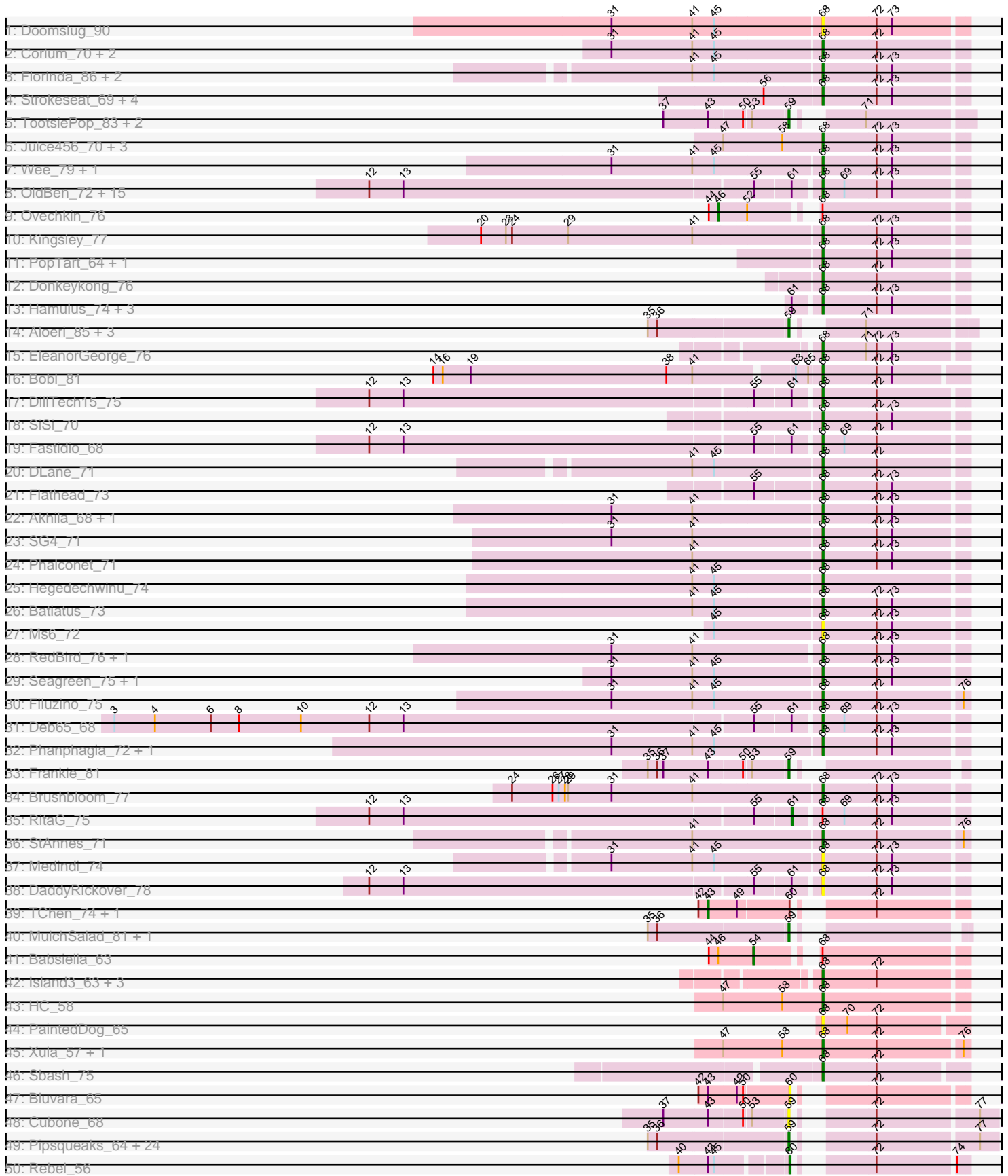
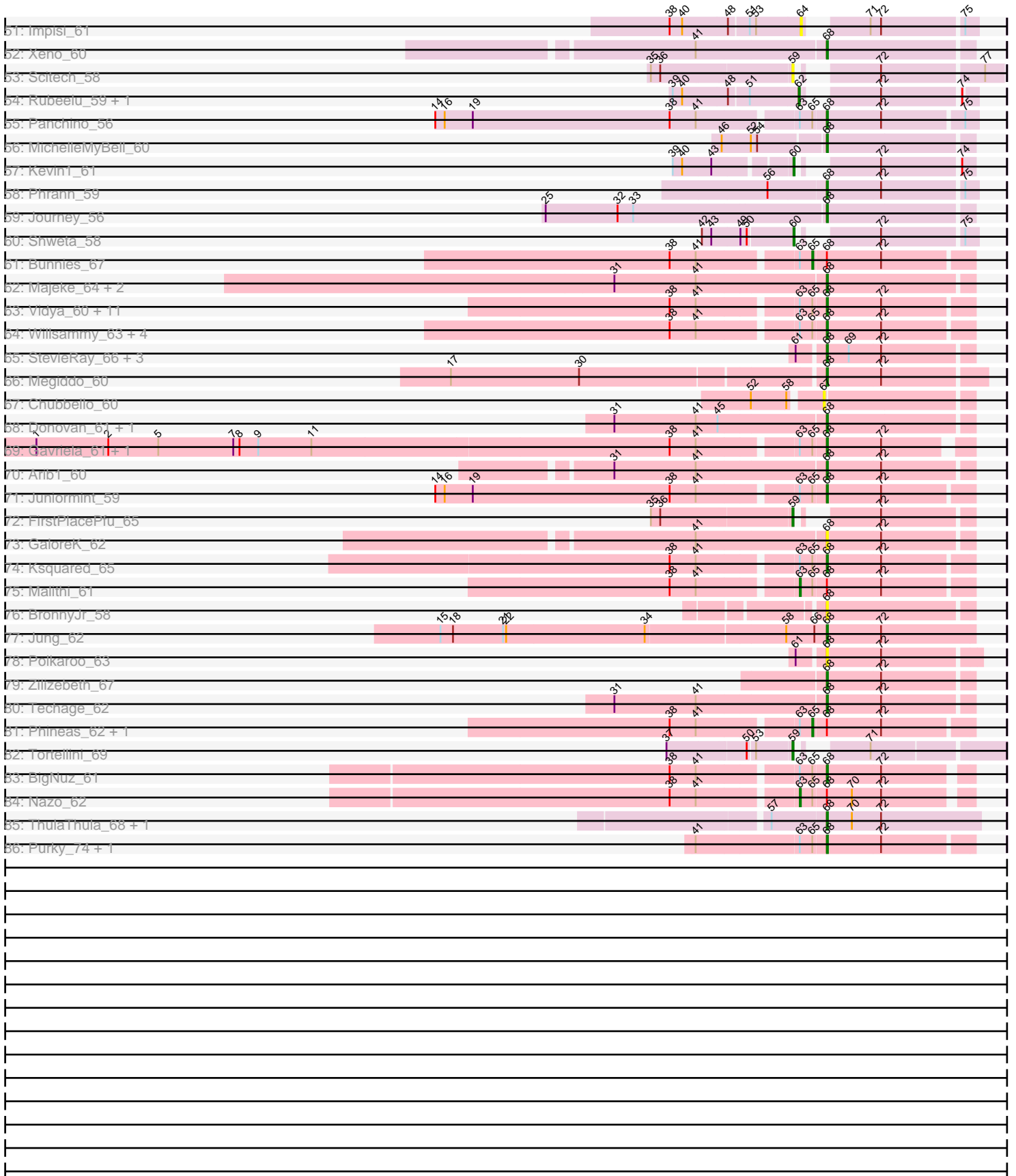


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Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. 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 294458 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294458 has 182 members, 22 are drafts.

Phages represented in each track:

- Track 1 : Doomslug\_90
- Track 2 : Corium\_70, KingJulian\_76, PatoPoderoso\_70
- Track 3 : Florinda\_86, Quico\_83, Girafales\_83
- Track 4 : Strokeseat\_69, Minnie\_71, Sandalphon\_69, Hlubikazi\_69, Mandlovu\_69
- Track 5 : TootsiePop\_83, Misha28\_83, Awesomesauce\_84
- Track 6 : Juice456\_70, JalFarm20\_82, KristaRAM\_72, DeadP\_75
- Track 7 : Wee\_79, Taj\_80
- Track 8 : OldBen\_72, JoeyJr\_75, Ogopogo\_79, Nimbo\_67, Doomphist\_78, KingMidas\_74, PHappiness\_75, Poenanya\_78, Geralt\_68, Daenerys\_74, Inventum\_73, Polka14\_79, Empress\_73, Leperchaun\_73, Scottish\_73, Sassafras\_76
- Track 9 : Ovechkin\_76
- Track 10 : Kingsley\_77
- Track 11 : PopTart\_64, SassyB\_64
- Track 12 : Donkeykong\_76
- Track 13 : Hamulus\_74, PhesterPhotato\_77, IMpilo\_64, LittleShirley\_74
- Track 14 : Aloeri\_85, LordVader\_82, ChickenDinner\_84, DocMcStuffins\_81
- Track 15 : EleanorGeorge\_76
- Track 16 : Bobi\_81
- Track 17 : DillTech15\_75
- Track 18 : SiSi\_70
- Track 19 : Fastidio\_68
- Track 20 : DLane\_71
- Track 21 : Flathead\_73
- Track 22 : Akhila\_68, MilanaBonita\_67
- Track 23 : SG4\_71
- Track 24 : Phalconet\_71
- Track 25 : Hegedechwinu\_74
- Track 26 : Batiatus\_73
- Track 27 : Ms6\_72
- Track 28 : RedBird\_76, Dorothy\_76
- Track 29 : Seagreen\_75, Bipolar\_77
- Track 30 : Filuzino\_75
- Track 31 : Deb65\_68
- Track 32 : Phanphagia\_72, Shauna1\_73
- Track 33 : Frankie\_81
- Track 34 : Brushbloom\_77
- Track 35 : RitaG\_75

- Track 36 : StAnnes\_71
- Track 37 : Medindi\_74
- Track 38 : DaddyRickover\_78
- Track 39 : TChen\_74, LunaStella\_72
- Track 40 : MulchSalad\_81, Piper2020\_87
- Track 41 : Babsiella\_63
- Track 42 : Island3\_63, Che9c\_71, Brujita\_62, Xavia\_63
- Track 43 : HC\_58
- Track 44 : PaintedDog\_65
- Track 45 : Xula\_57, QueenHazel\_58
- Track 46 : Sbash\_75
- Track 47 : Bluvara\_65
- Track 48 : Cubone\_68
- Track 49 : Pipsqueaks\_64, SkinnyPete\_60, EGUunicorn\_58, Andies\_57, Carcharodon\_63, Magsby\_62, Chewbacca\_66, Schnauzer\_64, Philonius\_63, Silvy\_59, Fulbright\_61, Xerxes\_63, Bosection6\_58, Tessdabest\_64, Parmesanjohn\_63, Phloss\_61, Gex\_64, Smurph\_63, Duplicity\_61, Charlie\_60, Melville\_68, Aggie\_59, Silvafighter\_65, Tortoise12\_63, Tapioca\_61
- Track 50 : Rebel\_56
- Track 51 : Impisi\_61
- Track 52 : Xeno\_60
- Track 53 : Scitech\_58
- Track 54 : Rubeelu\_59, Butters\_59
- Track 55 : Panchino\_56
- Track 56 : MichelleMyBell\_60
- Track 57 : Kevin1\_61
- Track 58 : Phrann\_59
- Track 59 : Journey\_56
- Track 60 : Shweta\_58
- Track 61 : Bunnies\_67
- Track 62 : Majeke\_64, Phegasus\_64, Mangethe\_64
- Track 63 : Vidya\_60, Jebeks\_62, Bogie\_64, HUHilltop\_64, Camster\_62, Sonah\_62, Dynamo\_61, Bhagsy\_67, Necropolis\_59, Shipwreck\_64, PeanutPie\_66, Pygmy\_65
- Track 64 : Willsammy\_63, CactusJack\_62, Glaske\_61, KilKor\_62, Phalm\_62
- Track 65 : StevieRay\_66, Thespis\_63, Atcoo\_63, Brusacoram\_63
- Track 66 : Megiddo\_60
- Track 67 : Chubbello\_60
- Track 68 : Donovan\_61, Kari\_61
- Track 69 : Gavriela\_61, StressBall\_61
- Track 70 : Arib1\_60
- Track 71 : Juniormint\_59
- Track 72 : FirstPlacePfu\_65
- Track 73 : GaloreK\_62
- Track 74 : Ksquared\_65
- Track 75 : Malithi\_61
- Track 76 : BronnyJr\_58
- Track 77 : Jung\_62
- Track 78 : Polkaroo\_63
- Track 79 : Zilizebeth\_67
- Track 80 : Techage\_62
- Track 81 : Phineas\_62, GreaseLightnin\_66
- Track 82 : Tortellini\_69
- Track 83 : BigNuz\_61

- Track 84 : Nazo\_62
- Track 85 : ThulaThula\_68, Phayonce\_64
- Track 86 : Purky\_74, Stuck\_74

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

The start number called the most often in the published annotations is 68, it was called in 111 of the 160 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Akhila\_68, Arib1\_60, Atcoo\_63, Batiatus\_73, Bhagsy\_67, BigNuz\_61, Bipolar\_77, Bobi\_81, Bogie\_64, BronnyJr\_58, Brujita\_62, Brusacoram\_63, Brushbloom\_77, CactusJack\_62, Camster\_62, Che9c\_71, Corium\_70, DLane\_71, DaddyRickover\_78, Daenerys\_74, DeadP\_75, Deb65\_68, DillTech15\_75, Donkeykong\_76, Donovan\_61, Doomphist\_78, Doomslug\_90, Dorothy\_76, Dynamo\_61, EleanorGeorge\_76, Empress\_73, Fastidio\_68, Filuzino\_75, Flathead\_73, Florinda\_86, GaloreK\_62, Gavriela\_61, Geralt\_68, Girafales\_83, Glaske\_61, HC\_58, HUHilltop\_64, Hamulus\_74, Hegedechwinu\_74, Hlubikazi\_69, IMpilo\_64, Inventum\_73, Island3\_63, JalFarm20\_82, Jebeks\_62, JoeyJr\_75, Journey\_56, Juice456\_70, Jung\_62, Juniormint\_59, Kari\_61, KilKor\_62, KingJulian\_76, KingMidas\_74, Kingsley\_77, KristaRAM\_72, Ksquared\_65, Leperchaun\_73, LittleShirley\_74, Majeke\_64, Mandlovu\_69, Mangethe\_64, Medindi\_74, Megiddo\_60, MichelleMyBell\_60, MilanaBonita\_67, Minnie\_71, Ms6\_72, Necropolis\_59, Nimbo\_67, Ogopogo\_79, OldBen\_72, PHappiness\_75, PaintedDog\_65, Panchino\_56, PatoPoderoso\_70, PeanutPie\_66, Phalconet\_71, Phalm\_62, Phanphagia\_72, Phayonce\_64, Phegasus\_64, PhesterPotato\_77, Phrann\_59, Poenanya\_78, Polka14\_79, Polkaroo\_63, PopTart\_64, Purky\_74, Pygmy\_65, QueenHazel\_58, Quico\_83, RedBird\_76, SG4\_71, Sandalphon\_69, Sassafras\_76, SassyB\_64, Sbash\_75, Scottish\_73, Seagreen\_75, Shauna1\_73, Shipwreck\_64, SiSi\_70, Sonah\_62, StAnnes\_71, StevieRay\_66, StressBall\_61, Strokeseat\_69, Stuck\_74, Taj\_80, Techage\_62, Thespis\_63, ThulaThula\_68, Vidya\_60, Wee\_79, Willsammy\_63, Xavia\_63, Xeno\_60, Xula\_57, Zilizebeth\_67,

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

- Babsiella\_63, Bunnies\_67, GreaseLightnin\_66, Malithi\_61, Nazo\_62, Ovechkin\_76, Phineas\_62, RitaG\_75,

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

- Aggie\_59, Aloeri\_85, Andies\_57, Awesomesauce\_84, Bluvara\_65, Bosection6\_58, Butters\_59, Carcharodon\_63, Charlie\_60, Chewbacca\_66, ChickenDinner\_84, Chubbello\_60, Cubone\_68, DocMcStuffins\_81, Duplicity\_61, EGUnicorn\_58, FirstPlacePfu\_65, Frankie\_81, Fulbright\_61, Gex\_64, Impisi\_61, Kevin1\_61, LordVader\_82, LunaStella\_72, Magsby\_62, Melville\_68, Misha28\_83, MulchSalad\_81, ParmesanJohn\_63, Philonius\_63, Phloss\_61, Piper2020\_87, Pipsqueaks\_64, Rebel\_56, Rubeelu\_59, Schnauzer\_64, Scitech\_58, Shweta\_58, Silvafighter\_65, Silvy\_59, SkinnyPete\_60, Smurph\_63, TChen\_74, Tapioca\_61, Tessdabest\_64, TootsiePop\_83, Tortellini\_69, Tortoise12\_63, Xerxes\_63,

**Summary by start number:**

Start 43:

- Found in 11 of 182 ( 6.0% ) of genes in pham
- Manual Annotations of this start: 2 of 160
- Called 18.2% of time when present
- Phage (with cluster) where this start called: LunaStella\_72 (F4), TChen\_74 (F4),

Start 46:

- Found in 3 of 182 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 160
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Ovechkin\_76 (F1),

Start 54:

- Found in 2 of 182 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 160
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Babsiella\_63 (I1),

Start 59:

- Found in 39 of 182 ( 21.4% ) of genes in pham
- Manual Annotations of this start: 34 of 160
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aggie\_59 (N), Aloeri\_85 (F1), Andies\_57 (N), Awesomesauce\_84 (F1), Bosection6\_58 (N), Carcharodon\_63 (N), Charlie\_60 (N), Chewbacca\_66 (N), ChickenDinner\_84 (F1), Cubone\_68 (N), DocMcStuffins\_81 (F1), Duplicity\_61 (N), EGUnicorn\_58 (N), FirstPlacePfu\_65 (P1), Frankie\_81 (F1), Fulbright\_61 (N), Gex\_64 (N), LordVader\_82 (F), Magsby\_62 (N), Melville\_68 (N), Misha28\_83 (F1), MulchSalad\_81 (F7), Parmesanjohn\_63 (N), Philonius\_63 (N), Phloss\_61 (N), Piper2020\_87 (F1), Pipsqueaks\_64 (N), Schnauzer\_64 (N), Scitech\_58 (N), Silvafighter\_65 (N), Silvy\_59 (N), SkinnyPete\_60 (N), Smurph\_63 (N), Tapioca\_61 (N), Tessdabest\_64 (N), TootsiePop\_83 (F1), Tortellini\_69 (P2), Tortoise12\_63 (N), Xerxes\_63 (N),

Start 60:

- Found in 6 of 182 ( 3.3% ) of genes in pham
- Manual Annotations of this start: 3 of 160
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Bluvara\_65 (I3), Kevin1\_61 (N), Rebel\_56 (N), Shweta\_58 (N),

Start 61:

- Found in 30 of 182 ( 16.5% ) of genes in pham
- Manual Annotations of this start: 1 of 160
- Called 3.3% of time when present
- Phage (with cluster) where this start called: RitaG\_75 (F1),

Start 62:

- Found in 2 of 182 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 2 of 160
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Butters\_59 (N), Rubeelu\_59 (N),

Start 63:

- Found in 31 of 182 ( 17.0% ) of genes in pham
- Manual Annotations of this start: 2 of 160
- Called 6.5% of time when present
- Phage (with cluster) where this start called: Malithi\_61 (P1), Nazo\_62 (P4),

#### Start 64:

- Found in 1 of 182 ( 0.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Impisi\_61 (N),

#### Start 65:

- Found in 31 of 182 ( 17.0% ) of genes in pham
- Manual Annotations of this start: 3 of 160
- Called 9.7% of time when present
- Phage (with cluster) where this start called: Bunnies\_67 (P1), GreaseLightnin\_66 (P1), Phineas\_62 (P1),

#### Start 67:

- Found in 1 of 182 ( 0.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chubbello\_60 (P1),

#### Start 68:

- Found in 133 of 182 ( 73.1% ) of genes in pham
- Manual Annotations of this start: 111 of 160
- Called 94.0% of time when present
- Phage (with cluster) where this start called: Akhila\_68 (F1), Arib1\_60 (P1), Atcoo\_63 (P1), Batiatus\_73 (F1), Bhagsy\_67 (P1), BigNuz\_61 (P4), Bipolar\_77 (F1), Bobi\_81 (F1), Bogie\_64 (P1), BronnyJr\_58 (P1), Brujita\_62 (I1), Brusacoram\_63 (P1), Brushbloom\_77 (F1), CactusJack\_62 (P1), Camster\_62 (P1), Che9c\_71 (I2), Corium\_70 (F1), DLane\_71 (F1), DaddyRickover\_78 (F1), Daenerys\_74 (F1), DeadP\_75 (F1), Deb65\_68 (F1), DillTech15\_75 (F1), Donkeykong\_76 (F1), Donovan\_61 (P1), Doomphist\_78 (F1), Doomslug\_90 (F), Dorothy\_76 (F1), Dynamo\_61 (P1), EleanorGeorge\_76 (F1), Empress\_73 (F1), Fastidio\_68 (F1), Filuzino\_75 (F1), Flathead\_73 (F1), Florinda\_86 (F1), GaloreK\_62 (P1), Gavriela\_61 (P1), Geralt\_68 (F1), Girafales\_83 (F1), Glaske\_61 (P1), HC\_58 (I1), HUHilltop\_64 (P1), Hamulus\_74 (F1), Hegedechwinu\_74 (F1), Hlubikazi\_69 (F1), IMpilo\_64 (F1), Inventum\_73 (F1), Island3\_63 (I1), JalFarm20\_82 (F1), Jebeks\_62 (P1), JoeyJr\_75 (F1), Journey\_56 (N), Juice456\_70 (F1), Jung\_62 (P1), Juniormint\_59 (P1), Kari\_61 (P1), KilKor\_62 (P1), KingJulian\_76 (F1), KingMidas\_74 (F1), Kingsley\_77 (F1), KristaRAM\_72 (F1), Ksquared\_65 (P1), Leperchaun\_73 (F1), LittleShirley\_74 (F1), Majeke\_64 (P1), Mandlovu\_69 (F1), Mangethe\_64 (P1), Medindi\_74 (F1), Megiddo\_60 (P1), MichelleMyBell\_60 (N), MilanaBonita\_67 (F1), Minnie\_71 (F1), Ms6\_72 (F1), Necropolis\_59 (P1), Nimbo\_67 (F1), Ogopogo\_79 (F1), OldBen\_72 (F1), PHappiness\_75 (F1), PaintedDog\_65 (I1), Panchino\_56 (N), PatoPoderoso\_70 (F1), PeanutPie\_66 (P1), Phalconet\_71 (F1), Phalm\_62 (P1), Phanphagia\_72 (F1), Phayonce\_64 (P5), Phegasus\_64 (P1), PhesterPotato\_77 (F1), Phrann\_59 (N), Poenanya\_78 (F1), Polka14\_79 (F1), Polkaroo\_63 (P1), PopTart\_64 (F1), Purky\_74 (P6), Pygmy\_65 (P1), QueenHazel\_58 (I1), Quico\_83 (F1), RedBird\_76 (F1), SG4\_71 (F1), Sandalphon\_69 (F1), Sassafras\_76 (F1), SassyB\_64 (F1), Sbash\_75 (I2), Scottish\_73 (F1), Seagreen\_75 (F1), Shauna1\_73 (F1), Shipwreck\_64 (P1), SiSi\_70

(F1), Sonah\_62 (P1), StAnnes\_71 (F1), StevieRay\_66 (P1), StressBall\_61 (P1), Strokeseat\_69 (F1), Stuck\_74 (I2), Taj\_80 (F1), Techage\_62 (P1), Thespis\_63 (P1), ThulaThula\_68 (P5), Vidya\_60 (P1), Wee\_79 (F1), Willsammy\_63 (P1), Xavia\_63 (P3), Xeno\_60 (N), Xula\_57 (I1), Zilizebeth\_67 (P1),

### **Summary by clusters:**

There are 14 clusters represented in this pham: P2, F1, F, P1, P6, P4, P5, I1, I3, I2, F7, N, F4, P3,

Info for manual annotations of cluster F1:

- Start number 46 was manually annotated 1 time for cluster F1.
- Start number 59 was manually annotated 8 times for cluster F1.
- Start number 61 was manually annotated 1 time for cluster F1.
- Start number 68 was manually annotated 61 times for cluster F1.

Info for manual annotations of cluster F4:

- Start number 43 was manually annotated 2 times for cluster F4.

Info for manual annotations of cluster I1:

- Start number 54 was manually annotated 1 time for cluster I1.
- Start number 68 was manually annotated 5 times for cluster I1.

Info for manual annotations of cluster I2:

- Start number 68 was manually annotated 2 times for cluster I2.

Info for manual annotations of cluster N:

- Start number 59 was manually annotated 24 times for cluster N.
- Start number 60 was manually annotated 3 times for cluster N.
- Start number 62 was manually annotated 2 times for cluster N.
- Start number 68 was manually annotated 5 times for cluster N.

Info for manual annotations of cluster P1:

- Start number 59 was manually annotated 1 time for cluster P1.
- Start number 63 was manually annotated 1 time for cluster P1.
- Start number 65 was manually annotated 3 times for cluster P1.
- Start number 68 was manually annotated 33 times for cluster P1.

Info for manual annotations of cluster P2:

- Start number 59 was manually annotated 1 time for cluster P2.

Info for manual annotations of cluster P3:

- Start number 68 was manually annotated 1 time for cluster P3.

Info for manual annotations of cluster P4:

- Start number 63 was manually annotated 1 time for cluster P4.
- Start number 68 was manually annotated 1 time for cluster P4.

Info for manual annotations of cluster P5:

- Start number 68 was manually annotated 2 times for cluster P5.

Info for manual annotations of cluster P6:

•Start number 68 was manually annotated 1 time for cluster P6.

**Gene Information:**

Gene: Aggie\_59 Start: 39996, Stop: 40157, Start Num: 59

Candidate Starts for Aggie\_59:

(35, 39867), (36, 39876), (Start: 59 @39996 has 34 MA's), (72, 40047), (77, 40140),

Gene: Akhila\_68 Start: 45011, Stop: 45145, Start Num: 68

Candidate Starts for Akhila\_68:

(31, 44813), (41, 44891), (Start: 68 @45011 has 111 MA's), (72, 45062), (73, 45077),

Gene: Aloeri\_85 Start: 50386, Stop: 50526, Start Num: 59

Candidate Starts for Aloeri\_85:

(35, 50257), (36, 50266), (Start: 59 @50386 has 34 MA's), (71, 50428),

Gene: Andies\_57 Start: 39441, Stop: 39602, Start Num: 59

Candidate Starts for Andies\_57:

(35, 39312), (36, 39321), (Start: 59 @39441 has 34 MA's), (72, 39492), (77, 39585),

Gene: Arib1\_60 Start: 39157, Stop: 39291, Start Num: 68

Candidate Starts for Arib1\_60:

(31, 38959), (41, 39037), (Start: 68 @39157 has 111 MA's), (72, 39208),

Gene: Atcoo\_63 Start: 42534, Stop: 42668, Start Num: 68

Candidate Starts for Atcoo\_63:

(Start: 61 @42510 has 1 MA's), (Start: 68 @42534 has 111 MA's), (69, 42555), (72, 42585),

Gene: Awesomesauce\_84 Start: 50622, Stop: 50762, Start Num: 59

Candidate Starts for Awesomesauce\_84:

(37, 50511), (Start: 43 @50553 has 2 MA's), (50, 50583), (53, 50589), (Start: 59 @50622 has 34 MA's), (71, 50664),

Gene: Babsiella\_63 Start: 40488, Stop: 40664, Start Num: 54

Candidate Starts for Babsiella\_63:

(44, 40446), (Start: 46 @40455 has 1 MA's), (Start: 54 @40488 has 1 MA's), (Start: 68 @40530 has 111 MA's),

Gene: Batiatus\_73 Start: 46749, Stop: 46883, Start Num: 68

Candidate Starts for Batiatus\_73:

(41, 46629), (45, 46650), (Start: 68 @46749 has 111 MA's), (72, 46800), (73, 46815),

Gene: Bhagsy\_67 Start: 41639, Stop: 41773, Start Num: 68

Candidate Starts for Bhagsy\_67:

(38, 41504), (41, 41528), (Start: 63 @41615 has 2 MA's), (Start: 65 @41627 has 3 MA's), (Start: 68 @41639 has 111 MA's), (72, 41690),

Gene: BigNuz\_61 Start: 40925, Stop: 41053, Start Num: 68

Candidate Starts for BigNuz\_61:

(38, 40790), (41, 40814), (Start: 63 @40901 has 2 MA's), (Start: 65 @40913 has 3 MA's), (Start: 68 @40925 has 111 MA's), (72, 40976),

Gene: Bipolar\_77 Start: 48393, Stop: 48527, Start Num: 68

Candidate Starts for Bipolar\_77:

(31, 48195), (41, 48273), (45, 48294), (Start: 68 @48393 has 111 MA's), (72, 48444), (73, 48459),

Gene: Bluvara\_65 Start: 43152, Stop: 43286, Start Num: 60

Candidate Starts for Bluvara\_65:

(42, 43068), (Start: 43 @43077 has 2 MA's), (49, 43104), (50, 43110), (Start: 60 @43152 has 3 MA's), (72, 43203),

Gene: Bobi\_81 Start: 49048, Stop: 49182, Start Num: 68

Candidate Starts for Bobi\_81:

(14, 48688), (16, 48697), (19, 48724), (38, 48913), (41, 48937), (Start: 63 @49024 has 2 MA's), (Start: 65 @49036 has 3 MA's), (Start: 68 @49048 has 111 MA's), (72, 49099), (73, 49114),

Gene: Bogie\_64 Start: 41516, Stop: 41650, Start Num: 68

Candidate Starts for Bogie\_64:

(38, 41381), (41, 41405), (Start: 63 @41492 has 2 MA's), (Start: 65 @41504 has 3 MA's), (Start: 68 @41516 has 111 MA's), (72, 41567),

Gene: Bosection6\_58 Start: 39045, Stop: 39206, Start Num: 59

Candidate Starts for Bosection6\_58:

(35, 38916), (36, 38925), (Start: 59 @39045 has 34 MA's), (72, 39096), (77, 39189),

Gene: BronnyJr\_58 Start: 40476, Stop: 40610, Start Num: 68

Candidate Starts for BronnyJr\_58:

(Start: 68 @40476 has 111 MA's),

Gene: Brujita\_62 Start: 40659, Stop: 40793, Start Num: 68

Candidate Starts for Brujita\_62:

(Start: 68 @40659 has 111 MA's), (72, 40710),

Gene: Brusacoram\_63 Start: 41077, Stop: 41211, Start Num: 68

Candidate Starts for Brusacoram\_63:

(Start: 61 @41053 has 1 MA's), (Start: 68 @41077 has 111 MA's), (69, 41098), (72, 41128),

Gene: Brushbloom\_77 Start: 48189, Stop: 48323, Start Num: 68

Candidate Starts for Brushbloom\_77:

(24, 47895), (26, 47934), (27, 47940), (28, 47946), (29, 47949), (31, 47991), (41, 48069), (Start: 68 @48189 has 111 MA's), (72, 48240), (73, 48255),

Gene: Bunnies\_67 Start: 42398, Stop: 42544, Start Num: 65

Candidate Starts for Bunnies\_67:

(38, 42275), (41, 42299), (Start: 63 @42386 has 2 MA's), (Start: 65 @42398 has 3 MA's), (Start: 68 @42410 has 111 MA's), (72, 42461),

Gene: Butters\_59 Start: 37429, Stop: 37563, Start Num: 62

Candidate Starts for Butters\_59:

(39, 37315), (40, 37324), (48, 37366), (51, 37384), (Start: 62 @37429 has 2 MA's), (72, 37480), (74, 37552),

Gene: CactusJack\_62 Start: 41278, Stop: 41412, Start Num: 68  
Candidate Starts for CactusJack\_62:  
(38, 41143), (41, 41167), (Start: 63 @41254 has 2 MA's), (Start: 65 @41266 has 3 MA's), (Start: 68 @41278 has 111 MA's), (72, 41329),

Gene: Camster\_62 Start: 39977, Stop: 40111, Start Num: 68  
Candidate Starts for Camster\_62:  
(38, 39842), (41, 39866), (Start: 63 @39953 has 2 MA's), (Start: 65 @39965 has 3 MA's), (Start: 68 @39977 has 111 MA's), (72, 40028),

Gene: Carcharodon\_63 Start: 39343, Stop: 39504, Start Num: 59  
Candidate Starts for Carcharodon\_63:  
(35, 39214), (36, 39223), (Start: 59 @39343 has 34 MA's), (72, 39394), (77, 39487),

Gene: Charlie\_60 Start: 38669, Stop: 38830, Start Num: 59  
Candidate Starts for Charlie\_60:  
(35, 38540), (36, 38549), (Start: 59 @38669 has 34 MA's), (72, 38720), (77, 38813),

Gene: Che9c\_71 Start: 50371, Stop: 50505, Start Num: 68  
Candidate Starts for Che9c\_71:  
(Start: 68 @50371 has 111 MA's), (72, 50422),

Gene: Chewbacca\_66 Start: 39238, Stop: 39399, Start Num: 59  
Candidate Starts for Chewbacca\_66:  
(35, 39109), (36, 39118), (Start: 59 @39238 has 34 MA's), (72, 39289), (77, 39382),

Gene: ChickenDinner\_84 Start: 50386, Stop: 50526, Start Num: 59  
Candidate Starts for ChickenDinner\_84:  
(35, 50257), (36, 50266), (Start: 59 @50386 has 34 MA's), (71, 50428),

Gene: Chubbello\_60 Start: 39283, Stop: 39417, Start Num: 67  
Candidate Starts for Chubbello\_60:  
(52, 39226), (58, 39259), (67, 39283),

Gene: Corium\_70 Start: 47202, Stop: 47336, Start Num: 68  
Candidate Starts for Corium\_70:  
(31, 47004), (41, 47082), (45, 47103), (Start: 68 @47202 has 111 MA's), (72, 47253),

Gene: Cubone\_68 Start: 39965, Stop: 40126, Start Num: 59  
Candidate Starts for Cubone\_68:  
(37, 39854), (Start: 43 @39896 has 2 MA's), (50, 39926), (53, 39932), (Start: 59 @39965 has 34 MA's), (72, 40016), (77, 40109),

Gene: DLane\_71 Start: 46327, Stop: 46461, Start Num: 68  
Candidate Starts for DLane\_71:  
(41, 46207), (45, 46228), (Start: 68 @46327 has 111 MA's), (72, 46378),

Gene: DaddyRickover\_78 Start: 48359, Stop: 48493, Start Num: 68  
Candidate Starts for DaddyRickover\_78:  
(12, 47939), (13, 47972), (55, 48302), (Start: 61 @48335 has 1 MA's), (Start: 68 @48359 has 111 MA's), (72, 48410), (73, 48425),

Gene: Daenerys\_74 Start: 47956, Stop: 48090, Start Num: 68

Candidate Starts for Daenerys\_74:

(12, 47536), (13, 47569), (55, 47899), (Start: 61 @47932 has 1 MA's), (Start: 68 @47956 has 111 MA's), (69, 47977), (72, 48007), (73, 48022),

Gene: DeadP\_75 Start: 45575, Stop: 45709, Start Num: 68

Candidate Starts for DeadP\_75:

(47, 45479), (58, 45536), (Start: 68 @45575 has 111 MA's), (72, 45626), (73, 45641),

Gene: Deb65\_68 Start: 45678, Stop: 45812, Start Num: 68

Candidate Starts for Deb65\_68:

(3, 45012), (4, 45051), (6, 45105), (8, 45132), (10, 45192), (12, 45258), (13, 45291), (55, 45621), (Start: 61 @45654 has 1 MA's), (Start: 68 @45678 has 111 MA's), (69, 45699), (72, 45729), (73, 45744),

Gene: DillTech15\_75 Start: 45272, Stop: 45406, Start Num: 68

Candidate Starts for DillTech15\_75:

(12, 44852), (13, 44885), (55, 45215), (Start: 61 @45248 has 1 MA's), (Start: 68 @45272 has 111 MA's), (72, 45323),

Gene: DocMcStuffins\_81 Start: 52016, Stop: 52156, Start Num: 59

Candidate Starts for DocMcStuffins\_81:

(35, 51887), (36, 51896), (Start: 59 @52016 has 34 MA's), (71, 52058),

Gene: Donkeykong\_76 Start: 47467, Stop: 47601, Start Num: 68

Candidate Starts for Donkeykong\_76:

(Start: 68 @47467 has 111 MA's), (72, 47518),

Gene: Donovan\_61 Start: 40222, Stop: 40356, Start Num: 68

Candidate Starts for Donovan\_61:

(31, 40024), (41, 40102), (45, 40123), (Start: 68 @40222 has 111 MA's),

Gene: Doomphist\_78 Start: 47769, Stop: 47903, Start Num: 68

Candidate Starts for Doomphist\_78:

(12, 47349), (13, 47382), (55, 47712), (Start: 61 @47745 has 1 MA's), (Start: 68 @47769 has 111 MA's), (69, 47790), (72, 47820), (73, 47835),

Gene: Doomslug\_90 Start: 49187, Stop: 49321, Start Num: 68

Candidate Starts for Doomslug\_90:

(31, 48989), (41, 49067), (45, 49088), (Start: 68 @49187 has 111 MA's), (72, 49238), (73, 49253),

Gene: Dorothy\_76 Start: 48407, Stop: 48541, Start Num: 68

Candidate Starts for Dorothy\_76:

(31, 48212), (41, 48290), (Start: 68 @48407 has 111 MA's), (72, 48458), (73, 48473),

Gene: Duplicity\_61 Start: 38600, Stop: 38761, Start Num: 59

Candidate Starts for Duplicity\_61:

(35, 38471), (36, 38480), (Start: 59 @38600 has 34 MA's), (72, 38651), (77, 38744),

Gene: Dynamo\_61 Start: 39550, Stop: 39684, Start Num: 68

Candidate Starts for Dynamo\_61:

(38, 39415), (41, 39439), (Start: 63 @39526 has 2 MA's), (Start: 65 @39538 has 3 MA's), (Start: 68 @39550 has 111 MA's), (72, 39601),

Gene: EGUunicorn\_58 Start: 37666, Stop: 37827, Start Num: 59  
Candidate Starts for EGUunicorn\_58:  
(35, 37537), (36, 37546), (Start: 59 @37666 has 34 MA's), (72, 37717), (77, 37810),

Gene: EleanorGeorge\_76 Start: 47362, Stop: 47496, Start Num: 68  
Candidate Starts for EleanorGeorge\_76:  
(Start: 68 @47362 has 111 MA's), (71, 47404), (72, 47413), (73, 47428),

Gene: Empress\_73 Start: 46580, Stop: 46714, Start Num: 68  
Candidate Starts for Empress\_73:  
(12, 46160), (13, 46193), (55, 46523), (Start: 61 @46556 has 1 MA's), (Start: 68 @46580 has 111 MA's), (69, 46601), (72, 46631), (73, 46646),

Gene: Fastidio\_68 Start: 42078, Stop: 42212, Start Num: 68  
Candidate Starts for Fastidio\_68:  
(12, 41658), (13, 41691), (55, 42021), (Start: 61 @42054 has 1 MA's), (Start: 68 @42078 has 111 MA's), (69, 42099), (72, 42129),

Gene: Filuzino\_75 Start: 48306, Stop: 48440, Start Num: 68  
Candidate Starts for Filuzino\_75:  
(31, 48108), (41, 48186), (45, 48207), (Start: 68 @48306 has 111 MA's), (72, 48357), (76, 48435),

Gene: FirstPlacePfu\_65 Start: 39143, Stop: 39277, Start Num: 59  
Candidate Starts for FirstPlacePfu\_65:  
(35, 39014), (36, 39023), (Start: 59 @39143 has 34 MA's), (72, 39194),

Gene: Flathead\_73 Start: 46020, Stop: 46154, Start Num: 68  
Candidate Starts for Flathead\_73:  
(55, 45960), (Start: 68 @46020 has 111 MA's), (72, 46071), (73, 46086),

Gene: Florinda\_86 Start: 49222, Stop: 49356, Start Num: 68  
Candidate Starts for Florinda\_86:  
(41, 49102), (45, 49123), (Start: 68 @49222 has 111 MA's), (72, 49273), (73, 49288),

Gene: Frankie\_81 Start: 47698, Stop: 47826, Start Num: 59  
Candidate Starts for Frankie\_81:  
(35, 47572), (36, 47581), (37, 47587), (Start: 43 @47629 has 2 MA's), (50, 47659), (53, 47665), (Start: 59 @47698 has 34 MA's),

Gene: Fulbright\_61 Start: 38037, Stop: 38198, Start Num: 59  
Candidate Starts for Fulbright\_61:  
(35, 37908), (36, 37917), (Start: 59 @38037 has 34 MA's), (72, 38088), (77, 38181),

Gene: GaloreK\_62 Start: 40602, Stop: 40736, Start Num: 68  
Candidate Starts for GaloreK\_62:  
(41, 40482), (Start: 68 @40602 has 111 MA's), (72, 40653),

Gene: Gavriela\_61 Start: 40980, Stop: 41105, Start Num: 68  
Candidate Starts for Gavriela\_61:  
(1, 40242), (2, 40311), (5, 40359), (7, 40431), (8, 40437), (9, 40455), (11, 40506), (38, 40845), (41, 40869), (Start: 63 @40956 has 2 MA's), (Start: 65 @40968 has 3 MA's), (Start: 68 @40980 has 111 MA's), (72, 41031),

Gene: Geralt\_68 Start: 45676, Stop: 45810, Start Num: 68

Candidate Starts for Geralt\_68:

(12, 45256), (13, 45289), (55, 45619), (Start: 61 @45652 has 1 MA's), (Start: 68 @45676 has 111 MA's), (69, 45697), (72, 45727), (73, 45742),

Gene: Gex\_64 Start: 39359, Stop: 39520, Start Num: 59

Candidate Starts for Gex\_64:

(35, 39230), (36, 39239), (Start: 59 @39359 has 34 MA's), (72, 39410), (77, 39503),

Gene: Girafales\_83 Start: 48827, Stop: 48961, Start Num: 68

Candidate Starts for Girafales\_83:

(41, 48707), (45, 48728), (Start: 68 @48827 has 111 MA's), (72, 48878), (73, 48893),

Gene: Glaske\_61 Start: 41278, Stop: 41412, Start Num: 68

Candidate Starts for Glaske\_61:

(38, 41143), (41, 41167), (Start: 63 @41254 has 2 MA's), (Start: 65 @41266 has 3 MA's), (Start: 68 @41278 has 111 MA's), (72, 41329),

Gene: GreaseLightnin\_66 Start: 41919, Stop: 42065, Start Num: 65

Candidate Starts for GreaseLightnin\_66:

(38, 41796), (41, 41820), (Start: 63 @41907 has 2 MA's), (Start: 65 @41919 has 3 MA's), (Start: 68 @41931 has 111 MA's), (72, 41982),

Gene: HC\_58 Start: 38076, Stop: 38210, Start Num: 68

Candidate Starts for HC\_58:

(47, 37980), (58, 38037), (Start: 68 @38076 has 111 MA's),

Gene: HUHilltop\_64 Start: 39773, Stop: 39907, Start Num: 68

Candidate Starts for HUHilltop\_64:

(38, 39638), (41, 39662), (Start: 63 @39749 has 2 MA's), (Start: 65 @39761 has 3 MA's), (Start: 68 @39773 has 111 MA's), (72, 39824),

Gene: Hamulus\_74 Start: 46705, Stop: 46839, Start Num: 68

Candidate Starts for Hamulus\_74:

(Start: 61 @46681 has 1 MA's), (Start: 68 @46705 has 111 MA's), (72, 46756), (73, 46771),

Gene: Hegedechwinu\_74 Start: 44915, Stop: 45049, Start Num: 68

Candidate Starts for Hegedechwinu\_74:

(41, 44795), (45, 44816), (Start: 68 @44915 has 111 MA's),

Gene: Hlubikazi\_69 Start: 44290, Stop: 44424, Start Num: 68

Candidate Starts for Hlubikazi\_69:

(56, 44236), (Start: 68 @44290 has 111 MA's), (72, 44341), (73, 44356),

Gene: IMPilo\_64 Start: 42435, Stop: 42569, Start Num: 68

Candidate Starts for IMPilo\_64:

(Start: 61 @42411 has 1 MA's), (Start: 68 @42435 has 111 MA's), (72, 42486), (73, 42501),

Gene: Impisi\_61 Start: 37721, Stop: 37858, Start Num: 64

Candidate Starts for Impisi\_61:

(38, 37601), (40, 37613), (48, 37655), (51, 37673), (53, 37679), (64, 37721), (71, 37763), (72, 37772), (75, 37847),

Gene: Inventum\_73 Start: 46592, Stop: 46726, Start Num: 68

Candidate Starts for Inventum\_73:

(12, 46172), (13, 46205), (55, 46535), (Start: 61 @46568 has 1 MA's), (Start: 68 @46592 has 111 MA's), (69, 46613), (72, 46643), (73, 46658),

Gene: Island3\_63 Start: 40659, Stop: 40793, Start Num: 68

Candidate Starts for Island3\_63:

(Start: 68 @40659 has 111 MA's), (72, 40710),

Gene: JalFarm20\_82 Start: 47370, Stop: 47504, Start Num: 68

Candidate Starts for JalFarm20\_82:

(47, 47274), (58, 47331), (Start: 68 @47370 has 111 MA's), (72, 47421), (73, 47436),

Gene: Jebeks\_62 Start: 39070, Stop: 39204, Start Num: 68

Candidate Starts for Jebeks\_62:

(38, 38935), (41, 38959), (Start: 63 @39046 has 2 MA's), (Start: 65 @39058 has 3 MA's), (Start: 68 @39070 has 111 MA's), (72, 39121),

Gene: JoeyJr\_75 Start: 47581, Stop: 47715, Start Num: 68

Candidate Starts for JoeyJr\_75:

(12, 47161), (13, 47194), (55, 47524), (Start: 61 @47557 has 1 MA's), (Start: 68 @47581 has 111 MA's), (69, 47602), (72, 47632), (73, 47647),

Gene: Journey\_56 Start: 37628, Stop: 37762, Start Num: 68

Candidate Starts for Journey\_56:

(25, 37364), (32, 37433), (33, 37448), (Start: 68 @37628 has 111 MA's),

Gene: Juice456\_70 Start: 45326, Stop: 45460, Start Num: 68

Candidate Starts for Juice456\_70:

(47, 45230), (58, 45287), (Start: 68 @45326 has 111 MA's), (72, 45377), (73, 45392),

Gene: Jung\_62 Start: 40067, Stop: 40207, Start Num: 68

Candidate Starts for Jung\_62:

(15, 39704), (18, 39716), (21, 39764), (22, 39767), (34, 39899), (58, 40028), (66, 40055), (Start: 68 @40067 has 111 MA's), (72, 40118),

Gene: Juniormint\_59 Start: 38526, Stop: 38660, Start Num: 68

Candidate Starts for Juniormint\_59:

(14, 38166), (16, 38175), (19, 38202), (38, 38391), (41, 38415), (Start: 63 @38502 has 2 MA's), (Start: 65 @38514 has 3 MA's), (Start: 68 @38526 has 111 MA's), (72, 38577),

Gene: Kari\_61 Start: 40045, Stop: 40179, Start Num: 68

Candidate Starts for Kari\_61:

(31, 39847), (41, 39925), (45, 39946), (Start: 68 @40045 has 111 MA's),

Gene: Kevin1\_61 Start: 37537, Stop: 37671, Start Num: 60

Candidate Starts for Kevin1\_61:

(39, 37435), (40, 37444), (Start: 43 @37471 has 2 MA's), (Start: 60 @37537 has 3 MA's), (72, 37588), (74, 37660),

Gene: KilKor\_62 Start: 41971, Stop: 42105, Start Num: 68

Candidate Starts for KilKor\_62:

(38, 41836), (41, 41860), (Start: 63 @41947 has 2 MA's), (Start: 65 @41959 has 3 MA's), (Start: 68 @41971 has 111 MA's), (72, 42022),

Gene: KingJulian\_76 Start: 47202, Stop: 47336, Start Num: 68

Candidate Starts for KingJulian\_76:

(31, 47004), (41, 47082), (45, 47103), (Start: 68 @47202 has 111 MA's), (72, 47253),

Gene: KingMidas\_74 Start: 46995, Stop: 47129, Start Num: 68

Candidate Starts for KingMidas\_74:

(12, 46575), (13, 46608), (55, 46938), (Start: 61 @46971 has 1 MA's), (Start: 68 @46995 has 111 MA's), (69, 47016), (72, 47046), (73, 47061),

Gene: Kingsley\_77 Start: 48832, Stop: 48966, Start Num: 68

Candidate Starts for Kingsley\_77:

(20, 48508), (23, 48532), (24, 48538), (29, 48592), (41, 48712), (Start: 68 @48832 has 111 MA's), (72, 48883), (73, 48898),

Gene: KristaRAM\_72 Start: 45695, Stop: 45829, Start Num: 68

Candidate Starts for KristaRAM\_72:

(47, 45599), (58, 45656), (Start: 68 @45695 has 111 MA's), (72, 45746), (73, 45761),

Gene: Ksquared\_65 Start: 42287, Stop: 42421, Start Num: 68

Candidate Starts for Ksquared\_65:

(38, 42152), (41, 42176), (Start: 63 @42263 has 2 MA's), (Start: 65 @42275 has 3 MA's), (Start: 68 @42287 has 111 MA's), (72, 42338),

Gene: Leperchaun\_73 Start: 46815, Stop: 46949, Start Num: 68

Candidate Starts for Leperchaun\_73:

(12, 46395), (13, 46428), (55, 46758), (Start: 61 @46791 has 1 MA's), (Start: 68 @46815 has 111 MA's), (69, 46836), (72, 46866), (73, 46881),

Gene: LittleShirley\_74 Start: 45751, Stop: 45885, Start Num: 68

Candidate Starts for LittleShirley\_74:

(Start: 61 @45727 has 1 MA's), (Start: 68 @45751 has 111 MA's), (72, 45802), (73, 45817),

Gene: LordVader\_82 Start: 46612, Stop: 46743, Start Num: 59

Candidate Starts for LordVader\_82:

(35, 46483), (36, 46492), (Start: 59 @46612 has 34 MA's), (71, 46654),

Gene: LunaStella\_72 Start: 45804, Stop: 46013, Start Num: 43

Candidate Starts for LunaStella\_72:

(42, 45795), (Start: 43 @45804 has 2 MA's), (49, 45831), (Start: 60 @45879 has 3 MA's), (72, 45930),

Gene: Magsby\_62 Start: 39305, Stop: 39466, Start Num: 59

Candidate Starts for Magsby\_62:

(35, 39176), (36, 39185), (Start: 59 @39305 has 34 MA's), (72, 39356), (77, 39449),

Gene: Majeke\_64 Start: 40672, Stop: 40806, Start Num: 68

Candidate Starts for Majeke\_64:

(31, 40474), (41, 40552), (Start: 68 @40672 has 111 MA's),

Gene: Malithi\_61 Start: 39664, Stop: 39822, Start Num: 63

Candidate Starts for Malithi\_61:

(38, 39553), (41, 39577), (Start: 63 @39664 has 2 MA's), (Start: 65 @39676 has 3 MA's), (Start: 68 @39688 has 111 MA's), (72, 39739),

Gene: Mandlovu\_69 Start: 44232, Stop: 44366, Start Num: 68  
Candidate Starts for Mandlovu\_69:  
(56, 44178), (Start: 68 @44232 has 111 MA's), (72, 44283), (73, 44298),

Gene: Mangethe\_64 Start: 40672, Stop: 40806, Start Num: 68  
Candidate Starts for Mangethe\_64:  
(31, 40474), (41, 40552), (Start: 68 @40672 has 111 MA's),

Gene: Medindi\_74 Start: 46132, Stop: 46266, Start Num: 68  
Candidate Starts for Medindi\_74:  
(31, 45934), (41, 46012), (45, 46033), (Start: 68 @46132 has 111 MA's), (72, 46183), (73, 46198),

Gene: Megiddo\_60 Start: 41056, Stop: 41202, Start Num: 68  
Candidate Starts for Megiddo\_60:  
(17, 40711), (30, 40834), (Start: 68 @41056 has 111 MA's), (72, 41107),

Gene: Melville\_68 Start: 38914, Stop: 39075, Start Num: 59  
Candidate Starts for Melville\_68:  
(35, 38785), (36, 38794), (Start: 59 @38914 has 34 MA's), (72, 38965), (77, 39058),

Gene: MichelleMyBell\_60 Start: 37388, Stop: 37522, Start Num: 68  
Candidate Starts for MichelleMyBell\_60:  
(Start: 46 @37295 has 1 MA's), (52, 37322), (Start: 54 @37328 has 1 MA's), (Start: 68 @37388 has 111 MA's),

Gene: MilanaBonita\_67 Start: 45011, Stop: 45145, Start Num: 68  
Candidate Starts for MilanaBonita\_67:  
(31, 44813), (41, 44891), (Start: 68 @45011 has 111 MA's), (72, 45062), (73, 45077),

Gene: Minnie\_71 Start: 48191, Stop: 48325, Start Num: 68  
Candidate Starts for Minnie\_71:  
(56, 48137), (Start: 68 @48191 has 111 MA's), (72, 48242), (73, 48257),

Gene: Misha28\_83 Start: 51321, Stop: 51461, Start Num: 59  
Candidate Starts for Misha28\_83:  
(37, 51210), (Start: 43 @51252 has 2 MA's), (50, 51282), (53, 51288), (Start: 59 @51321 has 34 MA's), (71, 51363),

Gene: Ms6\_72 Start: 42574, Stop: 42708, Start Num: 68  
Candidate Starts for Ms6\_72:  
(45, 42475), (Start: 68 @42574 has 111 MA's), (72, 42625), (73, 42640),

Gene: MulchSalad\_81 Start: 48362, Stop: 48490, Start Num: 59  
Candidate Starts for MulchSalad\_81:  
(35, 48233), (36, 48242), (Start: 59 @48362 has 34 MA's),

Gene: Nazo\_62 Start: 41086, Stop: 41238, Start Num: 63  
Candidate Starts for Nazo\_62:  
(38, 40975), (41, 40999), (Start: 63 @41086 has 2 MA's), (Start: 65 @41098 has 3 MA's), (Start: 68 @41110 has 111 MA's), (70, 41134), (72, 41161),

Gene: Necropolis\_59 Start: 39139, Stop: 39273, Start Num: 68  
Candidate Starts for Necropolis\_59:  
(38, 39004), (41, 39028), (Start: 63 @39115 has 2 MA's), (Start: 65 @39127 has 3 MA's), (Start: 68 @39139 has 111 MA's), (72, 39190),

Gene: Nimbo\_67 Start: 45679, Stop: 45813, Start Num: 68  
Candidate Starts for Nimbo\_67:  
(12, 45259), (13, 45292), (55, 45622), (Start: 61 @45655 has 1 MA's), (Start: 68 @45679 has 111 MA's), (69, 45700), (72, 45730), (73, 45745),

Gene: Ogotogo\_79 Start: 46196, Stop: 46330, Start Num: 68  
Candidate Starts for Ogotogo\_79:  
(12, 45776), (13, 45809), (55, 46139), (Start: 61 @46172 has 1 MA's), (Start: 68 @46196 has 111 MA's), (69, 46217), (72, 46247), (73, 46262),

Gene: OldBen\_72 Start: 47071, Stop: 47205, Start Num: 68  
Candidate Starts for OldBen\_72:  
(12, 46651), (13, 46684), (55, 47014), (Start: 61 @47047 has 1 MA's), (Start: 68 @47071 has 111 MA's), (69, 47092), (72, 47122), (73, 47137),

Gene: Ovechkin\_76 Start: 46664, Stop: 46873, Start Num: 46  
Candidate Starts for Ovechkin\_76:  
(44, 46655), (Start: 46 @46664 has 1 MA's), (52, 46691), (Start: 68 @46739 has 111 MA's),

Gene: PHappiness\_75 Start: 47900, Stop: 48034, Start Num: 68  
Candidate Starts for PHappiness\_75:  
(12, 47480), (13, 47513), (55, 47843), (Start: 61 @47876 has 1 MA's), (Start: 68 @47900 has 111 MA's), (69, 47921), (72, 47951), (73, 47966),

Gene: PaintedDog\_65 Start: 42363, Stop: 42497, Start Num: 68  
Candidate Starts for PaintedDog\_65:  
(Start: 68 @42363 has 111 MA's), (70, 42387), (72, 42414),

Gene: Panchino\_56 Start: 38919, Stop: 39056, Start Num: 68  
Candidate Starts for Panchino\_56:  
(14, 38559), (16, 38568), (19, 38595), (38, 38784), (41, 38808), (Start: 63 @38895 has 2 MA's), (Start: 65 @38907 has 3 MA's), (Start: 68 @38919 has 111 MA's), (72, 38970), (75, 39045),

Gene: Parmesanjohn\_63 Start: 39363, Stop: 39524, Start Num: 59  
Candidate Starts for Parmesanjohn\_63:  
(35, 39234), (36, 39243), (Start: 59 @39363 has 34 MA's), (72, 39414), (77, 39507),

Gene: PatoPoderoso\_70 Start: 47202, Stop: 47336, Start Num: 68  
Candidate Starts for PatoPoderoso\_70:  
(31, 47004), (41, 47082), (45, 47103), (Start: 68 @47202 has 111 MA's), (72, 47253),

Gene: PeanutPie\_66 Start: 41642, Stop: 41776, Start Num: 68  
Candidate Starts for PeanutPie\_66:  
(38, 41507), (41, 41531), (Start: 63 @41618 has 2 MA's), (Start: 65 @41630 has 3 MA's), (Start: 68 @41642 has 111 MA's), (72, 41693),

Gene: Phalconet\_71 Start: 45548, Stop: 45682, Start Num: 68

Candidate Starts for Phalconet\_71:

(41, 45428), (Start: 68 @45548 has 111 MA's), (72, 45599), (73, 45614),

Gene: Phalm\_62 Start: 41278, Stop: 41403, Start Num: 68

Candidate Starts for Phalm\_62:

(38, 41143), (41, 41167), (Start: 63 @41254 has 2 MA's), (Start: 65 @41266 has 3 MA's), (Start: 68 @41278 has 111 MA's), (72, 41329),

Gene: Phanphagia\_72 Start: 46628, Stop: 46762, Start Num: 68

Candidate Starts for Phanphagia\_72:

(31, 46430), (41, 46508), (45, 46529), (Start: 68 @46628 has 111 MA's), (72, 46679), (73, 46694),

Gene: Phayonce\_64 Start: 43136, Stop: 43282, Start Num: 68

Candidate Starts for Phayonce\_64:

(57, 43085), (Start: 68 @43136 has 111 MA's), (70, 43160), (72, 43187),

Gene: Phegasus\_64 Start: 40639, Stop: 40773, Start Num: 68

Candidate Starts for Phegasus\_64:

(31, 40441), (41, 40519), (Start: 68 @40639 has 111 MA's),

Gene: PhesterPhotato\_77 Start: 46716, Stop: 46850, Start Num: 68

Candidate Starts for PhesterPhotato\_77:

(Start: 61 @46692 has 1 MA's), (Start: 68 @46716 has 111 MA's), (72, 46767), (73, 46782),

Gene: Philonius\_63 Start: 39528, Stop: 39689, Start Num: 59

Candidate Starts for Philonius\_63:

(35, 39399), (36, 39408), (Start: 59 @39528 has 34 MA's), (72, 39579), (77, 39672),

Gene: Phineas\_62 Start: 40096, Stop: 40242, Start Num: 65

Candidate Starts for Phineas\_62:

(38, 39973), (41, 39997), (Start: 63 @40084 has 2 MA's), (Start: 65 @40096 has 3 MA's), (Start: 68 @40108 has 111 MA's), (72, 40159),

Gene: Phloss\_61 Start: 38770, Stop: 38931, Start Num: 59

Candidate Starts for Phloss\_61:

(35, 38641), (36, 38650), (Start: 59 @38770 has 34 MA's), (72, 38821), (77, 38914),

Gene: Phrann\_59 Start: 40673, Stop: 40810, Start Num: 68

Candidate Starts for Phrann\_59:

(56, 40619), (Start: 68 @40673 has 111 MA's), (72, 40724), (75, 40799),

Gene: Piper2020\_87 Start: 52127, Stop: 52279, Start Num: 59

Candidate Starts for Piper2020\_87:

(35, 51998), (36, 52007), (Start: 59 @52127 has 34 MA's),

Gene: Pipsqueaks\_64 Start: 39341, Stop: 39502, Start Num: 59

Candidate Starts for Pipsqueaks\_64:

(35, 39212), (36, 39221), (Start: 59 @39341 has 34 MA's), (72, 39392), (77, 39485),

Gene: Poenanya\_78 Start: 47769, Stop: 47903, Start Num: 68

Candidate Starts for Poenanya\_78:

(12, 47349), (13, 47382), (55, 47712), (Start: 61 @47745 has 1 MA's), (Start: 68 @47769 has 111 MA's), (69, 47790), (72, 47820), (73, 47835),

Gene: Polka14\_79 Start: 48559, Stop: 48693, Start Num: 68  
Candidate Starts for Polka14\_79:  
(12, 48139), (13, 48172), (55, 48502), (Start: 61 @48535 has 1 MA's), (Start: 68 @48559 has 111 MA's), (69, 48580), (72, 48610), (73, 48625),

Gene: Polkaroo\_63 Start: 41848, Stop: 41988, Start Num: 68  
Candidate Starts for Polkaroo\_63:  
(Start: 61 @41824 has 1 MA's), (Start: 68 @41848 has 111 MA's), (72, 41899),

Gene: PopTart\_64 Start: 43414, Stop: 43548, Start Num: 68  
Candidate Starts for PopTart\_64:  
(Start: 68 @43414 has 111 MA's), (72, 43465), (73, 43480),

Gene: Purky\_74 Start: 45740, Stop: 45874, Start Num: 68  
Candidate Starts for Purky\_74:  
(41, 45620), (Start: 63 @45716 has 2 MA's), (Start: 65 @45728 has 3 MA's), (Start: 68 @45740 has 111 MA's), (72, 45791),

Gene: Pygmy\_65 Start: 41572, Stop: 41706, Start Num: 68  
Candidate Starts for Pygmy\_65:  
(38, 41437), (41, 41461), (Start: 63 @41548 has 2 MA's), (Start: 65 @41560 has 3 MA's), (Start: 68 @41572 has 111 MA's), (72, 41623),

Gene: QueenHazel\_58 Start: 39693, Stop: 39827, Start Num: 68  
Candidate Starts for QueenHazel\_58:  
(47, 39597), (58, 39654), (Start: 68 @39693 has 111 MA's), (72, 39744), (76, 39822),

Gene: Quico\_83 Start: 49042, Stop: 49176, Start Num: 68  
Candidate Starts for Quico\_83:  
(41, 48922), (45, 48943), (Start: 68 @49042 has 111 MA's), (72, 49093), (73, 49108),

Gene: Rebel\_56 Start: 35847, Stop: 35981, Start Num: 60  
Candidate Starts for Rebel\_56:  
(40, 35754), (Start: 43 @35781 has 2 MA's), (45, 35787), (Start: 60 @35847 has 3 MA's), (72, 35898), (74, 35970),

Gene: RedBird\_76 Start: 48274, Stop: 48408, Start Num: 68  
Candidate Starts for RedBird\_76:  
(31, 48079), (41, 48157), (Start: 68 @48274 has 111 MA's), (72, 48325), (73, 48340),

Gene: RitaG\_75 Start: 47678, Stop: 47836, Start Num: 61  
Candidate Starts for RitaG\_75:  
(12, 47282), (13, 47315), (55, 47645), (Start: 61 @47678 has 1 MA's), (Start: 68 @47702 has 111 MA's), (69, 47723), (72, 47753), (73, 47768),

Gene: Rubeelu\_59 Start: 37429, Stop: 37563, Start Num: 62  
Candidate Starts for Rubeelu\_59:  
(39, 37315), (40, 37324), (48, 37366), (51, 37384), (Start: 62 @37429 has 2 MA's), (72, 37480), (74, 37552),

Gene: SG4\_71 Start: 45477, Stop: 45611, Start Num: 68  
Candidate Starts for SG4\_71:

(31, 45279), (41, 45357), (Start: 68 @45477 has 111 MA's), (72, 45528), (73, 45543),

Gene: Sandalphon\_69 Start: 46176, Stop: 46310, Start Num: 68

Candidate Starts for Sandalphon\_69:

(56, 46122), (Start: 68 @46176 has 111 MA's), (72, 46227), (73, 46242),

Gene: Sassafras\_76 Start: 46591, Stop: 46725, Start Num: 68

Candidate Starts for Sassafras\_76:

(12, 46171), (13, 46204), (55, 46534), (Start: 61 @46567 has 1 MA's), (Start: 68 @46591 has 111 MA's), (69, 46612), (72, 46642), (73, 46657),

Gene: SassyB\_64 Start: 43414, Stop: 43548, Start Num: 68

Candidate Starts for SassyB\_64:

(Start: 68 @43414 has 111 MA's), (72, 43465), (73, 43480),

Gene: Sbash\_75 Start: 48069, Stop: 48203, Start Num: 68

Candidate Starts for Sbash\_75:

(Start: 68 @48069 has 111 MA's), (72, 48120),

Gene: Schnauzer\_64 Start: 39363, Stop: 39524, Start Num: 59

Candidate Starts for Schnauzer\_64:

(35, 39234), (36, 39243), (Start: 59 @39363 has 34 MA's), (72, 39414), (77, 39507),

Gene: Scitech\_58 Start: 38766, Stop: 38927, Start Num: 59

Candidate Starts for Scitech\_58:

(35, 38637), (36, 38646), (Start: 59 @38766 has 34 MA's), (72, 38817), (77, 38910),

Gene: Scottish\_73 Start: 46250, Stop: 46384, Start Num: 68

Candidate Starts for Scottish\_73:

(12, 45830), (13, 45863), (55, 46193), (Start: 61 @46226 has 1 MA's), (Start: 68 @46250 has 111 MA's), (69, 46271), (72, 46301), (73, 46316),

Gene: Seagreen\_75 Start: 47524, Stop: 47658, Start Num: 68

Candidate Starts for Seagreen\_75:

(31, 47326), (41, 47404), (45, 47425), (Start: 68 @47524 has 111 MA's), (72, 47575), (73, 47590),

Gene: Shauna1\_73 Start: 46878, Stop: 47012, Start Num: 68

Candidate Starts for Shauna1\_73:

(31, 46680), (41, 46758), (45, 46779), (Start: 68 @46878 has 111 MA's), (72, 46929), (73, 46944),

Gene: Shipwreck\_64 Start: 41547, Stop: 41681, Start Num: 68

Candidate Starts for Shipwreck\_64:

(38, 41412), (41, 41436), (Start: 63 @41523 has 2 MA's), (Start: 65 @41535 has 3 MA's), (Start: 68 @41547 has 111 MA's), (72, 41598),

Gene: Shweta\_58 Start: 38359, Stop: 38496, Start Num: 60

Candidate Starts for Shweta\_58:

(42, 38275), (Start: 43 @38284 has 2 MA's), (49, 38311), (50, 38317), (Start: 60 @38359 has 3 MA's), (72, 38410), (75, 38485),

Gene: SiSi\_70 Start: 45708, Stop: 45842, Start Num: 68

Candidate Starts for SiSi\_70:

(Start: 68 @45708 has 111 MA's), (72, 45759), (73, 45774),

Gene: Silvafighter\_65 Start: 38906, Stop: 39067, Start Num: 59

Candidate Starts for Silvafighter\_65:

(35, 38777), (36, 38786), (Start: 59 @38906 has 34 MA's), (72, 38957), (77, 39050),

Gene: Silvy\_59 Start: 39996, Stop: 40157, Start Num: 59

Candidate Starts for Silvy\_59:

(35, 39867), (36, 39876), (Start: 59 @39996 has 34 MA's), (72, 40047), (77, 40140),

Gene: SkinnyPete\_60 Start: 39110, Stop: 39271, Start Num: 59

Candidate Starts for SkinnyPete\_60:

(35, 38981), (36, 38990), (Start: 59 @39110 has 34 MA's), (72, 39161), (77, 39254),

Gene: Smurph\_63 Start: 39363, Stop: 39524, Start Num: 59

Candidate Starts for Smurph\_63:

(35, 39234), (36, 39243), (Start: 59 @39363 has 34 MA's), (72, 39414), (77, 39507),

Gene: Sonah\_62 Start: 39244, Stop: 39378, Start Num: 68

Candidate Starts for Sonah\_62:

(38, 39109), (41, 39133), (Start: 63 @39220 has 2 MA's), (Start: 65 @39232 has 3 MA's), (Start: 68 @39244 has 111 MA's), (72, 39295),

Gene: StAnnes\_71 Start: 46866, Stop: 47000, Start Num: 68

Candidate Starts for StAnnes\_71:

(41, 46746), (Start: 68 @46866 has 111 MA's), (72, 46917), (76, 46995),

Gene: StevieRay\_66 Start: 42311, Stop: 42445, Start Num: 68

Candidate Starts for StevieRay\_66:

(Start: 61 @42287 has 1 MA's), (Start: 68 @42311 has 111 MA's), (69, 42332), (72, 42362),

Gene: StressBall\_61 Start: 40980, Stop: 41105, Start Num: 68

Candidate Starts for StressBall\_61:

(1, 40242), (2, 40311), (5, 40359), (7, 40431), (8, 40437), (9, 40455), (11, 40506), (38, 40845), (41, 40869), (Start: 63 @40956 has 2 MA's), (Start: 65 @40968 has 3 MA's), (Start: 68 @40980 has 111 MA's), (72, 41031),

Gene: Strokeseat\_69 Start: 44289, Stop: 44423, Start Num: 68

Candidate Starts for Strokeseat\_69:

(56, 44235), (Start: 68 @44289 has 111 MA's), (72, 44340), (73, 44355),

Gene: Stuck\_74 Start: 48313, Stop: 48447, Start Num: 68

Candidate Starts for Stuck\_74:

(41, 48193), (Start: 63 @48289 has 2 MA's), (Start: 65 @48301 has 3 MA's), (Start: 68 @48313 has 111 MA's), (72, 48364),

Gene: TChen\_74 Start: 47755, Stop: 47964, Start Num: 43

Candidate Starts for TChen\_74:

(42, 47746), (Start: 43 @47755 has 2 MA's), (49, 47782), (Start: 60 @47830 has 3 MA's), (72, 47881),

Gene: Taj\_80 Start: 48332, Stop: 48466, Start Num: 68

Candidate Starts for Taj\_80:

(31, 48134), (41, 48212), (45, 48233), (Start: 68 @48332 has 111 MA's), (72, 48383), (73, 48398),

Gene: Tapioca\_61 Start: 39880, Stop: 40041, Start Num: 59  
Candidate Starts for Tapioca\_61:  
(35, 39751), (36, 39760), (Start: 59 @39880 has 34 MA's), (72, 39931), (77, 40024),

Gene: Techage\_62 Start: 40112, Stop: 40246, Start Num: 68  
Candidate Starts for Techage\_62:  
(31, 39914), (41, 39992), (Start: 68 @40112 has 111 MA's), (72, 40163),

Gene: Tessdabest\_64 Start: 39497, Stop: 39658, Start Num: 59  
Candidate Starts for Tessdabest\_64:  
(35, 39368), (36, 39377), (Start: 59 @39497 has 34 MA's), (72, 39548), (77, 39641),

Gene: Thespis\_63 Start: 41077, Stop: 41211, Start Num: 68  
Candidate Starts for Thespis\_63:  
(Start: 61 @41053 has 1 MA's), (Start: 68 @41077 has 111 MA's), (69, 41098), (72, 41128),

Gene: ThulaThula\_68 Start: 44563, Stop: 44709, Start Num: 68  
Candidate Starts for ThulaThula\_68:  
(57, 44512), (Start: 68 @44563 has 111 MA's), (70, 44587), (72, 44614),

Gene: TootsiePop\_83 Start: 51321, Stop: 51461, Start Num: 59  
Candidate Starts for TootsiePop\_83:  
(37, 51210), (Start: 43 @51252 has 2 MA's), (50, 51282), (53, 51288), (Start: 59 @51321 has 34 MA's),  
(71, 51363),

Gene: Tortellini\_69 Start: 45507, Stop: 45668, Start Num: 59  
Candidate Starts for Tortellini\_69:  
(37, 45396), (50, 45468), (53, 45474), (Start: 59 @45507 has 34 MA's), (71, 45549),

Gene: Tortoise12\_63 Start: 38484, Stop: 38645, Start Num: 59  
Candidate Starts for Tortoise12\_63:  
(35, 38355), (36, 38364), (Start: 59 @38484 has 34 MA's), (72, 38535), (77, 38628),

Gene: Vidya\_60 Start: 39365, Stop: 39499, Start Num: 68  
Candidate Starts for Vidya\_60:  
(38, 39230), (41, 39254), (Start: 63 @39341 has 2 MA's), (Start: 65 @39353 has 3 MA's), (Start: 68  
@39365 has 111 MA's), (72, 39416),

Gene: Wee\_79 Start: 48408, Stop: 48542, Start Num: 68  
Candidate Starts for Wee\_79:  
(31, 48210), (41, 48288), (45, 48309), (Start: 68 @48408 has 111 MA's), (72, 48459), (73, 48474),

Gene: Willsammy\_63 Start: 41455, Stop: 41589, Start Num: 68  
Candidate Starts for Willsammy\_63:  
(38, 41320), (41, 41344), (Start: 63 @41431 has 2 MA's), (Start: 65 @41443 has 3 MA's), (Start: 68  
@41455 has 111 MA's), (72, 41506),

Gene: Xavia\_63 Start: 45540, Stop: 45674, Start Num: 68  
Candidate Starts for Xavia\_63:  
(Start: 68 @45540 has 111 MA's), (72, 45591),

Gene: Xeno\_60 Start: 38028, Stop: 38162, Start Num: 68  
Candidate Starts for Xeno\_60:

(41, 37908), (Start: 68 @38028 has 111 MA's),

Gene: Xerxes\_63 Start: 39360, Stop: 39521, Start Num: 59

Candidate Starts for Xerxes\_63:

(35, 39231), (36, 39240), (Start: 59 @39360 has 34 MA's), (72, 39411), (77, 39504),

Gene: Xula\_57 Start: 39314, Stop: 39448, Start Num: 68

Candidate Starts for Xula\_57:

(47, 39218), (58, 39275), (Start: 68 @39314 has 111 MA's), (72, 39365), (76, 39443),

Gene: Zilizebeth\_67 Start: 40886, Stop: 41020, Start Num: 68

Candidate Starts for Zilizebeth\_67:

(Start: 68 @40886 has 111 MA's), (72, 40937),