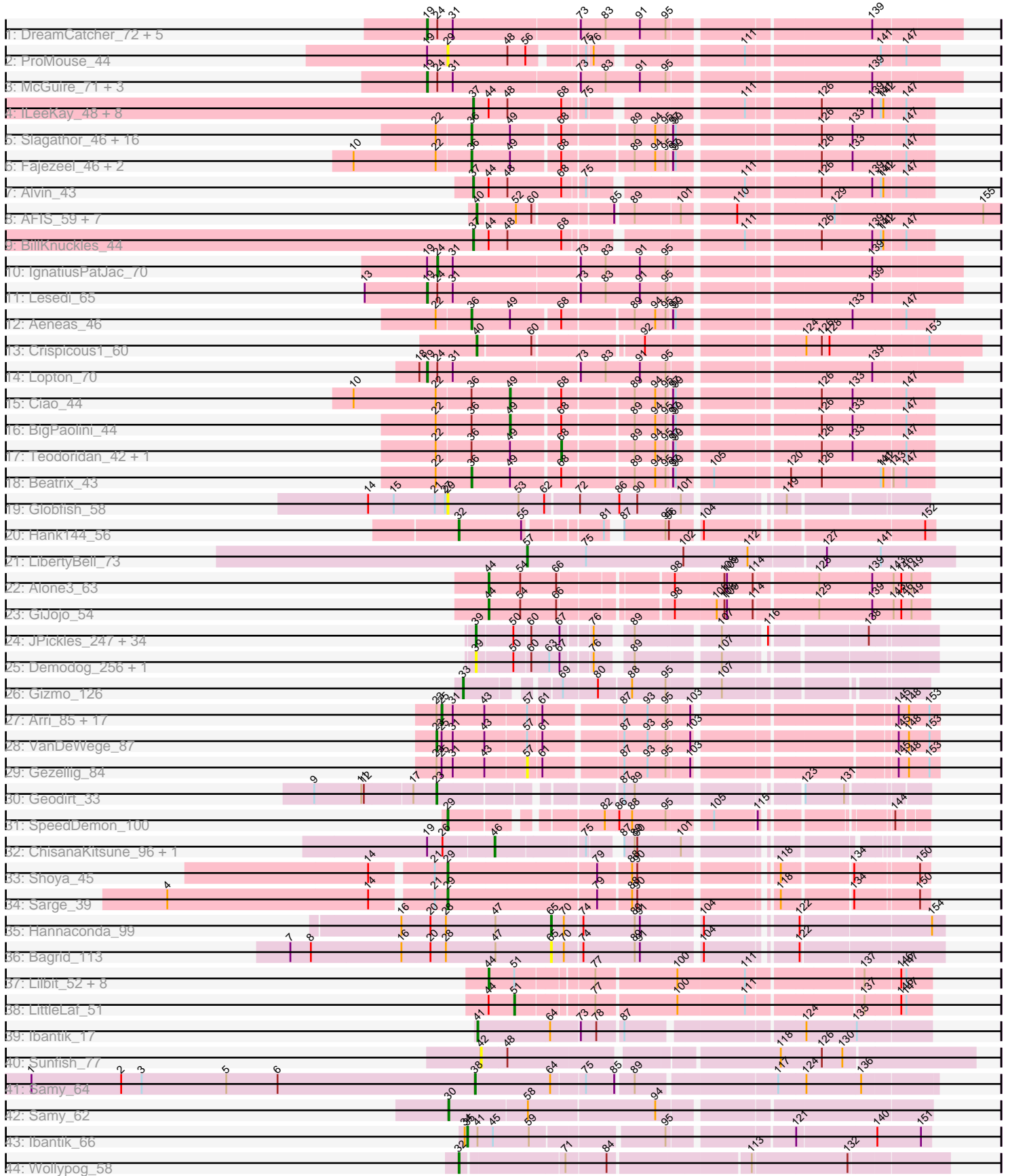


Pham 196344



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 196344 Report

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

Pham number 196344 has 147 members, 13 are drafts.

Phages represented in each track:

- Track 1 : DreamCatcher\_72, GrecoEtereo\_71, AFIS\_66, Snazzy\_68, SarFire\_70, Thor\_70
- Track 2 : ProMouse\_44
- Track 3 : McGuire\_71, BluSpix\_68, Ichabod\_74, Squee\_73
- Track 4 : ILeeKay\_48, Seanderson\_46, Fushigi\_42, Trouble\_45, BluSpix\_41, IgnatiusPatJac\_43, Petruccio\_44, Ajay\_44, Kykar\_44
- Track 5 : Slagathor\_46, Naira\_45, Marge\_44, StrongArm\_43, Eyeball\_45, Bexan\_42, Dexes\_44, TheloniousMonk\_45, Fenn\_45, Rajelicia\_45, Arcanine\_45, Niza\_46, Bones\_44, Licorice\_47, Ruotula\_47, Sagefire\_47, Smairt\_46
- Track 6 : Fajezeel\_46, Greg\_46, Pippin\_46
- Track 7 : Alvin\_43
- Track 8 : AFIS\_59, NEHalo\_60, Moose\_64, SwissCheese\_66, GageAP\_64, Forsytheast\_64, Bruns\_64, SpikeBT\_61
- Track 9 : BillKnuckles\_44
- Track 10 : IgnatiusPatJac\_70
- Track 11 : Lesedi\_65
- Track 12 : Aeneas\_46
- Track 13 : Crispicous1\_60
- Track 14 : Lopton\_70
- Track 15 : Ciao\_44
- Track 16 : BigPaolini\_44
- Track 17 : Teodoridan\_42, Ringer\_45
- Track 18 : Beatrix\_43
- Track 19 : Globfish\_58
- Track 20 : Hank144\_56
- Track 21 : LibertyBell\_73
- Track 22 : Alone3\_63
- Track 23 : GiJojo\_54
- Track 24 : JPickles\_247, StubbySaigey\_256, Darko\_249, Blackbrain\_248, Maby2021\_250, Issimir\_243, TinyTim\_248, Erdmann\_251, Cactojaque\_244, Ading\_252, Shrimp\_252, Gizmo\_255, Chargie21\_247, Trinitium\_246, ZygoTaiga\_246, Basquiat\_247, Yucca\_250, Specks\_254, Bread\_246, Astraea\_245, McGee\_251, Janiyra\_253, Bonray\_252, ErnieJ\_243, BananaFence\_247, Salacia\_251, FoxtrotP1\_248, Morizzled23\_247, Lee7\_249, PurduePete\_250, FudgeTart\_245, Asterius\_245, SrishMeg2525\_247, EmToTheThree\_250, Teardrop\_248
- Track 25 : Demodog\_256, Concombre\_255

- Track 26 : Gizmo\_126
- Track 27 : Arri\_85, PullumCavea\_83, SmokingBunny\_86, Twister6\_84, Wizard\_80, Fireball\_88, PinkCoffee\_86, TillyBobJoe\_83, Salvador\_85, Portcullis\_85, Savbucketdawg\_80, Evamon\_85, Phlop\_82, KimmyK\_83, RogerDodger\_88, Togo\_85, Valary\_86, Shinji\_84
- Track 28 : VanDeWege\_87
- Track 29 : Gezellig\_84
- Track 30 : Geodirt\_33
- Track 31 : SpeedDemon\_100
- Track 32 : ChisanaKitsune\_96, MintFritos\_94
- Track 33 : Shoya\_45
- Track 34 : Sarge\_39
- Track 35 : Hannaconda\_99
- Track 36 : Bagrid\_113
- Track 37 : Lilbit\_52, Clarkson\_52, Pringar\_51, Blackbeetle\_51, Huphlepuuff\_53, VasuNzinga\_51, Raela\_51, Beelzebub\_55, Poise\_51
- Track 38 : LittleLaf\_51
- Track 39 : Ibantik\_17
- Track 40 : Sunfish\_77
- Track 41 : Samy\_64
- Track 42 : Samy\_62
- Track 43 : Ibantik\_66
- Track 44 : Wollypog\_58

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

The start number called the most often in the published annotations is 39, it was called in 33 of the 134 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Ading\_252, Asterius\_245, Astraea\_245, BananaFence\_247, Basquiat\_247, Blackbrain\_248, Bonray\_252, Bread\_246, Cactojaque\_244, Chargie21\_247, Concombre\_255, Darko\_249, Demodog\_256, EmToTheThree\_250, Erdmann\_251, ErnieJ\_243, FoxtrotP1\_248, FudgeTart\_245, Gizmo\_255, Issimir\_243, JPickles\_247, Janiyra\_253, Lee7\_249, Maby2021\_250, McGee\_251, Morizzled23\_247, PurduePete\_250, Salacia\_251, Shrimp\_252, Specks\_254, SrishMeg2525\_247, StubbySaigey\_256, Teardrop\_248, TinyTim\_248, Trinitium\_246, Yucca\_250, ZygoTaiga\_246,

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

- 

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

- AFIS\_59, AFIS\_66, Aeneas\_46, Ajay\_44, Alone3\_63, Alvin\_43, Arcanine\_45, Arri\_85, Bagrid\_113, Beatrix\_43, Beelzebub\_55, Bexan\_42, BigPaolini\_44, BillKnuckles\_44, Blackbeetle\_51, BluSpix\_41, BluSpix\_68, Bones\_44, Bruns\_64, ChisanaKitsune\_96, Ciao\_44, Clarkson\_52, Crispicous1\_60, Dexes\_44, DreamCatcher\_72, Evamon\_85, Eyeball\_45, Fajezeel\_46, Fenn\_45, Fireball\_88, Forsytheast\_64, Fushigi\_42, GageAP\_64, Geodirt\_33, Gezellig\_84, GiJojo\_54, Gizmo\_126, Globfish\_58, GrecoEtereo\_71, Greg\_46, Hank144\_56, Hannaconda\_99,

Huphlepuuff\_53, ILeeKay\_48, Ibantik\_17, Ibantik\_66, Ichabod\_74, IgnatiusPatJac\_43, IgnatiusPatJac\_70, KimmyK\_83, Kykar\_44, Lesedi\_65, LibertyBell\_73, Licorice\_47, Lilbit\_52, LittleLaf\_51, Lopton\_70, Marge\_44, McGuire\_71, MintFritos\_94, Moose\_64, NEHalo\_60, Naira\_45, Niza\_46, Petruchio\_44, Phlop\_82, PinkCoffee\_86, Pippin\_46, Poise\_51, Portcullis\_85, Pringar\_51, ProMouse\_44, PullumCavea\_83, Raela\_51, Rajelicia\_45, Ringer\_45, RogerDodger\_88, Ruotula\_47, Sagefire\_47, Salvador\_85, Samy\_62, Samy\_64, SarFire\_70, Sarge\_39, Savbucketdawg\_80, Seanderson\_46, Shinji\_84, Shoya\_45, Slagathor\_46, Smairt\_46, SmokingBunny\_86, Snazzy\_68, SpeedDemon\_100, SpikeBT\_61, Squee\_73, StrongArm\_43, Sunfish\_77, SwissCheese\_66, Teodoridan\_42, TheloniousMonk\_45, Thor\_70, TillyBobJoe\_83, Togo\_85, Trouble\_45, Twister6\_84, Valary\_86, VanDeWege\_87, VasuNzinga\_51, Wizard\_80, Wollypog\_58,

### Summary by start number:

#### Start 19:

- Found in 16 of 147 ( 10.9% ) of genes in pham
- Manual Annotations of this start: 12 of 134
- Called 75.0% of time when present
- Phage (with cluster) where this start called: AFIS\_66 (A1), BluSpix\_68 (A1), DreamCatcher\_72 (A1), GrecoEtereo\_71 (A1), Ichabod\_74 (A1), Lesedi\_65 (A1), Lopton\_70 (A1), McGuire\_71 (A1), SarFire\_70 (A1), Snazzy\_68 (A1), Squee\_73 (A1), Thor\_70 (A1),

#### Start 23:

- Found in 21 of 147 ( 14.3% ) of genes in pham
- Manual Annotations of this start: 2 of 134
- Called 9.5% of time when present
- Phage (with cluster) where this start called: Geodirt\_33 (DE1), VanDeWege\_87 (DC1),

#### Start 24:

- Found in 13 of 147 ( 8.8% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 7.7% of time when present
- Phage (with cluster) where this start called: IgnatiusPatJac\_70 (A1),

#### Start 25:

- Found in 20 of 147 ( 13.6% ) of genes in pham
- Manual Annotations of this start: 17 of 134
- Called 90.0% of time when present
- Phage (with cluster) where this start called: Arri\_85 (DC1), Evamon\_85 (DC1), Fireball\_88 (DC1), KimmyK\_83 (DC1), Phlop\_82 (DC1), PinkCoffee\_86 (DC1), Portcullis\_85 (DC1), PullumCavea\_83 (DC1), RogerDodger\_88 (DC1), Salvador\_85 (DC1), Savbucketdawg\_80 (DC1), Shinji\_84 (DC1), SmokingBunny\_86 (DC1), TillyBobJoe\_83 (DC1), Togo\_85 (DC1), Twister6\_84 (DC1), Valary\_86 (DC1), Wizard\_80 (DC1),

#### Start 29:

- Found in 5 of 147 ( 3.4% ) of genes in pham
- Manual Annotations of this start: 3 of 134
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Globfish\_58 (AY), ProMouse\_44 (A1), Sarge\_39 (FB), Shoya\_45 (FB), SpeedDemon\_100 (DL),

#### Start 30:

- Found in 1 of 147 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Samy\_62 (singleton),

#### Start 32:

- Found in 2 of 147 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hank144\_56 (BD2), Wollypog\_58 (singleton),

#### Start 33:

- Found in 1 of 147 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gizmo\_126 (C1),

#### Start 35:

- Found in 1 of 147 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ibantik\_66 (singleton),

#### Start 36:

- Found in 26 of 147 ( 17.7% ) of genes in pham
- Manual Annotations of this start: 22 of 134
- Called 84.6% of time when present
- Phage (with cluster) where this start called: Aeneas\_46 (A1), Arcanine\_45 (A1), Beatrix\_43 (A1), Bexan\_42 (A1), Bones\_44 (A1), Dexes\_44 (A1), Eyeball\_45 (A1), Fajezeel\_46 (A1), Fenn\_45 (A1), Greg\_46 (A1), Licorice\_47 (A1), Marge\_44 (A1), Naira\_45 (A1), Niza\_46 (A1), Pippin\_46 (A1), Rajelicia\_45 (A1), Ruotula\_47 (A1), Sagefire\_47 (A1), Slagathor\_46 (A1), Smairt\_46 (A1), StrongArm\_43 (A1), TheloniousMonk\_45 (A1),

#### Start 37:

- Found in 11 of 147 ( 7.5% ) of genes in pham
- Manual Annotations of this start: 11 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ajay\_44 (A1), Alvin\_43 (A1), BillKnuckles\_44 (A1), BluSpix\_41 (A1), Fushigi\_42 (A1), ILeeKay\_48 (A1), IgnatiusPatJac\_43 (A1), Kykar\_44 (A1), Petruccio\_44 (A1), Seanderson\_46 (A1), Trouble\_45 (A1),

#### Start 38:

- Found in 1 of 147 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Samy\_64 (singleton),

Start 39:

- Found in 37 of 147 ( 25.2% ) of genes in pham
- Manual Annotations of this start: 33 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ading\_252 (C1), Asterius\_245 (C1), Astraea\_245 (C1), BananaFence\_247 (C1), Basquiat\_247 (C1), Blackbrain\_248 (C1), Bonray\_252 (C1), Bread\_246 (C1), Cactojaque\_244 (C1), Chargie21\_247 (C1), Concombre\_255 (C1), Darko\_249 (C1), Demodog\_256 (C1), EmToTheThree\_250 (C1), Erdmann\_251 (C1), ErnieJ\_243 (C1), FoxtrotP1\_248 (C1), FudgeTart\_245 (C1), Gizmo\_255 (C1), Issimir\_243 (C1), JPickles\_247 (C1), Janiyra\_253 (C1), Lee7\_249 (C1), Maby2021\_250 (C1), McGee\_251 (C1), Morizzled23\_247 (C1), PurduePete\_250 (C1), Salacia\_251 (C1), Shrimp\_252 (C1), Specks\_254 (C1), SrishMeg2525\_247 (C1), StubbySaigey\_256 (C1), Teardrop\_248 (C1), TinyTim\_248 (C1), Trinitium\_246 (C1), Yucca\_250 (C1), ZygoTaiga\_246 (C1),

Start 40:

- Found in 9 of 147 ( 6.1% ) of genes in pham
- Manual Annotations of this start: 9 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AFIS\_59 (A1), Bruns\_64 (A1), Crispicous1\_60 (A1), Forsytheast\_64 (A1), GageAP\_64 (A1), Moose\_64 (A1), NEHalo\_60 (A1), SpikeBT\_61 (A1), SwissCheese\_66 (A1),

Start 41:

- Found in 2 of 147 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Ibantik\_17 (singleton),

Start 42:

- Found in 1 of 147 ( 0.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sunfish\_77 (singleton),

Start 44:

- Found in 23 of 147 ( 15.6% ) of genes in pham
- Manual Annotations of this start: 10 of 134
- Called 47.8% of time when present
- Phage (with cluster) where this start called: Alone3\_63 (BS), Beelzebub\_55 (S), Blackbeetle\_51 (S), Clarkson\_52 (S), GiJojo\_54 (BS), Huphlepuuff\_53 (S), Lilbit\_52 (S), Poise\_51 (S), Pringar\_51 (S), Raela\_51 (S), VasuNzinga\_51 (S),

Start 46:

- Found in 2 of 147 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ChisanaKitsune\_96 (DQ), MintFritos\_94 (DQ),

Start 49:

- Found in 26 of 147 ( 17.7% ) of genes in pham

- Manual Annotations of this start: 2 of 134
- Called 7.7% of time when present
- Phage (with cluster) where this start called: BigPaolini\_44 (A1), Ciao\_44 (A1),

Start 51:

- Found in 10 of 147 ( 6.8% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 10.0% of time when present
- Phage (with cluster) where this start called: LittleLaf\_51 (S),

Start 57:

- Found in 21 of 147 ( 14.3% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 9.5% of time when present
- Phage (with cluster) where this start called: Gezellig\_84 (DC1), LibertyBell\_73 (B13),

Start 65:

- Found in 2 of 147 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bagrid\_113 (J), Hannaconda\_99 (J),

Start 68:

- Found in 37 of 147 ( 25.2% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 5.4% of time when present
- Phage (with cluster) where this start called: Ringer\_45 (A1), Teodoridan\_42 (A1),

### **Summary by clusters:**

There are 14 clusters represented in this pham: singleton, J, DE1, BD2, FB, A1, S, BS, AY, C1, DQ, B13, DL, DC1,

Info for manual annotations of cluster A1:

- Start number 19 was manually annotated 12 times for cluster A1.
- Start number 24 was manually annotated 1 time for cluster A1.
- Start number 36 was manually annotated 22 times for cluster A1.
- Start number 37 was manually annotated 11 times for cluster A1.
- Start number 40 was manually annotated 9 times for cluster A1.
- Start number 49 was manually annotated 2 times for cluster A1.
- Start number 68 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster BD2:

- Start number 32 was manually annotated 1 time for cluster BD2.

Info for manual annotations of cluster B13:

- Start number 57 was manually annotated 1 time for cluster B13.

Info for manual annotations of cluster BS:

- Start number 44 was manually annotated 2 times for cluster BS.

Info for manual annotations of cluster C1:

- Start number 33 was manually annotated 1 time for cluster C1.
- Start number 39 was manually annotated 33 times for cluster C1.

Info for manual annotations of cluster DC1:

- Start number 23 was manually annotated 1 time for cluster DC1.
- Start number 25 was manually annotated 17 times for cluster DC1.

Info for manual annotations of cluster DE1:

- Start number 23 was manually annotated 1 time for cluster DE1.

Info for manual annotations of cluster DL:

- Start number 29 was manually annotated 1 time for cluster DL.

Info for manual annotations of cluster DQ:

- Start number 46 was manually annotated 1 time for cluster DQ.

Info for manual annotations of cluster FB:

- Start number 29 was manually annotated 2 times for cluster FB.

Info for manual annotations of cluster J:

- Start number 65 was manually annotated 1 time for cluster J.

Info for manual annotations of cluster S:

- Start number 44 was manually annotated 8 times for cluster S.
- Start number 51 was manually annotated 1 time for cluster S.

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

Gene: AFIS\_59 Start: 40536, Stop: 39979, Start Num: 40

Candidate Starts for AFIS\_59:

(Start: 40 @40536 has 9 MA's), (52, 40494), (60, 40476), (85, 40392), (89, 40374), (101, 40323), (110, 40269), (129, 40167), (155, 39999),

Gene: AFIS\_66 Start: 43840, Stop: 43262, Start Num: 19

Candidate Starts for AFIS\_66:

(Start: 19 @43840 has 12 MA's), (Start: 24 @43828 has 1 MA's), (31, 43810), (73, 43669), (83, 43642), (91, 43603), (95, 43573), (139, 43360),

Gene: Ading\_252 Start: 144356, Stop: 144805, Start Num: 39

Candidate Starts for Ading\_252:

(Start: 39 @144356 has 33 MA's), (50, 144395), (60, 144413), (67, 144446), (76, 144473), (89, 144506), (107, 144593), (116, 144635), (138, 144734),

Gene: Aeneas\_46 Start: 33206, Stop: 32721, Start Num: 36

Candidate Starts for Aeneas\_46:

(22, 33245), (Start: 36 @33206 has 22 MA's), (Start: 49 @33164 has 2 MA's), (Start: 68 @33110 has 1 MA's), (89, 33035), (94, 33011), (95, 32999), (97, 32993), (99, 32990), (133, 32807), (147, 32750),

Gene: Ajay\_44 Start: 32810, Stop: 32334, Start Num: 37

Candidate Starts for Ajay\_44:



(Start: 37 @32810 has 11 MA's), (Start: 44 @32792 has 10 MA's), (48, 32771), (Start: 68 @32708 has 1 MA's), (75, 32687), (111, 32534), (126, 32456), (139, 32399), (141, 32390), (142, 32387), (147, 32363),

Gene: Alone3\_63 Start: 21624, Stop: 22094, Start Num: 44

Candidate Starts for Alone3\_63:

(Start: 44 @21624 has 10 MA's), (54, 21660), (66, 21702), (98, 21816), (108, 21870), (109, 21873), (114, 21903), (125, 21969), (139, 22029), (143, 22053), (146, 22062), (149, 22074),

Gene: Alvin\_43 Start: 33331, Stop: 32855, Start Num: 37

Candidate Starts for Alvin\_43:

(Start: 37 @33331 has 11 MA's), (Start: 44 @33313 has 10 MA's), (48, 33292), (Start: 68 @33229 has 1 MA's), (75, 33208), (111, 33055), (126, 32977), (139, 32920), (141, 32911), (142, 32908), (147, 32884),

Gene: Arcanine\_45 Start: 32773, Stop: 32288, Start Num: 36

Candidate Starts for Arcanine\_45:

(22, 32812), (Start: 36 @32773 has 22 MA's), (Start: 49 @32731 has 2 MA's), (Start: 68 @32677 has 1 MA's), (89, 32602), (94, 32578), (95, 32566), (97, 32560), (99, 32557), (126, 32410), (133, 32374), (147, 32317),

Gene: Arri\_85 Start: 56022, Stop: 55507, Start Num: 25

Candidate Starts for Arri\_85:

(Start: 23 @56028 has 2 MA's), (Start: 25 @56022 has 17 MA's), (31, 56010), (43, 55974), (Start: 57 @55929 has 1 MA's), (61, 55914), (87, 55836), (93, 55809), (95, 55788), (103, 55764), (145, 55554), (148, 55542), (153, 55518),

Gene: Asterius\_245 Start: 142368, Stop: 142817, Start Num: 39

Candidate Starts for Asterius\_245:

(Start: 39 @142368 has 33 MA's), (50, 142407), (60, 142425), (67, 142458), (76, 142485), (89, 142518), (107, 142605), (116, 142647), (138, 142746),

Gene: Astraea\_245 Start: 141563, Stop: 142012, Start Num: 39

Candidate Starts for Astraea\_245:

(Start: 39 @141563 has 33 MA's), (50, 141602), (60, 141620), (67, 141653), (76, 141680), (89, 141713), (107, 141800), (116, 141842), (138, 141941),

Gene: Bagrid\_113 Start: 63671, Stop: 64075, Start Num: 65

Candidate Starts for Bagrid\_113:

(7, 63371), (8, 63395), (16, 63500), (20, 63533), (28, 63551), (47, 63608), (Start: 65 @63671 has 1 MA's), (70, 63686), (74, 63704), (89, 63761), (91, 63767), (104, 63827), (122, 63920),

Gene: BananaFence\_247 Start: 142192, Stop: 142641, Start Num: 39

Candidate Starts for BananaFence\_247:

(Start: 39 @142192 has 33 MA's), (50, 142231), (60, 142249), (67, 142282), (76, 142309), (89, 142342), (107, 142429), (116, 142471), (138, 142570),

Gene: Basquiat\_247 Start: 140478, Stop: 140927, Start Num: 39

Candidate Starts for Basquiat\_247:

(Start: 39 @140478 has 33 MA's), (50, 140517), (60, 140535), (67, 140568), (76, 140595), (89, 140628), (107, 140715), (116, 140757), (138, 140856),

Gene: Beatrix\_43 Start: 34176, Stop: 33691, Start Num: 36

Candidate Starts for Beatrix\_43:

(22, 34215), (Start: 36 @34176 has 22 MA's), (Start: 49 @34134 has 2 MA's), (Start: 68 @34080 has 1 MA's), (89, 34005), (94, 33981), (95, 33969), (97, 33963), (99, 33960), (105, 33927), (120, 33846), (126, 33813), (141, 33747), (142, 33744), (143, 33735), (147, 33720),

Gene: Beelzebub\_55 Start: 29418, Stop: 29891, Start Num: 44

Candidate Starts for Beelzebub\_55:

(Start: 44 @29418 has 10 MA's), (Start: 51 @29448 has 1 MA's), (77, 29529), (100, 29619), (111, 29694), (137, 29817), (146, 29856), (147, 29862),

Gene: Bexan\_42 Start: 33854, Stop: 33369, Start Num: 36

Candidate Starts for Bexan\_42:

(22, 33893), (Start: 36 @33854 has 22 MA's), (Start: 49 @33812 has 2 MA's), (Start: 68 @33758 has 1 MA's), (89, 33683), (94, 33659), (95, 33647), (97, 33641), (99, 33638), (126, 33491), (133, 33455), (147, 33398),

Gene: BigPaolini\_44 Start: 31801, Stop: 31358, Start Num: 49

Candidate Starts for BigPaolini\_44:

(22, 31882), (Start: 36 @31843 has 22 MA's), (Start: 49 @31801 has 2 MA's), (Start: 68 @31747 has 1 MA's), (89, 31672), (94, 31648), (95, 31636), (97, 31630), (99, 31627), (126, 31480), (133, 31444), (147, 31387),

Gene: BillKnuckles\_44 Start: 33515, Stop: 33039, Start Num: 37

Candidate Starts for BillKnuckles\_44:

(Start: 37 @33515 has 11 MA's), (Start: 44 @33497 has 10 MA's), (48, 33476), (Start: 68 @33413 has 1 MA's), (111, 33239), (126, 33161), (139, 33104), (141, 33095), (142, 33092), (147, 33068),

Gene: Blackbeetle\_51 Start: 28464, Stop: 28937, Start Num: 44

Candidate Starts for Blackbeetle\_51:

(Start: 44 @28464 has 10 MA's), (Start: 51 @28494 has 1 MA's), (77, 28575), (100, 28665), (111, 28740), (137, 28863), (146, 28902), (147, 28908),

Gene: Blackbrain\_248 Start: 142255, Stop: 142704, Start Num: 39

Candidate Starts for Blackbrain\_248:

(Start: 39 @142255 has 33 MA's), (50, 142294), (60, 142312), (67, 142345), (76, 142372), (89, 142405), (107, 142492), (116, 142534), (138, 142633),

Gene: BluSpix\_68 Start: 40281, Stop: 39703, Start Num: 19

Candidate Starts for BluSpix\_68:

(Start: 19 @40281 has 12 MA's), (Start: 24 @40269 has 1 MA's), (31, 40251), (73, 40110), (83, 40083), (91, 40044), (95, 40014), (139, 39801),

Gene: BluSpix\_41 Start: 28937, Stop: 28461, Start Num: 37

Candidate Starts for BluSpix\_41:

(Start: 37 @28937 has 11 MA's), (Start: 44 @28919 has 10 MA's), (48, 28898), (Start: 68 @28835 has 1 MA's), (75, 28814), (111, 28661), (126, 28583), (139, 28526), (141, 28517), (142, 28514), (147, 28490),

Gene: Bones\_44 Start: 33339, Stop: 32854, Start Num: 36

Candidate Starts for Bones\_44:

(22, 33378), (Start: 36 @33339 has 22 MA's), (Start: 49 @33297 has 2 MA's), (Start: 68 @33243 has 1 MA's), (89, 33168), (94, 33144), (95, 33132), (97, 33126), (99, 33123), (126, 32976), (133, 32940), (147, 32883),

Gene: Bonray\_252 Start: 144055, Stop: 144504, Start Num: 39

Candidate Starts for Bonray\_252:

(Start: 39 @144055 has 33 MA's), (50, 144094), (60, 144112), (67, 144145), (76, 144172), (89, 144205), (107, 144292), (116, 144334), (138, 144433),

Gene: Bread\_246 Start: 142022, Stop: 142471, Start Num: 39

Candidate Starts for Bread\_246:

(Start: 39 @142022 has 33 MA's), (50, 142061), (60, 142079), (67, 142112), (76, 142139), (89, 142172), (107, 142259), (116, 142301), (138, 142400),

Gene: Bruns\_64 Start: 41012, Stop: 40455, Start Num: 40

Candidate Starts for Bruns\_64:

(Start: 40 @41012 has 9 MA's), (52, 40970), (60, 40952), (85, 40868), (89, 40850), (101, 40799), (110, 40745), (129, 40643), (155, 40475),

Gene: Cactojaque\_244 Start: 141201, Stop: 141650, Start Num: 39

Candidate Starts for Cactojaque\_244:

(Start: 39 @141201 has 33 MA's), (50, 141240), (60, 141258), (67, 141291), (76, 141318), (89, 141351), (107, 141438), (116, 141480), (138, 141579),

Gene: Chargie21\_247 Start: 140478, Stop: 140927, Start Num: 39

Candidate Starts for Chargie21\_247:

(Start: 39 @140478 has 33 MA's), (50, 140517), (60, 140535), (67, 140568), (76, 140595), (89, 140628), (107, 140715), (116, 140757), (138, 140856),

Gene: ChisanaKitsune\_96 Start: 72440, Stop: 72853, Start Num: 46

Candidate Starts for ChisanaKitsune\_96:

(Start: 19 @72365 has 12 MA's), (26, 72383), (Start: 46 @72440 has 1 MA's), (75, 72536), (87, 72563), (89, 72575), (90, 72578), (101, 72626),

Gene: Ciao\_44 Start: 32944, Stop: 32501, Start Num: 49

Candidate Starts for Ciao\_44:

(10, 33121), (22, 33025), (Start: 36 @32986 has 22 MA's), (Start: 49 @32944 has 2 MA's), (Start: 68 @32890 has 1 MA's), (89, 32815), (94, 32791), (95, 32779), (97, 32773), (99, 32770), (126, 32623), (133, 32587), (147, 32530),

Gene: Clarkson\_52 Start: 29146, Stop: 29619, Start Num: 44

Candidate Starts for Clarkson\_52:

(Start: 44 @29146 has 10 MA's), (Start: 51 @29176 has 1 MA's), (77, 29257), (100, 29347), (111, 29422), (137, 29545), (146, 29584), (147, 29590),

Gene: Concombres\_255 Start: 144217, Stop: 144666, Start Num: 39

Candidate Starts for Concombres\_255:

(Start: 39 @144217 has 33 MA's), (50, 144256), (60, 144274), (63, 144295), (67, 144307), (76, 144334), (89, 144367), (107, 144454),

Gene: Crispicous1\_60 Start: 40522, Stop: 39992, Start Num: 40

Candidate Starts for Crispicous1\_60:

(Start: 40 @40522 has 9 MA's), (60, 40462), (92, 40348), (124, 40186), (126, 40168), (128, 40159), (153, 40051),

Gene: Darko\_249 Start: 142196, Stop: 142645, Start Num: 39

Candidate Starts for Darko\_249:

(Start: 39 @142196 has 33 MA's), (50, 142235), (60, 142253), (67, 142286), (76, 142313), (89, 142346), (107, 142433), (116, 142475), (138, 142574),

Gene: Demodog\_256 Start: 144227, Stop: 144676, Start Num: 39

Candidate Starts for Demodog\_256:

(Start: 39 @144227 has 33 MA's), (50, 144266), (60, 144284), (63, 144305), (67, 144317), (76, 144344), (89, 144377), (107, 144464),

Gene: Dexes\_44 Start: 33602, Stop: 33117, Start Num: 36

Candidate Starts for Dexes\_44:

(22, 33641), (Start: 36 @33602 has 22 MA's), (Start: 49 @33560 has 2 MA's), (Start: 68 @33506 has 1 MA's), (89, 33431), (94, 33407), (95, 33395), (97, 33389), (99, 33386), (126, 33239), (133, 33203), (147, 33146),

Gene: DreamCatcher\_72 Start: 44845, Stop: 44267, Start Num: 19

Candidate Starts for DreamCatcher\_72:

(Start: 19 @44845 has 12 MA's), (Start: 24 @44833 has 1 MA's), (31, 44815), (73, 44674), (83, 44647), (91, 44608), (95, 44578), (139, 44365),

Gene: EmToTheThree\_250 Start: 143104, Stop: 143553, Start Num: 39

Candidate Starts for EmToTheThree\_250:

(Start: 39 @143104 has 33 MA's), (50, 143143), (60, 143161), (67, 143194), (76, 143221), (89, 143254), (107, 143341), (116, 143383), (138, 143482),

Gene: Erdmann\_251 Start: 143072, Stop: 143521, Start Num: 39

Candidate Starts for Erdmann\_251:

(Start: 39 @143072 has 33 MA's), (50, 143111), (60, 143129), (67, 143162), (76, 143189), (89, 143222), (107, 143309), (116, 143351), (138, 143450),

Gene: ErnieJ\_243 Start: 139900, Stop: 140349, Start Num: 39

Candidate Starts for ErnieJ\_243:

(Start: 39 @139900 has 33 MA's), (50, 139939), (60, 139957), (67, 139990), (76, 140017), (89, 140050), (107, 140137), (116, 140179), (138, 140278),

Gene: Evamon\_85 Start: 55834, Stop: 55319, Start Num: 25

Candidate Starts for Evamon\_85:

(Start: 23 @55840 has 2 MA's), (Start: 25 @55834 has 17 MA's), (31, 55822), (43, 55786), (Start: 57 @55741 has 1 MA's), (61, 55726), (87, 55648), (93, 55621), (95, 55600), (103, 55576), (145, 55366), (148, 55354), (153, 55330),

Gene: Eyeball\_45 Start: 33249, Stop: 32764, Start Num: 36

Candidate Starts for Eyeball\_45:

(22, 33288), (Start: 36 @33249 has 22 MA's), (Start: 49 @33207 has 2 MA's), (Start: 68 @33153 has 1 MA's), (89, 33078), (94, 33054), (95, 33042), (97, 33036), (99, 33033), (126, 32886), (133, 32850), (147, 32793),

Gene: Fajezeel\_46 Start: 33359, Stop: 32874, Start Num: 36

Candidate Starts for Fajezeel\_46:

(10, 33494), (22, 33398), (Start: 36 @33359 has 22 MA's), (Start: 49 @33317 has 2 MA's), (Start: 68 @33263 has 1 MA's), (89, 33188), (94, 33164), (95, 33152), (97, 33146), (99, 33143), (126, 32996), (133, 32960), (147, 32903),

Gene: Fenn\_45 Start: 34680, Stop: 34195, Start Num: 36

Candidate Starts for Fenn\_45:

(22, 34719), (Start: 36 @34680 has 22 MA's), (Start: 49 @34638 has 2 MA's), (Start: 68 @34584 has 1 MA's), (89, 34509), (94, 34485), (95, 34473), (97, 34467), (99, 34464), (126, 34317), (133, 34281), (147, 34224),

Gene: Fireball\_88 Start: 56296, Stop: 55781, Start Num: 25

Candidate Starts for Fireball\_88:

(Start: 23 @56302 has 2 MA's), (Start: 25 @56296 has 17 MA's), (31, 56284), (43, 56248), (Start: 57 @56203 has 1 MA's), (61, 56188), (87, 56110), (93, 56083), (95, 56062), (103, 56038), (145, 55828), (148, 55816), (153, 55792),

Gene: Forsytheast\_64 Start: 41180, Stop: 40623, Start Num: 40

Candidate Starts for Forsytheast\_64:

(Start: 40 @41180 has 9 MA's), (52, 41138), (60, 41120), (85, 41036), (89, 41018), (101, 40967), (110, 40913), (129, 40811), (155, 40643),

Gene: FoxtrotP1\_248 Start: 143658, Stop: 144107, Start Num: 39

Candidate Starts for FoxtrotP1\_248:

(Start: 39 @143658 has 33 MA's), (50, 143697), (60, 143715), (67, 143748), (76, 143775), (89, 143808), (107, 143895), (116, 143937), (138, 144036),

Gene: FudgeTart\_245 Start: 142162, Stop: 142611, Start Num: 39

Candidate Starts for FudgeTart\_245:

(Start: 39 @142162 has 33 MA's), (50, 142201), (60, 142219), (67, 142252), (76, 142279), (89, 142312), (107, 142399), (116, 142441), (138, 142540),

Gene: Fushigi\_42 Start: 30914, Stop: 30438, Start Num: 37

Candidate Starts for Fushigi\_42:

(Start: 37 @30914 has 11 MA's), (Start: 44 @30896 has 10 MA's), (48, 30875), (Start: 68 @30812 has 1 MA's), (75, 30791), (111, 30638), (126, 30560), (139, 30503), (141, 30494), (142, 30491), (147, 30467),

Gene: GageAP\_64 Start: 42203, Stop: 41646, Start Num: 40

Candidate Starts for GageAP\_64:

(Start: 40 @42203 has 9 MA's), (52, 42161), (60, 42143), (85, 42059), (89, 42041), (101, 41990), (110, 41936), (129, 41834), (155, 41666),

Gene: Geodirt\_33 Start: 32468, Stop: 31986, Start Num: 23

Candidate Starts for Geodirt\_33:

(9, 32606), (11, 32552), (12, 32549), (17, 32495), (Start: 23 @32468 has 2 MA's), (87, 32285), (89, 32273), (123, 32111), (131, 32066),

Gene: Gezellig\_84 Start: 55587, Stop: 55165, Start Num: 57

Candidate Starts for Gezellig\_84:

(Start: 23 @55686 has 2 MA's), (Start: 25 @55680 has 17 MA's), (31, 55668), (43, 55632), (Start: 57 @55587 has 1 MA's), (61, 55572), (87, 55494), (93, 55467), (95, 55446), (103, 55422), (145, 55212), (148, 55200), (153, 55176),

Gene: GiJojo\_54 Start: 20818, Stop: 21288, Start Num: 44

Candidate Starts for GiJojo\_54:

(Start: 44 @20818 has 10 MA's), (54, 20854), (66, 20896), (98, 21010), (106, 21055), (108, 21064), (109, 21067), (114, 21097), (125, 21163), (139, 21223), (143, 21247), (146, 21256), (149, 21268),

Gene: Gizmo\_126 Start: 66298, Stop: 65843, Start Num: 33

Candidate Starts for Gizmo\_126:

(Start: 33 @66298 has 1 MA's), (69, 66211), (80, 66175), (88, 66139), (95, 66100), (107, 66049),

Gene: Gizmo\_255 Start: 144989, Stop: 145438, Start Num: 39

Candidate Starts for Gizmo\_255:

(Start: 39 @144989 has 33 MA's), (50, 145028), (60, 145046), (67, 145079), (76, 145106), (89, 145139), (107, 145226), (116, 145268), (138, 145367),

Gene: Globfish\_58 Start: 33707, Stop: 34201, Start Num: 29

Candidate Starts for Globfish\_58:

(14, 33614), (15, 33644), (21, 33692), (27, 33704), (Start: 29 @33707 has 3 MA's), (53, 33788), (62, 33818), (72, 33851), (86, 33896), (90, 33917), (101, 33965), (119, 34058),

Gene: GrecoEtereo\_71 Start: 44625, Stop: 44047, Start Num: 19

Candidate Starts for GrecoEtereo\_71:

(Start: 19 @44625 has 12 MA's), (Start: 24 @44613 has 1 MA's), (31, 44595), (73, 44454), (83, 44427), (91, 44388), (95, 44358), (139, 44145),

Gene: Greg\_46 Start: 33359, Stop: 32874, Start Num: 36

Candidate Starts for Greg\_46:

(10, 33494), (22, 33398), (Start: 36 @33359 has 22 MA's), (Start: 49 @33317 has 2 MA's), (Start: 68 @33263 has 1 MA's), (89, 33188), (94, 33164), (95, 33152), (97, 33146), (99, 33143), (126, 32996), (133, 32960), (147, 32903),

Gene: Hank144\_56 Start: 39762, Stop: 39295, Start Num: 32

Candidate Starts for Hank144\_56:

(Start: 32 @39762 has 2 MA's), (55, 39693), (81, 39615), (87, 39609), (95, 39561), (96, 39558), (104, 39531), (152, 39306),

Gene: Hannaconda\_99 Start: 57411, Stop: 57815, Start Num: 65

Candidate Starts for Hannaconda\_99:

(16, 57240), (20, 57273), (28, 57291), (47, 57348), (Start: 65 @57411 has 1 MA's), (70, 57426), (74, 57444), (89, 57501), (91, 57507), (104, 57567), (122, 57660), (154, 57801),

Gene: Huphlepuuff\_53 Start: 28951, Stop: 29424, Start Num: 44

Candidate Starts for Huphlepuuff\_53:

(Start: 44 @28951 has 10 MA's), (Start: 51 @28981 has 1 MA's), (77, 29062), (100, 29152), (111, 29227), (137, 29350), (146, 29389), (147, 29395),

Gene: ILeeKay\_48 Start: 33858, Stop: 33382, Start Num: 37

Candidate Starts for ILeeKay\_48:

(Start: 37 @33858 has 11 MA's), (Start: 44 @33840 has 10 MA's), (48, 33819), (Start: 68 @33756 has 1 MA's), (75, 33735), (111, 33582), (126, 33504), (139, 33447), (141, 33438), (142, 33435), (147, 33411),

Gene: Ibantik\_17 Start: 6683, Stop: 6195, Start Num: 41

Candidate Starts for Ibantik\_17:

(Start: 41 @6683 has 1 MA's), (64, 6599), (73, 6566), (78, 6548), (87, 6521), (124, 6335), (135, 6278),

Gene: Ibantik\_66 Start: 28032, Stop: 28526, Start Num: 35

Candidate Starts for Ibantik\_66:

(34, 28029), (Start: 35 @28032 has 1 MA's), (Start: 41 @28044 has 1 MA's), (45, 28062), (59, 28104), (95, 28245), (121, 28374), (140, 28464), (151, 28515),

Gene: Ichabod\_74 Start: 45654, Stop: 45076, Start Num: 19

Candidate Starts for Ichabod\_74:

(Start: 19 @45654 has 12 MA's), (Start: 24 @45642 has 1 MA's), (31, 45624), (73, 45483), (83, 45456), (91, 45417), (95, 45387), (139, 45174),

Gene: IgnatiusPatJac\_70 Start: 44214, Stop: 43648, Start Num: 24

Candidate Starts for IgnatiusPatJac\_70:

(Start: 19 @44226 has 12 MA's), (Start: 24 @44214 has 1 MA's), (31, 44196), (73, 44055), (83, 44028), (91, 43989), (95, 43959), (139, 43746),

Gene: IgnatiusPatJac\_43 Start: 32882, Stop: 32406, Start Num: 37

Candidate Starts for IgnatiusPatJac\_43:

(Start: 37 @32882 has 11 MA's), (Start: 44 @32864 has 10 MA's), (48, 32843), (Start: 68 @32780 has 1 MA's), (75, 32759), (111, 32606), (126, 32528), (139, 32471), (141, 32462), (142, 32459), (147, 32435),

Gene: Issimir\_243 Start: 142261, Stop: 142710, Start Num: 39

Candidate Starts for Issimir\_243:

(Start: 39 @142261 has 33 MA's), (50, 142300), (60, 142318), (67, 142351), (76, 142378), (89, 142411), (107, 142498), (116, 142540), (138, 142639),

Gene: JPickles\_247 Start: 141311, Stop: 141760, Start Num: 39

Candidate Starts for JPickles\_247:

(Start: 39 @141311 has 33 MA's), (50, 141350), (60, 141368), (67, 141401), (76, 141428), (89, 141461), (107, 141548), (116, 141590), (138, 141689),

Gene: Janiyra\_253 Start: 142848, Stop: 143297, Start Num: 39

Candidate Starts for Janiyra\_253:

(Start: 39 @142848 has 33 MA's), (50, 142887), (60, 142905), (67, 142938), (76, 142965), (89, 142998), (107, 143085), (116, 143127), (138, 143226),

Gene: KimmyK\_83 Start: 56127, Stop: 55612, Start Num: 25

Candidate Starts for KimmyK\_83:

(Start: 23 @56133 has 2 MA's), (Start: 25 @56127 has 17 MA's), (31, 56115), (43, 56079), (Start: 57 @56034 has 1 MA's), (61, 56019), (87, 55941), (93, 55914), (95, 55893), (103, 55869), (145, 55659), (148, 55647), (153, 55623),

Gene: Kykar\_44 Start: 32934, Stop: 32458, Start Num: 37

Candidate Starts for Kykar\_44:

(Start: 37 @32934 has 11 MA's), (Start: 44 @32916 has 10 MA's), (48, 32895), (Start: 68 @32832 has 1 MA's), (75, 32811), (111, 32658), (126, 32580), (139, 32523), (141, 32514), (142, 32511), (147, 32487),

Gene: Lee7\_249 Start: 144611, Stop: 145060, Start Num: 39

Candidate Starts for Lee7\_249:

(Start: 39 @144611 has 33 MA's), (50, 144650), (60, 144668), (67, 144701), (76, 144728), (89, 144761), (107, 144848), (116, 144890), (138, 144989),

Gene: Lesedi\_65 Start: 42530, Stop: 41952, Start Num: 19

Candidate Starts for Lesedi\_65:

(13, 42602), (Start: 19 @42530 has 12 MA's), (Start: 24 @42518 has 1 MA's), (31, 42500), (73, 42359), (83, 42332), (91, 42293), (95, 42263), (139, 42050),

Gene: LibertyBell\_73 Start: 45969, Stop: 46457, Start Num: 57

Candidate Starts for LibertyBell\_73:

(Start: 57 @45969 has 1 MA's), (75, 46038), (102, 46152), (112, 46227), (127, 46308), (141, 46371),

Gene: Licorice\_47 Start: 34445, Stop: 33960, Start Num: 36

Candidate Starts for Licorice\_47:

(22, 34484), (Start: 36 @34445 has 22 MA's), (Start: 49 @34403 has 2 MA's), (Start: 68 @34349 has 1 MA's), (89, 34274), (94, 34250), (95, 34238), (97, 34232), (99, 34229), (126, 34082), (133, 34046), (147, 33989),

Gene: Lilbit\_52 Start: 29147, Stop: 29620, Start Num: 44

Candidate Starts for Lilbit\_52:

(Start: 44 @29147 has 10 MA's), (Start: 51 @29177 has 1 MA's), (77, 29258), (100, 29348), (111, 29423), (137, 29546), (146, 29585), (147, 29591),

Gene: LittleLaf\_51 Start: 28906, Stop: 29349, Start Num: 51

Candidate Starts for LittleLaf\_51:

(Start: 44 @28876 has 10 MA's), (Start: 51 @28906 has 1 MA's), (77, 28987), (100, 29077), (111, 29152), (137, 29275), (146, 29314), (147, 29320),

Gene: Lopton\_70 Start: 46302, Stop: 45724, Start Num: 19

Candidate Starts for Lopton\_70:

(18, 46311), (Start: 19 @46302 has 12 MA's), (Start: 24 @46290 has 1 MA's), (31, 46272), (73, 46131), (83, 46104), (91, 46065), (95, 46035), (139, 45822),

Gene: Maby2021\_250 Start: 143650, Stop: 144099, Start Num: 39

Candidate Starts for Maby2021\_250:

(Start: 39 @143650 has 33 MA's), (50, 143689), (60, 143707), (67, 143740), (76, 143767), (89, 143800), (107, 143887), (116, 143929), (138, 144028),

Gene: Marge\_44 Start: 33477, Stop: 32992, Start Num: 36

Candidate Starts for Marge\_44:

(22, 33516), (Start: 36 @33477 has 22 MA's), (Start: 49 @33435 has 2 MA's), (Start: 68 @33381 has 1 MA's), (89, 33306), (94, 33282), (95, 33270), (97, 33264), (99, 33261), (126, 33114), (133, 33078), (147, 33021),

Gene: McGee\_251 Start: 142298, Stop: 142747, Start Num: 39

Candidate Starts for McGee\_251:

(Start: 39 @142298 has 33 MA's), (50, 142337), (60, 142355), (67, 142388), (76, 142415), (89, 142448), (107, 142535), (116, 142577), (138, 142676),

Gene: McGuire\_71 Start: 44174, Stop: 43596, Start Num: 19

Candidate Starts for McGuire\_71:

(Start: 19 @44174 has 12 MA's), (Start: 24 @44162 has 1 MA's), (31, 44144), (73, 44003), (83, 43976), (91, 43937), (95, 43907), (139, 43694),

Gene: MintFritos\_94 Start: 72730, Stop: 73143, Start Num: 46

Candidate Starts for MintFritos\_94:

(Start: 19 @72655 has 12 MA's), (26, 72673), (Start: 46 @72730 has 1 MA's), (75, 72826), (87, 72853), (89, 72865), (90, 72868), (101, 72916),



Gene: Moose\_64 Start: 41180, Stop: 40623, Start Num: 40

Candidate Starts for Moose\_64:

(Start: 40 @41180 has 9 MA's), (52, 41138), (60, 41120), (85, 41036), (89, 41018), (101, 40967), (110, 40913), (129, 40811), (155, 40643),

Gene: Morizzled23\_247 Start: 141326, Stop: 141775, Start Num: 39

Candidate Starts for Morizzled23\_247:

(Start: 39 @141326 has 33 MA's), (50, 141365), (60, 141383), (67, 141416), (76, 141443), (89, 141476), (107, 141563), (116, 141605), (138, 141704),

Gene: NEHalo\_60 Start: 41604, Stop: 41047, Start Num: 40

Candidate Starts for NEHalo\_60:

(Start: 40 @41604 has 9 MA's), (52, 41562), (60, 41544), (85, 41460), (89, 41442), (101, 41391), (110, 41337), (129, 41235), (155, 41067),

Gene: Naira\_45 Start: 34727, Stop: 34242, Start Num: 36

Candidate Starts for Naira\_45:

(22, 34766), (Start: 36 @34727 has 22 MA's), (Start: 49 @34685 has 2 MA's), (Start: 68 @34631 has 1 MA's), (89, 34556), (94, 34532), (95, 34520), (97, 34514), (99, 34511), (126, 34364), (133, 34328), (147, 34271),

Gene: Niza\_46 Start: 34104, Stop: 33619, Start Num: 36

Candidate Starts for Niza\_46:

(22, 34143), (Start: 36 @34104 has 22 MA's), (Start: 49 @34062 has 2 MA's), (Start: 68 @34008 has 1 MA's), (89, 33933), (94, 33909), (95, 33897), (97, 33891), (99, 33888), (126, 33741), (133, 33705), (147, 33648),

Gene: Petruccio\_44 Start: 32947, Stop: 32471, Start Num: 37

Candidate Starts for Petruccio\_44:

(Start: 37 @32947 has 11 MA's), (Start: 44 @32929 has 10 MA's), (48, 32908), (Start: 68 @32845 has 1 MA's), (75, 32824), (111, 32671), (126, 32593), (139, 32536), (141, 32527), (142, 32524), (147, 32500),

Gene: Phlop\_82 Start: 55730, Stop: 55215, Start Num: 25

Candidate Starts for Phlop\_82:

(Start: 23 @55736 has 2 MA's), (Start: 25 @55730 has 17 MA's), (31, 55718), (43, 55682), (Start: 57 @55637 has 1 MA's), (61, 55622), (87, 55544), (93, 55517), (95, 55496), (103, 55472), (145, 55262), (148, 55250), (153, 55226),

Gene: PinkCoffee\_86 Start: 55594, Stop: 55079, Start Num: 25

Candidate Starts for PinkCoffee\_86:

(Start: 23 @55600 has 2 MA's), (Start: 25 @55594 has 17 MA's), (31, 55582), (43, 55546), (Start: 57 @55501 has 1 MA's), (61, 55486), (87, 55408), (93, 55381), (95, 55360), (103, 55336), (145, 55126), (148, 55114), (153, 55090),

Gene: Pippin\_46 Start: 33403, Stop: 32918, Start Num: 36

Candidate Starts for Pippin\_46:

(10, 33538), (22, 33442), (Start: 36 @33403 has 22 MA's), (Start: 49 @33361 has 2 MA's), (Start: 68 @33307 has 1 MA's), (89, 33232), (94, 33208), (95, 33196), (97, 33190), (99, 33187), (126, 33040), (133, 33004), (147, 32947),

Gene: Poise\_51 Start: 28464, Stop: 28937, Start Num: 44

Candidate Starts for Poise\_51:

(Start: 44 @28464 has 10 MA's), (Start: 51 @28494 has 1 MA's), (77, 28575), (100, 28665), (111, 28740), (137, 28863), (146, 28902), (147, 28908),

Gene: Portcullis\_85 Start: 55736, Stop: 55221, Start Num: 25

Candidate Starts for Portcullis\_85:

(Start: 23 @55742 has 2 MA's), (Start: 25 @55736 has 17 MA's), (31, 55724), (43, 55688), (Start: 57 @55643 has 1 MA's), (61, 55628), (87, 55550), (93, 55523), (95, 55502), (103, 55478), (145, 55268), (148, 55256), (153, 55232),

Gene: Pringar\_51 Start: 28752, Stop: 29225, Start Num: 44

Candidate Starts for Pringar\_51:

(Start: 44 @28752 has 10 MA's), (Start: 51 @28782 has 1 MA's), (77, 28863), (100, 28953), (111, 29028), (137, 29151), (146, 29190), (147, 29196),

Gene: ProMouse\_44 Start: 33305, Stop: 32802, Start Num: 29

Candidate Starts for ProMouse\_44:

(Start: 19 @33329 has 12 MA's), (Start: 29 @33305 has 3 MA's), (48, 33236), (56, 33215), (75, 33164), (76, 33158), (111, 33011), (141, 32867), (147, 32840),

Gene: PullumCavea\_83 Start: 55907, Stop: 55392, Start Num: 25

Candidate Starts for PullumCavea\_83:

(Start: 23 @55913 has 2 MA's), (Start: 25 @55907 has 17 MA's), (31, 55895), (43, 55859), (Start: 57 @55814 has 1 MA's), (61, 55799), (87, 55721), (93, 55694), (95, 55673), (103, 55649), (145, 55439), (148, 55427), (153, 55403),

Gene: PurduePete\_250 Start: 143690, Stop: 144139, Start Num: 39

Candidate Starts for PurduePete\_250:

(Start: 39 @143690 has 33 MA's), (50, 143729), (60, 143747), (67, 143780), (76, 143807), (89, 143840), (107, 143927), (116, 143969), (138, 144068),

Gene: Raela\_51 Start: 29019, Stop: 29492, Start Num: 44

Candidate Starts for Raela\_51:

(Start: 44 @29019 has 10 MA's), (Start: 51 @29049 has 1 MA's), (77, 29130), (100, 29220), (111, 29295), (137, 29418), (146, 29457), (147, 29463),

Gene: Rajelicia\_45 Start: 33435, Stop: 32950, Start Num: 36

Candidate Starts for Rajelicia\_45:

(22, 33474), (Start: 36 @33435 has 22 MA's), (Start: 49 @33393 has 2 MA's), (Start: 68 @33339 has 1 MA's), (89, 33264), (94, 33240), (95, 33228), (97, 33222), (99, 33219), (126, 33072), (133, 33036), (147, 32979),

Gene: Ringer\_45 Start: 33671, Stop: 33282, Start Num: 68

Candidate Starts for Ringer\_45:

(22, 33806), (Start: 36 @33767 has 22 MA's), (Start: 49 @33725 has 2 MA's), (Start: 68 @33671 has 1 MA's), (89, 33596), (94, 33572), (95, 33560), (97, 33554), (99, 33551), (126, 33404), (133, 33368), (147, 33311),

Gene: RogerDodger\_88 Start: 56495, Stop: 55980, Start Num: 25

Candidate Starts for RogerDodger\_88:

(Start: 23 @56501 has 2 MA's), (Start: 25 @56495 has 17 MA's), (31, 56483), (43, 56447), (Start: 57 @56402 has 1 MA's), (61, 56387), (87, 56309), (93, 56282), (95, 56261), (103, 56237), (145, 56027), (148, 56015), (153, 55991),

Gene: Ruotula\_47 Start: 34572, Stop: 34078, Start Num: 36

Candidate Starts for Ruotula\_47:

(22, 34611), (Start: 36 @34572 has 22 MA's), (Start: 49 @34530 has 2 MA's), (Start: 68 @34476 has 1 MA's), (89, 34401), (94, 34377), (95, 34365), (97, 34359), (99, 34356), (126, 34200), (133, 34164), (147, 34107),

Gene: Sagefire\_47 Start: 34321, Stop: 33836, Start Num: 36

Candidate Starts for Sagefire\_47:

(22, 34360), (Start: 36 @34321 has 22 MA's), (Start: 49 @34279 has 2 MA's), (Start: 68 @34225 has 1 MA's), (89, 34150), (94, 34126), (95, 34114), (97, 34108), (99, 34105), (126, 33958), (133, 33922), (147, 33865),

Gene: Salacia\_251 Start: 144116, Stop: 144565, Start Num: 39

Candidate Starts for Salacia\_251:

(Start: 39 @144116 has 33 MA's), (50, 144155), (60, 144173), (67, 144206), (76, 144233), (89, 144266), (107, 144353), (116, 144395), (138, 144494),

Gene: Salvador\_85 Start: 55832, Stop: 55317, Start Num: 25

Candidate Starts for Salvador\_85:

(Start: 23 @55838 has 2 MA's), (Start: 25 @55832 has 17 MA's), (31, 55820), (43, 55784), (Start: 57 @55739 has 1 MA's), (61, 55724), (87, 55646), (93, 55619), (95, 55598), (103, 55574), (145, 55364), (148, 55352), (153, 55328),

Gene: Samy\_64 Start: 40970, Stop: 41473, Start Num: 38

Candidate Starts for Samy\_64:

(1, 40451), (2, 40556), (3, 40580), (5, 40679), (6, 40739), (Start: 38 @40970 has 1 MA's), (64, 41057), (75, 41093), (85, 41126), (89, 41144), (117, 41297), (124, 41327), (136, 41390),

Gene: Samy\_62 Start: 37969, Stop: 38490, Start Num: 30

Candidate Starts for Samy\_62:

(Start: 30 @37969 has 1 MA's), (58, 38059), (94, 38200),

Gene: SarFire\_70 Start: 44563, Stop: 43985, Start Num: 19

Candidate Starts for SarFire\_70:

(Start: 19 @44563 has 12 MA's), (Start: 24 @44551 has 1 MA's), (31, 44533), (73, 44392), (83, 44365), (91, 44326), (95, 44296), (139, 44083),

Gene: Sarge\_39 Start: 25703, Stop: 26194, Start Num: 29

Candidate Starts for Sarge\_39:

(4, 25388), (14, 25622), (21, 25688), (Start: 29 @25703 has 3 MA's), (79, 25868), (88, 25904), (90, 25910), (118, 26045), (134, 26117), (150, 26183),

Gene: Savbucketdawg\_80 Start: 55174, Stop: 54659, Start Num: 25

Candidate Starts for Savbucketdawg\_80:

(Start: 23 @55180 has 2 MA's), (Start: 25 @55174 has 17 MA's), (31, 55162), (43, 55126), (Start: 57 @55081 has 1 MA's), (61, 55066), (87, 54988), (93, 54961), (95, 54940), (103, 54916), (145, 54706), (148, 54694), (153, 54670),

Gene: Seanderson\_46 Start: 33923, Stop: 33447, Start Num: 37

Candidate Starts for Seanderson\_46:

(Start: 37 @33923 has 11 MA's), (Start: 44 @33905 has 10 MA's), (48, 33884), (Start: 68 @33821 has 1 MA's), (75, 33800), (111, 33647), (126, 33569), (139, 33512), (141, 33503), (142, 33500), (147,

33476),

Gene: Shinji\_84 Start: 55913, Stop: 55398, Start Num: 25

Candidate Starts for Shinji\_84:

(Start: 23 @55919 has 2 MA's), (Start: 25 @55913 has 17 MA's), (31, 55901), (43, 55865), (Start: 57 @55820 has 1 MA's), (61, 55805), (87, 55727), (93, 55700), (95, 55679), (103, 55655), (145, 55445), (148, 55433), (153, 55409),

Gene: Shoya\_45 Start: 27671, Stop: 28162, Start Num: 29

Candidate Starts for Shoya\_45:

(14, 27590), (21, 27656), (Start: 29 @27671 has 3 MA's), (79, 27836), (88, 27872), (90, 27878), (118, 28013), (134, 28085), (150, 28151),

Gene: Shrimp\_252 Start: 143727, Stop: 144176, Start Num: 39

Candidate Starts for Shrimp\_252:

(Start: 39 @143727 has 33 MA's), (50, 143766), (60, 143784), (67, 143817), (76, 143844), (89, 143877), (107, 143964), (116, 144006), (138, 144105),

Gene: Slagathor\_46 Start: 33360, Stop: 32875, Start Num: 36

Candidate Starts for Slagathor\_46:

(22, 33399), (Start: 36 @33360 has 22 MA's), (Start: 49 @33318 has 2 MA's), (Start: 68 @33264 has 1 MA's), (89, 33189), (94, 33165), (95, 33153), (97, 33147), (99, 33144), (126, 32997), (133, 32961), (147, 32904),

Gene: Smairt\_46 Start: 33659, Stop: 33174, Start Num: 36

Candidate Starts for Smairt\_46:

(22, 33698), (Start: 36 @33659 has 22 MA's), (Start: 49 @33617 has 2 MA's), (Start: 68 @33563 has 1 MA's), (89, 33488), (94, 33464), (95, 33452), (97, 33446), (99, 33443), (126, 33296), (133, 33260), (147, 33203),

Gene: SmokingBunny\_86 Start: 56828, Stop: 56313, Start Num: 25

Candidate Starts for SmokingBunny\_86:

(Start: 23 @56834 has 2 MA's), (Start: 25 @56828 has 17 MA's), (31, 56816), (43, 56780), (Start: 57 @56735 has 1 MA's), (61, 56720), (87, 56642), (93, 56615), (95, 56594), (103, 56570), (145, 56360), (148, 56348), (153, 56324),

Gene: Snazzy\_68 Start: 43855, Stop: 43277, Start Num: 19

Candidate Starts for Snazzy\_68:

(Start: 19 @43855 has 12 MA's), (Start: 24 @43843 has 1 MA's), (31, 43825), (73, 43684), (83, 43657), (91, 43618), (95, 43588), (139, 43375),

Gene: Specks\_254 Start: 143067, Stop: 143516, Start Num: 39

Candidate Starts for Specks\_254:

(Start: 39 @143067 has 33 MA's), (50, 143106), (60, 143124), (67, 143157), (76, 143184), (89, 143217), (107, 143304), (116, 143346), (138, 143445),

Gene: SpeedDemon\_100 Start: 4893, Stop: 5351, Start Num: 29

Candidate Starts for SpeedDemon\_100:

(Start: 29 @4893 has 3 MA's), (82, 5040), (86, 5055), (88, 5070), (95, 5109), (105, 5151), (115, 5199), (144, 5319),

Gene: SpikeBT\_61 Start: 41461, Stop: 40904, Start Num: 40

Candidate Starts for SpikeBT\_61:

(Start: 40 @41461 has 9 MA's), (52, 41419), (60, 41401), (85, 41317), (89, 41299), (101, 41248), (110, 41194), (129, 41092), (155, 40924),

Gene: Squee\_73 Start: 44893, Stop: 44315, Start Num: 19

Candidate Starts for Squee\_73:

(Start: 19 @44893 has 12 MA's), (Start: 24 @44881 has 1 MA's), (31, 44863), (73, 44722), (83, 44695), (91, 44656), (95, 44626), (139, 44413),

Gene: SrishMeg2525\_247 Start: 143222, Stop: 143671, Start Num: 39

Candidate Starts for SrishMeg2525\_247:

(Start: 39 @143222 has 33 MA's), (50, 143261), (60, 143279), (67, 143312), (76, 143339), (89, 143372), (107, 143459), (116, 143501), (138, 143600),

Gene: StrongArm\_43 Start: 33982, Stop: 33497, Start Num: 36

Candidate Starts for StrongArm\_43:

(22, 34021), (Start: 36 @33982 has 22 MA's), (Start: 49 @33940 has 2 MA's), (Start: 68 @33886 has 1 MA's), (89, 33811), (94, 33787), (95, 33775), (97, 33769), (99, 33766), (126, 33619), (133, 33583), (147, 33526),

Gene: StubbySaigey\_256 Start: 142752, Stop: 143201, Start Num: 39

Candidate Starts for StubbySaigey\_256:

(Start: 39 @142752 has 33 MA's), (50, 142791), (60, 142809), (67, 142842), (76, 142869), (89, 142902), (107, 142989), (116, 143031), (138, 143130),

Gene: Sunfish\_77 Start: 46858, Stop: 46316, Start Num: 42

Candidate Starts for Sunfish\_77:

(42, 46858), (48, 46828), (118, 46537), (126, 46489), (130, 46465),

Gene: SwissCheese\_66 Start: 41680, Stop: 41123, Start Num: 40

Candidate Starts for SwissCheese\_66:

(Start: 40 @41680 has 9 MA's), (52, 41638), (60, 41620), (85, 41536), (89, 41518), (101, 41467), (110, 41413), (129, 41311), (155, 41143),

Gene: Teardrop\_248 Start: 142079, Stop: 142528, Start Num: 39

Candidate Starts for Teardrop\_248:

(Start: 39 @142079 has 33 MA's), (50, 142118), (60, 142136), (67, 142169), (76, 142196), (89, 142229), (107, 142316), (116, 142358), (138, 142457),

Gene: Teodoridan\_42 Start: 32338, Stop: 31949, Start Num: 68

Candidate Starts for Teodoridan\_42:

(22, 32473), (Start: 36 @32434 has 22 MA's), (Start: 49 @32392 has 2 MA's), (Start: 68 @32338 has 1 MA's), (89, 32263), (94, 32239), (95, 32227), (97, 32221), (99, 32218), (126, 32071), (133, 32035), (147, 31978),

Gene: TheloniousMonk\_45 Start: 34368, Stop: 33883, Start Num: 36

Candidate Starts for TheloniousMonk\_45:

(22, 34407), (Start: 36 @34368 has 22 MA's), (Start: 49 @34326 has 2 MA's), (Start: 68 @34272 has 1 MA's), (89, 34197), (94, 34173), (95, 34161), (97, 34155), (99, 34152), (126, 34005), (133, 33969), (147, 33912),

Gene: Thor\_70 Start: 43921, Stop: 43343, Start Num: 19

Candidate Starts for Thor\_70:

(Start: 19 @43921 has 12 MA's), (Start: 24 @43909 has 1 MA's), (31, 43891), (73, 43750), (83, 43723), (91, 43684), (95, 43654), (139, 43441),

Gene: TillyBobJoe\_83 Start: 55714, Stop: 55199, Start Num: 25

Candidate Starts for TillyBobJoe\_83:

(Start: 23 @55720 has 2 MA's), (Start: 25 @55714 has 17 MA's), (31, 55702), (43, 55666), (Start: 57 @55621 has 1 MA's), (61, 55606), (87, 55528), (93, 55501), (95, 55480), (103, 55456), (145, 55246), (148, 55234), (153, 55210),

Gene: TinyTim\_248 Start: 142046, Stop: 142495, Start Num: 39

Candidate Starts for TinyTim\_248:

(Start: 39 @142046 has 33 MA's), (50, 142085), (60, 142103), (67, 142136), (76, 142163), (89, 142196), (107, 142283), (116, 142325), (138, 142424),

Gene: Togo\_85 Start: 56828, Stop: 56313, Start Num: 25

Candidate Starts for Togo\_85:

(Start: 23 @56834 has 2 MA's), (Start: 25 @56828 has 17 MA's), (31, 56816), (43, 56780), (Start: 57 @56735 has 1 MA's), (61, 56720), (87, 56642), (93, 56615), (95, 56594), (103, 56570), (145, 56360), (148, 56348), (153, 56324),

Gene: Trinitium\_246 Start: 140800, Stop: 141249, Start Num: 39

Candidate Starts for Trinitium\_246:

(Start: 39 @140800 has 33 MA's), (50, 140839), (60, 140857), (67, 140890), (76, 140917), (89, 140950), (107, 141037), (116, 141079), (138, 141178),

Gene: Trouble\_45 Start: 34048, Stop: 33572, Start Num: 37

Candidate Starts for Trouble\_45:

(Start: 37 @34048 has 11 MA's), (Start: 44 @34030 has 10 MA's), (48, 34009), (Start: 68 @33946 has 1 MA's), (75, 33925), (111, 33772), (126, 33694), (139, 33637), (141, 33628), (142, 33625), (147, 33601),

Gene: Twister6\_84 Start: 55177, Stop: 54662, Start Num: 25

Candidate Starts for Twister6\_84:

(Start: 23 @55183 has 2 MA's), (Start: 25 @55177 has 17 MA's), (31, 55165), (43, 55129), (Start: 57 @55084 has 1 MA's), (61, 55069), (87, 54991), (93, 54964), (95, 54943), (103, 54919), (145, 54709), (148, 54697), (153, 54673),

Gene: Valary\_86 Start: 56820, Stop: 56305, Start Num: 25

Candidate Starts for Valary\_86:

(Start: 23 @56826 has 2 MA's), (Start: 25 @56820 has 17 MA's), (31, 56808), (43, 56772), (Start: 57 @56727 has 1 MA's), (61, 56712), (87, 56634), (93, 56607), (95, 56586), (103, 56562), (145, 56352), (148, 56340), (153, 56316),

Gene: VanDeWege\_87 Start: 56351, Stop: 55830, Start Num: 23

Candidate Starts for VanDeWege\_87:

(Start: 23 @56351 has 2 MA's), (Start: 25 @56345 has 17 MA's), (31, 56333), (43, 56297), (Start: 57 @56252 has 1 MA's), (61, 56237), (87, 56159), (93, 56132), (95, 56111), (103, 56087), (145, 55877), (148, 55865), (153, 55841),

Gene: VasuNzinga\_51 Start: 28326, Stop: 28799, Start Num: 44

Candidate Starts for VasuNzinga\_51:

(Start: 44 @28326 has 10 MA's), (Start: 51 @28356 has 1 MA's), (77, 28437), (100, 28527), (111, 28602), (137, 28725), (146, 28764), (147, 28770),

Gene: Wizard\_80 Start: 55680, Stop: 55165, Start Num: 25

Candidate Starts for Wizard\_80:

(Start: 23 @55686 has 2 MA's), (Start: 25 @55680 has 17 MA's), (31, 55668), (43, 55632), (Start: 57 @55587 has 1 MA's), (61, 55572), (87, 55494), (93, 55467), (95, 55446), (103, 55422), (145, 55212), (148, 55200), (153, 55176),

Gene: Wollypog\_58 Start: 43704, Stop: 44234, Start Num: 32

Candidate Starts for Wollypog\_58:

(Start: 32 @43704 has 2 MA's), (71, 43818), (84, 43863), (113, 44016), (132, 44124),

Gene: Yucca\_250 Start: 143605, Stop: 144054, Start Num: 39

Candidate Starts for Yucca\_250:

(Start: 39 @143605 has 33 MA's), (50, 143644), (60, 143662), (67, 143695), (76, 143722), (89, 143755), (107, 143842), (116, 143884), (138, 143983),

Gene: ZygoTaiga\_246 Start: 143902, Stop: 144351, Start Num: 39

Candidate Starts for ZygoTaiga\_246:

(Start: 39 @143902 has 33 MA's), (50, 143941), (60, 143959), (67, 143992), (76, 144019), (89, 144052), (107, 144139), (116, 144181), (138, 144280),