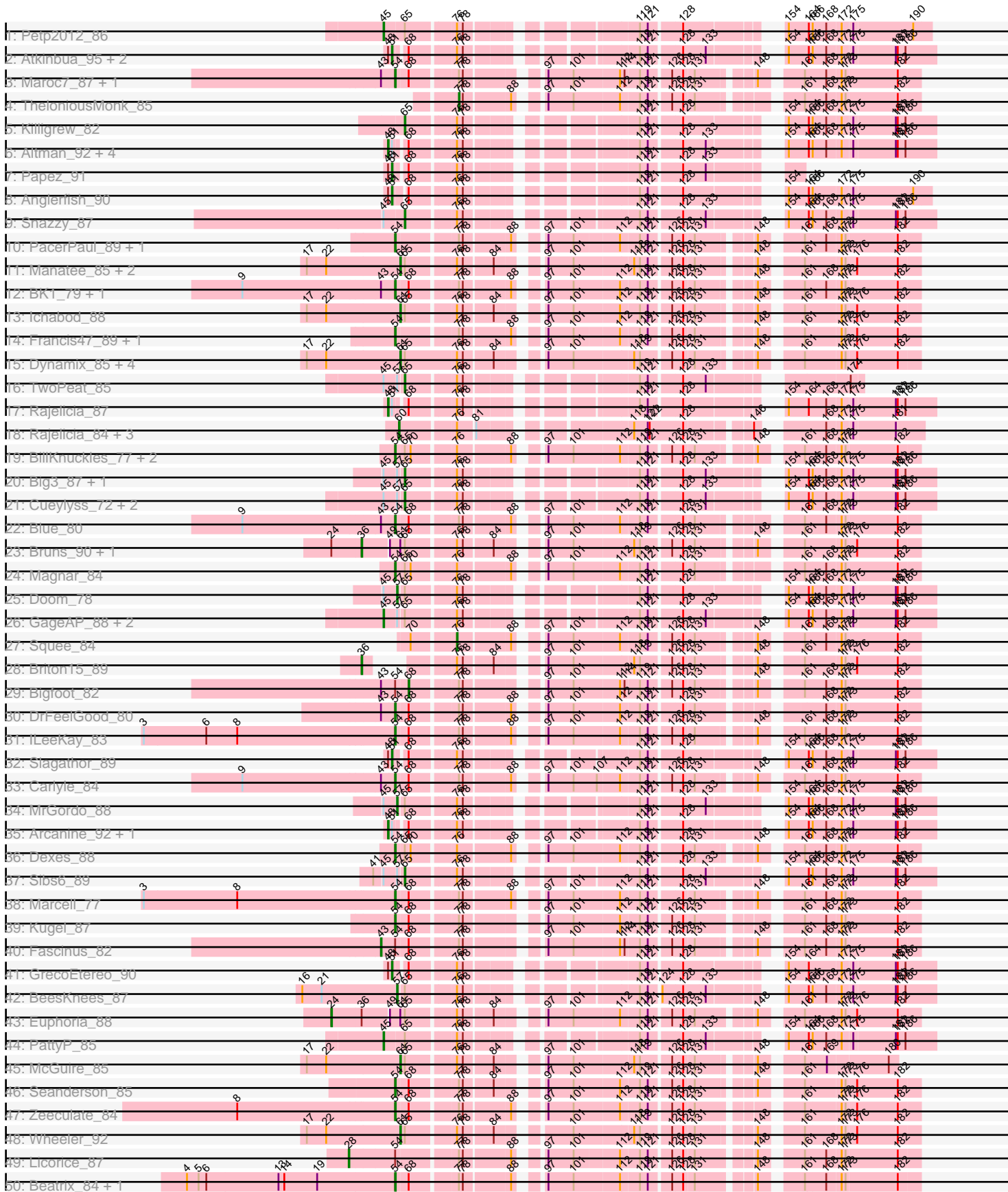
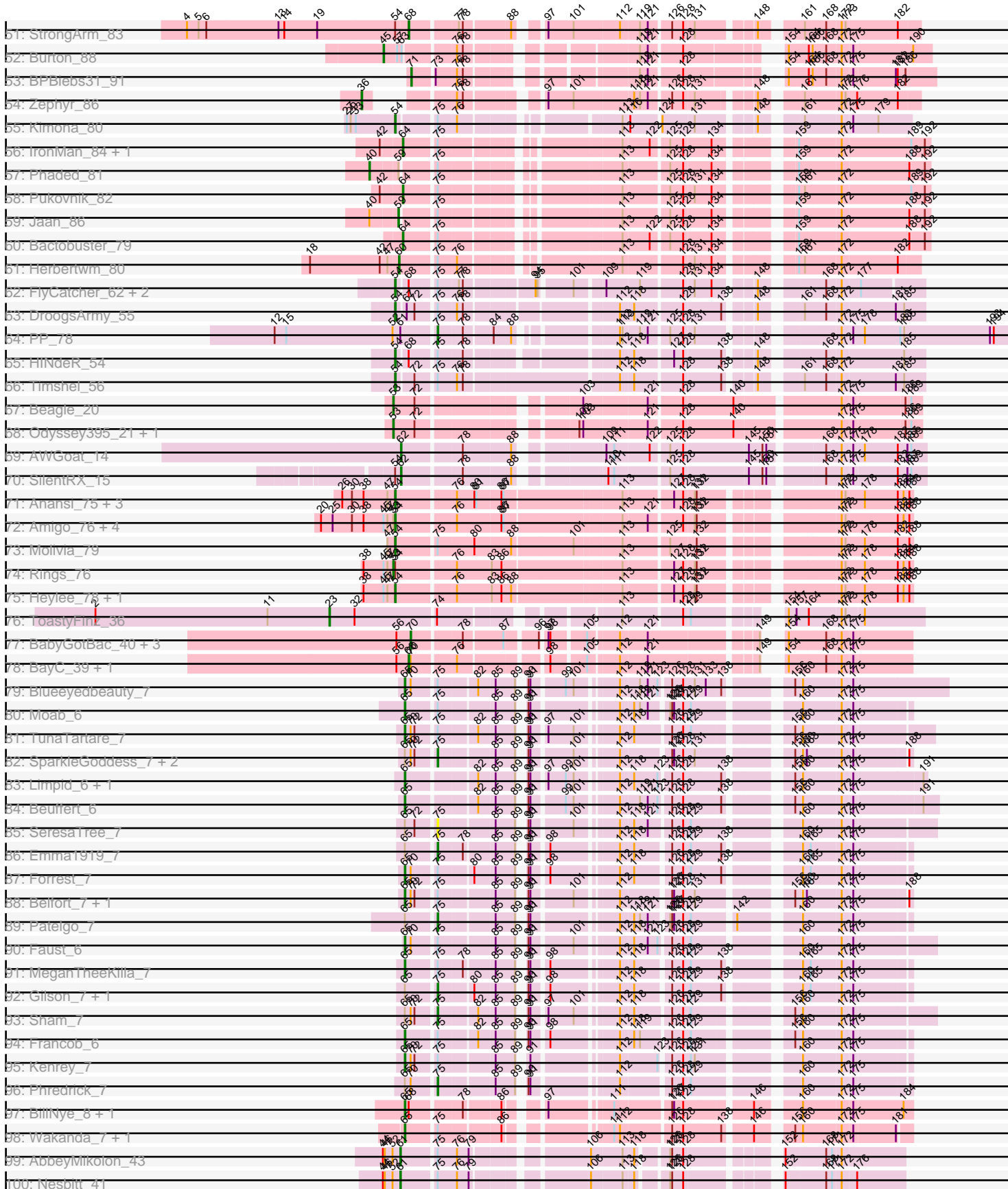


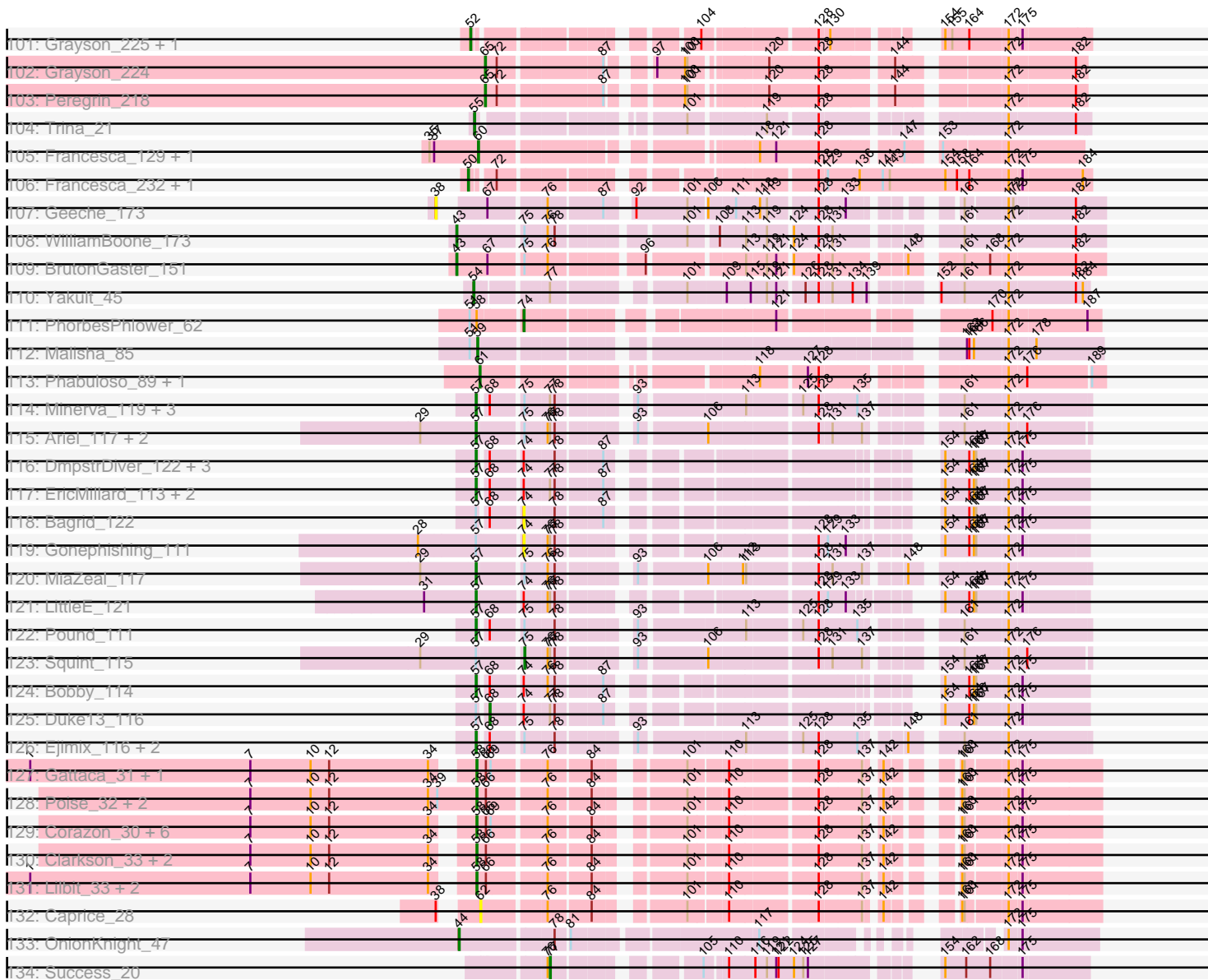
Pham 195411



Pham 195411



Pham 195411



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 195411 Report

This analysis was run 12/09/24 on database version 580.

Pham number 195411 has 215 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Petp2012\_86
- Track 2 : Atkinbua\_95, Gwendoluna\_89, Tripl3t\_89
- Track 3 : Maroc7\_87, CactusRose\_91
- Track 4 : TheloniousMonk\_85
- Track 5 : Killigrew\_82
- Track 6 : Altman\_92, Ruotula\_92, ConceptII\_94, Pinto\_85, Kanely\_91
- Track 7 : Papez\_91
- Track 8 : Anglerfish\_90
- Track 9 : Snazzy\_87
- Track 10 : PacerPaul\_89, BigPaolini\_83
- Track 11 : Manatee\_85, Lockley\_87, DD5\_84
- Track 12 : BK1\_79, A6\_79
- Track 13 : Ichabod\_88
- Track 14 : Francis47\_89, Agaliana\_82
- Track 15 : Dynamix\_85, U2\_78, KSSJEB\_84, Seabiscuit\_87, Switzer\_84
- Track 16 : TwoPeat\_85
- Track 17 : Rajelicia\_87
- Track 18 : Rajelicia\_84, Dreamboat\_83, PherrisBueller\_82, Jasper\_82
- Track 19 : BillKnuckles\_77, Naira\_89, Fenn\_90
- Track 20 : Big3\_87, Mkhuseleli\_82
- Track 21 : Cueylyss\_72, Sanya\_79, ShortQueendom\_79
- Track 22 : Blue\_80
- Track 23 : Bruns\_90, Lesedi\_82
- Track 24 : Magnar\_84
- Track 25 : Doom\_78
- Track 26 : GageAP\_88, Museum\_87, Graduation\_89
- Track 27 : Squee\_84
- Track 28 : Briton15\_89
- Track 29 : Bigfoot\_82
- Track 30 : DrFeelGood\_80
- Track 31 : ILeeKay\_83
- Track 32 : Slagathor\_89
- Track 33 : Carlyle\_84
- Track 34 : MrGordo\_88
- Track 35 : Arcanine\_92, Hope4ever\_84
- Track 36 : Dexes\_88
- Track 37 : Sibs6\_89

- Track 38 : Marcell\_77
- Track 39 : Kugel\_87
- Track 40 : Fascinus\_82
- Track 41 : GrecoEtereo\_90
- Track 42 : BeesKnees\_87
- Track 43 : Euphoria\_88
- Track 44 : PattyP\_85
- Track 45 : McGuire\_85
- Track 46 : Seanderson\_85
- Track 47 : Zeeculate\_84
- Track 48 : Wheeler\_92
- Track 49 : Licorice\_87
- Track 50 : Beatrix\_84, Bexan\_82
- Track 51 : StrongArm\_83
- Track 52 : Burton\_88
- Track 53 : BPBiebs31\_91
- Track 54 : Zephyr\_86
- Track 55 : Kimona\_80
- Track 56 : IronMan\_84, Landor\_85
- Track 57 : Phaded\_81
- Track 58 : Pukovnik\_82
- Track 59 : Jaan\_86
- Track 60 : Bactobuster\_79
- Track 61 : Herbertwm\_80
- Track 62 : FlyCatcher\_62, Toro\_60, Sheen\_59
- Track 63 : DroogsArmy\_55
- Track 64 : PP\_78
- Track 65 : HINdeR\_54
- Track 66 : Timshel\_56
- Track 67 : Beagle\_20
- Track 68 : Odyssey395\_21, Pureglobe5\_21
- Track 69 : AWGoat\_14
- Track 70 : SilentRX\_15
- Track 71 : Anansi\_75, Thunderclap\_75, SorJuana\_75, Gorgeous\_75
- Track 72 : Amigo\_76, Yeezus\_75, Boersma\_78, Ichor\_75, Jaek\_75
- Track 73 : Molivia\_79
- Track 74 : Rings\_76
- Track 75 : Heylee\_78, Amavida\_77
- Track 76 : ToastyFinz\_36
- Track 77 : BabyGotBac\_40, Asis\_39, Maih\_38, TP1604\_39
- Track 78 : BayC\_39, Salete\_39
- Track 79 : Blueeyedbeauty\_7
- Track 80 : Moab\_6
- Track 81 : TunaTartare\_7
- Track 82 : SparkleGoddess\_7, Stigma\_7, Comrade\_7
- Track 83 : Limpid\_6, Annadreamy\_6
- Track 84 : Beuffert\_6
- Track 85 : SeresaTree\_7
- Track 86 : Emma1919\_7
- Track 87 : Forrest\_7
- Track 88 : Belfort\_7, Karp\_7
- Track 89 : Patelgo\_7
- Track 90 : Faust\_6

- Track 91 : MeganTheeKilla\_7
- Track 92 : Gilson\_7, Jada\_7
- Track 93 : Sham\_7
- Track 94 : Francob\_6
- Track 95 : Kenrey\_7
- Track 96 : Phredrick\_7
- Track 97 : BillNye\_8, Circinus\_9
- Track 98 : Wakanda\_7, Muntaha\_8
- Track 99 : AbbeyMikolon\_43
- Track 100 : Nesbitt\_41
- Track 101 : Grayson\_225, Peregrin\_219
- Track 102 : Grayson\_224
- Track 103 : Peregrin\_218
- Track 104 : Trina\_21
- Track 105 : Francesca\_129, Dorin\_129
- Track 106 : Francesca\_232, Dorin\_231
- Track 107 : Geeche\_173
- Track 108 : WilliamBoone\_173
- Track 109 : BrutonGaster\_151
- Track 110 : Yakult\_45
- Track 111 : PhorbesPhlower\_62
- Track 112 : Malisha\_85
- Track 113 : Phabuloso\_89, Kamaru\_76
- Track 114 : Minerva\_119, Zelink\_116, Hughesyang\_121, ThreeRngTarjay\_117
- Track 115 : Ariel\_117, Courthouse\_112, Superphikiman\_114
- Track 116 : DmpstrDiver\_122, Kalah2\_113, Klein\_118, Wanda\_121
- Track 117 : EricMillard\_113, BAKA\_121, Optimus\_112
- Track 118 : Bagrid\_122
- Track 119 : Gonephishing\_111
- Track 120 : MiaZeal\_117
- Track 121 : LittleE\_121
- Track 122 : Pound\_111
- Track 123 : Squint\_115
- Track 124 : Bobby\_114
- Track 125 : Duke13\_116
- Track 126 : Ejimix\_116, Redno2\_115, Halley\_124
- Track 127 : Gattaca\_31, MosMoris\_30
- Track 128 : Poise\_32, Raela\_32, Blackbeetle\_32
- Track 129 : Corazon\_30, Tesla\_31, Pringar\_32, JoieB\_33, RedRaider77\_32, VasuNzinga\_32, Beelzebub\_36
- Track 130 : Clarkson\_33, Huphlepuuff\_34, LittleLaf\_32
- Track 131 : Lilbit\_33, FeliMaine\_32, Marvin\_30
- Track 132 : Caprice\_28
- Track 133 : OnionKnight\_47
- Track 134 : Success\_20

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

The start number called the most often in the published annotations is 54, it was called in 40 of the 202 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- A6\_79, Agaliana\_82, Amavida\_77, Amigo\_76, Anansi\_75, BK1\_79, Beatrix\_84, Bexan\_82, BigPaolini\_83, BillKnuckles\_77, Blue\_80, Boersma\_78, CactusRose\_91, Carlyle\_84, Dexes\_88, DrFeelGood\_80, DroogsArmy\_55, Fenn\_90, FlyCatcher\_62, Francis47\_89, Gorgeous\_75, HINdeR\_54, Heylee\_78, ILeeKay\_83, Ichor\_75, Jaek\_75, Kimona\_80, Kugel\_87, Magnar\_84, Marcell\_77, Maroc7\_87, Molivia\_79, Naira\_89, PacerPaul\_89, Seanderson\_85, Sheen\_59, SorJuana\_75, Thunderclap\_75, Timshel\_56, Toro\_60, Yakult\_45, Yeezus\_75, Zeeculate\_84,

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

- Bigfoot\_82, Fascinus\_82, Licorice\_87, Rings\_76, SilentRX\_15, StrongArm\_83,

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

- AWGoat\_14, AbbeyMikolon\_43, Altman\_92, Anglerfish\_90, Annadreamy\_6, Arcanine\_92, Ariel\_117, Asis\_39, Atkinbua\_95, BAKA\_121, BPBiabs31\_91, BabyGotBac\_40, Bactobuster\_79, Bagrid\_122, BayC\_39, Beagle\_20, Beelzebub\_36, BeesKnees\_87, Belfort\_7, Beuffert\_6, Big3\_87, BillNye\_8, Blackbeetle\_32, Blueeyedbeauty\_7, Bobby\_114, Briton15\_89, Bruns\_90, BrutonGaster\_151, Burton\_88, Caprice\_28, Circinus\_9, Clarkson\_33, Comrade\_7, ConceptII\_94, Corazon\_30, Courthouse\_112, Cueyllyss\_72, DD5\_84, DmpstrDiver\_122, Doom\_78, Dorin\_129, Dorin\_231, Dreamboat\_83, Duke13\_116, Dynamix\_85, Ejimix\_116, Emma1919\_7, EricMillard\_113, Euphoria\_88, Faust\_6, FeliMaine\_32, Forrest\_7, Francesca\_129, Francesca\_232, Francob\_6, GageAP\_88, Gattaca\_31, Geeche\_173, Gilson\_7, Gonephishing\_111, Graduation\_89, Grayson\_224, Grayson\_225, GrecoEtereo\_90, Gwendoluna\_89, Halley\_124, Herbertwm\_80, Hope4ever\_84, Hughesyang\_121, Huphlepuuff\_34, Ichabod\_88, IronMan\_84, Jaan\_86, Jada\_7, Jasper\_82, JoieB\_33, KSSJEB\_84, Kalah2\_113, Kamaru\_76, Kanely\_91, Karp\_7, Kenrey\_7, Killigrew\_82, Klein\_118, Landor\_85, Lesedi\_82, Lilbit\_33, Limpid\_6, LittleE\_121, LittleLaf\_32, Lockley\_87, Maih\_38, Malisha\_85, Manatee\_85, Marvin\_30, McGuire\_85, MeganTheeKilla\_7, MiaZeal\_117, Minerva\_119, Mkhuseleli\_82, Moab\_6, MosMoris\_30, MrGordo\_88, Muntaha\_8, Museum\_87, Nesbitt\_41, Odyssey395\_21, OnionKnight\_47, Optimus\_112, PP\_78, Papez\_91, Patelgo\_7, PattyP\_85, Peregrin\_218, Peregrin\_219, Petp2012\_86, Phabuloso\_89, Phaded\_81, PherrisBueller\_82, PhorbessPhlower\_62, Phredrick\_7, Pinto\_85, Poise\_32, Pound\_111, Pringar\_32, Pukovnik\_82, Pureglobe5\_21, Raela\_32, Rajelicia\_84, Rajelicia\_87, RedRaider77\_32, Redno2\_115, Ruotula\_92, Salete\_39, Sanya\_79, Seabiscuit\_87, SeresaTree\_7, Sham\_7, ShortQueendom\_79, Sibs6\_89, Slagathor\_89, Snazzy\_87, SparkleGoddess\_7, Squee\_84, Squint\_115, Stigma\_7, Success\_20, Superphikiman\_114, Switzer\_84, TP1604\_39, Tesla\_31, TheloniousMonk\_85, ThreeRngTarjay\_117, ToastyFinz\_36, Trina\_21, Trip13t\_89, TunaTartare\_7, TwoPeat\_85, U2\_78, VasuNzinga\_32, Wakanda\_7, Wanda\_121, Wheeler\_92, WilliamBoone\_173, Zelink\_116, Zephyr\_86,

### Summary by start number:

Start 23:

- Found in 1 of 215 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 202
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ToastyFinz\_36 (BC1),

Start 24:

- Found in 3 of 215 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 202
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Euphoria\_88 (A1),

#### Start 28:

- Found in 2 of 215 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 202
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Licorice\_87 (A1),

#### Start 36:

- Found in 5 of 215 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 4 of 202
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Briton15\_89 (A1), Bruns\_90 (A1), Lesedi\_82 (A1), Zephyr\_86 (A1),

#### Start 38:

- Found in 14 of 215 ( 6.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 7.1% of time when present
- Phage (with cluster) where this start called: Geeche\_173 (CQ1),

#### Start 40:

- Found in 2 of 215 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 202
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Phaded\_81 (A2),

#### Start 43:

- Found in 11 of 215 ( 5.1% ) of genes in pham
- Manual Annotations of this start: 3 of 202
- Called 27.3% of time when present
- Phage (with cluster) where this start called: BrutonGaster\_151 (CQ2), Fascinus\_82 (A1), WilliamBoone\_173 (CQ1),

#### Start 44:

- Found in 3 of 215 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 202
- Called 33.3% of time when present
- Phage (with cluster) where this start called: OnionKnight\_47 (singleton),

#### Start 45:

- Found in 24 of 215 ( 11.2% ) of genes in pham
- Manual Annotations of this start: 6 of 202
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Burton\_88 (A1), GageAP\_88 (A1), Graduation\_89 (A1), Museum\_87 (A1), PattyP\_85 (A1), Petp2012\_86 (A1),

#### Start 48:

- Found in 15 of 215 ( 7.0% ) of genes in pham
- Manual Annotations of this start: 8 of 202



- Called 53.3% of time when present
- Phage (with cluster) where this start called: Altman\_92 (A1), Arcanine\_92 (A1), ConceptII\_94 (A1), Hope4ever\_84 (A1), Kanely\_91 (A1), Pinto\_85 (A1), Rajelicia\_87 (A1), Ruotula\_92 (A1),

#### Start 50:

- Found in 2 of 215 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 2 of 202
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dorin\_231 (CG), Francesca\_232 (CG),

#### Start 51:

- Found in 17 of 215 ( 7.9% ) of genes in pham
- Manual Annotations of this start: 7 of 202
- Called 41.2% of time when present
- Phage (with cluster) where this start called: Anglerfish\_90 (A1), Atkinbua\_95 (A1), GrecoEtereo\_90 (A1), Gwendoluna\_89 (A1), Papez\_91 (A1), Slagathor\_89 (A1), Tripl3t\_89 (A1),

#### Start 52:

- Found in 5 of 215 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 2 of 202
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Grayson\_225 (CB), Peregrin\_219 (CB),

#### Start 53:

- Found in 9 of 215 ( 4.2% ) of genes in pham
- Manual Annotations of this start: 4 of 202
- Called 44.4% of time when present
- Phage (with cluster) where this start called: Beagle\_20 (AP2), Odyssey395\_21 (AP2), Pureglobe5\_21 (AP2), Rings\_76 (AQ),

#### Start 54:

- Found in 49 of 215 ( 22.8% ) of genes in pham
- Manual Annotations of this start: 40 of 202
- Called 87.8% of time when present
- Phage (with cluster) where this start called: A6\_79 (A1), Agaliana\_82 (A1), Amavida\_77 (AQ), Amigo\_76 (AQ), Anansi\_75 (AQ), BK1\_79 (A1), Beatrix\_84 (A1), Bexan\_82 (A1), BigPaolini\_83 (A1), BillKnuckles\_77 (A1), Blue\_80 (A1), Boersma\_78 (AQ), CactusRose\_91 (A1), Carlyle\_84 (A1), Dexes\_88 (A1), DrFeelGood\_80 (A1), DroogsArmy\_55 (A7), Fenn\_90 (A1), FlyCatcher\_62 (A7), Francis47\_89 (A1), Gorgeous\_75 (AQ), HINdeR\_54 (A7), Heylee\_78 (AQ), ILeeKay\_83 (A1), Ichor\_75 (AQ), Jaek\_75 (AQ), Kimona\_80 (A19), Kugel\_87 (A1), Magnar\_84 (A1), Marcell\_77 (A1), Maroc7\_87 (A1), Molivia\_79 (AQ), Naira\_89 (A1), PacerPaul\_89 (A1), Seanderson\_85 (A1), Sheen\_59 (A7), SorJuana\_75 (AQ), Thunderclap\_75 (AQ), Timshel\_56 (A7), Toro\_60 (A7), Yakult\_45 (CT), Yeezus\_75 (AQ), Zeeculate\_84 (A1),

#### Start 55:

- Found in 1 of 215 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 202
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Trina\_21 (CE),

Start 57:

- Found in 39 of 215 ( 18.1% ) of genes in pham
- Manual Annotations of this start: 24 of 202
- Called 61.5% of time when present
- Phage (with cluster) where this start called: Ariel\_117 (J), BAKA\_121 (J), BeesKnees\_87 (A1), Bobby\_114 (J), Courthouse\_112 (J), DmpstrDiver\_122 (J), Doom\_78 (A1), Ejimix\_116 (J), EricMillard\_113 (J), Halley\_124 (J), Hughesyang\_121 (J), Kalah2\_113 (J), Klein\_118 (J), LittleE\_121 (J), MiaZeal\_117 (J), Minerva\_119 (J), MrGordo\_88 (A1), Optimus\_112 (J), Pound\_111 (J), Redno2\_115 (J), Superphikiman\_114 (J), ThreeRngTarjay\_117 (J), Wanda\_121 (J), Zelink\_116 (J),

Start 58:

- Found in 19 of 215 ( 8.8% ) of genes in pham
- Manual Annotations of this start: 16 of 202
- Called 94.7% of time when present
- Phage (with cluster) where this start called: Beelzebub\_36 (S), Blackbeetle\_32 (S), Clarkson\_33 (S), Corazon\_30 (S), FeliMaine\_32 (S), Gattaca\_31 (S), Huphlepuuff\_34 (S), JoieB\_33 (S), Lilbit\_33 (S), LittleLaf\_32 (S), Marvin\_30 (S), MosMoris\_30 (S), Poise\_32 (S), Pringar\_32 (S), Raela\_32 (S), RedRaider77\_32 (S), Tesla\_31 (S), VasuNzinga\_32 (S),

Start 59:

- Found in 3 of 215 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 202
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Jaan\_86 (A2), Malisha\_85 (DN),

Start 60:

- Found in 7 of 215 ( 3.3% ) of genes in pham
- Manual Annotations of this start: 7 of 202
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dorin\_129 (CG), Dreamboat\_83 (A1), Francesca\_129 (CG), Herbertwm\_80 (A2), Jasper\_82 (A1), PherrisBueller\_82 (A1), Rajelicia\_84 (A1),

Start 61:

- Found in 19 of 215 ( 8.8% ) of genes in pham
- Manual Annotations of this start: 15 of 202
- Called 78.9% of time when present
- Phage (with cluster) where this start called: AbbeyMikolon\_43 (BL), DD5\_84 (A1), Dynamix\_85 (A1), Ichabod\_88 (A1), KSSJEB\_84 (A1), Kamaru\_76 (DN1), Lockley\_87 (A1), Manatee\_85 (A1), McGuire\_85 (A1), Nesbitt\_41 (BL), Phabuloso\_89 (DN1), Seabiscuit\_87 (A1), Switzer\_84 (A1), U2\_78 (A1), Wheeler\_92 (A1),

Start 62:

- Found in 3 of 215 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 202
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AWGoat\_14 (AP4), Caprice\_28 (S), SilentRX\_15 (AP4),

Start 64:

- Found in 4 of 215 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 4 of 202
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bactobuster\_79 (A2), IronMan\_84 (A2), Landor\_85 (A2), Pukovnik\_82 (A2),

Start 65:

- Found in 65 of 215 ( 30.2% ) of genes in pham
- Manual Annotations of this start: 25 of 202
- Called 43.1% of time when present
- Phage (with cluster) where this start called: Annadreamy\_6 (BK1), Belfort\_7 (BK1), Beuffert\_6 (BK1), Big3\_87 (A1), BillNye\_8 (BK2), Blueeyedbeauty\_7 (BK1), Circinus\_9 (BK2), Cueylyss\_72 (A1), Faust\_6 (BK1), Forrest\_7 (BK1), Francob\_6 (BK1), Grayson\_224 (CB), Karp\_7 (BK1), Kenrey\_7 (BK1), Killigrew\_82 (A1), Limpid\_6 (BK1), MeganTheeKilla\_7 (BK1), Mkhuseleli\_82 (A1), Moab\_6 (BK1), Muntaha\_8 (BK2), Peregrin\_218 (CB), Sanya\_79 (A1), ShortQueendom\_79 (A1), Sibs6\_89 (A1), Snazzy\_87 (A1), TunaTartare\_7 (BK1), TwoPeat\_85 (A1), Wakanda\_7 (BK2),

Start 68:

- Found in 58 of 215 ( 27.0% ) of genes in pham
- Manual Annotations of this start: 5 of 202
- Called 8.6% of time when present
- Phage (with cluster) where this start called: BayC\_39 (BG), Bigfoot\_82 (A1), Duke13\_116 (J), Salette\_39 (BG), StrongArm\_83 (A1),

Start 70:

- Found in 24 of 215 ( 11.2% ) of genes in pham
- Manual Annotations of this start: 4 of 202
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Asis\_39 (BG), BabyGotBac\_40 (BG), Maih\_38 (BG), TP1604\_39 (BG),

Start 71:

- Found in 1 of 215 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 202
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BPBiabs31\_91 (A1),

Start 74:

- Found in 14 of 215 ( 6.5% ) of genes in pham
- Manual Annotations of this start: 1 of 202
- Called 21.4% of time when present
- Phage (with cluster) where this start called: Bagrid\_122 (J), Gonephishing\_111 (J), PhorbesPhlower\_62 (DH),

Start 75:

- Found in 55 of 215 ( 25.6% ) of genes in pham
- Manual Annotations of this start: 11 of 202
- Called 21.8% of time when present
- Phage (with cluster) where this start called: Comrade\_7 (BK1), Emma1919\_7 (BK1), Gilson\_7 (BK1), Jada\_7 (BK1), PP\_78 (A7), Patelgo\_7 (BK1), Phredrick\_7 (BK1),

SeresaTree\_7 (BK1), Sham\_7 (BK1), SparkleGoddess\_7 (BK1), Squint\_115 (J), Stigma\_7 (BK1),

Start 76:

- Found in 111 of 215 ( 51.6% ) of genes in pham
- Manual Annotations of this start: 1 of 202
- Called 0.9% of time when present
- Phage (with cluster) where this start called: Squee\_84 (A1),

Start 77:

- Found in 42 of 215 ( 19.5% ) of genes in pham
- Manual Annotations of this start: 2 of 202
- Called 4.8% of time when present
- Phage (with cluster) where this start called: Success\_20 (singleton), TheloniousMonk\_85 (A1),

### **Summary by clusters:**

There are 24 clusters represented in this pham: DN, singleton, BG, DH, BL, AP4, A19, A1, AP2, A2, DN1, A7, CQ2, CQ1, CB, J, CG, CE, AQ, S, BK1, BK2, CT, BC1,

Info for manual annotations of cluster A1:

- Start number 24 was manually annotated 1 time for cluster A1.
- Start number 28 was manually annotated 1 time for cluster A1.
- Start number 36 was manually annotated 4 times for cluster A1.
- Start number 43 was manually annotated 1 time for cluster A1.
- Start number 45 was manually annotated 6 times for cluster A1.
- Start number 48 was manually annotated 8 times for cluster A1.
- Start number 51 was manually annotated 7 times for cluster A1.
- Start number 54 was manually annotated 22 times for cluster A1.
- Start number 57 was manually annotated 3 times for cluster A1.
- Start number 60 was manually annotated 4 times for cluster A1.
- Start number 61 was manually annotated 11 times for cluster A1.
- Start number 65 was manually annotated 6 times for cluster A1.
- Start number 68 was manually annotated 2 times for cluster A1.
- Start number 71 was manually annotated 1 time for cluster A1.
- Start number 76 was manually annotated 1 time for cluster A1.
- Start number 77 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster A19:

- Start number 54 was manually annotated 1 time for cluster A19.

Info for manual annotations of cluster A2:

- Start number 40 was manually annotated 1 time for cluster A2.
- Start number 59 was manually annotated 1 time for cluster A2.
- Start number 60 was manually annotated 1 time for cluster A2.
- Start number 64 was manually annotated 4 times for cluster A2.

Info for manual annotations of cluster A7:

- Start number 54 was manually annotated 4 times for cluster A7.
- Start number 75 was manually annotated 1 time for cluster A7.

Info for manual annotations of cluster AP2:

- Start number 53 was manually annotated 3 times for cluster AP2.

Info for manual annotations of cluster AP4:

- Start number 62 was manually annotated 2 times for cluster AP4.

Info for manual annotations of cluster AQ:

- Start number 53 was manually annotated 1 time for cluster AQ.
- Start number 54 was manually annotated 12 times for cluster AQ.

Info for manual annotations of cluster BC1:

- Start number 23 was manually annotated 1 time for cluster BC1.

Info for manual annotations of cluster BG:

- Start number 68 was manually annotated 2 times for cluster BG.
- Start number 70 was manually annotated 4 times for cluster BG.

Info for manual annotations of cluster BK1:

- Start number 65 was manually annotated 13 times for cluster BK1.
- Start number 75 was manually annotated 9 times for cluster BK1.

Info for manual annotations of cluster BK2:

- Start number 65 was manually annotated 4 times for cluster BK2.

Info for manual annotations of cluster BL:

- Start number 61 was manually annotated 2 times for cluster BL.

Info for manual annotations of cluster CB:

- Start number 52 was manually annotated 2 times for cluster CB.
- Start number 65 was manually annotated 2 times for cluster CB.

Info for manual annotations of cluster CE:

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

Info for manual annotations of cluster CG:

- Start number 50 was manually annotated 2 times for cluster CG.
- Start number 60 was manually annotated 2 times for cluster CG.

Info for manual annotations of cluster CQ1:

- Start number 43 was manually annotated 1 time for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 43 was manually annotated 1 time for cluster CQ2.

Info for manual annotations of cluster CT:

- Start number 54 was manually annotated 1 time for cluster CT.

Info for manual annotations of cluster DH:

- Start number 74 was manually annotated 1 time for cluster DH.

Info for manual annotations of cluster DN:

- Start number 59 was manually annotated 1 time for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 61 was manually annotated 2 times for cluster DN1.

Info for manual annotations of cluster J:

- Start number 57 was manually annotated 21 times for cluster J.
- Start number 68 was manually annotated 1 time for cluster J.
- Start number 75 was manually annotated 1 time for cluster J.

Info for manual annotations of cluster S:

- Start number 58 was manually annotated 16 times for cluster S.

### **Gene Information:**

Gene: A6\_79 Start: 46951, Stop: 46274, Start Num: 54

Candidate Starts for A6\_79:

(9, 47182), (Start: 43 @46972 has 3 MA's), (Start: 54 @46951 has 40 MA's), (Start: 68 @46933 has 5 MA's), (Start: 77 @46867 has 2 MA's), (78, 46861), (88, 46795), (97, 46768), (101, 46729), (112, 46660), (119, 46633), (121, 46621), (126, 46591), (128, 46576), (131, 46561), (148, 46489), (161, 46441), (168, 46411), (172, 46390), (173, 46384), (182, 46306),

Gene: AWGoat\_14 Start: 5930, Stop: 6646, Start Num: 62

Candidate Starts for AWGoat\_14:

(Start: 62 @5930 has 2 MA's), (78, 6014), (88, 6083), (109, 6194), (111, 6206), (122, 6257), (125, 6281), (128, 6299), (145, 6395), (150, 6416), (151, 6422), (168, 6497), (172, 6521), (175, 6536), (178, 6551), (182, 6602), (187, 6617), (189, 6623),

Gene: AbbeyMikolon\_43 Start: 29546, Stop: 30193, Start Num: 61

Candidate Starts for AbbeyMikolon\_43:

(Start: 44 @29519 has 1 MA's), (46, 29522), (Start: 52 @29534 has 2 MA's), (Start: 61 @29546 has 15 MA's), (Start: 75 @29594 has 11 MA's), (Start: 76 @29624 has 1 MA's), (79, 29642), (106, 29792), (113, 29837), (118, 29852), (125, 29891), (126, 29894), (128, 29909), (152, 30020), (168, 30077), (171, 30086), (172, 30098),

Gene: Agaliana\_82 Start: 48068, Stop: 47394, Start Num: 54

Candidate Starts for Agaliana\_82:

(Start: 54 @48068 has 40 MA's), (Start: 77 @47984 has 2 MA's), (78, 47978), (88, 47912), (97, 47885), (101, 47846), (112, 47780), (119, 47753), (121, 47741), (126, 47711), (128, 47696), (131, 47681), (148, 47609), (161, 47561), (172, 47510), (173, 47504), (176, 47489), (182, 47426),

Gene: Altman\_92 Start: 51336, Stop: 50647, Start Num: 48

Candidate Starts for Altman\_92:

(Start: 48 @51336 has 8 MA's), (Start: 51 @51330 has 7 MA's), (Start: 68 @51315 has 5 MA's), (Start: 76 @51252 has 1 MA's), (78, 51243), (119, 51033), (121, 51021), (128, 50976), (133, 50943), (154, 50865), (164, 50835), (166, 50829), (168, 50808), (172, 50787), (175, 50772), (181, 50709), (182, 50706), (186, 50694),

Gene: Amavida\_77 Start: 49536, Stop: 48835, Start Num: 54

Candidate Starts for Amavida\_77:

(38, 49584), (Start: 45 @49554 has 6 MA's), (47, 49548), (Start: 54 @49536 has 40 MA's), (Start: 76 @49452 has 1 MA's), (83, 49401), (86, 49386), (88, 49371), (113, 49215), (127, 49146), (128, 49134), (131, 49119), (132, 49116), (172, 48942), (173, 48936), (178, 48909), (182, 48858), (184, 48849), (188, 48840),

Gene: Amigo\_76 Start: 49754, Stop: 49053, Start Num: 54

Candidate Starts for Amigo\_76:

(20, 49868), (25, 49850), (30, 49820), (38, 49802), (Start: 45 @49772 has 6 MA's), (47, 49766), (Start: 53 @49757 has 4 MA's), (Start: 54 @49754 has 40 MA's), (Start: 76 @49670 has 1 MA's), (86, 49604), (87, 49601), (113, 49433), (121, 49397), (128, 49352), (131, 49337), (132, 49334), (172, 49160), (173, 49154), (182, 49076), (184, 49067), (188, 49058),

Gene: Anansi\_75 Start: 49355, Stop: 48654, Start Num: 54

Candidate Starts for Anansi\_75:

(26, 49436), (30, 49421), (38, 49403), (47, 49367), (Start: 54 @49355 has 40 MA's), (Start: 76 @49271 has 1 MA's), (80, 49244), (81, 49241), (86, 49205), (87, 49202), (113, 49034), (127, 48965), (128, 48953), (131, 48938), (132, 48935), (172, 48761), (173, 48755), (178, 48728), (182, 48677), (184, 48668), (188, 48659),

Gene: Anglerfish\_90 Start: 51186, Stop: 50512, Start Num: 51

Candidate Starts for Anglerfish\_90:

(Start: 48 @51192 has 8 MA's), (Start: 51 @51186 has 7 MA's), (Start: 68 @51171 has 5 MA's), (Start: 76 @51108 has 1 MA's), (78, 51099), (119, 50889), (121, 50877), (128, 50832), (154, 50721), (164, 50691), (166, 50685), (172, 50643), (175, 50628), (190, 50538),

Gene: Annadreamy\_6 Start: 2126, Stop: 1452, Start Num: 65

Candidate Starts for Annadreamy\_6:

(Start: 65 @2126 has 25 MA's), (82, 2030), (85, 2006), (89, 1976), (90, 1973), (91, 1970), (97, 1952), (99, 1925), (101, 1913), (112, 1859), (118, 1841), (123, 1805), (126, 1790), (128, 1775), (138, 1721), (156, 1643), (160, 1631), (172, 1574), (175, 1559), (191, 1457),

Gene: Arcanine\_92 Start: 51479, Stop: 50790, Start Num: 48

Candidate Starts for Arcanine\_92:

(Start: 48 @51479 has 8 MA's), (Start: 51 @51473 has 7 MA's), (Start: 68 @51458 has 5 MA's), (Start: 76 @51395 has 1 MA's), (78, 51386), (119, 51176), (121, 51164), (128, 51119), (154, 51008), (164, 50978), (166, 50972), (168, 50951), (172, 50930), (175, 50915), (181, 50852), (182, 50849), (186, 50837),

Gene: Ariel\_117 Start: 63532, Stop: 64182, Start Num: 57

Candidate Starts for Ariel\_117:

(29, 63460), (Start: 57 @63532 has 24 MA's), (Start: 75 @63583 has 11 MA's), (Start: 76 @63610 has 1 MA's), (Start: 77 @63613 has 2 MA's), (78, 63619), (93, 63694), (106, 63772), (128, 63898), (131, 63913), (137, 63949), (161, 64033), (172, 64084), (176, 64105),

Gene: Asis\_39 Start: 31643, Stop: 31008, Start Num: 70

Candidate Starts for Asis\_39:

(56, 31661), (Start: 70 @31643 has 4 MA's), (78, 31574), (87, 31517), (96, 31475), (97, 31469), (98, 31466), (105, 31418), (112, 31376), (121, 31337), (149, 31193), (154, 31187), (168, 31130), (172, 31109), (175, 31094),

Gene: Atkinbua\_95 Start: 51766, Stop: 51083, Start Num: 51

Candidate Starts for Atkinbua\_95:

(Start: 48 @51772 has 8 MA's), (Start: 51 @51766 has 7 MA's), (Start: 68 @51751 has 5 MA's), (Start: 76 @51688 has 1 MA's), (78, 51679), (119, 51469), (121, 51457), (128, 51412), (133, 51379), (154, 51301), (164, 51271), (166, 51265), (168, 51244), (172, 51223), (175, 51208), (181, 51145), (182, 51142), (186, 51130),

Gene: BAKA\_121 Start: 67154, Stop: 67777, Start Num: 57

Candidate Starts for BAKA\_121:

(Start: 57 @67154 has 24 MA's), (Start: 68 @67163 has 5 MA's), (Start: 74 @67199 has 1 MA's), (Start: 77 @67229 has 2 MA's), (78, 67235), (87, 67289), (154, 67601), (164, 67631), (166, 67637), (167, 67640), (172, 67679), (175, 67694),

Gene: BK1\_79 Start: 46951, Stop: 46274, Start Num: 54

Candidate Starts for BK1\_79:

(9, 47182), (Start: 43 @46972 has 3 MA's), (Start: 54 @46951 has 40 MA's), (Start: 68 @46933 has 5 MA's), (Start: 77 @46867 has 2 MA's), (78, 46861), (88, 46795), (97, 46768), (101, 46729), (112, 46660), (119, 46633), (121, 46621), (126, 46591), (128, 46576), (131, 46561), (148, 46489), (161, 46441), (168, 46411), (172, 46390), (173, 46384), (182, 46306),

Gene: BPBiebs31\_91 Start: 51295, Stop: 50630, Start Num: 71

Candidate Starts for BPBiebs31\_91:

(Start: 71 @51295 has 1 MA's), (73, 51265), (Start: 76 @51235 has 1 MA's), (78, 51226), (119, 51016), (121, 51004), (128, 50959), (154, 50848), (164, 50818), (166, 50812), (168, 50791), (172, 50770), (175, 50755), (181, 50692), (182, 50689), (186, 50677),

Gene: BabyGotBac\_40 Start: 31643, Stop: 31008, Start Num: 70

Candidate Starts for BabyGotBac\_40:

(56, 31661), (Start: 70 @31643 has 4 MA's), (78, 31574), (87, 31517), (96, 31475), (97, 31469), (98, 31466), (105, 31418), (112, 31376), (121, 31337), (149, 31193), (154, 31187), (168, 31130), (172, 31109), (175, 31094),

Gene: Bactobuster\_79 Start: 48348, Stop: 47665, Start Num: 64

Candidate Starts for Bactobuster\_79:

(Start: 64 @48348 has 4 MA's), (Start: 75 @48303 has 11 MA's), (113, 48069), (122, 48030), (125, 48006), (128, 47988), (134, 47949), (159, 47856), (172, 47796), (188, 47694), (192, 47673),

Gene: Bagrid\_122 Start: 67160, Stop: 67738, Start Num: 74

Candidate Starts for Bagrid\_122:

(Start: 57 @67115 has 24 MA's), (Start: 68 @67124 has 5 MA's), (Start: 74 @67160 has 1 MA's), (78, 67196), (87, 67250), (154, 67562), (164, 67592), (166, 67598), (167, 67601), (172, 67640), (175, 67655),

Gene: BayC\_39 Start: 31646, Stop: 31008, Start Num: 68

Candidate Starts for BayC\_39:

(56, 31661), (Start: 68 @31646 has 5 MA's), (Start: 70 @31643 has 4 MA's), (Start: 76 @31583 has 1 MA's), (98, 31466), (105, 31418), (112, 31376), (121, 31337), (149, 31193), (154, 31187), (168, 31130), (172, 31109), (175, 31094),

Gene: Beagle\_20 Start: 6529, Stop: 7245, Start Num: 53

Candidate Starts for Beagle\_20:

(Start: 53 @6529 has 4 MA's), (72, 6562), (103, 6772), (121, 6865), (128, 6910), (140, 6985), (172, 7135), (175, 7150), (186, 7225), (189, 7231),

Gene: Beatrix\_84 Start: 49764, Stop: 49084, Start Num: 54

Candidate Starts for Beatrix\_84:

(4, 50085), (5, 50067), (6, 50055), (13, 49944), (14, 49935), (19, 49884), (Start: 54 @49764 has 40 MA's), (Start: 68 @49746 has 5 MA's), (Start: 77 @49680 has 2 MA's), (78, 49674), (88, 49608), (97, 49581), (101, 49542), (112, 49473), (119, 49446), (121, 49434), (126, 49404), (128, 49389), (131, 49374), (148, 49299), (161, 49251), (168, 49221), (172, 49200), (173, 49194), (182, 49116),



Gene: Beelzebub\_36 Start: 10697, Stop: 10047, Start Num: 58

Candidate Starts for Beelzebub\_36:

(7, 10961), (10, 10883), (12, 10859), (34, 10733), (Start: 58 @10697 has 16 MA's), (66, 10685), (69, 10679), (Start: 76 @10619 has 1 MA's), (84, 10568), (101, 10478), (110, 10433), (128, 10331), (137, 10280), (142, 10268), (160, 10211), (161, 10208), (172, 10160), (175, 10145),

Gene: BeesKnees\_87 Start: 48684, Stop: 48004, Start Num: 57

Candidate Starts for BeesKnees\_87:

(16, 48828), (21, 48798), (Start: 57 @48684 has 24 MA's), (Start: 65 @48678 has 25 MA's), (Start: 76 @48609 has 1 MA's), (78, 48600), (119, 48390), (121, 48378), (124, 48363), (128, 48333), (133, 48300), (154, 48222), (164, 48192), (166, 48186), (168, 48165), (172, 48144), (175, 48129), (181, 48066), (182, 48063), (186, 48051),

Gene: Belfort\_7 Start: 2280, Stop: 1633, Start Num: 65

Candidate Starts for Belfort\_7:

(Start: 65 @2280 has 25 MA's), (Start: 70 @2271 has 4 MA's), (72, 2265), (Start: 75 @2238 has 11 MA's), (85, 2160), (89, 2130), (90, 2127), (91, 2124), (101, 2067), (112, 2013), (126, 1947), (127, 1944), (128, 1932), (131, 1914), (156, 1797), (160, 1785), (163, 1779), (172, 1728), (175, 1713), (188, 1638),

Gene: Beuffert\_6 Start: 2198, Stop: 1509, Start Num: 65

Candidate Starts for Beuffert\_6:

(Start: 65 @2198 has 25 MA's), (82, 2102), (85, 2078), (89, 2048), (90, 2045), (91, 2042), (99, 1997), (101, 1985), (112, 1931), (119, 1904), (121, 1892), (123, 1877), (126, 1862), (128, 1847), (138, 1793), (156, 1715), (160, 1703), (172, 1646), (175, 1631), (191, 1532),

Gene: Bexan\_82 Start: 49540, Stop: 48860, Start Num: 54

Candidate Starts for Bexan\_82:

(4, 49861), (5, 49843), (6, 49831), (13, 49720), (14, 49711), (19, 49660), (Start: 54 @49540 has 40 MA's), (Start: 68 @49522 has 5 MA's), (Start: 77 @49456 has 2 MA's), (78, 49450), (88, 49384), (97, 49357), (101, 49318), (112, 49249), (119, 49222), (121, 49210), (126, 49180), (128, 49165), (131, 49150), (148, 49075), (161, 49027), (168, 48997), (172, 48976), (173, 48970), (182, 48892),

Gene: Big3\_87 Start: 51481, Stop: 50807, Start Num: 65

Candidate Starts for Big3\_87:

(Start: 45 @51505 has 6 MA's), (Start: 57 @51487 has 24 MA's), (Start: 65 @51481 has 25 MA's), (Start: 76 @51412 has 1 MA's), (78, 51403), (119, 51193), (121, 51181), (128, 51136), (133, 51103), (154, 51025), (164, 50995), (166, 50989), (168, 50968), (172, 50947), (175, 50932), (181, 50869), (182, 50866), (186, 50854),

Gene: BigPaolini\_83 Start: 48463, Stop: 47786, Start Num: 54

Candidate Starts for BigPaolini\_83:

(Start: 54 @48463 has 40 MA's), (Start: 77 @48379 has 2 MA's), (78, 48373), (88, 48307), (97, 48280), (101, 48241), (112, 48175), (119, 48148), (121, 48136), (126, 48106), (128, 48091), (131, 48076), (148, 48001), (161, 47953), (168, 47923), (172, 47902), (173, 47896), (182, 47818),

Gene: Bigfoot\_82 Start: 49765, Stop: 49106, Start Num: 68

Candidate Starts for Bigfoot\_82:

(Start: 43 @49804 has 3 MA's), (Start: 54 @49783 has 40 MA's), (Start: 68 @49765 has 5 MA's), (Start: 77 @49699 has 2 MA's), (78, 49693), (97, 49600), (101, 49561), (112, 49492), (114, 49486), (119, 49465), (121, 49453), (126, 49423), (128, 49408), (131, 49393), (148, 49321), (161, 49273), (168, 49243), (172, 49222), (173, 49216), (182, 49138),

Gene: BillKnuckles\_77 Start: 48897, Stop: 48223, Start Num: 54

Candidate Starts for BillKnuckles\_77:

(Start: 54 @48897 has 40 MA's), (Start: 65 @48885 has 25 MA's), (Start: 70 @48879 has 4 MA's), (Start: 76 @48819 has 1 MA's), (88, 48744), (97, 48717), (101, 48678), (112, 48609), (119, 48582), (121, 48570), (126, 48540), (128, 48525), (131, 48510), (148, 48438), (161, 48390), (168, 48360), (172, 48339), (173, 48333), (182, 48255),

Gene: BillNye\_8 Start: 3730, Stop: 3080, Start Num: 65

Candidate Starts for BillNye\_8:

(Start: 65 @3730 has 25 MA's), (Start: 68 @3724 has 5 MA's), (78, 3652), (86, 3601), (97, 3562), (111, 3478), (126, 3400), (127, 3397), (128, 3385), (146, 3295), (160, 3241), (172, 3184), (175, 3169), (184, 3094),

Gene: Blackbeetle\_32 Start: 9689, Stop: 9039, Start Num: 58

Candidate Starts for Blackbeetle\_32:

(7, 9980), (10, 9902), (12, 9878), (34, 9752), (39, 9740), (Start: 58 @9689 has 16 MA's), (66, 9677), (Start: 76 @9611 has 1 MA's), (84, 9560), (101, 9470), (110, 9425), (128, 9323), (137, 9272), (142, 9260), (160, 9203), (161, 9200), (172, 9152), (175, 9137),

Gene: Blue\_80 Start: 48982, Stop: 48305, Start Num: 54

Candidate Starts for Blue\_80:

(9, 49213), (Start: 43 @49003 has 3 MA's), (Start: 54 @48982 has 40 MA's), (Start: 68 @48964 has 5 MA's), (Start: 77 @48898 has 2 MA's), (78, 48892), (88, 48826), (97, 48799), (101, 48760), (112, 48691), (119, 48664), (121, 48652), (128, 48607), (131, 48592), (161, 48472), (168, 48442), (172, 48421), (173, 48415), (182, 48337),

Gene: Blueeyedbeauty\_7 Start: 2331, Stop: 1621, Start Num: 65

Candidate Starts for Blueeyedbeauty\_7:

(Start: 65 @2331 has 25 MA's), (Start: 70 @2322 has 4 MA's), (Start: 75 @2289 has 11 MA's), (82, 2235), (85, 2211), (89, 2181), (90, 2178), (91, 2175), (99, 2130), (101, 2118), (112, 2064), (119, 2037), (121, 2025), (123, 2010), (126, 1995), (128, 1980), (131, 1962), (133, 1947), (138, 1926), (156, 1848), (160, 1836), (172, 1779), (175, 1764),

Gene: Bobby\_114 Start: 68576, Stop: 69196, Start Num: 57

Candidate Starts for Bobby\_114:

(Start: 57 @68576 has 24 MA's), (Start: 68 @68585 has 5 MA's), (Start: 74 @68621 has 1 MA's), (Start: 76 @68648 has 1 MA's), (78, 68657), (87, 68711), (154, 69020), (164, 69050), (166, 69056), (167, 69059), (172, 69098), (175, 69113),

Gene: Boersma\_78 Start: 49754, Stop: 49053, Start Num: 54

Candidate Starts for Boersma\_78:

(20, 49868), (25, 49850), (30, 49820), (38, 49802), (Start: 45 @49772 has 6 MA's), (47, 49766), (Start: 53 @49757 has 4 MA's), (Start: 54 @49754 has 40 MA's), (Start: 76 @49670 has 1 MA's), (86, 49604), (87, 49601), (113, 49433), (121, 49397), (128, 49352), (131, 49337), (132, 49334), (172, 49160), (173, 49154), (182, 49076), (184, 49067), (188, 49058),

Gene: Briton15\_89 Start: 50750, Stop: 50073, Start Num: 36

Candidate Starts for Briton15\_89:

(Start: 36 @50750 has 4 MA's), (Start: 76 @50669 has 1 MA's), (78, 50660), (84, 50618), (97, 50567), (101, 50528), (118, 50441), (119, 50432), (126, 50390), (128, 50375), (131, 50360), (148, 50288), (161, 50240), (172, 50189), (173, 50183), (176, 50168), (182, 50105),

Gene: Bruns\_90 Start: 50053, Stop: 49328, Start Num: 36

Candidate Starts for Bruns\_90:

(Start: 24 @50098 has 1 MA's), (Start: 36 @50053 has 4 MA's), (49, 50014), (Start: 61 @49999 has 15 MA's), (Start: 65 @49993 has 25 MA's), (Start: 76 @49924 has 1 MA's), (78, 49915), (84, 49873), (97, 49822), (101, 49783), (118, 49696), (119, 49687), (126, 49645), (128, 49630), (131, 49615), (148, 49543), (161, 49495), (172, 49444), (173, 49438), (176, 49423), (182, 49360),

Gene: BrutonGaster\_151 Start: 82896, Stop: 82189, Start Num: 43

Candidate Starts for BrutonGaster\_151:

(Start: 43 @82896 has 3 MA's), (67, 82857), (Start: 75 @82818 has 11 MA's), (Start: 76 @82791 has 1 MA's), (96, 82689), (113, 82581), (119, 82557), (121, 82545), (124, 82530), (128, 82500), (131, 82485), (148, 82410), (161, 82362), (168, 82332), (172, 82311), (182, 82227),

Gene: Burton\_88 Start: 51831, Stop: 51142, Start Num: 45

Candidate Starts for Burton\_88:

(Start: 45 @51831 has 6 MA's), (Start: 57 @51813 has 24 MA's), (63, 51807), (Start: 76 @51738 has 1 MA's), (78, 51729), (119, 51519), (121, 51507), (128, 51462), (154, 51351), (164, 51321), (166, 51315), (168, 51294), (172, 51273), (175, 51258), (190, 51168),

Gene: CactusRose\_91 Start: 50800, Stop: 50123, Start Num: 54

Candidate Starts for CactusRose\_91:

(Start: 43 @50821 has 3 MA's), (Start: 54 @50800 has 40 MA's), (Start: 68 @50782 has 5 MA's), (Start: 77 @50716 has 2 MA's), (78, 50710), (97, 50617), (101, 50578), (112, 50509), (114, 50503), (119, 50482), (121, 50470), (126, 50440), (128, 50425), (131, 50410), (148, 50338), (161, 50290), (168, 50260), (172, 50239), (173, 50233), (182, 50155),

Gene: Caprice\_28 Start: 9258, Stop: 8611, Start Num: 62

Candidate Starts for Caprice\_28:

(38, 9288), (Start: 62 @9258 has 2 MA's), (Start: 76 @9183 has 1 MA's), (84, 9132), (101, 9042), (110, 8997), (128, 8895), (137, 8844), (142, 8832), (160, 8775), (161, 8772), (172, 8724), (175, 8709),

Gene: Carlyle\_84 Start: 48483, Stop: 47806, Start Num: 54

Candidate Starts for Carlyle\_84:

(9, 48714), (Start: 43 @48504 has 3 MA's), (Start: 54 @48483 has 40 MA's), (Start: 68 @48465 has 5 MA's), (Start: 77 @48399 has 2 MA's), (78, 48393), (88, 48327), (97, 48300), (101, 48261), (107, 48225), (112, 48192), (119, 48165), (121, 48153), (126, 48123), (128, 48108), (131, 48093), (148, 48021), (161, 47973), (168, 47943), (172, 47922), (173, 47916), (182, 47838),

Gene: Circinus\_9 Start: 3611, Stop: 2961, Start Num: 65

Candidate Starts for Circinus\_9:

(Start: 65 @3611 has 25 MA's), (Start: 68 @3605 has 5 MA's), (78, 3533), (86, 3482), (97, 3443), (111, 3359), (126, 3281), (127, 3278), (128, 3266), (146, 3176), (160, 3122), (172, 3065), (175, 3050), (184, 2975),

Gene: Clarkson\_33 Start: 10398, Stop: 9748, Start Num: 58

Candidate Starts for Clarkson\_33:

(7, 10662), (10, 10584), (12, 10560), (34, 10434), (Start: 58 @10398 has 16 MA's), (66, 10386), (Start: 76 @10320 has 1 MA's), (84, 10269), (101, 10179), (110, 10134), (128, 10032), (137, 9981), (142, 9969), (160, 9912), (161, 9909), (172, 9861), (175, 9846),

Gene: Comrade\_7 Start: 2239, Stop: 1634, Start Num: 75

Candidate Starts for Comrade\_7:

(Start: 65 @2281 has 25 MA's), (Start: 70 @2272 has 4 MA's), (72, 2266), (Start: 75 @2239 has 11 MA's), (85, 2161), (89, 2131), (90, 2128), (91, 2125), (101, 2068), (112, 2014), (126, 1948), (127, 1945), (128, 1933), (131, 1915), (156, 1798), (160, 1786), (163, 1780), (172, 1729), (175, 1714), (188, 1639),

Gene: Conceptll\_94 Start: 52101, Stop: 51412, Start Num: 48

Candidate Starts for Conceptll\_94:

(Start: 48 @52101 has 8 MA's), (Start: 51 @52095 has 7 MA's), (Start: 68 @52080 has 5 MA's), (Start: 76 @52017 has 1 MA's), (78, 52008), (119, 51798), (121, 51786), (128, 51741), (133, 51708), (154, 51630), (164, 51600), (166, 51594), (168, 51573), (172, 51552), (175, 51537), (181, 51474), (182, 51471), (186, 51459),

Gene: Corazon\_30 Start: 10351, Stop: 9701, Start Num: 58

Candidate Starts for Corazon\_30:

(7, 10615), (10, 10537), (12, 10513), (34, 10387), (Start: 58 @10351 has 16 MA's), (66, 10339), (69, 10333), (Start: 76 @10273 has 1 MA's), (84, 10222), (101, 10132), (110, 10087), (128, 9985), (137, 9934), (142, 9922), (160, 9865), (161, 9862), (172, 9814), (175, 9799),

Gene: Courthouse\_112 Start: 63132, Stop: 63782, Start Num: 57

Candidate Starts for Courthouse\_112:

(29, 63060), (Start: 57 @63132 has 24 MA's), (Start: 75 @63183 has 11 MA's), (Start: 76 @63210 has 1 MA's), (Start: 77 @63213 has 2 MA's), (78, 63219), (93, 63294), (106, 63372), (128, 63498), (131, 63513), (137, 63549), (161, 63633), (172, 63684), (176, 63705),

Gene: Cueyllyss\_72 Start: 46773, Stop: 46099, Start Num: 65

Candidate Starts for Cueyllyss\_72:

(Start: 45 @46797 has 6 MA's), (Start: 57 @46779 has 24 MA's), (Start: 65 @46773 has 25 MA's), (Start: 76 @46704 has 1 MA's), (78, 46695), (119, 46485), (121, 46473), (128, 46428), (133, 46395), (154, 46317), (164, 46287), (166, 46281), (168, 46260), (172, 46239), (175, 46224), (181, 46161), (182, 46158), (186, 46146),

Gene: DD5\_84 Start: 50105, Stop: 49434, Start Num: 61

Candidate Starts for DD5\_84:

(17, 50249), (22, 50219), (Start: 61 @50105 has 15 MA's), (Start: 65 @50099 has 25 MA's), (Start: 76 @50030 has 1 MA's), (78, 50021), (84, 49979), (97, 49928), (101, 49889), (118, 49802), (119, 49793), (121, 49781), (126, 49751), (128, 49736), (131, 49721), (148, 49649), (161, 49601), (172, 49550), (173, 49544), (176, 49529), (182, 49466),

Gene: Dexes\_88 Start: 52469, Stop: 51795, Start Num: 54

Candidate Starts for Dexes\_88:

(Start: 54 @52469 has 40 MA's), (Start: 65 @52457 has 25 MA's), (Start: 70 @52451 has 4 MA's), (Start: 76 @52391 has 1 MA's), (88, 52316), (97, 52289), (101, 52250), (112, 52181), (119, 52154), (121, 52142), (128, 52097), (131, 52082), (148, 52010), (161, 51962), (168, 51932), (172, 51911), (173, 51905), (182, 51827),

Gene: DmpstrDiver\_122 Start: 67404, Stop: 68027, Start Num: 57

Candidate Starts for DmpstrDiver\_122:

(Start: 57 @67404 has 24 MA's), (Start: 68 @67413 has 5 MA's), (Start: 74 @67449 has 1 MA's), (78, 67485), (87, 67539), (154, 67851), (164, 67881), (166, 67887), (167, 67890), (172, 67929), (175, 67944),

Gene: Doom\_78 Start: 48519, Stop: 47839, Start Num: 57

Candidate Starts for Doom\_78:

(Start: 45 @48537 has 6 MA's), (Start: 57 @48519 has 24 MA's), (Start: 65 @48513 has 25 MA's), (Start: 76 @48444 has 1 MA's), (78, 48435), (119, 48225), (121, 48213), (128, 48168), (154, 48057), (164, 48027), (166, 48021), (168, 48000), (172, 47979), (175, 47964), (181, 47901), (182, 47898), (186, 47886),

Gene: Dorin\_231 Start: 119103, Stop: 119795, Start Num: 50

Candidate Starts for Dorin\_231:

(Start: 50 @119103 has 2 MA's), (72, 119127), (128, 119457), (129, 119466), (136, 119505), (141, 119535), (143, 119544), (154, 119616), (158, 119631), (164, 119646), (172, 119694), (175, 119709), (184, 119784),

Gene: Dorin\_129 Start: 82694, Stop: 83350, Start Num: 60

Candidate Starts for Dorin\_129:

(35, 82631), (37, 82637), (Start: 60 @82694 has 7 MA's), (118, 82988), (121, 83009), (128, 83060), (147, 83153), (153, 83180), (172, 83258),

Gene: DrFeelGood\_80 Start: 47764, Stop: 47084, Start Num: 54

Candidate Starts for DrFeelGood\_80:

(Start: 43 @47785 has 3 MA's), (Start: 54 @47764 has 40 MA's), (Start: 68 @47746 has 5 MA's), (Start: 77 @47680 has 2 MA's), (78, 47674), (88, 47608), (97, 47581), (101, 47542), (112, 47473), (119, 47446), (121, 47434), (128, 47389), (131, 47374), (168, 47221), (172, 47200), (173, 47194), (182, 47116),

Gene: Dreamboat\_83 Start: 47449, Stop: 46793, Start Num: 60

Candidate Starts for Dreamboat\_83:

(Start: 60 @47449 has 7 MA's), (Start: 76 @47374 has 1 MA's), (81, 47350), (118, 47161), (121, 47140), (122, 47137), (128, 47089), (146, 47008), (168, 46933), (172, 46912), (175, 46897), (181, 46834),

Gene: DroogsArmy\_55 Start: 40958, Stop: 40269, Start Num: 54

Candidate Starts for DroogsArmy\_55:

(Start: 54 @40958 has 40 MA's), (67, 40946), (72, 40934), (Start: 75 @40907 has 11 MA's), (Start: 76 @40880 has 1 MA's), (78, 40871), (112, 40664), (118, 40646), (128, 40580), (138, 40526), (148, 40490), (161, 40442), (168, 40412), (172, 40391), (181, 40310), (185, 40298),

Gene: Duke13\_116 Start: 64831, Stop: 65445, Start Num: 68

Candidate Starts for Duke13\_116:

(Start: 57 @64822 has 24 MA's), (Start: 68 @64831 has 5 MA's), (Start: 74 @64867 has 1 MA's), (Start: 77 @64897 has 2 MA's), (78, 64903), (87, 64957), (154, 65269), (164, 65299), (166, 65305), (167, 65308), (172, 65347), (175, 65362),

Gene: Dynamix\_85 Start: 48097, Stop: 47417, Start Num: 61

Candidate Starts for Dynamix\_85:

(17, 48241), (22, 48211), (Start: 61 @48097 has 15 MA's), (Start: 65 @48091 has 25 MA's), (Start: 76 @48013 has 1 MA's), (78, 48004), (84, 47962), (97, 47911), (101, 47872), (118, 47785), (119, 47776), (126, 47734), (128, 47719), (131, 47704), (148, 47632), (161, 47584), (172, 47533), (173, 47527), (176, 47512), (182, 47449),

Gene: Ejimix\_116 Start: 68532, Stop: 69179, Start Num: 57

Candidate Starts for Ejimix\_116:

(Start: 57 @68532 has 24 MA's), (Start: 68 @68541 has 5 MA's), (Start: 75 @68577 has 11 MA's), (78, 68613), (93, 68688), (113, 68811), (125, 68874), (128, 68892), (135, 68937), (148, 68979), (161, 69027), (172, 69078),

Gene: Emma1919\_7 Start: 2249, Stop: 1644, Start Num: 75

Candidate Starts for Emma1919\_7:

(Start: 65 @2291 has 25 MA's), (Start: 75 @2249 has 11 MA's), (78, 2213), (85, 2171), (89, 2141), (90, 2138), (91, 2135), (98, 2114), (112, 2024), (118, 2006), (126, 1958), (128, 1943), (129, 1931), (138, 1886), (160, 1796), (165, 1784), (172, 1739), (175, 1724),

Gene: EricMillard\_113 Start: 66791, Stop: 67414, Start Num: 57

Candidate Starts for EricMillard\_113:

(Start: 57 @66791 has 24 MA's), (Start: 68 @66800 has 5 MA's), (Start: 74 @66836 has 1 MA's), (Start: 77 @66866 has 2 MA's), (78, 66872), (87, 66926), (154, 67238), (164, 67268), (166, 67274), (167, 67277), (172, 67316), (175, 67331),

Gene: Euphoria\_88 Start: 50663, Stop: 49890, Start Num: 24

Candidate Starts for Euphoria\_88:

(Start: 24 @50663 has 1 MA's), (Start: 36 @50618 has 4 MA's), (49, 50579), (Start: 61 @50564 has 15 MA's), (Start: 65 @50558 has 25 MA's), (Start: 76 @50489 has 1 MA's), (78, 50480), (84, 50438), (97, 50387), (101, 50348), (112, 50279), (119, 50252), (121, 50240), (126, 50210), (128, 50195), (131, 50180), (148, 50105), (161, 50057), (172, 50006), (173, 50000), (176, 49985), (182, 49922),

Gene: Fascinus\_82 Start: 50318, Stop: 49620, Start Num: 43

Candidate Starts for Fascinus\_82:

(Start: 43 @50318 has 3 MA's), (Start: 54 @50297 has 40 MA's), (Start: 68 @50279 has 5 MA's), (Start: 77 @50213 has 2 MA's), (78, 50207), (97, 50114), (101, 50075), (112, 50006), (114, 50000), (119, 49979), (121, 49967), (126, 49937), (128, 49922), (131, 49907), (148, 49835), (161, 49787), (168, 49757), (172, 49736), (173, 49730), (182, 49652),

Gene: Faust\_6 Start: 2432, Stop: 1746, Start Num: 65

Candidate Starts for Faust\_6:

(Start: 65 @2432 has 25 MA's), (Start: 70 @2423 has 4 MA's), (Start: 75 @2390 has 11 MA's), (85, 2312), (89, 2282), (90, 2279), (91, 2276), (101, 2219), (112, 2165), (118, 2147), (121, 2126), (123, 2111), (126, 2096), (128, 2081), (129, 2069), (160, 1937), (172, 1880), (175, 1865),

Gene: FeliMaine\_32 Start: 10399, Stop: 9749, Start Num: 58

Candidate Starts for FeliMaine\_32:

(1, 10948), (7, 10663), (10, 10585), (12, 10561), (34, 10435), (Start: 58 @10399 has 16 MA's), (66, 10387), (Start: 76 @10321 has 1 MA's), (84, 10270), (101, 10180), (110, 10135), (128, 10033), (137, 9982), (142, 9970), (160, 9913), (161, 9910), (172, 9862), (175, 9847),

Gene: Fenn\_90 Start: 50622, Stop: 49948, Start Num: 54

Candidate Starts for Fenn\_90:

(Start: 54 @50622 has 40 MA's), (Start: 65 @50610 has 25 MA's), (Start: 70 @50604 has 4 MA's), (Start: 76 @50544 has 1 MA's), (88, 50469), (97, 50442), (101, 50403), (112, 50334), (119, 50307), (121, 50295), (126, 50265), (128, 50250), (131, 50235), (148, 50163), (161, 50115), (168, 50085), (172, 50064), (173, 50058), (182, 49980),

Gene: FlyCatcher\_62 Start: 41844, Stop: 41167, Start Num: 54

Candidate Starts for FlyCatcher\_62:

(Start: 54 @41844 has 40 MA's), (Start: 68 @41829 has 5 MA's), (Start: 75 @41793 has 11 MA's), (Start: 77 @41763 has 2 MA's), (78, 41757), (94, 41664), (95, 41661), (101, 41616), (109, 41577), (119, 41529), (128, 41472), (131, 41457), (134, 41433), (148, 41382), (168, 41304), (172, 41283), (177, 41256),

Gene: Forrest\_7 Start: 2288, Stop: 1641, Start Num: 65

Candidate Starts for Forrest\_7:

(Start: 65 @2288 has 25 MA's), (Start: 70 @2279 has 4 MA's), (Start: 75 @2246 has 11 MA's), (80, 2198), (85, 2168), (89, 2138), (90, 2135), (91, 2132), (98, 2111), (112, 2021), (118, 2003), (126, 1955), (128, 1940), (129, 1928), (138, 1883), (160, 1793), (165, 1781), (172, 1736), (175, 1721),

Gene: Francesca\_129 Start: 83609, Stop: 84265, Start Num: 60

Candidate Starts for Francesca\_129:

(35, 83546), (37, 83552), (Start: 60 @83609 has 7 MA's), (118, 83903), (121, 83924), (128, 83975), (147, 84068), (153, 84095), (172, 84173),

Gene: Francesca\_232 Start: 119746, Stop: 120438, Start Num: 50

Candidate Starts for Francesca\_232:

(Start: 50 @119746 has 2 MA's), (72, 119770), (128, 120100), (129, 120109), (136, 120148), (141, 120178), (143, 120187), (154, 120259), (158, 120274), (164, 120289), (172, 120337), (175, 120352), (184, 120427),

Gene: Francis47\_89 Start: 52474, Stop: 51800, Start Num: 54

Candidate Starts for Francis47\_89:

(Start: 54 @52474 has 40 MA's), (Start: 77 @52390 has 2 MA's), (78, 52384), (88, 52318), (97, 52291), (101, 52252), (112, 52186), (119, 52159), (121, 52147), (126, 52117), (128, 52102), (131, 52087), (148, 52015), (161, 51967), (172, 51916), (173, 51910), (176, 51895), (182, 51832),

Gene: Francob\_6 Start: 2290, Stop: 1643, Start Num: 65

Candidate Starts for Francob\_6:

(Start: 65 @2290 has 25 MA's), (Start: 75 @2248 has 11 MA's), (82, 2194), (85, 2170), (89, 2140), (90, 2137), (91, 2134), (98, 2113), (112, 2023), (118, 2005), (119, 1996), (126, 1954), (128, 1939), (129, 1927), (156, 1807), (160, 1795), (172, 1738), (175, 1723),

Gene: GageAP\_88 Start: 51129, Stop: 50431, Start Num: 45

Candidate Starts for GageAP\_88:

(Start: 45 @51129 has 6 MA's), (Start: 57 @51111 has 24 MA's), (Start: 65 @51105 has 25 MA's), (Start: 76 @51036 has 1 MA's), (78, 51027), (119, 50817), (121, 50805), (128, 50760), (133, 50727), (154, 50649), (164, 50619), (166, 50613), (168, 50592), (172, 50571), (175, 50556), (181, 50493), (182, 50490), (186, 50478),

Gene: Gattaca\_31 Start: 9578, Stop: 8928, Start Num: 58

Candidate Starts for Gattaca\_31:

(1, 10127), (7, 9842), (10, 9764), (12, 9740), (34, 9614), (Start: 58 @9578 has 16 MA's), (66, 9566), (69, 9560), (Start: 76 @9500 has 1 MA's), (84, 9449), (101, 9359), (110, 9314), (128, 9212), (137, 9161), (142, 9149), (160, 9092), (161, 9089), (172, 9041), (175, 9026),

Gene: Geeche\_173 Start: 87550, Stop: 86852, Start Num: 38

Candidate Starts for Geeche\_173:

(38, 87550), (67, 87511), (Start: 76 @87445 has 1 MA's), (87, 87379), (92, 87358), (101, 87292), (106, 87271), (111, 87238), (118, 87208), (119, 87199), (128, 87142), (133, 87112), (161, 87019), (172, 86971), (173, 86965), (182, 86890),

Gene: Gilson\_7 Start: 2246, Stop: 1641, Start Num: 75

Candidate Starts for Gilson\_7:

(Start: 65 @2288 has 25 MA's), (Start: 75 @2246 has 11 MA's), (80, 2198), (85, 2168), (89, 2138), (90, 2135), (91, 2132), (98, 2111), (112, 2021), (118, 2003), (126, 1955), (128, 1940), (129, 1928), (138, 1883), (160, 1793), (165, 1781), (172, 1736), (175, 1721),

Gene: Gonephishing\_111 Start: 62610, Stop: 63188, Start Num: 74

Candidate Starts for Gonephishing\_111:

(Start: 28 @62487 has 1 MA's), (Start: 57 @62559 has 24 MA's), (Start: 74 @62610 has 1 MA's), (Start: 76 @62637 has 1 MA's), (Start: 77 @62640 has 2 MA's), (78, 62646), (128, 62913), (129, 62925), (133, 62946), (154, 63015), (164, 63045), (166, 63051), (167, 63054), (172, 63093), (175, 63108),

Gene: Gorgeous\_75 Start: 49355, Stop: 48654, Start Num: 54

Candidate Starts for Gorgeous\_75:

(26, 49436), (30, 49421), (38, 49403), (47, 49367), (Start: 54 @49355 has 40 MA's), (Start: 76 @49271 has 1 MA's), (80, 49244), (81, 49241), (86, 49205), (87, 49202), (113, 49034), (127, 48965), (128, 48953), (131, 48938), (132, 48935), (172, 48761), (173, 48755), (178, 48728), (182, 48677), (184, 48668), (188, 48659),

Gene: Graduation\_89 Start: 50205, Stop: 49507, Start Num: 45

Candidate Starts for Graduation\_89:

(Start: 45 @50205 has 6 MA's), (Start: 57 @50187 has 24 MA's), (Start: 65 @50181 has 25 MA's), (Start: 76 @50112 has 1 MA's), (78, 50103), (119, 49893), (121, 49881), (128, 49836), (133, 49803), (154, 49725), (164, 49695), (166, 49689), (168, 49668), (172, 49647), (175, 49632), (181, 49569), (182, 49566), (186, 49554),

Gene: Grayson\_225 Start: 110700, Stop: 111323, Start Num: 52

Candidate Starts for Grayson\_225:

(Start: 52 @110700 has 2 MA's), (104, 110922), (128, 111051), (130, 111063), (154, 111147), (155, 111156), (164, 111177), (172, 111225), (175, 111240),

Gene: Grayson\_224 Start: 110034, Stop: 110687, Start Num: 65

Candidate Starts for Grayson\_224:

(Start: 65 @110034 has 25 MA's), (72, 110049), (87, 110172), (97, 110208), (100, 110244), (101, 110247), (120, 110331), (128, 110391), (144, 110472), (172, 110589), (182, 110673),

Gene: GrecoEtereo\_90 Start: 51375, Stop: 50692, Start Num: 51

Candidate Starts for GrecoEtereo\_90:

(Start: 48 @51381 has 8 MA's), (Start: 51 @51375 has 7 MA's), (Start: 68 @51360 has 5 MA's), (Start: 76 @51297 has 1 MA's), (78, 51288), (119, 51078), (121, 51066), (128, 51021), (154, 50910), (164, 50880), (172, 50832), (175, 50817), (181, 50754), (182, 50751), (186, 50739),

Gene: Gwendoluna\_89 Start: 50909, Stop: 50226, Start Num: 51

Candidate Starts for Gwendoluna\_89:

(Start: 48 @50915 has 8 MA's), (Start: 51 @50909 has 7 MA's), (Start: 68 @50894 has 5 MA's), (Start: 76 @50831 has 1 MA's), (78, 50822), (119, 50612), (121, 50600), (128, 50555), (133, 50522), (154, 50444), (164, 50414), (166, 50408), (168, 50387), (172, 50366), (175, 50351), (181, 50288), (182, 50285), (186, 50273),

Gene: HINdeR\_54 Start: 40614, Stop: 39931, Start Num: 54

Candidate Starts for HINdeR\_54:

(Start: 54 @40614 has 40 MA's), (Start: 68 @40599 has 5 MA's), (Start: 75 @40563 has 11 MA's), (78, 40527), (112, 40326), (118, 40308), (127, 40254), (128, 40242), (138, 40188), (148, 40152), (168, 40074), (172, 40053), (185, 39960),

Gene: Halley\_124 Start: 68848, Stop: 69495, Start Num: 57

Candidate Starts for Halley\_124:



(Start: 57 @68848 has 24 MA's), (Start: 68 @68857 has 5 MA's), (Start: 75 @68893 has 11 MA's), (78, 68929), (93, 69004), (113, 69127), (125, 69190), (128, 69208), (135, 69253), (148, 69295), (161, 69343), (172, 69394),

Gene: Herbertwm\_80 Start: 47646, Stop: 46972, Start Num: 60

Candidate Starts for Herbertwm\_80:

(18, 47781), (42, 47673), (47, 47661), (Start: 60 @47646 has 7 MA's), (Start: 75 @47595 has 11 MA's), (Start: 76 @47568 has 1 MA's), (113, 47361), (128, 47280), (131, 47265), (134, 47241), (159, 47148), (161, 47139), (172, 47088), (182, 47004),

Gene: Heylee\_78 Start: 49536, Stop: 48835, Start Num: 54

Candidate Starts for Heylee\_78:

(38, 49584), (Start: 45 @49554 has 6 MA's), (47, 49548), (Start: 54 @49536 has 40 MA's), (Start: 76 @49452 has 1 MA's), (83, 49401), (86, 49386), (88, 49371), (113, 49215), (127, 49146), (128, 49134), (131, 49119), (132, 49116), (172, 48942), (173, 48936), (178, 48909), (182, 48858), (184, 48849), (188, 48840),

Gene: Hope4ever\_84 Start: 49344, Stop: 48655, Start Num: 48

Candidate Starts for Hope4ever\_84:

(Start: 48 @49344 has 8 MA's), (Start: 51 @49338 has 7 MA's), (Start: 68 @49323 has 5 MA's), (Start: 76 @49260 has 1 MA's), (78, 49251), (119, 49041), (121, 49029), (128, 48984), (154, 48873), (164, 48843), (166, 48837), (168, 48816), (172, 48795), (175, 48780), (181, 48717), (182, 48714), (186, 48702),

Gene: Hughesyang\_121 Start: 68304, Stop: 68951, Start Num: 57

Candidate Starts for Hughesyang\_121:

(Start: 57 @68304 has 24 MA's), (Start: 68 @68313 has 5 MA's), (Start: 75 @68349 has 11 MA's), (Start: 77 @68379 has 2 MA's), (78, 68385), (93, 68460), (113, 68583), (125, 68646), (128, 68664), (135, 68709), (161, 68799), (172, 68850),

Gene: Huphlebuff\_34 Start: 10203, Stop: 9553, Start Num: 58

Candidate Starts for Huphlebuff\_34:

(7, 10467), (10, 10389), (12, 10365), (34, 10239), (Start: 58 @10203 has 16 MA's), (66, 10191), (Start: 76 @10125 has 1 MA's), (84, 10074), (101, 9984), (110, 9939), (128, 9837), (137, 9786), (142, 9774), (160, 9717), (161, 9714), (172, 9666), (175, 9651),

Gene: ILeeKay\_83 Start: 47940, Stop: 47263, Start Num: 54

Candidate Starts for ILeeKay\_83:

(3, 48324), (6, 48228), (8, 48180), (Start: 54 @47940 has 40 MA's), (Start: 68 @47922 has 5 MA's), (Start: 77 @47856 has 2 MA's), (78, 47850), (88, 47784), (97, 47757), (101, 47718), (112, 47649), (119, 47622), (121, 47610), (126, 47580), (128, 47565), (131, 47550), (148, 47478), (161, 47430), (168, 47400), (172, 47379), (173, 47373), (182, 47295),

Gene: Ichabod\_88 Start: 50257, Stop: 49586, Start Num: 61

Candidate Starts for Ichabod\_88:

(17, 50401), (22, 50371), (Start: 61 @50257 has 15 MA's), (Start: 65 @50251 has 25 MA's), (Start: 76 @50182 has 1 MA's), (78, 50173), (84, 50131), (97, 50080), (101, 50041), (112, 49972), (119, 49945), (121, 49933), (126, 49903), (128, 49888), (131, 49873), (148, 49801), (161, 49753), (172, 49702), (173, 49696), (176, 49681), (182, 49618),

Gene: Ichor\_75 Start: 49754, Stop: 49053, Start Num: 54

Candidate Starts for Ichor\_75:

(20, 49868), (25, 49850), (30, 49820), (38, 49802), (Start: 45 @49772 has 6 MA's), (47, 49766), (Start: 53 @49757 has 4 MA's), (Start: 54 @49754 has 40 MA's), (Start: 76 @49670 has 1 MA's), (86, 49604), (87, 49601), (113, 49433), (121, 49397), (128, 49352), (131, 49337), (132, 49334), (172, 49160), (173, 49154), (182, 49076), (184, 49067), (188, 49058),

Gene: IronMan\_84 Start: 49875, Stop: 49189, Start Num: 64

Candidate Starts for IronMan\_84:

(42, 49902), (Start: 64 @49875 has 4 MA's), (Start: 75 @49830 has 11 MA's), (113, 49596), (122, 49557), (125, 49533), (128, 49515), (134, 49476), (159, 49383), (172, 49323), (189, 49218), (192, 49197),

Gene: Jaan\_86 Start: 49980, Stop: 49297, Start Num: 59

Candidate Starts for Jaan\_86:

(Start: 40 @50019 has 1 MA's), (Start: 59 @49980 has 2 MA's), (Start: 75 @49935 has 11 MA's), (113, 49701), (125, 49638), (128, 49620), (134, 49581), (159, 49488), (172, 49428), (188, 49326), (192, 49305),

Gene: Jada\_7 Start: 2246, Stop: 1641, Start Num: 75

Candidate Starts for Jada\_7:

(Start: 65 @2288 has 25 MA's), (Start: 75 @2246 has 11 MA's), (80, 2198), (85, 2168), (89, 2138), (90, 2135), (91, 2132), (98, 2111), (112, 2021), (118, 2003), (126, 1955), (128, 1940), (129, 1928), (138, 1883), (160, 1793), (165, 1781), (172, 1736), (175, 1721),

Gene: Jaek\_75 Start: 49754, Stop: 49053, Start Num: 54

Candidate Starts for Jaek\_75:

(20, 49868), (25, 49850), (30, 49820), (38, 49802), (Start: 45 @49772 has 6 MA's), (47, 49766), (Start: 53 @49757 has 4 MA's), (Start: 54 @49754 has 40 MA's), (Start: 76 @49670 has 1 MA's), (86, 49604), (87, 49601), (113, 49433), (121, 49397), (128, 49352), (131, 49337), (132, 49334), (172, 49160), (173, 49154), (182, 49076), (184, 49067), (188, 49058),

Gene: Jasper\_82 Start: 47335, Stop: 46679, Start Num: 60

Candidate Starts for Jasper\_82:

(Start: 60 @47335 has 7 MA's), (Start: 76 @47260 has 1 MA's), (81, 47236), (118, 47047), (121, 47026), (122, 47023), (128, 46975), (146, 46894), (168, 46819), (172, 46798), (175, 46783), (181, 46720),

Gene: JoieB\_33 Start: 10422, Stop: 9772, Start Num: 58

Candidate Starts for JoieB\_33:

(7, 10686), (10, 10608), (12, 10584), (34, 10458), (Start: 58 @10422 has 16 MA's), (66, 10410), (69, 10404), (Start: 76 @10344 has 1 MA's), (84, 10293), (101, 10203), (110, 10158), (128, 10056), (137, 10005), (142, 9993), (160, 9936), (161, 9933), (172, 9885), (175, 9870),

Gene: KSSJEB\_84 Start: 48621, Stop: 47950, Start Num: 61

Candidate Starts for KSSJEB\_84:

(17, 48765), (22, 48735), (Start: 61 @48621 has 15 MA's), (Start: 65 @48615 has 25 MA's), (Start: 76 @48546 has 1 MA's), (78, 48537), (84, 48495), (97, 48444), (101, 48405), (118, 48318), (119, 48309), (126, 48267), (128, 48252), (131, 48237), (148, 48165), (161, 48117), (172, 48066), (173, 48060), (176, 48045), (182, 47982),

Gene: Kalah2\_113 Start: 67017, Stop: 67640, Start Num: 57

Candidate Starts for Kalah2\_113:

(Start: 57 @67017 has 24 MA's), (Start: 68 @67026 has 5 MA's), (Start: 74 @67062 has 1 MA's), (78, 67098), (87, 67152), (154, 67464), (164, 67494), (166, 67500), (167, 67503), (172, 67542), (175,

67557),

Gene: Kamaru\_76 Start: 44933, Stop: 45595, Start Num: 61

Candidate Starts for Kamaru\_76:

(Start: 61 @44933 has 15 MA's), (118, 45224), (127, 45278), (128, 45290), (172, 45479), (176, 45500), (189, 45578),

Gene: Kanely\_91 Start: 51113, Stop: 50424, Start Num: 48

Candidate Starts for Kanely\_91:

(Start: 48 @51113 has 8 MA's), (Start: 51 @51107 has 7 MA's), (Start: 68 @51092 has 5 MA's), (Start: 76 @51029 has 1 MA's), (78, 51020), (119, 50810), (121, 50798), (128, 50753), (133, 50720), (154, 50642), (164, 50612), (166, 50606), (168, 50585), (172, 50564), (175, 50549), (181, 50486), (182, 50483), (186, 50471),

Gene: Karp\_7 Start: 2281, Stop: 1634, Start Num: 65

Candidate Starts for Karp\_7:

(Start: 65 @2281 has 25 MA's), (Start: 70 @2272 has 4 MA's), (72, 2266), (Start: 75 @2239 has 11 MA's), (85, 2161), (89, 2131), (90, 2128), (91, 2125), (101, 2068), (112, 2014), (126, 1948), (127, 1945), (128, 1933), (131, 1915), (156, 1798), (160, 1786), (163, 1780), (172, 1729), (175, 1714), (188, 1639),

Gene: Kenrey\_7 Start: 2277, Stop: 1630, Start Num: 65

Candidate Starts for Kenrey\_7:

(Start: 65 @2277 has 25 MA's), (Start: 70 @2268 has 4 MA's), (72, 2262), (Start: 75 @2235 has 11 MA's), (85, 2157), (89, 2127), (91, 2121), (112, 2010), (123, 1956), (126, 1944), (128, 1929), (129, 1917), (131, 1911), (160, 1782), (172, 1725), (175, 1710),

Gene: Killigrew\_82 Start: 48701, Stop: 48027, Start Num: 65

Candidate Starts for Killigrew\_82:

(Start: 65 @48701 has 25 MA's), (Start: 76 @48632 has 1 MA's), (78, 48623), (119, 48413), (121, 48401), (128, 48356), (154, 48245), (164, 48215), (166, 48209), (168, 48188), (172, 48167), (175, 48152), (181, 48089), (182, 48086), (186, 48074),

Gene: Kimona\_80 Start: 46221, Stop: 45568, Start Num: 54

Candidate Starts for Kimona\_80:

(27, 46290), (29, 46284), (33, 46278), (Start: 54 @46221 has 40 MA's), (Start: 75 @46170 has 11 MA's), (Start: 76 @46143 has 1 MA's), (113, 45942), (116, 45933), (124, 45891), (131, 45846), (148, 45771), (161, 45723), (172, 45672), (175, 45657), (179, 45618),

Gene: Klein\_118 Start: 65374, Stop: 65997, Start Num: 57

Candidate Starts for Klein\_118:

(Start: 57 @65374 has 24 MA's), (Start: 68 @65383 has 5 MA's), (Start: 74 @65419 has 1 MA's), (78, 65455), (87, 65509), (154, 65821), (164, 65851), (166, 65857), (167, 65860), (172, 65899), (175, 65914),

Gene: Kugel\_87 Start: 50139, Stop: 49459, Start Num: 54

Candidate Starts for Kugel\_87:

(Start: 54 @50139 has 40 MA's), (Start: 68 @50121 has 5 MA's), (Start: 77 @50055 has 2 MA's), (78, 50049), (97, 49956), (101, 49917), (112, 49848), (119, 49821), (121, 49809), (126, 49779), (128, 49764), (131, 49749), (161, 49626), (168, 49596), (172, 49575), (173, 49569), (182, 49491),

Gene: Landor\_85 Start: 49908, Stop: 49222, Start Num: 64

Candidate Starts for Landor\_85:

(42, 49935), (Start: 64 @49908 has 4 MA's), (Start: 75 @49863 has 11 MA's), (113, 49629), (122, 49590), (125, 49566), (128, 49548), (134, 49509), (159, 49416), (172, 49356), (189, 49251), (192, 49230),

Gene: Lesedi\_82 Start: 48034, Stop: 47309, Start Num: 36

Candidate Starts for Lesedi\_82:

(Start: 24 @48079 has 1 MA's), (Start: 36 @48034 has 4 MA's), (49, 47995), (Start: 61 @47980 has 15 MA's), (Start: 65 @47974 has 25 MA's), (Start: 76 @47905 has 1 MA's), (78, 47896), (84, 47854), (97, 47803), (101, 47764), (118, 47677), (119, 47668), (126, 47626), (128, 47611), (131, 47596), (148, 47524), (161, 47476), (172, 47425), (173, 47419), (176, 47404), (182, 47341),

Gene: Licorice\_87 Start: 51728, Stop: 50982, Start Num: 28

Candidate Starts for Licorice\_87:

(Start: 28 @51728 has 1 MA's), (Start: 54 @51659 has 40 MA's), (Start: 77 @51575 has 2 MA's), (78, 51569), (88, 51503), (97, 51476), (101, 51437), (112, 51371), (119, 51344), (121, 51332), (126, 51302), (128, 51287), (131, 51272), (148, 51197), (161, 51149), (168, 51119), (172, 51098), (173, 51092), (182, 51014),

Gene: Lilbit\_33 Start: 10399, Stop: 9749, Start Num: 58

Candidate Starts for Lilbit\_33:

(1, 10948), (7, 10663), (10, 10585), (12, 10561), (34, 10435), (Start: 58 @10399 has 16 MA's), (66, 10387), (Start: 76 @10321 has 1 MA's), (84, 10270), (101, 10180), (110, 10135), (128, 10033), (137, 9982), (142, 9970), (160, 9913), (161, 9910), (172, 9862), (175, 9847),

Gene: Limpid\_6 Start: 2125, Stop: 1451, Start Num: 65

Candidate Starts for Limpid\_6:

(Start: 65 @2125 has 25 MA's), (82, 2029), (85, 2005), (89, 1975), (90, 1972), (91, 1969), (97, 1951), (99, 1924), (101, 1912), (112, 1858), (118, 1840), (123, 1804), (126, 1789), (128, 1774), (138, 1720), (156, 1642), (160, 1630), (172, 1573), (175, 1558), (191, 1456),

Gene: LittleE\_121 Start: 66758, Stop: 67387, Start Num: 57

Candidate Starts for LittleE\_121:

(31, 66692), (Start: 57 @66758 has 24 MA's), (Start: 74 @66809 has 1 MA's), (Start: 76 @66836 has 1 MA's), (Start: 77 @66839 has 2 MA's), (78, 66845), (128, 67112), (129, 67124), (133, 67145), (154, 67214), (164, 67244), (166, 67250), (167, 67253), (172, 67292), (175, 67307),

Gene: LittleLaf\_32 Start: 10128, Stop: 9478, Start Num: 58

Candidate Starts for LittleLaf\_32:

(7, 10392), (10, 10314), (12, 10290), (34, 10164), (Start: 58 @10128 has 16 MA's), (66, 10116), (Start: 76 @10050 has 1 MA's), (84, 9999), (101, 9909), (110, 9864), (128, 9762), (137, 9711), (142, 9699), (160, 9642), (161, 9639), (172, 9591), (175, 9576),

Gene: Lockley\_87 Start: 49860, Stop: 49189, Start Num: 61

Candidate Starts for Lockley\_87:

(17, 50004), (22, 49974), (Start: 61 @49860 has 15 MA's), (Start: 65 @49854 has 25 MA's), (Start: 76 @49785 has 1 MA's), (78, 49776), (84, 49734), (97, 49683), (101, 49644), (118, 49557), (119, 49548), (121, 49536), (126, 49506), (128, 49491), (131, 49476), (148, 49404), (161, 49356), (172, 49305), (173, 49299), (176, 49284), (182, 49221),

Gene: Magnar\_84 Start: 49011, Stop: 48337, Start Num: 54

Candidate Starts for Magnar\_84:

(Start: 54 @49011 has 40 MA's), (Start: 65 @48999 has 25 MA's), (Start: 70 @48993 has 4 MA's), (Start: 76 @48933 has 1 MA's), (88, 48858), (97, 48831), (101, 48792), (112, 48723), (119, 48696),

(121, 48684), (128, 48639), (131, 48624), (161, 48504), (168, 48474), (172, 48453), (173, 48447), (182, 48369),

Gene: Maih\_38 Start: 31642, Stop: 31007, Start Num: 70

Candidate Starts for Maih\_38:

(56, 31660), (Start: 70 @31642 has 4 MA's), (78, 31573), (87, 31516), (96, 31474), (97, 31468), (98, 31465), (105, 31417), (112, 31375), (121, 31336), (149, 31192), (154, 31186), (168, 31129), (172, 31108), (175, 31093),

Gene: Malisha\_85 Start: 50278, Stop: 50961, Start Num: 59

Candidate Starts for Malisha\_85:

(Start: 51 @50269 has 7 MA's), (Start: 59 @50278 has 2 MA's), (163, 50794), (164, 50797), (166, 50803), (172, 50845), (178, 50875),

Gene: Manatee\_85 Start: 48517, Stop: 47846, Start Num: 61

Candidate Starts for Manatee\_85:

(17, 48661), (22, 48631), (Start: 61 @48517 has 15 MA's), (Start: 65 @48511 has 25 MA's), (Start: 76 @48442 has 1 MA's), (78, 48433), (84, 48391), (97, 48340), (101, 48301), (118, 48214), (119, 48205), (121, 48193), (126, 48163), (128, 48148), (131, 48133), (148, 48061), (161, 48013), (172, 47962), (173, 47956), (176, 47941), (182, 47878),

Gene: Marcell\_77 Start: 46764, Stop: 46087, Start Num: 54

Candidate Starts for Marcell\_77:

(3, 47148), (8, 47004), (Start: 54 @46764 has 40 MA's), (Start: 68 @46746 has 5 MA's), (Start: 77 @46680 has 2 MA's), (78, 46674), (88, 46608), (97, 46581), (101, 46542), (112, 46473), (119, 46446), (121, 46434), (128, 46389), (131, 46374), (148, 46302), (161, 46254), (168, 46224), (172, 46203), (173, 46197), (182, 46119),

Gene: Maroc7\_87 Start: 51516, Stop: 50839, Start Num: 54

Candidate Starts for Maroc7\_87:

(Start: 43 @51537 has 3 MA's), (Start: 54 @51516 has 40 MA's), (Start: 68 @51498 has 5 MA's), (Start: 77 @51432 has 2 MA's), (78, 51426), (97, 51333), (101, 51294), (112, 51225), (114, 51219), (119, 51198), (121, 51186), (126, 51156), (128, 51141), (131, 51126), (148, 51054), (161, 51006), (168, 50976), (172, 50955), (173, 50949), (182, 50871),

Gene: Marvin\_30 Start: 10398, Stop: 9748, Start Num: 58

Candidate Starts for Marvin\_30:

(1, 10947), (7, 10662), (10, 10584), (12, 10560), (34, 10434), (Start: 58 @10398 has 16 MA's), (66, 10386), (Start: 76 @10320 has 1 MA's), (84, 10269), (101, 10179), (110, 10134), (128, 10032), (137, 9981), (142, 9969), (160, 9912), (161, 9909), (172, 9861), (175, 9846),

Gene: McGuire\_85 Start: 48751, Stop: 48110, Start Num: 61

Candidate Starts for McGuire\_85:

(17, 48895), (22, 48865), (Start: 61 @48751 has 15 MA's), (Start: 65 @48745 has 25 MA's), (Start: 76 @48676 has 1 MA's), (78, 48667), (84, 48625), (97, 48574), (101, 48535), (118, 48448), (119, 48439), (126, 48397), (128, 48382), (131, 48367), (148, 48295), (161, 48247), (169, 48214), (180, 48124),

Gene: MeganTheeKilla\_7 Start: 2288, Stop: 1641, Start Num: 65

Candidate Starts for MeganTheeKilla\_7:

(Start: 65 @2288 has 25 MA's), (Start: 75 @2246 has 11 MA's), (78, 2210), (85, 2168), (89, 2138), (90, 2135), (91, 2132), (98, 2111), (112, 2021), (118, 2003), (126, 1955), (128, 1940), (129, 1928), (138, 1883), (160, 1793), (165, 1781), (172, 1736), (175, 1721),

Gene: MiaZeal\_117 Start: 64204, Stop: 64857, Start Num: 57

Candidate Starts for MiaZeal\_117:

(29, 64132), (Start: 57 @64204 has 24 MA's), (Start: 75 @64255 has 11 MA's), (Start: 76 @64282 has 1 MA's), (78, 64291), (93, 64366), (106, 64444), (112, 64486), (113, 64489), (128, 64570), (131, 64585), (137, 64621), (148, 64657), (172, 64756),

Gene: Minerva\_119 Start: 66905, Stop: 67552, Start Num: 57

Candidate Starts for Minerva\_119:

(Start: 57 @66905 has 24 MA's), (Start: 68 @66914 has 5 MA's), (Start: 75 @66950 has 11 MA's), (Start: 77 @66980 has 2 MA's), (78, 66986), (93, 67061), (113, 67184), (125, 67247), (128, 67265), (135, 67310), (161, 67400), (172, 67451),

Gene: Mkhuseleli\_82 Start: 47268, Stop: 46594, Start Num: 65

Candidate Starts for Mkhuseleli\_82:

(Start: 45 @47292 has 6 MA's), (Start: 57 @47274 has 24 MA's), (Start: 65 @47268 has 25 MA's), (Start: 76 @47199 has 1 MA's), (78, 47190), (119, 46980), (121, 46968), (128, 46923), (133, 46890), (154, 46812), (164, 46782), (166, 46776), (168, 46755), (172, 46734), (175, 46719), (181, 46656), (182, 46653), (186, 46641),

Gene: Moab\_6 Start: 2241, Stop: 1594, Start Num: 65

Candidate Starts for Moab\_6:

(Start: 65 @2241 has 25 MA's), (Start: 75 @2199 has 11 MA's), (85, 2121), (89, 2091), (90, 2088), (91, 2085), (112, 1974), (118, 1956), (119, 1947), (121, 1935), (125, 1911), (126, 1908), (127, 1905), (128, 1893), (129, 1881), (160, 1746), (172, 1689), (175, 1674),

Gene: Molivia\_79 Start: 48343, Stop: 47642, Start Num: 54

Candidate Starts for Molivia\_79:

(47, 48355), (Start: 54 @48343 has 40 MA's), (Start: 75 @48286 has 11 MA's), (80, 48232), (88, 48178), (101, 48088), (113, 48022), (125, 47959), (132, 47923), (172, 47749), (173, 47743), (178, 47716), (182, 47665), (188, 47647),

Gene: MosMoris\_30 Start: 9578, Stop: 8928, Start Num: 58

Candidate Starts for MosMoris\_30:

(1, 10127), (7, 9842), (10, 9764), (12, 9740), (34, 9614), (Start: 58 @9578 has 16 MA's), (66, 9566), (69, 9560), (Start: 76 @9500 has 1 MA's), (84, 9449), (101, 9359), (110, 9314), (128, 9212), (137, 9161), (142, 9149), (160, 9092), (161, 9089), (172, 9041), (175, 9026),

Gene: MrGordo\_88 Start: 49233, Stop: 48553, Start Num: 57

Candidate Starts for MrGordo\_88:

(Start: 45 @49251 has 6 MA's), (Start: 57 @49233 has 24 MA's), (Start: 65 @49227 has 25 MA's), (Start: 76 @49158 has 1 MA's), (78, 49149), (119, 48939), (121, 48927), (128, 48882), (133, 48849), (154, 48771), (164, 48741), (166, 48735), (168, 48714), (172, 48693), (175, 48678), (181, 48615), (182, 48612), (186, 48600),

Gene: Muntaha\_8 Start: 3277, Stop: 2633, Start Num: 65

Candidate Starts for Muntaha\_8:

(Start: 65 @3277 has 25 MA's), (Start: 75 @3235 has 11 MA's), (86, 3148), (111, 3025), (112, 3016), (126, 2947), (128, 2932), (138, 2878), (146, 2842), (156, 2800), (160, 2788), (172, 2731), (175, 2716), (181, 2653),

Gene: Museum\_87 Start: 50254, Stop: 49556, Start Num: 45

Candidate Starts for Museum\_87:

(Start: 45 @50254 has 6 MA's), (Start: 57 @50236 has 24 MA's), (Start: 65 @50230 has 25 MA's), (Start: 76 @50161 has 1 MA's), (78, 50152), (119, 49942), (121, 49930), (128, 49885), (133, 49852), (154, 49774), (164, 49744), (166, 49738), (168, 49717), (172, 49696), (175, 49681), (181, 49618), (182, 49615), (186, 49603),

Gene: Naira\_89 Start: 50754, Stop: 50080, Start Num: 54

Candidate Starts for Naira\_89:

(Start: 54 @50754 has 40 MA's), (Start: 65 @50742 has 25 MA's), (Start: 70 @50736 has 4 MA's), (Start: 76 @50676 has 1 MA's), (88, 50601), (97, 50574), (101, 50535), (112, 50466), (119, 50439), (121, 50427), (126, 50397), (128, 50382), (131, 50367), (148, 50295), (161, 50247), (168, 50217), (172, 50196), (173, 50190), (182, 50112),

Gene: Nesbitt\_41 Start: 29441, Stop: 30088, Start Num: 61

Candidate Starts for Nesbitt\_41:

(Start: 44 @29414 has 1 MA's), (46, 29417), (Start: 52 @29429 has 2 MA's), (Start: 61 @29441 has 15 MA's), (Start: 75 @29489 has 11 MA's), (Start: 76 @29519 has 1 MA's), (79, 29537), (106, 29687), (113, 29732), (118, 29747), (125, 29786), (126, 29789), (128, 29804), (152, 29915), (168, 29972), (171, 29981), (172, 29993), (176, 30014),

Gene: Odyssey395\_21 Start: 6730, Stop: 7446, Start Num: 53

Candidate Starts for Odyssey395\_21:

(Start: 53 @6730 has 4 MA's), (72, 6763), (102, 6967), (103, 6973), (121, 7066), (128, 7111), (140, 7186), (172, 7336), (175, 7351), (186, 7426), (189, 7432),

Gene: OnionKnight\_47 Start: 32813, Stop: 33472, Start Num: 44

Candidate Starts for OnionKnight\_47:

(Start: 44 @32813 has 1 MA's), (78, 32924), (81, 32939), (117, 33155), (172, 33362), (175, 33377),

Gene: Optimus\_112 Start: 65325, Stop: 65948, Start Num: 57

Candidate Starts for Optimus\_112:

(Start: 57 @65325 has 24 MA's), (Start: 68 @65334 has 5 MA's), (Start: 74 @65370 has 1 MA's), (Start: 77 @65400 has 2 MA's), (78, 65406), (87, 65460), (154, 65772), (164, 65802), (166, 65808), (167, 65811), (172, 65850), (175, 65865),

Gene: PP\_78 Start: 50822, Stop: 50058, Start Num: 75

Candidate Starts for PP\_78:

(12, 51065), (15, 51047), (Start: 52 @50882 has 2 MA's), (Start: 61 @50870 has 15 MA's), (Start: 75 @50822 has 11 MA's), (78, 50786), (84, 50747), (88, 50723), (112, 50597), (113, 50594), (119, 50570), (121, 50558), (125, 50531), (128, 50513), (131, 50498), (172, 50324), (175, 50309), (178, 50291), (183, 50237), (185, 50231), (193, 50099), (194, 50093),

Gene: PacerPaul\_89 Start: 51271, Stop: 50597, Start Num: 54

Candidate Starts for PacerPaul\_89:

(Start: 54 @51271 has 40 MA's), (Start: 77 @51187 has 2 MA's), (78, 51181), (88, 51115), (97, 51088), (101, 51049), (112, 50983), (119, 50956), (121, 50944), (126, 50914), (128, 50899), (131, 50884), (148, 50812), (161, 50764), (168, 50734), (172, 50713), (173, 50707), (182, 50629),

Gene: Papez\_91 Start: 51123, Stop: 50632, Start Num: 51

Candidate Starts for Papez\_91:

(Start: 48 @51129 has 8 MA's), (Start: 51 @51123 has 7 MA's), (Start: 68 @51108 has 5 MA's), (Start: 76 @51045 has 1 MA's), (78, 51036), (119, 50826), (121, 50814), (128, 50769), (133, 50736),

Gene: Patelgo\_7 Start: 2199, Stop: 1594, Start Num: 75

Candidate Starts for Patelgo\_7:

(Start: 65 @2241 has 25 MA's), (Start: 75 @2199 has 11 MA's), (85, 2121), (89, 2091), (90, 2088), (91, 2085), (112, 1974), (118, 1956), (119, 1947), (121, 1935), (125, 1911), (126, 1908), (127, 1905), (128, 1893), (129, 1881), (142, 1824), (160, 1746), (172, 1689), (175, 1674),

Gene: PattyP\_85 Start: 49801, Stop: 49100, Start Num: 45

Candidate Starts for PattyP\_85:

(Start: 45 @49801 has 6 MA's), (Start: 65 @49774 has 25 MA's), (Start: 76 @49705 has 1 MA's), (78, 49696), (119, 49486), (121, 49474), (128, 49429), (133, 49396), (154, 49318), (164, 49288), (166, 49282), (168, 49261), (172, 49240), (175, 49225), (181, 49162), (182, 49159), (186, 49147),

Gene: Peregrin\_218 Start: 109695, Stop: 110348, Start Num: 65

Candidate Starts for Peregrin\_218:

(Start: 65 @109695 has 25 MA's), (72, 109710), (87, 109833), (100, 109905), (101, 109908), (120, 109992), (128, 110052), (144, 110133), (172, 110250), (182, 110334),

Gene: Peregrin\_219 Start: 110361, Stop: 110984, Start Num: 52

Candidate Starts for Peregrin\_219:

(Start: 52 @110361 has 2 MA's), (104, 110583), (128, 110712), (130, 110724), (154, 110808), (155, 110817), (164, 110838), (172, 110886), (175, 110901),

Gene: Petp2012\_86 Start: 50544, Stop: 49852, Start Num: 45

Candidate Starts for Petp2012\_86:

(Start: 45 @50544 has 6 MA's), (Start: 65 @50517 has 25 MA's), (Start: 76 @50448 has 1 MA's), (78, 50439), (119, 50229), (121, 50217), (128, 50172), (154, 50061), (164, 50031), (166, 50025), (168, 50004), (172, 49983), (175, 49968), (190, 49878),

Gene: Phabuloso\_89 Start: 47857, Stop: 48519, Start Num: 61

Candidate Starts for Phabuloso\_89:

(Start: 61 @47857 has 15 MA's), (118, 48148), (127, 48202), (128, 48214), (172, 48403), (176, 48424), (189, 48502),

Gene: Phaded\_81 Start: 49902, Stop: 49180, Start Num: 40

Candidate Starts for Phaded\_81:

(Start: 40 @49902 has 1 MA's), (Start: 59 @49863 has 2 MA's), (Start: 75 @49818 has 11 MA's), (113, 49584), (125, 49521), (128, 49503), (134, 49464), (159, 49371), (172, 49311), (188, 49209), (192, 49188),

Gene: PherrisBueller\_82 Start: 46986, Stop: 46330, Start Num: 60

Candidate Starts for PherrisBueller\_82:

(Start: 60 @46986 has 7 MA's), (Start: 76 @46911 has 1 MA's), (81, 46887), (118, 46698), (121, 46677), (122, 46674), (128, 46626), (146, 46545), (168, 46470), (172, 46449), (175, 46434), (181, 46371),

Gene: PhorbesPhlower\_62 Start: 36855, Stop: 37460, Start Num: 74

Candidate Starts for PhorbesPhlower\_62:

(Start: 51 @36798 has 7 MA's), (Start: 58 @36807 has 16 MA's), (Start: 74 @36855 has 1 MA's), (121, 37122), (170, 37332), (172, 37347), (187, 37443),

Gene: Phredrick\_7 Start: 2246, Stop: 1641, Start Num: 75

Candidate Starts for Phredrick\_7:

(Start: 65 @2288 has 25 MA's), (Start: 70 @2279 has 4 MA's), (Start: 75 @2246 has 11 MA's), (85, 2168), (89, 2138), (90, 2135), (91, 2132), (112, 2021), (126, 1955), (128, 1940), (129, 1928), (160,



1793), (172, 1736), (175, 1721),

Gene: Pinto\_85 Start: 49797, Stop: 49108, Start Num: 48

Candidate Starts for Pinto\_85:

(Start: 48 @49797 has 8 MA's), (Start: 51 @49791 has 7 MA's), (Start: 68 @49776 has 5 MA's), (Start: 76 @49713 has 1 MA's), (78, 49704), (119, 49494), (121, 49482), (128, 49437), (133, 49404), (154, 49326), (164, 49296), (166, 49290), (168, 49269), (172, 49248), (175, 49233), (181, 49170), (182, 49167), (186, 49155),

Gene: Poise\_32 Start: 9689, Stop: 9039, Start Num: 58

Candidate Starts for Poise\_32:

(7, 9980), (10, 9902), (12, 9878), (34, 9752), (39, 9740), (Start: 58 @9689 has 16 MA's), (66, 9677), (Start: 76 @9611 has 1 MA's), (84, 9560), (101, 9470), (110, 9425), (128, 9323), (137, 9272), (142, 9260), (160, 9203), (161, 9200), (172, 9152), (175, 9137),

Gene: Pound\_111 Start: 65924, Stop: 66571, Start Num: 57

Candidate Starts for Pound\_111:

(Start: 57 @65924 has 24 MA's), (Start: 68 @65933 has 5 MA's), (Start: 75 @65969 has 11 MA's), (78, 66005), (93, 66080), (113, 66203), (125, 66266), (128, 66284), (135, 66329), (161, 66419), (172, 66470),

Gene: Pringar\_32 Start: 10028, Stop: 9378, Start Num: 58

Candidate Starts for Pringar\_32:

(7, 10292), (10, 10214), (12, 10190), (34, 10064), (Start: 58 @10028 has 16 MA's), (66, 10016), (69, 10010), (Start: 76 @9950 has 1 MA's), (84, 9899), (101, 9809), (110, 9764), (128, 9662), (137, 9611), (142, 9599), (160, 9542), (161, 9539), (172, 9491), (175, 9476),

Gene: Pukovnik\_82 Start: 49336, Stop: 48650, Start Num: 64

Candidate Starts for Pukovnik\_82:

(42, 49360), (Start: 64 @49336 has 4 MA's), (Start: 75 @49291 has 11 MA's), (113, 49057), (125, 48994), (128, 48976), (131, 48961), (134, 48937), (159, 48844), (161, 48835), (172, 48784), (189, 48679), (192, 48658),

Gene: Pureglobe5\_21 Start: 6744, Stop: 7460, Start Num: 53

Candidate Starts for Pureglobe5\_21:

(Start: 53 @6744 has 4 MA's), (72, 6777), (102, 6981), (103, 6987), (121, 7080), (128, 7125), (140, 7200), (172, 7350), (175, 7365), (186, 7440), (189, 7446),

Gene: Raela\_32 Start: 10244, Stop: 9594, Start Num: 58

Candidate Starts for Raela\_32:

(7, 10535), (10, 10457), (12, 10433), (34, 10307), (39, 10295), (Start: 58 @10244 has 16 MA's), (66, 10232), (Start: 76 @10166 has 1 MA's), (84, 10115), (101, 10025), (110, 9980), (128, 9878), (137, 9827), (142, 9815), (160, 9758), (161, 9755), (172, 9707), (175, 9692),

Gene: Rajelicia\_87 Start: 52049, Stop: 51360, Start Num: 48

Candidate Starts for Rajelicia\_87:

(Start: 48 @52049 has 8 MA's), (Start: 51 @52043 has 7 MA's), (Start: 68 @52028 has 5 MA's), (Start: 76 @51965 has 1 MA's), (78, 51956), (119, 51746), (121, 51734), (128, 51689), (154, 51578), (164, 51548), (168, 51521), (172, 51500), (175, 51485), (181, 51422), (182, 51419), (186, 51407),

Gene: Rajelicia\_84 Start: 50923, Stop: 50267, Start Num: 60

Candidate Starts for Rajelicia\_84:

(Start: 60 @50923 has 7 MA's), (Start: 76 @50848 has 1 MA's), (81, 50824), (118, 50635), (121, 50614), (122, 50611), (128, 50563), (146, 50482), (168, 50407), (172, 50386), (175, 50371), (181, 50308),

Gene: RedRaider77\_32 Start: 10172, Stop: 9522, Start Num: 58

Candidate Starts for RedRaider77\_32:

(7, 10436), (10, 10358), (12, 10334), (34, 10208), (Start: 58 @10172 has 16 MA's), (66, 10160), (69, 10154), (Start: 76 @10094 has 1 MA's), (84, 10043), (101, 9953), (110, 9908), (128, 9806), (137, 9755), (142, 9743), (160, 9686), (161, 9683), (172, 9635), (175, 9620),

Gene: Redno2\_115 Start: 65360, Stop: 66007, Start Num: 57

Candidate Starts for Redno2\_115:

(Start: 57 @65360 has 24 MA's), (Start: 68 @65369 has 5 MA's), (Start: 75 @65405 has 11 MA's), (78, 65441), (93, 65516), (113, 65639), (125, 65702), (128, 65720), (135, 65765), (148, 65807), (161, 65855), (172, 65906),

Gene: Rings\_76 Start: 49802, Stop: 49098, Start Num: 53

Candidate Starts for Rings\_76:

(38, 49847), (Start: 45 @49817 has 6 MA's), (47, 49811), (Start: 53 @49802 has 4 MA's), (Start: 54 @49799 has 40 MA's), (Start: 76 @49715 has 1 MA's), (83, 49664), (86, 49649), (113, 49478), (127, 49409), (128, 49397), (131, 49382), (132, 49379), (172, 49205), (173, 49199), (178, 49172), (182, 49121), (184, 49112), (188, 49103),

Gene: Ruotula\_92 Start: 51789, Stop: 51100, Start Num: 48

Candidate Starts for Ruotula\_92:

(Start: 48 @51789 has 8 MA's), (Start: 51 @51783 has 7 MA's), (Start: 68 @51768 has 5 MA's), (Start: 76 @51705 has 1 MA's), (78, 51696), (119, 51486), (121, 51474), (128, 51429), (133, 51396), (154, 51318), (164, 51288), (166, 51282), (168, 51261), (172, 51240), (175, 51225), (181, 51162), (182, 51159), (186, 51147),

Gene: Salete\_39 Start: 31646, Stop: 31008, Start Num: 68

Candidate Starts for Salete\_39:

(56, 31661), (Start: 68 @31646 has 5 MA's), (Start: 70 @31643 has 4 MA's), (Start: 76 @31583 has 1 MA's), (98, 31466), (105, 31418), (112, 31376), (121, 31337), (149, 31193), (154, 31187), (168, 31130), (172, 31109), (175, 31094),

Gene: Sanya\_79 Start: 49939, Stop: 49265, Start Num: 65

Candidate Starts for Sanya\_79:

(Start: 45 @49963 has 6 MA's), (Start: 57 @49945 has 24 MA's), (Start: 65 @49939 has 25 MA's), (Start: 76 @49870 has 1 MA's), (78, 49861), (119, 49651), (121, 49639), (128, 49594), (133, 49561), (154, 49483), (164, 49453), (166, 49447), (168, 49426), (172, 49405), (175, 49390), (181, 49327), (182, 49324), (186, 49312),

Gene: Seabiscuit\_87 Start: 48983, Stop: 48312, Start Num: 61

Candidate Starts for Seabiscuit\_87:

(17, 49127), (22, 49097), (Start: 61 @48983 has 15 MA's), (Start: 65 @48977 has 25 MA's), (Start: 76 @48908 has 1 MA's), (78, 48899), (84, 48857), (97, 48806), (101, 48767), (118, 48680), (119, 48671), (126, 48629), (128, 48614), (131, 48599), (148, 48527), (161, 48479), (172, 48428), (173, 48422), (176, 48407), (182, 48344),

Gene: Seanderson\_85 Start: 51237, Stop: 50560, Start Num: 54

Candidate Starts for Seanderson\_85:

(Start: 54 @51237 has 40 MA's), (Start: 68 @51219 has 5 MA's), (Start: 77 @51153 has 2 MA's), (78, 51147), (84, 51105), (97, 51054), (101, 51015), (112, 50946), (119, 50919), (121, 50907), (126, 50877), (128, 50862), (131, 50847), (148, 50775), (161, 50727), (172, 50676), (173, 50670), (176, 50655), (182, 50592),

Gene: SeresaTree\_7 Start: 2390, Stop: 1746, Start Num: 75

Candidate Starts for SeresaTree\_7:

(Start: 65 @2432 has 25 MA's), (72, 2417), (Start: 75 @2390 has 11 MA's), (85, 2312), (89, 2282), (90, 2279), (91, 2276), (101, 2219), (112, 2165), (118, 2147), (121, 2126), (126, 2096), (128, 2081), (129, 2069), (160, 1937), (172, 1880), (175, 1865),

Gene: Sham\_7 Start: 2371, Stop: 1727, Start Num: 75

Candidate Starts for Sham\_7:

(Start: 65 @2413 has 25 MA's), (Start: 70 @2404 has 4 MA's), (72, 2398), (Start: 75 @2371 has 11 MA's), (82, 2317), (85, 2293), (89, 2263), (90, 2260), (91, 2257), (97, 2239), (101, 2200), (112, 2146), (118, 2128), (126, 2077), (128, 2062), (129, 2050), (156, 1930), (160, 1918), (172, 1861), (175, 1846),

Gene: Sheen\_59 Start: 41732, Stop: 41055, Start Num: 54

Candidate Starts for Sheen\_59:

(Start: 54 @41732 has 40 MA's), (Start: 68 @41717 has 5 MA's), (Start: 75 @41681 has 11 MA's), (Start: 77 @41651 has 2 MA's), (78, 41645), (94, 41552), (95, 41549), (101, 41504), (109, 41465), (119, 41417), (128, 41360), (131, 41345), (134, 41321), (148, 41270), (168, 41192), (172, 41171), (177, 41144),

Gene: ShortQueendom\_79 Start: 47837, Stop: 47163, Start Num: 65

Candidate Starts for ShortQueendom\_79:

(Start: 45 @47861 has 6 MA's), (Start: 57 @47843 has 24 MA's), (Start: 65 @47837 has 25 MA's), (Start: 76 @47768 has 1 MA's), (78, 47759), (119, 47549), (121, 47537), (128, 47492), (133, 47459), (154, 47381), (164, 47351), (166, 47345), (168, 47324), (172, 47303), (175, 47288), (181, 47225), (182, 47222), (186, 47210),

Gene: Sibs6\_89 Start: 47701, Stop: 47027, Start Num: 65

Candidate Starts for Sibs6\_89:

(41, 47737), (Start: 45 @47725 has 6 MA's), (Start: 57 @47707 has 24 MA's), (Start: 65 @47701 has 25 MA's), (Start: 76 @47632 has 1 MA's), (78, 47623), (119, 47413), (121, 47401), (128, 47356), (133, 47323), (154, 47245), (164, 47215), (166, 47209), (168, 47188), (172, 47167), (175, 47152), (181, 47089), (182, 47086), (186, 47074),

Gene: SilentRX\_15 Start: 5723, Stop: 6439, Start Num: 62

Candidate Starts for SilentRX\_15:

(Start: 54 @5714 has 40 MA's), (Start: 62 @5723 has 2 MA's), (78, 5807), (88, 5876), (110, 5990), (111, 5999), (125, 6074), (128, 6092), (145, 6188), (150, 6209), (151, 6215), (168, 6290), (172, 6314), (175, 6329), (182, 6395), (187, 6410), (189, 6416),

Gene: Slagathor\_89 Start: 50784, Stop: 50101, Start Num: 51

Candidate Starts for Slagathor\_89:

(Start: 48 @50790 has 8 MA's), (Start: 51 @50784 has 7 MA's), (Start: 68 @50769 has 5 MA's), (Start: 76 @50706 has 1 MA's), (78, 50697), (119, 50487), (121, 50475), (128, 50430), (154, 50319), (164, 50289), (166, 50283), (168, 50262), (172, 50241), (175, 50226), (181, 50163), (182, 50160), (186, 50148),

Gene: Snazzy\_87 Start: 50092, Stop: 49418, Start Num: 65

Candidate Starts for Snazzy\_87:

(Start: 45 @50119 has 6 MA's), (Start: 65 @50092 has 25 MA's), (Start: 76 @50023 has 1 MA's), (78, 50014), (119, 49804), (121, 49792), (128, 49747), (133, 49714), (154, 49636), (164, 49606), (166, 49600), (168, 49579), (172, 49558), (175, 49543), (181, 49480), (182, 49477), (186, 49465),

Gene: SorJuana\_75 Start: 49355, Stop: 48654, Start Num: 54

Candidate Starts for SorJuana\_75:

(26, 49436), (30, 49421), (38, 49403), (47, 49367), (Start: 54 @49355 has 40 MA's), (Start: 76 @49271 has 1 MA's), (80, 49244), (81, 49241), (86, 49205), (87, 49202), (113, 49034), (127, 48965), (128, 48953), (131, 48938), (132, 48935), (172, 48761), (173, 48755), (178, 48728), (182, 48677), (184, 48668), (188, 48659),

Gene: SparkleGoddess\_7 Start: 2235, Stop: 1630, Start Num: 75

Candidate Starts for SparkleGoddess\_7:

(Start: 65 @2277 has 25 MA's), (Start: 70 @2268 has 4 MA's), (72, 2262), (Start: 75 @2235 has 11 MA's), (85, 2157), (89, 2127), (90, 2124), (91, 2121), (101, 2064), (112, 2010), (126, 1944), (127, 1941), (128, 1929), (131, 1911), (156, 1794), (160, 1782), (163, 1776), (172, 1725), (175, 1710), (188, 1635),

Gene: Squee\_84 Start: 49047, Stop: 48451, Start Num: 76

Candidate Starts for Squee\_84:

(Start: 70 @49107 has 4 MA's), (Start: 76 @49047 has 1 MA's), (88, 48972), (97, 48945), (101, 48906), (112, 48837), (119, 48810), (121, 48798), (126, 48768), (128, 48753), (131, 48738), (148, 48666), (161, 48618), (168, 48588), (172, 48567), (173, 48561), (182, 48483),

Gene: Squint\_115 Start: 64374, Stop: 64973, Start Num: 75

Candidate Starts for Squint\_115:

(29, 64251), (Start: 57 @64323 has 24 MA's), (Start: 75 @64374 has 11 MA's), (Start: 76 @64401 has 1 MA's), (Start: 77 @64404 has 2 MA's), (78, 64410), (93, 64485), (106, 64563), (128, 64689), (131, 64704), (137, 64740), (161, 64824), (172, 64875), (176, 64896),

Gene: Stigma\_7 Start: 2239, Stop: 1634, Start Num: 75

Candidate Starts for Stigma\_7:

(Start: 65 @2281 has 25 MA's), (Start: 70 @2272 has 4 MA's), (72, 2266), (Start: 75 @2239 has 11 MA's), (85, 2161), (89, 2131), (90, 2128), (91, 2125), (101, 2068), (112, 2014), (126, 1948), (127, 1945), (128, 1933), (131, 1915), (156, 1798), (160, 1786), (163, 1780), (172, 1729), (175, 1714), (188, 1639),

Gene: StrongArm\_83 Start: 49650, Stop: 48988, Start Num: 68

Candidate Starts for StrongArm\_83:

(4, 49989), (5, 49971), (6, 49959), (13, 49848), (14, 49839), (19, 49788), (Start: 54 @49668 has 40 MA's), (Start: 68 @49650 has 5 MA's), (Start: 77 @49584 has 2 MA's), (78, 49578), (88, 49512), (97, 49485), (101, 49446), (112, 49377), (119, 49350), (121, 49338), (126, 49308), (128, 49293), (131, 49278), (148, 49203), (161, 49155), (168, 49125), (172, 49104), (173, 49098), (182, 49020),

Gene: Success\_20 Start: 12404, Stop: 11850, Start Num: 77

Candidate Starts for Success\_20:

(Start: 76 @12407 has 1 MA's), (Start: 77 @12404 has 2 MA's), (105, 12257), (110, 12233), (116, 12203), (119, 12188), (121, 12176), (122, 12173), (124, 12155), (125, 12143), (127, 12137), (154, 12026), (162, 11999), (168, 11969), (175, 11933),

Gene: Superphikiman\_114 Start: 63414, Stop: 64064, Start Num: 57

Candidate Starts for Superphikiman\_114:

(29, 63342), (Start: 57 @63414 has 24 MA's), (Start: 75 @63465 has 11 MA's), (Start: 76 @63492 has 1 MA's), (Start: 77 @63495 has 2 MA's), (78, 63501), (93, 63576), (106, 63654), (128, 63780), (131, 63795), (137, 63831), (161, 63915), (172, 63966), (176, 63987),

Gene: Switzer\_84 Start: 49767, Stop: 49096, Start Num: 61

Candidate Starts for Switzer\_84:

(17, 49911), (22, 49881), (Start: 61 @49767 has 15 MA's), (Start: 65 @49761 has 25 MA's), (Start: 76 @49692 has 1 MA's), (78, 49683), (84, 49641), (97, 49590), (101, 49551), (118, 49464), (119, 49455), (126, 49413), (128, 49398), (131, 49383), (148, 49311), (161, 49263), (172, 49212), (173, 49206), (176, 49191), (182, 49128),

Gene: TP1604\_39 Start: 31643, Stop: 31008, Start Num: 70

Candidate Starts for TP1604\_39:

(56, 31661), (Start: 70 @31643 has 4 MA's), (78, 31574), (87, 31517), (96, 31475), (97, 31469), (98, 31466), (105, 31418), (112, 31376), (121, 31337), (149, 31193), (154, 31187), (168, 31130), (172, 31109), (175, 31094),

Gene: Tesla\_31 Start: 10021, Stop: 9371, Start Num: 58

Candidate Starts for Tesla\_31:

(7, 10285), (10, 10207), (12, 10183), (34, 10057), (Start: 58 @10021 has 16 MA's), (66, 10009), (69, 10003), (Start: 76 @9943 has 1 MA's), (84, 9892), (101, 9802), (110, 9757), (128, 9655), (137, 9604), (142, 9592), (160, 9535), (161, 9532), (172, 9484), (175, 9469),

Gene: TheloniousMonk\_85 Start: 50510, Stop: 49917, Start Num: 77

Candidate Starts for TheloniousMonk\_85:

(Start: 77 @50510 has 2 MA's), (78, 50504), (88, 50438), (97, 50411), (101, 50372), (112, 50303), (119, 50276), (121, 50264), (126, 50234), (128, 50219), (131, 50204), (161, 50084), (168, 50054), (172, 50033), (173, 50027), (182, 49949),

Gene: ThreeRngTarjay\_117 Start: 68249, Stop: 68896, Start Num: 57

Candidate Starts for ThreeRngTarjay\_117:

(Start: 57 @68249 has 24 MA's), (Start: 68 @68258 has 5 MA's), (Start: 75 @68294 has 11 MA's), (Start: 77 @68324 has 2 MA's), (78, 68330), (93, 68405), (113, 68528), (125, 68591), (128, 68609), (135, 68654), (161, 68744), (172, 68795),

Gene: Thunderclap\_75 Start: 49777, Stop: 49076, Start Num: 54

Candidate Starts for Thunderclap\_75:

(26, 49858), (30, 49843), (38, 49825), (47, 49789), (Start: 54 @49777 has 40 MA's), (Start: 76 @49693 has 1 MA's), (80, 49666), (81, 49663), (86, 49627), (87, 49624), (113, 49456), (127, 49387), (128, 49375), (131, 49360), (132, 49357), (172, 49183), (173, 49177), (178, 49150), (182, 49099), (184, 49090), (188, 49081),

Gene: Timshel\_56 Start: 41030, Stop: 40329, Start Num: 54

Candidate Starts for Timshel\_56:

(Start: 54 @41030 has 40 MA's), (72, 41006), (Start: 75 @40979 has 11 MA's), (Start: 76 @40952 has 1 MA's), (78, 40943), (112, 40724), (118, 40706), (128, 40640), (138, 40586), (148, 40550), (161, 40502), (168, 40472), (172, 40451), (181, 40370), (185, 40358),

Gene: ToastyFinz\_36 Start: 28865, Stop: 29620, Start Num: 23

Candidate Starts for ToastyFinz\_36:

(2, 28502), (11, 28769), (Start: 23 @28865 has 1 MA's), (32, 28904), (Start: 74 @29021 has 1 MA's), (113, 29243), (128, 29324), (129, 29333), (154, 29420), (157, 29432), (164, 29450), (172, 29498), (173, 29504), (178, 29528),

Gene: Toro\_60 Start: 41844, Stop: 41167, Start Num: 54

Candidate Starts for Toro\_60:

(Start: 54 @41844 has 40 MA's), (Start: 68 @41829 has 5 MA's), (Start: 75 @41793 has 11 MA's), (Start: 77 @41763 has 2 MA's), (78, 41757), (94, 41664), (95, 41661), (101, 41616), (109, 41577), (119, 41529), (128, 41472), (131, 41457), (134, 41433), (148, 41382), (168, 41304), (172, 41283), (177, 41256),

Gene: Trina\_21 Start: 7519, Stop: 6875, Start Num: 55

Candidate Starts for Trina\_21:

(Start: 55 @7519 has 1 MA's), (101, 7309), (119, 7222), (128, 7165), (172, 6976), (182, 6892),

Gene: Tripl3t\_89 Start: 52782, Stop: 52099, Start Num: 51

Candidate Starts for Tripl3t\_89:

(Start: 48 @52788 has 8 MA's), (Start: 51 @52782 has 7 MA's), (Start: 68 @52767 has 5 MA's), (Start: 76 @52704 has 1 MA's), (78, 52695), (119, 52485), (121, 52473), (128, 52428), (133, 52395), (154, 52317), (164, 52287), (166, 52281), (168, 52260), (172, 52239), (175, 52224), (181, 52161), (182, 52158), (186, 52146),

Gene: TunaTartare\_7 Start: 2413, Stop: 1730, Start Num: 65

Candidate Starts for TunaTartare\_7:

(Start: 65 @2413 has 25 MA's), (Start: 70 @2404 has 4 MA's), (72, 2398), (Start: 75 @2371 has 11 MA's), (82, 2317), (85, 2293), (89, 2263), (90, 2260), (91, 2257), (97, 2239), (101, 2200), (112, 2146), (118, 2128), (126, 2077), (128, 2062), (129, 2050), (156, 1930), (160, 1918), (172, 1861), (175, 1846),

Gene: TwoPeat\_85 Start: 49196, Stop: 48633, Start Num: 65

Candidate Starts for TwoPeat\_85:

(Start: 45 @49220 has 6 MA's), (Start: 57 @49202 has 24 MA's), (Start: 65 @49196 has 25 MA's), (Start: 76 @49127 has 1 MA's), (78, 49118), (119, 48908), (121, 48896), (128, 48851), (133, 48818), (174, 48650),

Gene: U2\_78 Start: 49972, Stop: 49301, Start Num: 61

Candidate Starts for U2\_78:

(17, 50116), (22, 50086), (Start: 61 @49972 has 15 MA's), (Start: 65 @49966 has 25 MA's), (Start: 76 @49897 has 1 MA's), (78, 49888), (84, 49846), (97, 49795), (101, 49756), (118, 49669), (119, 49660), (126, 49618), (128, 49603), (131, 49588), (148, 49516), (161, 49468), (172, 49417), (173, 49411), (176, 49396), (182, 49333),

Gene: VasuNzinga\_32 Start: 9605, Stop: 8955, Start Num: 58

Candidate Starts for VasuNzinga\_32:

(7, 9869), (10, 9791), (12, 9767), (34, 9641), (Start: 58 @9605 has 16 MA's), (66, 9593), (69, 9587), (Start: 76 @9527 has 1 MA's), (84, 9476), (101, 9386), (110, 9341), (128, 9239), (137, 9188), (142, 9176), (160, 9119), (161, 9116), (172, 9068), (175, 9053),

Gene: Wakanda\_7 Start: 3176, Stop: 2532, Start Num: 65

Candidate Starts for Wakanda\_7:

(Start: 65 @3176 has 25 MA's), (Start: 75 @3134 has 11 MA's), (86, 3047), (111, 2924), (112, 2915), (126, 2846), (128, 2831), (138, 2777), (146, 2741), (156, 2699), (160, 2687), (172, 2630), (175, 2615), (181, 2552),

Gene: Wanda\_121 Start: 65651, Stop: 66274, Start Num: 57

Candidate Starts for Wanda\_121:

(Start: 57 @65651 has 24 MA's), (Start: 68 @65660 has 5 MA's), (Start: 74 @65696 has 1 MA's), (78, 65732), (87, 65786), (154, 66098), (164, 66128), (166, 66134), (167, 66137), (172, 66176), (175, 66191),

Gene: Wheeler\_92 Start: 52122, Stop: 51451, Start Num: 61

Candidate Starts for Wheeler\_92:

(17, 52266), (22, 52236), (Start: 61 @52122 has 15 MA's), (Start: 65 @52116 has 25 MA's), (Start: 76 @52047 has 1 MA's), (78, 52038), (84, 51996), (101, 51906), (118, 51819), (119, 51810), (126, 51768), (128, 51753), (131, 51738), (148, 51666), (161, 51618), (172, 51567), (173, 51561), (176, 51546), (182, 51483),

Gene: WilliamBoone\_173 Start: 85461, Stop: 84754, Start Num: 43

Candidate Starts for WilliamBoone\_173:

(Start: 43 @85461 has 3 MA's), (Start: 75 @85383 has 11 MA's), (Start: 76 @85356 has 1 MA's), (78, 85347), (101, 85209), (108, 85176), (113, 85146), (119, 85122), (124, 85095), (128, 85065), (131, 85050), (161, 84927), (172, 84876), (182, 84792),

Gene: Yakult\_45 Start: 31564, Stop: 30911, Start Num: 54

Candidate Starts for Yakult\_45:

(Start: 54 @31564 has 40 MA's), (Start: 77 @31483 has 2 MA's), (101, 31345), (109, 31300), (115, 31270), (119, 31252), (121, 31240), (126, 31210), (128, 31195), (131, 31180), (134, 31156), (139, 31141), (152, 31087), (161, 31060), (172, 31009), (182, 30925), (184, 30916),

Gene: Yeezus\_75 Start: 49753, Stop: 49052, Start Num: 54

Candidate Starts for Yeezus\_75:

(20, 49867), (25, 49849), (30, 49819), (38, 49801), (Start: 45 @49771 has 6 MA's), (47, 49765), (Start: 53 @49756 has 4 MA's), (Start: 54 @49753 has 40 MA's), (Start: 76 @49669 has 1 MA's), (86, 49603), (87, 49600), (113, 49432), (121, 49396), (128, 49351), (131, 49336), (132, 49333), (172, 49159), (173, 49153), (182, 49075), (184, 49066), (188, 49057),

Gene: Zeeculate\_84 Start: 50762, Stop: 50082, Start Num: 54

Candidate Starts for Zeeculate\_84:

(8, 51002), (Start: 54 @50762 has 40 MA's), (Start: 68 @50744 has 5 MA's), (Start: 77 @50678 has 2 MA's), (78, 50672), (88, 50606), (97, 50579), (101, 50540), (112, 50471), (119, 50444), (121, 50432), (126, 50402), (128, 50387), (131, 50372), (161, 50249), (172, 50198), (173, 50192), (176, 50177), (182, 50114),

Gene: Zelink\_116 Start: 68196, Stop: 68843, Start Num: 57

Candidate Starts for Zelink\_116:

(Start: 57 @68196 has 24 MA's), (Start: 68 @68205 has 5 MA's), (Start: 75 @68241 has 11 MA's), (Start: 77 @68271 has 2 MA's), (78, 68277), (93, 68352), (113, 68475), (125, 68538), (128, 68556), (135, 68601), (161, 68691), (172, 68742),

Gene: Zephyr\_86 Start: 49855, Stop: 49178, Start Num: 36

Candidate Starts for Zephyr\_86:

(Start: 36 @49855 has 4 MA's), (Start: 76 @49774 has 1 MA's), (78, 49765), (97, 49672), (101, 49633), (118, 49546), (119, 49537), (121, 49525), (126, 49495), (128, 49480), (131, 49465), (148, 49393), (161, 49345), (172, 49294), (173, 49288), (176, 49273), (182, 49210),