), (Start: 41 @8163 has 101 MA's), (72, 8265), (84, 8334), (96, 8376), (105, 8436), (106, 8439), (107, 8442),

Gene: Nicky22\_11 Start: 8102, Stop: 8359, Start Num: 41

Candidate Starts for Nicky22\_11:

(Start: 37 @8090 has 1 MA's), (Start: 41 @8102 has 101 MA's), (64, 8123), (96, 8279), (99, 8294), (103, 8330),

Gene: Nina\_12 Start: 8291, Stop: 8572, Start Num: 41

Candidate Starts for Nina\_12:

(17, 8168), (Start: 41 @8291 has 101 MA's),

Gene: Nodigi\_13 Start: 8256, Stop: 8525, Start Num: 41

Candidate Starts for Nodigi\_13:

(Start: 41 @8256 has 101 MA's), (62, 8313),

Gene: ODay\_11 Start: 6855, Stop: 7112, Start Num: 49

Candidate Starts for ODay\_11:

(31, 6810), (Start: 49 @6855 has 3 MA's), (73, 6948), (78, 6969), (96, 7041), (97, 7044), (100, 7065), (104, 7095),

Gene: Olliecat\_10 Start: 7885, Stop: 8151, Start Num: 41

Candidate Starts for Olliecat\_10:

(Start: 37 @7873 has 1 MA's), (Start: 41 @7885 has 101 MA's), (62, 7909), (79, 7990), (88, 8032), (96, 8068), (99, 8083),

Gene: Orcanus\_11 Start: 8038, Stop: 8292, Start Num: 42

Candidate Starts for Orcanus\_11:

(16, 7909), (18, 7924), (32, 8002), (35, 8020), (Start: 42 @8038 has 16 MA's), (63, 8062), (90, 8176), (91, 8182), (97, 8212),

Gene: Orla\_13 Start: 8260, Stop: 8529, Start Num: 41

Candidate Starts for Orla\_13:

(Start: 41 @8260 has 101 MA's), (62, 8317),

Gene: OtsoOtso\_11 Start: 8074, Stop: 8343, Start Num: 37

Candidate Starts for OtsoOtso\_11:

(Start: 37 @8074 has 1 MA's), (Start: 39 @8080 has 6 MA's), (Start: 40 @8083 has 16 MA's), (Start: 42 @8089 has 16 MA's), (63, 8113), (74, 8158), (87, 8221), (91, 8233),

Gene: Ouroboros\_9 Start: 6453, Stop: 6743, Start Num: 51

Candidate Starts for Ouroboros\_9:

(Start: 51 @6453 has 45 MA's), (53, 6465), (55, 6471), (58, 6483), (62, 6501), (63, 6504), (67, 6519), (70, 6528), (71, 6531), (75, 6552), (78, 6576), (84, 6618), (90, 6630), (93, 6654), (103, 6714),

Gene: P1.1\_9 Start: 6453, Stop: 6743, Start Num: 51

Candidate Starts for P1.1\_9:

(Start: 51 @6453 has 45 MA's), (53, 6465), (55, 6471), (58, 6483), (62, 6501), (63, 6504), (67, 6519), (70, 6528), (71, 6531), (78, 6576), (90, 6630), (103, 6714),

Gene: P100.1\_9 Start: 6443, Stop: 6733, Start Num: 51

Candidate Starts for P100.1\_9:

(Start: 51 @6443 has 45 MA's), (53, 6455), (55, 6461), (58, 6473), (62, 6491), (63, 6494), (67, 6509), (70, 6518), (71, 6521), (75, 6542), (78, 6566), (84, 6608), (90, 6620), (93, 6644), (103, 6704),

Gene: P100A\_9 Start: 6464, Stop: 6754, Start Num: 51

Candidate Starts for P100A\_9:

(28, 6392), (48, 6458), (Start: 51 @6464 has 45 MA's), (53, 6476), (55, 6482), (58, 6494), (62, 6512), (63, 6515), (67, 6530), (70, 6539), (71, 6542), (75, 6563), (78, 6587), (84, 6629), (90, 6641), (93, 6665), (103, 6725),

Gene: P100D\_9 Start: 6447, Stop: 6737, Start Num: 51

Candidate Starts for P100D\_9:

(Start: 51 @6447 has 45 MA's), (53, 6459), (55, 6465), (58, 6477), (62, 6495), (63, 6498), (67, 6513), (70, 6522), (71, 6525), (78, 6570), (84, 6612), (90, 6624), (93, 6648),

Gene: P101A\_9 Start: 6446, Stop: 6736, Start Num: 51

Candidate Starts for P101A\_9:

(Start: 51 @6446 has 45 MA's), (53, 6458), (55, 6464), (58, 6476), (62, 6494), (63, 6497), (67, 6512), (70, 6521), (71, 6524), (75, 6545), (78, 6569), (84, 6611), (90, 6623), (93, 6647), (103, 6707),

Gene: P104A\_9 Start: 6448, Stop: 6738, Start Num: 51

Candidate Starts for P104A\_9:

(Start: 51 @6448 has 45 MA's), (53, 6460), (55, 6466), (58, 6478), (62, 6496), (63, 6499), (67, 6514), (70, 6523), (71, 6526), (78, 6571), (84, 6613), (90, 6625), (93, 6649), (103, 6709),

Gene: P104B\_9 Start: 6452, Stop: 6742, Start Num: 51

Candidate Starts for P104B\_9:

(Start: 51 @6452 has 45 MA's), (53, 6464), (55, 6470), (58, 6482), (62, 6500), (63, 6503), (67, 6518), (70, 6527), (71, 6530), (75, 6551), (78, 6575), (84, 6617), (90, 6629),

Gene: P105\_9 Start: 6442, Stop: 6732, Start Num: 51

Candidate Starts for P105\_9:

(Start: 51 @6442 has 45 MA's), (53, 6454), (55, 6460), (58, 6472), (62, 6490), (63, 6493), (67, 6508), (70, 6517), (71, 6520), (75, 6541), (78, 6565), (84, 6607), (90, 6619), (93, 6643), (103, 6703),

Gene: P106A\_9 Start: 6470, Stop: 6760, Start Num: 51

Candidate Starts for P106A\_9:

(Start: 51 @6470 has 45 MA's), (53, 6482), (55, 6488), (58, 6500), (62, 6518), (63, 6521), (67, 6536), (70, 6545), (71, 6548), (78, 6593), (103, 6731),

Gene: P106C\_9 Start: 6470, Stop: 6760, Start Num: 51

Candidate Starts for P106C\_9:

(Start: 51 @6470 has 45 MA's), (53, 6482), (55, 6488), (58, 6500), (62, 6518), (63, 6521), (67, 6536), (70, 6545), (71, 6548), (78, 6593), (103, 6731),

Gene: P106I\_9 Start: 6470, Stop: 6760, Start Num: 51

Candidate Starts for P106I\_9:

(Start: 51 @6470 has 45 MA's), (53, 6482), (55, 6488), (58, 6500), (62, 6518), (63, 6521), (67, 6536), (70, 6545), (71, 6548), (78, 6593), (103, 6731),

Gene: P106L\_9 Start: 6470, Stop: 6760, Start Num: 51

Candidate Starts for P106L\_9:

(Start: 51 @6470 has 45 MA's), (53, 6482), (55, 6488), (58, 6500), (62, 6518), (63, 6521), (67, 6536), (70, 6545), (71, 6548), (78, 6593), (103, 6731),

Gene: P106M\_9 Start: 6470, Stop: 6760, Start Num: 51

Candidate Starts for P106M\_9:

(Start: 51 @6470 has 45 MA's), (53, 6482), (55, 6488), (58, 6500), (62, 6518), (63, 6521), (67, 6536), (70, 6545), (71, 6548), (78, 6593), (103, 6731),

Gene: P107A\_9 Start: 6456, Stop: 6746, Start Num: 51

Candidate Starts for P107A\_9:

(Start: 51 @6456 has 45 MA's), (53, 6468), (55, 6474), (58, 6486), (62, 6504), (63, 6507), (67, 6522), (70, 6531), (71, 6534), (75, 6555), (78, 6579), (84, 6621), (88, 6627), (90, 6633), (93, 6657), (103, 6717),

Gene: P107C\_9 Start: 6452, Stop: 6742, Start Num: 51

Candidate Starts for P107C\_9:

(Start: 51 @6452 has 45 MA's), (53, 6464), (55, 6470), (58, 6482), (62, 6500), (63, 6503), (67, 6518), (70, 6527), (71, 6530), (78, 6575), (84, 6617), (90, 6629), (103, 6713),

Gene: P108C\_9 Start: 6456, Stop: 6746, Start Num: 51

Candidate Starts for P108C\_9:

(Start: 51 @6456 has 45 MA's), (53, 6468), (55, 6474), (58, 6486), (62, 6504), (63, 6507), (67, 6522), (70, 6531), (71, 6534), (78, 6579), (84, 6621), (90, 6633),

Gene: P14.4\_9 Start: 6447, Stop: 6737, Start Num: 51

Candidate Starts for P14.4\_9:

(Start: 51 @6447 has 45 MA's), (53, 6459), (55, 6465), (58, 6477), (62, 6495), (63, 6498), (67, 6513), (70, 6522), (71, 6525), (78, 6570), (84, 6612), (90, 6624),

Gene: P9.1\_9 Start: 6445, Stop: 6735, Start Num: 51

Candidate Starts for P9.1\_9:

(Start: 51 @6445 has 45 MA's), (53, 6457), (55, 6463), (58, 6475), (62, 6493), (63, 6496), (67, 6511), (70, 6520), (71, 6523), (78, 6568), (84, 6610), (90, 6622),

Gene: PA6\_9 Start: 6455, Stop: 6745, Start Num: 51

Candidate Starts for PA6\_9:

(Start: 51 @6455 has 45 MA's), (53, 6467), (55, 6473), (58, 6485), (62, 6503), (63, 6506), (67, 6521), (70, 6530), (71, 6533), (75, 6554), (84, 6620), (90, 6632), (92, 6647), (93, 6656), (103, 6716),

Gene: PAD20\_9 Start: 6453, Stop: 6743, Start Num: 51

Candidate Starts for PAD20\_9:

(Start: 51 @6453 has 45 MA's), (53, 6465), (55, 6471), (58, 6483), (62, 6501), (63, 6504), (67, 6519), (70, 6528), (71, 6531), (78, 6576), (84, 6618), (90, 6630), (103, 6714),

Gene: PAS50\_9 Start: 6450, Stop: 6740, Start Num: 51

Candidate Starts for PAS50\_9:

(Start: 51 @6450 has 45 MA's), (53, 6462), (55, 6468), (58, 6480), (62, 6498), (63, 6501), (67, 6516), (70, 6525), (71, 6528), (78, 6573), (84, 6615), (90, 6627), (93, 6651),

Gene: PHL010M04\_09 Start: 6444, Stop: 6734, Start Num: 51

Candidate Starts for PHL010M04\_09:

(48, 6438), (Start: 51 @6444 has 45 MA's), (53, 6456), (55, 6462), (58, 6474), (62, 6492), (63, 6495), (67, 6510), (70, 6519), (71, 6522), (78, 6567), (84, 6609), (90, 6621), (93, 6645), (103, 6705),

Gene: PHL037M02\_09 Start: 6444, Stop: 6740, Start Num: 48

Candidate Starts for PHL037M02\_09:

(48, 6444), (Start: 51 @6450 has 45 MA's), (53, 6462), (55, 6468), (62, 6498), (63, 6501), (67, 6516), (70, 6525), (71, 6528), (84, 6615), (90, 6627), (103, 6711),

Gene: PHL060L00\_09 Start: 6443, Stop: 6733, Start Num: 51

Candidate Starts for PHL060L00\_09:

(Start: 51 @6443 has 45 MA's), (53, 6455), (55, 6461), (58, 6473), (62, 6491), (63, 6494), (67, 6509), (70, 6518), (71, 6521), (78, 6566), (84, 6608), (90, 6620), (93, 6644),

Gene: PHL067M10\_09 Start: 6447, Stop: 6737, Start Num: 51

Candidate Starts for PHL067M10\_09:

(Start: 51 @6447 has 45 MA's), (53, 6459), (55, 6465), (58, 6477), (62, 6495), (63, 6498), (67, 6513), (70, 6522), (71, 6525), (78, 6570), (84, 6612), (90, 6624), (93, 6648),

Gene: PHL071N05\_09 Start: 6449, Stop: 6739, Start Num: 51

Candidate Starts for PHL071N05\_09:

(Start: 51 @6449 has 45 MA's), (53, 6461), (55, 6467), (58, 6479), (62, 6497), (63, 6500), (67, 6515), (70, 6524), (71, 6527), (78, 6572), (84, 6614), (90, 6626),

Gene: PHL111M01\_09 Start: 6453, Stop: 6743, Start Num: 51

Candidate Starts for PHL111M01\_09:

(Start: 51 @6453 has 45 MA's), (53, 6465), (55, 6471), (58, 6483), (62, 6501), (63, 6504), (67, 6519), (70, 6528), (71, 6531), (78, 6576), (84, 6618), (90, 6630),

Gene: PHL112N00\_09 Start: 6453, Stop: 6743, Start Num: 51

Candidate Starts for PHL112N00\_09:

(Start: 51 @6453 has 45 MA's), (53, 6465), (55, 6471), (58, 6483), (62, 6501), (63, 6504), (67, 6519), (70, 6528), (71, 6531), (78, 6576), (84, 6618), (90, 6630), (92, 6645), (93, 6654),

Gene: PHL113M01\_09 Start: 6453, Stop: 6743, Start Num: 51

Candidate Starts for PHL113M01\_09:

(Start: 51 @6453 has 45 MA's), (53, 6465), (55, 6471), (56, 6477), (58, 6483), (62, 6501), (63, 6504), (67, 6519), (70, 6528), (71, 6531), (78, 6576), (84, 6618), (90, 6630), (93, 6654), (103, 6714),

Gene: PHL114L00\_09 Start: 6452, Stop: 6742, Start Num: 51

Candidate Starts for PHL114L00\_09:

(Start: 51 @6452 has 45 MA's), (53, 6464), (55, 6470), (62, 6500), (67, 6518), (70, 6527), (71, 6530), (75, 6551), (78, 6575), (84, 6617), (90, 6629), (93, 6653), (103, 6713),

Gene: PastaFagioli\_10 Start: 7726, Stop: 7989, Start Num: 40

Candidate Starts for PastaFagioli\_10:

(Start: 37 @7717 has 1 MA's), (Start: 40 @7726 has 16 MA's), (74, 7795),

Gene: Pelletreau\_12 Start: 8244, Stop: 8498, Start Num: 42

Candidate Starts for Pelletreau\_12:

(16, 8115), (32, 8208), (35, 8226), (Start: 42 @8244 has 16 MA's), (63, 8268), (90, 8382), (91, 8388), (97, 8418),

Gene: PhigPhack\_10 Start: 7683, Stop: 7940, Start Num: 41

Candidate Starts for PhigPhack\_10:

(Start: 37 @7671 has 1 MA's), (Start: 41 @7683 has 101 MA's), (64, 7704), (95, 7857), (96, 7860), (99, 7875), (103, 7911),



Gene: Phisb\_10 Start: 7645, Stop: 7905, Start Num: 41  
Candidate Starts for Phisb\_10:  
(Start: 37 @7633 has 1 MA's), (Start: 41 @7645 has 101 MA's), (64, 7669), (96, 7825), (99, 7840),  
(103, 7876),

Gene: PhluffyCoco\_10 Start: 7655, Stop: 7909, Start Num: 42  
Candidate Starts for PhluffyCoco\_10:  
(32, 7619), (Start: 42 @7655 has 16 MA's), (63, 7679), (74, 7724), (77, 7736), (83, 7781), (87, 7787),  
(91, 7799), (96, 7826),

Gene: PhorbesPhlower\_10 Start: 6300, Stop: 6557, Start Num: 47  
Candidate Starts for PhorbesPhlower\_10:  
(34, 6267), (Start: 47 @6300 has 8 MA's), (96, 6486), (100, 6510),

Gene: Pirate\_9 Start: 6445, Stop: 6735, Start Num: 51  
Candidate Starts for Pirate\_9:  
(Start: 51 @6445 has 45 MA's), (53, 6457), (55, 6463), (58, 6475), (62, 6493), (63, 6496), (67, 6511),  
(70, 6520), (71, 6523), (78, 6568), (84, 6610), (90, 6622),

Gene: Polka\_11 Start: 8080, Stop: 8343, Start Num: 39  
Candidate Starts for Polka\_11:  
(Start: 37 @8074 has 1 MA's), (Start: 39 @8080 has 6 MA's), (Start: 40 @8083 has 16 MA's), (Start: 42  
@8089 has 16 MA's), (63, 8113), (74, 8158), (87, 8221), (91, 8233),

Gene: Pollux\_12 Start: 8015, Stop: 8272, Start Num: 43  
Candidate Starts for Pollux\_12:  
(Start: 43 @8015 has 24 MA's), (100, 8225), (106, 8264),

Gene: Pons\_11 Start: 7037, Stop: 7309, Start Num: 41  
Candidate Starts for Pons\_11:  
(Start: 41 @7037 has 101 MA's), (Start: 51 @7049 has 45 MA's), (52, 7055), (94, 7220), (96, 7226),  
(100, 7250),

Gene: Posh\_12 Start: 8009, Stop: 8266, Start Num: 43  
Candidate Starts for Posh\_12:  
(Start: 43 @8009 has 24 MA's), (100, 8219), (106, 8258),

Gene: PotPie\_11 Start: 7888, Stop: 8160, Start Num: 41  
Candidate Starts for PotPie\_11:  
(Start: 40 @7885 has 16 MA's), (Start: 41 @7888 has 101 MA's), (Start: 51 @7900 has 45 MA's), (52,  
7906), (94, 8071), (96, 8077), (100, 8101),

Gene: Procrass1\_9 Start: 6452, Stop: 6742, Start Num: 51  
Candidate Starts for Procrass1\_9:  
(Start: 51 @6452 has 45 MA's), (53, 6464), (55, 6470), (58, 6482), (62, 6500), (63, 6503), (67, 6518),  
(70, 6527), (71, 6530), (78, 6575), (84, 6617), (90, 6629), (93, 6653), (103, 6713),

Gene: PsychoKiller\_11 Start: 7257, Stop: 7538, Start Num: 41  
Candidate Starts for PsychoKiller\_11:  
(17, 7134), (Start: 41 @7257 has 101 MA's),

Gene: Pytheas\_12 Start: 7862, Stop: 8119, Start Num: 43  
Candidate Starts for Pytheas\_12:

(Start: 43 @7862 has 24 MA's), (100, 8072), (106, 8111),

Gene: QMacho\_11 Start: 8135, Stop: 8395, Start Num: 41

Candidate Starts for QMacho\_11:

(Start: 37 @8123 has 1 MA's), (Start: 41 @8135 has 101 MA's), (64, 8159), (96, 8315), (99, 8330),

Gene: Quasar\_11 Start: 7872, Stop: 8147, Start Num: 41

Candidate Starts for Quasar\_11:

(17, 7749), (Start: 41 @7872 has 101 MA's),

Gene: QueenBey\_9 Start: 6446, Stop: 6736, Start Num: 51

Candidate Starts for QueenBey\_9:

(Start: 51 @6446 has 45 MA's), (55, 6464), (58, 6476), (62, 6494), (63, 6497), (67, 6512), (70, 6521), (71, 6524), (78, 6569), (84, 6611), (90, 6623), (93, 6647), (103, 6707),

Gene: Quenya\_11 Start: 7781, Stop: 8044, Start Num: 41

Candidate Starts for Quenya\_11:

(24, 7724), (Start: 41 @7781 has 101 MA's), (64, 7808), (68, 7823), (96, 7964),

Gene: RanchParmCat\_14 Start: 7972, Stop: 8241, Start Num: 41

Candidate Starts for RanchParmCat\_14:

(Start: 41 @7972 has 101 MA's), (52, 7987), (62, 8029),

Gene: Rattail\_10 Start: 7706, Stop: 7960, Start Num: 42

Candidate Starts for Rattail\_10:

(6, 7448), (8, 7472), (10, 7508), (15, 7556), (29, 7664), (32, 7670), (Start: 42 @7706 has 16 MA's), (63, 7730), (75, 7778), (77, 7787), (83, 7832), (91, 7850), (96, 7877),

Gene: RedBaron\_12 Start: 7302, Stop: 7583, Start Num: 41

Candidate Starts for RedBaron\_12:

(17, 7179), (Start: 41 @7302 has 101 MA's),

Gene: RedFox\_10 Start: 7655, Stop: 7909, Start Num: 42

Candidate Starts for RedFox\_10:

(32, 7619), (Start: 42 @7655 has 16 MA's), (63, 7679), (74, 7724), (77, 7736), (83, 7781), (87, 7787), (91, 7799), (96, 7826),

Gene: Renna12\_11 Start: 7855, Stop: 8109, Start Num: 42

Candidate Starts for Renna12\_11:

(Start: 42 @7855 has 16 MA's), (63, 7879), (74, 7924), (77, 7936), (83, 7981), (87, 7987), (91, 7999), (96, 8026),

Gene: Rileysaurus\_9 Start: 6441, Stop: 6731, Start Num: 51

Candidate Starts for Rileysaurus\_9:

(Start: 51 @6441 has 45 MA's), (53, 6453), (55, 6459), (58, 6471), (62, 6489), (67, 6507), (70, 6516), (71, 6519), (78, 6564), (84, 6606), (90, 6618), (93, 6642),

Gene: Rollins\_9 Start: 7485, Stop: 7748, Start Num: 41

Candidate Starts for Rollins\_9:

(24, 7428), (Start: 41 @7485 has 101 MA's), (60, 7500), (64, 7515), (88, 7632), (100, 7692), (104, 7722),

Gene: Rona\_10 Start: 7882, Stop: 8139, Start Num: 41

Candidate Starts for Rona\_10:

(Start: 41 @7882 has 101 MA's), (74, 7945), (96, 8059), (102, 8104),

Gene: Ronaldo\_46 Start: 17223, Stop: 17507, Start Num: 38

Candidate Starts for Ronaldo\_46:

(36, 17217), (Start: 38 @17223 has 6 MA's), (58, 17280), (65, 17307), (86, 17388), (90, 17394),

Gene: SKKY\_9 Start: 6477, Stop: 6767, Start Num: 51

Candidate Starts for SKKY\_9:

(Start: 51 @6477 has 45 MA's), (53, 6489), (55, 6495), (58, 6507), (62, 6525), (63, 6528), (67, 6543), (70, 6552), (71, 6555), (78, 6600),

Gene: SanaSana\_11 Start: 7900, Stop: 8160, Start Num: 41

Candidate Starts for SanaSana\_11:

(Start: 41 @7900 has 101 MA's), (74, 7966),

Gene: SansAfet\_10 Start: 7665, Stop: 7922, Start Num: 41

Candidate Starts for SansAfet\_10:

(Start: 37 @7653 has 1 MA's), (Start: 41 @7665 has 101 MA's), (64, 7686), (95, 7839), (96, 7842), (99, 7857), (103, 7893),

Gene: SarBear\_10 Start: 7625, Stop: 7888, Start Num: 40

Candidate Starts for SarBear\_10:

(Start: 37 @7616 has 1 MA's), (Start: 40 @7625 has 16 MA's), (64, 7652), (96, 7808), (99, 7823),

Gene: Sharkboy\_10 Start: 7881, Stop: 8138, Start Num: 41

Candidate Starts for Sharkboy\_10:

(Start: 41 @7881 has 101 MA's), (74, 7944), (96, 8058), (102, 8103),

Gene: Shayna\_9 Start: 7487, Stop: 7753, Start Num: 40

Candidate Starts for Shayna\_9:

(Start: 37 @7478 has 1 MA's), (Start: 40 @7487 has 16 MA's), (62, 7511), (64, 7517), (79, 7592), (88, 7634), (95, 7667), (106, 7733),

Gene: SheckWes\_10 Start: 7025, Stop: 7297, Start Num: 41

Candidate Starts for SheckWes\_10:

(Start: 41 @7025 has 101 MA's), (Start: 51 @7037 has 45 MA's), (52, 7043), (94, 7208), (96, 7214), (100, 7238),

Gene: SilverChicken\_12 Start: 6948, Stop: 7220, Start Num: 43

Candidate Starts for SilverChicken\_12:

(Start: 43 @6948 has 24 MA's), (62, 7008), (63, 7011), (72, 7041), (77, 7065), (82, 7095), (98, 7155),

Gene: SketchMex\_10 Start: 7241, Stop: 7519, Start Num: 41

Candidate Starts for SketchMex\_10:

(Start: 41 @7241 has 101 MA's), (63, 7310), (81, 7382),

Gene: Skylord\_9 Start: 7425, Stop: 7688, Start Num: 41

Candidate Starts for Skylord\_9:

(24, 7368), (Start: 41 @7425 has 101 MA's), (60, 7440), (64, 7455), (88, 7572), (100, 7632), (104, 7662),

Gene: Slay\_10 Start: 8101, Stop: 8364, Start Num: 40

Candidate Starts for Slay\_10:

(Start: 37 @8092 has 1 MA's), (Start: 40 @8101 has 16 MA's), (64, 8128), (96, 8284), (99, 8299),

Gene: Sleepyhead\_11 Start: 7625, Stop: 7879, Start Num: 46

Candidate Starts for Sleepyhead\_11:

(Start: 46 @7625 has 3 MA's), (60, 7667), (73, 7706), (76, 7718),

Gene: Socotra\_12 Start: 7257, Stop: 7538, Start Num: 41

Candidate Starts for Socotra\_12:

(17, 7134), (Start: 41 @7257 has 101 MA's),

Gene: Softsoap\_10 Start: 7654, Stop: 7911, Start Num: 41

Candidate Starts for Softsoap\_10:

(Start: 37 @7642 has 1 MA's), (Start: 41 @7654 has 101 MA's), (96, 7831), (103, 7882),

Gene: Solea\_11 Start: 8040, Stop: 8297, Start Num: 41

Candidate Starts for Solea\_11:

(Start: 37 @8028 has 1 MA's), (Start: 41 @8040 has 101 MA's), (64, 8061), (96, 8217), (99, 8232), (103, 8268),

Gene: Solid\_9 Start: 6453, Stop: 6743, Start Num: 51

Candidate Starts for Solid\_9:

(Start: 51 @6453 has 45 MA's), (53, 6465), (55, 6471), (58, 6483), (62, 6501), (63, 6504), (67, 6519), (70, 6528), (71, 6531), (78, 6576), (84, 6618), (90, 6630), (93, 6654), (103, 6714),

Gene: Sopespian\_11 Start: 7257, Stop: 7538, Start Num: 41

Candidate Starts for Sopespian\_11:

(17, 7134), (Start: 41 @7257 has 101 MA's),

Gene: Soul22\_12 Start: 6947, Stop: 7219, Start Num: 43

Candidate Starts for Soul22\_12:

(Start: 43 @6947 has 24 MA's), (62, 7007), (63, 7010), (72, 7040), (77, 7064), (82, 7094), (98, 7154),

Gene: Squiracle\_10 Start: 7884, Stop: 8150, Start Num: 41

Candidate Starts for Squiracle\_10:

(Start: 37 @7872 has 1 MA's), (Start: 41 @7884 has 101 MA's), (62, 7908), (79, 7989), (88, 8031), (96, 8067), (99, 8082),

Gene: Starburst\_12 Start: 7257, Stop: 7538, Start Num: 41

Candidate Starts for Starburst\_12:

(17, 7134), (Start: 41 @7257 has 101 MA's),

Gene: SteamedHams\_13 Start: 7276, Stop: 7548, Start Num: 41

Candidate Starts for SteamedHams\_13:

(Start: 41 @7276 has 101 MA's), (63, 7339),

Gene: Stoor\_10 Start: 7897, Stop: 8157, Start Num: 41

Candidate Starts for Stoor\_10:

(Start: 41 @7897 has 101 MA's), (74, 7963),

Gene: Stormborn\_9 Start: 6448, Stop: 6738, Start Num: 51

Candidate Starts for Stormborn\_9:

(Start: 51 @6448 has 45 MA's), (53, 6460), (55, 6466), (58, 6478), (62, 6496), (63, 6499), (67, 6514), (70, 6523), (71, 6526), (78, 6571), (84, 6613), (90, 6625), (93, 6649), (103, 6709),

Gene: Stromboli\_10 Start: 7898, Stop: 8161, Start Num: 42

Candidate Starts for Stromboli\_10:

(Start: 42 @7898 has 16 MA's), (61, 7910), (64, 7925), (88, 8042), (96, 8081), (99, 8096),

Gene: StuartMinion\_10 Start: 7681, Stop: 7935, Start Num: 42

Candidate Starts for StuartMinion\_10:

(4, 7405), (7, 7444), (Start: 42 @7681 has 16 MA's), (75, 7753), (83, 7807), (90, 7819), (91, 7825), (96, 7852),

Gene: SummitAcademy\_10 Start: 7103, Stop: 7375, Start Num: 41

Candidate Starts for SummitAcademy\_10:

(Start: 40 @7100 has 16 MA's), (Start: 41 @7103 has 101 MA's), (Start: 51 @7115 has 45 MA's), (52, 7121), (94, 7286), (96, 7292), (100, 7316),

Gene: SunnyD\_9 Start: 7487, Stop: 7753, Start Num: 40

Candidate Starts for SunnyD\_9:

(Start: 37 @7478 has 1 MA's), (Start: 40 @7487 has 16 MA's), (62, 7511), (64, 7517), (88, 7634), (95, 7667), (106, 7733),

Gene: Supernova\_9 Start: 6445, Stop: 6735, Start Num: 51

Candidate Starts for Supernova\_9:

(Start: 51 @6445 has 45 MA's), (53, 6457), (55, 6463), (62, 6493), (63, 6496), (67, 6511), (70, 6520), (71, 6523), (75, 6544), (78, 6568), (84, 6610), (90, 6622), (93, 6646), (103, 6706),

Gene: Survivors\_13 Start: 8017, Stop: 8316, Start Num: 41

Candidate Starts for Survivors\_13:

(Start: 40 @8014 has 16 MA's), (Start: 41 @8017 has 101 MA's), (72, 8119), (84, 8188), (96, 8230), (105, 8290), (106, 8293), (107, 8296),

Gene: SweatNTears\_13 Start: 7761, Stop: 8030, Start Num: 41

Candidate Starts for SweatNTears\_13:

(Start: 41 @7761 has 101 MA's), (63, 7821), (81, 7893),

Gene: Swervy\_10 Start: 7625, Stop: 7888, Start Num: 40

Candidate Starts for Swervy\_10:

(Start: 37 @7616 has 1 MA's), (Start: 40 @7625 has 16 MA's), (64, 7652), (96, 7808), (99, 7823),

Gene: TMaxx\_12 Start: 7340, Stop: 7600, Start Num: 45

Candidate Starts for TMaxx\_12:

(Start: 45 @7340 has 4 MA's), (74, 7439), (96, 7520), (97, 7523),

Gene: TaylorSipht\_11 Start: 8123, Stop: 8377, Start Num: 42

Candidate Starts for TaylorSipht\_11:

(32, 8087), (35, 8105), (Start: 42 @8123 has 16 MA's), (63, 8147), (75, 8195), (77, 8204),

Gene: Teagster\_9 Start: 7487, Stop: 7753, Start Num: 40

Candidate Starts for Teagster\_9:

(Start: 37 @7478 has 1 MA's), (Start: 40 @7487 has 16 MA's), (62, 7511), (64, 7517), (79, 7592), (88, 7634), (95, 7667), (106, 7733),

Gene: Toad24\_12 Start: 8245, Stop: 8499, Start Num: 42  
Candidate Starts for Toad24\_12:  
(16, 8116), (18, 8131), (35, 8227), (Start: 42 @8245 has 16 MA's), (63, 8269), (90, 8383), (91, 8389),  
(97, 8419),

Gene: Tolls\_13 Start: 7279, Stop: 7551, Start Num: 41  
Candidate Starts for Tolls\_13:  
(Start: 41 @7279 has 101 MA's), (63, 7342),

Gene: Troje\_11 Start: 7235, Stop: 7504, Start Num: 41  
Candidate Starts for Troje\_11:  
(Start: 41 @7235 has 101 MA's), (63, 7295), (81, 7367),

Gene: TukTuk\_10 Start: 7628, Stop: 7948, Start Num: 41  
Candidate Starts for TukTuk\_10:  
(Start: 37 @7616 has 1 MA's), (Start: 41 @7628 has 101 MA's), (64, 7712), (96, 7868), (99, 7883),

Gene: Typha\_17 Start: 11749, Stop: 11997, Start Num: 59  
Candidate Starts for Typha\_17:  
(27, 11692), (Start: 59 @11749 has 4 MA's), (71, 11791), (83, 11866), (97, 11914), (104, 11965), (108,  
11983),

Gene: Typhonomachy\_12 Start: 7257, Stop: 7538, Start Num: 41  
Candidate Starts for Typhonomachy\_12:  
(17, 7134), (Start: 41 @7257 has 101 MA's),

Gene: Vine\_12 Start: 8032, Stop: 8304, Start Num: 41  
Candidate Starts for Vine\_12:  
(Start: 40 @8029 has 16 MA's), (Start: 41 @8032 has 101 MA's), (94, 8215), (96, 8221), (100, 8245),

Gene: Vitas\_9 Start: 7425, Stop: 7688, Start Num: 41  
Candidate Starts for Vitas\_9:  
(24, 7368), (Start: 41 @7425 has 101 MA's), (60, 7440), (64, 7455), (88, 7572), (100, 7632), (104,  
7662),

Gene: Volt\_45 Start: 17223, Stop: 17507, Start Num: 38  
Candidate Starts for Volt\_45:  
(36, 17217), (Start: 38 @17223 has 6 MA's), (58, 17280), (65, 17307), (86, 17388), (90, 17394),

Gene: WalkingDead\_10 Start: 7885, Stop: 8148, Start Num: 42  
Candidate Starts for WalkingDead\_10:  
(Start: 42 @7885 has 16 MA's), (64, 7912), (96, 8068), (99, 8083),

Gene: Westrich\_12 Start: 8233, Stop: 8487, Start Num: 42  
Candidate Starts for Westrich\_12:  
(16, 8104), (18, 8119), (32, 8197), (35, 8215), (Start: 42 @8233 has 16 MA's), (63, 8257), (90, 8371),  
(91, 8377), (97, 8407),

Gene: Wizzo\_9 Start: 6457, Stop: 6747, Start Num: 51  
Candidate Starts for Wizzo\_9:  
(Start: 51 @6457 has 45 MA's), (53, 6469), (55, 6475), (58, 6487), (62, 6505), (63, 6508), (67, 6523),  
(70, 6532), (71, 6535), (84, 6622), (90, 6634),

Gene: Wrigley\_12 Start: 7859, Stop: 8116, Start Num: 43  
Candidate Starts for Wrigley\_12:  
(Start: 43 @7859 has 24 MA's), (100, 8069), (106, 8108),

Gene: Yakult\_12 Start: 7168, Stop: 7437, Start Num: 41  
Candidate Starts for Yakult\_12:  
(Start: 41 @7168 has 101 MA's),

Gene: Yarn\_10 Start: 7269, Stop: 7541, Start Num: 41  
Candidate Starts for Yarn\_10:  
(Start: 41 @7269 has 101 MA's),

Gene: Yoshi\_12 Start: 6947, Stop: 7219, Start Num: 43  
Candidate Starts for Yoshi\_12:  
(Start: 43 @6947 has 24 MA's), (62, 7007), (63, 7010), (72, 7040), (77, 7064), (82, 7094), (98, 7154),

Gene: Yucky\_13 Start: 7892, Stop: 8164, Start Num: 41  
Candidate Starts for Yucky\_13:  
(Start: 40 @7889 has 16 MA's), (Start: 41 @7892 has 101 MA's), (94, 8075), (96, 8081), (100, 8105),

Gene: Yummy\_12 Start: 7139, Stop: 7417, Start Num: 41  
Candidate Starts for Yummy\_12:  
(Start: 41 @7139 has 101 MA's), (63, 7208), (81, 7280),

Gene: Zapner\_13 Start: 7472, Stop: 7744, Start Num: 43  
Candidate Starts for Zapner\_13:  
(Start: 43 @7472 has 24 MA's), (62, 7532), (63, 7535), (72, 7565), (77, 7589), (82, 7619), (98, 7679),

Gene: Zareef\_15 Start: 8164, Stop: 8463, Start Num: 41  
Candidate Starts for Zareef\_15:  
(Start: 40 @8161 has 16 MA's), (Start: 41 @8164 has 101 MA's), (72, 8266), (84, 8335), (96, 8377),  
(105, 8437), (106, 8440), (107, 8443),

Gene: Zhuangyuan\_13 Start: 8412, Stop: 8666, Start Num: 42  
Candidate Starts for Zhuangyuan\_13:  
(6, 8154), (9, 8205), (16, 8283), (32, 8376), (35, 8394), (Start: 42 @8412 has 16 MA's), (60, 8424), (87,  
8544), (96, 8583), (101, 8622),

Gene: Ziko\_46 Start: 17163, Stop: 17447, Start Num: 38  
Candidate Starts for Ziko\_46:  
(36, 17157), (Start: 38 @17163 has 6 MA's), (58, 17220), (65, 17247), (86, 17328), (90, 17334),