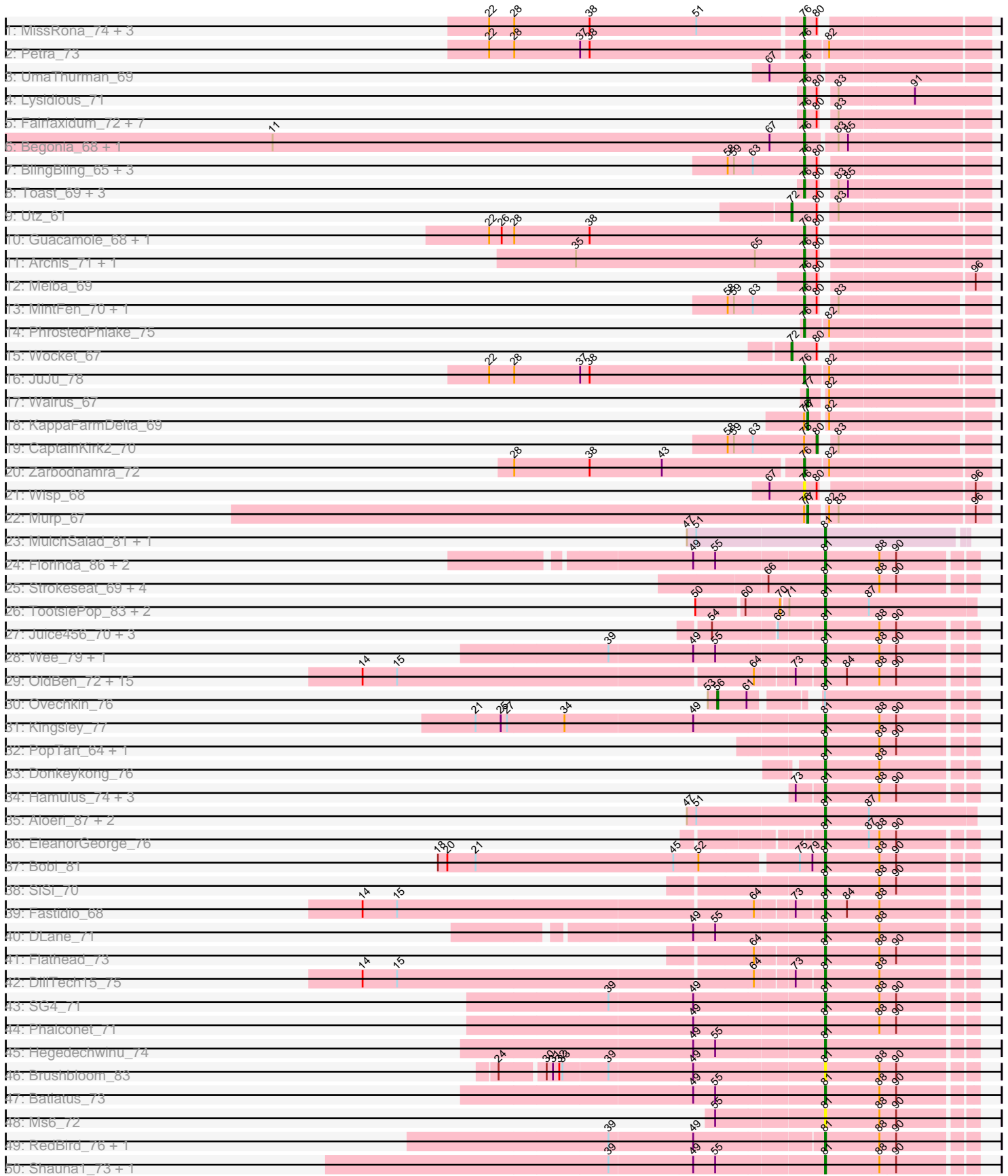
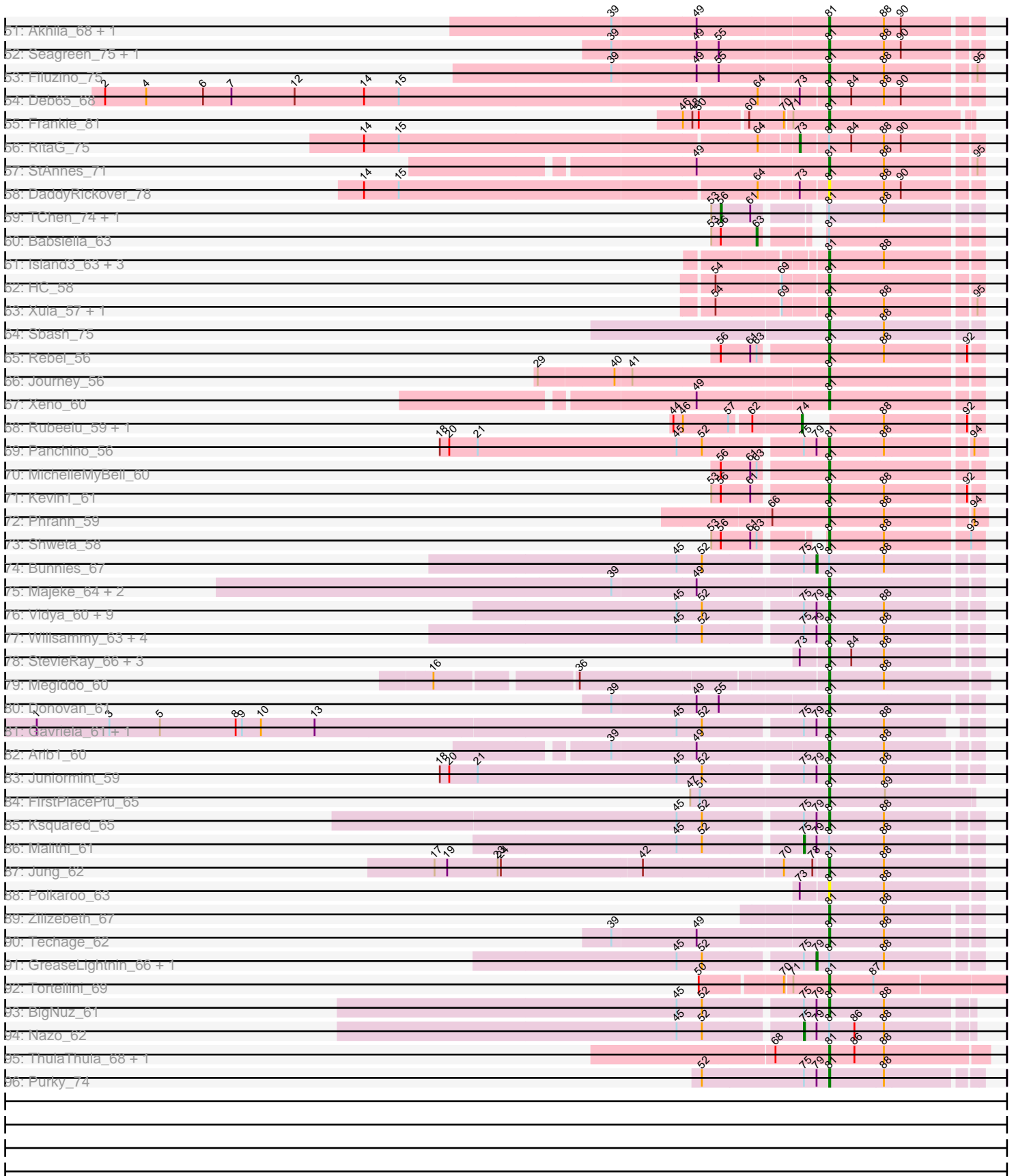


Pham 202709



Pham 202709



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 202709 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202709 has 181 members, 11 are drafts.

Phages represented in each track:

- Track 1 : MissRona\_74, Gambino\_76, Azula\_74, Blueberry\_73
- Track 2 : Petra\_73
- Track 3 : UmaThurman\_69
- Track 4 : Lysidious\_71
- Track 5 : Fairfaxidum\_72, Hitter\_69, Samba\_69, Blino\_71, Mellie\_66, Jalammah\_72, CarolAnn\_70, Fenry\_68
- Track 6 : Begonia\_68, Malachai\_68
- Track 7 : BlingBling\_65, Obliviate\_68, Barco\_66, Pipp\_73
- Track 8 : Toast\_69, PCoral7\_69, PrincePatrick\_70, William\_72
- Track 9 : Utz\_61
- Track 10 : Guacamole\_68, JasperJr\_68
- Track 11 : Archis\_71, ZiggyZoo\_70
- Track 12 : Melba\_69
- Track 13 : MintFen\_70, Delian\_73
- Track 14 : PhrostedPhlake\_75
- Track 15 : Wocket\_67
- Track 16 : JuJu\_78
- Track 17 : Walrus\_67
- Track 18 : KappaFarmDelta\_69
- Track 19 : CaptainKirk2\_70
- Track 20 : Zarbodnamra\_72
- Track 21 : Wisp\_68
- Track 22 : Murp\_67
- Track 23 : MulchSalad\_81, Piper2020\_87
- Track 24 : Florinda\_86, Quico\_83, Girafales\_83
- Track 25 : Strokeseat\_69, Minnie\_71, Sandalphon\_69, Hlubikazi\_69, Mandlovu\_69
- Track 26 : TootsiePop\_83, Misha28\_83, Awesomesauce\_84
- Track 27 : Juice456\_70, JalFarm20\_82, DeadP\_75, KristaRAM\_72
- Track 28 : Wee\_79, Taj\_80
- Track 29 : 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 30 : Ovechkin\_76
- Track 31 : Kingsley\_77
- Track 32 : PopTart\_64, SassyB\_64
- Track 33 : Donkeykong\_76
- Track 34 : Hamulus\_74, PhesterPhotato\_77, IMpilo\_64, LittleShirley\_74

- Track 35 : Aloeri\_87, ChickenDinner\_87, DocMcStuffins\_81
- Track 36 : EleanorGeorge\_76
- Track 37 : Bobi\_81
- Track 38 : SiSi\_70
- Track 39 : Fastidio\_68
- Track 40 : DLane\_71
- Track 41 : Flathead\_73
- Track 42 : DillTech15\_75
- Track 43 : SG4\_71
- Track 44 : Phalconet\_71
- Track 45 : Hegedechwinu\_74
- Track 46 : Brushbloom\_83
- Track 47 : Batiatus\_73
- Track 48 : Ms6\_72
- Track 49 : RedBird\_76, Dorothy\_76
- Track 50 : Shauna1\_73, Phanphagia\_72
- Track 51 : Akhila\_68, MilanaBonita\_67
- Track 52 : Seagreen\_75, Bipolar\_77
- Track 53 : Filuzino\_75
- Track 54 : Deb65\_68
- Track 55 : Frankie\_81
- Track 56 : RitaG\_75
- Track 57 : StAnnes\_71
- Track 58 : DaddyRickover\_78
- Track 59 : TChen\_74, LunaStella\_72
- Track 60 : Babsiella\_63
- Track 61 : Island3\_63, Che9c\_71, Brujita\_62, Xavia\_63
- Track 62 : HC\_58
- Track 63 : Xula\_57, QueenHazel\_58
- Track 64 : Sbash\_75
- Track 65 : Rebel\_56
- Track 66 : Journey\_56
- Track 67 : Xeno\_60
- Track 68 : Rubeelu\_59, Butters\_59
- Track 69 : Panchino\_56
- Track 70 : MichelleMyBell\_60
- Track 71 : Kevin1\_61
- Track 72 : Phrann\_59
- Track 73 : Shweta\_58
- Track 74 : Bunnies\_67
- Track 75 : Majeke\_64, Phegasus\_64, Mangethe\_64
- Track 76 : Vidya\_60, Jebeks\_62, Bogie\_64, HUHilltop\_64, Camster\_62, Sonah\_62, Dynamo\_61, Necropolis\_59, Shipwreck\_64, Pygmy\_65
- Track 77 : Willsammy\_63, CactusJack\_62, Glaske\_61, KilKor\_62, Phalm\_62
- Track 78 : StevieRay\_66, Atcoo\_63, Brusacoram\_63, Thespis\_63
- Track 79 : Megiddo\_60
- Track 80 : Donovan\_61
- Track 81 : Gavriela\_61, StressBall\_61
- Track 82 : Arib1\_60
- Track 83 : Juniormint\_59
- Track 84 : FirstPlacePfu\_65
- Track 85 : Ksquared\_65
- Track 86 : Malithi\_61

- Track 87 : Jung\_62
- Track 88 : Polkaroo\_63
- Track 89 : Zilizebeth\_67
- Track 90 : Techage\_62
- Track 91 : GreaseLightnin\_66, Phineas\_62
- Track 92 : Tortellini\_69
- Track 93 : BigNuz\_61
- Track 94 : Nazo\_62
- Track 95 : ThulaThula\_68, Phayonce\_64
- Track 96 : Purky\_74

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

The start number called the most often in the published annotations is 81, it was called in 117 of the 170 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Akhila\_68, Aloeri\_87, Arib1\_60, Atcoo\_63, Awesomesauce\_84, Batiatus\_73, BigNuz\_61, Bipolar\_77, Bobi\_81, Bogie\_64, Brujita\_62, Brusacoram\_63, Brushbloom\_83, CactusJack\_62, Camster\_62, Che9c\_71, ChickenDinner\_87, DLane\_71, DaddyRickover\_78, Daenerys\_74, DeadP\_75, Deb65\_68, DillTech15\_75, DocMcStuffins\_81, Donkeykong\_76, Donovan\_61, Doomphist\_78, Dorothy\_76, Dynamo\_61, EleanorGeorge\_76, Empress\_73, Fastidio\_68, Filuzino\_75, FirstPlacePfu\_65, Flathead\_73, Florinda\_86, Frankie\_81, 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, Kevin1\_61, KilKor\_62, KingMidas\_74, Kingsley\_77, KristaRAM\_72, Ksquared\_65, Leperchaun\_73, LittleShirley\_74, Majeke\_64, Mandlovu\_69, Mangethe\_64, Megiddo\_60, MichelleMyBell\_60, MilanaBonita\_67, Minnie\_71, Misha28\_83, Ms6\_72, MulchSalad\_81, Necropolis\_59, Nimbo\_67, Ogopogo\_79, OldBen\_72, PHappiness\_75, Panchino\_56, Phalconet\_71, Phalm\_62, Phanphagia\_72, Phayonce\_64, Phegasus\_64, PhesterPhotato\_77, Phrann\_59, Piper2020\_87, Poenanya\_78, Polka14\_79, Polkaroo\_63, PopTart\_64, Purky\_74, Pygmy\_65, QueenHazel\_58, Quico\_83, Rebel\_56, RedBird\_76, SG4\_71, Sandalphon\_69, Sassafras\_76, SassyB\_64, Sbash\_75, Scottish\_73, Seagreen\_75, Shauna1\_73, Shipwreck\_64, Shweta\_58, SiSi\_70, Sonah\_62, StAnnes\_71, StevieRay\_66, StressBall\_61, Strokeseat\_69, Taj\_80, Techage\_62, Thespis\_63, ThulaThula\_68, TootsiePop\_83, Tortellini\_69, 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, LunaStella\_72, Malithi\_61, Nazo\_62, Ovechkin\_76, Phineas\_62, RitaG\_75, TChen\_74,

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

- Archis\_71, Azula\_74, Barco\_66, Begonia\_68, BlingBling\_65, Blino\_71, Blueberry\_73, Butters\_59, CaptainKirk2\_70, CarolAnn\_70, Delian\_73, Fairfaxidum\_72, Fenry\_68, Gambino\_76, Guacamole\_68, Hitter\_69, Jalammah\_72, JasperJr\_68, JuJu\_78, KappaFarmDelta\_69, Lysidious\_71, Malachai\_68, Melba\_69,

Mellie\_66, MintFen\_70, MissRona\_74, Murp\_67, Obliviate\_68, PCoral7\_69, Petra\_73, PhrostedPhlake\_75, Pipp\_73, PrincePatrick\_70, Rubeelu\_59, Samba\_69, Toast\_69, UmaThurman\_69, Utz\_61, Walrus\_67, William\_72, Wisp\_68, Wocket\_67, Zarbodnamra\_72, ZiggyZoo\_70,

### Summary by start number:

#### Start 56:

- Found in 8 of 181 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 3 of 170
- Called 37.5% of time when present
- Phage (with cluster) where this start called: LunaStella\_72 (F4), Ovechkin\_76 (F1), TChen\_74 (F4),

#### Start 63:

- Found in 11 of 181 ( 6.1% ) of genes in pham
- Manual Annotations of this start: 1 of 170
- Called 9.1% of time when present
- Phage (with cluster) where this start called: Babsiella\_63 (I1),

#### Start 72:

- Found in 2 of 181 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 2 of 170
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Utz\_61 (CV), Wocket\_67 (CV),

#### Start 73:

- Found in 30 of 181 ( 16.6% ) of genes in pham
- Manual Annotations of this start: 1 of 170
- Called 3.3% of time when present
- Phage (with cluster) where this start called: RitaG\_75 (F1),

#### Start 74:

- Found in 2 of 181 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 2 of 170
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Butters\_59 (N), Rubeelu\_59 (N),

#### Start 75:

- Found in 28 of 181 ( 15.5% ) of genes in pham
- Manual Annotations of this start: 2 of 170
- Called 7.1% of time when present
- Phage (with cluster) where this start called: Malithi\_61 (P1), Nazo\_62 (P4),

#### Start 76:

- Found in 39 of 181 ( 21.5% ) of genes in pham
- Manual Annotations of this start: 35 of 170
- Called 92.3% of time when present
- Phage (with cluster) where this start called: Archis\_71 (CV), Azula\_74 (CV), Barco\_66 (CV), Begonia\_68 (CV), BlingBling\_65 (CV), Blino\_71 (CV), Blueberry\_73 (CV), CarolAnn\_70 (CV), Delian\_73 (CV), Fairfaxidum\_72 (CV), Ferry\_68 (CV), Gambino\_76 (CV), Guacamole\_68 (CV), Hitter\_69 (CV), Jalammah\_72 (CV), JasperJr\_68 (CV), JuJu\_78 (CV), Lysidious\_71 (CV), Malachai\_68 (CV), Melba\_69

(CV), Mellie\_66 (CV), MintFen\_70 (CV), MissRona\_74 (CV), Obliviate\_68 (CV), PCoral7\_69 (CV), Petra\_73 (CV), PhrostedPhlake\_75 (CV), Pipp\_73 (CV), PrincePatrick\_70 (CV), Samba\_69 (CV), Toast\_69 (CV), UmaThurman\_69 (CV), William\_72 (CV), Wisp\_68 (CV), Zarbodnamra\_72 (CV), ZiggyZoo\_70 (CV),

Start 77:

- Found in 3 of 181 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 3 of 170
- Called 100.0% of time when present
- Phage (with cluster) where this start called: KappaFarmDelta\_69 (CV), Murp\_67 (CV), Walrus\_67 (CV),

Start 79:

- Found in 28 of 181 ( 15.5% ) of genes in pham
- Manual Annotations of this start: 3 of 170
- Called 10.7% of time when present
- Phage (with cluster) where this start called: Bunnies\_67 (P1), GreaseLightnin\_66 (P1), Phineas\_62 (P1),

Start 80:

- Found in 32 of 181 ( 17.7% ) of genes in pham
- Manual Annotations of this start: 1 of 170
- Called 3.1% of time when present
- Phage (with cluster) where this start called: CaptainKirk2\_70 (CV),

Start 81:

- Found in 137 of 181 ( 75.7% ) of genes in pham
- Manual Annotations of this start: 117 of 170
- Called 92.7% of time when present
- Phage (with cluster) where this start called: Akhila\_68 (F1), Aloeri\_87 (F1), Arib1\_60 (P1), Atcoo\_63 (P1), Awesomesauce\_84 (F1), Batiatus\_73 (F1), BigNuz\_61 (P4), Bipolar\_77 (F1), Bobi\_81 (F1), Bogie\_64 (P1), Brujita\_62 (I1), Brusacorram\_63 (P1), Brushbloom\_83 (F1), CactusJack\_62 (P1), Camster\_62 (P1), Che9c\_71 (I2), ChickenDinner\_87 (F1), DLane\_71 (F1), DaddyRickover\_78 (F1), Daenerys\_74 (F1), DeadP\_75 (F1), Deb65\_68 (F1), DillTech15\_75 (F1), DocMcStuffins\_81 (F1), Donkeykong\_76 (F1), Donovan\_61 (P1), Doomphist\_78 (F1), Dorothy\_76 (F1), Dynamo\_61 (P1), EleanorGeorge\_76 (F1), Empress\_73 (F1), Fastidio\_68 (F1), Filuzino\_75 (F1), FirstPlacePfu\_65 (P1), Flathead\_73 (F1), Florida\_86 (F1), Frankie\_81 (F1), 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), Kevin1\_61 (N), KilKor\_62 (P1), 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), Megiddo\_60 (P1), MichelleMyBell\_60 (N), MilanaBonita\_67 (F1), Minnie\_71 (F1), Misha28\_83 (F1), Ms6\_72 (F1), MulchSalad\_81 (F), Necropolis\_59 (P1), Nimbo\_67 (F1), Ogopogo\_79 (F1), OldBen\_72 (F1), PHappiness\_75 (F1), Panchino\_56 (N), Phalconet\_71 (F1), Phalm\_62 (P1), Phanphagia\_72 (F1), Phayonce\_64 (P5), Phegasus\_64 (P1), PhesterPotato\_77 (F1), Phrann\_59 (N), Piper2020\_87 (F1), Poenanya\_78 (F1), Polka14\_79 (F1), Polkaroo\_63 (P1), PopTart\_64 (F1), Purky\_74 (P6), Pygmy\_65 (P1), QueenHazel\_58 (I1), Quico\_83 (F1), Rebel\_56 (N), 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), Shweta\_58 (N), SiSi\_70 (F1), Sonah\_62 (P1), StAnnes\_71 (F1), StevieRay\_66 (P1), StressBall\_61 (P1), Strokeseat\_69 (F1), Taj\_80 (F1), Techage\_62 (P1), Thespis\_63 (P1), ThulaThula\_68 (P5), TootsiePop\_83 (F1), Tortellini\_69 (P2), 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 13 clusters represented in this pham: P2, F1, P1, P6, P4, F, I1, P3, I2, N, F4, CV, P5,

Info for manual annotations of cluster CV:

- Start number 72 was manually annotated 2 times for cluster CV.
- Start number 76 was manually annotated 35 times for cluster CV.
- Start number 77 was manually annotated 3 times for cluster CV.
- Start number 80 was manually annotated 1 time for cluster CV.

Info for manual annotations of cluster F1:

- Start number 56 was manually annotated 1 time for cluster F1.
- Start number 73 was manually annotated 1 time for cluster F1.
- Start number 81 was manually annotated 65 times for cluster F1.

Info for manual annotations of cluster F4:

- Start number 56 was manually annotated 2 times for cluster F4.

Info for manual annotations of cluster I1:

- Start number 63 was manually annotated 1 time for cluster I1.
- Start number 81 was manually annotated 5 times for cluster I1.

Info for manual annotations of cluster I2:

- Start number 81 was manually annotated 2 times for cluster I2.

Info for manual annotations of cluster N:

- Start number 74 was manually annotated 2 times for cluster N.
- Start number 81 was manually annotated 8 times for cluster N.

Info for manual annotations of cluster P1:

- Start number 75 was manually annotated 1 time for cluster P1.
- Start number 79 was manually annotated 3 times for cluster P1.
- Start number 81 was manually annotated 31 times for cluster P1.

Info for manual annotations of cluster P2:

- Start number 81 was manually annotated 1 time for cluster P2.

Info for manual annotations of cluster P3:

- Start number 81 was manually annotated 1 time for cluster P3.

Info for manual annotations of cluster P4:

- Start number 75 was manually annotated 1 time for cluster P4.
- Start number 81 was manually annotated 1 time for cluster P4.



Info for manual annotations of cluster P5:

- Start number 81 was manually annotated 2 times for cluster P5.

Info for manual annotations of cluster P6:

- Start number 81 was manually annotated 1 time for cluster P6.

### **Gene Information:**

Gene: Akhila\_68 Start: 45011, Stop: 45145, Start Num: 81

Candidate Starts for Akhila\_68:

(39, 44813), (49, 44891), (Start: 81 @45011 has 117 MA's), (88, 45062), (90, 45077),

Gene: Aloeri\_87 Start: 50386, Stop: 50526, Start Num: 81

Candidate Starts for Aloeri\_87:

(47, 50257), (51, 50266), (Start: 81 @50386 has 117 MA's), (87, 50428),

Gene: Archis\_71 Start: 42723, Stop: 42881, Start Num: 76

Candidate Starts for Archis\_71:

(35, 42507), (65, 42678), (Start: 76 @42723 has 35 MA's), (Start: 80 @42735 has 1 MA's),

Gene: Arib1\_60 Start: 39157, Stop: 39291, Start Num: 81

Candidate Starts for Arib1\_60:

(39, 38959), (49, 39037), (Start: 81 @39157 has 117 MA's), (88, 39208),

Gene: Atcoo\_63 Start: 42534, Stop: 42668, Start Num: 81

Candidate Starts for Atcoo\_63:

(Start: 73 @42510 has 1 MA's), (Start: 81 @42534 has 117 MA's), (84, 42555), (88, 42585),

Gene: Awesomesauce\_84 Start: 50622, Stop: 50762, Start Num: 81

Candidate Starts for Awesomesauce\_84:

(50, 50511), (60, 50553), (70, 50583), (71, 50589), (Start: 81 @50622 has 117 MA's), (87, 50664),

Gene: Azula\_74 Start: 46615, Stop: 46773, Start Num: 76

Candidate Starts for Azula\_74:

(22, 46321), (28, 46345), (38, 46417), (51, 46519), (Start: 76 @46615 has 35 MA's), (Start: 80 @46627 has 1 MA's),

Gene: Babsiella\_63 Start: 40488, Stop: 40664, Start Num: 63

Candidate Starts for Babsiella\_63:

(53, 40446), (Start: 56 @40455 has 3 MA's), (Start: 63 @40488 has 1 MA's), (Start: 81 @40530 has 117 MA's),

Gene: Barco\_66 Start: 42553, Stop: 42711, Start Num: 76

Candidate Starts for Barco\_66:

(58, 42481), (59, 42487), (Start: 63 @42505 has 1 MA's), (Start: 76 @42553 has 35 MA's), (Start: 80 @42565 has 1 MA's),

Gene: Batiatus\_73 Start: 46749, Stop: 46883, Start Num: 81

Candidate Starts for Batiatus\_73:

(49, 46629), (55, 46650), (Start: 81 @46749 has 117 MA's), (88, 46800), (90, 46815),

Gene: Begonia\_68 Start: 45480, Stop: 45644, Start Num: 76  
Candidate Starts for Begonia\_68:  
(11, 44973), (67, 45447), (Start: 76 @45480 has 35 MA's), (83, 45507), (85, 45516),

Gene: BigNuz\_61 Start: 40925, Stop: 41053, Start Num: 81  
Candidate Starts for BigNuz\_61:  
(45, 40790), (52, 40814), (Start: 75 @40901 has 2 MA's), (Start: 79 @40913 has 3 MA's), (Start: 81 @40925 has 117 MA's), (88, 40976),

Gene: Bipolar\_77 Start: 48393, Stop: 48527, Start Num: 81  
Candidate Starts for Bipolar\_77:  
(39, 48195), (49, 48273), (55, 48294), (Start: 81 @48393 has 117 MA's), (88, 48444), (90, 48459),

Gene: BlingBling\_65 Start: 43435, Stop: 43593, Start Num: 76  
Candidate Starts for BlingBling\_65:  
(58, 43363), (59, 43369), (Start: 63 @43387 has 1 MA's), (Start: 76 @43435 has 35 MA's), (Start: 80 @43447 has 1 MA's),

Gene: Blino\_71 Start: 48216, Stop: 48371, Start Num: 76  
Candidate Starts for Blino\_71:  
(Start: 76 @48216 has 35 MA's), (Start: 80 @48228 has 1 MA's), (83, 48237),

Gene: Blueberry\_73 Start: 46615, Stop: 46773, Start Num: 76  
Candidate Starts for Blueberry\_73:  
(22, 46321), (28, 46345), (38, 46417), (51, 46519), (Start: 76 @46615 has 35 MA's), (Start: 80 @46627 has 1 MA's),

Gene: Bobi\_81 Start: 49048, Stop: 49182, Start Num: 81  
Candidate Starts for Bobi\_81:  
(18, 48688), (20, 48697), (21, 48724), (45, 48913), (52, 48937), (Start: 75 @49024 has 2 MA's), (Start: 79 @49036 has 3 MA's), (Start: 81 @49048 has 117 MA's), (88, 49099), (90, 49114),

Gene: Bogie\_64 Start: 41516, Stop: 41650, Start Num: 81  
Candidate Starts for Bogie\_64:  
(45, 41381), (52, 41405), (Start: 75 @41492 has 2 MA's), (Start: 79 @41504 has 3 MA's), (Start: 81 @41516 has 117 MA's), (88, 41567),

Gene: Brujita\_62 Start: 40659, Stop: 40793, Start Num: 81  
Candidate Starts for Brujita\_62:  
(Start: 81 @40659 has 117 MA's), (88, 40710),

Gene: Brusacoram\_63 Start: 41077, Stop: 41211, Start Num: 81  
Candidate Starts for Brusacoram\_63:  
(Start: 73 @41053 has 1 MA's), (Start: 81 @41077 has 117 MA's), (84, 41098), (88, 41128),

Gene: Brushbloom\_83 Start: 48189, Stop: 48323, Start Num: 81  
Candidate Starts for Brushbloom\_83:  
(24, 47895), (30, 47934), (31, 47940), (32, 47946), (33, 47949), (39, 47991), (49, 48069), (Start: 81 @48189 has 117 MA's), (88, 48240), (90, 48255),

Gene: Bunnies\_67 Start: 42398, Stop: 42544, Start Num: 79  
Candidate Starts for Bunnies\_67:

(45, 42275), (52, 42299), (Start: 75 @42386 has 2 MA's), (Start: 79 @42398 has 3 MA's), (Start: 81 @42410 has 117 MA's), (88, 42461),

Gene: Butters\_59 Start: 37429, Stop: 37563, Start Num: 74

Candidate Starts for Butters\_59:

(44, 37315), (46, 37324), (57, 37366), (62, 37384), (Start: 74 @37429 has 2 MA's), (88, 37480), (92, 37552),

Gene: CactusJack\_62 Start: 41278, Stop: 41412, Start Num: 81

Candidate Starts for CactusJack\_62:

(45, 41143), (52, 41167), (Start: 75 @41254 has 2 MA's), (Start: 79 @41266 has 3 MA's), (Start: 81 @41278 has 117 MA's), (88, 41329),

Gene: Camster\_62 Start: 39977, Stop: 40111, Start Num: 81

Candidate Starts for Camster\_62:

(45, 39842), (52, 39866), (Start: 75 @39953 has 2 MA's), (Start: 79 @39965 has 3 MA's), (Start: 81 @39977 has 117 MA's), (88, 40028),

Gene: CaptainKirk2\_70 Start: 42213, Stop: 42356, Start Num: 80

Candidate Starts for CaptainKirk2\_70:

(58, 42129), (59, 42135), (Start: 63 @42153 has 1 MA's), (Start: 76 @42201 has 35 MA's), (Start: 80 @42213 has 1 MA's), (83, 42222),

Gene: CarolAnn\_70 Start: 48215, Stop: 48370, Start Num: 76

Candidate Starts for CarolAnn\_70:

(Start: 76 @48215 has 35 MA's), (Start: 80 @48227 has 1 MA's), (83, 48236),

Gene: Che9c\_71 Start: 50371, Stop: 50505, Start Num: 81

Candidate Starts for Che9c\_71:

(Start: 81 @50371 has 117 MA's), (88, 50422),

Gene: ChickenDinner\_87 Start: 50386, Stop: 50526, Start Num: 81

Candidate Starts for ChickenDinner\_87:

(47, 50257), (51, 50266), (Start: 81 @50386 has 117 MA's), (87, 50428),

Gene: DLane\_71 Start: 46327, Stop: 46461, Start Num: 81

Candidate Starts for DLane\_71:

(49, 46207), (55, 46228), (Start: 81 @46327 has 117 MA's), (88, 46378),

Gene: DaddyRickover\_78 Start: 48359, Stop: 48493, Start Num: 81

Candidate Starts for DaddyRickover\_78:

(14, 47939), (15, 47972), (64, 48302), (Start: 73 @48335 has 1 MA's), (Start: 81 @48359 has 117 MA's), (88, 48410), (90, 48425),

Gene: Daenerys\_74 Start: 47956, Stop: 48090, Start Num: 81

Candidate Starts for Daenerys\_74:

(14, 47536), (15, 47569), (64, 47899), (Start: 73 @47932 has 1 MA's), (Start: 81 @47956 has 117 MA's), (84, 47977), (88, 48007), (90, 48022),

Gene: DeadP\_75 Start: 45575, Stop: 45709, Start Num: 81

Candidate Starts for DeadP\_75:

(54, 45479), (69, 45536), (Start: 81 @45575 has 117 MA's), (88, 45626), (90, 45641),

Gene: Deb65\_68 Start: 45678, Stop: 45812, Start Num: 81

Candidate Starts for Deb65\_68:

(2, 45012), (4, 45051), (6, 45105), (7, 45132), (12, 45192), (14, 45258), (15, 45291), (64, 45621), (Start: 73 @45654 has 1 MA's), (Start: 81 @45678 has 117 MA's), (84, 45699), (88, 45729), (90, 45744),

Gene: Delian\_73 Start: 42199, Stop: 42354, Start Num: 76

Candidate Starts for Delian\_73:

(58, 42127), (59, 42133), (Start: 63 @42151 has 1 MA's), (Start: 76 @42199 has 35 MA's), (Start: 80 @42211 has 1 MA's), (83, 42220),

Gene: DillTech15\_75 Start: 45272, Stop: 45406, Start Num: 81

Candidate Starts for DillTech15\_75:

(14, 44852), (15, 44885), (64, 45215), (Start: 73 @45248 has 1 MA's), (Start: 81 @45272 has 117 MA's), (88, 45323),

Gene: DocMcStuffins\_81 Start: 52016, Stop: 52156, Start Num: 81

Candidate Starts for DocMcStuffins\_81:

(47, 51887), (51, 51896), (Start: 81 @52016 has 117 MA's), (87, 52058),

Gene: Donkeykong\_76 Start: 47467, Stop: 47601, Start Num: 81

Candidate Starts for Donkeykong\_76:

(Start: 81 @47467 has 117 MA's), (88, 47518),

Gene: Donovan\_61 Start: 40222, Stop: 40356, Start Num: 81

Candidate Starts for Donovan\_61:

(39, 40024), (49, 40102), (55, 40123), (Start: 81 @40222 has 117 MA's),

Gene: Doomphist\_78 Start: 47769, Stop: 47903, Start Num: 81

Candidate Starts for Doomphist\_78:

(14, 47349), (15, 47382), (64, 47712), (Start: 73 @47745 has 1 MA's), (Start: 81 @47769 has 117 MA's), (84, 47790), (88, 47820), (90, 47835),

Gene: Dorothy\_76 Start: 48407, Stop: 48541, Start Num: 81

Candidate Starts for Dorothy\_76:

(39, 48212), (49, 48290), (Start: 81 @48407 has 117 MA's), (88, 48458), (90, 48473),

Gene: Dynamo\_61 Start: 39550, Stop: 39684, Start Num: 81

Candidate Starts for Dynamo\_61:

(45, 39415), (52, 39439), (Start: 75 @39526 has 2 MA's), (Start: 79 @39538 has 3 MA's), (Start: 81 @39550 has 117 MA's), (88, 39601),

Gene: EleanorGeorge\_76 Start: 47362, Stop: 47496, Start Num: 81

Candidate Starts for EleanorGeorge\_76:

(Start: 81 @47362 has 117 MA's), (87, 47404), (88, 47413), (90, 47428),

Gene: Empress\_73 Start: 46580, Stop: 46714, Start Num: 81

Candidate Starts for Empress\_73:

(14, 46160), (15, 46193), (64, 46523), (Start: 73 @46556 has 1 MA's), (Start: 81 @46580 has 117 MA's), (84, 46601), (88, 46631), (90, 46646),

Gene: Fairfaxidum\_72 Start: 44764, Stop: 44922, Start Num: 76

Candidate Starts for Fairfaxidum\_72:

(Start: 76 @44764 has 35 MA's), (Start: 80 @44776 has 1 MA's), (83, 44785),

Gene: Fastidio\_68 Start: 42078, Stop: 42212, Start Num: 81

Candidate Starts for Fastidio\_68:

(14, 41658), (15, 41691), (64, 42021), (Start: 73 @42054 has 1 MA's), (Start: 81 @42078 has 117 MA's), (84, 42099), (88, 42129),

Gene: Fenry\_68 Start: 44226, Stop: 44384, Start Num: 76

Candidate Starts for Fenry\_68:

(Start: 76 @44226 has 35 MA's), (Start: 80 @44238 has 1 MA's), (83, 44247),

Gene: Filuzino\_75 Start: 48306, Stop: 48440, Start Num: 81

Candidate Starts for Filuzino\_75:

(39, 48108), (49, 48186), (55, 48207), (Start: 81 @48306 has 117 MA's), (88, 48357), (95, 48435),

Gene: FirstPlacePfu\_65 Start: 39143, Stop: 39277, Start Num: 81

Candidate Starts for FirstPlacePfu\_65:

(47, 39014), (51, 39023), (Start: 81 @39143 has 117 MA's), (89, 39194),

Gene: Flathead\_73 Start: 46020, Stop: 46154, Start Num: 81

Candidate Starts for Flathead\_73:

(64, 45960), (Start: 81 @46020 has 117 MA's), (88, 46071), (90, 46086),

Gene: Florinda\_86 Start: 49222, Stop: 49356, Start Num: 81

Candidate Starts for Florinda\_86:

(49, 49102), (55, 49123), (Start: 81 @49222 has 117 MA's), (88, 49273), (90, 49288),

Gene: Frankie\_81 Start: 47698, Stop: 47826, Start Num: 81

Candidate Starts for Frankie\_81:

(46, 47572), (48, 47581), (50, 47587), (60, 47629), (70, 47659), (71, 47665), (Start: 81 @47698 has 117 MA's),

Gene: Gambino\_76 Start: 46615, Stop: 46773, Start Num: 76

Candidate Starts for Gambino\_76:

(22, 46321), (28, 46345), (38, 46417), (51, 46519), (Start: 76 @46615 has 35 MA's), (Start: 80 @46627 has 1 MA's),

Gene: Gavriela\_61 Start: 40980, Stop: 41105, Start Num: 81

Candidate Starts for Gavriela\_61:

(1, 40242), (3, 40311), (5, 40359), (8, 40431), (9, 40437), (10, 40455), (13, 40506), (45, 40845), (52, 40869), (Start: 75 @40956 has 2 MA's), (Start: 79 @40968 has 3 MA's), (Start: 81 @40980 has 117 MA's), (88, 41031),

Gene: Geralt\_68 Start: 45676, Stop: 45810, Start Num: 81

Candidate Starts for Geralt\_68:

(14, 45256), (15, 45289), (64, 45619), (Start: 73 @45652 has 1 MA's), (Start: 81 @45676 has 117 MA's), (84, 45697), (88, 45727), (90, 45742),

Gene: Girafales\_83 Start: 48827, Stop: 48961, Start Num: 81

Candidate Starts for Girafales\_83:

(49, 48707), (55, 48728), (Start: 81 @48827 has 117 MA's), (88, 48878), (90, 48893),

Gene: Glaske\_61 Start: 41278, Stop: 41412, Start Num: 81

Candidate Starts for Glaske\_61:

(45, 41143), (52, 41167), (Start: 75 @41254 has 2 MA's), (Start: 79 @41266 has 3 MA's), (Start: 81 @41278 has 117 MA's), (88, 41329),

Gene: GreaseLightnin\_66 Start: 41919, Stop: 42065, Start Num: 79

Candidate Starts for GreaseLightnin\_66:

(45, 41796), (52, 41820), (Start: 75 @41907 has 2 MA's), (Start: 79 @41919 has 3 MA's), (Start: 81 @41931 has 117 MA's), (88, 41982),

Gene: Guacamole\_68 Start: 43616, Stop: 43774, Start Num: 76

Candidate Starts for Guacamole\_68:

(22, 43316), (26, 43328), (28, 43340), (38, 43412), (Start: 76 @43616 has 35 MA's), (Start: 80 @43628 has 1 MA's),

Gene: HC\_58 Start: 38076, Stop: 38210, Start Num: 81

Candidate Starts for HC\_58:

(54, 37980), (69, 38037), (Start: 81 @38076 has 117 MA's),

Gene: HUHilltop\_64 Start: 39773, Stop: 39907, Start Num: 81

Candidate Starts for HUHilltop\_64:

(45, 39638), (52, 39662), (Start: 75 @39749 has 2 MA's), (Start: 79 @39761 has 3 MA's), (Start: 81 @39773 has 117 MA's), (88, 39824),

Gene: Hamulus\_74 Start: 46705, Stop: 46839, Start Num: 81

Candidate Starts for Hamulus\_74:

(Start: 73 @46681 has 1 MA's), (Start: 81 @46705 has 117 MA's), (88, 46756), (90, 46771),

Gene: Hegedechwinu\_74 Start: 44915, Stop: 45049, Start Num: 81

Candidate Starts for Hegedechwinu\_74:

(49, 44795), (55, 44816), (Start: 81 @44915 has 117 MA's),

Gene: Hitter\_69 Start: 42159, Stop: 42317, Start Num: 76

Candidate Starts for Hitter\_69:

(Start: 76 @42159 has 35 MA's), (Start: 80 @42171 has 1 MA's), (83, 42180),

Gene: Hlubikazi\_69 Start: 44290, Stop: 44424, Start Num: 81

Candidate Starts for Hlubikazi\_69:

(66, 44236), (Start: 81 @44290 has 117 MA's), (88, 44341), (90, 44356),

Gene: IMpilo\_64 Start: 42435, Stop: 42569, Start Num: 81

Candidate Starts for IMpilo\_64:

(Start: 73 @42411 has 1 MA's), (Start: 81 @42435 has 117 MA's), (88, 42486), (90, 42501),

Gene: Inventum\_73 Start: 46592, Stop: 46726, Start Num: 81

Candidate Starts for Inventum\_73:

(14, 46172), (15, 46205), (64, 46535), (Start: 73 @46568 has 1 MA's), (Start: 81 @46592 has 117 MA's), (84, 46613), (88, 46643), (90, 46658),

Gene: Island3\_63 Start: 40659, Stop: 40793, Start Num: 81

Candidate Starts for Island3\_63:

(Start: 81 @40659 has 117 MA's), (88, 40710),

Gene: JalFarm20\_82 Start: 47370, Stop: 47504, Start Num: 81

Candidate Starts for JalFarm20\_82:  
(54, 47274), (69, 47331), (Start: 81 @47370 has 117 MA's), (88, 47421), (90, 47436),

Gene: Jalammah\_72 Start: 45129, Stop: 45290, Start Num: 76  
Candidate Starts for Jalammah\_72:  
(Start: 76 @45129 has 35 MA's), (Start: 80 @45141 has 1 MA's), (83, 45150),

Gene: JasperJr\_68 Start: 43616, Stop: 43774, Start Num: 76  
Candidate Starts for JasperJr\_68:  
(22, 43316), (26, 43328), (28, 43340), (38, 43412), (Start: 76 @43616 has 35 MA's), (Start: 80 @43628 has 1 MA's),

Gene: Jebeks\_62 Start: 39070, Stop: 39204, Start Num: 81  
Candidate Starts for Jebeks\_62:  
(45, 38935), (52, 38959), (Start: 75 @39046 has 2 MA's), (Start: 79 @39058 has 3 MA's), (Start: 81 @39070 has 117 MA's), (88, 39121),

Gene: JoeyJr\_75 Start: 47581, Stop: 47715, Start Num: 81  
Candidate Starts for JoeyJr\_75:  
(14, 47161), (15, 47194), (64, 47524), (Start: 73 @47557 has 1 MA's), (Start: 81 @47581 has 117 MA's), (84, 47602), (88, 47632), (90, 47647),

Gene: Journey\_56 Start: 37628, Stop: 37762, Start Num: 81  
Candidate Starts for Journey\_56:  
(29, 37364), (40, 37433), (41, 37448), (Start: 81 @37628 has 117 MA's),

Gene: JuJu\_78 Start: 48352, Stop: 48516, Start Num: 76  
Candidate Starts for JuJu\_78:  
(22, 48052), (28, 48076), (37, 48139), (38, 48148), (Start: 76 @48352 has 35 MA's), (82, 48373),

Gene: Juice456\_70 Start: 45326, Stop: 45460, Start Num: 81  
Candidate Starts for Juice456\_70:  
(54, 45230), (69, 45287), (Start: 81 @45326 has 117 MA's), (88, 45377), (90, 45392),

Gene: Jung\_62 Start: 40067, Stop: 40207, Start Num: 81  
Candidate Starts for Jung\_62:  
(17, 39704), (19, 39716), (23, 39764), (24, 39767), (42, 39899), (70, 40028), (78, 40055), (Start: 81 @40067 has 117 MA's), (88, 40118),

Gene: Juniormint\_59 Start: 38526, Stop: 38660, Start Num: 81  
Candidate Starts for Juniormint\_59:  
(18, 38166), (20, 38175), (21, 38202), (45, 38391), (52, 38415), (Start: 75 @38502 has 2 MA's), (Start: 79 @38514 has 3 MA's), (Start: 81 @38526 has 117 MA's), (88, 38577),

Gene: KappaFarmDelta\_69 Start: 43192, Stop: 43353, Start Num: 77  
Candidate Starts for KappaFarmDelta\_69:  
(Start: 76 @43189 has 35 MA's), (Start: 77 @43192 has 3 MA's), (82, 43207),

Gene: Kevin1\_61 Start: 37537, Stop: 37671, Start Num: 81  
Candidate Starts for Kevin1\_61:  
(53, 37435), (Start: 56 @37444 has 3 MA's), (61, 37471), (Start: 81 @37537 has 117 MA's), (88, 37588), (92, 37660),

Gene: KilKor\_62 Start: 41971, Stop: 42105, Start Num: 81  
Candidate Starts for KilKor\_62:  
(45, 41836), (52, 41860), (Start: 75 @41947 has 2 MA's), (Start: 79 @41959 has 3 MA's), (Start: 81 @41971 has 117 MA's), (88, 42022),

Gene: KingMidas\_74 Start: 46995, Stop: 47129, Start Num: 81  
Candidate Starts for KingMidas\_74:  
(14, 46575), (15, 46608), (64, 46938), (Start: 73 @46971 has 1 MA's), (Start: 81 @46995 has 117 MA's), (84, 47016), (88, 47046), (90, 47061),

Gene: Kingsley\_77 Start: 48832, Stop: 48966, Start Num: 81  
Candidate Starts for Kingsley\_77:  
(21, 48508), (25, 48532), (27, 48538), (34, 48592), (49, 48712), (Start: 81 @48832 has 117 MA's), (88, 48883), (90, 48898),

Gene: KristaRAM\_72 Start: 45695, Stop: 45829, Start Num: 81  
Candidate Starts for KristaRAM\_72:  
(54, 45599), (69, 45656), (Start: 81 @45695 has 117 MA's), (88, 45746), (90, 45761),

Gene: Ksquared\_65 Start: 42287, Stop: 42421, Start Num: 81  
Candidate Starts for Ksquared\_65:  
(45, 42152), (52, 42176), (Start: 75 @42263 has 2 MA's), (Start: 79 @42275 has 3 MA's), (Start: 81 @42287 has 117 MA's), (88, 42338),

Gene: Leperchaun\_73 Start: 46815, Stop: 46949, Start Num: 81  
Candidate Starts for Leperchaun\_73:  
(14, 46395), (15, 46428), (64, 46758), (Start: 73 @46791 has 1 MA's), (Start: 81 @46815 has 117 MA's), (84, 46836), (88, 46866), (90, 46881),

Gene: LittleShirley\_74 Start: 45751, Stop: 45885, Start Num: 81  
Candidate Starts for LittleShirley\_74:  
(Start: 73 @45727 has 1 MA's), (Start: 81 @45751 has 117 MA's), (88, 45802), (90, 45817),

Gene: LunaStella\_72 Start: 45804, Stop: 46013, Start Num: 56  
Candidate Starts for LunaStella\_72:  
(53, 45795), (Start: 56 @45804 has 3 MA's), (61, 45831), (Start: 81 @45879 has 117 MA's), (88, 45930),

Gene: Lysidious\_71 Start: 44855, Stop: 45016, Start Num: 76  
Candidate Starts for Lysidious\_71:  
(Start: 76 @44855 has 35 MA's), (Start: 80 @44867 has 1 MA's), (83, 44876), (91, 44945),

Gene: Majeke\_64 Start: 40672, Stop: 40806, Start Num: 81  
Candidate Starts for Majeke\_64:  
(39, 40474), (49, 40552), (Start: 81 @40672 has 117 MA's),

Gene: Malachai\_68 Start: 45480, Stop: 45644, Start Num: 76  
Candidate Starts for Malachai\_68:  
(11, 44973), (67, 45447), (Start: 76 @45480 has 35 MA's), (83, 45507), (85, 45516),

Gene: Malithi\_61 Start: 39664, Stop: 39822, Start Num: 75  
Candidate Starts for Malithi\_61:



(45, 39553), (52, 39577), (Start: 75 @39664 has 2 MA's), (Start: 79 @39676 has 3 MA's), (Start: 81 @39688 has 117 MA's), (88, 39739),

Gene: Mandlovu\_69 Start: 44232, Stop: 44366, Start Num: 81  
Candidate Starts for Mandlovu\_69:  
(66, 44178), (Start: 81 @44232 has 117 MA's), (88, 44283), (90, 44298),

Gene: Mangethe\_64 Start: 40672, Stop: 40806, Start Num: 81  
Candidate Starts for Mangethe\_64:  
(39, 40474), (49, 40552), (Start: 81 @40672 has 117 MA's),

Gene: Megiddo\_60 Start: 41056, Stop: 41202, Start Num: 81  
Candidate Starts for Megiddo\_60:  
(16, 40711), (36, 40834), (Start: 81 @41056 has 117 MA's), (88, 41107),

Gene: Melba\_69 Start: 42570, Stop: 42728, Start Num: 76  
Candidate Starts for Melba\_69:  
(Start: 76 @42570 has 35 MA's), (Start: 80 @42582 has 1 MA's), (96, 42714),

Gene: Mellie\_66 Start: 42417, Stop: 42575, Start Num: 76  
Candidate Starts for Mellie\_66:  
(Start: 76 @42417 has 35 MA's), (Start: 80 @42429 has 1 MA's), (83, 42438),

Gene: MichelleMyBell\_60 Start: 37388, Stop: 37522, Start Num: 81  
Candidate Starts for MichelleMyBell\_60:  
(Start: 56 @37295 has 3 MA's), (61, 37322), (Start: 63 @37328 has 1 MA's), (Start: 81 @37388 has 117 MA's),

Gene: MilanaBonita\_67 Start: 45011, Stop: 45145, Start Num: 81  
Candidate Starts for MilanaBonita\_67:  
(39, 44813), (49, 44891), (Start: 81 @45011 has 117 MA's), (88, 45062), (90, 45077),

Gene: Minnie\_71 Start: 48191, Stop: 48325, Start Num: 81  
Candidate Starts for Minnie\_71:  
(66, 48137), (Start: 81 @48191 has 117 MA's), (88, 48242), (90, 48257),

Gene: MintFen\_70 Start: 42815, Stop: 42970, Start Num: 76  
Candidate Starts for MintFen\_70:  
(58, 42743), (59, 42749), (Start: 63 @42767 has 1 MA's), (Start: 76 @42815 has 35 MA's), (Start: 80 @42827 has 1 MA's), (83, 42836),

Gene: Misha28\_83 Start: 51321, Stop: 51461, Start Num: 81  
Candidate Starts for Misha28\_83:  
(50, 51210), (60, 51252), (70, 51282), (71, 51288), (Start: 81 @51321 has 117 MA's), (87, 51363),

Gene: MissRona\_74 Start: 46616, Stop: 46774, Start Num: 76  
Candidate Starts for MissRona\_74:  
(22, 46322), (28, 46346), (38, 46418), (51, 46520), (Start: 76 @46616 has 35 MA's), (Start: 80 @46628 has 1 MA's),

Gene: Ms6\_72 Start: 42574, Stop: 42708, Start Num: 81  
Candidate Starts for Ms6\_72:  
(55, 42475), (Start: 81 @42574 has 117 MA's), (88, 42625), (90, 42640),

Gene: MulchSalad\_81 Start: 48362, Stop: 48490, Start Num: 81

Candidate Starts for MulchSalad\_81:

(47, 48233), (51, 48242), (Start: 81 @48362 has 117 MA's),

Gene: Murp\_67 Start: 45821, Stop: 45982, Start Num: 77

Candidate Starts for Murp\_67:

(Start: 76 @45818 has 35 MA's), (Start: 77 @45821 has 3 MA's), (82, 45836), (83, 45845), (96, 45968),

Gene: Nazo\_62 Start: 41086, Stop: 41238, Start Num: 75

Candidate Starts for Nazo\_62:

(45, 40975), (52, 40999), (Start: 75 @41086 has 2 MA's), (Start: 79 @41098 has 3 MA's), (Start: 81 @41110 has 117 MA's), (86, 41134), (88, 41161),

Gene: Necropolis\_59 Start: 39139, Stop: 39273, Start Num: 81

Candidate Starts for Necropolis\_59:

(45, 39004), (52, 39028), (Start: 75 @39115 has 2 MA's), (Start: 79 @39127 has 3 MA's), (Start: 81 @39139 has 117 MA's), (88, 39190),

Gene: Nimbo\_67 Start: 45679, Stop: 45813, Start Num: 81

Candidate Starts for Nimbo\_67:

(14, 45259), (15, 45292), (64, 45622), (Start: 73 @45655 has 1 MA's), (Start: 81 @45679 has 117 MA's), (84, 45700), (88, 45730), (90, 45745),

Gene: Obliviate\_68 Start: 42724, Stop: 42882, Start Num: 76

Candidate Starts for Obliviate\_68:

(58, 42652), (59, 42658), (Start: 63 @42676 has 1 MA's), (Start: 76 @42724 has 35 MA's), (Start: 80 @42736 has 1 MA's),

Gene: Ogotogo\_79 Start: 46196, Stop: 46330, Start Num: 81

Candidate Starts for Ogotogo\_79:

(14, 45776), (15, 45809), (64, 46139), (Start: 73 @46172 has 1 MA's), (Start: 81 @46196 has 117 MA's), (84, 46217), (88, 46247), (90, 46262),

Gene: OldBen\_72 Start: 47071, Stop: 47205, Start Num: 81

Candidate Starts for OldBen\_72:

(14, 46651), (15, 46684), (64, 47014), (Start: 73 @47047 has 1 MA's), (Start: 81 @47071 has 117 MA's), (84, 47092), (88, 47122), (90, 47137),

Gene: Ovechkin\_76 Start: 46664, Stop: 46873, Start Num: 56

Candidate Starts for Ovechkin\_76:

(53, 46655), (Start: 56 @46664 has 3 MA's), (61, 46691), (Start: 81 @46739 has 117 MA's),

Gene: PCoral7\_69 Start: 43537, Stop: 43695, Start Num: 76

Candidate Starts for PCoral7\_69:

(Start: 76 @43537 has 35 MA's), (Start: 80 @43549 has 1 MA's), (83, 43558), (85, 43567),

Gene: PHappiness\_75 Start: 47900, Stop: 48034, Start Num: 81

Candidate Starts for PHappiness\_75:

(14, 47480), (15, 47513), (64, 47843), (Start: 73 @47876 has 1 MA's), (Start: 81 @47900 has 117 MA's), (84, 47921), (88, 47951), (90, 47966),

Gene: Panchino\_56 Start: 38919, Stop: 39056, Start Num: 81

Candidate Starts for Panchino\_56:

(18, 38559), (20, 38568), (21, 38595), (45, 38784), (52, 38808), (Start: 75 @38895 has 2 MA's), (Start: 79 @38907 has 3 MA's), (Start: 81 @38919 has 117 MA's), (88, 38970), (94, 39045),

Gene: Petra\_73 Start: 44768, Stop: 44935, Start Num: 76

Candidate Starts for Petra\_73:

(22, 44474), (28, 44498), (37, 44561), (38, 44570), (Start: 76 @44768 has 35 MA's), (82, 44789),

Gene: Phalconet\_71 Start: 45548, Stop: 45682, Start Num: 81

Candidate Starts for Phalconet\_71:

(49, 45428), (Start: 81 @45548 has 117 MA's), (88, 45599), (90, 45614),

Gene: Phalm\_62 Start: 41278, Stop: 41403, Start Num: 81

Candidate Starts for Phalm\_62:

(45, 41143), (52, 41167), (Start: 75 @41254 has 2 MA's), (Start: 79 @41266 has 3 MA's), (Start: 81 @41278 has 117 MA's), (88, 41329),

Gene: Phanphagia\_72 Start: 46628, Stop: 46762, Start Num: 81

Candidate Starts for Phanphagia\_72:

(39, 46430), (49, 46508), (55, 46529), (Start: 81 @46628 has 117 MA's), (88, 46679), (90, 46694),

Gene: Phayonce\_64 Start: 43136, Stop: 43282, Start Num: 81

Candidate Starts for Phayonce\_64:

(68, 43085), (Start: 81 @43136 has 117 MA's), (86, 43160), (88, 43187),

Gene: Phegasus\_64 Start: 40639, Stop: 40773, Start Num: 81

Candidate Starts for Phegasus\_64:

(39, 40441), (49, 40519), (Start: 81 @40639 has 117 MA's),

Gene: PhesterPhotato\_77 Start: 46716, Stop: 46850, Start Num: 81

Candidate Starts for PhesterPhotato\_77:

(Start: 73 @46692 has 1 MA's), (Start: 81 @46716 has 117 MA's), (88, 46767), (90, 46782),

Gene: Phineas\_62 Start: 40096, Stop: 40242, Start Num: 79

Candidate Starts for Phineas\_62:

(45, 39973), (52, 39997), (Start: 75 @40084 has 2 MA's), (Start: 79 @40096 has 3 MA's), (Start: 81 @40108 has 117 MA's), (88, 40159),

Gene: Phrann\_59 Start: 40673, Stop: 40810, Start Num: 81

Candidate Starts for Phrann\_59:

(66, 40619), (Start: 81 @40673 has 117 MA's), (88, 40724), (94, 40799),

Gene: PhrostedPhlake\_75 Start: 45016, Stop: 45183, Start Num: 76

Candidate Starts for PhrostedPhlake\_75:

(Start: 76 @45016 has 35 MA's), (82, 45037),

Gene: Piper2020\_87 Start: 52127, Stop: 52279, Start Num: 81

Candidate Starts for Piper2020\_87:

(47, 51998), (51, 52007), (Start: 81 @52127 has 117 MA's),

Gene: Pipp\_73 Start: 44772, Stop: 44930, Start Num: 76

Candidate Starts for Pipp\_73:

(58, 44700), (59, 44706), (Start: 63 @44724 has 1 MA's), (Start: 76 @44772 has 35 MA's), (Start: 80 @44784 has 1 MA's),

Gene: Poenanya\_78 Start: 47769, Stop: 47903, Start Num: 81

Candidate Starts for Poenanya\_78:

(14, 47349), (15, 47382), (64, 47712), (Start: 73 @47745 has 1 MA's), (Start: 81 @47769 has 117 MA's), (84, 47790), (88, 47820), (90, 47835),

Gene: Polka14\_79 Start: 48559, Stop: 48693, Start Num: 81

Candidate Starts for Polka14\_79:

(14, 48139), (15, 48172), (64, 48502), (Start: 73 @48535 has 1 MA's), (Start: 81 @48559 has 117 MA's), (84, 48580), (88, 48610), (90, 48625),

Gene: Polkaroo\_63 Start: 41848, Stop: 41988, Start Num: 81

Candidate Starts for Polkaroo\_63:

(Start: 73 @41824 has 1 MA's), (Start: 81 @41848 has 117 MA's), (88, 41899),

Gene: PopTart\_64 Start: 43414, Stop: 43548, Start Num: 81

Candidate Starts for PopTart\_64:

(Start: 81 @43414 has 117 MA's), (88, 43465), (90, 43480),

Gene: PrincePatrick\_70 Start: 42596, Stop: 42754, Start Num: 76

Candidate Starts for PrincePatrick\_70:

(Start: 76 @42596 has 35 MA's), (Start: 80 @42608 has 1 MA's), (83, 42617), (85, 42626),

Gene: Purky\_74 Start: 45740, Stop: 45874, Start Num: 81

Candidate Starts for Purky\_74:

(52, 45620), (Start: 75 @45716 has 2 MA's), (Start: 79 @45728 has 3 MA's), (Start: 81 @45740 has 117 MA's), (88, 45791),

Gene: Pygmy\_65 Start: 41572, Stop: 41706, Start Num: 81

Candidate Starts for Pygmy\_65:

(45, 41437), (52, 41461), (Start: 75 @41548 has 2 MA's), (Start: 79 @41560 has 3 MA's), (Start: 81 @41572 has 117 MA's), (88, 41623),

Gene: QueenHazel\_58 Start: 39693, Stop: 39827, Start Num: 81

Candidate Starts for QueenHazel\_58:

(54, 39597), (69, 39654), (Start: 81 @39693 has 117 MA's), (88, 39744), (95, 39822),

Gene: Quico\_83 Start: 49042, Stop: 49176, Start Num: 81

Candidate Starts for Quico\_83:

(49, 48922), (55, 48943), (Start: 81 @49042 has 117 MA's), (88, 49093), (90, 49108),

Gene: Rebel\_56 Start: 35847, Stop: 35981, Start Num: 81

Candidate Starts for Rebel\_56:

(Start: 56 @35754 has 3 MA's), (61, 35781), (Start: 63 @35787 has 1 MA's), (Start: 81 @35847 has 117 MA's), (88, 35898), (92, 35970),

Gene: RedBird\_76 Start: 48274, Stop: 48408, Start Num: 81

Candidate Starts for RedBird\_76:

(39, 48079), (49, 48157), (Start: 81 @48274 has 117 MA's), (88, 48325), (90, 48340),

Gene: RitaG\_75 Start: 47678, Stop: 47836, Start Num: 73

Candidate Starts for RitaG\_75:

(14, 47282), (15, 47315), (64, 47645), (Start: 73 @47678 has 1 MA's), (Start: 81 @47702 has 117 MA's), (84, 47723), (88, 47753), (90, 47768),

Gene: Rubeelu\_59 Start: 37429, Stop: 37563, Start Num: 74

Candidate Starts for Rubeelu\_59:

(44, 37315), (46, 37324), (57, 37366), (62, 37384), (Start: 74 @37429 has 2 MA's), (88, 37480), (92, 37552),

Gene: SG4\_71 Start: 45477, Stop: 45611, Start Num: 81

Candidate Starts for SG4\_71:

(39, 45279), (49, 45357), (Start: 81 @45477 has 117 MA's), (88, 45528), (90, 45543),

Gene: Samba\_69 Start: 45554, Stop: 45712, Start Num: 76

Candidate Starts for Samba\_69:

(Start: 76 @45554 has 35 MA's), (Start: 80 @45566 has 1 MA's), (83, 45575),

Gene: Sandalphon\_69 Start: 46176, Stop: 46310, Start Num: 81

Candidate Starts for Sandalphon\_69:

(66, 46122), (Start: 81 @46176 has 117 MA's), (88, 46227), (90, 46242),

Gene: Sassafras\_76 Start: 46591, Stop: 46725, Start Num: 81

Candidate Starts for Sassafras\_76:

(14, 46171), (15, 46204), (64, 46534), (Start: 73 @46567 has 1 MA's), (Start: 81 @46591 has 117 MA's), (84, 46612), (88, 46642), (90, 46657),

Gene: SassyB\_64 Start: 43414, Stop: 43548, Start Num: 81

Candidate Starts for SassyB\_64:

(Start: 81 @43414 has 117 MA's), (88, 43465), (90, 43480),

Gene: Sbash\_75 Start: 48069, Stop: 48203, Start Num: 81

Candidate Starts for Sbash\_75:

(Start: 81 @48069 has 117 MA's), (88, 48120),

Gene: Scottish\_73 Start: 46250, Stop: 46384, Start Num: 81

Candidate Starts for Scottish\_73:

(14, 45830), (15, 45863), (64, 46193), (Start: 73 @46226 has 1 MA's), (Start: 81 @46250 has 117 MA's), (84, 46271), (88, 46301), (90, 46316),

Gene: Seagreen\_75 Start: 47524, Stop: 47658, Start Num: 81

Candidate Starts for Seagreen\_75:

(39, 47326), (49, 47404), (55, 47425), (Start: 81 @47524 has 117 MA's), (88, 47575), (90, 47590),

Gene: Shauna1\_73 Start: 46878, Stop: 47012, Start Num: 81

Candidate Starts for Shauna1\_73:

(39, 46680), (49, 46758), (55, 46779), (Start: 81 @46878 has 117 MA's), (88, 46929), (90, 46944),

Gene: Shipwreck\_64 Start: 41547, Stop: 41681, Start Num: 81

Candidate Starts for Shipwreck\_64:

(45, 41412), (52, 41436), (Start: 75 @41523 has 2 MA's), (Start: 79 @41535 has 3 MA's), (Start: 81 @41547 has 117 MA's), (88, 41598),

Gene: Shweta\_58 Start: 38359, Stop: 38496, Start Num: 81

Candidate Starts for Shweta\_58:

(53, 38275), (Start: 56 @38284 has 3 MA's), (61, 38311), (Start: 63 @38317 has 1 MA's), (Start: 81 @38359 has 117 MA's), (88, 38410), (93, 38485),

Gene: SiSi\_70 Start: 45708, Stop: 45842, Start Num: 81

Candidate Starts for SiSi\_70:

(Start: 81 @45708 has 117 MA's), (88, 45759), (90, 45774),

Gene: Sonah\_62 Start: 39244, Stop: 39378, Start Num: 81

Candidate Starts for Sonah\_62:

(45, 39109), (52, 39133), (Start: 75 @39220 has 2 MA's), (Start: 79 @39232 has 3 MA's), (Start: 81 @39244 has 117 MA's), (88, 39295),

Gene: StAnnes\_71 Start: 46866, Stop: 47000, Start Num: 81

Candidate Starts for StAnnes\_71:

(49, 46746), (Start: 81 @46866 has 117 MA's), (88, 46917), (95, 46995),

Gene: StevieRay\_66 Start: 42311, Stop: 42445, Start Num: 81

Candidate Starts for StevieRay\_66:

(Start: 73 @42287 has 1 MA's), (Start: 81 @42311 has 117 MA's), (84, 42332), (88, 42362),

Gene: StressBall\_61 Start: 40980, Stop: 41105, Start Num: 81

Candidate Starts for StressBall\_61:

(1, 40242), (3, 40311), (5, 40359), (8, 40431), (9, 40437), (10, 40455), (13, 40506), (45, 40845), (52, 40869), (Start: 75 @40956 has 2 MA's), (Start: 79 @40968 has 3 MA's), (Start: 81 @40980 has 117 MA's), (88, 41031),

Gene: Strokeseat\_69 Start: 44289, Stop: 44423, Start Num: 81

Candidate Starts for Strokeseat\_69:

(66, 44235), (Start: 81 @44289 has 117 MA's), (88, 44340), (90, 44355),

Gene: TChen\_74 Start: 47755, Stop: 47964, Start Num: 56

Candidate Starts for TChen\_74:

(53, 47746), (Start: 56 @47755 has 3 MA's), (61, 47782), (Start: 81 @47830 has 117 MA's), (88, 47881),

Gene: Taj\_80 Start: 48332, Stop: 48466, Start Num: 81

Candidate Starts for Taj\_80:

(39, 48134), (49, 48212), (55, 48233), (Start: 81 @48332 has 117 MA's), (88, 48383), (90, 48398),

Gene: Techage\_62 Start: 40112, Stop: 40246, Start Num: 81

Candidate Starts for Techage\_62:

(39, 39914), (49, 39992), (Start: 81 @40112 has 117 MA's), (88, 40163),

Gene: Thespis\_63 Start: 41077, Stop: 41211, Start Num: 81

Candidate Starts for Thespis\_63:

(Start: 73 @41053 has 1 MA's), (Start: 81 @41077 has 117 MA's), (84, 41098), (88, 41128),

Gene: ThulaThula\_68 Start: 44563, Stop: 44709, Start Num: 81

Candidate Starts for ThulaThula\_68:

(68, 44512), (Start: 81 @44563 has 117 MA's), (86, 44587), (88, 44614),

Gene: Toast\_69 Start: 43537, Stop: 43695, Start Num: 76

Candidate Starts for Toast\_69:

(Start: 76 @43537 has 35 MA's), (Start: 80 @43549 has 1 MA's), (83, 43558), (85, 43567),

Gene: TootsiePop\_83 Start: 51321, Stop: 51461, Start Num: 81

Candidate Starts for TootsiePop\_83:

(50, 51210), (60, 51252), (70, 51282), (71, 51288), (Start: 81 @51321 has 117 MA's), (87, 51363),

Gene: Tortellini\_69 Start: 45507, Stop: 45668, Start Num: 81

Candidate Starts for Tortellini\_69:

(50, 45396), (70, 45468), (71, 45474), (Start: 81 @45507 has 117 MA's), (87, 45549),

Gene: UmaThurman\_69 Start: 43900, Stop: 44064, Start Num: 76

Candidate Starts for UmaThurman\_69:

(67, 43867), (Start: 76 @43900 has 35 MA's),

Gene: Utz\_61 Start: 43181, Stop: 43348, Start Num: 72

Candidate Starts for Utz\_61:

(Start: 72 @43181 has 2 MA's), (Start: 80 @43205 has 1 MA's), (83, 43214),

Gene: Vidya\_60 Start: 39365, Stop: 39499, Start Num: 81

Candidate Starts for Vidya\_60:

(45, 39230), (52, 39254), (Start: 75 @39341 has 2 MA's), (Start: 79 @39353 has 3 MA's), (Start: 81 @39365 has 117 MA's), (88, 39416),

Gene: Walrus\_67 Start: 43261, Stop: 43425, Start Num: 77

Candidate Starts for Walrus\_67:

(Start: 77 @43261 has 3 MA's), (82, 43276),

Gene: Wee\_79 Start: 48408, Stop: 48542, Start Num: 81

Candidate Starts for Wee\_79:

(39, 48210), (49, 48288), (55, 48309), (Start: 81 @48408 has 117 MA's), (88, 48459), (90, 48474),

Gene: William\_72 Start: 44944, Stop: 45102, Start Num: 76

Candidate Starts for William\_72:

(Start: 76 @44944 has 35 MA's), (Start: 80 @44956 has 1 MA's), (83, 44965), (85, 44974),

Gene: Willsammy\_63 Start: 41455, Stop: 41589, Start Num: 81

Candidate Starts for Willsammy\_63:

(45, 41320), (52, 41344), (Start: 75 @41431 has 2 MA's), (Start: 79 @41443 has 3 MA's), (Start: 81 @41455 has 117 MA's), (88, 41506),

Gene: Wisp\_68 Start: 43598, Stop: 43756, Start Num: 76

Candidate Starts for Wisp\_68:

(67, 43565), (Start: 76 @43598 has 35 MA's), (Start: 80 @43610 has 1 MA's), (96, 43742),

Gene: Wocket\_67 Start: 43577, Stop: 43747, Start Num: 72

Candidate Starts for Wocket\_67:

(Start: 72 @43577 has 2 MA's), (Start: 80 @43601 has 1 MA's),

Gene: Xavia\_63 Start: 45540, Stop: 45674, Start Num: 81

Candidate Starts for Xavia\_63:

(Start: 81 @45540 has 117 MA's), (88, 45591),

Gene: Xeno\_60 Start: 38028, Stop: 38162, Start Num: 81

Candidate Starts for Xeno\_60:

(49, 37908), (Start: 81 @38028 has 117 MA's),

Gene: Xula\_57 Start: 39314, Stop: 39448, Start Num: 81

Candidate Starts for Xula\_57:

(54, 39218), (69, 39275), (Start: 81 @39314 has 117 MA's), (88, 39365), (95, 39443),

Gene: Zarbodnamra\_72 Start: 43709, Stop: 43876, Start Num: 76

Candidate Starts for Zarbodnamra\_72:

(28, 43439), (38, 43511), (43, 43580), (Start: 76 @43709 has 35 MA's), (82, 43730),

Gene: ZiggyZoo\_70 Start: 45187, Stop: 45345, Start Num: 76

Candidate Starts for ZiggyZoo\_70:

(35, 44971), (65, 45142), (Start: 76 @45187 has 35 MA's), (Start: 80 @45199 has 1 MA's),

Gene: Zilizebeth\_67 Start: 40886, Stop: 41020, Start Num: 81

Candidate Starts for Zilizebeth\_67:

(Start: 81 @40886 has 117 MA's), (88, 40937),