

Pham 162983



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 162983 Report

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

Pham number 162983 has 104 members, 10 are drafts.

Phages represented in each track:

- Track 1 : Lysidious\_73
- Track 2 : Melba\_70
- Track 3 : BlingBling\_67, UmaThurman\_71, Fenry\_70, Samba\_71, Barco\_68, Zarbodnamra\_74, Petra\_75
- Track 4 : PhrostedPhlake\_77
- Track 5 : Wocket\_69
- Track 6 : Murp\_68
- Track 7 : Wisp\_69
- Track 8 : BritBrat\_87
- Track 9 : Vasanti\_65
- Track 10 : Moosehead\_68
- Track 11 : Zipp\_57
- Track 12 : Zitch\_59
- Track 13 : Delrey21\_56, DoctorFroggo\_56, Verity\_56
- Track 14 : Ecliptus\_95, Crater\_88, Phistory\_86, Apricot\_88
- Track 15 : Malibo\_71
- Track 16 : DumpsterDude\_67
- Track 17 : Melissauren88\_69
- Track 18 : Whatsapiecost\_69
- Track 19 : Mozy\_81
- Track 20 : OldBen\_73, JoeyJr\_76, PopTart\_65, Hamulus\_75, JalFarm20\_83, EleanorGeorge\_77, Doomhist\_79, KingMidas\_75, Harley\_74, Polka14\_80, SiSi\_71, Poenanya\_79, Fastidio\_68, Nimbo\_68, Taj\_81, Flathead\_74, DillTech15\_76, SG4\_72, Daenerys\_75, PHappiness\_76, Leperchaun\_74, Quico\_84, Geralt\_69, Wee\_80, KristaRAM\_73, Akhila\_69, Girafales\_84, Inventum\_74, RedBird\_77, SassyB\_65, Seagreen\_76, LittleShirley\_75, Dorothy\_77, Filuzino\_76, Empress\_74, Minnie\_72, Deb65\_69, Sandalphon\_70, Florinda\_87, MilanaBonita\_68, RitaG\_76, Scottish\_74, Juice456\_71, Sassafras\_77, DaddyRickover\_79
- Track 21 : Mandlovu\_70, Bobi\_82, DLane\_72, Phalconet\_72, PhesterPhotato\_78, Hlubikazi\_70, Strokeseat\_70, StAnnes\_72
- Track 22 : Cerasum\_68, Coco12\_71
- Track 23 : Kingsley\_78, DeadP\_76, Ms6\_73, Shauna1\_74, Bipolar\_78, Ogopogo\_80, Phanphagia\_73
- Track 24 : Aubs\_76, Guppsters\_69
- Track 25 : MadMen\_72
- Track 26 : Batiatus\_74
- Track 27 : Fruitloop\_67

- Track 28 : BigPhil\_68
- Track 29 : ShroomBoi\_75
- Track 30 : Squirty\_76
- Track 31 : 32HC\_67
- Track 32 : Rem711\_66
- Track 33 : Finkle\_63
- Track 34 : GMA1\_64

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

The start number called the most often in the published annotations is 33, it was called in 65 of the 94 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 32HC\_67, Akhila\_69, Aubs\_76, Batiatus\_74, Bipolar\_78, Bobi\_82, Cerasum\_68, Coco12\_71, DLane\_72, DaddyRickover\_79, Daenerys\_75, DeadP\_76, Deb65\_69, DillTech15\_76, Doomphist\_79, Dorothy\_77, EleanorGeorge\_77, Empress\_74, Fastidio\_68, Filuzino\_76, Flathead\_74, Florinda\_87, Geralt\_69, Girafales\_84, Guppsters\_69, Hamulus\_75, Harley\_74, Hlubikazi\_70, Inventum\_74, JalFarm20\_83, JoeyJr\_76, Juice456\_71, KingMidas\_75, Kingsley\_78, KristaRAM\_73, Leperchaun\_74, LittleShirley\_75, MadMen\_72, Mandlovu\_70, Melissauren88\_69, MilanaBonita\_68, Minnie\_72, Mozy\_81, Ms6\_73, Nimbo\_68, Ogopogo\_80, OldBen\_73, PHappiness\_76, Phalconet\_72, Phanphagia\_73, PhesterPhotato\_78, Poenanya\_79, Polka14\_80, PopTart\_65, Quico\_84, RedBird\_77, Rem711\_66, RitaG\_76, SG4\_72, Sandalphon\_70, Sassafras\_77, SassyB\_65, Scottish\_74, Seagreen\_76, Shauna1\_74, ShroomBoi\_75, SiSi\_71, Squirty\_76, StAnnes\_72, Strokeseat\_70, Taj\_81, Wee\_80, Whatsapiecost\_69,

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

- BigPhil\_68, Fruitloop\_67, Malibo\_71, Melba\_70, Murp\_68, Vasanti\_65, Wisp\_69,

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

- Apricot\_88, Barco\_68, BlingBling\_67, BritBrat\_87, Crater\_88, Delrey21\_56, DoctorFroggo\_56, DumpsterDude\_67, Ecliptus\_95, Fenry\_70, Finkle\_63, GMA1\_64, Lysidious\_73, Moosehead\_68, Petra\_75, Phistory\_86, PhrostedPhlake\_77, Samba\_71, UmaThurman\_71, Verity\_56, Wocket\_69, Zarbodnamra\_74, Zipp\_57, Zitch\_59,

**Summary by start number:**

Start 22:

- Found in 1 of 104 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Finkle\_63 (singleton),

Start 32:

- Found in 3 of 104 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 33.3% of time when present

- Phage (with cluster) where this start called: BigPhil\_68 (F1),

#### Start 33:

- Found in 80 of 104 ( 76.9% ) of genes in pham
- Manual Annotations of this start: 65 of 94
- Called 91.2% of time when present
- Phage (with cluster) where this start called: 32HC\_67 (Z), Akhila\_69 (F1), Aubs\_76 (F1), Batiatus\_74 (F1), Bipolar\_78 (F1), Bobi\_82 (F1), Cerasum\_68 (F1), Coco12\_71 (F1), DLane\_72 (F1), DaddyRickover\_79 (F1), Daenerys\_75 (F1), DeadP\_76 (F1), Deb65\_69 (F1), DillTech15\_76 (F1), Doomphist\_79 (F1), Dorothy\_77 (F1), EleanorGeorge\_77 (F1), Empress\_74 (F1), Fastidio\_68 (F1), Filuzino\_76 (F1), Flathead\_74 (F1), Florinda\_87 (F1), Geralt\_69 (F1), Girafales\_84 (F1), Guppsters\_69 (F1), Hamulus\_75 (F1), Harley\_74 (F1), Hlubikazi\_70 (F1), Inventum\_74 (F1), JalFarm20\_83 (F1), JoeyJr\_76 (F1), Juice456\_71 (F1), KingMidas\_75 (F1), Kingsley\_78 (F1), KristaRAM\_73 (F1), Leperchaun\_74 (F1), LittleShirley\_75 (F1), MadMen\_72 (F1), Mandlovu\_70 (F1), Melissauren88\_69 (F1), MilanaBonita\_68 (F1), Minnie\_72 (F1), Mozy\_81 (F1), Ms6\_73 (F1), Nimbo\_68 (F1), Ogopogo\_80 (F1), OldBen\_73 (F1), PHappiness\_76 (F1), Phalconet\_72 (F1), Phanphagia\_73 (F1), PhesterPhotato\_78 (F1), Poenanya\_79 (F1), Polka14\_80 (F1), PopTart\_65 (F1), Quico\_84 (F1), RedBird\_77 (F1), Rem711\_66 (Z), RitaG\_76 (F1), SG4\_72 (F1), Sandalphon\_70 (F1), Sassafras\_77 (F1), SassyB\_65 (F1), Scottish\_74 (F1), Seagreen\_76 (F1), Shauna1\_74 (F1), ShroomBoi\_75 (F1), SiSi\_71 (F1), Squirty\_76 (F3), StAnnes\_72 (F1), Strokeseat\_70 (F1), Taj\_81 (F1), Wee\_80 (F1), Whatsapiecost\_69 (F1),

#### Start 37:

- Found in 70 of 104 ( 67.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 1.4% of time when present
- Phage (with cluster) where this start called: GMA1\_64 (singleton),

#### Start 38:

- Found in 70 of 104 ( 67.3% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 1.4% of time when present
- Phage (with cluster) where this start called: Fruitloop\_67 (F1),

#### Start 45:

- Found in 27 of 104 ( 26.0% ) of genes in pham
- Manual Annotations of this start: 26 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Apricot\_88 (DN3), Barco\_68 (CV), BlingBling\_67 (CV), BritBrat\_87 (CY2), Crater\_88 (DN3), Delrey21\_56 (DE4), DoctorFroggo\_56 (DE4), DumpsterDude\_67 (DW), Ecliptus\_95 (DN), Fenry\_70 (CV), Lysidious\_73 (CV), Malibo\_71 (DW), Melba\_70 (CV), Moosehead\_68 (CZ6), Murp\_68 (CV), Petra\_75 (CV), Phistory\_86 (DN1), PhrostedPhlake\_77 (CV), Samba\_71 (CV), UmaThurman\_71 (CV), Vasanti\_65 (CZ2), Verity\_56 (DE4), Wisp\_69 (CV), Wocket\_69 (CV), Zarbodnamra\_74 (CV), Zipp\_57 (DE4), Zitch\_59 (DE4),

### Summary by clusters:

There are 13 clusters represented in this pham: DN, F1, singleton, F3, CY2, CZ2, DE4, CZ6, DN1, DN3, DW, Z, CV,

Info for manual annotations of cluster CV:

- Start number 45 was manually annotated 12 times for cluster CV.

Info for manual annotations of cluster CY2:

- Start number 45 was manually annotated 1 time for cluster CY2.

Info for manual annotations of cluster CZ2:

- Start number 45 was manually annotated 1 time for cluster CZ2.

Info for manual annotations of cluster CZ6:

- Start number 45 was manually annotated 1 time for cluster CZ6.

Info for manual annotations of cluster DE4:

- Start number 45 was manually annotated 5 times for cluster DE4.

Info for manual annotations of cluster DN:

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

Info for manual annotations of cluster DN1:

- Start number 45 was manually annotated 1 time for cluster DN1.

Info for manual annotations of cluster DN3:

- Start number 45 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DW:

- Start number 45 was manually annotated 2 times for cluster DW.

Info for manual annotations of cluster F1:

- Start number 32 was manually annotated 1 time for cluster F1.
- Start number 33 was manually annotated 63 times for cluster F1.
- Start number 38 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster F3:

- Start number 33 was manually annotated 1 time for cluster F3.

Info for manual annotations of cluster Z:

- Start number 33 was manually annotated 1 time for cluster Z.

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

Gene: 32HC\_67 Start: 42023, Stop: 42889, Start Num: 33

Candidate Starts for 32HC\_67:

(Start: 33 @42023 has 65 MA's), (Start: 38 @42071 has 1 MA's), (41, 42077), (48, 42122), (80, 42338), (100, 42455),

Gene: Akhila\_69 Start: 45149, Stop: 46000, Start Num: 33

Candidate Starts for Akhila\_69:

(Start: 33 @45149 has 65 MA's), (36, 45164), (37, 45194), (Start: 38 @45197 has 1 MA's), (46, 45236), (53, 45287), (55, 45302), (78, 45452), (89, 45566), (93, 45584), (96, 45599), (97, 45602), (98, 45605), (107, 45638), (110, 45692), (115, 45803), (119, 45914),

Gene: Apricot\_88 Start: 47456, Stop: 48217, Start Num: 45

Candidate Starts for Apricot\_88:

(Start: 45 @47456 has 26 MA's), (47, 47471), (56, 47531), (61, 47558), (71, 47606), (85, 47750), (108, 47843), (116, 48044), (125, 48167),

Gene: Aubs\_76 Start: 47632, Stop: 48345, Start Num: 33

Candidate Starts for Aubs\_76:

(Start: 33 @47632 has 65 MA's), (46, 47707), (50, 47734), (51, 47743), (53, 47758), (58, 47773), (64, 47794), (65, 47800), (83, 47902), (87, 47932), (94, 47974), (97, 47986), (102, 47998), (110, 48058), (122, 48301), (126, 48328),

Gene: Barco\_68 Start: 43101, Stop: 43886, Start Num: 45

Candidate Starts for Barco\_68:

(Start: 45 @43101 has 26 MA's), (51, 43146), (56, 43176), (61, 43203), (79, 43326), (85, 43395), (129, 43830),

Gene: Batiatus\_74 Start: 46887, Stop: 47738, Start Num: 33

Candidate Starts for Batiatus\_74:

(Start: 33 @46887 has 65 MA's), (36, 46902), (37, 46932), (Start: 38 @46935 has 1 MA's), (46, 46974), (55, 47040), (78, 47190), (89, 47304), (93, 47322), (96, 47337), (97, 47340), (98, 47343), (107, 47376), (110, 47430), (115, 47541), (119, 47652), (127, 47724),

Gene: BigPhil\_68 Start: 42702, Stop: 43418, Start Num: 32

Candidate Starts for BigPhil\_68:

(Start: 32 @42702 has 1 MA's), (Start: 33 @42705 has 65 MA's), (46, 42780), (50, 42807), (51, 42816), (53, 42831), (58, 42846), (64, 42867), (65, 42873), (83, 42975), (87, 43005), (94, 43047), (97, 43059), (102, 43071), (110, 43131), (116, 43275), (122, 43374), (126, 43401),

Gene: Bipolar\_78 Start: 48531, Stop: 49382, Start Num: 33

Candidate Starts for Bipolar\_78:

(Start: 33 @48531 has 65 MA's), (36, 48546), (37, 48576), (Start: 38 @48579 has 1 MA's), (46, 48618), (55, 48684), (78, 48834), (89, 48948), (93, 48966), (96, 48981), (97, 48984), (98, 48987), (107, 49020), (110, 49074), (115, 49185), (119, 49296),

Gene: BlingBling\_67 Start: 43983, Stop: 44768, Start Num: 45

Candidate Starts for BlingBling\_67:

(Start: 45 @43983 has 26 MA's), (51, 44028), (56, 44058), (61, 44085), (79, 44208), (85, 44277), (129, 44712),

Gene: Bobi\_82 Start: 49186, Stop: 50037, Start Num: 33

Candidate Starts for Bobi\_82:

(Start: 33 @49186 has 65 MA's), (36, 49201), (37, 49231), (Start: 38 @49234 has 1 MA's), (46, 49273), (53, 49324), (55, 49339), (78, 49489), (89, 49603), (93, 49621), (96, 49636), (97, 49639), (98, 49642), (107, 49675), (110, 49729), (115, 49840), (119, 49951), (127, 50023),

Gene: BritBrat\_87 Start: 50794, Stop: 51558, Start Num: 45

Candidate Starts for BritBrat\_87:

(24, 50614), (25, 50620), (26, 50629), (Start: 45 @50794 has 26 MA's), (47, 50809), (70, 50941), (73, 50971), (74, 50974), (77, 50992), (81, 51055), (99, 51160), (103, 51172), (105, 51184), (118, 51445),

(124, 51511),

Gene: Cerasum\_68 Start: 42723, Stop: 43436, Start Num: 33

Candidate Starts for Cerasum\_68:

(Start: 32 @42720 has 1 MA's), (Start: 33 @42723 has 65 MA's), (46, 42798), (50, 42825), (51, 42834), (53, 42849), (58, 42864), (64, 42885), (65, 42891), (83, 42993), (87, 43023), (94, 43065), (97, 43077), (102, 43089), (110, 43149), (116, 43293), (122, 43392), (126, 43419),

Gene: Coco12\_71 Start: 46780, Stop: 47493, Start Num: 33

Candidate Starts for Coco12\_71:

(Start: 32 @46777 has 1 MA's), (Start: 33 @46780 has 65 MA's), (46, 46855), (50, 46882), (51, 46891), (53, 46906), (58, 46921), (64, 46942), (65, 46948), (83, 47050), (87, 47080), (94, 47122), (97, 47134), (102, 47146), (110, 47206), (116, 47350), (122, 47449), (126, 47476),

Gene: Crater\_88 Start: 47800, Stop: 48561, Start Num: 45

Candidate Starts for Crater\_88:

(Start: 45 @47800 has 26 MA's), (47, 47815), (56, 47875), (61, 47902), (71, 47950), (85, 48094), (108, 48187), (116, 48388), (125, 48511),

Gene: DLane\_72 Start: 46465, Stop: 47316, Start Num: 33

Candidate Starts for DLane\_72:

(Start: 33 @46465 has 65 MA's), (36, 46480), (37, 46510), (Start: 38 @46513 has 1 MA's), (46, 46552), (53, 46603), (55, 46618), (78, 46768), (89, 46882), (93, 46900), (96, 46915), (97, 46918), (98, 46921), (107, 46954), (110, 47008), (115, 47119), (119, 47230), (127, 47302),

Gene: DaddyRickover\_79 Start: 48497, Stop: 49348, Start Num: 33

Candidate Starts for DaddyRickover\_79:

(Start: 33 @48497 has 65 MA's), (36, 48512), (37, 48542), (Start: 38 @48545 has 1 MA's), (46, 48584), (53, 48635), (55, 48650), (78, 48800), (89, 48914), (93, 48932), (96, 48947), (97, 48950), (98, 48953), (107, 48986), (110, 49040), (115, 49151), (119, 49262),

Gene: Daenerys\_75 Start: 48094, Stop: 48945, Start Num: 33

Candidate Starts for Daenerys\_75:

(Start: 33 @48094 has 65 MA's), (36, 48109), (37, 48139), (Start: 38 @48142 has 1 MA's), (46, 48181), (53, 48232), (55, 48247), (78, 48397), (89, 48511), (93, 48529), (96, 48544), (97, 48547), (98, 48550), (107, 48583), (110, 48637), (115, 48748), (119, 48859),

Gene: DeadP\_76 Start: 45713, Stop: 46564, Start Num: 33

Candidate Starts for DeadP\_76:

(Start: 33 @45713 has 65 MA's), (36, 45728), (37, 45758), (Start: 38 @45761 has 1 MA's), (46, 45800), (55, 45866), (78, 46016), (89, 46130), (93, 46148), (96, 46163), (97, 46166), (98, 46169), (107, 46202), (110, 46256), (115, 46367), (119, 46478),

Gene: Deb65\_69 Start: 45816, Stop: 46667, Start Num: 33

Candidate Starts for Deb65\_69:

(Start: 33 @45816 has 65 MA's), (36, 45831), (37, 45861), (Start: 38 @45864 has 1 MA's), (46, 45903), (53, 45954), (55, 45969), (78, 46119), (89, 46233), (93, 46251), (96, 46266), (97, 46269), (98, 46272), (107, 46305), (110, 46359), (115, 46470), (119, 46581),

Gene: Delrey21\_56 Start: 46577, Stop: 47413, Start Num: 45

Candidate Starts for Delrey21\_56:

(Start: 45 @46577 has 26 MA's), (54, 46637), (64, 46703), (76, 46772), (96, 46952), (101, 46964), (104, 46976),

Gene: DillTech15\_76 Start: 45410, Stop: 46261, Start Num: 33

Candidate Starts for DillTech15\_76:

(Start: 33 @45410 has 65 MA's), (36, 45425), (37, 45455), (Start: 38 @45458 has 1 MA's), (46, 45497), (53, 45548), (55, 45563), (78, 45713), (89, 45827), (93, 45845), (96, 45860), (97, 45863), (98, 45866), (107, 45899), (110, 45953), (115, 46064), (119, 46175),

Gene: DoctorFroggo\_56 Start: 46577, Stop: 47413, Start Num: 45

Candidate Starts for DoctorFroggo\_56:

(Start: 45 @46577 has 26 MA's), (54, 46637), (64, 46703), (76, 46772), (96, 46952), (101, 46964), (104, 46976),

Gene: Doomphist\_79 Start: 47907, Stop: 48758, Start Num: 33

Candidate Starts for Doomphist\_79:

(Start: 33 @47907 has 65 MA's), (36, 47922), (37, 47952), (Start: 38 @47955 has 1 MA's), (46, 47994), (53, 48045), (55, 48060), (78, 48210), (89, 48324), (93, 48342), (96, 48357), (97, 48360), (98, 48363), (107, 48396), (110, 48450), (115, 48561), (119, 48672),

Gene: Dorothy\_77 Start: 48545, Stop: 49396, Start Num: 33

Candidate Starts for Dorothy\_77:

(Start: 33 @48545 has 65 MA's), (36, 48560), (37, 48590), (Start: 38 @48593 has 1 MA's), (46, 48632), (53, 48683), (55, 48698), (78, 48848), (89, 48962), (93, 48980), (96, 48995), (97, 48998), (98, 49001), (107, 49034), (110, 49088), (115, 49199), (119, 49310),

Gene: DumpsterDude\_67 Start: 49217, Stop: 50014, Start Num: 45

Candidate Starts for DumpsterDude\_67:

(Start: 45 @49217 has 26 MA's), (57, 49298), (63, 49328), (67, 49355), (71, 49367), (74, 49397), (81, 49478), (95, 49574), (99, 49583), (105, 49595),

Gene: Ecliptus\_95 Start: 50999, Stop: 51760, Start Num: 45

Candidate Starts for Ecliptus\_95:

(Start: 45 @50999 has 26 MA's), (47, 51014), (56, 51074), (61, 51101), (71, 51149), (85, 51293), (108, 51386), (116, 51587), (125, 51710),

Gene: EleanorGeorge\_77 Start: 47500, Stop: 48351, Start Num: 33

Candidate Starts for EleanorGeorge\_77:

(Start: 33 @47500 has 65 MA's), (36, 47515), (37, 47545), (Start: 38 @47548 has 1 MA's), (46, 47587), (53, 47638), (55, 47653), (78, 47803), (89, 47917), (93, 47935), (96, 47950), (97, 47953), (98, 47956), (107, 47989), (110, 48043), (115, 48154), (119, 48265),

Gene: Empress\_74 Start: 46718, Stop: 47569, Start Num: 33

Candidate Starts for Empress\_74:

(Start: 33 @46718 has 65 MA's), (36, 46733), (37, 46763), (Start: 38 @46766 has 1 MA's), (46, 46805), (53, 46856), (55, 46871), (78, 47021), (89, 47135), (93, 47153), (96, 47168), (97, 47171), (98, 47174), (107, 47207), (110, 47261), (115, 47372), (119, 47483),

Gene: Fastidio\_68 Start: 42216, Stop: 43067, Start Num: 33

Candidate Starts for Fastidio\_68:

(Start: 33 @42216 has 65 MA's), (36, 42231), (37, 42261), (Start: 38 @42264 has 1 MA's), (46, 42303), (53, 42354), (55, 42369), (78, 42519), (89, 42633), (93, 42651), (96, 42666), (97, 42669), (98, 42672), (107, 42705), (110, 42759), (115, 42870), (119, 42981),

Gene: Fenry\_70 Start: 44774, Stop: 45559, Start Num: 45



Candidate Starts for Fenry\_70:

(Start: 45 @44774 has 26 MA's), (51, 44819), (56, 44849), (61, 44876), (79, 44999), (85, 45068), (129, 45503),

Gene: Filuzino\_76 Start: 48444, Stop: 49295, Start Num: 33

Candidate Starts for Filuzino\_76:

(Start: 33 @48444 has 65 MA's), (36, 48459), (37, 48489), (Start: 38 @48492 has 1 MA's), (46, 48531), (53, 48582), (55, 48597), (78, 48747), (89, 48861), (93, 48879), (96, 48894), (97, 48897), (98, 48900), (107, 48933), (110, 48987), (115, 49098), (119, 49209),

Gene: Finkle\_63 Start: 39287, Stop: 40303, Start Num: 22

Candidate Starts for Finkle\_63:

(12, 39143), (Start: 22 @39287 has 1 MA's), (29, 39335), (37, 39437), (72, 39656), (75, 39680), (82, 39764), (84, 39776), (86, 39800), (93, 39842), (99, 39863), (131, 40274),

Gene: Flathead\_74 Start: 46158, Stop: 47009, Start Num: 33

Candidate Starts for Flathead\_74:

(Start: 33 @46158 has 65 MA's), (36, 46173), (37, 46203), (Start: 38 @46206 has 1 MA's), (46, 46245), (53, 46296), (55, 46311), (78, 46461), (89, 46575), (93, 46593), (96, 46608), (97, 46611), (98, 46614), (107, 46647), (110, 46701), (115, 46812), (119, 46923),

Gene: Florinda\_87 Start: 49360, Stop: 50211, Start Num: 33

Candidate Starts for Florinda\_87:

(Start: 33 @49360 has 65 MA's), (36, 49375), (37, 49405), (Start: 38 @49408 has 1 MA's), (46, 49447), (53, 49498), (55, 49513), (78, 49663), (89, 49777), (93, 49795), (96, 49810), (97, 49813), (98, 49816), (107, 49849), (110, 49903), (115, 50014), (119, 50125),

Gene: Fruitloop\_67 Start: 44726, Stop: 45490, Start Num: 38

Candidate Starts for Fruitloop\_67:

(Start: 33 @44678 has 65 MA's), (36, 44693), (37, 44723), (Start: 38 @44726 has 1 MA's), (46, 44765), (55, 44831), (60, 44858), (66, 44894), (93, 45074), (96, 45089), (98, 45095), (101, 45101), (102, 45107), (106, 45122), (110, 45182), (115, 45293), (119, 45404),

Gene: GMA1\_64 Start: 38118, Stop: 38942, Start Num: 37

Candidate Starts for GMA1\_64:

(37, 38118), (39, 38124), (40, 38133), (49, 38193), (52, 38214), (59, 38256), (68, 38304), (91, 38499), (113, 38673), (121, 38859), (123, 38880),

Gene: Geralt\_69 Start: 45814, Stop: 46665, Start Num: 33

Candidate Starts for Geralt\_69:

(Start: 33 @45814 has 65 MA's), (36, 45829), (37, 45859), (Start: 38 @45862 has 1 MA's), (46, 45901), (53, 45952), (55, 45967), (78, 46117), (89, 46231), (93, 46249), (96, 46264), (97, 46267), (98, 46270), (107, 46303), (110, 46357), (115, 46468), (119, 46579),

Gene: Girafales\_84 Start: 48965, Stop: 49816, Start Num: 33

Candidate Starts for Girafales\_84:

(Start: 33 @48965 has 65 MA's), (36, 48980), (37, 49010), (Start: 38 @49013 has 1 MA's), (46, 49052), (53, 49103), (55, 49118), (78, 49268), (89, 49382), (93, 49400), (96, 49415), (97, 49418), (98, 49421), (107, 49454), (110, 49508), (115, 49619), (119, 49730),

Gene: Guppsters\_69 Start: 44386, Stop: 45099, Start Num: 33

Candidate Starts for Guppsters\_69:

(Start: 33 @44386 has 65 MA's), (46, 44461), (50, 44488), (51, 44497), (53, 44512), (58, 44527), (64, 44548), (65, 44554), (83, 44656), (87, 44686), (94, 44728), (97, 44740), (102, 44752), (110, 44812), (122, 45055), (126, 45082),

Gene: Hamulus\_75 Start: 46843, Stop: 47694, Start Num: 33

Candidate Starts for Hamulus\_75:

(Start: 33 @46843 has 65 MA's), (36, 46858), (37, 46888), (Start: 38 @46891 has 1 MA's), (46, 46930), (53, 46981), (55, 46996), (78, 47146), (89, 47260), (93, 47278), (96, 47293), (97, 47296), (98, 47299), (107, 47332), (110, 47386), (115, 47497), (119, 47608),

Gene: Harley\_74 Start: 46048, Stop: 46899, Start Num: 33

Candidate Starts for Harley\_74:

(Start: 33 @46048 has 65 MA's), (36, 46063), (37, 46093), (Start: 38 @46096 has 1 MA's), (46, 46135), (53, 46186), (55, 46201), (78, 46351), (89, 46465), (93, 46483), (96, 46498), (97, 46501), (98, 46504), (107, 46537), (110, 46591), (115, 46702), (119, 46813),

Gene: Hlubikazi\_70 Start: 44428, Stop: 45279, Start Num: 33

Candidate Starts for Hlubikazi\_70:

(Start: 33 @44428 has 65 MA's), (36, 44443), (37, 44473), (Start: 38 @44476 has 1 MA's), (46, 44515), (53, 44566), (55, 44581), (78, 44731), (89, 44845), (93, 44863), (96, 44878), (97, 44881), (98, 44884), (107, 44917), (110, 44971), (115, 45082), (119, 45193), (127, 45265),

Gene: Inventum\_74 Start: 46730, Stop: 47581, Start Num: 33

Candidate Starts for Inventum\_74:

(Start: 33 @46730 has 65 MA's), (36, 46745), (37, 46775), (Start: 38 @46778 has 1 MA's), (46, 46817), (53, 46868), (55, 46883), (78, 47033), (89, 47147), (93, 47165), (96, 47180), (97, 47183), (98, 47186), (107, 47219), (110, 47273), (115, 47384), (119, 47495),

Gene: JalFarm20\_83 Start: 47508, Stop: 48359, Start Num: 33

Candidate Starts for JalFarm20\_83:

(Start: 33 @47508 has 65 MA's), (36, 47523), (37, 47553), (Start: 38 @47556 has 1 MA's), (46, 47595), (53, 47646), (55, 47661), (78, 47811), (89, 47925), (93, 47943), (96, 47958), (97, 47961), (98, 47964), (107, 47997), (110, 48051), (115, 48162), (119, 48273),

Gene: JoeyJr\_76 Start: 47719, Stop: 48570, Start Num: 33

Candidate Starts for JoeyJr\_76:

(Start: 33 @47719 has 65 MA's), (36, 47734), (37, 47764), (Start: 38 @47767 has 1 MA's), (46, 47806), (53, 47857), (55, 47872), (78, 48022), (89, 48136), (93, 48154), (96, 48169), (97, 48172), (98, 48175), (107, 48208), (110, 48262), (115, 48373), (119, 48484),

Gene: Juice456\_71 Start: 45464, Stop: 46315, Start Num: 33

Candidate Starts for Juice456\_71:

(Start: 33 @45464 has 65 MA's), (36, 45479), (37, 45509), (Start: 38 @45512 has 1 MA's), (46, 45551), (53, 45602), (55, 45617), (78, 45767), (89, 45881), (93, 45899), (96, 45914), (97, 45917), (98, 45920), (107, 45953), (110, 46007), (115, 46118), (119, 46229),

Gene: KingMidas\_75 Start: 47133, Stop: 47984, Start Num: 33

Candidate Starts for KingMidas\_75:

(Start: 33 @47133 has 65 MA's), (36, 47148), (37, 47178), (Start: 38 @47181 has 1 MA's), (46, 47220), (53, 47271), (55, 47286), (78, 47436), (89, 47550), (93, 47568), (96, 47583), (97, 47586), (98, 47589), (107, 47622), (110, 47676), (115, 47787), (119, 47898),

Gene: Kingsley\_78 Start: 48970, Stop: 49821, Start Num: 33

Candidate Starts for Kingsley\_78:

(Start: 33 @48970 has 65 MA's), (36, 48985), (37, 49015), (Start: 38 @49018 has 1 MA's), (46, 49057), (55, 49123), (78, 49273), (89, 49387), (93, 49405), (96, 49420), (97, 49423), (98, 49426), (107, 49459), (110, 49513), (115, 49624), (119, 49735),

Gene: KristaRAM\_73 Start: 45833, Stop: 46684, Start Num: 33

Candidate Starts for KristaRAM\_73:

(Start: 33 @45833 has 65 MA's), (36, 45848), (37, 45878), (Start: 38 @45881 has 1 MA's), (46, 45920), (53, 45971), (55, 45986), (78, 46136), (89, 46250), (93, 46268), (96, 46283), (97, 46286), (98, 46289), (107, 46322), (110, 46376), (115, 46487), (119, 46598),

Gene: Leperchaun\_74 Start: 46953, Stop: 47804, Start Num: 33

Candidate Starts for Leperchaun\_74:

(Start: 33 @46953 has 65 MA's), (36, 46968), (37, 46998), (Start: 38 @47001 has 1 MA's), (46, 47040), (53, 47091), (55, 47106), (78, 47256), (89, 47370), (93, 47388), (96, 47403), (97, 47406), (98, 47409), (107, 47442), (110, 47496), (115, 47607), (119, 47718),

Gene: LittleShirley\_75 Start: 45889, Stop: 46740, Start Num: 33

Candidate Starts for LittleShirley\_75:

(Start: 33 @45889 has 65 MA's), (36, 45904), (37, 45934), (Start: 38 @45937 has 1 MA's), (46, 45976), (53, 46027), (55, 46042), (78, 46192), (89, 46306), (93, 46324), (96, 46339), (97, 46342), (98, 46345), (107, 46378), (110, 46432), (115, 46543), (119, 46654),

Gene: Lysidious\_73 Start: 45614, Stop: 46399, Start Num: 45

Candidate Starts for Lysidious\_73:

(Start: 45 @45614 has 26 MA's), (51, 45659), (56, 45689), (61, 45716), (79, 45839), (85, 45908), (88, 45917), (121, 46298), (129, 46343),

Gene: MadMen\_72 Start: 45229, Stop: 46047, Start Num: 33

Candidate Starts for MadMen\_72:

(11, 44971), (13, 45040), (18, 45088), (27, 45160), (28, 45166), (30, 45184), (Start: 33 @45229 has 65 MA's), (36, 45244), (37, 45274), (Start: 38 @45277 has 1 MA's), (46, 45316), (53, 45367), (55, 45382), (78, 45532), (89, 45646), (92, 45661), (93, 45664), (96, 45679), (97, 45682), (98, 45685), (107, 45718), (110, 45772), (117, 45946), (120, 45985), (130, 46042),

Gene: Malibo\_71 Start: 46632, Stop: 47426, Start Num: 45

Candidate Starts for Malibo\_71:

(2, 46107), (7, 46173), (9, 46257), (Start: 33 @46542 has 65 MA's), (Start: 45 @46632 has 26 MA's), (56, 46707), (57, 46713), (63, 46743), (67, 46770), (71, 46782), (73, 46809), (74, 46812), (81, 46893), (95, 46989), (99, 46998), (105, 47010),

Gene: Mandlovu\_70 Start: 44370, Stop: 45221, Start Num: 33

Candidate Starts for Mandlovu\_70:

(Start: 33 @44370 has 65 MA's), (36, 44385), (37, 44415), (Start: 38 @44418 has 1 MA's), (46, 44457), (53, 44508), (55, 44523), (78, 44673), (89, 44787), (93, 44805), (96, 44820), (97, 44823), (98, 44826), (107, 44859), (110, 44913), (115, 45024), (119, 45135), (127, 45207),

Gene: Melba\_70 Start: 42725, Stop: 43543, Start Num: 45

Candidate Starts for Melba\_70:

(21, 42542), (31, 42635), (Start: 33 @42641 has 65 MA's), (34, 42644), (35, 42650), (Start: 45 @42725 has 26 MA's), (56, 42800), (63, 42836), (74, 42905), (81, 42986), (95, 43082), (99, 43091), (103, 43103), (105, 43115),

Gene: Melissauern88\_69 Start: 43991, Stop: 44842, Start Num: 33

Candidate Starts for Melissauern88\_69:

(14, 43808), (15, 43811), (27, 43922), (28, 43928), (30, 43946), (Start: 33 @43991 has 65 MA's), (36, 44006), (37, 44036), (Start: 38 @44039 has 1 MA's), (46, 44078), (53, 44129), (55, 44144), (78, 44294), (89, 44408), (93, 44426), (96, 44441), (97, 44444), (98, 44447), (107, 44480), (110, 44534), (115, 44645), (119, 44756),

Gene: MilanaBonita\_68 Start: 45149, Stop: 46000, Start Num: 33

Candidate Starts for MilanaBonita\_68:

(Start: 33 @45149 has 65 MA's), (36, 45164), (37, 45194), (Start: 38 @45197 has 1 MA's), (46, 45236), (53, 45287), (55, 45302), (78, 45452), (89, 45566), (93, 45584), (96, 45599), (97, 45602), (98, 45605), (107, 45638), (110, 45692), (115, 45803), (119, 45914),

Gene: Minnie\_72 Start: 48329, Stop: 49180, Start Num: 33

Candidate Starts for Minnie\_72:

(Start: 33 @48329 has 65 MA's), (36, 48344), (37, 48374), (Start: 38 @48377 has 1 MA's), (46, 48416), (53, 48467), (55, 48482), (78, 48632), (89, 48746), (93, 48764), (96, 48779), (97, 48782), (98, 48785), (107, 48818), (110, 48872), (115, 48983), (119, 49094),

Gene: Moosehead\_68 Start: 38475, Stop: 39236, Start Num: 45

Candidate Starts for Moosehead\_68:

(42, 38460), (44, 38472), (Start: 45 @38475 has 26 MA's), (56, 38550), (61, 38577), (71, 38625), (79, 38700), (85, 38769), (108, 38862), (114, 39012), (128, 39204),

Gene: Mozy\_81 Start: 46079, Stop: 46891, Start Num: 33

Candidate Starts for Mozy\_81:

(20, 45959), (23, 45977), (28, 46016), (30, 46034), (Start: 33 @46079 has 65 MA's), (36, 46094), (37, 46124), (Start: 38 @46127 has 1 MA's), (46, 46166), (55, 46232), (60, 46259), (66, 46295), (93, 46475), (98, 46496), (101, 46502), (102, 46508), (106, 46523), (110, 46583), (115, 46694), (119, 46805),

Gene: Ms6\_73 Start: 42712, Stop: 43563, Start Num: 33

Candidate Starts for Ms6\_73:

(Start: 33 @42712 has 65 MA's), (36, 42727), (37, 42757), (Start: 38 @42760 has 1 MA's), (46, 42799), (55, 42865), (78, 43015), (89, 43129), (93, 43147), (96, 43162), (97, 43165), (98, 43168), (107, 43201), (110, 43255), (115, 43366), (119, 43477),

Gene: Murp\_68 Start: 45979, Stop: 46797, Start Num: 45

Candidate Starts for Murp\_68:

(31, 45889), (Start: 33 @45895 has 65 MA's), (34, 45898), (35, 45904), (Start: 45 @45979 has 26 MA's), (56, 46054), (63, 46090), (74, 46159), (81, 46240), (95, 46336), (99, 46345), (103, 46357), (105, 46369), (129, 46741),

Gene: Nimbo\_68 Start: 45817, Stop: 46668, Start Num: 33

Candidate Starts for Nimbo\_68:

(Start: 33 @45817 has 65 MA's), (36, 45832), (37, 45862), (Start: 38 @45865 has 1 MA's), (46, 45904), (53, 45955), (55, 45970), (78, 46120), (89, 46234), (93, 46252), (96, 46267), (97, 46270), (98, 46273), (107, 46306), (110, 46360), (115, 46471), (119, 46582),

Gene: Ogopogo\_80 Start: 46334, Stop: 47185, Start Num: 33

Candidate Starts for Ogopogo\_80:

(Start: 33 @46334 has 65 MA's), (36, 46349), (37, 46379), (Start: 38 @46382 has 1 MA's), (46, 46421), (55, 46487), (78, 46637), (89, 46751), (93, 46769), (96, 46784), (97, 46787), (98, 46790),

(107, 46823), (110, 46877), (115, 46988), (119, 47099),

Gene: OldBen\_73 Start: 47209, Stop: 48060, Start Num: 33

Candidate Starts for OldBen\_73:

(Start: 33 @47209 has 65 MA's), (36, 47224), (37, 47254), (Start: 38 @47257 has 1 MA's), (46, 47296), (53, 47347), (55, 47362), (78, 47512), (89, 47626), (93, 47644), (96, 47659), (97, 47662), (98, 47665), (107, 47698), (110, 47752), (115, 47863), (119, 47974),

Gene: PHappiness\_76 Start: 48038, Stop: 48889, Start Num: 33

Candidate Starts for PHappiness\_76:

(Start: 33 @48038 has 65 MA's), (36, 48053), (37, 48083), (Start: 38 @48086 has 1 MA's), (46, 48125), (53, 48176), (55, 48191), (78, 48341), (89, 48455), (93, 48473), (96, 48488), (97, 48491), (98, 48494), (107, 48527), (110, 48581), (115, 48692), (119, 48803),

Gene: Petra\_75 Start: 45325, Stop: 46110, Start Num: 45

Candidate Starts for Petra\_75:

(Start: 45 @45325 has 26 MA's), (51, 45370), (56, 45400), (61, 45427), (79, 45550), (85, 45619), (129, 46057),

Gene: Phalconet\_72 Start: 45686, Stop: 46537, Start Num: 33

Candidate Starts for Phalconet\_72:

(Start: 33 @45686 has 65 MA's), (36, 45701), (37, 45731), (Start: 38 @45734 has 1 MA's), (46, 45773), (53, 45824), (55, 45839), (78, 45989), (89, 46103), (93, 46121), (96, 46136), (97, 46139), (98, 46142), (107, 46175), (110, 46229), (115, 46340), (119, 46451), (127, 46523),

Gene: Phanphagia\_73 Start: 46766, Stop: 47617, Start Num: 33

Candidate Starts for Phanphagia\_73:

(Start: 33 @46766 has 65 MA's), (36, 46781), (37, 46811), (Start: 38 @46814 has 1 MA's), (46, 46853), (55, 46919), (78, 47069), (89, 47183), (93, 47201), (96, 47216), (97, 47219), (98, 47222), (107, 47255), (110, 47309), (115, 47420), (119, 47531),

Gene: PhesterPhotato\_78 Start: 46854, Stop: 47705, Start Num: 33

Candidate Starts for PhesterPhotato\_78:

(Start: 33 @46854 has 65 MA's), (36, 46869), (37, 46899), (Start: 38 @46902 has 1 MA's), (46, 46941), (53, 46992), (55, 47007), (78, 47157), (89, 47271), (93, 47289), (96, 47304), (97, 47307), (98, 47310), (107, 47343), (110, 47397), (115, 47508), (119, 47619), (127, 47691),

Gene: Phistory\_86 Start: 47064, Stop: 47825, Start Num: 45

Candidate Starts for Phistory\_86:

(Start: 45 @47064 has 26 MA's), (47, 47079), (56, 47139), (61, 47166), (71, 47214), (85, 47358), (108, 47451), (116, 47652), (125, 47775),

Gene: PhrostedPhlake\_77 Start: 45573, Stop: 46358, Start Num: 45

Candidate Starts for PhrostedPhlake\_77:

(Start: 45 @45573 has 26 MA's), (51, 45618), (56, 45648), (61, 45675), (79, 45798), (85, 45867), (121, 46257), (129, 46302),

Gene: Poenanya\_79 Start: 47907, Stop: 48758, Start Num: 33

Candidate Starts for Poenanya\_79:

(Start: 33 @47907 has 65 MA's), (36, 47922), (37, 47952), (Start: 38 @47955 has 1 MA's), (46, 47994), (53, 48045), (55, 48060), (78, 48210), (89, 48324), (93, 48342), (96, 48357), (97, 48360), (98, 48363), (107, 48396), (110, 48450), (115, 48561), (119, 48672),

Gene: Polka14\_80 Start: 48697, Stop: 49548, Start Num: 33

Candidate Starts for Polka14\_80:

(Start: 33 @48697 has 65 MA's), (36, 48712), (37, 48742), (Start: 38 @48745 has 1 MA's), (46, 48784), (53, 48835), (55, 48850), (78, 49000), (89, 49114), (93, 49132), (96, 49147), (97, 49150), (98, 49153), (107, 49186), (110, 49240), (115, 49351), (119, 49462),

Gene: PopTart\_65 Start: 43552, Stop: 44403, Start Num: 33

Candidate Starts for PopTart\_65:

(Start: 33 @43552 has 65 MA's), (36, 43567), (37, 43597), (Start: 38 @43600 has 1 MA's), (46, 43639), (53, 43690), (55, 43705), (78, 43855), (89, 43969), (93, 43987), (96, 44002), (97, 44005), (98, 44008), (107, 44041), (110, 44095), (115, 44206), (119, 44317),

Gene: Quico\_84 Start: 49180, Stop: 50031, Start Num: 33

Candidate Starts for Quico\_84:

(Start: 33 @49180 has 65 MA's), (36, 49195), (37, 49225), (Start: 38 @49228 has 1 MA's), (46, 49267), (53, 49318), (55, 49333), (78, 49483), (89, 49597), (93, 49615), (96, 49630), (97, 49633), (98, 49636), (107, 49669), (110, 49723), (115, 49834), (119, 49945),

Gene: RedBird\_77 Start: 48412, Stop: 49263, Start Num: 33

Candidate Starts for RedBird\_77:

(Start: 33 @48412 has 65 MA's), (36, 48427), (37, 48457), (Start: 38 @48460 has 1 MA's), (46, 48499), (53, 48550), (55, 48565), (78, 48715), (89, 48829), (93, 48847), (96, 48862), (97, 48865), (98, 48868), (107, 48901), (110, 48955), (115, 49066), (119, 49177),

Gene: Rem711\_66 Start: 42013, Stop: 42843, Start Num: 33

Candidate Starts for Rem711\_66:

(Start: 33 @42013 has 65 MA's), (Start: 38 @42061 has 1 MA's), (43, 42094), (47, 42121), (62, 42211), (64, 42223), (69, 42238), (78, 42277), (90, 42385), (93, 42406), (106, 42454), (109, 42499), (111, 42517),

Gene: RitaG\_76 Start: 47840, Stop: 48691, Start Num: 33

Candidate Starts for RitaG\_76:

(Start: 33 @47840 has 65 MA's), (36, 47855), (37, 47885), (Start: 38 @47888 has 1 MA's), (46, 47927), (53, 47978), (55, 47993), (78, 48143), (89, 48257), (93, 48275), (96, 48290), (97, 48293), (98, 48296), (107, 48329), (110, 48383), (115, 48494), (119, 48605),

Gene: SG4\_72 Start: 45615, Stop: 46466, Start Num: 33

Candidate Starts for SG4\_72:

(Start: 33 @45615 has 65 MA's), (36, 45630), (37, 45660), (Start: 38 @45663 has 1 MA's), (46, 45702), (53, 45753), (55, 45768), (78, 45918), (89, 46032), (93, 46050), (96, 46065), (97, 46068), (98, 46071), (107, 46104), (110, 46158), (115, 46269), (119, 46380),

Gene: Samba\_71 Start: 46102, Stop: 46887, Start Num: 45

Candidate Starts for Samba\_71:

(Start: 45 @46102 has 26 MA's), (51, 46147), (56, 46177), (61, 46204), (79, 46327), (85, 46396), (129, 46831),

Gene: Sandalphon\_70 Start: 46314, Stop: 47165, Start Num: 33

Candidate Starts for Sandalphon\_70:

(Start: 33 @46314 has 65 MA's), (36, 46329), (37, 46359), (Start: 38 @46362 has 1 MA's), (46, 46401), (53, 46452), (55, 46467), (78, 46617), (89, 46731), (93, 46749), (96, 46764), (97, 46767), (98, 46770), (107, 46803), (110, 46857), (115, 46968), (119, 47079),

Gene: Sassafras\_77 Start: 46729, Stop: 47580, Start Num: 33

Candidate Starts for Sassafras\_77:

(Start: 33 @46729 has 65 MA's), (36, 46744), (37, 46774), (Start: 38 @46777 has 1 MA's), (46, 46816), (53, 46867), (55, 46882), (78, 47032), (89, 47146), (93, 47164), (96, 47179), (97, 47182), (98, 47185), (107, 47218), (110, 47272), (115, 47383), (119, 47494),

Gene: SassyB\_65 Start: 43552, Stop: 44403, Start Num: 33

Candidate Starts for SassyB\_65:

(Start: 33 @43552 has 65 MA's), (36, 43567), (37, 43597), (Start: 38 @43600 has 1 MA's), (46, 43639), (53, 43690), (55, 43705), (78, 43855), (89, 43969), (93, 43987), (96, 44002), (97, 44005), (98, 44008), (107, 44041), (110, 44095), (115, 44206), (119, 44317),

Gene: Scottish\_74 Start: 46388, Stop: 47239, Start Num: 33

Candidate Starts for Scottish\_74:

(Start: 33 @46388 has 65 MA's), (36, 46403), (37, 46433), (Start: 38 @46436 has 1 MA's), (46, 46475), (53, 46526), (55, 46541), (78, 46691), (89, 46805), (93, 46823), (96, 46838), (97, 46841), (98, 46844), (107, 46877), (110, 46931), (115, 47042), (119, 47153),

Gene: Seagreen\_76 Start: 47662, Stop: 48513, Start Num: 33

Candidate Starts for Seagreen\_76:

(Start: 33 @47662 has 65 MA's), (36, 47677), (37, 47707), (Start: 38 @47710 has 1 MA's), (46, 47749), (53, 47800), (55, 47815), (78, 47965), (89, 48079), (93, 48097), (96, 48112), (97, 48115), (98, 48118), (107, 48151), (110, 48205), (115, 48316), (119, 48427),

Gene: Shauna1\_74 Start: 47016, Stop: 47867, Start Num: 33

Candidate Starts for Shauna1\_74:

(Start: 33 @47016 has 65 MA's), (36, 47031), (37, 47061), (Start: 38 @47064 has 1 MA's), (46, 47103), (55, 47169), (78, 47319), (89, 47433), (93, 47451), (96, 47466), (97, 47469), (98, 47472), (107, 47505), (110, 47559), (115, 47670), (119, 47781),

Gene: ShroomBoi\_75 Start: 46810, Stop: 47622, Start Num: 33

Candidate Starts for ShroomBoi\_75:

(14, 46627), (15, 46630), (27, 46741), (28, 46747), (30, 46765), (Start: 33 @46810 has 65 MA's), (36, 46825), (37, 46855), (Start: 38 @46858 has 1 MA's), (46, 46897), (55, 46963), (60, 46990), (66, 47026), (93, 47206), (98, 47227), (101, 47233), (102, 47239), (106, 47254), (110, 47314), (115, 47425), (119, 47536),

Gene: SiSi\_71 Start: 45846, Stop: 46697, Start Num: 33

Candidate Starts for SiSi\_71:

(Start: 33 @45846 has 65 MA's), (36, 45861), (37, 45891), (Start: 38 @45894 has 1 MA's), (46, 45933), (53, 45984), (55, 45999), (78, 46149), (89, 46263), (93, 46281), (96, 46296), (97, 46299), (98, 46302), (107, 46335), (110, 46389), (115, 46500), (119, 46611),

Gene: Squirty\_76 Start: 49943, Stop: 50794, Start Num: 33

Candidate Starts for Squirty\_76:

(Start: 33 @49943 has 65 MA's), (36, 49958), (37, 49988), (Start: 38 @49991 has 1 MA's), (46, 50030), (53, 50081), (55, 50096), (78, 50246), (89, 50360), (93, 50378), (96, 50393), (97, 50396), (98, 50399), (107, 50432), (110, 50486), (115, 50597), (119, 50708),

Gene: StAnnes\_72 Start: 47004, Stop: 47855, Start Num: 33

Candidate Starts for StAnnes\_72:

(Start: 33 @47004 has 65 MA's), (36, 47019), (37, 47049), (Start: 38 @47052 has 1 MA's), (46, 47091), (53, 47142), (55, 47157), (78, 47307), (89, 47421), (93, 47439), (96, 47454), (97, 47457), (98,

47460), (107, 47493), (110, 47547), (115, 47658), (119, 47769), (127, 47841),

Gene: Strokeseat\_70 Start: 44427, Stop: 45278, Start Num: 33

Candidate Starts for Strokeseat\_70:

(Start: 33 @44427 has 65 MA's), (36, 44442), (37, 44472), (Start: 38 @44475 has 1 MA's), (46, 44514), (53, 44565), (55, 44580), (78, 44730), (89, 44844), (93, 44862), (96, 44877), (97, 44880), (98, 44883), (107, 44916), (110, 44970), (115, 45081), (119, 45192), (127, 45264),

Gene: Taj\_81 Start: 48470, Stop: 49321, Start Num: 33

Candidate Starts for Taj\_81:

(Start: 33 @48470 has 65 MA's), (36, 48485), (37, 48515), (Start: 38 @48518 has 1 MA's), (46, 48557), (53, 48608), (55, 48623), (78, 48773), (89, 48887), (93, 48905), (96, 48920), (97, 48923), (98, 48926), (107, 48959), (110, 49013), (115, 49124), (119, 49235),

Gene: UmaThurman\_71 Start: 44454, Stop: 45239, Start Num: 45

Candidate Starts for UmaThurman\_71:

(Start: 45 @44454 has 26 MA's), (51, 44499), (56, 44529), (61, 44556), (79, 44679), (85, 44748), (129, 45183),

Gene: Vasanti\_65 Start: 43214, Stop: 44008, Start Num: 45

Candidate Starts for Vasanti\_65:

(2, 42689), (7, 42755), (8, 42821), (9, 42839), (Start: 33 @43124 has 65 MA's), (Start: 45 @43214 has 26 MA's), (56, 43289), (57, 43295), (63, 43325), (67, 43352), (71, 43364), (73, 43391), (74, 43394), (81, 43475), (95, 43571), (99, 43580), (105, 43592),

Gene: Verity\_56 Start: 46577, Stop: 47413, Start Num: 45

Candidate Starts for Verity\_56:

(Start: 45 @46577 has 26 MA's), (54, 46637), (64, 46703), (76, 46772), (96, 46952), (101, 46964), (104, 46976),

Gene: Wee\_80 Start: 48546, Stop: 49397, Start Num: 33

Candidate Starts for Wee\_80:

(Start: 33 @48546 has 65 MA's), (36, 48561), (37, 48591), (Start: 38 @48594 has 1 MA's), (46, 48633), (53, 48684), (55, 48699), (78, 48849), (89, 48963), (93, 48981), (96, 48996), (97, 48999), (98, 49002), (107, 49035), (110, 49089), (115, 49200), (119, 49311),

Gene: Whatsapiecost\_69 Start: 42354, Stop: 43205, Start Num: 33

Candidate Starts for Whatsapiecost\_69:

(9, 42069), (16, 42183), (17, 42201), (28, 42291), (30, 42309), (Start: 33 @42354 has 65 MA's), (36, 42369), (37, 42399), (Start: 38 @42402 has 1 MA's), (46, 42441), (53, 42492), (55, 42507), (78, 42657), (89, 42771), (93, 42789), (96, 42804), (97, 42807), (98, 42810), (107, 42843), (110, 42897), (115, 43008), (119, 43119),

Gene: Wisp\_69 Start: 43753, Stop: 44571, Start Num: 45

Candidate Starts for Wisp\_69:

(19, 43546), (31, 43663), (Start: 33 @43669 has 65 MA's), (34, 43672), (35, 43678), (Start: 45 @43753 has 26 MA's), (56, 43828), (57, 43834), (63, 43864), (74, 43933), (81, 44014), (95, 44110), (99, 44119), (103, 44131), (105, 44143), (129, 44515),

Gene: Wocket\_69 Start: 44140, Stop: 44925, Start Num: 45

Candidate Starts for Wocket\_69:

(1, 43552), (3, 43654), (4, 43660), (5, 43663), (6, 43669), (10, 43789), (Start: 45 @44140 has 26 MA's), (51, 44185), (56, 44215), (61, 44242), (79, 44365), (85, 44434), (88, 44443), (129, 44869),



Gene: Zarbodnamra\_74 Start: 44266, Stop: 45051, Start Num: 45

Candidate Starts for Zarbodnamra\_74:

(Start: 45 @44266 has 26 MA's), (51, 44311), (56, 44341), (61, 44368), (79, 44491), (85, 44560), (129, 44995),

Gene: Zipp\_57 Start: 46492, Stop: 47337, Start Num: 45

Candidate Starts for Zipp\_57:

(Start: 45 @46492 has 26 MA's), (54, 46552), (64, 46618), (76, 46687), (96, 46867), (101, 46879), (104, 46891), (112, 47023),

Gene: Zitch\_59 Start: 44615, Stop: 45460, Start Num: 45

Candidate Starts for Zitch\_59:

(Start: 45 @44615 has 26 MA's), (54, 44675), (76, 44810), (96, 44990), (101, 45002), (104, 45014), (112, 45146),