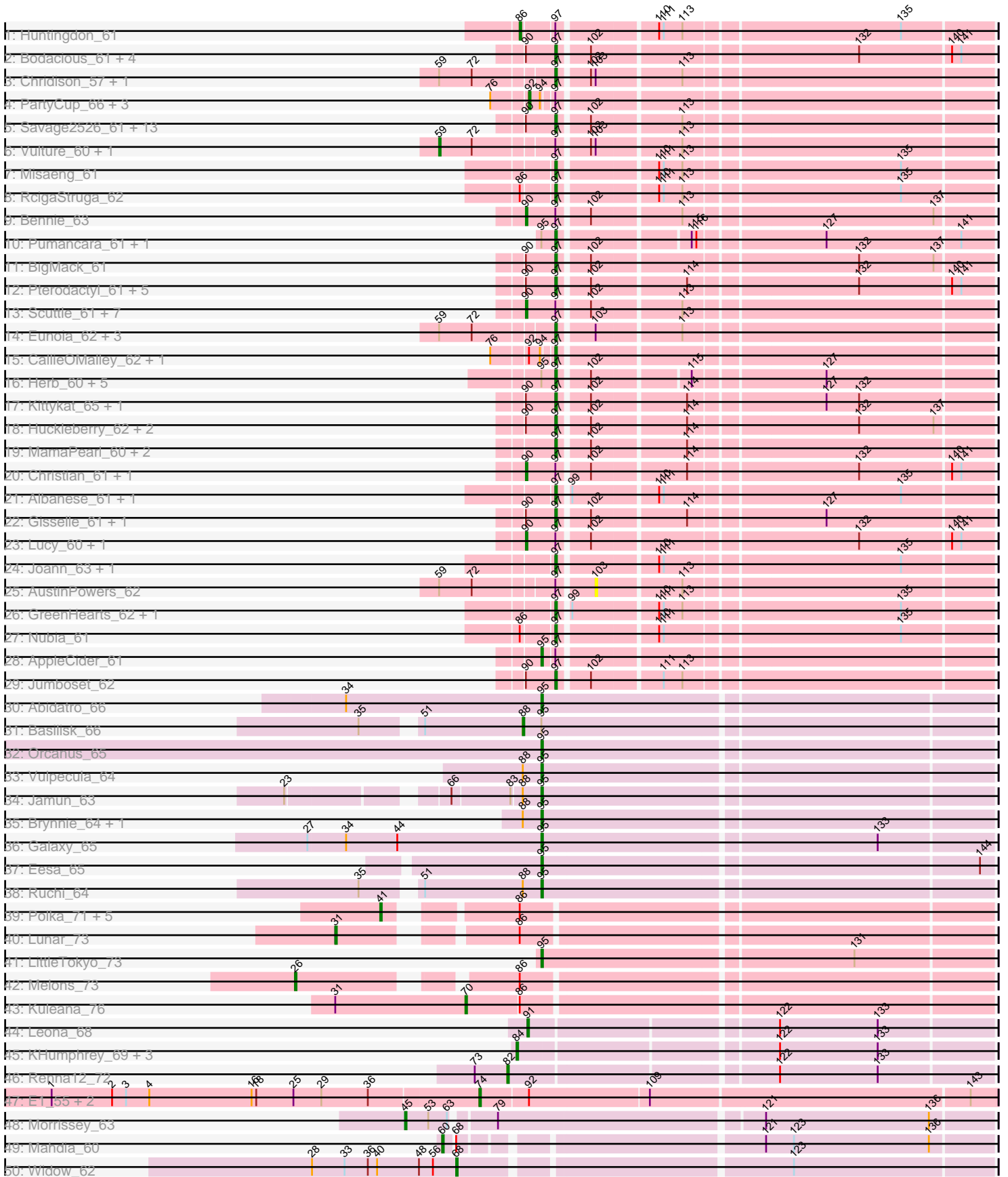
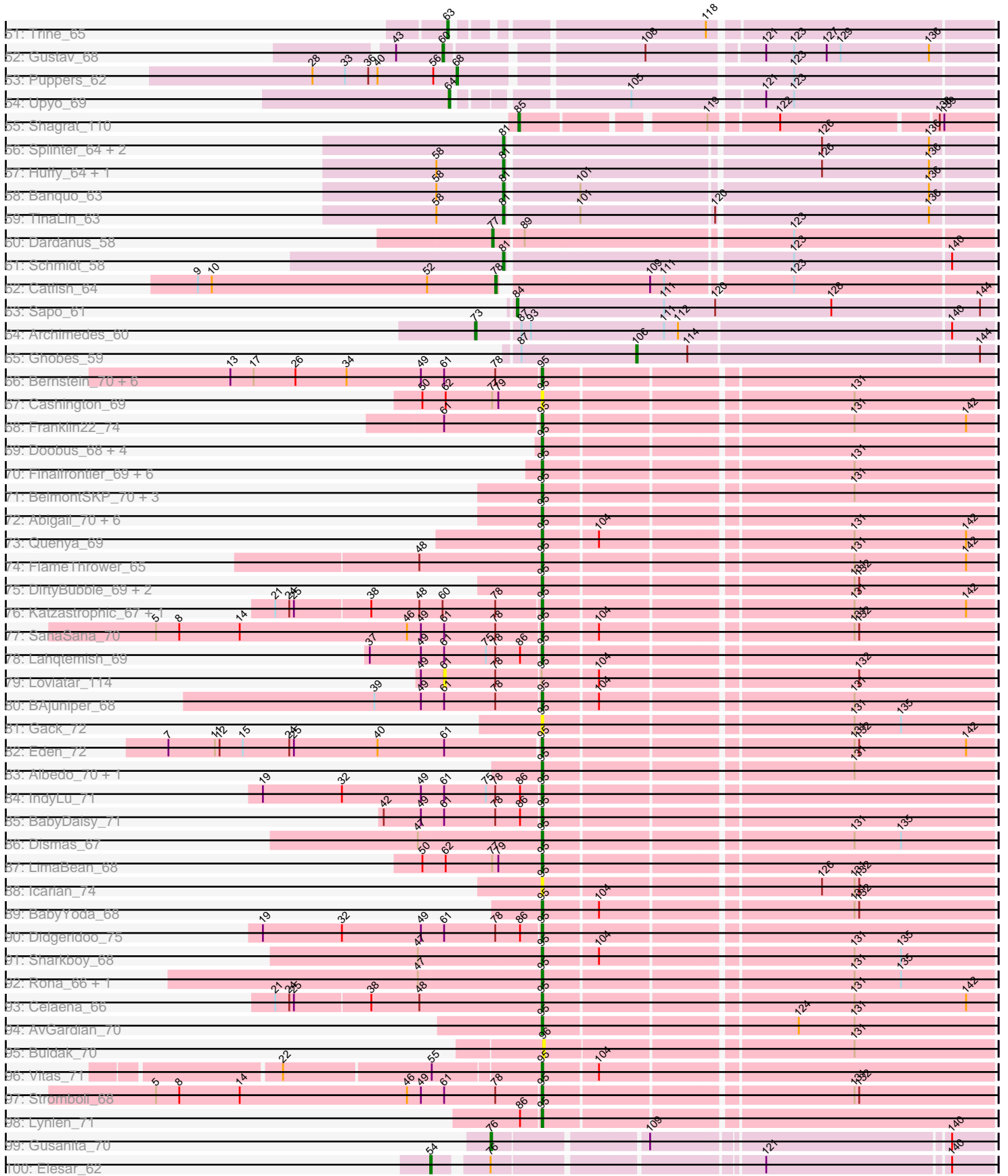


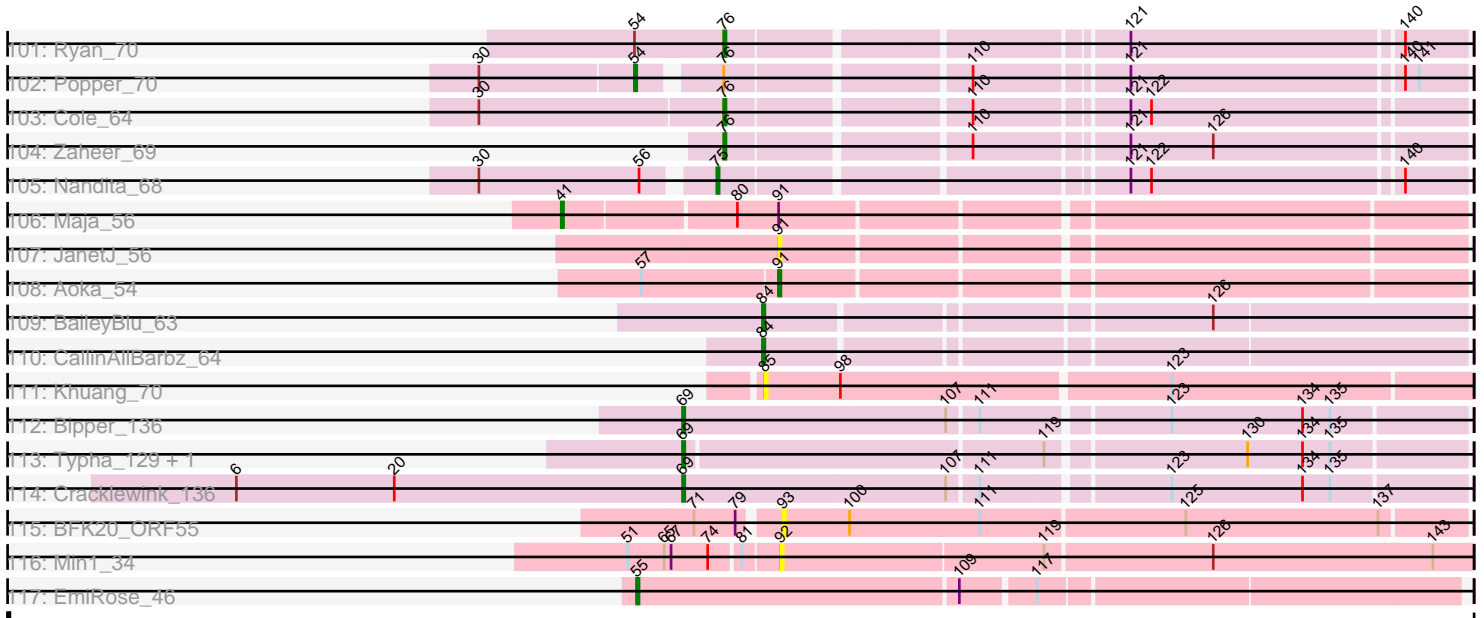
Pham 157581



Pham 157581



Pham 157581



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 157581 Report

This analysis was run 04/13/24 on database version 558.

Pham number 157581 has 217 members, 19 are drafts.

Phages represented in each track:

- Track 1 : Huntingdon\_61
- Track 2 : Bodacious\_61, CristinaYang\_61, Nancia\_61, LilStuart\_60, Lasagna\_59
- Track 3 : Chridison\_57, Supakev\_60
- Track 4 : PartyCup\_66, Wayne\_64, Suppi\_62, Canowicakte\_62
- Track 5 : Savage2526\_61, Potatoes\_62, BrotherBLo\_62, Zorro\_62, TattModd\_61, Wawa\_62, Rozby\_60, Immaculata\_62, Kalizoi\_63, Cholula\_62, Korra\_62, Riverdale\_61, Beethoven\_63, Carpal\_61
- Track 6 : Vulture\_60, HunterDalle\_60
- Track 7 : Misaeng\_61
- Track 8 : RcigaStruga\_62
- Track 9 : Bennie\_63
- Track 10 : Pumancara\_61, PinkFriday\_62
- Track 11 : BigMack\_61
- Track 12 : Pterodactyl\_61, Makoto\_60, Lennox\_61, ChewChew\_61, OurGirlNessie\_59, WonderBoy\_59
- Track 13 : Scuttle\_61, MrGloopy\_62, RAP15\_63, Glenn\_64, Vallejo\_62, Dino\_62, MeganNoll\_63, Fluke\_62
- Track 14 : Eunoia\_62, OMalley\_60, Aledel\_60, Riovina\_60
- Track 15 : CallieOMalley\_62, Litotes\_62
- Track 16 : Herb\_60, Maria1952\_59, Daiboju\_60, Sergei\_60, KingBob\_60, Temper16\_60
- Track 17 : Kittykat\_65, Preamble\_64
- Track 18 : Huckleberry\_62, Moki\_62, HeadNerd\_62
- Track 19 : MamaPearl\_60, EstebanJulior\_60, Urla\_62
- Track 20 : Christian\_61, PitaDog\_61
- Track 21 : Albanese\_61, Greenhouse\_61
- Track 22 : Gisselle\_61, DreamTeam\_61
- Track 23 : Lucy\_60, DrRobert\_59
- Track 24 : Joann\_63, Oxynfrius\_62
- Track 25 : AustinPowers\_62
- Track 26 : GreenHearts\_62, Lakshmi\_61
- Track 27 : Nubia\_61
- Track 28 : AppleCider\_61
- Track 29 : Jumboset\_62
- Track 30 : Abidatro\_66
- Track 31 : Basilisk\_66
- Track 32 : Orcanus\_65

- Track 33 : Vulpecula\_64
- Track 34 : Jamun\_63
- Track 35 : Brynnie\_64, Chickaboom\_70
- Track 36 : Galaxy\_65
- Track 37 : Eesa\_65
- Track 38 : Ruchi\_64
- Track 39 : Polka\_71, Cote\_75, Amelia\_71, Kepler\_75, Daob\_71, Coral\_72
- Track 40 : Lunar\_73
- Track 41 : LittleTokyo\_73
- Track 42 : Melons\_73
- Track 43 : Kuleana\_76
- Track 44 : Leona\_68
- Track 45 : KHumphrey\_69, Juno112\_70, PhluffyCoco\_69, RedFox\_71
- Track 46 : Renna12\_72
- Track 47 : E1\_55, Anatole\_55, B3\_57
- Track 48 : Morrissey\_63
- Track 49 : Mahdia\_60
- Track 50 : Widow\_62
- Track 51 : Trine\_65
- Track 52 : Gustav\_68
- Track 53 : Puppies\_62
- Track 54 : Upyo\_69
- Track 55 : Shagrat\_110
- Track 56 : Splinter\_64, TZGordon\_65, Vendetta\_64
- Track 57 : Huffy\_64, DinoDaryn\_64
- Track 58 : Banquo\_63
- Track 59 : TinaLin\_63
- Track 60 : Dardanus\_58
- Track 61 : Schmidt\_58
- Track 62 : Catfish\_64
- Track 63 : Sapo\_61
- Track 64 : Archimedes\_60
- Track 65 : Ghobes\_59
- Track 66 : Bernstein\_70, Brahms\_70, Clayda5\_72, Armstrong\_70, Skylord\_70, Coltrane\_70, Rollins\_70
- Track 67 : Cashington\_69
- Track 68 : Franklin22\_74
- Track 69 : Doobus\_68, Albright\_69, BubbaBear\_68, DickRichards\_68, Avocadoman\_69
- Track 70 : Finalfrontier\_69, Eula\_69, TukTuk\_70, Jovita\_68, Nicky22\_69, Swervy\_70, Slay\_70
- Track 71 : BelmontSKP\_70, Arroyo\_71, SansAfet\_72, AnnaLie\_70
- Track 72 : Abigail\_70, Johnathan\_70, SarBear\_72, CroZenni\_71, QMacho\_72, Burritobowl\_72, Phisb\_74
- Track 73 : Quenya\_69
- Track 74 : FlameThrower\_65
- Track 75 : DirtyBubble\_69, Elva\_73, Stoor\_69
- Track 76 : Katzastrophic\_67, Bachaco\_67
- Track 77 : SanaSana\_70
- Track 78 : Lahqtemish\_69
- Track 79 : Loviatar\_114
- Track 80 : BAjuniper\_68
- Track 81 : Gack\_72

- Track 82 : Eden\_72
- Track 83 : Albedo\_70, Kenzers\_69
- Track 84 : IndyLu\_71
- Track 85 : BabyDaisy\_71
- Track 86 : Dismas\_67
- Track 87 : LimaBean\_68
- Track 88 : Icarian\_74
- Track 89 : BabyYoda\_68
- Track 90 : Didgeridoo\_75
- Track 91 : Sharkboy\_68
- Track 92 : Rona\_66, Kieran\_65
- Track 93 : Celaena\_66
- Track 94 : AvGardian\_70
- Track 95 : Buldak\_70
- Track 96 : Vitas\_71
- Track 97 : Stromboli\_68
- Track 98 : Lynlen\_71
- Track 99 : Gusanita\_70
- Track 100 : Elesar\_62
- Track 101 : Ryan\_70
- Track 102 : Popper\_70
- Track 103 : Cole\_64
- Track 104 : Zaheer\_69
- Track 105 : Nandita\_68
- Track 106 : Maja\_56
- Track 107 : JanetJ\_56
- Track 108 : Aoka\_54
- Track 109 : BaileyBlu\_63
- Track 110 : CallinAllBarbz\_64
- Track 111 : Khuang\_70
- Track 112 : Bipper\_136
- Track 113 : Typha\_129, Hilltopfarm\_134
- Track 114 : Cracklewink\_136
- Track 115 : BFK20\_ORF55
- Track 116 : Min1\_34
- Track 117 : EmiRose\_46

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

The start number called the most often in the published annotations is 95, it was called in 66 of the 198 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• Abidatro\_66, Abigail\_70, Albedo\_70, Albright\_69, AnnaLie\_70, AppleCider\_61, Armstrong\_70, Arroyo\_71, AvGardian\_70, Avocadoman\_69, BAjuniper\_68, BabyDaisy\_71, BabyYoda\_68, Bachaco\_67, BelmontSKP\_70, Bernstein\_70, Brahms\_70, Brynnie\_64, BubbaBear\_68, Burritobowl\_72, Cashington\_69, Celaena\_66, Chickaboom\_70, Clayda5\_72, Coltrane\_70, CroZenni\_71, DickRichards\_68, Didgeridoo\_75, DirtyBubble\_69, Dismas\_67, Doobus\_68, Eden\_72, Eesa\_65, Elva\_73, Eula\_69, Finalfrontier\_69, FlameThrower\_65,

Franklin22\_74, Gack\_72, Galaxy\_65, Icarian\_74, IndyLu\_71, Jamun\_63, Johnathan\_70, Jovita\_68, Katzastrophic\_67, Kenzers\_69, Kieran\_65, Lahqtemish\_69, LimaBean\_68, LittleTokyo\_73, Lynlen\_71, Nicky22\_69, Orcanus\_65, Phisb\_74, QMacho\_72, Quenya\_69, Rollins\_70, Rona\_66, Ruchi\_64, SanaSana\_70, SansAfet\_72, SarBear\_72, Sharkboy\_68, Skylord\_70, Slay\_70, Stoor\_69, Stromboli\_68, Swervy\_70, TukTuk\_70, Vitas\_71, Vulpecula\_64,

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

- Basilisk\_66, Daiboju\_60, Herb\_60, KingBob\_60, Loviatar\_114, Maria1952\_59, PinkFriday\_62, Pumancara\_61, Sergei\_60, Temper16\_60,

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

- Albanese\_61, Aledel\_60, Amelia\_71, Anatole\_55, Aoka\_54, Archimedes\_60, AustinPowers\_62, B3\_57, BFK20\_ORF55, BaileyBlu\_63, Banquo\_63, Beethoven\_63, Bennie\_63, BigMack\_61, Bipper\_136, Bodacious\_61, BrotherBLo\_62, Buldak\_70, CallieOMalley\_62, CallinAllBarbz\_64, Canowicakte\_62, Carpal\_61, Catfish\_64, ChewChew\_61, Cholula\_62, Chridison\_57, Christian\_61, Cole\_64, Coral\_72, Cote\_75, Cracklewink\_136, CristinaYang\_61, Daob\_71, Dardanus\_58, DinoDaryn\_64, Dino\_62, DrRobert\_59, DreamTeam\_61, E1\_55, Elesar\_62, EmiRose\_46, EstebanJulior\_60, Eunoia\_62, Fluke\_62, Ghobes\_59, Gisselle\_61, Glenn\_64, GreenHearts\_62, Greenhouse\_61, Gusanita\_70, Gustav\_68, HeadNerd\_62, Hilltopfarm\_134, Huckleberry\_62, Huffy\_64, HunterDalle\_60, Huntingdon\_61, Immaculata\_62, JanetJ\_56, Joann\_63, Jumboset\_62, Juno112\_70, KHumphrey\_69, Kalizoi\_63, Kepler\_75, Khuang\_70, Kittykat\_65, Korra\_62, Kuleana\_76, Lakshmi\_61, Lasagna\_59, Lennox\_61, Leona\_68, LilStuart\_60, Litotes\_62, Lucy\_60, Lunar\_73, Mahdia\_60, Maja\_56, Makoto\_60, MamaPearl\_60, MeganNoll\_63, Melons\_73, Min1\_34, Misaeng\_61, Moki\_62, Morrissey\_63, MrGloopy\_62, Nancia\_61, Nandita\_68, Nubia\_61, OMalley\_60, OurGirlNessie\_59, Oxynfrius\_62, PartyCup\_66, PhluffyCoco\_69, PitaDog\_61, Polka\_71, Popper\_70, Potatoes\_62, Preamble\_64, Pterodactyl\_61, Puppies\_62, RAP15\_63, RcigaStruga\_62, RedFox\_71, Renna12\_72, Riovina\_60, Riverdale\_61, Rozby\_60, Ryan\_70, Sapo\_61, Savage2526\_61, Schmidt\_58, Scuttle\_61, Shagrat\_110, Splinter\_64, Supakev\_60, Suppi\_62, TZGordon\_65, TattModd\_61, TinaLin\_63, Trine\_65, Typha\_129, Upyo\_69, Urla\_62, Vallejo\_62, Vendetta\_64, Vulture\_60, Wawa\_62, Wayne\_64, Widow\_62, WonderBoy\_59, Zaheer\_69, Zorro\_62,

### Summary by start number:

Start 26:

- Found in 8 of 217 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 12.5% of time when present
- Phage (with cluster) where this start called: Melons\_73 (AS2),

Start 31:

- Found in 2 of 217 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Lunar\_73 (AS2),

Start 41:

- Found in 7 of 217 ( 3.2% ) of genes in pham
- Manual Annotations of this start: 7 of 198

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amelia\_71 (AS2), Coral\_72 (AS2), Cote\_75 (AS2), Daob\_71 (AS2), Kepler\_75 (AS2), Maja\_56 (FO), Polka\_71 (AS2),

#### Start 45:

- Found in 1 of 217 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Morrissey\_63 (CD),

#### Start 54:

- Found in 3 of 217 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 198
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Elesar\_62 (FF), Popper\_70 (FF),

#### Start 55:

- Found in 2 of 217 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 50.0% of time when present
- Phage (with cluster) where this start called: EmiRose\_46 (singleton),

#### Start 59:

- Found in 9 of 217 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 2 of 198
- Called 22.2% of time when present
- Phage (with cluster) where this start called: HunterDalle\_60 (AK), Vulture\_60 (AK),

#### Start 60:

- Found in 4 of 217 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 2 of 198
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Gustav\_68 (CD), Mahdia\_60 (CD),

#### Start 61:

- Found in 17 of 217 ( 7.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 5.9% of time when present
- Phage (with cluster) where this start called: Loviatar\_114 (EB),

#### Start 63:

- Found in 2 of 217 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Trine\_65 (CD),

#### Start 64:

- Found in 1 of 217 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Upyo\_69 (CD),

#### Start 68:



- Found in 3 of 217 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 198
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Puppies\_62 (CD), Widow\_62 (CD),

#### Start 69:

- Found in 4 of 217 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 4 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bipper\_136 (Y), Cracklewink\_136 (Y), Hilltopfarm\_134 (Y), Typha\_129 (Y),

#### Start 70:

- Found in 1 of 217 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kuleana\_76 (AS2),

#### Start 73:

- Found in 2 of 217 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Archimedes\_60 (DA),

#### Start 74:

- Found in 4 of 217 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 3 of 198
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Anatole\_55 (BV), B3\_57 (BV), E1\_55 (BV),

#### Start 75:

- Found in 3 of 217 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Nandita\_68 (FF),

#### Start 76:

- Found in 12 of 217 ( 5.5% ) of genes in pham
- Manual Annotations of this start: 4 of 198
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Cole\_64 (FF), Gusanita\_70 (FF), Ryan\_70 (FF), Zaheer\_69 (FF),

#### Start 77:

- Found in 3 of 217 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Dardanus\_58 (CU3),

#### Start 78:

- Found in 18 of 217 ( 8.3% ) of genes in pham
- Manual Annotations of this start: 1 of 198

- Called 5.6% of time when present
- Phage (with cluster) where this start called: Catfish\_64 (CU5),

Start 81:

- Found in 9 of 217 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 8 of 198
- Called 88.9% of time when present
- Phage (with cluster) where this start called: Banquo\_63 (CU1), DinoDaryn\_64 (CU1), Huffy\_64 (CU1), Schmidt\_58 (CU4), Splinter\_64 (CU1), TZGordon\_65 (CU1), TinaLin\_63 (CU1), Vendetta\_64 (CU1),

Start 82:

- Found in 1 of 217 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Renna12\_72 (AS3),

Start 84:

- Found in 7 of 217 ( 3.2% ) of genes in pham
- Manual Annotations of this start: 4 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BaileyBlu\_63 (FP), CallinAllBarbz\_64 (FP), Juno112\_70 (AS3), KHumphrey\_69 (AS3), PhluffyCoco\_69 (AS3), RedFox\_71 (AS3), Sapo\_61 (DA),

Start 85:

- Found in 2 of 217 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Khuang\_70 (UNK), Shagrat\_110 (CF),

Start 86:

- Found in 17 of 217 ( 7.8% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 5.9% of time when present
- Phage (with cluster) where this start called: Huntingdon\_61 (AK),

Start 88:

- Found in 6 of 217 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Basilisk\_66 (AS1),

Start 90:

- Found in 47 of 217 ( 21.7% ) of genes in pham
- Manual Annotations of this start: 13 of 198
- Called 27.7% of time when present
- Phage (with cluster) where this start called: Bennie\_63 (AK), Christian\_61 (AK), Dino\_62 (AK), DrRobert\_59 (AK), Fluke\_62 (AK), Glenn\_64 (AK), Lucy\_60 (AK), MeganNoll\_63 (AK), MrGloopy\_62 (AK), PitaDog\_61 (AK), RAP15\_63 (AK), Scuttle\_61 (AK), Vallejo\_62 (AK),

Start 91:

- Found in 4 of 217 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 2 of 198
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Aoka\_54 (FO), JanetJ\_56 (FO), Leona\_68 (AS3),

#### Start 92:

- Found in 10 of 217 ( 4.6% ) of genes in pham
- Manual Annotations of this start: 3 of 198
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Canowicakte\_62 (AK), Min1\_34 (singleton), PartyCup\_66 (AK), Suppi\_62 (AK), Wayne\_64 (AK),

#### Start 93:

- Found in 2 of 217 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: BFK20\_ORF55 (singleton),

#### Start 95:

- Found in 82 of 217 ( 37.8% ) of genes in pham
- Manual Annotations of this start: 66 of 198
- Called 87.8% of time when present
- Phage (with cluster) where this start called: Abidatro\_66 (AS1), Abigail\_70 (EB), Albedo\_70 (EB), Albright\_69 (EB), AnnaLie\_70 (EB), AppleCider\_61 (AK), Armstrong\_70 (EB), Arroyo\_71 (EB), AvGardian\_70 (EB), Avocadoman\_69 (EB), BAjuniper\_68 (EB), BabyDaisy\_71 (EB), BabyYoda\_68 (EB), Bachaco\_67 (EB), BelmontSKP\_70 (EB), Bernstein\_70 (EB), Brahms\_70 (EB), Brynnie\_64 (AS1), BubbaBear\_68 (EB), Burritobowl\_72 (EB), Cashington\_69 (EB), Celaena\_66 (EB), Chickaboom\_70 (AS1), Clayda5\_72 (EB), Coltrane\_70 (EB), CroZenni\_71 (EB), DickRichards\_68 (EB), Didgeridoo\_75 (EB), DirtyBubble\_69 (EB), Dismas\_67 (EB), Doobus\_68 (EB), Eden\_72 (EB), Eesa\_65 (AS1), Elva\_73 (EB), Eula\_69 (EB), Finalfrontier\_69 (EB), FlameThrower\_65 (EB), Franklin22\_74 (EB), Gack\_72 (EB), Galaxy\_65 (AS1), Icarian\_74 (EB), IndyLu\_71 (EB), Jamun\_63 (AS1), Johnathan\_70 (EB), Jovita\_68 (EB), Katzastrophic\_67 (EB), Kenzers\_69 (EB), Kieran\_65 (EB), Lahqtemish\_69 (EB), LimaBean\_68 (EB), LittleTokyo\_73 (AS2), Lynlen\_71 (EB), Nicky22\_69 (EB), Orcanus\_65 (AS1), Phisb\_74 (EB), QMacho\_72 (EB), Quenya\_69 (EB), Rollins\_70 (EB), Rona\_66 (EB), Ruchi\_64 (AS1), SanaSana\_70 (EB), SansAfet\_72 (EB), SarBear\_72 (EB), Sharkboy\_68 (EB), Skylord\_70 (EB), Slay\_70 (EB), Stoor\_69 (EB), Stromboli\_68 (EB), Swervy\_70 (EB), TukTuk\_70 (EB), Vitas\_71 (EB), Vulpecula\_64 (AS1),

#### Start 96:

- Found in 1 of 217 ( 0.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Buldak\_70 (EB),

#### Start 97:

- Found in 84 of 217 ( 38.7% ) of genes in pham
- Manual Annotations of this start: 60 of 198
- Called 73.8% of time when present

- Phage (with cluster) where this start called: Albanese\_61 (AK), Aledel\_60 (AK), Beethoven\_63 (AK), BigMack\_61 (AK), Bodacious\_61 (AK), BrotherBLo\_62 (AK), CallieOMalley\_62 (AK), Carpal\_61 (AK), ChewChew\_61 (AK), Cholula\_62 (AK), Chridison\_57 (AK), CristinaYang\_61 (AK), Daiboju\_60 (AK), DreamTeam\_61 (AK), EstebanJulior\_60 (AK), Eunoia\_62 (AK), Gisselle\_61 (AK), GreenHearts\_62 (AK), Greenhouse\_61 (AK), HeadNerd\_62 (AK), Herb\_60 (AK), Huckleberry\_62 (AK), Immaculata\_62 (AK), Joann\_63 (AK), Jumboset\_62 (AK), Kalizoi\_63 (AK), KingBob\_60 (AK), Kittykat\_65 (AK), Korra\_62 (AK), Lakshmi\_61 (AK), Lasagna\_59 (AK), Lennox\_61 (AK), LilStuart\_60 (AK), Litotes\_62 (AK), Makoto\_60 (AK), MamaPearl\_60 (AK), Maria1952\_59 (AK), Misaeng\_61 (AK), Moki\_62 (AK), Nancia\_61 (AK), Nubia\_61 (AK), OMalley\_60 (AK), OurGirlNessie\_59 (AK), Oxyfnrius\_62 (AK), PinkFriday\_62 (AK), Potatoes\_62 (AK), Preamble\_64 (AK), Pterodactyl\_61 (AK), Pumancara\_61 (AK), RcigaStruga\_62 (AK), Riovina\_60 (AK), Riverdale\_61 (AK), Rozby\_60 (AK), Savage2526\_61 (AK), Sergei\_60 (AK), Supakev\_60 (AK), TattModd\_61 (AK), Temper16\_60 (AK), Urla\_62 (AK), Wawa\_62 (AK), WonderBoy\_59 (AK), Zorro\_62 (AK),

Start 103:

- Found in 9 of 217 ( 4.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 11.1% of time when present
- Phage (with cluster) where this start called: AustinPowers\_62 (AK),

Start 106:

- Found in 1 of 217 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 198
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ghobes\_59 (DA),

### Summary by clusters:

There are 19 clusters represented in this pham: AS3, AS2, AS1, UNK, DA, CU1, AK, CU5, FP, EB, BV, CU4, FF, CF, Y, CU3, singleton, CD, FO,

Info for manual annotations of cluster AK:

- Start number 59 was manually annotated 2 times for cluster AK.
- Start number 86 was manually annotated 1 time for cluster AK.
- Start number 90 was manually annotated 13 times for cluster AK.
- Start number 92 was manually annotated 3 times for cluster AK.
- Start number 95 was manually annotated 1 time for cluster AK.
- Start number 97 was manually annotated 60 times for cluster AK.

Info for manual annotations of cluster AS1:

- Start number 88 was manually annotated 1 time for cluster AS1.
- Start number 95 was manually annotated 8 times for cluster AS1.

Info for manual annotations of cluster AS2:

- Start number 26 was manually annotated 1 time for cluster AS2.
- Start number 31 was manually annotated 1 time for cluster AS2.
- Start number 41 was manually annotated 6 times for cluster AS2.
- Start number 70 was manually annotated 1 time for cluster AS2.
- Start number 95 was manually annotated 1 time for cluster AS2.

Info for manual annotations of cluster AS3:

- Start number 82 was manually annotated 1 time for cluster AS3.
- Start number 84 was manually annotated 1 time for cluster AS3.
- Start number 91 was manually annotated 1 time for cluster AS3.

Info for manual annotations of cluster BV:

- Start number 74 was manually annotated 3 times for cluster BV.

Info for manual annotations of cluster CD:

- Start number 45 was manually annotated 1 time for cluster CD.
- Start number 60 was manually annotated 2 times for cluster CD.
- Start number 63 was manually annotated 1 time for cluster CD.
- Start number 64 was manually annotated 1 time for cluster CD.
- Start number 68 was manually annotated 2 times for cluster CD.

Info for manual annotations of cluster CF:

- Start number 85 was manually annotated 1 time for cluster CF.

Info for manual annotations of cluster CU1:

- Start number 81 was manually annotated 7 times for cluster CU1.

Info for manual annotations of cluster CU3:

- Start number 77 was manually annotated 1 time for cluster CU3.

Info for manual annotations of cluster CU4:

- Start number 81 was manually annotated 1 time for cluster CU4.

Info for manual annotations of cluster CU5:

- Start number 78 was manually annotated 1 time for cluster CU5.

Info for manual annotations of cluster DA:

- Start number 73 was manually annotated 1 time for cluster DA.
- Start number 84 was manually annotated 1 time for cluster DA.
- Start number 106 was manually annotated 1 time for cluster DA.

Info for manual annotations of cluster EB:

- Start number 95 was manually annotated 56 times for cluster EB.

Info for manual annotations of cluster FF:

- Start number 54 was manually annotated 2 times for cluster FF.
- Start number 75 was manually annotated 1 time for cluster FF.
- Start number 76 was manually annotated 4 times for cluster FF.

Info for manual annotations of cluster FO:

- Start number 41 was manually annotated 1 time for cluster FO.
- Start number 91 was manually annotated 1 time for cluster FO.

Info for manual annotations of cluster FP:

- Start number 84 was manually annotated 2 times for cluster FP.

Info for manual annotations of cluster Y:

- Start number 69 was manually annotated 4 times for cluster Y.

**Gene Information:**

Gene: Abidatro\_66 Start: 38766, Stop: 39044, Start Num: 95

Candidate Starts for Abidatro\_66:

(34, 38640), (Start: 95 @38766 has 66 MA's),

Gene: Abigail\_70 Start: 40540, Stop: 40815, Start Num: 95

Candidate Starts for Abigail\_70:

(Start: 95 @40540 has 66 MA's),

Gene: Albanese\_61 Start: 43774, Stop: 44034, Start Num: 97

Candidate Starts for Albanese\_61:

(Start: 97 @43774 has 60 MA's), (99, 43780), (110, 43831), (111, 43834), (135, 43978),

Gene: Albedo\_70 Start: 41350, Stop: 41625, Start Num: 95

Candidate Starts for Albedo\_70:

(Start: 95 @41350 has 66 MA's), (131, 41536),

Gene: Albright\_69 Start: 40420, Stop: 40695, Start Num: 95

Candidate Starts for Albright\_69:

(Start: 95 @40420 has 66 MA's),

Gene: Aledel\_60 Start: 43400, Stop: 43660, Start Num: 97

Candidate Starts for Aledel\_60:

(Start: 59 @43331 has 2 MA's), (72, 43352), (Start: 97 @43400 has 60 MA's), (103, 43421), (113, 43472),

Gene: Amelia\_71 Start: 37701, Stop: 38054, Start Num: 41

Candidate Starts for Amelia\_71:

(Start: 41 @37701 has 7 MA's), (Start: 86 @37767 has 1 MA's),

Gene: Anatole\_55 Start: 34869, Stop: 35189, Start Num: 74

Candidate Starts for Anatole\_55:

(1, 34596), (2, 34635), (3, 34644), (4, 34659), (16, 34725), (18, 34728), (25, 34752), (29, 34770), (36, 34800), (Start: 74 @34869 has 3 MA's), (Start: 92 @34899 has 3 MA's), (109, 34974), (143, 35172),

Gene: AnnaLie\_70 Start: 41202, Stop: 41477, Start Num: 95

Candidate Starts for AnnaLie\_70:

(Start: 95 @41202 has 66 MA's), (131, 41388),

Gene: Aoka\_54 Start: 36392, Stop: 36673, Start Num: 91

Candidate Starts for Aoka\_54:

(57, 36335), (Start: 91 @36392 has 2 MA's),

Gene: AppleCider\_61 Start: 43353, Stop: 43619, Start Num: 95

Candidate Starts for AppleCider\_61:

(Start: 95 @43353 has 66 MA's), (Start: 97 @43359 has 60 MA's),

Gene: Archimedes\_60 Start: 44555, Stop: 44878, Start Num: 73

Candidate Starts for Archimedes\_60:

(Start: 73 @44555 has 1 MA's), (87, 44582), (93, 44588), (111, 44672), (112, 44681), (140, 44852),

Gene: Armstrong\_70 Start: 39580, Stop: 39855, Start Num: 95

Candidate Starts for Armstrong\_70:

(13, 39382), (17, 39397), (Start: 26 @39424 has 1 MA's), (34, 39457), (49, 39505), (61, 39520), (Start: 78 @39553 has 1 MA's), (Start: 95 @39580 has 66 MA's),

Gene: Arroyo\_71 Start: 41666, Stop: 41941, Start Num: 95

Candidate Starts for Arroyo\_71:

(Start: 95 @41666 has 66 MA's), (131, 41852),

Gene: AustinPowers\_62 Start: 43443, Stop: 43682, Start Num: 103

Candidate Starts for AustinPowers\_62:

(Start: 59 @43353 has 2 MA's), (72, 43374), (Start: 97 @43422 has 60 MA's), (103, 43443), (113, 43494),

Gene: AvGardian\_70 Start: 41184, Stop: 41459, Start Num: 95

Candidate Starts for AvGardian\_70:

(Start: 95 @41184 has 66 MA's), (124, 41334), (131, 41370),

Gene: Avocadoman\_69 Start: 40737, Stop: 41012, Start Num: 95

Candidate Starts for Avocadoman\_69:

(Start: 95 @40737 has 66 MA's),

Gene: B3\_57 Start: 35532, Stop: 35852, Start Num: 74

Candidate Starts for B3\_57:

(1, 35259), (2, 35298), (3, 35307), (4, 35322), (16, 35388), (18, 35391), (25, 35415), (29, 35433), (36, 35463), (Start: 74 @35532 has 3 MA's), (Start: 92 @35562 has 3 MA's), (109, 35637), (143, 35835),

Gene: BAjuniper\_68 Start: 41633, Stop: 41908, Start Num: 95

Candidate Starts for BAjuniper\_68:

(39, 41528), (49, 41558), (61, 41573), (Start: 78 @41606 has 1 MA's), (Start: 95 @41633 has 66 MA's), (104, 41666), (131, 41819),

Gene: BFK20\_ORF55 Start: 42590, Stop: 42880, Start Num: 93

Candidate Starts for BFK20\_ORF55:

(71, 42557), (79, 42575), (93, 42590), (100, 42617), (111, 42674), (125, 42761), (137, 42845),

Gene: BabyDaisy\_71 Start: 41763, Stop: 42038, Start Num: 95

Candidate Starts for BabyDaisy\_71:

(42, 41664), (49, 41688), (61, 41703), (Start: 78 @41736 has 1 MA's), (Start: 86 @41751 has 1 MA's), (Start: 95 @41763 has 66 MA's),

Gene: BabyYoda\_68 Start: 41093, Stop: 41368, Start Num: 95

Candidate Starts for BabyYoda\_68:

(Start: 95 @41093 has 66 MA's), (104, 41126), (131, 41279), (132, 41282),

Gene: Bachaco\_67 Start: 42043, Stop: 42318, Start Num: 95

Candidate Starts for Bachaco\_67:

(21, 41878), (24, 41887), (25, 41890), (38, 41938), (48, 41968), (Start: 60 @41983 has 2 MA's), (Start: 78 @42016 has 1 MA's), (Start: 95 @42043 has 66 MA's), (131, 42229), (142, 42301),

Gene: BaileyBlu\_63 Start: 40002, Stop: 40289, Start Num: 84

Candidate Starts for BaileyBlu\_63:  
(Start: 84 @40002 has 4 MA's), (126, 40182),

Gene: Banquo\_63 Start: 39126, Stop: 39422, Start Num: 81  
Candidate Starts for Banquo\_63:  
(58, 39084), (Start: 81 @39126 has 8 MA's), (101, 39168), (136, 39384),

Gene: Basilisk\_66 Start: 38281, Stop: 38571, Start Num: 88  
Candidate Starts for Basilisk\_66:  
(35, 38188), (51, 38218), (Start: 88 @38281 has 1 MA's), (Start: 95 @38293 has 66 MA's),

Gene: Beethoven\_63 Start: 43598, Stop: 43858, Start Num: 97  
Candidate Starts for Beethoven\_63:  
(Start: 90 @43580 has 13 MA's), (Start: 97 @43598 has 60 MA's), (102, 43616), (113, 43670),

Gene: BelmontSKP\_70 Start: 41202, Stop: 41477, Start Num: 95  
Candidate Starts for BelmontSKP\_70:  
(Start: 95 @41202 has 66 MA's), (131, 41388),

Gene: Bennie\_63 Start: 42720, Stop: 42998, Start Num: 90  
Candidate Starts for Bennie\_63:  
(Start: 90 @42720 has 13 MA's), (Start: 97 @42738 has 60 MA's), (102, 42756), (113, 42810), (137, 42963),

Gene: Bernstein\_70 Start: 39578, Stop: 39853, Start Num: 95  
Candidate Starts for Bernstein\_70:  
(13, 39380), (17, 39395), (Start: 26 @39422 has 1 MA's), (34, 39455), (49, 39503), (61, 39518), (Start: 78 @39551 has 1 MA's), (Start: 95 @39578 has 66 MA's),

Gene: BigMack\_61 Start: 43021, Stop: 43281, Start Num: 97  
Candidate Starts for BigMack\_61:  
(Start: 90 @43003 has 13 MA's), (Start: 97 @43021 has 60 MA's), (102, 43039), (132, 43198), (137, 43246),

Gene: Bipper\_136 Start: 77103, Stop: 77429, Start Num: 69  
Candidate Starts for Bipper\_136:  
(Start: 69 @77103 has 4 MA's), (107, 77217), (111, 77229), (123, 77304), (134, 77361), (135, 77373),

Gene: Bodacious\_61 Start: 42903, Stop: 43163, Start Num: 97  
Candidate Starts for Bodacious\_61:  
(Start: 90 @42885 has 13 MA's), (Start: 97 @42903 has 60 MA's), (102, 42921), (132, 43080), (140, 43137), (141, 43143),

Gene: Brahms\_70 Start: 39480, Stop: 39755, Start Num: 95  
Candidate Starts for Brahms\_70:  
(13, 39282), (17, 39297), (Start: 26 @39324 has 1 MA's), (34, 39357), (49, 39405), (61, 39420), (Start: 78 @39453 has 1 MA's), (Start: 95 @39480 has 66 MA's),

Gene: BrotherBLo\_62 Start: 43314, Stop: 43574, Start Num: 97  
Candidate Starts for BrotherBLo\_62:  
(Start: 90 @43296 has 13 MA's), (Start: 97 @43314 has 60 MA's), (102, 43332), (113, 43386),

Gene: Brynnie\_64 Start: 38238, Stop: 38516, Start Num: 95



Candidate Starts for Brynnie\_64:  
(Start: 88 @38226 has 1 MA's), (Start: 95 @38238 has 66 MA's),

Gene: BubbaBear\_68 Start: 41351, Stop: 41626, Start Num: 95  
Candidate Starts for BubbaBear\_68:  
(Start: 95 @41351 has 66 MA's),

Gene: Buldak\_70 Start: 39158, Stop: 39433, Start Num: 96  
Candidate Starts for Buldak\_70:  
(96, 39158), (131, 39344),

Gene: Burritobowl\_72 Start: 40954, Stop: 41229, Start Num: 95  
Candidate Starts for Burritobowl\_72:  
(Start: 95 @40954 has 66 MA's),

Gene: CallieOMalley\_62 Start: 43522, Stop: 43782, Start Num: 97  
Candidate Starts for CallieOMalley\_62:  
(Start: 76 @43489 has 4 MA's), (Start: 92 @43510 has 3 MA's), (94, 43516), (Start: 97 @43522 has 60 MA's),

Gene: CallinAllBarbz\_64 Start: 40753, Stop: 41040, Start Num: 84  
Candidate Starts for CallinAllBarbz\_64:  
(Start: 84 @40753 has 4 MA's),

Gene: Canowicakte\_62 Start: 43562, Stop: 43834, Start Num: 92  
Candidate Starts for Canowicakte\_62:  
(Start: 76 @43541 has 4 MA's), (Start: 92 @43562 has 3 MA's), (94, 43568), (Start: 97 @43574 has 60 MA's),

Gene: Carpal\_61 Start: 43369, Stop: 43629, Start Num: 97  
Candidate Starts for Carpal\_61:  
(Start: 90 @43351 has 13 MA's), (Start: 97 @43369 has 60 MA's), (102, 43387), (113, 43441),

Gene: Cashington\_69 Start: 41137, Stop: 41412, Start Num: 95  
Candidate Starts for Cashington\_69:  
(50, 41062), (62, 41077), (Start: 77 @41107 has 1 MA's), (79, 41110), (Start: 95 @41137 has 66 MA's), (131, 41323),

Gene: Catfish\_64 Start: 41148, Stop: 41444, Start Num: 78  
Candidate Starts for Catfish\_64:  
(9, 40959), (10, 40968), (52, 41106), (Start: 78 @41148 has 1 MA's), (109, 41235), (111, 41244), (123, 41319),

Gene: Celaena\_66 Start: 41809, Stop: 42084, Start Num: 95  
Candidate Starts for Celaena\_66:  
(21, 41641), (24, 41650), (25, 41653), (38, 41701), (48, 41731), (Start: 95 @41809 has 66 MA's), (131, 41995), (142, 42067),

Gene: ChewChew\_61 Start: 43103, Stop: 43363, Start Num: 97  
Candidate Starts for ChewChew\_61:  
(Start: 90 @43085 has 13 MA's), (Start: 97 @43103 has 60 MA's), (102, 43121), (114, 43178), (132, 43280), (140, 43337), (141, 43343),

Gene: Chickaboom\_70 Start: 38402, Stop: 38680, Start Num: 95

Candidate Starts for Chickaboom\_70:

(Start: 88 @38390 has 1 MA's), (Start: 95 @38402 has 66 MA's),

Gene: Cholula\_62 Start: 43324, Stop: 43584, Start Num: 97

Candidate Starts for Cholula\_62:

(Start: 90 @43306 has 13 MA's), (Start: 97 @43324 has 60 MA's), (102, 43342), (113, 43396),

Gene: Chridison\_57 Start: 42676, Stop: 42936, Start Num: 97

Candidate Starts for Chridison\_57:

(Start: 59 @42607 has 2 MA's), (72, 42628), (Start: 97 @42676 has 60 MA's), (102, 42694), (103, 42697), (113, 42748),

Gene: Christian\_61 Start: 42727, Stop: 43005, Start Num: 90

Candidate Starts for Christian\_61:

(Start: 90 @42727 has 13 MA's), (Start: 97 @42745 has 60 MA's), (102, 42763), (114, 42820), (132, 42922), (140, 42979), (141, 42985),

Gene: Clayda5\_72 Start: 39546, Stop: 39821, Start Num: 95

Candidate Starts for Clayda5\_72:

(13, 39348), (17, 39363), (Start: 26 @39390 has 1 MA's), (34, 39423), (49, 39471), (61, 39486), (Start: 78 @39519 has 1 MA's), (Start: 95 @39546 has 66 MA's),

Gene: Cole\_64 Start: 41483, Stop: 41779, Start Num: 76

Candidate Starts for Cole\_64:

(30, 41378), (Start: 76 @41483 has 4 MA's), (110, 41579), (121, 41639), (122, 41648),

Gene: Coltrane\_70 Start: 39480, Stop: 39755, Start Num: 95

Candidate Starts for Coltrane\_70:

(13, 39282), (17, 39297), (Start: 26 @39324 has 1 MA's), (34, 39357), (49, 39405), (61, 39420), (Start: 78 @39453 has 1 MA's), (Start: 95 @39480 has 66 MA's),

Gene: Coral\_72 Start: 37893, Stop: 38243, Start Num: 41

Candidate Starts for Coral\_72:

(Start: 41 @37893 has 7 MA's), (Start: 86 @37956 has 1 MA's),

Gene: Cote\_75 Start: 38617, Stop: 38970, Start Num: 41

Candidate Starts for Cote\_75:

(Start: 41 @38617 has 7 MA's), (Start: 86 @38683 has 1 MA's),

Gene: Cracklewink\_136 Start: 76262, Stop: 76588, Start Num: 69

Candidate Starts for Cracklewink\_136:

(6, 76067), (20, 76136), (Start: 69 @76262 has 4 MA's), (107, 76376), (111, 76388), (123, 76463), (134, 76520), (135, 76532),

Gene: CristinaYang\_61 Start: 43030, Stop: 43290, Start Num: 97

Candidate Starts for CristinaYang\_61:

(Start: 90 @43012 has 13 MA's), (Start: 97 @43030 has 60 MA's), (102, 43048), (132, 43207), (140, 43264), (141, 43270),

Gene: CroZenni\_71 Start: 41008, Stop: 41283, Start Num: 95

Candidate Starts for CroZenni\_71:

(Start: 95 @41008 has 66 MA's),

Gene: Daiboju\_60 Start: 43614, Stop: 43871, Start Num: 97  
Candidate Starts for Daiboju\_60:  
(Start: 95 @43605 has 66 MA's), (Start: 97 @43614 has 60 MA's), (102, 43632), (115, 43689), (127, 43767),

Gene: Daob\_71 Start: 37543, Stop: 37893, Start Num: 41  
Candidate Starts for Daob\_71:  
(Start: 41 @37543 has 7 MA's), (Start: 86 @37606 has 1 MA's),

Gene: Dardanus\_58 Start: 37373, Stop: 37678, Start Num: 77  
Candidate Starts for Dardanus\_58:  
(Start: 77 @37373 has 1 MA's), (89, 37391), (123, 37553),

Gene: DickRichards\_68 Start: 40877, Stop: 41152, Start Num: 95  
Candidate Starts for DickRichards\_68:  
(Start: 95 @40877 has 66 MA's),

Gene: Didgeridoo\_75 Start: 42192, Stop: 42467, Start Num: 95  
Candidate Starts for Didgeridoo\_75:  
(19, 42015), (32, 42066), (49, 42117), (61, 42132), (Start: 78 @42165 has 1 MA's), (Start: 86 @42180 has 1 MA's), (Start: 95 @42192 has 66 MA's),

Gene: Dino\_62 Start: 43208, Stop: 43486, Start Num: 90  
Candidate Starts for Dino\_62:  
(Start: 90 @43208 has 13 MA's), (Start: 97 @43226 has 60 MA's), (102, 43244), (113, 43298),

Gene: DinoDaryn\_64 Start: 39227, Stop: 39523, Start Num: 81  
Candidate Starts for DinoDaryn\_64:  
(58, 39185), (Start: 81 @39227 has 8 MA's), (126, 39416), (136, 39485),

Gene: DirtyBubble\_69 Start: 41228, Stop: 41503, Start Num: 95  
Candidate Starts for DirtyBubble\_69:  
(Start: 95 @41228 has 66 MA's), (131, 41414), (132, 41417),

Gene: Dismas\_67 Start: 41256, Stop: 41531, Start Num: 95  
Candidate Starts for Dismas\_67:  
(47, 41181), (Start: 95 @41256 has 66 MA's), (131, 41442), (135, 41472),

Gene: Doobus\_68 Start: 40732, Stop: 41007, Start Num: 95  
Candidate Starts for Doobus\_68:  
(Start: 95 @40732 has 66 MA's),

Gene: DrRobert\_59 Start: 42246, Stop: 42524, Start Num: 90  
Candidate Starts for DrRobert\_59:  
(Start: 90 @42246 has 13 MA's), (Start: 97 @42264 has 60 MA's), (102, 42282), (132, 42441), (140, 42498), (141, 42504),

Gene: DreamTeam\_61 Start: 42752, Stop: 43012, Start Num: 97  
Candidate Starts for DreamTeam\_61:  
(Start: 90 @42734 has 13 MA's), (Start: 97 @42752 has 60 MA's), (102, 42770), (114, 42827), (127, 42908),

Gene: E1\_55 Start: 34794, Stop: 35114, Start Num: 74

Candidate Starts for E1\_55:

(1, 34521), (2, 34560), (3, 34569), (4, 34584), (16, 34650), (18, 34653), (25, 34677), (29, 34695), (36, 34725), (Start: 74 @34794 has 3 MA's), (Start: 92 @34824 has 3 MA's), (109, 34899), (143, 35097),

Gene: Eden\_72 Start: 40483, Stop: 40758, Start Num: 95

Candidate Starts for Eden\_72:

(7, 40246), (11, 40276), (12, 40279), (15, 40294), (24, 40324), (25, 40327), (40, 40381), (61, 40423), (Start: 95 @40483 has 66 MA's), (131, 40669), (132, 40672), (142, 40741),

Gene: Eesa\_65 Start: 39439, Stop: 39717, Start Num: 95

Candidate Starts for Eesa\_65:

(Start: 95 @39439 has 66 MA's), (144, 39709),

Gene: Elesar\_62 Start: 42571, Stop: 42897, Start Num: 54

Candidate Starts for Elesar\_62:

(Start: 54 @42571 has 2 MA's), (Start: 76 @42601 has 4 MA's), (121, 42757), (140, 42871),

Gene: Elva\_73 Start: 41675, Stop: 41950, Start Num: 95

Candidate Starts for Elva\_73:

(Start: 95 @41675 has 66 MA's), (131, 41861), (132, 41864),

Gene: EmiRose\_46 Start: 36892, Stop: 37236, Start Num: 55

Candidate Starts for EmiRose\_46:

(Start: 55 @36892 has 1 MA's), (109, 37030), (117, 37060),

Gene: EstebanJulior\_60 Start: 43409, Stop: 43669, Start Num: 97

Candidate Starts for EstebanJulior\_60:

(Start: 97 @43409 has 60 MA's), (102, 43427), (114, 43484),

Gene: Eula\_69 Start: 40916, Stop: 41191, Start Num: 95

Candidate Starts for Eula\_69:

(Start: 95 @40916 has 66 MA's), (131, 41102),

Gene: Eunoia\_62 Start: 44077, Stop: 44337, Start Num: 97

Candidate Starts for Eunoia\_62:

(Start: 59 @44008 has 2 MA's), (72, 44029), (Start: 97 @44077 has 60 MA's), (103, 44098), (113, 44149),

Gene: Finalfrontier\_69 Start: 41583, Stop: 41858, Start Num: 95

Candidate Starts for Finalfrontier\_69:

(Start: 95 @41583 has 66 MA's), (131, 41769),

Gene: FlameThrower\_65 Start: 40846, Stop: 41121, Start Num: 95

Candidate Starts for FlameThrower\_65:

(48, 40768), (Start: 95 @40846 has 66 MA's), (131, 41032), (142, 41104),

Gene: Fluke\_62 Start: 43458, Stop: 43736, Start Num: 90

Candidate Starts for Fluke\_62:

(Start: 90 @43458 has 13 MA's), (Start: 97 @43476 has 60 MA's), (102, 43494), (113, 43548),

Gene: Franklin22\_74 Start: 40216, Stop: 40491, Start Num: 95

Candidate Starts for Franklin22\_74:

(61, 40156), (Start: 95 @40216 has 66 MA's), (131, 40402), (142, 40474),

Gene: Gack\_72 Start: 40197, Stop: 40472, Start Num: 95

Candidate Starts for Gack\_72:

(Start: 95 @40197 has 66 MA's), (131, 40383), (135, 40413),

Gene: Galaxy\_65 Start: 37453, Stop: 37731, Start Num: 95

Candidate Starts for Galaxy\_65:

(27, 37303), (34, 37327), (44, 37360), (Start: 95 @37453 has 66 MA's), (133, 37660),

Gene: Ghobes\_59 Start: 45003, Stop: 45227, Start Num: 106

Candidate Starts for Ghobes\_59:

(87, 44931), (Start: 106 @45003 has 1 MA's), (114, 45036), (144, 45219),

Gene: Gisselle\_61 Start: 42752, Stop: 43012, Start Num: 97

Candidate Starts for Gisselle\_61:

(Start: 90 @42734 has 13 MA's), (Start: 97 @42752 has 60 MA's), (102, 42770), (114, 42827), (127, 42908),

Gene: Glenn\_64 Start: 44035, Stop: 44313, Start Num: 90

Candidate Starts for Glenn\_64:

(Start: 90 @44035 has 13 MA's), (Start: 97 @44053 has 60 MA's), (102, 44071), (113, 44125),

Gene: GreenHearts\_62 Start: 43911, Stop: 44171, Start Num: 97

Candidate Starts for GreenHearts\_62:

(Start: 97 @43911 has 60 MA's), (99, 43917), (110, 43968), (111, 43971), (113, 43983), (135, 44115),

Gene: Greenhouse\_61 Start: 43637, Stop: 43897, Start Num: 97

Candidate Starts for Greenhouse\_61:

(Start: 97 @43637 has 60 MA's), (99, 43643), (110, 43694), (111, 43697), (135, 43841),

Gene: Gusanita\_70 Start: 42391, Stop: 42687, Start Num: 76

Candidate Starts for Gusanita\_70:

(Start: 76 @42391 has 4 MA's), (109, 42481), (140, 42661),

Gene: Gustav\_68 Start: 43674, Stop: 44000, Start Num: 60

Candidate Starts for Gustav\_68:

(43, 43644), (Start: 60 @43674 has 2 MA's), (108, 43788), (121, 43857), (123, 43875), (127, 43896), (129, 43905), (136, 43962),

Gene: HeadNerd\_62 Start: 42632, Stop: 42892, Start Num: 97

Candidate Starts for HeadNerd\_62:

(Start: 90 @42614 has 13 MA's), (Start: 97 @42632 has 60 MA's), (102, 42650), (114, 42707), (132, 42809), (137, 42857),

Gene: Herb\_60 Start: 43613, Stop: 43870, Start Num: 97

Candidate Starts for Herb\_60:

(Start: 95 @43604 has 66 MA's), (Start: 97 @43613 has 60 MA's), (102, 43631), (115, 43688), (127, 43766),

Gene: Hilltopfarm\_134 Start: 76128, Stop: 76451, Start Num: 69

Candidate Starts for Hilltopfarm\_134:

(Start: 69 @76128 has 4 MA's), (119, 76278), (130, 76359), (134, 76383), (135, 76395),

Gene: Huckleberry\_62 Start: 42636, Stop: 42896, Start Num: 97  
Candidate Starts for Huckleberry\_62:  
(Start: 90 @42618 has 13 MA's), (Start: 97 @42636 has 60 MA's), (102, 42654), (114, 42711), (132, 42813), (137, 42861),

Gene: Huffy\_64 Start: 39227, Stop: 39523, Start Num: 81  
Candidate Starts for Huffy\_64:  
(58, 39185), (Start: 81 @39227 has 8 MA's), (126, 39416), (136, 39485),

Gene: HunterDalle\_60 Start: 42928, Stop: 43257, Start Num: 59  
Candidate Starts for HunterDalle\_60:  
(Start: 59 @42928 has 2 MA's), (72, 42949), (Start: 97 @42997 has 60 MA's), (102, 43015), (103, 43018), (113, 43069),

Gene: Huntingdon\_61 Start: 43533, Stop: 43811, Start Num: 86  
Candidate Starts for Huntingdon\_61:  
(Start: 86 @43533 has 1 MA's), (Start: 97 @43551 has 60 MA's), (110, 43608), (111, 43611), (113, 43623), (135, 43755),

Gene: Icarian\_74 Start: 41856, Stop: 42131, Start Num: 95  
Candidate Starts for Icarian\_74:  
(Start: 95 @41856 has 66 MA's), (126, 42021), (131, 42042), (132, 42045),

Gene: Immaculata\_62 Start: 43324, Stop: 43584, Start Num: 97  
Candidate Starts for Immaculata\_62:  
(Start: 90 @43306 has 13 MA's), (Start: 97 @43324 has 60 MA's), (102, 43342), (113, 43396),

Gene: IndyLu\_71 Start: 41495, Stop: 41770, Start Num: 95  
Candidate Starts for IndyLu\_71:  
(19, 41318), (32, 41369), (49, 41420), (61, 41435), (Start: 75 @41462 has 1 MA's), (Start: 78 @41468 has 1 MA's), (Start: 86 @41483 has 1 MA's), (Start: 95 @41495 has 66 MA's),

Gene: Jamun\_63 Start: 38467, Stop: 38745, Start Num: 95  
Candidate Starts for Jamun\_63:  
(23, 38326), (66, 38413), (83, 38449), (Start: 88 @38455 has 1 MA's), (Start: 95 @38467 has 66 MA's),

Gene: JanetJ\_56 Start: 36634, Stop: 36915, Start Num: 91  
Candidate Starts for JanetJ\_56:  
(Start: 91 @36634 has 2 MA's),

Gene: Joann\_63 Start: 43843, Stop: 44103, Start Num: 97  
Candidate Starts for Joann\_63:  
(Start: 97 @43843 has 60 MA's), (110, 43900), (111, 43903), (135, 44047),

Gene: Johnathan\_70 Start: 40508, Stop: 40783, Start Num: 95  
Candidate Starts for Johnathan\_70:  
(Start: 95 @40508 has 66 MA's),

Gene: Jovita\_68 Start: 40684, Stop: 40959, Start Num: 95  
Candidate Starts for Jovita\_68:  
(Start: 95 @40684 has 66 MA's), (131, 40870),

Gene: Jumboset\_62 Start: 43444, Stop: 43704, Start Num: 97

Candidate Starts for Jumboset\_62:

(Start: 90 @43426 has 13 MA's), (Start: 97 @43444 has 60 MA's), (102, 43462), (111, 43504), (113, 43516),

Gene: Juno112\_70 Start: 38104, Stop: 38391, Start Num: 84

Candidate Starts for Juno112\_70:

(Start: 84 @38104 has 4 MA's), (122, 38257), (133, 38320),

Gene: KHumphrey\_69 Start: 37978, Stop: 38265, Start Num: 84

Candidate Starts for KHumphrey\_69:

(Start: 84 @37978 has 4 MA's), (122, 38131), (133, 38194),

Gene: Kalizoi\_63 Start: 43182, Stop: 43442, Start Num: 97

Candidate Starts for Kalizoi\_63:

(Start: 90 @43164 has 13 MA's), (Start: 97 @43182 has 60 MA's), (102, 43200), (113, 43254),

Gene: Katzastrophic\_67 Start: 41352, Stop: 41627, Start Num: 95

Candidate Starts for Katzastrophic\_67:

(21, 41187), (24, 41196), (25, 41199), (38, 41247), (48, 41277), (Start: 60 @41292 has 2 MA's), (Start: 78 @41325 has 1 MA's), (Start: 95 @41352 has 66 MA's), (131, 41538), (142, 41610),

Gene: Kenzers\_69 Start: 40798, Stop: 41073, Start Num: 95

Candidate Starts for Kenzers\_69:

(Start: 95 @40798 has 66 MA's), (131, 40984),

Gene: Kepler\_75 Start: 38025, Stop: 38375, Start Num: 41

Candidate Starts for Kepler\_75:

(Start: 41 @38025 has 7 MA's), (Start: 86 @38088 has 1 MA's),

Gene: Khuang\_70 Start: 39192, Stop: 39488, Start Num: 85

Candidate Starts for Khuang\_70:

(Start: 85 @39192 has 1 MA's), (98, 39222), (123, 39360),

Gene: Kieran\_65 Start: 41080, Stop: 41355, Start Num: 95

Candidate Starts for Kieran\_65:

(47, 41005), (Start: 95 @41080 has 66 MA's), (131, 41266), (135, 41296),

Gene: KingBob\_60 Start: 43614, Stop: 43871, Start Num: 97

Candidate Starts for KingBob\_60:

(Start: 95 @43605 has 66 MA's), (Start: 97 @43614 has 60 MA's), (102, 43632), (115, 43689), (127, 43767),

Gene: Kittykat\_65 Start: 43266, Stop: 43526, Start Num: 97

Candidate Starts for Kittykat\_65:

(Start: 90 @43248 has 13 MA's), (Start: 97 @43266 has 60 MA's), (102, 43284), (114, 43341), (127, 43422), (132, 43443),

Gene: Korra\_62 Start: 43371, Stop: 43631, Start Num: 97

Candidate Starts for Korra\_62:

(Start: 90 @43353 has 13 MA's), (Start: 97 @43371 has 60 MA's), (102, 43389), (113, 43443),

Gene: Kuleana\_76 Start: 38455, Stop: 38775, Start Num: 70  
Candidate Starts for Kuleana\_76:  
(Start: 31 @38371 has 1 MA's), (Start: 70 @38455 has 1 MA's), (Start: 86 @38488 has 1 MA's),

Gene: Lahqtemish\_69 Start: 41710, Stop: 41985, Start Num: 95  
Candidate Starts for Lahqtemish\_69:  
(37, 41602), (49, 41635), (61, 41650), (Start: 75 @41677 has 1 MA's), (Start: 78 @41683 has 1 MA's),  
(Start: 86 @41698 has 1 MA's), (Start: 95 @41710 has 66 MA's),

Gene: Lakshmi\_61 Start: 43678, Stop: 43938, Start Num: 97  
Candidate Starts for Lakshmi\_61:  
(Start: 97 @43678 has 60 MA's), (99, 43684), (110, 43735), (111, 43738), (113, 43750), (135, 43882),

Gene: Lasagna\_59 Start: 42266, Stop: 42526, Start Num: 97  
Candidate Starts for Lasagna\_59:  
(Start: 90 @42248 has 13 MA's), (Start: 97 @42266 has 60 MA's), (102, 42284), (132, 42443), (140,  
42500), (141, 42506),

Gene: Lennox\_61 Start: 42751, Stop: 43011, Start Num: 97  
Candidate Starts for Lennox\_61:  
(Start: 90 @42733 has 13 MA's), (Start: 97 @42751 has 60 MA's), (102, 42769), (114, 42826), (132,  
42928), (140, 42985), (141, 42991),

Gene: Leona\_68 Start: 38237, Stop: 38518, Start Num: 91  
Candidate Starts for Leona\_68:  
(Start: 91 @38237 has 2 MA's), (122, 38384), (133, 38447),

Gene: LilStuart\_60 Start: 42614, Stop: 42874, Start Num: 97  
Candidate Starts for LilStuart\_60:  
(Start: 90 @42596 has 13 MA's), (Start: 97 @42614 has 60 MA's), (102, 42632), (132, 42791), (140,  
42848), (141, 42854),

Gene: LimaBean\_68 Start: 40790, Stop: 41065, Start Num: 95  
Candidate Starts for LimaBean\_68:  
(50, 40715), (62, 40730), (Start: 77 @40760 has 1 MA's), (79, 40763), (Start: 95 @40790 has 66  
MA's),

Gene: Litotes\_62 Start: 43156, Stop: 43416, Start Num: 97  
Candidate Starts for Litotes\_62:  
(Start: 76 @43123 has 4 MA's), (Start: 92 @43144 has 3 MA's), (94, 43150), (Start: 97 @43156 has  
60 MA's),

Gene: LittleTokyo\_73 Start: 38604, Stop: 38882, Start Num: 95  
Candidate Starts for LittleTokyo\_73:  
(Start: 95 @38604 has 66 MA's), (131, 38796),

Gene: Loviatar\_114 Start: 42044, Stop: 42379, Start Num: 61  
Candidate Starts for Loviatar\_114:  
(49, 42029), (61, 42044), (Start: 78 @42077 has 1 MA's), (Start: 95 @42104 has 66 MA's), (104,  
42137), (132, 42293),

Gene: Lucy\_60 Start: 42591, Stop: 42869, Start Num: 90  
Candidate Starts for Lucy\_60:



(Start: 90 @42591 has 13 MA's), (Start: 97 @42609 has 60 MA's), (102, 42627), (132, 42786), (140, 42843), (141, 42849),

Gene: Lunar\_73 Start: 37996, Stop: 38376, Start Num: 31

Candidate Starts for Lunar\_73:

(Start: 31 @37996 has 1 MA's), (Start: 86 @38089 has 1 MA's),

Gene: Lynlen\_71 Start: 40984, Stop: 41259, Start Num: 95

Candidate Starts for Lynlen\_71:

(Start: 86 @40972 has 1 MA's), (Start: 95 @40984 has 66 MA's),

Gene: Mahdia\_60 Start: 41790, Stop: 42113, Start Num: 60

Candidate Starts for Mahdia\_60:

(Start: 60 @41790 has 2 MA's), (Start: 68 @41796 has 2 MA's), (121, 41970), (123, 41988), (136, 42075),

Gene: Maja\_56 Start: 36343, Stop: 36714, Start Num: 41

Candidate Starts for Maja\_56:

(Start: 41 @36343 has 7 MA's), (80, 36415), (Start: 91 @36433 has 2 MA's),

Gene: Makoto\_60 Start: 42571, Stop: 42831, Start Num: 97

Candidate Starts for Makoto\_60:

(Start: 90 @42553 has 13 MA's), (Start: 97 @42571 has 60 MA's), (102, 42589), (114, 42646), (132, 42748), (140, 42805), (141, 42811),

Gene: MamaPearl\_60 Start: 43409, Stop: 43669, Start Num: 97

Candidate Starts for MamaPearl\_60:

(Start: 97 @43409 has 60 MA's), (102, 43427), (114, 43484),

Gene: Maria1952\_59 Start: 43613, Stop: 43870, Start Num: 97

Candidate Starts for Maria1952\_59:

(Start: 95 @43604 has 66 MA's), (Start: 97 @43613 has 60 MA's), (102, 43631), (115, 43688), (127, 43766),

Gene: MeganNoll\_63 Start: 43904, Stop: 44182, Start Num: 90

Candidate Starts for MeganNoll\_63:

(Start: 90 @43904 has 13 MA's), (Start: 97 @43922 has 60 MA's), (102, 43940), (113, 43994),

Gene: Melons\_73 Start: 37979, Stop: 38383, Start Num: 26

Candidate Starts for Melons\_73:

(Start: 26 @37979 has 1 MA's), (Start: 86 @38096 has 1 MA's),

Gene: Min1\_34 Start: 16506, Stop: 16799, Start Num: 92

Candidate Starts for Min1\_34:

(51, 16446), (65, 16461), (67, 16464), (Start: 74 @16479 has 3 MA's), (Start: 81 @16491 has 8 MA's), (Start: 92 @16506 has 3 MA's), (119, 16617), (126, 16686), (143, 16782),

Gene: Misaeng\_61 Start: 43477, Stop: 43737, Start Num: 97

Candidate Starts for Misaeng\_61:

(Start: 97 @43477 has 60 MA's), (110, 43534), (111, 43537), (113, 43549), (135, 43681),

Gene: Moki\_62 Start: 42825, Stop: 43085, Start Num: 97

Candidate Starts for Moki\_62:

(Start: 90 @42807 has 13 MA's), (Start: 97 @42825 has 60 MA's), (102, 42843), (114, 42900), (132, 43002), (137, 43050),

Gene: Morrissey\_63 Start: 43651, Stop: 44007, Start Num: 45

Candidate Starts for Morrissey\_63:

(Start: 45 @43651 has 1 MA's), (53, 43666), (Start: 63 @43678 has 1 MA's), (79, 43702), (121, 43864), (136, 43969),

Gene: MrGloopy\_62 Start: 43347, Stop: 43625, Start Num: 90

Candidate Starts for MrGloopy\_62:

(Start: 90 @43347 has 13 MA's), (Start: 97 @43365 has 60 MA's), (102, 43383), (113, 43437),

Gene: Nancia\_61 Start: 42902, Stop: 43162, Start Num: 97

Candidate Starts for Nancia\_61:

(Start: 90 @42884 has 13 MA's), (Start: 97 @42902 has 60 MA's), (102, 42920), (132, 43079), (140, 43136), (141, 43142),

Gene: Nandita\_68 Start: 42024, Stop: 42323, Start Num: 75

Candidate Starts for Nandita\_68:

(30, 41931), (56, 42000), (Start: 75 @42024 has 1 MA's), (121, 42183), (122, 42192), (140, 42297),

Gene: Nicky22\_69 Start: 41321, Stop: 41596, Start Num: 95

Candidate Starts for Nicky22\_69:

(Start: 95 @41321 has 66 MA's), (131, 41507),

Gene: Nubia\_61 Start: 43705, Stop: 43965, Start Num: 97

Candidate Starts for Nubia\_61:

(Start: 86 @43687 has 1 MA's), (Start: 97 @43705 has 60 MA's), (110, 43762), (111, 43765), (135, 43909),

Gene: OMalley\_60 Start: 43400, Stop: 43660, Start Num: 97

Candidate Starts for OMalley\_60:

(Start: 59 @43331 has 2 MA's), (72, 43352), (Start: 97 @43400 has 60 MA's), (103, 43421), (113, 43472),

Gene: Orcanus\_65 Start: 39051, Stop: 39329, Start Num: 95

Candidate Starts for Orcanus\_65:

(Start: 95 @39051 has 66 MA's),

Gene: OurGirlNessie\_59 Start: 42225, Stop: 42485, Start Num: 97

Candidate Starts for OurGirlNessie\_59:

(Start: 90 @42207 has 13 MA's), (Start: 97 @42225 has 60 MA's), (102, 42243), (114, 42300), (132, 42402), (140, 42459), (141, 42465),

Gene: Oxynfrius\_62 Start: 43823, Stop: 44083, Start Num: 97

Candidate Starts for Oxynfrius\_62:

(Start: 97 @43823 has 60 MA's), (110, 43880), (111, 43883), (135, 44027),

Gene: PartyCup\_66 Start: 43576, Stop: 43848, Start Num: 92

Candidate Starts for PartyCup\_66:

(Start: 76 @43555 has 4 MA's), (Start: 92 @43576 has 3 MA's), (94, 43582), (Start: 97 @43588 has 60 MA's),

Gene: Phisb\_74 Start: 41092, Stop: 41367, Start Num: 95  
Candidate Starts for Phisb\_74:  
(Start: 95 @41092 has 66 MA's),

Gene: PhluffyCoco\_69 Start: 38203, Stop: 38490, Start Num: 84  
Candidate Starts for PhluffyCoco\_69:  
(Start: 84 @38203 has 4 MA's), (122, 38356), (133, 38419),

Gene: PinkFriday\_62 Start: 42959, Stop: 43216, Start Num: 97  
Candidate Starts for PinkFriday\_62:  
(Start: 95 @42950 has 66 MA's), (Start: 97 @42959 has 60 MA's), (115, 43034), (116, 43037), (127, 43112), (141, 43196),

Gene: PitaDog\_61 Start: 42609, Stop: 42887, Start Num: 90  
Candidate Starts for PitaDog\_61:  
(Start: 90 @42609 has 13 MA's), (Start: 97 @42627 has 60 MA's), (102, 42645), (114, 42702), (132, 42804), (140, 42861), (141, 42867),

Gene: Polka\_71 Start: 37650, Stop: 38003, Start Num: 41  
Candidate Starts for Polka\_71:  
(Start: 41 @37650 has 7 MA's), (Start: 86 @37716 has 1 MA's),

Gene: Popper\_70 Start: 41441, Stop: 41767, Start Num: 54  
Candidate Starts for Popper\_70:  
(30, 41375), (Start: 54 @41441 has 2 MA's), (Start: 76 @41471 has 4 MA's), (110, 41567), (121, 41627), (140, 41741), (141, 41747),

Gene: Potatoes\_62 Start: 43324, Stop: 43584, Start Num: 97  
Candidate Starts for Potatoes\_62:  
(Start: 90 @43306 has 13 MA's), (Start: 97 @43324 has 60 MA's), (102, 43342), (113, 43396),

Gene: Preamble\_64 Start: 43037, Stop: 43297, Start Num: 97  
Candidate Starts for Preamble\_64:  
(Start: 90 @43019 has 13 MA's), (Start: 97 @43037 has 60 MA's), (102, 43055), (114, 43112), (127, 43193), (132, 43214),

Gene: Pterodactyl\_61 Start: 42938, Stop: 43198, Start Num: 97  
Candidate Starts for Pterodactyl\_61:  
(Start: 90 @42920 has 13 MA's), (Start: 97 @42938 has 60 MA's), (102, 42956), (114, 43013), (132, 43115), (140, 43172), (141, 43178),

Gene: Pumancara\_61 Start: 42494, Stop: 42751, Start Num: 97  
Candidate Starts for Pumancara\_61:  
(Start: 95 @42485 has 66 MA's), (Start: 97 @42494 has 60 MA's), (115, 42569), (116, 42572), (127, 42647), (141, 42731),

Gene: Puppies\_62 Start: 41790, Stop: 42113, Start Num: 68  
Candidate Starts for Puppies\_62:  
(28, 41697), (33, 41718), (36, 41733), (40, 41739), (56, 41775), (Start: 68 @41790 has 2 MA's), (123, 41988),

Gene: QMacho\_72 Start: 41222, Stop: 41497, Start Num: 95  
Candidate Starts for QMacho\_72:

(Start: 95 @41222 has 66 MA's),

Gene: Quenya\_69 Start: 41516, Stop: 41791, Start Num: 95

Candidate Starts for Quenya\_69:

(Start: 95 @41516 has 66 MA's), (104, 41549), (131, 41702), (142, 41774),

Gene: RAP15\_63 Start: 43905, Stop: 44183, Start Num: 90

Candidate Starts for RAP15\_63:

(Start: 90 @43905 has 13 MA's), (Start: 97 @43923 has 60 MA's), (102, 43941), (113, 43995),

Gene: RcigaStruga\_62 Start: 43551, Stop: 43811, Start Num: 97

Candidate Starts for RcigaStruga\_62:

(Start: 86 @43533 has 1 MA's), (Start: 97 @43551 has 60 MA's), (110, 43608), (111, 43611), (113, 43623), (135, 43755),

Gene: RedFox\_71 Start: 38363, Stop: 38650, Start Num: 84

Candidate Starts for RedFox\_71:

(Start: 84 @38363 has 4 MA's), (122, 38516), (133, 38579),

Gene: Renna12\_72 Start: 38798, Stop: 39091, Start Num: 82

Candidate Starts for Renna12\_72:

(Start: 73 @38777 has 1 MA's), (Start: 82 @38798 has 1 MA's), (122, 38957), (133, 39020),

Gene: Riovina\_60 Start: 43400, Stop: 43660, Start Num: 97

Candidate Starts for Riovina\_60:

(Start: 59 @43331 has 2 MA's), (72, 43352), (Start: 97 @43400 has 60 MA's), (103, 43421), (113, 43472),

Gene: Riverdale\_61 Start: 43055, Stop: 43315, Start Num: 97

Candidate Starts for Riverdale\_61:

(Start: 90 @43037 has 13 MA's), (Start: 97 @43055 has 60 MA's), (102, 43073), (113, 43127),

Gene: Rollins\_70 Start: 39578, Stop: 39853, Start Num: 95

Candidate Starts for Rollins\_70:

(13, 39380), (17, 39395), (Start: 26 @39422 has 1 MA's), (34, 39455), (49, 39503), (61, 39518), (Start: 78 @39551 has 1 MA's), (Start: 95 @39578 has 66 MA's),

Gene: Rona\_66 Start: 41247, Stop: 41522, Start Num: 95

Candidate Starts for Rona\_66:

(47, 41172), (Start: 95 @41247 has 66 MA's), (131, 41433), (135, 41463),

Gene: Rozby\_60 Start: 42859, Stop: 43119, Start Num: 97

Candidate Starts for Rozby\_60:

(Start: 90 @42841 has 13 MA's), (Start: 97 @42859 has 60 MA's), (102, 42877), (113, 42931),

Gene: Ruchi\_64 Start: 38215, Stop: 38493, Start Num: 95

Candidate Starts for Ruchi\_64:

(35, 38110), (51, 38140), (Start: 88 @38203 has 1 MA's), (Start: 95 @38215 has 66 MA's),

Gene: Ryan\_70 Start: 42477, Stop: 42773, Start Num: 76

Candidate Starts for Ryan\_70:

(Start: 54 @42438 has 2 MA's), (Start: 76 @42477 has 4 MA's), (121, 42633), (140, 42747),

Gene: SanaSana\_70 Start: 41542, Stop: 41817, Start Num: 95  
Candidate Starts for SanaSana\_70:  
(5, 41296), (8, 41311), (14, 41350), (46, 41458), (49, 41467), (61, 41482), (Start: 78 @41515 has 1 MA's), (Start: 95 @41542 has 66 MA's), (104, 41575), (131, 41728), (132, 41731),

Gene: SansAfet\_72 Start: 41068, Stop: 41343, Start Num: 95  
Candidate Starts for SansAfet\_72:  
(Start: 95 @41068 has 66 MA's), (131, 41254),

Gene: Sapo\_61 Start: 45211, Stop: 45513, Start Num: 84  
Candidate Starts for Sapo\_61:  
(Start: 84 @45211 has 4 MA's), (111, 45304), (120, 45337), (128, 45412), (144, 45505),

Gene: SarBear\_72 Start: 41148, Stop: 41423, Start Num: 95  
Candidate Starts for SarBear\_72:  
(Start: 95 @41148 has 66 MA's),

Gene: Savage2526\_61 Start: 43082, Stop: 43342, Start Num: 97  
Candidate Starts for Savage2526\_61:  
(Start: 90 @43064 has 13 MA's), (Start: 97 @43082 has 60 MA's), (102, 43100), (113, 43154),

Gene: Schmidt\_58 Start: 36837, Stop: 37133, Start Num: 81  
Candidate Starts for Schmidt\_58:  
(Start: 81 @36837 has 8 MA's), (123, 37008), (140, 37107),

Gene: Scuttle\_61 Start: 43375, Stop: 43653, Start Num: 90  
Candidate Starts for Scuttle\_61:  
(Start: 90 @43375 has 13 MA's), (Start: 97 @43393 has 60 MA's), (102, 43411), (113, 43465),

Gene: Sergei\_60 Start: 43614, Stop: 43871, Start Num: 97  
Candidate Starts for Sergei\_60:  
(Start: 95 @43605 has 66 MA's), (Start: 97 @43614 has 60 MA's), (102, 43632), (115, 43689), (127, 43767),

Gene: Shagrat\_110 Start: 58151, Stop: 58423, Start Num: 85  
Candidate Starts for Shagrat\_110:  
(Start: 85 @58151 has 1 MA's), (119, 58256), (122, 58295), (138, 58391), (139, 58394),

Gene: Sharkboy\_68 Start: 41611, Stop: 41886, Start Num: 95  
Candidate Starts for Sharkboy\_68:  
(47, 41536), (Start: 95 @41611 has 66 MA's), (104, 41644), (131, 41797), (135, 41827),

Gene: Skylord\_70 Start: 39495, Stop: 39770, Start Num: 95  
Candidate Starts for Skylord\_70:  
(13, 39297), (17, 39312), (Start: 26 @39339 has 1 MA's), (34, 39372), (49, 39420), (61, 39435), (Start: 78 @39468 has 1 MA's), (Start: 95 @39495 has 66 MA's),

Gene: Slay\_70 Start: 41458, Stop: 41733, Start Num: 95  
Candidate Starts for Slay\_70:  
(Start: 95 @41458 has 66 MA's), (131, 41644),

Gene: Splinter\_64 Start: 40315, Stop: 40611, Start Num: 81  
Candidate Starts for Splinter\_64:

(Start: 81 @40315 has 8 MA's), (126, 40504), (136, 40573),

Gene: Stoor\_69 Start: 41350, Stop: 41625, Start Num: 95

Candidate Starts for Stoor\_69:

(Start: 95 @41350 has 66 MA's), (131, 41536), (132, 41539),

Gene: Stromboli\_68 Start: 41130, Stop: 41405, Start Num: 95

Candidate Starts for Stromboli\_68:

(5, 40884), (8, 40899), (14, 40938), (46, 41046), (49, 41055), (61, 41070), (Start: 78 @41103 has 1 MA's), (Start: 95 @41130 has 66 MA's), (131, 41316), (132, 41319),

Gene: Supakev\_60 Start: 43425, Stop: 43685, Start Num: 97

Candidate Starts for Supakev\_60:

(Start: 59 @43356 has 2 MA's), (72, 43377), (Start: 97 @43425 has 60 MA's), (102, 43443), (103, 43446), (113, 43497),

Gene: Suppi\_62 Start: 43562, Stop: 43834, Start Num: 92

Candidate Starts for Suppi\_62:

(Start: 76 @43541 has 4 MA's), (Start: 92 @43562 has 3 MA's), (94, 43568), (Start: 97 @43574 has 60 MA's),

Gene: Swervy\_70 Start: 41047, Stop: 41322, Start Num: 95

Candidate Starts for Swervy\_70:

(Start: 95 @41047 has 66 MA's), (131, 41233),

Gene: TZGordon\_65 Start: 39203, Stop: 39499, Start Num: 81

Candidate Starts for TZGordon\_65:

(Start: 81 @39203 has 8 MA's), (126, 39392), (136, 39461),

Gene: TattModd\_61 Start: 43209, Stop: 43469, Start Num: 97

Candidate Starts for TattModd\_61:

(Start: 90 @43191 has 13 MA's), (Start: 97 @43209 has 60 MA's), (102, 43227), (113, 43281),

Gene: Temper16\_60 Start: 43614, Stop: 43871, Start Num: 97

Candidate Starts for Temper16\_60:

(Start: 95 @43605 has 66 MA's), (Start: 97 @43614 has 60 MA's), (102, 43632), (115, 43689), (127, 43767),

Gene: TinaLin\_63 Start: 39046, Stop: 39342, Start Num: 81

Candidate Starts for TinaLin\_63:

(58, 39004), (Start: 81 @39046 has 8 MA's), (101, 39088), (120, 39172), (136, 39304),

Gene: Trine\_65 Start: 43058, Stop: 43372, Start Num: 63

Candidate Starts for Trine\_65:

(Start: 63 @43058 has 1 MA's), (118, 43199),

Gene: TukTuk\_70 Start: 41237, Stop: 41512, Start Num: 95

Candidate Starts for TukTuk\_70:

(Start: 95 @41237 has 66 MA's), (131, 41423),

Gene: Typha\_129 Start: 74982, Stop: 75305, Start Num: 69

Candidate Starts for Typha\_129:

(Start: 69 @74982 has 4 MA's), (119, 75132), (130, 75213), (134, 75237), (135, 75249),

Gene: Upyo\_69 Start: 44979, Stop: 45296, Start Num: 64  
Candidate Starts for Upyo\_69:  
(Start: 64 @44979 has 1 MA's), (105, 45075), (121, 45153), (123, 45171),

Gene: Urla\_62 Start: 43603, Stop: 43863, Start Num: 97  
Candidate Starts for Urla\_62:  
(Start: 97 @43603 has 60 MA's), (102, 43621), (114, 43678),

Gene: Vallejo\_62 Start: 43253, Stop: 43531, Start Num: 90  
Candidate Starts for Vallejo\_62:  
(Start: 90 @43253 has 13 MA's), (Start: 97 @43271 has 60 MA's), (102, 43289), (113, 43343),

Gene: Vendetta\_64 Start: 40315, Stop: 40611, Start Num: 81  
Candidate Starts for Vendetta\_64:  
(Start: 81 @40315 has 8 MA's), (126, 40504), (136, 40573),

Gene: Vitas\_71 Start: 39646, Stop: 39921, Start Num: 95  
Candidate Starts for Vitas\_71:  
(22, 39487), (Start: 55 @39580 has 1 MA's), (Start: 95 @39646 has 66 MA's), (104, 39679),

Gene: Vulpecula\_64 Start: 37410, Stop: 37688, Start Num: 95  
Candidate Starts for Vulpecula\_64:  
(Start: 88 @37398 has 1 MA's), (Start: 95 @37410 has 66 MA's),

Gene: Vulture\_60 Start: 42928, Stop: 43257, Start Num: 59  
Candidate Starts for Vulture\_60:  
(Start: 59 @42928 has 2 MA's), (72, 42949), (Start: 97 @42997 has 60 MA's), (102, 43015), (103, 43018), (113, 43069),

Gene: Wawa\_62 Start: 43514, Stop: 43774, Start Num: 97  
Candidate Starts for Wawa\_62:  
(Start: 90 @43496 has 13 MA's), (Start: 97 @43514 has 60 MA's), (102, 43532), (113, 43586),

Gene: Wayne\_64 Start: 44019, Stop: 44291, Start Num: 92  
Candidate Starts for Wayne\_64:  
(Start: 76 @43998 has 4 MA's), (Start: 92 @44019 has 3 MA's), (94, 44025), (Start: 97 @44031 has 60 MA's),

Gene: Widow\_62 Start: 42336, Stop: 42659, Start Num: 68  
Candidate Starts for Widow\_62:  
(28, 42243), (33, 42264), (36, 42279), (40, 42285), (48, 42312), (56, 42321), (Start: 68 @42336 has 2 MA's), (123, 42534),

Gene: WonderBoy\_59 Start: 42399, Stop: 42659, Start Num: 97  
Candidate Starts for WonderBoy\_59:  
(Start: 90 @42381 has 13 MA's), (Start: 97 @42399 has 60 MA's), (102, 42417), (114, 42474), (132, 42576), (140, 42633), (141, 42639),

Gene: Zaheer\_69 Start: 42523, Stop: 42819, Start Num: 76  
Candidate Starts for Zaheer\_69:  
(Start: 76 @42523 has 4 MA's), (110, 42619), (121, 42679), (126, 42715),

Gene: Zorro\_62 Start: 43226, Stop: 43486, Start Num: 97

Candidate Starts for Zorro\_62:

(Start: 90 @43208 has 13 MA's), (Start: 97 @43226 has 60 MA's), (102, 43244), (113, 43298),