



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 157692 Report

This analysis was run 04/28/24 on database version 559.

Pham number 157692 has 130 members, 12 are drafts.

Phages represented in each track:

- Track 1 : Kenuha5\_73, Gandolph\_74, SuperGrey\_76
- Track 2 : IrishSherpFalk\_76, Latretium\_72, Squirty\_77, Byougenkin\_74, Bubbles123\_71, XFactor\_71, Rita\_82, Marker\_82, lbhubesi\_73, Whouxphf\_72, Tweety\_76, WillSterrel\_76
- Track 3 : Llama\_81, Ochi17\_80, Seabastian\_82, AlpineSix\_81, OfUltron\_82, Jinglebell\_80, Wachhund\_75, Modragons\_79
- Track 4 : QuickMath\_74, DRBy19\_79, Soul22\_79, Kimberlium\_75, Zizzle\_78, Jacob\_75, Mattes\_77, Saal\_75, Clifton\_68, Lizziana\_80, lbOuu\_73, Blarby\_84, Spoonbill\_73, Philus\_78, Veteran\_68, OlympiaSaint\_75, Gorge\_77, James\_76, Firehouse51\_72, Jabbawokkie\_85, Zapner\_84
- Track 5 : OldBen\_74, JoeyJr\_77, JalFarm20\_84, KingMidas\_76, PHappiness\_77, Harley\_75, Polka14\_81, Nimbo\_69, Geralt\_70, Leperchaun\_75, Daenerys\_76, Doomphist\_80, KristaRAM\_74, Inventum\_75, RedBird\_78, Seagreen\_77, Dorothy\_78, Poenanya\_80, Empress\_75, RitaG\_77, Scottish\_75, Sassafras\_78
- Track 6 : GUmbie\_70
- Track 7 : Cerasum\_69, BigPhil\_69, Coco12\_72
- Track 8 : Yorick\_73, DirtMcgirt\_73, UncleRicky\_73, EleanorGeorge\_78, Burwell21\_72, Llij\_70, Lorde\_74, Flathead\_75, Blexus\_72, Leozinho\_75, Martik\_77, Pippy\_72, Drago\_71, Enby\_75, Maravista\_77, ShroomBoi\_76, Phatniss\_71
- Track 9 : Kingsley\_79, SiSi\_72, SG4\_73, Shauna1\_75, LittleShirley\_76, Phanphagia\_74, Whatsapiecost\_70
- Track 10 : Mozy\_82
- Track 11 : MadMen\_73
- Track 12 : Fastidio\_69
- Track 13 : Taj\_82, Wee\_81, Ms6\_74
- Track 14 : DeadP\_77
- Track 15 : DotProduct\_72, GigiOuiOui\_70
- Track 16 : DaddyRickover\_80
- Track 17 : Ardmore\_61, Chuckly\_73
- Track 18 : Aubs\_77, Guppsters\_70
- Track 19 : DillTech15\_77, Ogopogo\_81
- Track 20 : Totinger\_74
- Track 21 : Quico\_85, Girafales\_85, Florinda\_88
- Track 22 : Zerg\_74
- Track 23 : Dante\_75
- Track 24 : Juice456\_72, Deb65\_70
- Track 25 : Akhila\_70, MilanaBonita\_69

- Track 26 : Filuzino\_77
- Track 27 : PopTart\_66, SassyB\_66
- Track 28 : Minnie\_73, Sandalphon\_71
- Track 29 : MinionDave\_71
- Track 30 : Yoshi\_89
- Track 31 : Avani\_83
- Track 32 : ThetaBob\_79
- Track 33 : Cornie\_71

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

The start number called the most often in the published annotations is 15, it was called in 112 of the 118 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Akhila\_70, AlpineSix\_81, Ardmore\_61, Aubs\_77, Avani\_83, BigPhil\_69, Blarby\_84, Blexus\_72, Bubbles123\_71, Burwell21\_72, Byougenkin\_74, Cerasum\_69, Chuckly\_73, Clifton\_68, Coco12\_72, Cornie\_71, DRBy19\_79, Daenerys\_76, Dante\_75, DeadP\_77, DirtMcgirt\_73, Doomphist\_80, Dorothy\_78, Drago\_71, EleanorGeorge\_78, Empress\_75, Enby\_75, Fastidio\_69, Filuzino\_77, Firehouse51\_72, Flathead\_75, Florinda\_88, GUmbie\_70, Gandalph\_74, Geralt\_70, Girafales\_85, Gorge\_77, Guppsters\_70, Harley\_75, IbOuu\_73, Ibhubesi\_73, Inventum\_75, IrishSherpFalk\_76, Jabbawokkie\_85, JalFarm20\_84, James\_76, Jacob\_75, Jinglebell\_80, JoeyJr\_77, Kenuha5\_73, Kimberlium\_75, KingMidas\_76, Kingsley\_79, KristaRAM\_74, Latretium\_72, Leozinho\_75, Leperchaun\_75, LittleShirley\_76, Lizziana\_80, Llama\_81, Llij\_70, Lorde\_74, MadMen\_73, Maravista\_77, Marker\_82, Martik\_77, Mattes\_77, MilanaBonita\_69, Minnie\_73, Modragons\_79, Mozy\_82, Ms6\_74, Nimbo\_69, Ochi17\_80, OfUltron\_82, OldBen\_74, OlympiaSaint\_75, PHappiness\_77, Phanphagia\_74, Phatniss\_71, Philus\_78, Pippy\_72, Poenanya\_80, Polka14\_81, PopTart\_66, QuickMath\_74, Quico\_85, RedBird\_78, RitaG\_77, Rita\_82, SG4\_73, Saal\_75, Sandalphon\_71, Sassafras\_78, SassyB\_66, Scottish\_75, Seabastian\_82, Seagreen\_77, Shauna1\_75, ShroomBoi\_76, SiSi\_72, Soul22\_79, Spoonbill\_73, Squirty\_77, SuperGrey\_76, Taj\_82, ThetaBob\_79, Tweety\_76, UncleRicky\_73, Veteran\_68, Wachhund\_75, Wee\_81, Whatsapiecost\_70, Whouxphf\_72, WillSterrel\_76, XFactor\_71, Yorick\_73, Yoshi\_89, Zapner\_84, Zerg\_74, Zizzle\_78,

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

- Deb65\_70, Juice456\_72,

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

- DaddyRickover\_80, DillTech15\_77, DotProduct\_72, GigiOuiOui\_70, MinionDave\_71, Ogopogo\_81, Totinger\_74,

### **Summary by start number:**

Start 14:

- Found in 4 of 130 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 3 of 118
- Called 75.0% of time when present

- Phage (with cluster) where this start called: DotProduct\_72 (F1), GigiOuiOui\_70 (F1), MinionDave\_71 (F1),

#### Start 15:

- Found in 123 of 130 ( 94.6% ) of genes in pham
- Manual Annotations of this start: 112 of 118
- Called 98.4% of time when present
- Phage (with cluster) where this start called: Akhila\_70 (F1), AlpineSix\_81 (F1), Ardmore\_61 (F1), Aubs\_77 (F1), Avani\_83 (F2), BigPhil\_69 (F1), Blarby\_84 (F), Blexus\_72 (F1), Bubbles123\_71 (F1), Burwell21\_72 (F1), Byougenkin\_74 (F1), Cerasum\_69 (F1), Chuckly\_73 (F1), Clifton\_68 (F1), Coco12\_72 (F1), Cornie\_71 (F5), DRBy19\_79 (F1), Daenerys\_76 (F1), Dante\_75 (F1), DeadP\_77 (F1), DirtMcGirt\_73 (F1), Doomphist\_80 (F1), Dorothy\_78 (F1), Drago\_71 (F1), EleanorGeorge\_78 (F1), Empress\_75 (F1), Enby\_75 (F1), Fastidio\_69 (F1), Filuzino\_77 (F1), Firehouse51\_72 (F1), Flathead\_75 (F1), Florinda\_88 (F1), GUmbie\_70 (F1), Gandolph\_74 (F1), Geralt\_70 (F1), Girafales\_85 (F1), Gorge\_77 (F1), Guppsters\_70 (F1), Harley\_75 (F1), IbOuu\_73 (F1), Ibhubesi\_73 (F1), Inventum\_75 (F1), IrishSherpFalk\_76 (F1), Jabbawokkie\_85 (F2), JalFarm20\_84 (F1), James\_76 (F1), Jacob\_75 (F1), Jinglebell\_80 (F1), JoeyJr\_77 (F1), Kenuha5\_73 (F1), Kimberlium\_75 (F1), KingMidas\_76 (F1), Kingsley\_79 (F1), KristaRAM\_74 (F1), Latretium\_72 (F1), Leozinho\_75 (F1), Leperchaun\_75 (F1), LittleShirley\_76 (F1), Lizziana\_80 (F1), Llama\_81 (F1), Llij\_70 (F1), Lorde\_74 (F1), MadMen\_73 (F1), Maravista\_77 (F1), Marker\_82 (F1), Martik\_77 (F1), Mattes\_77 (F1), MilanaBonita\_69 (F1), Minnie\_73 (F1), Modragons\_79 (F1), Mozy\_82 (F1), Ms6\_74 (F1), Nimbo\_69 (F1), Ochi17\_80 (F1), OfUltron\_82 (F1), OldBen\_74 (F1), OlympiaSaint\_75 (F1), PHappiness\_77 (F1), Phanphagia\_74 (F1), Phatniss\_71 (F1), Philus\_78 (F1), Pippy\_72 (F1), Poenanya\_80 (F1), Polka14\_81 (F1), PopTart\_66 (F1), QuickMath\_74 (F1), Quico\_85 (F1), RedBird\_78 (F1), RitaG\_77 (F1), Rita\_82 (F1), SG4\_73 (F1), Saal\_75 (F1), Sandalphon\_71 (F1), Sassafras\_78 (F1), SassyB\_66 (F1), Scottish\_75 (F1), Seabastian\_82 (F1), Seagreen\_77 (F1), Shauna1\_75 (F1), ShroomBoi\_76 (F1), SiSi\_72 (F1), Soul22\_79 (F2), Spoonbill\_73 (F1), Squirty\_77 (F3), SuperGrey\_76 (F1), Taj\_82 (F1), ThetaBob\_79 (F4), Tweety\_76 (F1), UncleRicky\_73 (F1), Veteran\_68 (F1), Wachhund\_75 (F1), Wee\_81 (F1), Whatsapiecost\_70 (F1), Whouxphf\_72 (F1), WillSterrel\_76 (F1), XFactor\_71 (F1), Yorick\_73 (F1), Yoshi\_89 (F2), Zapner\_84 (F2), Zerg\_74 (F1), Zizzle\_78 (F1),

#### Start 16:

- Found in 3 of 130 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 2 of 118
- Called 66.7% of time when present
- Phage (with cluster) where this start called: DillTech15\_77 (F1), Ogopogo\_81 (F1),

#### Start 17:

- Found in 31 of 130 ( 23.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 3.2% of time when present
- Phage (with cluster) where this start called: Totinger\_74 (F1),

#### Start 19:

- Found in 101 of 130 ( 77.7% ) of genes in pham
- Manual Annotations of this start: 1 of 118
- Called 2.0% of time when present
- Phage (with cluster) where this start called: Deb65\_70 (F1), Juice456\_72 (F1),

Start 20:

- Found in 1 of 130 ( 0.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DaddyRickover\_80 (F1),

### **Summary by clusters:**

There are 6 clusters represented in this pham: F1, F2, F3, F4, F5, F,

Info for manual annotations of cluster F1:

- Start number 14 was manually annotated 3 times for cluster F1.
- Start number 15 was manually annotated 104 times for cluster F1.
- Start number 16 was manually annotated 2 times for cluster F1.
- Start number 19 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster F2:

- Start number 15 was manually annotated 5 times for cluster F2.

Info for manual annotations of cluster F3:

- Start number 15 was manually annotated 1 time for cluster F3.

Info for manual annotations of cluster F4:

- Start number 15 was manually annotated 1 time for cluster F4.

Info for manual annotations of cluster F5:

- Start number 15 was manually annotated 1 time for cluster F5.

### **Gene Information:**

Gene: Akhila\_70 Start: 45997, Stop: 46260, Start Num: 15

Candidate Starts for Akhila\_70:

(Start: 15 @45997 has 112 MA's), (18, 46036), (Start: 19 @46042 has 1 MA's), (21, 46060), (25, 46084), (26, 46087), (27, 46108), (28, 46111), (30, 46120),

Gene: AlpineSix\_81 Start: 48210, Stop: 48473, Start Num: 15

Candidate Starts for AlpineSix\_81:

(Start: 15 @48210 has 112 MA's), (18, 48249), (22, 48282), (25, 48297), (27, 48321), (28, 48324), (29, 48330), (30, 48333),

Gene: Ardmore\_61 Start: 42203, Stop: 42466, Start Num: 15

Candidate Starts for Ardmore\_61:

(Start: 15 @42203 has 112 MA's), (18, 42242), (Start: 19 @42248 has 1 MA's), (21, 42266), (25, 42290), (26, 42293), (27, 42314), (28, 42317), (29, 42323), (30, 42326),

Gene: Aubs\_77 Start: 48345, Stop: 48608, Start Num: 15

Candidate Starts for Aubs\_77:

(13, 48309), (Start: 15 @48345 has 112 MA's), (18, 48384), (Start: 19 @48390 has 1 MA's), (25, 48432), (26, 48435), (27, 48456), (28, 48459), (29, 48465), (30, 48468),

Gene: Avani\_83 Start: 45436, Stop: 45696, Start Num: 15

Candidate Starts for Avani\_83:

(Start: 15 @45436 has 112 MA's), (18, 45475), (25, 45523), (26, 45526), (27, 45547), (28, 45550), (29, 45556), (30, 45559), (32, 45640),

Gene: BigPhil\_69 Start: 43418, Stop: 43681, Start Num: 15

Candidate Starts for BigPhil\_69:

(13, 43382), (Start: 15 @43418 has 112 MA's), (17, 43448), (18, 43457), (Start: 19 @43463 has 1 MA's), (22, 43490), (25, 43505), (27, 43529), (28, 43532), (29, 43538), (30, 43541),

Gene: Blarby\_84 Start: 46350, Stop: 46613, Start Num: 15

Candidate Starts for Blarby\_84:

(13, 46314), (Start: 15 @46350 has 112 MA's), (18, 46389), (Start: 19 @46395 has 1 MA's), (25, 46437), (26, 46440), (27, 46461), (28, 46464), (29, 46470), (30, 46473),

Gene: Blexus\_72 Start: 47780, Stop: 48040, Start Num: 15

Candidate Starts for Blexus\_72:

(Start: 15 @47780 has 112 MA's), (17, 47810), (18, 47819), (Start: 19 @47825 has 1 MA's), (25, 47867), (26, 47870), (27, 47891), (28, 47894), (29, 47900), (30, 47903),

Gene: Bubbles123\_71 Start: 47407, Stop: 47667, Start Num: 15

Candidate Starts for Bubbles123\_71:

(Start: 15 @47407 has 112 MA's), (18, 47446), (22, 47479), (25, 47494), (27, 47518), (28, 47521), (29, 47527), (30, 47530),

Gene: Burwell21\_72 Start: 47228, Stop: 47491, Start Num: 15

Candidate Starts for Burwell21\_72:

(Start: 15 @47228 has 112 MA's), (17, 47258), (18, 47267), (Start: 19 @47273 has 1 MA's), (25, 47315), (26, 47318), (27, 47339), (28, 47342), (29, 47348), (30, 47351),

Gene: Byougenkin\_74 Start: 45276, Stop: 45536, Start Num: 15

Candidate Starts for Byougenkin\_74:

(Start: 15 @45276 has 112 MA's), (18, 45315), (22, 45348), (25, 45363), (27, 45387), (28, 45390), (29, 45396), (30, 45399),

Gene: Cerasum\_69 Start: 43436, Stop: 43699, Start Num: 15

Candidate Starts for Cerasum\_69:

(13, 43400), (Start: 15 @43436 has 112 MA's), (17, 43466), (18, 43475), (Start: 19 @43481 has 1 MA's), (22, 43508), (25, 43523), (27, 43547), (28, 43550), (29, 43556), (30, 43559),

Gene: Chuckly\_73 Start: 44774, Stop: 45043, Start Num: 15

Candidate Starts for Chuckly\_73:

(Start: 15 @44774 has 112 MA's), (18, 44813), (Start: 19 @44819 has 1 MA's), (21, 44837), (25, 44861), (26, 44864), (27, 44885), (28, 44888), (29, 44894), (30, 44897),

Gene: Clifton\_68 Start: 45729, Stop: 45998, Start Num: 15

Candidate Starts for Clifton\_68:

(13, 45693), (Start: 15 @45729 has 112 MA's), (18, 45768), (Start: 19 @45774 has 1 MA's), (25, 45816), (26, 45819), (27, 45840), (28, 45843), (29, 45849), (30, 45852),

Gene: Coco12\_72 Start: 47493, Stop: 47756, Start Num: 15

Candidate Starts for Coco12\_72:

(13, 47457), (Start: 15 @47493 has 112 MA's), (17, 47523), (18, 47532), (Start: 19 @47538 has 1 MA's), (22, 47565), (25, 47580), (27, 47604), (28, 47607), (29, 47613), (30, 47616),

Gene: Cornie\_71 Start: 45997, Stop: 46260, Start Num: 15

Candidate Starts for Cornie\_71:

(Start: 15 @45997 has 112 MA's), (17, 46027), (18, 46036), (22, 46069), (25, 46084), (27, 46108), (28, 46111), (29, 46117), (30, 46120),

Gene: DRBy19\_79 Start: 49458, Stop: 49727, Start Num: 15

Candidate Starts for DRBy19\_79:

(13, 49422), (Start: 15 @49458 has 112 MA's), (18, 49497), (Start: 19 @49503 has 1 MA's), (25, 49545), (26, 49548), (27, 49569), (28, 49572), (29, 49578), (30, 49581),

Gene: DaddyRickover\_80 Start: 49400, Stop: 49606, Start Num: 20

Candidate Starts for DaddyRickover\_80:

(Start: 16 @49358 has 2 MA's), (20, 49400), (23, 49421), (24, 49430), (27, 49457), (28, 49460), (29, 49466), (30, 49469),

Gene: Daenerys\_76 Start: 48942, Stop: 49205, Start Num: 15

Candidate Starts for Daenerys\_76:

(Start: 15 @48942 has 112 MA's), (18, 48981), (Start: 19 @48987 has 1 MA's), (21, 49005), (25, 49029), (26, 49032), (27, 49053), (28, 49056), (29, 49062), (30, 49065),

Gene: Dante\_75 Start: 49464, Stop: 49727, Start Num: 15

Candidate Starts for Dante\_75:

(1, 49134), (2, 49152), (3, 49173), (4, 49218), (5, 49233), (6, 49278), (7, 49281), (8, 49293), (11, 49407), (12, 49410), (Start: 15 @49464 has 112 MA's), (17, 49494), (18, 49503), (Start: 19 @49509 has 1 MA's), (25, 49551), (26, 49554), (27, 49575), (28, 49578), (29, 49584), (30, 49587),

Gene: DeadP\_77 Start: 46561, Stop: 46824, Start Num: 15

Candidate Starts for DeadP\_77:

(Start: 15 @46561 has 112 MA's), (18, 46600), (Start: 19 @46606 has 1 MA's), (25, 46648), (26, 46651), (27, 46672), (29, 46681), (30, 46684),

Gene: Deb65\_70 Start: 46709, Stop: 46927, Start Num: 19

Candidate Starts for Deb65\_70:

(Start: 15 @46664 has 112 MA's), (18, 46703), (Start: 19 @46709 has 1 MA's), (21, 46727), (25, 46751), (26, 46754), (27, 46775), (28, 46778), (29, 46784), (30, 46787),

Gene: DillTech15\_77 Start: 46271, Stop: 46519, Start Num: 16

Candidate Starts for DillTech15\_77:

(Start: 16 @46271 has 2 MA's), (18, 46295), (Start: 19 @46301 has 1 MA's), (21, 46319), (25, 46343), (26, 46346), (27, 46367), (28, 46370), (29, 46376), (30, 46379),

Gene: DirtMcgirt\_73 Start: 44667, Stop: 44927, Start Num: 15

Candidate Starts for DirtMcgirt\_73:

(Start: 15 @44667 has 112 MA's), (17, 44697), (18, 44706), (Start: 19 @44712 has 1 MA's), (25, 44754), (26, 44757), (27, 44778), (28, 44781), (29, 44787), (30, 44790),

Gene: Doomphist\_80 Start: 48755, Stop: 49015, Start Num: 15

Candidate Starts for Doomphist\_80:

(Start: 15 @48755 has 112 MA's), (18, 48794), (Start: 19 @48800 has 1 MA's), (21, 48818), (25, 48842), (26, 48845), (27, 48866), (28, 48869), (29, 48875), (30, 48878),

Gene: Dorothy\_78 Start: 49393, Stop: 49656, Start Num: 15

Candidate Starts for Dorothy\_78:

(Start: 15 @49393 has 112 MA's), (18, 49432), (Start: 19 @49438 has 1 MA's), (21, 49456), (25, 49480), (26, 49483), (27, 49504), (28, 49507), (29, 49513), (30, 49516),

Gene: DotProduct\_72 Start: 46308, Stop: 46571, Start Num: 14

Candidate Starts for DotProduct\_72:

(Start: 14 @46308 has 3 MA's), (17, 46338), (18, 46347), (Start: 19 @46353 has 1 MA's), (22, 46380), (25, 46395), (27, 46419), (28, 46422), (29, 46428), (30, 46431),

Gene: Drago\_71 Start: 44670, Stop: 44930, Start Num: 15

Candidate Starts for Drago\_71:

(Start: 15 @44670 has 112 MA's), (17, 44700), (18, 44709), (Start: 19 @44715 has 1 MA's), (25, 44757), (26, 44760), (27, 44781), (28, 44784), (29, 44790), (30, 44793),

Gene: EleanorGeorge\_78 Start: 48348, Stop: 48611, Start Num: 15

Candidate Starts for EleanorGeorge\_78:

(Start: 15 @48348 has 112 MA's), (17, 48378), (18, 48387), (Start: 19 @48393 has 1 MA's), (25, 48435), (26, 48438), (27, 48459), (28, 48462), (29, 48468), (30, 48471),

Gene: Empress\_75 Start: 47566, Stop: 47826, Start Num: 15

Candidate Starts for Empress\_75:

(Start: 15 @47566 has 112 MA's), (18, 47605), (Start: 19 @47611 has 1 MA's), (21, 47629), (25, 47653), (26, 47656), (27, 47677), (28, 47680), (29, 47686), (30, 47689),

Gene: Enby\_75 Start: 44946, Stop: 45206, Start Num: 15

Candidate Starts for Enby\_75:

(Start: 15 @44946 has 112 MA's), (17, 44976), (18, 44985), (Start: 19 @44991 has 1 MA's), (25, 45033), (26, 45036), (27, 45057), (28, 45060), (29, 45066), (30, 45069),

Gene: Fastidio\_69 Start: 43064, Stop: 43327, Start Num: 15

Candidate Starts for Fastidio\_69:

(Start: 15 @43064 has 112 MA's), (18, 43103), (Start: 19 @43109 has 1 MA's), (22, 43136), (25, 43151), (26, 43154), (27, 43175), (28, 43178), (29, 43184), (30, 43187),

Gene: Filuzino\_77 Start: 49292, Stop: 49555, Start Num: 15

Candidate Starts for Filuzino\_77:

(Start: 15 @49292 has 112 MA's), (18, 49331), (Start: 19 @49337 has 1 MA's), (21, 49355), (25, 49379), (26, 49382), (28, 49406), (29, 49412), (30, 49415),

Gene: Firehouse51\_72 Start: 48557, Stop: 48820, Start Num: 15

Candidate Starts for Firehouse51\_72:

(13, 48521), (Start: 15 @48557 has 112 MA's), (18, 48596), (Start: 19 @48602 has 1 MA's), (25, 48644), (26, 48647), (27, 48668), (28, 48671), (29, 48677), (30, 48680),

Gene: Flathead\_75 Start: 47006, Stop: 47269, Start Num: 15

Candidate Starts for Flathead\_75:

(Start: 15 @47006 has 112 MA's), (17, 47036), (18, 47045), (Start: 19 @47051 has 1 MA's), (25, 47093), (26, 47096), (27, 47117), (28, 47120), (29, 47126), (30, 47129),

Gene: Florinda\_88 Start: 50208, Stop: 50471, Start Num: 15

Candidate Starts for Florinda\_88:



(Start: 15 @50208 has 112 MA's), (18, 50247), (Start: 19 @50253 has 1 MA's), (25, 50295), (26, 50298), (27, 50319), (28, 50322), (29, 50328), (30, 50331), (31, 50382),

Gene: GUmbie\_70 Start: 46728, Stop: 46991, Start Num: 15

Candidate Starts for GUmbie\_70:

(13, 46692), (Start: 15 @46728 has 112 MA's), (18, 46767), (Start: 19 @46773 has 1 MA's), (25, 46815), (26, 46818), (27, 46839), (28, 46842), (29, 46848),

Gene: Gandalph\_74 Start: 44756, Stop: 45019, Start Num: 15

Candidate Starts for Gandalph\_74:

(Start: 15 @44756 has 112 MA's), (17, 44786), (18, 44795), (Start: 19 @44801 has 1 MA's), (22, 44828), (25, 44843), (27, 44867), (28, 44870), (29, 44876), (30, 44879),

Gene: Geralt\_70 Start: 46662, Stop: 46925, Start Num: 15

Candidate Starts for Geralt\_70:

(Start: 15 @46662 has 112 MA's), (18, 46701), (Start: 19 @46707 has 1 MA's), (21, 46725), (25, 46749), (26, 46752), (27, 46773), (28, 46776), (29, 46782), (30, 46785),

Gene: GigiOuiOui\_70 Start: 46399, Stop: 46662, Start Num: 14

Candidate Starts for GigiOuiOui\_70:

(Start: 14 @46399 has 3 MA's), (17, 46429), (18, 46438), (Start: 19 @46444 has 1 MA's), (22, 46471), (25, 46486), (27, 46510), (28, 46513), (29, 46519), (30, 46522),

Gene: Girafales\_85 Start: 49813, Stop: 50076, Start Num: 15

Candidate Starts for Girafales\_85:

(Start: 15 @49813 has 112 MA's), (18, 49852), (Start: 19 @49858 has 1 MA's), (25, 49900), (26, 49903), (27, 49924), (28, 49927), (29, 49933), (30, 49936), (31, 49987),

Gene: Gorge\_77 Start: 48668, Stop: 48937, Start Num: 15

Candidate Starts for Gorge\_77:

(13, 48632), (Start: 15 @48668 has 112 MA's), (18, 48707), (Start: 19 @48713 has 1 MA's), (25, 48755), (26, 48758), (27, 48779), (28, 48782), (29, 48788), (30, 48791),

Gene: Guppsters\_70 Start: 45099, Stop: 45362, Start Num: 15

Candidate Starts for Guppsters\_70:

(13, 45063), (Start: 15 @45099 has 112 MA's), (18, 45138), (Start: 19 @45144 has 1 MA's), (25, 45186), (26, 45189), (27, 45210), (28, 45213), (29, 45219), (30, 45222),

Gene: Harley\_75 Start: 46896, Stop: 47156, Start Num: 15

Candidate Starts for Harley\_75:

(Start: 15 @46896 has 112 MA's), (18, 46935), (Start: 19 @46941 has 1 MA's), (21, 46959), (25, 46983), (26, 46986), (27, 47007), (28, 47010), (29, 47016), (30, 47019),

Gene: IbOuu\_73 Start: 45535, Stop: 45804, Start Num: 15

Candidate Starts for IbOuu\_73:

(13, 45499), (Start: 15 @45535 has 112 MA's), (18, 45574), (Start: 19 @45580 has 1 MA's), (25, 45622), (26, 45625), (27, 45646), (28, 45649), (29, 45655), (30, 45658),

Gene: Ibhubesi\_73 Start: 45070, Stop: 45330, Start Num: 15

Candidate Starts for Ibhubesi\_73:

(Start: 15 @45070 has 112 MA's), (18, 45109), (22, 45142), (25, 45157), (27, 45181), (28, 45184), (29, 45190), (30, 45193),

Gene: Inventum\_75 Start: 47578, Stop: 47841, Start Num: 15

Candidate Starts for Inventum\_75:

(Start: 15 @47578 has 112 MA's), (18, 47617), (Start: 19 @47623 has 1 MA's), (21, 47641), (25, 47665), (26, 47668), (27, 47689), (28, 47692), (29, 47698), (30, 47701),

Gene: IrishSherpFalk\_76 Start: 48130, Stop: 48390, Start Num: 15

Candidate Starts for IrishSherpFalk\_76:

(Start: 15 @48130 has 112 MA's), (18, 48169), (22, 48202), (25, 48217), (27, 48241), (28, 48244), (29, 48250), (30, 48253),

Gene: Jabbawokkie\_85 Start: 46270, Stop: 46533, Start Num: 15

Candidate Starts for Jabbawokkie\_85:

(13, 46234), (Start: 15 @46270 has 112 MA's), (18, 46309), (Start: 19 @46315 has 1 MA's), (25, 46357), (26, 46360), (27, 46381), (28, 46384), (29, 46390), (30, 46393),

Gene: JalFarm20\_84 Start: 48356, Stop: 48619, Start Num: 15

Candidate Starts for JalFarm20\_84:

(Start: 15 @48356 has 112 MA's), (18, 48395), (Start: 19 @48401 has 1 MA's), (21, 48419), (25, 48443), (26, 48446), (27, 48467), (28, 48470), (29, 48476), (30, 48479),

Gene: James\_76 Start: 48793, Stop: 49062, Start Num: 15

Candidate Starts for James\_76:

(13, 48757), (Start: 15 @48793 has 112 MA's), (18, 48832), (Start: 19 @48838 has 1 MA's), (25, 48880), (26, 48883), (27, 48904), (28, 48907), (29, 48913), (30, 48916),

Gene: Jacob\_75 Start: 48390, Stop: 48659, Start Num: 15

Candidate Starts for Jacob\_75:

(13, 48354), (Start: 15 @48390 has 112 MA's), (18, 48429), (Start: 19 @48435 has 1 MA's), (25, 48477), (26, 48480), (27, 48501), (28, 48504), (29, 48510), (30, 48513),

Gene: Jinglebell\_80 Start: 48209, Stop: 48472, Start Num: 15

Candidate Starts for Jinglebell\_80:

(Start: 15 @48209 has 112 MA's), (18, 48248), (22, 48281), (25, 48296), (27, 48320), (28, 48323), (29, 48329), (30, 48332),

Gene: JoeyJr\_77 Start: 48567, Stop: 48830, Start Num: 15

Candidate Starts for JoeyJr\_77:

(Start: 15 @48567 has 112 MA's), (18, 48606), (Start: 19 @48612 has 1 MA's), (21, 48630), (25, 48654), (26, 48657), (27, 48678), (28, 48681), (29, 48687), (30, 48690),

Gene: Juice456\_72 Start: 46357, Stop: 46575, Start Num: 19

Candidate Starts for Juice456\_72:

(Start: 15 @46312 has 112 MA's), (18, 46351), (Start: 19 @46357 has 1 MA's), (21, 46375), (25, 46399), (26, 46402), (27, 46423), (28, 46426), (29, 46432), (30, 46435),

Gene: Kenuha5\_73 Start: 48117, Stop: 48380, Start Num: 15

Candidate Starts for Kenuha5\_73:

(Start: 15 @48117 has 112 MA's), (17, 48147), (18, 48156), (Start: 19 @48162 has 1 MA's), (22, 48189), (25, 48204), (27, 48228), (28, 48231), (29, 48237), (30, 48240),

Gene: Kimberlium\_75 Start: 46441, Stop: 46704, Start Num: 15

Candidate Starts for Kimberlium\_75:

(13, 46405), (Start: 15 @46441 has 112 MA's), (18, 46480), (Start: 19 @46486 has 1 MA's), (25, 46528), (26, 46531), (27, 46552), (28, 46555), (29, 46561), (30, 46564),

Gene: KingMidas\_76 Start: 47981, Stop: 48241, Start Num: 15

Candidate Starts for KingMidas\_76:

(Start: 15 @47981 has 112 MA's), (18, 48020), (Start: 19 @48026 has 1 MA's), (21, 48044), (25, 48068), (26, 48071), (27, 48092), (28, 48095), (29, 48101), (30, 48104),

Gene: Kingsley\_79 Start: 49818, Stop: 50081, Start Num: 15

Candidate Starts for Kingsley\_79:

(Start: 15 @49818 has 112 MA's), (18, 49857), (Start: 19 @49863 has 1 MA's), (25, 49905), (26, 49908), (27, 49929), (28, 49932), (29, 49938), (30, 49941),

Gene: KristaRAM\_74 Start: 46681, Stop: 46944, Start Num: 15

Candidate Starts for KristaRAM\_74:

(Start: 15 @46681 has 112 MA's), (18, 46720), (Start: 19 @46726 has 1 MA's), (21, 46744), (25, 46768), (26, 46771), (27, 46792), (28, 46795), (29, 46801), (30, 46804),

Gene: Latretium\_72 Start: 45212, Stop: 45475, Start Num: 15

Candidate Starts for Latretium\_72:

(Start: 15 @45212 has 112 MA's), (18, 45251), (22, 45284), (25, 45299), (27, 45323), (28, 45326), (29, 45332), (30, 45335),

Gene: Leozinho\_75 Start: 45465, Stop: 45725, Start Num: 15

Candidate Starts for Leozinho\_75:

(Start: 15 @45465 has 112 MA's), (17, 45495), (18, 45504), (Start: 19 @45510 has 1 MA's), (25, 45552), (26, 45555), (27, 45576), (28, 45579), (29, 45585), (30, 45588),

Gene: Leperchaun\_75 Start: 47801, Stop: 48064, Start Num: 15

Candidate Starts for Leperchaun\_75:

(Start: 15 @47801 has 112 MA's), (18, 47840), (Start: 19 @47846 has 1 MA's), (21, 47864), (25, 47888), (26, 47891), (27, 47912), (28, 47915), (29, 47921), (30, 47924),

Gene: LittleShirley\_76 Start: 46737, Stop: 47000, Start Num: 15

Candidate Starts for LittleShirley\_76:

(Start: 15 @46737 has 112 MA's), (18, 46776), (Start: 19 @46782 has 1 MA's), (25, 46824), (26, 46827), (27, 46848), (28, 46851), (29, 46857), (30, 46860),

Gene: Lizziana\_80 Start: 49116, Stop: 49385, Start Num: 15

Candidate Starts for Lizziana\_80:

(13, 49080), (Start: 15 @49116 has 112 MA's), (18, 49155), (Start: 19 @49161 has 1 MA's), (25, 49203), (26, 49206), (27, 49227), (28, 49230), (29, 49236), (30, 49239),

Gene: Llama\_81 Start: 48065, Stop: 48328, Start Num: 15

Candidate Starts for Llama\_81:

(Start: 15 @48065 has 112 MA's), (18, 48104), (22, 48137), (25, 48152), (27, 48176), (28, 48179), (29, 48185), (30, 48188),

Gene: Llij\_70 Start: 44824, Stop: 45084, Start Num: 15

Candidate Starts for Llij\_70:

(Start: 15 @44824 has 112 MA's), (17, 44854), (18, 44863), (Start: 19 @44869 has 1 MA's), (25, 44911), (26, 44914), (27, 44935), (28, 44938), (29, 44944), (30, 44947),

Gene: Lorde\_74 Start: 44111, Stop: 44371, Start Num: 15

Candidate Starts for Lorde\_74:

(Start: 15 @44111 has 112 MA's), (17, 44141), (18, 44150), (Start: 19 @44156 has 1 MA's), (25, 44198), (26, 44201), (27, 44222), (28, 44225), (29, 44231), (30, 44234),

Gene: MadMen\_73 Start: 46044, Stop: 46307, Start Num: 15

Candidate Starts for MadMen\_73:

(9, 45888), (10, 45975), (Start: 15 @46044 has 112 MA's), (18, 46083), (22, 46116), (25, 46131), (27, 46155), (28, 46158), (29, 46164), (30, 46167),

Gene: Maravista\_77 Start: 50144, Stop: 50407, Start Num: 15

Candidate Starts for Maravista\_77:

(Start: 15 @50144 has 112 MA's), (17, 50174), (18, 50183), (Start: 19 @50189 has 1 MA's), (25, 50231), (26, 50234), (27, 50255), (28, 50258), (29, 50264), (30, 50267),

Gene: Marker\_82 Start: 46631, Stop: 46891, Start Num: 15

Candidate Starts for Marker\_82:

(Start: 15 @46631 has 112 MA's), (18, 46670), (22, 46703), (25, 46718), (27, 46742), (28, 46745), (29, 46751), (30, 46754),

Gene: Martik\_77 Start: 49625, Stop: 49885, Start Num: 15

Candidate Starts for Martik\_77:

(Start: 15 @49625 has 112 MA's), (17, 49655), (18, 49664), (Start: 19 @49670 has 1 MA's), (25, 49712), (26, 49715), (27, 49736), (28, 49739), (29, 49745), (30, 49748),

Gene: Mattes\_77 Start: 48793, Stop: 49062, Start Num: 15

Candidate Starts for Mattes\_77:

(13, 48757), (Start: 15 @48793 has 112 MA's), (18, 48832), (Start: 19 @48838 has 1 MA's), (25, 48880), (26, 48883), (27, 48904), (28, 48907), (29, 48913), (30, 48916),

Gene: MilanaBonita\_69 Start: 45997, Stop: 46260, Start Num: 15

Candidate Starts for MilanaBonita\_69:

(Start: 15 @45997 has 112 MA's), (18, 46036), (Start: 19 @46042 has 1 MA's), (21, 46060), (25, 46084), (26, 46087), (27, 46108), (28, 46111), (30, 46120),

Gene: MinionDave\_71 Start: 47066, Stop: 47329, Start Num: 14

Candidate Starts for MinionDave\_71:

(Start: 14 @47066 has 3 MA's), (18, 47105), (22, 47138), (25, 47153), (27, 47177), (28, 47180), (29, 47186), (30, 47189),

Gene: Minnie\_73 Start: 49177, Stop: 49440, Start Num: 15

Candidate Starts for Minnie\_73:

(Start: 15 @49177 has 112 MA's), (17, 49207), (18, 49216), (Start: 19 @49222 has 1 MA's), (21, 49240), (25, 49264), (27, 49288), (28, 49291), (29, 49297), (30, 49300),

Gene: Modragons\_79 Start: 48053, Stop: 48316, Start Num: 15

Candidate Starts for Modragons\_79:

(Start: 15 @48053 has 112 MA's), (18, 48092), (22, 48125), (25, 48140), (27, 48164), (28, 48167), (29, 48173), (30, 48176),

Gene: Mozy\_82 Start: 46888, Stop: 47151, Start Num: 15

Candidate Starts for Mozy\_82:

(Start: 15 @46888 has 112 MA's), (18, 46927), (Start: 19 @46933 has 1 MA's), (22, 46960), (25, 46975), (27, 46999), (30, 47011),

Gene: Ms6\_74 Start: 43560, Stop: 43823, Start Num: 15

Candidate Starts for Ms6\_74:

(Start: 15 @43560 has 112 MA's), (18, 43599), (Start: 19 @43605 has 1 MA's), (21, 43623), (25, 43647), (26, 43650), (27, 43671), (28, 43674), (29, 43680), (30, 43683), (31, 43734),

Gene: Nimbo\_69 Start: 46665, Stop: 46928, Start Num: 15

Candidate Starts for Nimbo\_69:

(Start: 15 @46665 has 112 MA's), (18, 46704), (Start: 19 @46710 has 1 MA's), (21, 46728), (25, 46752), (26, 46755), (27, 46776), (28, 46779), (29, 46785), (30, 46788),

Gene: Ochi17\_80 Start: 47660, Stop: 47923, Start Num: 15

Candidate Starts for Ochi17\_80:

(Start: 15 @47660 has 112 MA's), (18, 47699), (22, 47732), (25, 47747), (27, 47771), (28, 47774), (29, 47780), (30, 47783),

Gene: OfUltron\_82 Start: 48209, Stop: 48472, Start Num: 15

Candidate Starts for OfUltron\_82:

(Start: 15 @48209 has 112 MA's), (18, 48248), (22, 48281), (25, 48296), (27, 48320), (28, 48323), (29, 48329), (30, 48332),

Gene: Ogopogo\_81 Start: 47195, Stop: 47443, Start Num: 16

Candidate Starts for Ogopogo\_81:

(Start: 16 @47195 has 2 MA's), (18, 47219), (Start: 19 @47225 has 1 MA's), (21, 47243), (25, 47267), (26, 47270), (27, 47291), (28, 47294), (29, 47300), (30, 47303),

Gene: OldBen\_74 Start: 48057, Stop: 48320, Start Num: 15

Candidate Starts for OldBen\_74:

(Start: 15 @48057 has 112 MA's), (18, 48096), (Start: 19 @48102 has 1 MA's), (21, 48120), (25, 48144), (26, 48147), (27, 48168), (28, 48171), (29, 48177), (30, 48180),

Gene: OlympiaSaint\_75 Start: 47735, Stop: 48004, Start Num: 15

Candidate Starts for OlympiaSaint\_75:

(13, 47699), (Start: 15 @47735 has 112 MA's), (18, 47774), (Start: 19 @47780 has 1 MA's), (25, 47822), (26, 47825), (27, 47846), (28, 47849), (29, 47855), (30, 47858),

Gene: PHappiness\_77 Start: 48886, Stop: 49149, Start Num: 15

Candidate Starts for PHappiness\_77:

(Start: 15 @48886 has 112 MA's), (18, 48925), (Start: 19 @48931 has 1 MA's), (21, 48949), (25, 48973), (26, 48976), (27, 48997), (28, 49000), (29, 49006), (30, 49009),

Gene: Phanphagia\_74 Start: 47614, Stop: 47877, Start Num: 15

Candidate Starts for Phanphagia\_74:

(Start: 15 @47614 has 112 MA's), (18, 47653), (Start: 19 @47659 has 1 MA's), (25, 47701), (26, 47704), (27, 47725), (28, 47728), (29, 47734), (30, 47737),

Gene: Phatniss\_71 Start: 45919, Stop: 46179, Start Num: 15

Candidate Starts for Phatniss\_71:

(Start: 15 @45919 has 112 MA's), (17, 45949), (18, 45958), (Start: 19 @45964 has 1 MA's), (25, 46006), (26, 46009), (27, 46030), (28, 46033), (29, 46039), (30, 46042),

Gene: Philus\_78 Start: 49434, Stop: 49703, Start Num: 15

Candidate Starts for Philus\_78:

(13, 49398), (Start: 15 @49434 has 112 MA's), (18, 49473), (Start: 19 @49479 has 1 MA's), (25, 49521), (26, 49524), (27, 49545), (28, 49548), (29, 49554), (30, 49557),

Gene: Pippy\_72 Start: 46520, Stop: 46780, Start Num: 15

Candidate Starts for Pippy\_72:

(Start: 15 @46520 has 112 MA's), (17, 46550), (18, 46559), (Start: 19 @46565 has 1 MA's), (25, 46607), (26, 46610), (27, 46631), (28, 46634), (29, 46640), (30, 46643),

Gene: Poenanya\_80 Start: 48755, Stop: 49015, Start Num: 15

Candidate Starts for Poenanya\_80:

(Start: 15 @48755 has 112 MA's), (18, 48794), (Start: 19 @48800 has 1 MA's), (21, 48818), (25, 48842), (26, 48845), (27, 48866), (28, 48869), (29, 48875), (30, 48878),

Gene: Polka14\_81 Start: 49545, Stop: 49805, Start Num: 15

Candidate Starts for Polka14\_81:

(Start: 15 @49545 has 112 MA's), (18, 49584), (Start: 19 @49590 has 1 MA's), (21, 49608), (25, 49632), (26, 49635), (27, 49656), (28, 49659), (29, 49665), (30, 49668),

Gene: PopTart\_66 Start: 44400, Stop: 44669, Start Num: 15

Candidate Starts for PopTart\_66:

(Start: 15 @44400 has 112 MA's), (18, 44439), (25, 44487), (26, 44490), (27, 44511), (28, 44514), (29, 44520), (30, 44523),

Gene: QuickMath\_74 Start: 46664, Stop: 46927, Start Num: 15

Candidate Starts for QuickMath\_74:

(13, 46628), (Start: 15 @46664 has 112 MA's), (18, 46703), (Start: 19 @46709 has 1 MA's), (25, 46751), (26, 46754), (27, 46775), (28, 46778), (29, 46784), (30, 46787),

Gene: Quico\_85 Start: 50028, Stop: 50291, Start Num: 15

Candidate Starts for Quico\_85:

(Start: 15 @50028 has 112 MA's), (18, 50067), (Start: 19 @50073 has 1 MA's), (25, 50115), (26, 50118), (27, 50139), (28, 50142), (29, 50148), (30, 50151), (31, 50202),

Gene: RedBird\_78 Start: 49260, Stop: 49523, Start Num: 15

Candidate Starts for RedBird\_78:

(Start: 15 @49260 has 112 MA's), (18, 49299), (Start: 19 @49305 has 1 MA's), (21, 49323), (25, 49347), (26, 49350), (27, 49371), (28, 49374), (29, 49380), (30, 49383),

Gene: Rita\_82 Start: 49678, Stop: 49941, Start Num: 15

Candidate Starts for Rita\_82:

(Start: 15 @49678 has 112 MA's), (18, 49717), (22, 49750), (25, 49765), (27, 49789), (28, 49792), (29, 49798), (30, 49801),

Gene: RitaG\_77 Start: 48688, Stop: 48951, Start Num: 15

Candidate Starts for RitaG\_77:

(Start: 15 @48688 has 112 MA's), (18, 48727), (Start: 19 @48733 has 1 MA's), (21, 48751), (25, 48775), (26, 48778), (27, 48799), (28, 48802), (29, 48808), (30, 48811),

Gene: SG4\_73 Start: 46463, Stop: 46726, Start Num: 15

Candidate Starts for SG4\_73:

(Start: 15 @46463 has 112 MA's), (18, 46502), (Start: 19 @46508 has 1 MA's), (25, 46550), (26, 46553), (27, 46574), (28, 46577), (29, 46583), (30, 46586),

Gene: Saal\_75 Start: 48487, Stop: 48756, Start Num: 15

Candidate Starts for Saal\_75:

(13, 48451), (Start: 15 @48487 has 112 MA's), (18, 48526), (Start: 19 @48532 has 1 MA's), (25, 48574), (26, 48577), (27, 48598), (28, 48601), (29, 48607), (30, 48610),

Gene: Sandalphon\_71 Start: 47162, Stop: 47425, Start Num: 15

Candidate Starts for Sandalphon\_71:

(Start: 15 @47162 has 112 MA's), (17, 47192), (18, 47201), (Start: 19 @47207 has 1 MA's), (21, 47225), (25, 47249), (27, 47273), (28, 47276), (29, 47282), (30, 47285),

Gene: Sassafras\_78 Start: 47577, Stop: 47840, Start Num: 15

Candidate Starts for Sassafras\_78:

(Start: 15 @47577 has 112 MA's), (18, 47616), (Start: 19 @47622 has 1 MA's), (21, 47640), (25, 47664), (26, 47667), (27, 47688), (28, 47691), (29, 47697), (30, 47700),

Gene: SassyB\_66 Start: 44400, Stop: 44669, Start Num: 15

Candidate Starts for SassyB\_66:

(Start: 15 @44400 has 112 MA's), (18, 44439), (25, 44487), (26, 44490), (27, 44511), (28, 44514), (29, 44520), (30, 44523),

Gene: Scottish\_75 Start: 47236, Stop: 47496, Start Num: 15

Candidate Starts for Scottish\_75:

(Start: 15 @47236 has 112 MA's), (18, 47275), (Start: 19 @47281 has 1 MA's), (21, 47299), (25, 47323), (26, 47326), (27, 47347), (28, 47350), (29, 47356), (30, 47359),

Gene: Seabastian\_82 Start: 48210, Stop: 48473, Start Num: 15

Candidate Starts for Seabastian\_82:

(Start: 15 @48210 has 112 MA's), (18, 48249), (22, 48282), (25, 48297), (27, 48321), (28, 48324), (29, 48330), (30, 48333),

Gene: Seagreen\_77 Start: 48510, Stop: 48773, Start Num: 15

Candidate Starts for Seagreen\_77:

(Start: 15 @48510 has 112 MA's), (18, 48549), (Start: 19 @48555 has 1 MA's), (21, 48573), (25, 48597), (26, 48600), (27, 48621), (28, 48624), (29, 48630), (30, 48633),

Gene: Shauna1\_75 Start: 47864, Stop: 48127, Start Num: 15

Candidate Starts for Shauna1\_75:

(Start: 15 @47864 has 112 MA's), (18, 47903), (Start: 19 @47909 has 1 MA's), (25, 47951), (26, 47954), (27, 47975), (28, 47978), (29, 47984), (30, 47987),

Gene: ShroomBoi\_76 Start: 47619, Stop: 47882, Start Num: 15

Candidate Starts for ShroomBoi\_76:

(Start: 15 @47619 has 112 MA's), (17, 47649), (18, 47658), (Start: 19 @47664 has 1 MA's), (25, 47706), (26, 47709), (27, 47730), (28, 47733), (29, 47739), (30, 47742),

Gene: SiSi\_72 Start: 46694, Stop: 46957, Start Num: 15

Candidate Starts for SiSi\_72:

(Start: 15 @46694 has 112 MA's), (18, 46733), (Start: 19 @46739 has 1 MA's), (25, 46781), (26, 46784), (27, 46805), (28, 46808), (29, 46814), (30, 46817),

Gene: Soul22\_79 Start: 46222, Stop: 46485, Start Num: 15

Candidate Starts for Soul22\_79:

(13, 46186), (Start: 15 @46222 has 112 MA's), (18, 46261), (Start: 19 @46267 has 1 MA's), (25, 46309), (26, 46312), (27, 46333), (28, 46336), (29, 46342), (30, 46345),

Gene: Spoonbill\_73 Start: 45779, Stop: 46048, Start Num: 15

Candidate Starts for Spoonbill\_73:

(13, 45743), (Start: 15 @45779 has 112 MA's), (18, 45818), (Start: 19 @45824 has 1 MA's), (25, 45866), (26, 45869), (27, 45890), (28, 45893), (29, 45899), (30, 45902),

Gene: Squirty\_77 Start: 50791, Stop: 51054, Start Num: 15

Candidate Starts for Squirty\_77:

(Start: 15 @50791 has 112 MA's), (18, 50830), (22, 50863), (25, 50878), (27, 50902), (28, 50905), (29, 50911), (30, 50914),

Gene: SuperGrey\_76 Start: 49600, Stop: 49863, Start Num: 15

Candidate Starts for SuperGrey\_76:

(Start: 15 @49600 has 112 MA's), (17, 49630), (18, 49639), (Start: 19 @49645 has 1 MA's), (22, 49672), (25, 49687), (27, 49711), (28, 49714), (29, 49720), (30, 49723),

Gene: Taj\_82 Start: 49318, Stop: 49581, Start Num: 15

Candidate Starts for Taj\_82:

(Start: 15 @49318 has 112 MA's), (18, 49357), (Start: 19 @49363 has 1 MA's), (21, 49381), (25, 49405), (26, 49408), (27, 49429), (28, 49432), (29, 49438), (30, 49441), (31, 49492),

Gene: ThetaBob\_79 Start: 47510, Stop: 47773, Start Num: 15

Candidate Starts for ThetaBob\_79:

(Start: 15 @47510 has 112 MA's), (17, 47540), (18, 47549), (Start: 19 @47555 has 1 MA's), (21, 47573), (25, 47597), (26, 47600), (27, 47621), (28, 47624), (29, 47630), (30, 47633),

Gene: Totinger\_74 Start: 45844, Stop: 46077, Start Num: 17

Candidate Starts for Totinger\_74:

(Start: 14 @45814 has 3 MA's), (17, 45844), (18, 45853), (Start: 19 @45859 has 1 MA's), (22, 45886), (25, 45901), (27, 45925), (28, 45928), (29, 45934), (30, 45937),

Gene: Tweety\_76 Start: 48310, Stop: 48573, Start Num: 15

Candidate Starts for Tweety\_76:

(Start: 15 @48310 has 112 MA's), (18, 48349), (22, 48382), (25, 48397), (27, 48421), (28, 48424), (29, 48430), (30, 48433),

Gene: UncleRicky\_73 Start: 46167, Stop: 46427, Start Num: 15

Candidate Starts for UncleRicky\_73:

(Start: 15 @46167 has 112 MA's), (17, 46197), (18, 46206), (Start: 19 @46212 has 1 MA's), (25, 46254), (26, 46257), (27, 46278), (28, 46281), (29, 46287), (30, 46290),

Gene: Veteran\_68 Start: 46574, Stop: 46837, Start Num: 15

Candidate Starts for Veteran\_68:

(13, 46538), (Start: 15 @46574 has 112 MA's), (18, 46613), (Start: 19 @46619 has 1 MA's), (25, 46661), (26, 46664), (27, 46685), (28, 46688), (29, 46694), (30, 46697),

Gene: Wachhund\_75 Start: 45262, Stop: 45531, Start Num: 15

Candidate Starts for Wachhund\_75:



(Start: 15 @45262 has 112 MA's), (18, 45301), (22, 45334), (25, 45349), (27, 45373), (28, 45376), (29, 45382), (30, 45385),

Gene: Wee\_81 Start: 49394, Stop: 49657, Start Num: 15

Candidate Starts for Wee\_81:

(Start: 15 @49394 has 112 MA's), (18, 49433), (Start: 19 @49439 has 1 MA's), (21, 49457), (25, 49481), (26, 49484), (27, 49505), (28, 49508), (29, 49514), (30, 49517), (31, 49568),

Gene: Whatsapiecost\_70 Start: 43202, Stop: 43465, Start Num: 15

Candidate Starts for Whatsapiecost\_70:

(Start: 15 @43202 has 112 MA's), (18, 43241), (Start: 19 @43247 has 1 MA's), (25, 43289), (26, 43292), (27, 43313), (28, 43316), (29, 43322), (30, 43325),

Gene: Whouxphf\_72 Start: 47287, Stop: 47550, Start Num: 15

Candidate Starts for Whouxphf\_72:

(Start: 15 @47287 has 112 MA's), (18, 47326), (22, 47359), (25, 47374), (27, 47398), (28, 47401), (29, 47407), (30, 47410),

Gene: WillSterrel\_76 Start: 48163, Stop: 48423, Start Num: 15

Candidate Starts for WillSterrel\_76:

(Start: 15 @48163 has 112 MA's), (18, 48202), (22, 48235), (25, 48250), (27, 48274), (28, 48277), (29, 48283), (30, 48286),

Gene: XFactor\_71 Start: 46580, Stop: 46843, Start Num: 15

Candidate Starts for XFactor\_71:

(Start: 15 @46580 has 112 MA's), (18, 46619), (22, 46652), (25, 46667), (27, 46691), (28, 46694), (29, 46700), (30, 46703),

Gene: Yorick\_73 Start: 48700, Stop: 48960, Start Num: 15

Candidate Starts for Yorick\_73:

(Start: 15 @48700 has 112 MA's), (17, 48730), (18, 48739), (Start: 19 @48745 has 1 MA's), (25, 48787), (26, 48790), (27, 48811), (28, 48814), (29, 48820), (30, 48823),

Gene: Yoshi\_89 Start: 48568, Stop: 48831, Start Num: 15

Candidate Starts for Yoshi\_89:

(Start: 15 @48568 has 112 MA's), (18, 48607), (22, 48640), (25, 48655), (27, 48679), (28, 48682), (29, 48688), (30, 48691),

Gene: Zapner\_84 Start: 46364, Stop: 46627, Start Num: 15

Candidate Starts for Zapner\_84:

(13, 46328), (Start: 15 @46364 has 112 MA's), (18, 46403), (Start: 19 @46409 has 1 MA's), (25, 46451), (26, 46454), (27, 46475), (28, 46478), (29, 46484), (30, 46487),

Gene: Zerg\_74 Start: 47425, Stop: 47688, Start Num: 15

Candidate Starts for Zerg\_74:

(Start: 15 @47425 has 112 MA's), (18, 47464), (22, 47497), (25, 47512), (27, 47536), (28, 47539), (29, 47545), (30, 47548), (32, 47629),

Gene: Zizzle\_78 Start: 48816, Stop: 49079, Start Num: 15

Candidate Starts for Zizzle\_78:

(13, 48780), (Start: 15 @48816 has 112 MA's), (18, 48855), (Start: 19 @48861 has 1 MA's), (25, 48903), (26, 48906), (27, 48927), (28, 48930), (29, 48936), (30, 48939),