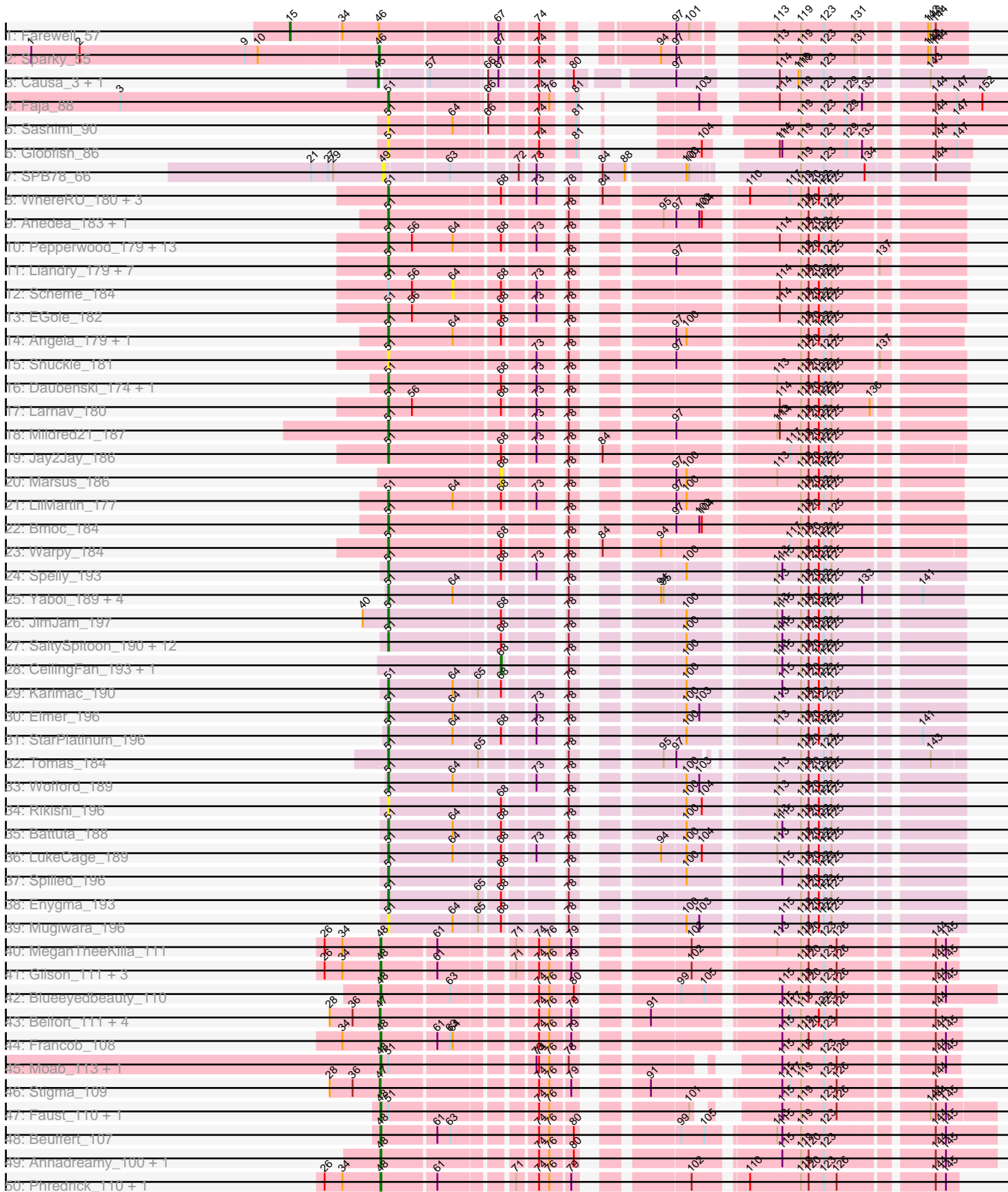
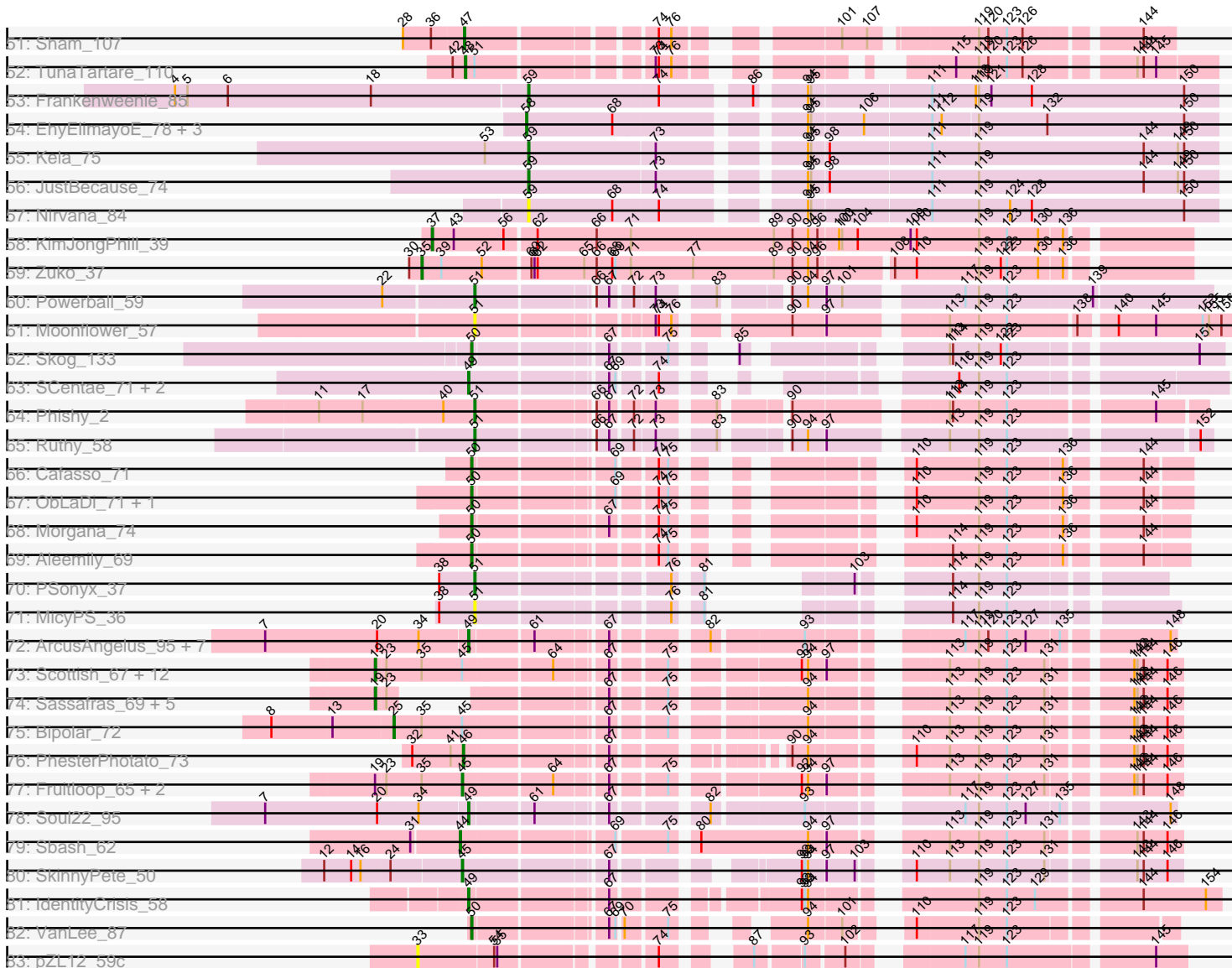


Pham 219460



Pham 219460



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 219460 Report

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

Pham number 219460 has 170 members, 21 are drafts.

Phages represented in each track:

- Track 1 : Farewell\_57
- Track 2 : Sparky\_55
- Track 3 : Causa\_3, StAugustine\_3
- Track 4 : Faja\_88
- Track 5 : Sashimi\_90
- Track 6 : Globfish\_86
- Track 7 : SPB78\_66
- Track 8 : WhereRU\_180, Evy\_171, Targaryen\_179, Persimmon\_181
- Track 9 : Anedea\_183, Riptide\_180
- Track 10 : Pepperwood\_179, Leo04\_182, Cross\_180, Cursive\_179, Deutsch\_179, Samisti12\_182, BlueOtter\_179, Watermoore\_179, Tribute\_178, Sushi23\_181, Peebs\_178, Lululemon\_179, PacManQ\_179, HangryHippo\_179
- Track 11 : Liandry\_179, Navo\_177, Bartholomune\_179, Squillium\_181, PinkiePie\_178, NootNoot\_177, Braelyn\_179, Paradiddles\_174
- Track 12 : Scheme\_184
- Track 13 : EGole\_182
- Track 14 : Angela\_179, MulchMansion\_178
- Track 15 : Shuckle\_181
- Track 16 : Daubenski\_174, Cadmus\_181
- Track 17 : Larnav\_180
- Track 18 : Mildred21\_187
- Track 19 : Jay2Jay\_186
- Track 20 : Marsus\_186
- Track 21 : LilMartin\_177
- Track 22 : Bmoc\_184
- Track 23 : Warpy\_184
- Track 24 : Spelly\_193
- Track 25 : Yaboi\_189, Sollertia\_186, Stanimal\_185, BoomerJR\_185, Genie2\_185
- Track 26 : JimJam\_197
- Track 27 : SaltySpittoon\_190, Bordeaux\_189, Amabiko\_194, Jollison\_187, Quaran19\_190, KentuckyRacer\_195, IchabodCrane\_186, Birchlyn\_189, MindFlayer\_183, PumpkinSpice\_192, Wipeout\_182, Starbow\_188, Gibbi\_197
- Track 28 : CeilingFan\_193, TomSawyer\_195
- Track 29 : Karimac\_190
- Track 30 : Elmer\_196
- Track 31 : StarPlatinum\_196
- Track 32 : Tomas\_184

- Track 33 : Wofford\_189
- Track 34 : Rikishi\_196
- Track 35 : Battuta\_188
- Track 36 : LukeCage\_189
- Track 37 : Spilled\_196
- Track 38 : Enygma\_193
- Track 39 : Mugiwara\_196
- Track 40 : MeganTheeKilla\_111
- Track 41 : Gilson\_111, Emma1919\_112, Jada\_112, Forrest\_116
- Track 42 : Blueeyedbeauty\_110
- Track 43 : Belfort\_111, Comrade\_108, Karp\_107, SparkleGoddess\_109, Westy\_111
- Track 44 : Francob\_108
- Track 45 : Moab\_113, Patelgo\_114
- Track 46 : Stigma\_109
- Track 47 : Faust\_110, SeresaTree\_110
- Track 48 : Beuffert\_107
- Track 49 : Annadreamy\_100, Limpid\_109
- Track 50 : Phredrick\_110, Kenrey\_114
- Track 51 : Sham\_107
- Track 52 : TunaTartare\_110
- Track 53 : Frankenweenie\_85
- Track 54 : EhyElimayoE\_78, Quantum\_77, Kradal\_78, Satis\_78
- Track 55 : Kela\_75
- Track 56 : JustBecause\_74
- Track 57 : Nirvana\_84
- Track 58 : KimJongPhill\_39
- Track 59 : Zuko\_37
- Track 60 : Powerball\_59
- Track 61 : Moonflower\_57
- Track 62 : Skog\_133
- Track 63 : SCentae\_71, CherryTomatoes\_73, Pupper\_72
- Track 64 : Phishy\_2
- Track 65 : Ruthy\_58
- Track 66 : Cafasso\_71
- Track 67 : ObLaDi\_71, ModicumRichard\_71
- Track 68 : Morgana\_74
- Track 69 : Aleemily\_69
- Track 70 : PSonyx\_37
- Track 71 : MicyPS\_36
- Track 72 : ArcusAngelus\_95, Nitzel\_88, Che8\_101, CheesePuff\_100, Chevrolet\_99, Rita\_95, MinionDave\_93, OwlsT2W\_93
- Track 73 : Scottish\_67, SiSi\_68, JoeyJr\_69, Nimbo\_62, PHappiness\_69, KingMidas\_68, Leperchaun\_66, Geralt\_63, OldBen\_66, Polka14\_72, Empress\_67, DaddyRickover\_70, RitaG\_69
- Track 74 : Sassafras\_69, Poenanya\_71, Inventum\_66, RedBird\_69, Doomphist\_71, Dorothy\_69
- Track 75 : Bipolar\_72
- Track 76 : PhesterPotato\_73
- Track 77 : Fruitloop\_65, Daenerys\_68, Deb65\_63
- Track 78 : Soul22\_95
- Track 79 : Sbash\_62
- Track 80 : SkinnyPete\_50
- Track 81 : IdentityCrisis\_58

- Track 82 : VanLee\_87
- Track 83 : pZL12\_59c

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

The start number called the most often in the published annotations is 51, it was called in 70 of the 149 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Amabiko\_194, Anedea\_183, Angela\_179, Bartholomune\_179, Battuta\_188, Birchlyn\_189, BlueOtter\_179, Bmoc\_184, BoomerJR\_185, Bordeaux\_189, Braelyn\_179, Cadmus\_181, Cross\_180, Cursive\_179, Daubenski\_174, EGole\_182, Elmer\_196, Enygma\_193, Evy\_171, Faja\_88, Genie2\_185, Gibbi\_197, Globfish\_86, HangryHippo\_179, IchabodCrane\_186, Jay2Jay\_186, JimJam\_197, Jollison\_187, Karimac\_190, KentuckyRacer\_195, Larnav\_180, Leo04\_182, Liandry\_179, LilMartin\_177, LukeCage\_189, Lululemon\_179, MicyPS\_36, Mildred21\_187, MindFlayer\_183, Moonflower\_57, Mugiwara\_196, MulchMansion\_178, Navo\_177, NootNoot\_177, PSonyx\_37, PacManQ\_179, Paradiddles\_174, Peebs\_178, Pepperwood\_179, Persimmon\_181, Phishy\_2, PinkiePie\_178, Powerball\_59, PumpkinSpice\_192, Quarant19\_190, Rikishi\_196, Riptide\_180, Ruthy\_58, SaltySpittoon\_190, Samisti12\_182, Sashimi\_90, Shuckle\_181, Sollertia\_186, Spelly\_193, Spilled\_196, Squillium\_181, Stanimal\_185, StarPlatinum\_196, Starbow\_188, Sushi23\_181, Targaryen\_179, Teutsch\_179, Tomas\_184, Tribute\_178, Warpy\_184, Watermoore\_179, WhereRU\_180, Wipeout\_182, Wofford\_189, Yaboi\_189,

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

- Faust\_110, Moab\_113, Patelgo\_114, Scheme\_184, SeresaTree\_110, TunaTartare\_110,

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

- Aleemily\_69, Annadreamy\_100, ArcusAngelus\_95, Belfort\_111, Beuffert\_107, Bipolar\_72, Blueeyedbeauty\_110, Cafasso\_71, Causa\_3, CeilingFan\_193, Che8\_101, CheesePuff\_100, CherryTomatoes\_73, Chevrolet\_99, Comrade\_108, DaddyRickover\_70, Daenerys\_68, Deb65\_63, Doomphist\_71, Dorothy\_69, EhyElimayoE\_78, Emma1919\_112, Empress\_67, Farewell\_57, Forrest\_116, Francob\_108, Frankenweenie\_85, Fruitloop\_65, Geralt\_63, Gilson\_111, IdentityCrisis\_58, Inventum\_66, Jada\_112, JoeyJr\_69, JustBecause\_74, Karp\_107, Kela\_75, Kenrey\_114, KimJongPhill\_39, KingMidas\_68, Kradal\_78, Leperchaun\_66, Limpid\_109, Marsus\_186, MeganTheeKilla\_111, MinionDave\_93, ModicumRichard\_71, Morgana\_74, Nimbo\_62, Nirvana\_84, Nitzel\_88, ObLaDi\_71, OldBen\_66, OwlsT2W\_93, PHappiness\_69, PhesterPotato\_73, Phredrick\_110, Poenanya\_71, Polka14\_72, Pupper\_72, Quantum\_77, RedBird\_69, RitaG\_69, Rita\_95, SCentae\_71, SPB78\_66, Sassafras\_69, Satis\_78, Sbash\_62, Scottish\_67, Sham\_107, SiSi\_68, SkinnyPete\_50, Skog\_133, Soul22\_95, SparkleGoddess\_109, Sparky\_55, StAugustine\_3, Stigma\_109, TomSawyer\_195, VanLee\_87, Westy\_111, Zuko\_37, pZL12\_59c,

**Summary by start number:**

Start 15:

- Found in 1 of 170 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Farewell\_57 (AF),

Start 19:

- Found in 22 of 170 ( 12.9% ) of genes in pham
- Manual Annotations of this start: 18 of 149
- Called 86.4% of time when present
- Phage (with cluster) where this start called: DaddyRickover\_70 (F1), Doomphist\_71 (F1), Dorothy\_69 (F1), Empress\_67 (F1), Geralt\_63 (F1), Inventum\_66 (F1), JoeyJr\_69 (F1), KingMidas\_68 (F1), Leperchaun\_66 (F1), Nimbo\_62 (F1), OldBen\_66 (F1), PHappiness\_69 (F1), Poenanya\_71 (F1), Polka14\_72 (F1), RedBird\_69 (F1), RitaG\_69 (F1), Sassafras\_69 (F1), Scottish\_67 (F1), SiSi\_68 (F1),

Start 25:

- Found in 1 of 170 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bipolar\_72 (F1),

Start 33:

- Found in 1 of 170 ( 0.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: pZL12\_59c (singleton),

Start 35:

- Found in 18 of 170 ( 10.6% ) of genes in pham
- Manual Annotations of this start: 1 of 149
- Called 5.6% of time when present
- Phage (with cluster) where this start called: Zuko\_37 (BR),

Start 37:

- Found in 1 of 170 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: KimJongPhill\_39 (BR),

Start 44:

- Found in 1 of 170 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sbash\_62 (I2),

Start 45:

- Found in 20 of 170 ( 11.8% ) of genes in pham
- Manual Annotations of this start: 5 of 149
- Called 30.0% of time when present
- Phage (with cluster) where this start called: Causa\_3 (AI), Daenerys\_68 (F1), Deb65\_63 (F1), Fruitloop\_65 (F1), SkinnyPete\_50 (N), StAugustine\_3 (AI),

Start 46:

- Found in 3 of 170 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 2 of 149
- Called 66.7% of time when present
- Phage (with cluster) where this start called: PhesterPhotato\_73 (F1), Sparky\_55 (AF),

Start 47:

- Found in 7 of 170 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 6 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Belfort\_111 (BK1), Comrade\_108 (BK1), Karp\_107 (BK1), Sham\_107 (BK1), SparkleGoddess\_109 (BK1), Stigma\_109 (BK1), Westy\_111 (BK1),

Start 48:

- Found in 17 of 170 ( 10.0% ) of genes in pham
- Manual Annotations of this start: 16 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Annadreamy\_100 (BK1), Beuffert\_107 (BK1), Blueeyedbeauty\_110 (BK1), Emma1919\_112 (BK1), Faust\_110 (BK1), Forrest\_116 (BK1), Francob\_108 (BK1), Gilson\_111 (BK1), Jada\_112 (BK1), Kenrey\_114 (BK1), Limpid\_109 (BK1), MeganTheeKilla\_111 (BK1), Moab\_113 (BK1), Patelgo\_114 (BK1), Phredrick\_110 (BK1), SeresaTree\_110 (BK1), TunaTartare\_110 (BK1),

Start 49:

- Found in 14 of 170 ( 8.2% ) of genes in pham
- Manual Annotations of this start: 12 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ArcusAngelus\_95 (F1), Che8\_101 (F1), CheesePuff\_100 (F1), CherryTomatoes\_73 (DO), Chevrolet\_99 (F1), IdentityCrisis\_58 (singleton), MinionDave\_93 (F1), Nitzel\_88 (F1), OwlsT2W\_93 (F1), Pupper\_72 (DO), Rita\_95 (F1), SCentae\_71 (DO), SPB78\_66 (BA), Soul22\_95 (F2),

Start 50:

- Found in 7 of 170 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 6 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aleemily\_69 (DZ), Cafasso\_71 (DZ), ModicumRichard\_71 (DZ), Morgana\_74 (DZ), ObLaDi\_71 (DZ), Skog\_133 (DO), VanLee\_87 (singleton),

Start 51:

- Found in 86 of 170 ( 50.6% ) of genes in pham
- Manual Annotations of this start: 70 of 149
- Called 93.0% of time when present
- Phage (with cluster) where this start called: Amabiko\_194 (BE2), Anedea\_183 (BE1), Angela\_179 (BE1), Bartholomune\_179 (BE1), Battuta\_188 (BE2), Birchlyn\_189 (BE2), BlueOtter\_179 (BE1), Bmoc\_184 (BE1), BoomerJR\_185 (BE2), Bordeaux\_189 (BE2), Braelyn\_179 (BE1), Cadmus\_181 (BE1), Cross\_180 (BE1), Cursive\_179 (BE1), Daubenski\_174 (BE1), EGole\_182 (BE1), Elmer\_196 (BE2), Enyigma\_193 (BE2), Evy\_171 (BE1), Faja\_88 (AY), Genie2\_185 (BE2), Gibbi\_197

(BE2), Globfish\_86 (AY), HangryHippo\_179 (BE1), IchabodCrane\_186 (BE2), Jay2Jay\_186 (BE1), JimJam\_197 (BE2), Jollison\_187 (BE2), Karimac\_190 (BE2), KentuckyRacer\_195 (BE2), Larnav\_180 (BE1), Leo04\_182 (BE1), Liandry\_179 (BE1), LilMartin\_177 (BE1), LukeCage\_189 (BE2), Lululemon\_179 (BE1), MicyPS\_36 (EQ), Mildred21\_187 (BE1), MindFlayer\_183 (BE2), Moonflower\_57 (DB), Mugiwara\_196 (BE2), MulchMansion\_178 (BE1), Navo\_177 (BE1), NootNoot\_177 (BE1), PSonyx\_37 (EQ), PacManQ\_179 (BE1), Paradiddles\_174 (BE1), Peebs\_178 (BE1), Pepperwood\_179 (BE1), Persimmon\_181 (BE1), Phishy\_2 (DT), PinkiePie\_178 (BE1), Powerball\_59 (CZ4), PumpkinSpice\_192 (BE2), Quarant19\_190 (BE2), Rikishi\_196 (BE2), Riptide\_180 (BE1), Ruthy\_58 (DW), SaltySpittoon\_190 (BE2), Samisti12\_182 (BE1), Sashimi\_90 (AY), Shuckle\_181 (BE1), Sollertia\_186 (BE2), Spelly\_193 (BE2), Spilled\_196 (BE2), Squillium\_181 (BE1), Stanimal\_185 (BE2), StarPlatinum\_196 (BE2), Starbow\_188 (BE2), Sushi23\_181 (BE1), Targaryen\_179 (BE1), Teutsch\_179 (BE1), Tomas\_184 (BE2), Tribute\_178 (BE1), Warpy\_184 (BE1), Watermoore\_179 (BE1), WhereRU\_180 (BE1), Wipeout\_182 (BE2), Wofford\_189 (BE2), Yaboi\_189 (BE2),

Start 58:

- Found in 4 of 170 ( 2.4% ) of genes in pham
- Manual Annotations of this start: 4 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EhyElimayoE\_78 (BM), Kradal\_78 (BM), Quantum\_77 (BM), Satis\_78 (BM),

Start 59:

- Found in 4 of 170 ( 2.4% ) of genes in pham
- Manual Annotations of this start: 3 of 149
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Frankenweenie\_85 (BM), JustBecause\_74 (BM), Kela\_75 (BM), Nirvana\_84 (BM),

Start 64:

- Found in 48 of 170 ( 28.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.1% of time when present
- Phage (with cluster) where this start called: Scheme\_184 (BE1),

Start 68:

- Found in 60 of 170 ( 35.3% ) of genes in pham
- Manual Annotations of this start: 2 of 149
- Called 5.0% of time when present
- Phage (with cluster) where this start called: CeilingFan\_193 (BE2), Marsus\_186 (BE1), TomSawyer\_195 (BE2),

### Summary by clusters:

There are 21 clusters represented in this pham: DO, F1, singleton, BA, AF, AI, BM, I2, DB, F2, CZ4, N, AY, DZ, BK1, BR, BE2, DW, DT, BE1, EQ,

Info for manual annotations of cluster AF:

- Start number 15 was manually annotated 1 time for cluster AF.
- Start number 46 was manually annotated 1 time for cluster AF.



Info for manual annotations of cluster AI:

- Start number 45 was manually annotated 1 time for cluster AI.

Info for manual annotations of cluster AY:

- Start number 51 was manually annotated 1 time for cluster AY.

Info for manual annotations of cluster BE1:

- Start number 51 was manually annotated 37 times for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 51 was manually annotated 28 times for cluster BE2.
- Start number 68 was manually annotated 2 times for cluster BE2.

Info for manual annotations of cluster BK1:

- Start number 47 was manually annotated 6 times for cluster BK1.
- Start number 48 was manually annotated 16 times for cluster BK1.

Info for manual annotations of cluster BM:

- Start number 58 was manually annotated 4 times for cluster BM.
- Start number 59 was manually annotated 3 times for cluster BM.

Info for manual annotations of cluster BR:

- Start number 35 was manually annotated 1 time for cluster BR.
- Start number 37 was manually annotated 1 time for cluster BR.

Info for manual annotations of cluster CZ4:

- Start number 51 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster DO:

- Start number 49 was manually annotated 3 times for cluster DO.
- Start number 50 was manually annotated 1 time for cluster DO.

Info for manual annotations of cluster DT:

- Start number 51 was manually annotated 1 time for cluster DT.

Info for manual annotations of cluster DW:

- Start number 51 was manually annotated 1 time for cluster DW.

Info for manual annotations of cluster DZ:

- Start number 50 was manually annotated 4 times for cluster DZ.

Info for manual annotations of cluster EQ:

- Start number 51 was manually annotated 1 time for cluster EQ.

Info for manual annotations of cluster F1:

- Start number 19 was manually annotated 18 times for cluster F1.
- Start number 25 was manually annotated 1 time for cluster F1.
- Start number 45 was manually annotated 3 times for cluster F1.
- Start number 46 was manually annotated 1 time for cluster F1.
- Start number 49 was manually annotated 7 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 49 was manually annotated 1 time for cluster F2.

Info for manual annotations of cluster I2:

- Start number 44 was manually annotated 1 time for cluster I2.

Info for manual annotations of cluster N:

- Start number 45 was manually annotated 1 time for cluster N.

### **Gene Information:**

Gene: Aleemily\_69 Start: 45785, Stop: 46318, Start Num: 50

Candidate Starts for Aleemily\_69:

(Start: 50 @45785 has 6 MA's), (74, 45932), (75, 45941), (114, 46115), (119, 46139), (123, 46166), (136, 46217), (144, 46277),

Gene: Amabiko\_194 Start: 96749, Stop: 97306, Start Num: 51

Candidate Starts for Amabiko\_194:

(Start: 51 @96749 has 70 MA's), (Start: 68 @96872 has 2 MA's), (78, 96926), (100, 97019), (113, 97106), (115, 97112), (119, 97133), (120, 97142), (122, 97154), (123, 97160), (125, 97169),

Gene: Anedea\_183 Start: 95656, Stop: 96213, Start Num: 51

Candidate Starts for Anedea\_183:

(Start: 51 @95656 has 70 MA's), (78, 95833), (95, 95902), (97, 95914), (103, 95941), (104, 95944), (119, 96040), (120, 96049), (123, 96067), (125, 96076),

Gene: Angela\_179 Start: 95320, Stop: 95874, Start Num: 51

Candidate Starts for Angela\_179:

(Start: 51 @95320 has 70 MA's), (64, 95395), (Start: 68 @95443 has 2 MA's), (78, 95497), (97, 95578), (100, 95590), (119, 95704), (120, 95713), (122, 95725), (123, 95731), (125, 95740),

Gene: Annadreamy\_100 Start: 67632, Stop: 68237, Start Num: 48

Candidate Starts for Annadreamy\_100:

(Start: 48 @67632 has 16 MA's), (74, 67788), (76, 67800), (80, 67824), (115, 68007), (119, 68028), (120, 68037), (123, 68055), (144, 68166), (145, 68178),

Gene: ArcusAngelus\_95 Start: 53408, Stop: 53965, Start Num: 49

Candidate Starts for ArcusAngelus\_95:

(7, 53216), (20, 53324), (34, 53363), (Start: 49 @53408 has 12 MA's), (61, 53462), (67, 53522), (82, 53594), (93, 53675), (117, 53789), (119, 53801), (120, 53810), (123, 53828), (127, 53846), (135, 53876), (148, 53960),

Gene: Bartholomune\_179 Start: 95153, Stop: 95710, Start Num: 51

Candidate Starts for Bartholomune\_179:

(Start: 51 @95153 has 70 MA's), (78, 95330), (97, 95411), (119, 95537), (120, 95546), (123, 95564), (125, 95573), (137, 95621),

Gene: Battuta\_188 Start: 96065, Stop: 96622, Start Num: 51

Candidate Starts for Battuta\_188:

(Start: 51 @96065 has 70 MA's), (64, 96140), (Start: 68 @96188 has 2 MA's), (78, 96242), (100, 96335), (113, 96422), (115, 96428), (119, 96449), (120, 96458), (122, 96470), (123, 96476), (125,

96485),

Gene: Belfort\_111 Start: 73479, Stop: 74042, Start Num: 47

Candidate Starts for Belfort\_111:

(28, 73422), (36, 73449), (Start: 47 @73479 has 6 MA's), (74, 73635), (76, 73647), (79, 73668), (91, 73722), (115, 73854), (117, 73863), (119, 73875), (122, 73896), (123, 73902), (126, 73917), (144, 74013),

Gene: Beuffert\_107 Start: 72453, Stop: 73058, Start Num: 48

Candidate Starts for Beuffert\_107:

(Start: 48 @72453 has 16 MA's), (61, 72513), (63, 72528), (74, 72609), (76, 72621), (80, 72645), (99, 72729), (105, 72756), (113, 72822), (115, 72828), (119, 72849), (123, 72876), (144, 72987), (145, 72999),

Gene: Bipolar\_72 Start: 44668, Stop: 45300, Start Num: 25

Candidate Starts for Bipolar\_72:

(8, 44554), (13, 44611), (Start: 25 @44668 has 1 MA's), (Start: 35 @44695 has 1 MA's), (Start: 45 @44734 has 5 MA's), (67, 44854), (75, 44899), (94, 45004), (113, 45100), (119, 45127), (123, 45154), (131, 45190), (142, 45256), (143, 45259), (144, 45265), (146, 45286),

Gene: Birchlyn\_189 Start: 93997, Stop: 94554, Start Num: 51

Candidate Starts for Birchlyn\_189:

(Start: 51 @93997 has 70 MA's), (Start: 68 @94120 has 2 MA's), (78, 94174), (100, 94267), (113, 94354), (115, 94360), (119, 94381), (120, 94390), (122, 94402), (123, 94408), (125, 94417),

Gene: BlueOtter\_179 Start: 96373, Stop: 96930, Start Num: 51

Candidate Starts for BlueOtter\_179:

(Start: 51 @96373 has 70 MA's), (56, 96400), (64, 96448), (Start: 68 @96496 has 2 MA's), (73, 96526), (78, 96550), (114, 96733), (119, 96757), (120, 96766), (122, 96778), (123, 96784), (125, 96793),

Gene: Blueeyedbeauty\_110 Start: 71549, Stop: 72154, Start Num: 48

Candidate Starts for Blueeyedbeauty\_110:

(Start: 48 @71549 has 16 MA's), (63, 71624), (74, 71705), (76, 71717), (80, 71741), (99, 71825), (105, 71852), (115, 71924), (119, 71945), (120, 71954), (123, 71972), (126, 71987), (144, 72083), (145, 72095),

Gene: Bmoc\_184 Start: 96405, Stop: 96962, Start Num: 51

Candidate Starts for Bmoc\_184:

(Start: 51 @96405 has 70 MA's), (78, 96582), (97, 96663), (103, 96690), (104, 96693), (119, 96789), (120, 96798), (125, 96825),

Gene: BoomerJR\_185 Start: 96024, Stop: 96578, Start Num: 51

Candidate Starts for BoomerJR\_185:

(Start: 51 @96024 has 70 MA's), (64, 96099), (78, 96201), (94, 96267), (95, 96270), (113, 96381), (119, 96408), (120, 96417), (122, 96429), (123, 96435), (125, 96444), (133, 96477), (141, 96531),

Gene: Bordeaux\_189 Start: 96647, Stop: 97204, Start Num: 51

Candidate Starts for Bordeaux\_189:

(Start: 51 @96647 has 70 MA's), (Start: 68 @96770 has 2 MA's), (78, 96824), (100, 96917), (113, 97004), (115, 97010), (119, 97031), (120, 97040), (122, 97052), (123, 97058), (125, 97067),

Gene: Braelyn\_179 Start: 96152, Stop: 96709, Start Num: 51

Candidate Starts for Braelyn\_179:

(Start: 51 @96152 has 70 MA's), (78, 96329), (97, 96410), (119, 96536), (120, 96545), (123, 96563), (125, 96572), (137, 96620),

Gene: Cadmus\_181 Start: 95641, Stop: 96198, Start Num: 51

Candidate Starts for Cadmus\_181:

(Start: 51 @95641 has 70 MA's), (Start: 68 @95764 has 2 MA's), (73, 95794), (78, 95818), (113, 95998), (119, 96025), (120, 96034), (122, 96046), (123, 96052), (125, 96061),

Gene: Cafasso\_71 Start: 46457, Stop: 46990, Start Num: 50

Candidate Starts for Cafasso\_71:

(Start: 50 @46457 has 6 MA's), (69, 46574), (74, 46604), (75, 46613), (110, 46754), (119, 46811), (123, 46838), (136, 46889), (144, 46949),

Gene: Causa\_3 Start: 1052, Stop: 1630, Start Num: 45

Candidate Starts for Causa\_3:

(Start: 45 @1052 has 5 MA's), (57, 1097), (66, 1154), (67, 1166), (74, 1202), (80, 1229), (97, 1325), (114, 1412), (118, 1433), (119, 1436), (123, 1463), (143, 1565),

Gene: CeilingFan\_193 Start: 97396, Stop: 97830, Start Num: 68

Candidate Starts for CeilingFan\_193:

(Start: 68 @97396 has 2 MA's), (78, 97450), (100, 97543), (113, 97630), (115, 97636), (119, 97657), (120, 97666), (122, 97678), (123, 97684), (125, 97693),

Gene: Che8\_101 Start: 54031, Stop: 54588, Start Num: 49

Candidate Starts for Che8\_101:

(7, 53839), (20, 53947), (34, 53986), (Start: 49 @54031 has 12 MA's), (61, 54085), (67, 54145), (82, 54217), (93, 54298), (117, 54412), (119, 54424), (120, 54433), (123, 54451), (127, 54469), (135, 54499), (148, 54583),

Gene: Cheesepuff\_100 Start: 52216, Stop: 52773, Start Num: 49

Candidate Starts for Cheesepuff\_100:

(7, 52024), (20, 52132), (34, 52171), (Start: 49 @52216 has 12 MA's), (61, 52270), (67, 52330), (82, 52402), (93, 52483), (117, 52597), (119, 52609), (120, 52618), (123, 52636), (127, 52654), (135, 52684), (148, 52768),

Gene: CherryTomatoes\_73 Start: 25264, Stop: 25827, Start Num: 49

Candidate Starts for CherryTomatoes\_73:

(Start: 49 @25264 has 12 MA's), (67, 25381), (69, 25387), (74, 25417), (116, 25594), (119, 25612), (123, 25639),

Gene: Chevrolet\_99 Start: 53409, Stop: 53966, Start Num: 49

Candidate Starts for Chevrolet\_99:

(7, 53217), (20, 53325), (34, 53364), (Start: 49 @53409 has 12 MA's), (61, 53463), (67, 53523), (82, 53595), (93, 53676), (117, 53790), (119, 53802), (120, 53811), (123, 53829), (127, 53847), (135, 53877), (148, 53961),

Gene: Comrade\_108 Start: 72796, Stop: 73359, Start Num: 47

Candidate Starts for Comrade\_108:

(28, 72739), (36, 72766), (Start: 47 @72796 has 6 MA's), (74, 72952), (76, 72964), (79, 72985), (91, 73039), (115, 73171), (117, 73180), (119, 73192), (122, 73213), (123, 73219), (126, 73234), (144, 73330),

Gene: Cross\_180 Start: 97018, Stop: 97575, Start Num: 51

Candidate Starts for Cross\_180:

(Start: 51 @97018 has 70 MA's), (56, 97045), (64, 97093), (Start: 68 @97141 has 2 MA's), (73, 97171), (78, 97195), (114, 97378), (119, 97402), (120, 97411), (122, 97423), (123, 97429), (125, 97438),

Gene: Cursive\_179 Start: 95227, Stop: 95784, Start Num: 51

Candidate Starts for Cursive\_179:

(Start: 51 @95227 has 70 MA's), (56, 95254), (64, 95302), (Start: 68 @95350 has 2 MA's), (73, 95380), (78, 95404), (114, 95587), (119, 95611), (120, 95620), (122, 95632), (123, 95638), (125, 95647),

Gene: DaddyRickover\_70 Start: 44130, Stop: 44783, Start Num: 19

Candidate Starts for DaddyRickover\_70:

(Start: 19 @44130 has 18 MA's), (23, 44139), (Start: 35 @44172 has 1 MA's), (Start: 45 @44211 has 5 MA's), (64, 44289), (67, 44331), (75, 44376), (92, 44481), (94, 44487), (97, 44502), (113, 44583), (119, 44610), (123, 44637), (131, 44673), (142, 44739), (143, 44742), (144, 44748), (146, 44769),

Gene: Daenerys\_68 Start: 44330, Stop: 44902, Start Num: 45

Candidate Starts for Daenerys\_68:

(Start: 19 @44249 has 18 MA's), (23, 44258), (Start: 35 @44291 has 1 MA's), (Start: 45 @44330 has 5 MA's), (64, 44408), (67, 44450), (75, 44495), (92, 44600), (94, 44606), (97, 44621), (113, 44702), (119, 44729), (123, 44756), (131, 44792), (142, 44858), (143, 44861), (144, 44867), (146, 44888),

Gene: Daubenski\_174 Start: 96878, Stop: 97435, Start Num: 51

Candidate Starts for Daubenski\_174:

(Start: 51 @96878 has 70 MA's), (Start: 68 @97001 has 2 MA's), (73, 97031), (78, 97055), (113, 97235), (119, 97262), (120, 97271), (122, 97283), (123, 97289), (125, 97298),

Gene: Deb65\_63 Start: 42050, Stop: 42622, Start Num: 45

Candidate Starts for Deb65\_63:

(Start: 19 @41969 has 18 MA's), (23, 41978), (Start: 35 @42011 has 1 MA's), (Start: 45 @42050 has 5 MA's), (64, 42128), (67, 42170), (75, 42215), (92, 42320), (94, 42326), (97, 42341), (113, 42422), (119, 42449), (123, 42476), (131, 42512), (142, 42578), (143, 42581), (144, 42587), (146, 42608),

Gene: Doomphist\_71 Start: 44678, Stop: 45256, Start Num: 19

Candidate Starts for Doomphist\_71:

(Start: 19 @44678 has 18 MA's), (23, 44687), (67, 44810), (75, 44855), (94, 44960), (113, 45056), (119, 45083), (123, 45110), (131, 45146), (142, 45212), (143, 45215), (144, 45221), (146, 45242),

Gene: Dorothy\_69 Start: 43304, Stop: 43882, Start Num: 19

Candidate Starts for Dorothy\_69:

(Start: 19 @43304 has 18 MA's), (23, 43313), (67, 43436), (75, 43481), (94, 43586), (113, 43682), (119, 43709), (123, 43736), (131, 43772), (142, 43838), (143, 43841), (144, 43847), (146, 43868),

Gene: EGole\_182 Start: 98035, Stop: 98592, Start Num: 51

Candidate Starts for EGole\_182:

(Start: 51 @98035 has 70 MA's), (56, 98062), (Start: 68 @98158 has 2 MA's), (73, 98188), (78, 98212), (114, 98395), (119, 98419), (120, 98428), (122, 98440), (123, 98446), (125, 98455),

Gene: EhyElimayoE\_78 Start: 57043, Stop: 56420, Start Num: 58

Candidate Starts for EhyElimayoE\_78:

(Start: 58 @57043 has 4 MA's), (Start: 68 @56962 has 2 MA's), (94, 56806), (95, 56803), (106, 56755), (111, 56692), (112, 56683), (119, 56650), (132, 56584), (150, 56452),

Gene: Elmer\_196 Start: 99545, Stop: 100102, Start Num: 51

Candidate Starts for Elmer\_196:

(Start: 51 @99545 has 70 MA's), (64, 99620), (73, 99698), (78, 99722), (100, 99815), (103, 99830), (113, 99902), (119, 99929), (120, 99938), (122, 99950), (125, 99965),

Gene: Emma1919\_112 Start: 72256, Stop: 72816, Start Num: 48

Candidate Starts for Emma1919\_112:

(26, 72190), (34, 72211), (Start: 48 @72256 has 16 MA's), (61, 72316), (71, 72391), (74, 72412), (76, 72424), (79, 72445), (102, 72544), (119, 72652), (120, 72661), (123, 72679), (126, 72694), (144, 72790), (145, 72802),

Gene: Empress\_67 Start: 43413, Stop: 44066, Start Num: 19

Candidate Starts for Empress\_67:

(Start: 19 @43413 has 18 MA's), (23, 43422), (Start: 35 @43455 has 1 MA's), (Start: 45 @43494 has 5 MA's), (64, 43572), (67, 43614), (75, 43659), (92, 43764), (94, 43770), (97, 43785), (113, 43866), (119, 43893), (123, 43920), (131, 43956), (142, 44022), (143, 44025), (144, 44031), (146, 44052),

Gene: Enygma\_193 Start: 98898, Stop: 99455, Start Num: 51

Candidate Starts for Enygma\_193:

(Start: 51 @98898 has 70 MA's), (65, 99000), (Start: 68 @99021 has 2 MA's), (78, 99075), (119, 99282), (120, 99291), (122, 99303), (123, 99309), (125, 99318),

Gene: Evy\_171 Start: 96433, Stop: 96990, Start Num: 51

Candidate Starts for Evy\_171:

(Start: 51 @96433 has 70 MA's), (Start: 68 @96556 has 2 MA's), (73, 96586), (78, 96610), (84, 96625), (110, 96760), (117, 96805), (119, 96817), (120, 96826), (122, 96838), (123, 96844), (125, 96853),

Gene: Faja\_88 Start: 49167, Stop: 49709, Start Num: 51

Candidate Starts for Faja\_88:

(3, 48852), (Start: 51 @49167 has 70 MA's), (66, 49266), (74, 49314), (76, 49326), (81, 49344), (103, 49395), (114, 49458), (119, 49482), (123, 49509), (129, 49536), (133, 49551), (144, 49620), (147, 49644), (152, 49674),

Gene: Farewell\_57 Start: 38417, Stop: 39061, Start Num: 15

Candidate Starts for Farewell\_57:

(Start: 15 @38417 has 1 MA's), (34, 38474), (Start: 46 @38513 has 2 MA's), (67, 38633), (74, 38669), (97, 38780), (101, 38795), (113, 38861), (119, 38888), (123, 38915), (131, 38951), (142, 39017), (143, 39020), (144, 39026),

Gene: Faust\_110 Start: 73136, Stop: 73705, Start Num: 48

Candidate Starts for Faust\_110:

(Start: 48 @73136 has 16 MA's), (Start: 51 @73145 has 70 MA's), (74, 73292), (76, 73304), (101, 73421), (115, 73478), (119, 73499), (123, 73526), (126, 73541), (143, 73631), (144, 73637), (145, 73649),

Gene: Forrest\_116 Start: 74569, Stop: 75129, Start Num: 48

Candidate Starts for Forrest\_116:

(26, 74503), (34, 74524), (Start: 48 @74569 has 16 MA's), (61, 74629), (71, 74704), (74, 74725), (76, 74737), (79, 74758), (102, 74857), (119, 74965), (120, 74974), (123, 74992), (126, 75007), (144, 75103), (145, 75115),

Gene: Francob\_108 Start: 72289, Stop: 72852, Start Num: 48

Candidate Starts for Francob\_108:

(34, 72244), (Start: 48 @72289 has 16 MA's), (61, 72349), (63, 72364), (64, 72367), (74, 72445), (76, 72457), (79, 72478), (115, 72664), (119, 72685), (120, 72694), (123, 72712), (144, 72823), (145, 72835),

Gene: Frankenweenie\_85 Start: 60895, Stop: 60269, Start Num: 59

Candidate Starts for Frankenweenie\_85:

(4, 61231), (5, 61219), (6, 61180), (18, 61042), (Start: 59 @60895 has 3 MA's), (74, 60772), (86, 60697), (94, 60658), (95, 60655), (111, 60544), (118, 60502), (119, 60499), (121, 60487), (128, 60448), (150, 60301),

Gene: Fruitloop\_65 Start: 43885, Stop: 44457, Start Num: 45

Candidate Starts for Fruitloop\_65:

(Start: 19 @43804 has 18 MA's), (23, 43813), (Start: 35 @43846 has 1 MA's), (Start: 45 @43885 has 5 MA's), (64, 43963), (67, 44005), (75, 44050), (92, 44155), (94, 44161), (97, 44176), (113, 44257), (119, 44284), (123, 44311), (131, 44347), (142, 44413), (143, 44416), (144, 44422), (146, 44443),

Gene: Genie2\_185 Start: 96138, Stop: 96692, Start Num: 51

Candidate Starts for Genie2\_185:

(Start: 51 @96138 has 70 MA's), (64, 96213), (78, 96315), (94, 96381), (95, 96384), (113, 96495), (119, 96522), (120, 96531), (122, 96543), (123, 96549), (125, 96558), (133, 96591), (141, 96645),

Gene: Geralt\_63 Start: 41968, Stop: 42621, Start Num: 19

Candidate Starts for Geralt\_63:

(Start: 19 @41968 has 18 MA's), (23, 41977), (Start: 35 @42010 has 1 MA's), (Start: 45 @42049 has 5 MA's), (64, 42127), (67, 42169), (75, 42214), (92, 42319), (94, 42325), (97, 42340), (113, 42421), (119, 42448), (123, 42475), (131, 42511), (142, 42577), (143, 42580), (144, 42586), (146, 42607),

Gene: Gibbi\_197 Start: 96935, Stop: 97492, Start Num: 51

Candidate Starts for Gibbi\_197:

(Start: 51 @96935 has 70 MA's), (Start: 68 @97058 has 2 MA's), (78, 97112), (100, 97205), (113, 97292), (115, 97298), (119, 97319), (120, 97328), (122, 97340), (123, 97346), (125, 97355),

Gene: Gilson\_111 Start: 72218, Stop: 72778, Start Num: 48

Candidate Starts for Gilson\_111:

(26, 72152), (34, 72173), (Start: 48 @72218 has 16 MA's), (61, 72278), (71, 72353), (74, 72374), (76, 72386), (79, 72407), (102, 72506), (119, 72614), (120, 72623), (123, 72641), (126, 72656), (144, 72752), (145, 72764),

Gene: Globfish\_86 Start: 47967, Stop: 48452, Start Num: 51

Candidate Starts for Globfish\_86:

(Start: 51 @47967 has 70 MA's), (74, 48114), (81, 48144), (104, 48198), (114, 48249), (115, 48252), (119, 48273), (123, 48300), (129, 48327), (133, 48342), (144, 48411), (147, 48435),

Gene: HangryHippo\_179 Start: 96373, Stop: 96930, Start Num: 51

Candidate Starts for HangryHippo\_179:

(Start: 51 @96373 has 70 MA's), (56, 96400), (64, 96448), (Start: 68 @96496 has 2 MA's), (73, 96526), (78, 96550), (114, 96733), (119, 96757), (120, 96766), (122, 96778), (123, 96784), (125, 96793),

Gene: IchabodCrane\_186 Start: 96450, Stop: 97007, Start Num: 51

Candidate Starts for IchabodCrane\_186:

(Start: 51 @96450 has 70 MA's), (Start: 68 @96573 has 2 MA's), (78, 96627), (100, 96720), (113, 96807), (115, 96813), (119, 96834), (120, 96843), (122, 96855), (123, 96861), (125, 96870),

Gene: IdentityCrisis\_58 Start: 35961, Stop: 36560, Start Num: 49  
Candidate Starts for IdentityCrisis\_58:  
(Start: 49 @35961 has 12 MA's), (67, 36075), (92, 36216), (93, 36219), (94, 36222), (119, 36345),  
(123, 36372), (129, 36399), (144, 36486), (154, 36546),

Gene: Inventum\_66 Start: 43502, Stop: 44080, Start Num: 19  
Candidate Starts for Inventum\_66:  
(Start: 19 @43502 has 18 MA's), (23, 43511), (67, 43634), (75, 43679), (94, 43784), (113, 43880),  
(119, 43907), (123, 43934), (131, 43970), (142, 44036), (143, 44039), (144, 44045), (146, 44066),

Gene: Jada\_112 Start: 73499, Stop: 74059, Start Num: 48  
Candidate Starts for Jada\_112:  
(26, 73433), (34, 73454), (Start: 48 @73499 has 16 MA's), (61, 73559), (71, 73634), (74, 73655), (76,  
73667), (79, 73688), (102, 73787), (119, 73895), (120, 73904), (123, 73922), (126, 73937), (144,  
74033), (145, 74045),

Gene: Jay2Jay\_186 Start: 97179, Stop: 97733, Start Num: 51  
Candidate Starts for Jay2Jay\_186:  
(Start: 51 @97179 has 70 MA's), (Start: 68 @97302 has 2 MA's), (73, 97332), (78, 97356), (84, 97371),  
(117, 97551), (119, 97563), (120, 97572), (122, 97584), (123, 97590), (125, 97599),

Gene: JimJam\_197 Start: 98371, Stop: 98928, Start Num: 51  
Candidate Starts for JimJam\_197:  
(40, 98341), (Start: 51 @98371 has 70 MA's), (Start: 68 @98494 has 2 MA's), (78, 98548), (100,  
98641), (113, 98728), (115, 98734), (119, 98755), (120, 98764), (122, 98776), (123, 98782), (125,  
98791),

Gene: JoeyJr\_69 Start: 44417, Stop: 45070, Start Num: 19  
Candidate Starts for JoeyJr\_69:  
(Start: 19 @44417 has 18 MA's), (23, 44426), (Start: 35 @44459 has 1 MA's), (Start: 45 @44498 has 5  
MA's), (64, 44576), (67, 44618), (75, 44663), (92, 44768), (94, 44774), (97, 44789), (113, 44870), (119,  
44897), (123, 44924), (131, 44960), (142, 45026), (143, 45029), (144, 45035), (146, 45056),

Gene: Jollison\_187 Start: 96581, Stop: 97138, Start Num: 51  
Candidate Starts for Jollison\_187:  
(Start: 51 @96581 has 70 MA's), (Start: 68 @96704 has 2 MA's), (78, 96758), (100, 96851), (113,  
96938), (115, 96944), (119, 96965), (120, 96974), (122, 96986), (123, 96992), (125, 97001),

Gene: JustBecause\_74 Start: 54987, Stop: 54361, Start Num: 59  
Candidate Starts for JustBecause\_74:  
(Start: 59 @54987 has 3 MA's), (73, 54867), (94, 54750), (95, 54747), (98, 54732), (111, 54636), (119,  
54591), (144, 54432), (149, 54399), (150, 54393),

Gene: Karimac\_190 Start: 96775, Stop: 97332, Start Num: 51  
Candidate Starts for Karimac\_190:  
(Start: 51 @96775 has 70 MA's), (64, 96850), (65, 96877), (Start: 68 @96898 has 2 MA's), (78, 96952),  
(100, 97045), (115, 97138), (119, 97159), (120, 97168), (122, 97180), (123, 97186), (125, 97195),

Gene: Karp\_107 Start: 72767, Stop: 73330, Start Num: 47  
Candidate Starts for Karp\_107:  
(28, 72710), (36, 72737), (Start: 47 @72767 has 6 MA's), (74, 72923), (76, 72935), (79, 72956), (91,  
73010), (115, 73142), (117, 73151), (119, 73163), (122, 73184), (123, 73190), (126, 73205), (144,  
73301),



Gene: Kela\_75 Start: 54852, Stop: 54226, Start Num: 59

Candidate Starts for Kela\_75:

(53, 54894), (Start: 59 @54852 has 3 MA's), (73, 54732), (94, 54615), (95, 54612), (98, 54597), (111, 54501), (119, 54456), (144, 54297), (149, 54264), (150, 54258),

Gene: Kenrey\_114 Start: 73258, Stop: 73818, Start Num: 48

Candidate Starts for Kenrey\_114:

(26, 73192), (34, 73213), (Start: 48 @73258 has 16 MA's), (61, 73318), (71, 73393), (74, 73414), (76, 73426), (79, 73447), (102, 73546), (110, 73597), (119, 73654), (120, 73663), (123, 73681), (126, 73696), (144, 73792), (145, 73804),

Gene: KentuckyRacer\_195 Start: 98117, Stop: 98674, Start Num: 51

Candidate Starts for KentuckyRacer\_195:

(Start: 51 @98117 has 70 MA's), (Start: 68 @98240 has 2 MA's), (78, 98294), (100, 98387), (113, 98474), (115, 98480), (119, 98501), (120, 98510), (122, 98522), (123, 98528), (125, 98537),

Gene: KimJongPhill\_39 Start: 34284, Stop: 33583, Start Num: 37

Candidate Starts for KimJongPhill\_39:

(Start: 37 @34284 has 1 MA's), (43, 34263), (56, 34215), (62, 34188), (66, 34131), (71, 34098), (89, 33960), (90, 33942), (94, 33927), (96, 33918), (100, 33900), (101, 33897), (104, 33882), (109, 33831), (110, 33825), (119, 33768), (123, 33741), (130, 33711), (136, 33690),

Gene: KingMidas\_68 Start: 43829, Stop: 44482, Start Num: 19

Candidate Starts for KingMidas\_68:

(Start: 19 @43829 has 18 MA's), (23, 43838), (Start: 35 @43871 has 1 MA's), (Start: 45 @43910 has 5 MA's), (64, 43988), (67, 44030), (75, 44075), (92, 44180), (94, 44186), (97, 44201), (113, 44282), (119, 44309), (123, 44336), (131, 44372), (142, 44438), (143, 44441), (144, 44447), (146, 44468),

Gene: Kradal\_78 Start: 57043, Stop: 56420, Start Num: 58

Candidate Starts for Kradal\_78:

(Start: 58 @57043 has 4 MA's), (Start: 68 @56962 has 2 MA's), (94, 56806), (95, 56803), (106, 56755), (111, 56692), (112, 56683), (119, 56650), (132, 56584), (150, 56452),

Gene: Larnav\_180 Start: 96992, Stop: 97549, Start Num: 51

Candidate Starts for Larnav\_180:

(Start: 51 @96992 has 70 MA's), (56, 97019), (Start: 68 @97115 has 2 MA's), (73, 97145), (78, 97169), (114, 97352), (119, 97376), (120, 97385), (122, 97397), (123, 97403), (125, 97412), (136, 97454),

Gene: Leo04\_182 Start: 97383, Stop: 97940, Start Num: 51

Candidate Starts for Leo04\_182:

(Start: 51 @97383 has 70 MA's), (56, 97410), (64, 97458), (Start: 68 @97506 has 2 MA's), (73, 97536), (78, 97560), (114, 97743), (119, 97767), (120, 97776), (122, 97788), (123, 97794), (125, 97803),

Gene: Leperchaun\_66 Start: 43647, Stop: 44300, Start Num: 19

Candidate Starts for Leperchaun\_66:

(Start: 19 @43647 has 18 MA's), (23, 43656), (Start: 35 @43689 has 1 MA's), (Start: 45 @43728 has 5 MA's), (64, 43806), (67, 43848), (75, 43893), (92, 43998), (94, 44004), (97, 44019), (113, 44100), (119, 44127), (123, 44154), (131, 44190), (142, 44256), (143, 44259), (144, 44265), (146, 44286),

Gene: Liandry\_179 Start: 95896, Stop: 96453, Start Num: 51

Candidate Starts for Liandry\_179:

(Start: 51 @95896 has 70 MA's), (78, 96073), (97, 96154), (119, 96280), (120, 96289), (123, 96307), (125, 96316), (137, 96364),

Gene: LilMartin\_177 Start: 94939, Stop: 95493, Start Num: 51

Candidate Starts for LilMartin\_177:

(Start: 51 @94939 has 70 MA's), (64, 95014), (Start: 68 @95062 has 2 MA's), (73, 95092), (78, 95116), (97, 95197), (100, 95209), (119, 95323), (120, 95332), (122, 95344), (123, 95350), (125, 95359),

Gene: Limpid\_109 Start: 72875, Stop: 73480, Start Num: 48

Candidate Starts for Limpid\_109:

(Start: 48 @72875 has 16 MA's), (74, 73031), (76, 73043), (80, 73067), (115, 73250), (119, 73271), (120, 73280), (123, 73298), (144, 73409), (145, 73421),

Gene: LukeCage\_189 Start: 97535, Stop: 98092, Start Num: 51

Candidate Starts for LukeCage\_189:

(Start: 51 @97535 has 70 MA's), (64, 97610), (Start: 68 @97658 has 2 MA's), (73, 97688), (78, 97712), (94, 97778), (100, 97805), (104, 97823), (113, 97892), (119, 97919), (120, 97928), (122, 97940), (123, 97946), (125, 97955),

Gene: Lululemon\_179 Start: 95754, Stop: 96311, Start Num: 51

Candidate Starts for Lululemon\_179:

(Start: 51 @95754 has 70 MA's), (56, 95781), (64, 95829), (Start: 68 @95877 has 2 MA's), (73, 95907), (78, 95931), (114, 96114), (119, 96138), (120, 96147), (122, 96159), (123, 96165), (125, 96174),

Gene: Marsus\_186 Start: 95988, Stop: 96419, Start Num: 68

Candidate Starts for Marsus\_186:

(Start: 68 @95988 has 2 MA's), (78, 96042), (97, 96123), (100, 96135), (113, 96222), (119, 96249), (120, 96258), (122, 96270), (123, 96276), (125, 96285),

Gene: MeganTheeKilla\_111 Start: 72424, Stop: 72984, Start Num: 48

Candidate Starts for MeganTheeKilla\_111:

(26, 72358), (34, 72379), (Start: 48 @72424 has 16 MA's), (61, 72484), (71, 72559), (74, 72580), (76, 72592), (79, 72613), (102, 72712), (113, 72793), (119, 72820), (120, 72829), (123, 72847), (126, 72862), (144, 72958), (145, 72970),

Gene: MicyPS\_36 Start: 31790, Stop: 31314, Start Num: 51

Candidate Starts for MicyPS\_36:

(38, 31823), (Start: 51 @31790 has 70 MA's), (76, 31631), (81, 31613), (114, 31508), (119, 31484), (123, 31457),

Gene: Mildred21\_187 Start: 95214, Stop: 95771, Start Num: 51

Candidate Starts for Mildred21\_187:

(Start: 51 @95214 has 70 MA's), (73, 95367), (78, 95391), (97, 95472), (113, 95571), (114, 95574), (119, 95598), (120, 95607), (122, 95619), (123, 95625), (125, 95634),

Gene: MindFlayer\_183 Start: 95966, Stop: 96523, Start Num: 51

Candidate Starts for MindFlayer\_183:

(Start: 51 @95966 has 70 MA's), (Start: 68 @96089 has 2 MA's), (78, 96143), (100, 96236), (113, 96323), (115, 96329), (119, 96350), (120, 96359), (122, 96371), (123, 96377), (125, 96386),

Gene: MinionDave\_93 Start: 52864, Stop: 53421, Start Num: 49

Candidate Starts for MinionDave\_93:

(7, 52672), (20, 52780), (34, 52819), (Start: 49 @52864 has 12 MA's), (61, 52918), (67, 52978), (82, 53050), (93, 53131), (117, 53245), (119, 53257), (120, 53266), (123, 53284), (127, 53302), (135, 53332), (148, 53416),

Gene: Moab\_113 Start: 74949, Stop: 75476, Start Num: 48

Candidate Starts for Moab\_113:

(Start: 48 @74949 has 16 MA's), (Start: 51 @74958 has 70 MA's), (73, 75102), (74, 75105), (76, 75117), (78, 75135), (115, 75291), (119, 75312), (123, 75339), (126, 75354), (144, 75450), (145, 75462),

Gene: ModicumRichard\_71 Start: 46606, Stop: 47139, Start Num: 50

Candidate Starts for ModicumRichard\_71:

(Start: 50 @46606 has 6 MA's), (69, 46723), (74, 46753), (75, 46762), (110, 46903), (119, 46960), (123, 46987), (136, 47038), (144, 47098),

Gene: Moonflower\_57 Start: 40406, Stop: 41035, Start Num: 51

Candidate Starts for Moonflower\_57:

(Start: 51 @40406 has 70 MA's), (73, 40550), (74, 40553), (76, 40565), (90, 40655), (97, 40685), (113, 40781), (119, 40808), (123, 40835), (138, 40895), (140, 40925), (145, 40961), (153, 41006), (155, 41012), (156, 41024),

Gene: Morgana\_74 Start: 47769, Stop: 48302, Start Num: 50

Candidate Starts for Morgana\_74:

(Start: 50 @47769 has 6 MA's), (67, 47880), (74, 47916), (75, 47925), (110, 48066), (119, 48123), (123, 48150), (136, 48201), (144, 48261),

Gene: Mugiwara\_196 Start: 97750, Stop: 98307, Start Num: 51

Candidate Starts for Mugiwara\_196:

(Start: 51 @97750 has 70 MA's), (64, 97825), (65, 97852), (Start: 68 @97873 has 2 MA's), (78, 97927), (100, 98020), (103, 98035), (115, 98113), (119, 98134), (120, 98143), (122, 98155), (123, 98161), (125, 98170),

Gene: MulchMansion\_178 Start: 95582, Stop: 96136, Start Num: 51

Candidate Starts for MulchMansion\_178:

(Start: 51 @95582 has 70 MA's), (64, 95657), (Start: 68 @95705 has 2 MA's), (78, 95759), (97, 95840), (100, 95852), (119, 95966), (120, 95975), (122, 95987), (123, 95993), (125, 96002),

Gene: Navo\_177 Start: 95533, Stop: 96090, Start Num: 51

Candidate Starts for Navo\_177:

(Start: 51 @95533 has 70 MA's), (78, 95710), (97, 95791), (119, 95917), (120, 95926), (123, 95944), (125, 95953), (137, 96001),

Gene: Nimbo\_62 Start: 41971, Stop: 42624, Start Num: 19

Candidate Starts for Nimbo\_62:

(Start: 19 @41971 has 18 MA's), (23, 41980), (Start: 35 @42013 has 1 MA's), (Start: 45 @42052 has 5 MA's), (64, 42130), (67, 42172), (75, 42217), (92, 42322), (94, 42328), (97, 42343), (113, 42424), (119, 42451), (123, 42478), (131, 42514), (142, 42580), (143, 42583), (144, 42589), (146, 42610),

Gene: Nirvana\_84 Start: 59297, Stop: 58671, Start Num: 59

Candidate Starts for Nirvana\_84:

(Start: 59 @59297 has 3 MA's), (Start: 68 @59216 has 2 MA's), (74, 59174), (94, 59060), (95, 59057), (111, 58946), (119, 58901), (124, 58871), (128, 58850), (150, 58703),

Gene: Nitzel\_88 Start: 49520, Stop: 50077, Start Num: 49

Candidate Starts for Nitzel\_88:

(7, 49328), (20, 49436), (34, 49475), (Start: 49 @49520 has 12 MA's), (61, 49574), (67, 49634), (82, 49706), (93, 49787), (117, 49901), (119, 49913), (120, 49922), (123, 49940), (127, 49958), (135, 49988), (148, 50072),

Gene: NootNoot\_177 Start: 94903, Stop: 95460, Start Num: 51

Candidate Starts for NootNoot\_177:

(Start: 51 @94903 has 70 MA's), (78, 95080), (97, 95161), (119, 95287), (120, 95296), (123, 95314), (125, 95323), (137, 95371),

Gene: ObLaDi\_71 Start: 46578, Stop: 47111, Start Num: 50

Candidate Starts for ObLaDi\_71:

(Start: 50 @46578 has 6 MA's), (69, 46695), (74, 46725), (75, 46734), (110, 46875), (119, 46932), (123, 46959), (136, 47010), (144, 47070),

Gene: OldBen\_66 Start: 43364, Stop: 44017, Start Num: 19

Candidate Starts for OldBen\_66:

(Start: 19 @43364 has 18 MA's), (23, 43373), (Start: 35 @43406 has 1 MA's), (Start: 45 @43445 has 5 MA's), (64, 43523), (67, 43565), (75, 43610), (92, 43715), (94, 43721), (97, 43736), (113, 43817), (119, 43844), (123, 43871), (131, 43907), (142, 43973), (143, 43976), (144, 43982), (146, 44003),

Gene: OwlsT2W\_93 Start: 51404, Stop: 51961, Start Num: 49

Candidate Starts for OwlsT2W\_93:

(7, 51212), (20, 51320), (34, 51359), (Start: 49 @51404 has 12 MA's), (61, 51458), (67, 51518), (82, 51590), (93, 51671), (117, 51785), (119, 51797), (120, 51806), (123, 51824), (127, 51842), (135, 51872), (148, 51956),

Gene: PHappiness\_69 Start: 44193, Stop: 44846, Start Num: 19

Candidate Starts for PHappiness\_69:

(Start: 19 @44193 has 18 MA's), (23, 44202), (Start: 35 @44235 has 1 MA's), (Start: 45 @44274 has 5 MA's), (64, 44352), (67, 44394), (75, 44439), (92, 44544), (94, 44550), (97, 44565), (113, 44646), (119, 44673), (123, 44700), (131, 44736), (142, 44802), (143, 44805), (144, 44811), (146, 44832),

Gene: PSonyx\_37 Start: 31434, Stop: 30970, Start Num: 51

Candidate Starts for PSonyx\_37:

(38, 31467), (Start: 51 @31434 has 70 MA's), (76, 31275), (81, 31257), (103, 31209), (114, 31152), (119, 31128), (123, 31101),

Gene: PacManQ\_179 Start: 95754, Stop: 96311, Start Num: 51

Candidate Starts for PacManQ\_179:

(Start: 51 @95754 has 70 MA's), (56, 95781), (64, 95829), (Start: 68 @95877 has 2 MA's), (73, 95907), (78, 95931), (114, 96114), (119, 96138), (120, 96147), (122, 96159), (123, 96165), (125, 96174),

Gene: Paradiddles\_174 Start: 97716, Stop: 98273, Start Num: 51

Candidate Starts for Paradiddles\_174:

(Start: 51 @97716 has 70 MA's), (78, 97893), (97, 97974), (119, 98100), (120, 98109), (123, 98127), (125, 98136), (137, 98184),

Gene: Patelgo\_114 Start: 74809, Stop: 75336, Start Num: 48

Candidate Starts for Patelgo\_114:

(Start: 48 @74809 has 16 MA's), (Start: 51 @74818 has 70 MA's), (73, 74962), (74, 74965), (76, 74977), (78, 74995), (115, 75151), (119, 75172), (123, 75199), (126, 75214), (144, 75310), (145,

75322),

Gene: Peebs\_178 Start: 96695, Stop: 97252, Start Num: 51

Candidate Starts for Peebs\_178:

(Start: 51 @96695 has 70 MA's), (56, 96722), (64, 96770), (Start: 68 @96818 has 2 MA's), (73, 96848), (78, 96872), (114, 97055), (119, 97079), (120, 97088), (122, 97100), (123, 97106), (125, 97115),

Gene: Pepperwood\_179 Start: 96639, Stop: 97196, Start Num: 51

Candidate Starts for Pepperwood\_179:

(Start: 51 @96639 has 70 MA's), (56, 96666), (64, 96714), (Start: 68 @96762 has 2 MA's), (73, 96792), (78, 96816), (114, 96999), (119, 97023), (120, 97032), (122, 97044), (123, 97050), (125, 97059),

Gene: Persimmon\_181 Start: 95550, Stop: 96107, Start Num: 51

Candidate Starts for Persimmon\_181:

(Start: 51 @95550 has 70 MA's), (Start: 68 @95673 has 2 MA's), (73, 95703), (78, 95727), (84, 95742), (110, 95877), (117, 95922), (119, 95934), (120, 95943), (122, 95955), (123, 95961), (125, 95970),

Gene: PhesterPhotato\_73 Start: 45038, Stop: 45586, Start Num: 46

Candidate Starts for PhesterPhotato\_73:

(32, 44990), (41, 45026), (Start: 46 @45038 has 2 MA's), (67, 45158), (90, 45275), (94, 45290), (110, 45356), (113, 45386), (119, 45413), (123, 45440), (131, 45476), (142, 45542), (143, 45545), (144, 45551), (146, 45572),

Gene: Phishy\_2 Start: 216, Stop: 800, Start Num: 51

Candidate Starts for Phishy\_2:

(11, 69), (17, 111), (40, 186), (Start: 51 @216 has 70 MA's), (66, 315), (67, 327), (72, 345), (73, 363), (83, 405), (90, 453), (113, 579), (114, 582), (119, 606), (123, 633), (145, 756),

Gene: Phredrick\_110 Start: 71544, Stop: 72104, Start Num: 48

Candidate Starts for Phredrick\_110:

(26, 71478), (34, 71499), (Start: 48 @71544 has 16 MA's), (61, 71604), (71, 71679), (74, 71700), (76, 71712), (79, 71733), (102, 71832), (110, 71883), (119, 71940), (120, 71949), (123, 71967), (126, 71982), (144, 72078), (145, 72090),

Gene: PinkiePie\_178 Start: 95896, Stop: 96453, Start Num: 51

Candidate Starts for PinkiePie\_178:

(Start: 51 @95896 has 70 MA's), (78, 96073), (97, 96154), (119, 96280), (120, 96289), (123, 96307), (125, 96316), (137, 96364),

Gene: Poenanya\_71 Start: 44678, Stop: 45256, Start Num: 19

Candidate Starts for Poenanya\_71:

(Start: 19 @44678 has 18 MA's), (23, 44687), (67, 44810), (75, 44855), (94, 44960), (113, 45056), (119, 45083), (123, 45110), (131, 45146), (142, 45212), (143, 45215), (144, 45221), (146, 45242),

Gene: Polka14\_72 Start: 45394, Stop: 46047, Start Num: 19

Candidate Starts for Polka14\_72:

(Start: 19 @45394 has 18 MA's), (23, 45403), (Start: 35 @45436 has 1 MA's), (Start: 45 @45475 has 5 MA's), (64, 45553), (67, 45595), (75, 45640), (92, 45745), (94, 45751), (97, 45766), (113, 45847), (119, 45874), (123, 45901), (131, 45937), (142, 46003), (143, 46006), (144, 46012), (146, 46033),

Gene: Powerball\_59 Start: 40153, Stop: 40761, Start Num: 51

Candidate Starts for Powerball\_59:

(22, 40072), (Start: 51 @40153 has 70 MA's), (66, 40252), (67, 40264), (72, 40282), (73, 40300), (83, 40342), (90, 40390), (94, 40405), (97, 40420), (101, 40435), (117, 40531), (119, 40543), (123, 40570), (139, 40651),

Gene: PumpkinSpice\_192 Start: 97187, Stop: 97744, Start Num: 51

Candidate Starts for PumpkinSpice\_192:

(Start: 51 @97187 has 70 MA's), (Start: 68 @97310 has 2 MA's), (78, 97364), (100, 97457), (113, 97544), (115, 97550), (119, 97571), (120, 97580), (122, 97592), (123, 97598), (125, 97607),

Gene: Pupper\_72 Start: 25365, Stop: 25928, Start Num: 49

Candidate Starts for Pupper\_72:

(Start: 49 @25365 has 12 MA's), (67, 25482), (69, 25488), (74, 25518), (116, 25695), (119, 25713), (123, 25740),

Gene: Quantum\_77 Start: 57043, Stop: 56420, Start Num: 58

Candidate Starts for Quantum\_77:

(Start: 58 @57043 has 4 MA's), (Start: 68 @56962 has 2 MA's), (94, 56806), (95, 56803), (106, 56755), (111, 56692), (112, 56683), (119, 56650), (132, 56584), (150, 56452),

Gene: Quaran19\_190 Start: 96628, Stop: 97185, Start Num: 51

Candidate Starts for Quaran19\_190:

(Start: 51 @96628 has 70 MA's), (Start: 68 @96751 has 2 MA's), (78, 96805), (100, 96898), (113, 96985), (115, 96991), (119, 97012), (120, 97021), (122, 97033), (123, 97039), (125, 97048),

Gene: RedBird\_69 Start: 43183, Stop: 43761, Start Num: 19

Candidate Starts for RedBird\_69:

(Start: 19 @43183 has 18 MA's), (23, 43192), (67, 43315), (75, 43360), (94, 43465), (113, 43561), (119, 43588), (123, 43615), (131, 43651), (142, 43717), (143, 43720), (144, 43726), (146, 43747),

Gene: Rikishi\_196 Start: 96739, Stop: 97296, Start Num: 51

Candidate Starts for Rikishi\_196:

(Start: 51 @96739 has 70 MA's), (Start: 68 @96862 has 2 MA's), (78, 96916), (100, 97009), (104, 97027), (113, 97096), (119, 97123), (120, 97132), (122, 97144), (123, 97150), (125, 97159),

Gene: Riptide\_180 Start: 94295, Stop: 94852, Start Num: 51

Candidate Starts for Riptide\_180:

(Start: 51 @94295 has 70 MA's), (78, 94472), (95, 94541), (97, 94553), (103, 94580), (104, 94583), (119, 94679), (120, 94688), (123, 94706), (125, 94715),

Gene: Rita\_95 Start: 53949, Stop: 54506, Start Num: 49

Candidate Starts for Rita\_95:

(7, 53757), (20, 53865), (34, 53904), (Start: 49 @53949 has 12 MA's), (61, 54003), (67, 54063), (82, 54135), (93, 54216), (117, 54330), (119, 54342), (120, 54351), (123, 54369), (127, 54387), (135, 54417), (148, 54501),

Gene: RitaG\_69 Start: 44538, Stop: 45191, Start Num: 19

Candidate Starts for RitaG\_69:

(Start: 19 @44538 has 18 MA's), (23, 44547), (Start: 35 @44580 has 1 MA's), (Start: 45 @44619 has 5 MA's), (64, 44697), (67, 44739), (75, 44784), (92, 44889), (94, 44895), (97, 44910), (113, 44991), (119, 45018), (123, 45045), (131, 45081), (142, 45147), (143, 45150), (144, 45156), (146, 45177),

Gene: Ruthy\_58 Start: 42248, Stop: 42835, Start Num: 51

Candidate Starts for Ruthy\_58:

(Start: 51 @42248 has 70 MA's), (66, 42347), (67, 42359), (72, 42377), (73, 42395), (83, 42437), (90, 42485), (94, 42500), (97, 42515), (113, 42611), (119, 42638), (123, 42665), (152, 42824),

Gene: SCentae\_71 Start: 25119, Stop: 25682, Start Num: 49

Candidate Starts for SCentae\_71:

(Start: 49 @25119 has 12 MA's), (67, 25236), (69, 25242), (74, 25272), (116, 25449), (119, 25467), (123, 25494),

Gene: SPB78\_66 Start: 42811, Stop: 43368, Start Num: 49

Candidate Starts for SPB78\_66:

(21, 42730), (27, 42748), (29, 42754), (Start: 49 @42811 has 12 MA's), (63, 42880), (72, 42946), (73, 42961), (84, 43003), (88, 43027), (100, 43093), (101, 43096), (119, 43189), (123, 43216), (134, 43264), (144, 43330),

Gene: SaltySpittoon\_190 Start: 96170, Stop: 96727, Start Num: 51

Candidate Starts for SaltySpittoon\_190:

(Start: 51 @96170 has 70 MA's), (Start: 68 @96293 has 2 MA's), (78, 96347), (100, 96440), (113, 96527), (115, 96533), (119, 96554), (120, 96563), (122, 96575), (123, 96581), (125, 96590),

Gene: Samisti12\_182 Start: 98079, Stop: 98636, Start Num: 51

Candidate Starts for Samisti12\_182:

(Start: 51 @98079 has 70 MA's), (56, 98106), (64, 98154), (Start: 68 @98202 has 2 MA's), (73, 98232), (78, 98256), (114, 98439), (119, 98463), (120, 98472), (122, 98484), (123, 98490), (125, 98499),

Gene: Sashimi\_90 Start: 48886, Stop: 49443, Start Num: 51

Candidate Starts for Sashimi\_90:

(Start: 51 @48886 has 70 MA's), (64, 48955), (66, 48985), (74, 49033), (81, 49063), (119, 49216), (123, 49243), (129, 49270), (144, 49354), (147, 49378),

Gene: Sassafras\_69 Start: 43501, Stop: 44079, Start Num: 19

Candidate Starts for Sassafras\_69:

(Start: 19 @43501 has 18 MA's), (23, 43510), (67, 43633), (75, 43678), (94, 43783), (113, 43879), (119, 43906), (123, 43933), (131, 43969), (142, 44035), (143, 44038), (144, 44044), (146, 44065),

Gene: Satis\_78 Start: 57039, Stop: 56416, Start Num: 58

Candidate Starts for Satis\_78:

(Start: 58 @57039 has 4 MA's), (Start: 68 @56958 has 2 MA's), (94, 56802), (95, 56799), (106, 56751), (111, 56688), (112, 56679), (119, 56646), (132, 56580), (150, 56448),

Gene: Sbash\_62 Start: 43188, Stop: 43778, Start Num: 44

Candidate Starts for Sbash\_62:

(31, 43146), (Start: 44 @43188 has 1 MA's), (69, 43317), (75, 43362), (80, 43380), (94, 43482), (97, 43497), (113, 43578), (119, 43605), (123, 43632), (131, 43668), (143, 43737), (144, 43743), (146, 43764),

Gene: Scheme\_184 Start: 98335, Stop: 98817, Start Num: 64

Candidate Starts for Scheme\_184:

(Start: 51 @98260 has 70 MA's), (56, 98287), (64, 98335), (Start: 68 @98383 has 2 MA's), (73, 98413), (78, 98437), (114, 98620), (119, 98644), (120, 98653), (122, 98665), (123, 98671), (125, 98680),

Gene: Scottish\_67 Start: 43084, Stop: 43737, Start Num: 19

Candidate Starts for Scottish\_67:

(Start: 19 @43084 has 18 MA's), (23, 43093), (Start: 35 @43126 has 1 MA's), (Start: 45 @43165 has 5 MA's), (64, 43243), (67, 43285), (75, 43330), (92, 43435), (94, 43441), (97, 43456), (113, 43537), (119, 43564), (123, 43591), (131, 43627), (142, 43693), (143, 43696), (144, 43702), (146, 43723),

Gene: SeresaTree\_110 Start: 72518, Stop: 73087, Start Num: 48

Candidate Starts for SeresaTree\_110:

(Start: 48 @72518 has 16 MA's), (Start: 51 @72527 has 70 MA's), (74, 72674), (76, 72686), (101, 72803), (115, 72860), (119, 72881), (123, 72908), (126, 72923), (143, 73013), (144, 73019), (145, 73031),

Gene: Sham\_107 Start: 72628, Stop: 73191, Start Num: 47

Candidate Starts for Sham\_107:

(28, 72571), (36, 72598), (Start: 47 @72628 has 6 MA's), (74, 72784), (76, 72796), (101, 72913), (107, 72937), (119, 73024), (120, 73033), (123, 73051), (126, 73066), (144, 73162),

Gene: Shuckle\_181 Start: 96745, Stop: 97302, Start Num: 51

Candidate Starts for Shuckle\_181:

(Start: 51 @96745 has 70 MA's), (73, 96898), (78, 96922), (97, 97003), (119, 97129), (120, 97138), (123, 97156), (125, 97165), (137, 97213),

Gene: SiSi\_68 Start: 44708, Stop: 45361, Start Num: 19

Candidate Starts for SiSi\_68:

(Start: 19 @44708 has 18 MA's), (23, 44717), (Start: 35 @44750 has 1 MA's), (Start: 45 @44789 has 5 MA's), (64, 44867), (67, 44909), (75, 44954), (92, 45059), (94, 45065), (97, 45080), (113, 45161), (119, 45188), (123, 45215), (131, 45251), (142, 45317), (143, 45320), (144, 45326), (146, 45347),

Gene: SkinnyPete\_50 Start: 33679, Stop: 34233, Start Num: 45

Candidate Starts for SkinnyPete\_50:

(12, 33553), (14, 33577), (16, 33586), (24, 33613), (Start: 45 @33679 has 5 MA's), (67, 33799), (92, 33931), (93, 33934), (94, 33937), (97, 33952), (103, 33979), (110, 34003), (113, 34033), (119, 34060), (123, 34087), (131, 34123), (143, 34192), (144, 34198), (146, 34219),

Gene: Skog\_133 Start: 54097, Stop: 54663, Start Num: 50

Candidate Starts for Skog\_133:

(Start: 50 @54097 has 6 MA's), (67, 54208), (75, 54253), (85, 54277), (113, 54421), (114, 54424), (119, 54448), (122, 54469), (123, 54475), (151, 54640),

Gene: Sollertia\_186 Start: 96138, Stop: 96692, Start Num: 51

Candidate Starts for Sollertia\_186:

(Start: 51 @96138 has 70 MA's), (64, 96213), (78, 96315), (94, 96381), (95, 96384), (113, 96495), (119, 96522), (120, 96531), (122, 96543), (123, 96549), (125, 96558), (133, 96591), (141, 96645),

Gene: Soul22\_95 Start: 50440, Stop: 50997, Start Num: 49

Candidate Starts for Soul22\_95:

(7, 50248), (20, 50356), (34, 50395), (Start: 49 @50440 has 12 MA's), (61, 50494), (67, 50554), (82, 50626), (93, 50707), (117, 50821), (119, 50833), (123, 50860), (127, 50878), (135, 50908), (148, 50992),

Gene: SparkleGoddess\_109 Start: 73096, Stop: 73659, Start Num: 47

Candidate Starts for SparkleGoddess\_109:

(28, 73039), (36, 73066), (Start: 47 @73096 has 6 MA's), (74, 73252), (76, 73264), (79, 73285), (91, 73339), (115, 73471), (117, 73480), (119, 73492), (122, 73513), (123, 73519), (126, 73534), (144, 73630),



Gene: Sparky\_55 Start: 38977, Stop: 39525, Start Num: 46

Candidate Starts for Sparky\_55:

(1, 38575), (2, 38632), (9, 38827), (10, 38842), (Start: 46 @38977 has 2 MA's), (67, 39097), (74, 39133), (94, 39229), (97, 39244), (113, 39325), (119, 39352), (123, 39379), (131, 39415), (142, 39481), (143, 39484), (144, 39490),

Gene: Spelly\_193 Start: 96099, Stop: 96656, Start Num: 51

Candidate Starts for Spelly\_193:

(Start: 51 @96099 has 70 MA's), (Start: 68 @96222 has 2 MA's), (73, 96252), (78, 96276), (100, 96369), (113, 96456), (115, 96462), (119, 96483), (120, 96492), (122, 96504), (123, 96510), (125, 96519),

Gene: Spilled\_196 Start: 97303, Stop: 97860, Start Num: 51

Candidate Starts for Spilled\_196:

(Start: 51 @97303 has 70 MA's), (Start: 68 @97426 has 2 MA's), (78, 97480), (100, 97573), (115, 97666), (119, 97687), (120, 97696), (122, 97708), (123, 97714), (125, 97723),

Gene: Squillium\_181 Start: 95898, Stop: 96455, Start Num: 51

Candidate Starts for Squillium\_181:

(Start: 51 @95898 has 70 MA's), (78, 96075), (97, 96156), (119, 96282), (120, 96291), (123, 96309), (125, 96318), (137, 96366),

Gene: StAugustine\_3 Start: 1052, Stop: 1621, Start Num: 45

Candidate Starts for StAugustine\_3:

(Start: 45 @1052 has 5 MA's), (57, 1097), (66, 1154), (67, 1166), (74, 1202), (80, 1229), (97, 1325), (114, 1412), (118, 1433), (119, 1436), (123, 1463), (143, 1565),

Gene: Stanimal\_185 Start: 96499, Stop: 97053, Start Num: 51

Candidate Starts for Stanimal\_185:

(Start: 51 @96499 has 70 MA's), (64, 96574), (78, 96676), (94, 96742), (95, 96745), (113, 96856), (119, 96883), (120, 96892), (122, 96904), (123, 96910), (125, 96919), (133, 96952), (141, 97006),

Gene: StarPlatinum\_196 Start: 98569, Stop: 99126, Start Num: 51

Candidate Starts for StarPlatinum\_196:

(Start: 51 @98569 has 70 MA's), (64, 98644), (Start: 68 @98692 has 2 MA's), (73, 98722), (78, 98746), (100, 98839), (113, 98926), (119, 98953), (120, 98962), (122, 98974), (123, 98980), (125, 98989), (141, 99076),

Gene: Starbow\_188 Start: 96143, Stop: 96700, Start Num: 51

Candidate Starts for Starbow\_188:

(Start: 51 @96143 has 70 MA's), (Start: 68 @96266 has 2 MA's), (78, 96320), (100, 96413), (113, 96500), (115, 96506), (119, 96527), (120, 96536), (122, 96548), (123, 96554), (125, 96563),

Gene: Stigma\_109 Start: 73104, Stop: 73667, Start Num: 47

Candidate Starts for Stigma\_109:

(28, 73047), (36, 73074), (Start: 47 @73104 has 6 MA's), (74, 73260), (76, 73272), (79, 73293), (91, 73347), (115, 73479), (117, 73488), (119, 73500), (123, 73527), (126, 73542), (144, 73638),

Gene: Sushi23\_181 Start: 97745, Stop: 98302, Start Num: 51

Candidate Starts for Sushi23\_181:

(Start: 51 @97745 has 70 MA's), (56, 97772), (64, 97820), (Start: 68 @97868 has 2 MA's), (73, 97898), (78, 97922), (114, 98105), (119, 98129), (120, 98138), (122, 98150), (123, 98156), (125, 98165),

Gene: Targaryen\_179 Start: 97642, Stop: 98199, Start Num: 51

Candidate Starts for Targaryen\_179:

(Start: 51 @97642 has 70 MA's), (Start: 68 @97765 has 2 MA's), (73, 97795), (78, 97819), (84, 97834), (110, 97969), (117, 98014), (119, 98026), (120, 98035), (122, 98047), (123, 98053), (125, 98062),

Gene: Teutsch\_179 Start: 97177, Stop: 97734, Start Num: 51

Candidate Starts for Teutsch\_179:

(Start: 51 @97177 has 70 MA's), (56, 97204), (64, 97252), (Start: 68 @97300 has 2 MA's), (73, 97330), (78, 97354), (114, 97537), (119, 97561), (120, 97570), (122, 97582), (123, 97588), (125, 97597),

Gene: TomSawyer\_195 Start: 98737, Stop: 99171, Start Num: 68

Candidate Starts for TomSawyer\_195:

(Start: 68 @98737 has 2 MA's), (78, 98791), (100, 98884), (113, 98971), (115, 98977), (119, 98998), (120, 99007), (122, 99019), (123, 99025), (125, 99034),

Gene: Tomas\_184 Start: 96480, Stop: 97016, Start Num: 51

Candidate Starts for Tomas\_184:

(Start: 51 @96480 has 70 MA's), (65, 96582), (78, 96657), (95, 96726), (97, 96738), (119, 96846), (120, 96855), (123, 96873), (125, 96882), (143, 96978),

Gene: Tribute\_178 Start: 97194, Stop: 97751, Start Num: 51

Candidate Starts for Tribute\_178:

(Start: 51 @97194 has 70 MA's), (56, 97221), (64, 97269), (Start: 68 @97317 has 2 MA's), (73, 97347), (78, 97371), (114, 97554), (119, 97578), (120, 97587), (122, 97599), (123, 97605), (125, 97614),

Gene: TunaTartare\_110 Start: 74387, Stop: 74956, Start Num: 48

Candidate Starts for TunaTartare\_110:

(42, 74375), (Start: 48 @74387 has 16 MA's), (Start: 51 @74396 has 70 MA's), (73, 74540), (74, 74543), (76, 74555), (115, 74729), (119, 74750), (120, 74759), (123, 74777), (126, 74792), (143, 74882), (144, 74888), (145, 74900),

Gene: VanLee\_87 Start: 48126, Stop: 48647, Start Num: 50

Candidate Starts for VanLee\_87:

(Start: 50 @48126 has 6 MA's), (67, 48237), (69, 48243), (70, 48246), (75, 48282), (94, 48357), (101, 48387), (110, 48423), (119, 48480), (123, 48507),

Gene: Warpy\_184 Start: 96658, Stop: 97212, Start Num: 51

Candidate Starts for Warpy\_184:

(Start: 51 @96658 has 70 MA's), (Start: 68 @96781 has 2 MA's), (78, 96835), (84, 96850), (94, 96901), (117, 97030), (119, 97042), (120, 97051), (122, 97063), (123, 97069), (125, 97078),

Gene: Watermoore\_179 Start: 97589, Stop: 98146, Start Num: 51

Candidate Starts for Watermoore\_179:

(Start: 51 @97589 has 70 MA's), (56, 97616), (64, 97664), (Start: 68 @97712 has 2 MA's), (73, 97742), (78, 97766), (114, 97949), (119, 97973), (120, 97982), (122, 97994), (123, 98000), (125, 98009),

Gene: Westy\_111 Start: 74131, Stop: 74694, Start Num: 47

Candidate Starts for Westy\_111:

(28, 74074), (36, 74101), (Start: 47 @74131 has 6 MA's), (74, 74287), (76, 74299), (79, 74320), (91, 74374), (115, 74506), (117, 74515), (119, 74527), (122, 74548), (123, 74554), (126, 74569), (144, 74665),

Gene: WhereRU\_180 Start: 96302, Stop: 96859, Start Num: 51

Candidate Starts for WhereRU\_180:

(Start: 51 @96302 has 70 MA's), (Start: 68 @96425 has 2 MA's), (73, 96455), (78, 96479), (84, 96494), (110, 96629), (117, 96674), (119, 96686), (120, 96695), (122, 96707), (123, 96713), (125, 96722),

Gene: Wipeout\_182 Start: 97566, Stop: 98123, Start Num: 51

Candidate Starts for Wipeout\_182:

(Start: 51 @97566 has 70 MA's), (Start: 68 @97689 has 2 MA's), (78, 97743), (100, 97836), (113, 97923), (115, 97929), (119, 97950), (120, 97959), (122, 97971), (123, 97977), (125, 97986),

Gene: Wofford\_189 Start: 99505, Stop: 100062, Start Num: 51

Candidate Starts for Wofford\_189:

(Start: 51 @99505 has 70 MA's), (64, 99580), (73, 99658), (78, 99682), (100, 99775), (103, 99790), (113, 99862), (119, 99889), (120, 99898), (122, 99910), (123, 99916), (125, 99925),

Gene: Yaboi\_189 Start: 96073, Stop: 96627, Start Num: 51

Candidate Starts for Yaboi\_189:

(Start: 51 @96073 has 70 MA's), (64, 96148), (78, 96250), (94, 96316), (95, 96319), (113, 96430), (119, 96457), (120, 96466), (122, 96478), (123, 96484), (125, 96493), (133, 96526), (141, 96580),

Gene: Zuko\_37 Start: 32848, Stop: 32147, Start Num: 35

Candidate Starts for Zuko\_37:

(30, 32860), (Start: 35 @32848 has 1 MA's), (39, 32830), (52, 32791), (60, 32749), (61, 32746), (62, 32743), (65, 32698), (66, 32686), (Start: 68 @32671 has 2 MA's), (69, 32668), (71, 32653), (77, 32593), (89, 32515), (90, 32497), (94, 32482), (96, 32473), (108, 32410), (110, 32389), (119, 32332), (122, 32311), (123, 32305), (130, 32275), (136, 32254),

Gene: pZL12\_59c Start: 47859, Stop: 47257, Start Num: 33

Candidate Starts for pZL12\_59c:

(33, 47859), (54, 47790), (55, 47787), (74, 47661), (87, 47607), (93, 47568), (102, 47535), (117, 47454), (119, 47442), (123, 47415), (145, 47286),