

Pham 216049



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 216049 Report

This analysis was run 02/22/25 on database version 588.

Pham number 216049 has 94 members, 15 are drafts.

Phages represented in each track:

- Track 1 : Mao1\_75
- Track 2 : MulchSalad\_80
- Track 3 : Strokeseat\_63, Hlubikazi\_63, Mandlovu\_63
- Track 4 : Melissauren88\_65, Wee\_73, Scottish\_66, Akhila\_58, Ovechkin\_67, DotProduct\_62, Nimbo\_61, Hegedechwinu\_69, KingMidas\_67, Emmaloid\_69, Ms6\_64, Geralt\_62, Seagreen\_66, Filuzino\_66, IbOuu\_70, Fruitloop\_64, Slim\_69, StAnnes\_67, Shauna1\_65, Deb65\_62, DLane\_63, Rialto\_73, Empress\_66, Quico\_75, Taj\_73
- Track 5 : DaddyRickover\_69, Sassafras\_68, JoeyJr\_68, PHappiness\_68, Inventum\_65, RedBird\_68, Daenerys\_67, Dorothy\_68, Kingsley\_68, RitaG\_68
- Track 6 : QuickMath\_71, Soul22\_76, Kimberlium\_72, Blarby\_80, Zapner\_81, Jabbawokkie\_82
- Track 7 : Juice456\_69, JalFarm20\_81, KristaRAM\_71
- Track 8 : Donkeykong\_71, Jant\_72
- Track 9 : Aloeri\_86, ChickenDinner\_86, DocMcStuffins\_80
- Track 10 : SiSi\_67
- Track 11 : Veteran\_65
- Track 12 : Phalconet\_67, PhesterPhotato\_72
- Track 13 : Piper2020\_86
- Track 14 : Toron\_90
- Track 15 : Xula\_56, QueenHazel\_57
- Track 16 : Sbash\_70
- Track 17 : SkinnyPete\_59, FirstPlacePfu\_64, Pipsqueaks\_63, Smurph\_62, EGUnicorn\_60, Carcharodon\_62, Magsby\_61, Chewbacca\_65, Schnauzer\_63, Philonius\_62, Silvfighter\_64, Fulbright\_60, Xerxes\_62, Phloss\_60, Duplicity\_60, Melville\_67, Tortoise12\_60, Parmesanjohn\_62, Gex\_63
- Track 18 : Bosection6\_61, Charlie\_59, Tapioca\_60, Andies\_56
- Track 19 : Silvy\_58, Aggie\_58
- Track 20 : Scitech\_57
- Track 21 : Rubeelu\_58, Butters\_58
- Track 22 : ThulaThula\_66
- Track 23 : Purky\_69
- Track 24 : MooMoo\_77

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

The start number called the most often in the published annotations is 32, it was called in 50 of the 79 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Akhila\_58, Blarby\_80, DLane\_63, DaddyRickover\_69, Daenerys\_67, Deb65\_62, Donkeykong\_71, Dorothy\_68, DotProduct\_62, Emmaloid\_69, Empress\_66, Filuzino\_66, Fruitloop\_64, Geralt\_62, Hegedechwinu\_69, Hlubikazi\_63, IbOuu\_70, Inventum\_65, Jabbawokkie\_82, JalFarm20\_81, Jant\_72, JoeyJr\_68, Juice456\_69, Kimberlium\_72, KingMidas\_67, Kingsley\_68, KristaRAM\_71, Mandlovu\_63, Mao1\_75, Melissauren88\_65, Ms6\_64, Nimbo\_61, Ovechkin\_67, PHappiness\_68, Purky\_69, QueenHazel\_57, QuickMath\_71, Quico\_75, RedBird\_68, Rialto\_73, RitaG\_68, Sassafras\_68, Sbash\_70, Scitech\_57, Scottish\_66, Seagreen\_66, Shauna1\_65, SiSi\_67, Slim\_69, Soul22\_76, StAnnes\_67, Strokeseat\_63, Taj\_73, ThulaThula\_66, Toron\_90, Veteran\_65, Wee\_73, Xula\_56, Zapner\_81,

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

- MooMoo\_77, Phalconet\_67, PhesterPhotato\_72,

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

- Aggie\_58, Aloeri\_86, Andies\_56, Bosection6\_61, Butters\_58, Carcharodon\_62, Charlie\_59, Chewbacca\_65, ChickenDinner\_86, DocMcStuffins\_80, Duplicity\_60, EGUnicorn\_60, FirstPlacePfu\_64, Fulbright\_60, Gex\_63, Magsby\_61, Melville\_67, MulchSalad\_80, Parmesanjohn\_62, Philonius\_62, Phloss\_60, Piper2020\_86, Pipsqueaks\_63, Rubeelu\_58, Schnauzer\_63, Silvafighter\_64, Silvy\_58, SkinnyPete\_59, Smurph\_62, Tapioca\_60, Tortoise12\_60, Xerxes\_62,

### Summary by start number:

Start 23:

- Found in 2 of 94 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 2 of 79
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Phalconet\_67 (F1), PhesterPhotato\_72 (F1),

Start 28:

- Found in 1 of 94 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 79
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MooMoo\_77 (singleton),

Start 31:

- Found in 30 of 94 ( 31.9% ) of genes in pham
- Manual Annotations of this start: 24 of 79
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aggie\_58 (N), Aloeri\_86 (F1), Andies\_56 (N), Bosection6\_61 (N), Carcharodon\_62 (N), Charlie\_59 (N), Chewbacca\_65 (N), ChickenDinner\_86 (F1), DocMcStuffins\_80 (F1), Duplicity\_60 (N), EGUnicorn\_60 (N), FirstPlacePfu\_64 (P1), Fulbright\_60 (N), Gex\_63 (N), Magsby\_61 (N), Melville\_67 (N), MulchSalad\_80 (F), Parmesanjohn\_62 (N), Philonius\_62 (N), Phloss\_60 (N), Piper2020\_86 (F1), Pipsqueaks\_63 (N), Schnauzer\_63 (N), Silvafighter\_64 (N), Silvy\_58 (N), SkinnyPete\_59 (N), Smurph\_62 (N), Tapioca\_60 (N), Tortoise12\_60

(N), Xerxes\_62 (N),

Start 32:

- Found in 62 of 94 ( 66.0% ) of genes in pham
- Manual Annotations of this start: 50 of 79
- Called 95.2% of time when present
- Phage (with cluster) where this start called: Akhila\_58 (F1), Blarby\_80 (F), DLane\_63 (F1), DaddyRickover\_69 (F1), Daenerys\_67 (F1), Deb65\_62 (F1), Donkeykong\_71 (F1), Dorothy\_68 (F1), DotProduct\_62 (F1), Emmaloid\_69 (F1), Empress\_66 (F1), Filuzino\_66 (F1), Fruitloop\_64 (F1), Geralt\_62 (F1), Hegedechwinu\_69 (F1), Hlubikazi\_63 (F1), IbOuu\_70 (F1), Inventum\_65 (F1), Jabbawokkie\_82 (F2), JalFarm20\_81 (F1), Jant\_72 (F1), JoeyJr\_68 (F1), Juice456\_69 (F1), Kimberlium\_72 (F1), KingMidas\_67 (F1), Kingsley\_68 (F1), KristaRAM\_71 (F1), Mandlovu\_63 (F1), Mao1\_75 (AD), Melissauren88\_65 (F1), Ms6\_64 (F1), Nimbo\_61 (F1), Ovechkin\_67 (F1), PHappiness\_68 (F1), Purky\_69 (P6), QueenHazel\_57 (I1), QuickMath\_71 (F1), Quico\_75 (F1), RedBird\_68 (F1), Rialto\_73 (F1), RitaG\_68 (F1), Sassafras\_68 (F1), Sbash\_70 (I2), Scitech\_57 (N), Scottish\_66 (F1), Seagreen\_66 (F1), Shauna1\_65 (F1), SiSi\_67 (F1), Slim\_69 (F1), Soul22\_76 (F2), StAnnes\_67 (F1), Strokeseat\_63 (F1), Taj\_73 (F1), ThulaThula\_66 (P5), Toron\_90 (F6), Veteran\_65 (F1), Wee\_73 (F1), Xula\_56 (I1), Zapner\_81 (F2),

Start 33:

- Found in 2 of 94 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 2 of 79
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Butters\_58 (N), Rubeelu\_58 (N),

### Summary by clusters:

There are 12 clusters represented in this pham: F1, F2, P1, P6, AD, F6, P5, I1, I2, singleton, N, F,

Info for manual annotations of cluster AD:

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

Info for manual annotations of cluster F1:

- Start number 23 was manually annotated 2 times for cluster F1.
- Start number 31 was manually annotated 2 times for cluster F1.
- Start number 32 was manually annotated 41 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 32 was manually annotated 3 times for cluster F2.

Info for manual annotations of cluster I1:

- Start number 32 was manually annotated 2 times for cluster I1.

Info for manual annotations of cluster I2:

- Start number 32 was manually annotated 1 time for cluster I2.

Info for manual annotations of cluster N:

- Start number 31 was manually annotated 21 times for cluster N.

- Start number 33 was manually annotated 2 times for cluster N.

Info for manual annotations of cluster P1:

- Start number 31 was manually annotated 1 time for cluster P1.

Info for manual annotations of cluster P5:

- Start number 32 was manually annotated 1 time for cluster P5.

Info for manual annotations of cluster P6:

- Start number 32 was manually annotated 1 time for cluster P6.

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

Gene: Aggie\_58 Start: 39856, Stop: 39999, Start Num: 31

Candidate Starts for Aggie\_58:

(6, 39541), (7, 39550), (13, 39706), (Start: 31 @39856 has 24 MA's), (42, 39952),

Gene: Akhila\_58 Start: 38471, Stop: 38626, Start Num: 32

Candidate Starts for Akhila\_58:

(15, 38333), (Start: 32 @38471 has 50 MA's), (35, 38486), (39, 38534), (41, 38555), (44, 38576),

Gene: Aloeri\_86 Start: 50246, Stop: 50389, Start Num: 31

Candidate Starts for Aloeri\_86:

(8, 49937), (Start: 31 @50246 has 24 MA's), (42, 50342),

Gene: Andies\_56 Start: 39301, Stop: 39444, Start Num: 31

Candidate Starts for Andies\_56:

(13, 39148), (Start: 31 @39301 has 24 MA's), (42, 39397),

Gene: Blarby\_80 Start: 44685, Stop: 44834, Start Num: 32

Candidate Starts for Blarby\_80:

(15, 44547), (25, 44646), (Start: 32 @44685 has 50 MA's), (35, 44700), (39, 44748), (41, 44769), (44, 44790),

Gene: Bosection6\_61 Start: 38905, Stop: 39048, Start Num: 31

Candidate Starts for Bosection6\_61:

(13, 38752), (Start: 31 @38905 has 24 MA's), (42, 39001),

Gene: Butters\_58 Start: 37292, Stop: 37432, Start Num: 33

Candidate Starts for Butters\_58:

(26, 37250), (29, 37271), (Start: 33 @37292 has 2 MA's), (36, 37322),

Gene: Carcharodon\_62 Start: 39203, Stop: 39346, Start Num: 31

Candidate Starts for Carcharodon\_62:

(6, 38885), (7, 38894), (13, 39050), (Start: 31 @39203 has 24 MA's), (42, 39299),

Gene: Charlie\_59 Start: 38529, Stop: 38672, Start Num: 31

Candidate Starts for Charlie\_59:

(13, 38376), (Start: 31 @38529 has 24 MA's), (42, 38625),

Gene: Chewbacca\_65 Start: 39098, Stop: 39241, Start Num: 31

Candidate Starts for Chewbacca\_65:

(6, 38780), (7, 38789), (13, 38945), (Start: 31 @39098 has 24 MA's), (42, 39194),

Gene: ChickenDinner\_86 Start: 50246, Stop: 50389, Start Num: 31

Candidate Starts for ChickenDinner\_86:

(8, 49937), (Start: 31 @50246 has 24 MA's), (42, 50342),

Gene: DLane\_63 Start: 42015, Stop: 42170, Start Num: 32

Candidate Starts for DLane\_63:

(15, 41877), (Start: 32 @42015 has 50 MA's), (35, 42030), (39, 42078), (41, 42099), (44, 42120),

Gene: DaddyRickover\_69 Start: 43982, Stop: 44137, Start Num: 32

Candidate Starts for DaddyRickover\_69:

(Start: 32 @43982 has 50 MA's), (35, 43997), (39, 44045), (41, 44066), (44, 44087),

Gene: Daenerys\_67 Start: 44101, Stop: 44256, Start Num: 32

Candidate Starts for Daenerys\_67:

(Start: 32 @44101 has 50 MA's), (35, 44116), (39, 44164), (41, 44185), (44, 44206),

Gene: Deb65\_62 Start: 41821, Stop: 41976, Start Num: 32

Candidate Starts for Deb65\_62:

(15, 41683), (Start: 32 @41821 has 50 MA's), (35, 41836), (39, 41884), (41, 41905), (44, 41926),

Gene: DocMcStuffins\_80 Start: 51876, Stop: 52019, Start Num: 31

Candidate Starts for DocMcStuffins\_80:

(8, 51567), (Start: 31 @51876 has 24 MA's), (42, 51972),

Gene: Donkeykong\_71 Start: 45836, Stop: 45991, Start Num: 32

Candidate Starts for Donkeykong\_71:

(Start: 32 @45836 has 50 MA's), (39, 45899), (41, 45920), (44, 45941),

Gene: Dorothy\_68 Start: 43156, Stop: 43311, Start Num: 32

Candidate Starts for Dorothy\_68:

(Start: 32 @43156 has 50 MA's), (35, 43171), (39, 43219), (41, 43240), (44, 43261),

Gene: DotProduct\_62 Start: 41324, Stop: 41479, Start Num: 32

Candidate Starts for DotProduct\_62:

(15, 41186), (Start: 32 @41324 has 50 MA's), (35, 41339), (39, 41387), (41, 41408), (44, 41429),

Gene: Duplicity\_60 Start: 38460, Stop: 38603, Start Num: 31

Candidate Starts for Duplicity\_60:

(6, 38142), (7, 38151), (13, 38307), (Start: 31 @38460 has 24 MA's), (42, 38556),

Gene: EGUunicorn\_60 Start: 37526, Stop: 37669, Start Num: 31

Candidate Starts for EGUunicorn\_60:

(6, 37208), (7, 37217), (13, 37373), (Start: 31 @37526 has 24 MA's), (42, 37622),

Gene: Emmaloid\_69 Start: 44558, Stop: 44713, Start Num: 32

Candidate Starts for Emmaloid\_69:

(15, 44420), (Start: 32 @44558 has 50 MA's), (35, 44573), (39, 44621), (41, 44642), (44, 44663),

Gene: Empress\_66 Start: 43265, Stop: 43420, Start Num: 32

Candidate Starts for Empress\_66:

(15, 43127), (Start: 32 @43265 has 50 MA's), (35, 43280), (39, 43328), (41, 43349), (44, 43370),

Gene: Filuzino\_66 Start: 42350, Stop: 42505, Start Num: 32

Candidate Starts for Filuzino\_66:

(15, 42212), (Start: 32 @42350 has 50 MA's), (35, 42365), (39, 42413), (41, 42434), (44, 42455),

Gene: FirstPlacePfu\_64 Start: 39003, Stop: 39146, Start Num: 31

Candidate Starts for FirstPlacePfu\_64:

(6, 38685), (7, 38694), (13, 38850), (Start: 31 @39003 has 24 MA's), (42, 39099),

Gene: Fruitloop\_64 Start: 43656, Stop: 43811, Start Num: 32

Candidate Starts for Fruitloop\_64:

(15, 43518), (Start: 32 @43656 has 50 MA's), (35, 43671), (39, 43719), (41, 43740), (44, 43761),

Gene: Fulbright\_60 Start: 37897, Stop: 38040, Start Num: 31

Candidate Starts for Fulbright\_60:

(6, 37579), (7, 37588), (13, 37744), (Start: 31 @37897 has 24 MA's), (42, 37993),

Gene: Geralt\_62 Start: 41820, Stop: 41975, Start Num: 32

Candidate Starts for Geralt\_62:

(15, 41682), (Start: 32 @41820 has 50 MA's), (35, 41835), (39, 41883), (41, 41904), (44, 41925),

Gene: Gex\_63 Start: 39219, Stop: 39362, Start Num: 31

Candidate Starts for Gex\_63:

(6, 38901), (7, 38910), (13, 39066), (Start: 31 @39219 has 24 MA's), (42, 39315),

Gene: Hegedechwinu\_69 Start: 42429, Stop: 42584, Start Num: 32

Candidate Starts for Hegedechwinu\_69:

(15, 42291), (Start: 32 @42429 has 50 MA's), (35, 42444), (39, 42492), (41, 42513), (44, 42534),

Gene: Hlubikazi\_63 Start: 40435, Stop: 40590, Start Num: 32

Candidate Starts for Hlubikazi\_63:

(1, 39982), (2, 40000), (3, 40036), (4, 40042), (5, 40060), (9, 40156), (11, 40234), (17, 40309), (Start: 32 @40435 has 50 MA's), (35, 40450), (39, 40498), (41, 40519), (44, 40540),

Gene: lbOuu\_70 Start: 43870, Stop: 44019, Start Num: 32

Candidate Starts for lbOuu\_70:

(15, 43732), (Start: 32 @43870 has 50 MA's), (35, 43885), (39, 43933), (41, 43954), (44, 43975),

Gene: Inventum\_65 Start: 43354, Stop: 43509, Start Num: 32

Candidate Starts for Inventum\_65:

(Start: 32 @43354 has 50 MA's), (35, 43369), (39, 43417), (41, 43438), (44, 43459),

Gene: Jabbawokkie\_82 Start: 44605, Stop: 44754, Start Num: 32

Candidate Starts for Jabbawokkie\_82:

(15, 44467), (25, 44566), (Start: 32 @44605 has 50 MA's), (35, 44620), (39, 44668), (41, 44689), (44, 44710),

Gene: JalFarm20\_81 Start: 47224, Stop: 47373, Start Num: 32

Candidate Starts for JalFarm20\_81:

(Start: 32 @47224 has 50 MA's), (35, 47239), (39, 47287), (41, 47308), (44, 47329),

Gene: Jant\_72 Start: 44995, Stop: 45144, Start Num: 32

Candidate Starts for Jant\_72:

(Start: 32 @44995 has 50 MA's), (39, 45058), (41, 45079), (44, 45100),

Gene: JoeyJr\_68 Start: 44269, Stop: 44424, Start Num: 32

Candidate Starts for JoeyJr\_68:

(Start: 32 @44269 has 50 MA's), (35, 44284), (39, 44332), (41, 44353), (44, 44374),

Gene: Juice456\_69 Start: 45180, Stop: 45329, Start Num: 32

Candidate Starts for Juice456\_69:

(Start: 32 @45180 has 50 MA's), (35, 45195), (39, 45243), (41, 45264), (44, 45285),

Gene: Kimberlium\_72 Start: 44776, Stop: 44925, Start Num: 32

Candidate Starts for Kimberlium\_72:

(15, 44638), (25, 44737), (Start: 32 @44776 has 50 MA's), (35, 44791), (39, 44839), (41, 44860), (44, 44881),

Gene: KingMidas\_67 Start: 43681, Stop: 43836, Start Num: 32

Candidate Starts for KingMidas\_67:

(15, 43543), (Start: 32 @43681 has 50 MA's), (35, 43696), (39, 43744), (41, 43765), (44, 43786),

Gene: Kingsley\_68 Start: 45553, Stop: 45708, Start Num: 32

Candidate Starts for Kingsley\_68:

(Start: 32 @45553 has 50 MA's), (35, 45568), (39, 45616), (41, 45637), (44, 45658),

Gene: KristaRAM\_71 Start: 45549, Stop: 45698, Start Num: 32

Candidate Starts for KristaRAM\_71:

(Start: 32 @45549 has 50 MA's), (35, 45564), (39, 45612), (41, 45633), (44, 45654),

Gene: Magsby\_61 Start: 39165, Stop: 39308, Start Num: 31

Candidate Starts for Magsby\_61:

(6, 38847), (7, 38856), (13, 39012), (Start: 31 @39165 has 24 MA's), (42, 39261),

Gene: Mandlovu\_63 Start: 40377, Stop: 40532, Start Num: 32

Candidate Starts for Mandlovu\_63:

(1, 39924), (2, 39942), (3, 39978), (4, 39984), (5, 40002), (9, 40098), (11, 40176), (17, 40251), (Start: 32 @40377 has 50 MA's), (35, 40392), (39, 40440), (41, 40461), (44, 40482),

Gene: Mao1\_75 Start: 54531, Stop: 54680, Start Num: 32

Candidate Starts for Mao1\_75:

(12, 54357), (24, 54486), (Start: 32 @54531 has 50 MA's), (38, 54588), (40, 54597), (42, 54627),

Gene: Melissauren88\_65 Start: 41894, Stop: 42049, Start Num: 32

Candidate Starts for Melissauren88\_65:

(15, 41756), (Start: 32 @41894 has 50 MA's), (35, 41909), (39, 41957), (41, 41978), (44, 41999),

Gene: Melville\_67 Start: 38774, Stop: 38917, Start Num: 31

Candidate Starts for Melville\_67:

(6, 38456), (7, 38465), (13, 38621), (Start: 31 @38774 has 24 MA's), (42, 38870),

Gene: MooMoo\_77 Start: 47555, Stop: 47719, Start Num: 28

Candidate Starts for MooMoo\_77:

(Start: 28 @47555 has 1 MA's), (Start: 32 @47573 has 50 MA's), (42, 47669),



Gene: Ms6\_64 Start: 38259, Stop: 38414, Start Num: 32  
Candidate Starts for Ms6\_64:  
(15, 38121), (Start: 32 @38259 has 50 MA's), (35, 38274), (39, 38322), (41, 38343), (44, 38364),

Gene: MulchSalad\_80 Start: 48222, Stop: 48365, Start Num: 31  
Candidate Starts for MulchSalad\_80:  
(6, 47892), (7, 47901), (13, 48069), (Start: 31 @48222 has 24 MA's), (42, 48318),

Gene: Nimbo\_61 Start: 41823, Stop: 41978, Start Num: 32  
Candidate Starts for Nimbo\_61:  
(15, 41685), (Start: 32 @41823 has 50 MA's), (35, 41838), (39, 41886), (41, 41907), (44, 41928),

Gene: Ovechkin\_67 Start: 43210, Stop: 43365, Start Num: 32  
Candidate Starts for Ovechkin\_67:  
(15, 43072), (Start: 32 @43210 has 50 MA's), (35, 43225), (39, 43273), (41, 43294), (44, 43315),

Gene: PHappiness\_68 Start: 44045, Stop: 44200, Start Num: 32  
Candidate Starts for PHappiness\_68:  
(Start: 32 @44045 has 50 MA's), (35, 44060), (39, 44108), (41, 44129), (44, 44150),

Gene: Parmesanjohn\_62 Start: 39223, Stop: 39366, Start Num: 31  
Candidate Starts for Parmesanjohn\_62:  
(6, 38905), (7, 38914), (13, 39070), (Start: 31 @39223 has 24 MA's), (42, 39319),

Gene: Phalconet\_67 Start: 43045, Stop: 43245, Start Num: 23  
Candidate Starts for Phalconet\_67:  
(Start: 23 @43045 has 2 MA's), (30, 43081), (Start: 32 @43087 has 50 MA's), (34, 43099), (35, 43102),  
(39, 43150), (41, 43171), (44, 43192),

Gene: PhesterPhotato\_72 Start: 44766, Stop: 44963, Start Num: 23  
Candidate Starts for PhesterPhotato\_72:  
(Start: 23 @44766 has 2 MA's), (30, 44802), (Start: 32 @44808 has 50 MA's), (34, 44820), (35, 44823),  
(39, 44871), (41, 44892), (44, 44913),

Gene: Philonius\_62 Start: 39388, Stop: 39531, Start Num: 31  
Candidate Starts for Philonius\_62:  
(6, 39070), (7, 39079), (13, 39235), (Start: 31 @39388 has 24 MA's), (42, 39484),

Gene: Phloss\_60 Start: 38630, Stop: 38773, Start Num: 31  
Candidate Starts for Phloss\_60:  
(6, 38312), (7, 38321), (13, 38477), (Start: 31 @38630 has 24 MA's), (42, 38726),

Gene: Piper2020\_86 Start: 51987, Stop: 52130, Start Num: 31  
Candidate Starts for Piper2020\_86:  
(13, 51834), (Start: 31 @51987 has 24 MA's), (42, 52083),

Gene: Pipsqueaks\_63 Start: 39201, Stop: 39344, Start Num: 31  
Candidate Starts for Pipsqueaks\_63:  
(6, 38883), (7, 38892), (13, 39048), (Start: 31 @39201 has 24 MA's), (42, 39297),

Gene: Purky\_69 Start: 44331, Stop: 44486, Start Num: 32  
Candidate Starts for Purky\_69:  
(21, 44220), (22, 44238), (Start: 32 @44331 has 50 MA's), (42, 44427),

Gene: QueenHazel\_57 Start: 39547, Stop: 39696, Start Num: 32  
Candidate Starts for QueenHazel\_57:  
(17, 39421), (Start: 32 @39547 has 50 MA's), (35, 39562), (39, 39610), (41, 39631), (44, 39652),

Gene: QuickMath\_71 Start: 44999, Stop: 45148, Start Num: 32  
Candidate Starts for QuickMath\_71:  
(15, 44861), (25, 44960), (Start: 32 @44999 has 50 MA's), (35, 45014), (39, 45062), (41, 45083), (44, 45104),

Gene: Quico\_75 Start: 44316, Stop: 44471, Start Num: 32  
Candidate Starts for Quico\_75:  
(15, 44178), (Start: 32 @44316 has 50 MA's), (35, 44331), (39, 44379), (41, 44400), (44, 44421),

Gene: RedBird\_68 Start: 43035, Stop: 43190, Start Num: 32  
Candidate Starts for RedBird\_68:  
(Start: 32 @43035 has 50 MA's), (35, 43050), (39, 43098), (41, 43119), (44, 43140),

Gene: Rialto\_73 Start: 45931, Stop: 46086, Start Num: 32  
Candidate Starts for Rialto\_73:  
(15, 45793), (Start: 32 @45931 has 50 MA's), (35, 45946), (39, 45994), (41, 46015), (44, 46036),

Gene: RitaG\_68 Start: 44390, Stop: 44545, Start Num: 32  
Candidate Starts for RitaG\_68:  
(Start: 32 @44390 has 50 MA's), (35, 44405), (39, 44453), (41, 44474), (44, 44495),

Gene: Rubeelu\_58 Start: 37292, Stop: 37432, Start Num: 33  
Candidate Starts for Rubeelu\_58:  
(26, 37250), (29, 37271), (Start: 33 @37292 has 2 MA's), (36, 37322),

Gene: Sassafras\_68 Start: 43353, Stop: 43508, Start Num: 32  
Candidate Starts for Sassafras\_68:  
(Start: 32 @43353 has 50 MA's), (35, 43368), (39, 43416), (41, 43437), (44, 43458),

Gene: Sbash\_70 Start: 46782, Stop: 46940, Start Num: 32  
Candidate Starts for Sbash\_70:  
(Start: 32 @46782 has 50 MA's), (37, 46836), (43, 46884),

Gene: Schnauzer\_63 Start: 39223, Stop: 39366, Start Num: 31  
Candidate Starts for Schnauzer\_63:  
(6, 38905), (7, 38914), (13, 39070), (Start: 31 @39223 has 24 MA's), (42, 39319),

Gene: Scitech\_57 Start: 38626, Stop: 38769, Start Num: 32  
Candidate Starts for Scitech\_57:  
(10, 38389), (14, 38461), (16, 38491), (27, 38599), (Start: 32 @38626 has 50 MA's), (42, 38722),

Gene: Scottish\_66 Start: 42936, Stop: 43091, Start Num: 32  
Candidate Starts for Scottish\_66:  
(15, 42798), (Start: 32 @42936 has 50 MA's), (35, 42951), (39, 42999), (41, 43020), (44, 43041),

Gene: Seagreen\_66 Start: 42125, Stop: 42280, Start Num: 32  
Candidate Starts for Seagreen\_66:  
(15, 41987), (Start: 32 @42125 has 50 MA's), (35, 42140), (39, 42188), (41, 42209), (44, 42230),

Gene: Shauna1\_65 Start: 42665, Stop: 42820, Start Num: 32

Candidate Starts for Shauna1\_65:

(15, 42527), (Start: 32 @42665 has 50 MA's), (35, 42680), (39, 42728), (41, 42749), (44, 42770),

Gene: SiSi\_67 Start: 44560, Stop: 44715, Start Num: 32

Candidate Starts for SiSi\_67:

(19, 44446), (Start: 32 @44560 has 50 MA's), (35, 44575), (39, 44623), (41, 44644), (44, 44665),

Gene: Silvafighter\_64 Start: 38766, Stop: 38909, Start Num: 31

Candidate Starts for Silvafighter\_64:

(6, 38448), (7, 38457), (13, 38613), (Start: 31 @38766 has 24 MA's), (42, 38862),

Gene: Silvy\_58 Start: 39856, Stop: 39999, Start Num: 31

Candidate Starts for Silvy\_58:

(6, 39541), (7, 39550), (13, 39706), (Start: 31 @39856 has 24 MA's), (42, 39952),

Gene: SkinnyPete\_59 Start: 38970, Stop: 39113, Start Num: 31

Candidate Starts for SkinnyPete\_59:

(6, 38652), (7, 38661), (13, 38817), (Start: 31 @38970 has 24 MA's), (42, 39066),

Gene: Slim\_69 Start: 44549, Stop: 44704, Start Num: 32

Candidate Starts for Slim\_69:

(15, 44411), (Start: 32 @44549 has 50 MA's), (35, 44564), (39, 44612), (41, 44633), (44, 44654),

Gene: Smurph\_62 Start: 39223, Stop: 39366, Start Num: 31

Candidate Starts for Smurph\_62:

(6, 38905), (7, 38914), (13, 39070), (Start: 31 @39223 has 24 MA's), (42, 39319),

Gene: Soul22\_76 Start: 44557, Stop: 44706, Start Num: 32

Candidate Starts for Soul22\_76:

(15, 44419), (25, 44518), (Start: 32 @44557 has 50 MA's), (35, 44572), (39, 44620), (41, 44641), (44, 44662),

Gene: StAnnes\_67 Start: 43879, Stop: 44034, Start Num: 32

Candidate Starts for StAnnes\_67:

(15, 43741), (Start: 32 @43879 has 50 MA's), (35, 43894), (39, 43942), (41, 43963), (44, 43984),

Gene: Strokeseat\_63 Start: 40434, Stop: 40589, Start Num: 32

Candidate Starts for Strokeseat\_63:

(1, 39981), (2, 39999), (3, 40035), (4, 40041), (5, 40059), (9, 40155), (11, 40233), (17, 40308), (Start: 32 @40434 has 50 MA's), (35, 40449), (39, 40497), (41, 40518), (44, 40539),

Gene: Taj\_73 Start: 45199, Stop: 45354, Start Num: 32

Candidate Starts for Taj\_73:

(15, 45061), (Start: 32 @45199 has 50 MA's), (35, 45214), (39, 45262), (41, 45283), (44, 45304),

Gene: Tapioca\_60 Start: 39740, Stop: 39883, Start Num: 31

Candidate Starts for Tapioca\_60:

(13, 39587), (Start: 31 @39740 has 24 MA's), (42, 39836),

Gene: ThulaThula\_66 Start: 44182, Stop: 44340, Start Num: 32

Candidate Starts for ThulaThula\_66:

(20, 44086), (Start: 32 @44182 has 50 MA's), (37, 44239), (43, 44287),

Gene: Toron\_90 Start: 52849, Stop: 53001, Start Num: 32

Candidate Starts for Toron\_90:

(Start: 32 @52849 has 50 MA's), (37, 52903), (43, 52951),

Gene: Tortoise12\_60 Start: 38344, Stop: 38487, Start Num: 31

Candidate Starts for Tortoise12\_60:

(6, 38026), (7, 38035), (13, 38191), (Start: 31 @38344 has 24 MA's), (42, 38440),

Gene: Veteran\_65 Start: 44909, Stop: 45058, Start Num: 32

Candidate Starts for Veteran\_65:

(18, 44792), (25, 44870), (Start: 32 @44909 has 50 MA's), (35, 44924), (39, 44972), (41, 44993), (44, 45014),

Gene: Wee\_73 Start: 45275, Stop: 45430, Start Num: 32

Candidate Starts for Wee\_73:

(15, 45137), (Start: 32 @45275 has 50 MA's), (35, 45290), (39, 45338), (41, 45359), (44, 45380),

Gene: Xerxes\_62 Start: 39220, Stop: 39363, Start Num: 31

Candidate Starts for Xerxes\_62:

(6, 38902), (7, 38911), (13, 39067), (Start: 31 @39220 has 24 MA's), (42, 39316),

Gene: Xula\_56 Start: 39168, Stop: 39317, Start Num: 32

Candidate Starts for Xula\_56:

(17, 39042), (Start: 32 @39168 has 50 MA's), (35, 39183), (39, 39231), (41, 39252), (44, 39273),

Gene: Zapner\_81 Start: 44699, Stop: 44848, Start Num: 32

Candidate Starts for Zapner\_81:

(15, 44561), (25, 44660), (Start: 32 @44699 has 50 MA's), (35, 44714), (39, 44762), (41, 44783), (44, 44804),