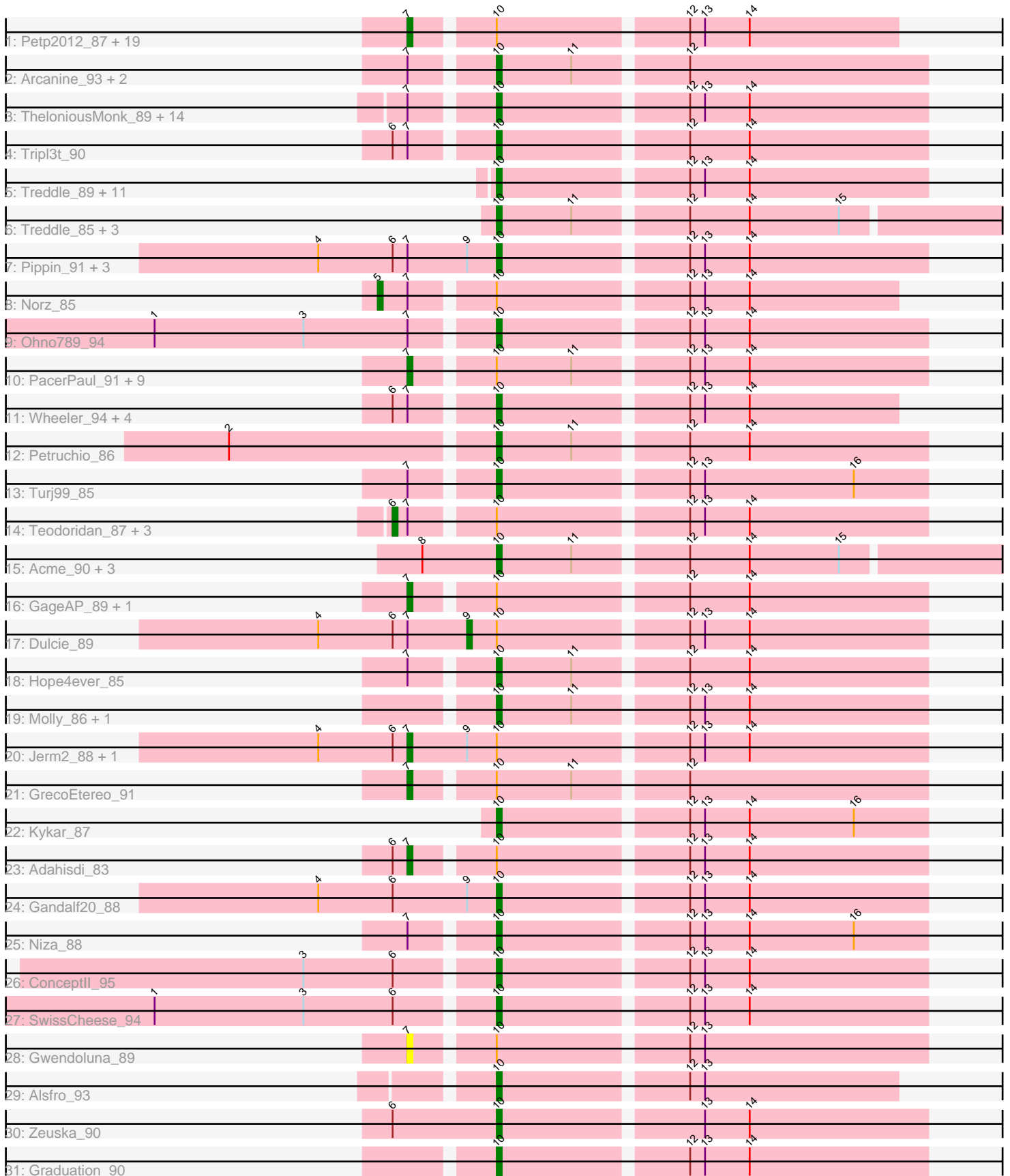


# Pham 157744



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 157744 Report

This analysis was run 04/13/24 on database version 558.

Pham number 157744 has 105 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Petp2012\_87, Pelly\_90, Arlo\_95, Anglerfish\_91, Kenmech\_92, Makemake\_92, Hermia\_79, Magnar\_89, STLscum\_97, Homines\_79, Zephyr\_91, Sibs6\_94, Thor\_97, Carlyle\_89, Euphoria\_94, PattyP\_86, Kugel\_92, Ruotula\_93, McGuire\_90, PascalRango\_90
- Track 2 : Arcanine\_93, Papez\_92, Rajelicia\_88
- Track 3 : TheloniousMonk\_89, Moose\_94, KyMonks1A\_94, Michley\_90, Slagathor\_90, Ciao\_91, Rubeus\_87, SarFire\_97, DreamCatcher\_99, Burton\_89, Rufus\_92, BPBiabs31\_95, KSSJEB\_89, Abbyshoes\_88, Forsytheast\_95
- Track 4 : Tripl3t\_90
- Track 5 : Treddle\_89, Ajay\_83, Pepe\_85, Mryolo\_83, Bigfoot\_85, DrFeelGood\_84, Maroc7\_91, Ringer\_89, Lesedi\_87, Alvin\_85, Gyzlar\_81, CactusRose\_95
- Track 6 : Treddle\_85, Monet\_88, QTRlifeCrisis\_85, Buttons\_81
- Track 7 : Pippin\_91, Topgun\_87, Marsha\_91, Wilkins\_88
- Track 8 : Norz\_85
- Track 9 : Ohno789\_94
- Track 10 : PacerPaul\_91, Francis47\_91, Dynamix\_90, Ichabod\_94, BeesKnees\_93, Briton15\_93, Switzer\_89, Peterson\_87, Seabiscuit\_92, Manatee\_90
- Track 11 : Wheeler\_94, BillKnuckles\_80, Oogway\_85, Dexes\_91, Eyeball\_92
- Track 12 : Petruccio\_86
- Track 13 : Turj99\_85
- Track 14 : Teodoridan\_87, ILeeKay\_90, Marcell\_82, Magnito\_90
- Track 15 : Acme\_90, Fajezeel\_89, Watermelon\_88, Greg\_89
- Track 16 : GageAP\_89, Museum\_88
- Track 17 : Dulcie\_89
- Track 18 : Hope4ever\_85
- Track 19 : Molly\_86, Licorice\_89
- Track 20 : Jerm2\_88, Solon\_81
- Track 21 : GrecoEtereo\_91
- Track 22 : Kykar\_87
- Track 23 : Adahisdi\_83
- Track 24 : Gandalf20\_88
- Track 25 : Niza\_88
- Track 26 : ConceptII\_95
- Track 27 : SwissCheese\_94
- Track 28 : Gwendoluna\_89
- Track 29 : Alsfro\_93
- Track 30 : Zeuska\_90

- Track 31 : Graduation\_90

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

The start number called the most often in the published annotations is 10, it was called in 61 of the 100 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abbyshoes\_88, Acme\_90, Ajay\_83, Alsfro\_93, Alvin\_85, Arcanine\_93, BPBiebs31\_95, Bigfoot\_85, BillKnuckles\_80, Burton\_89, Buttons\_81, CactusRose\_95, Ciao\_91, ConceptII\_95, Dexes\_91, DrFeelGood\_84, DreamCatcher\_99, Eyeball\_92, Fajezeel\_89, Forsytheast\_95, Gandalf20\_88, Graduation\_90, Greg\_89, Gyzlar\_81, Hope4ever\_85, KSSJEB\_89, KyMonks1A\_94, Kykar\_87, Lesedi\_87, Licorice\_89, Maroc7\_91, Marsha\_91, Michley\_90, Molly\_86, Monet\_88, Moose\_94, Mryolo\_83, Niza\_88, Ohno789\_94, Oogway\_85, Papez\_92, Pepe\_85, Petruchio\_86, Pippin\_91, QTRlifeCrisis\_85, Rajelicia\_88, Ringer\_89, Rubeus\_87, Rufus\_92, SarFire\_97, Slagathor\_90, SwissCheese\_94, TheloniousMonk\_89, Topgun\_87, Treddle\_85, Treddle\_89, Tripl3t\_90, Turj99\_85, Watermelon\_88, Wheeler\_94, Wilkins\_88, Zeuska\_90,

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

- Adahisdi\_83, Anglerfish\_91, Arlo\_95, BeesKnees\_93, Briton15\_93, Carlyle\_89, Dulcie\_89, Dynamix\_90, Euphoria\_94, Francis47\_91, GageAP\_89, GrecoEtereo\_91, Gwendoluna\_89, Hermia\_79, Homines\_79, ILeeKay\_90, Ichabod\_94, Jerm2\_88, Kenmech\_92, Kugel\_92, Magnar\_89, Magnito\_90, Makemake\_92, Manatee\_90, Marcell\_82, McGuire\_90, Museum\_88, Norz\_85, PacerPaul\_91, PascalRango\_90, PattyP\_86, Pelly\_90, Peterson\_87, Petp2012\_87, Ruotula\_93, STLscum\_97, Seabiscuit\_92, Sibs6\_94, Solon\_81, Switzer\_89, Teodoridan\_87, Thor\_97, Zephyr\_91,

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

- 

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

Start 5:

- Found in 1 of 105 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 100
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Norz\_85 (A1),

Start 6:

- Found in 22 of 105 ( 21.0% ) of genes in pham
- Manual Annotations of this start: 3 of 100
- Called 18.2% of time when present
- Phage (with cluster) where this start called: ILeeKay\_90 (A1), Magnito\_90 (A1), Marcell\_82 (A1), Teodoridan\_87 (A1),

Start 7:

- Found in 75 of 105 ( 71.4% ) of genes in pham

- Manual Annotations of this start: 34 of 100
- Called 49.3% of time when present
- Phage (with cluster) where this start called: Adahisdi\_83 (A1), Anglerfish\_91 (A1), Arlo\_95 (A1), BeesKnees\_93 (A1), Briton15\_93 (A1), Carlyle\_89 (A1), Dynamix\_90 (A1), Euphoria\_94 (A1), Francis47\_91 (A1), GageAP\_89 (A1), GrecoEtereo\_91 (A1), Gwendoluna\_89 (A1), Hermia\_79 (A1), Homines\_79 (A1), Ichabod\_94 (A1), Jerm2\_88 (A1), Kenmech\_92 (A1), Kugel\_92 (A1), Magnar\_89 (A1), Makemake\_92 (A1), Manatee\_90 (A1), McGuire\_90 (A1), Museum\_88 (A1), PacerPaul\_91 (A1), PascalRango\_90 (A1), PattyP\_86 (A1), Pelly\_90 (A1), Peterson\_87 (A1), Petp2012\_87 (A1), Ruotula\_93 (A1), STLscum\_97 (A1), Seabiscuit\_92 (A1), Sibs6\_94 (A1), Solon\_81 (A1), Switzer\_89 (A1), Thor\_97 (A1), Zephyr\_91 (A1),

#### Start 9:

- Found in 8 of 105 ( 7.6% ) of genes in pham
- Manual Annotations of this start: 1 of 100
- Called 12.5% of time when present
- Phage (with cluster) where this start called: Dulcie\_89 (A1),

#### Start 10:

- Found in 105 of 105 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 61 of 100
- Called 59.0% of time when present
- Phage (with cluster) where this start called: Abbyshoes\_88 (A1), Acme\_90 (A1), Ajay\_83 (A1), Alsfro\_93 (A1), Alvin\_85 (A1), Arcanine\_93 (A1), BPBiels31\_95 (A1), Bigfoot\_85 (A1), BillKnuckles\_80 (A1), Burton\_89 (A1), Buttons\_81 (A1), CactusRose\_95 (A1), Ciao\_91 (A1), ConceptII\_95 (A1), Dexes\_91 (A1), DrFeelGood\_84 (A1), DreamCatcher\_99 (A1), Eyeball\_92 (A1), Fajezeel\_89 (A1), Forsytheast\_95 (A1), Gandalf20\_88 (A1), Graduation\_90 (A1), Greg\_89 (A1), Gyzlar\_81 (A1), Hope4ever\_85 (A1), KSSJEB\_89 (A1), KyMonks1A\_94 (A1), Kykar\_87 (A1), Lesedi\_87 (A1), Licorice\_89 (A1), Maroc7\_91 (A1), Marsha\_91 (A1), Michley\_90 (A1), Molly\_86 (A1), Monet\_88 (A1), Moose\_94 (A1), Mryolo\_83 (A1), Niza\_88 (A1), Ohno789\_94 (A1), Oogway\_85 (A1), Papez\_92 (A1), Pepe\_85 (A1), Petruccio\_86 (A1), Pippin\_91 (A1), QTRlifeCrisis\_85 (A1), Rajelicia\_88 (A1), Ringer\_89 (A1), Rubeus\_87 (A1), Rufus\_92 (A1), SarFire\_97 (A1), Slagathor\_90 (A1), SwissCheese\_94 (A1), TheloniousMonk\_89 (A1), Topgun\_87 (A1), Treddle\_85 (A1), Treddle\_89 (A1), Tripl3t\_90 (A1), Turj99\_85 (A1), Watermelon\_88 (A1), Wheeler\_94 (A1), Wilkins\_88 (A1), Zeuska\_90 (A1),

### **Summary by clusters:**

There is one cluster represented in this pham: A1

Info for manual annotations of cluster A1:

- Start number 5 was manually annotated 1 time for cluster A1.
- Start number 6 was manually annotated 3 times for cluster A1.
- Start number 7 was manually annotated 34 times for cluster A1.
- Start number 9 was manually annotated 1 time for cluster A1.
- Start number 10 was manually annotated 61 times for cluster A1.

### **Gene Information:**

Gene: Abbysshoes\_88 Start: 50629, Stop: 50546, Start Num: 10  
Candidate Starts for Abbysshoes\_88:  
(Start: 7 @50644 has 34 MA's), (Start: 10 @50629 has 61 MA's), (12, 50593), (13, 50590), (14, 50581),

Gene: Acme\_90 Start: 51093, Stop: 50980, Start Num: 10  
Candidate Starts for Acme\_90:  
(8, 51108), (Start: 10 @51093 has 61 MA's), (11, 51078), (12, 51057), (14, 51045), (15, 51027),

Gene: Adahisdi\_83 Start: 50638, Stop: 50540, Start Num: 7  
Candidate Starts for Adahisdi\_83:  
(Start: 6 @50641 has 3 MA's), (Start: 7 @50638 has 34 MA's), (Start: 10 @50623 has 61 MA's), (12, 50587), (13, 50584), (14, 50575),

Gene: Ajay\_83 Start: 48796, Stop: 48713, Start Num: 10  
Candidate Starts for Ajay\_83:  
(Start: 10 @48796 has 61 MA's), (12, 48760), (13, 48757), (14, 48748),

Gene: Alsfro\_93 Start: 49532, Stop: 49455, Start Num: 10  
Candidate Starts for Alsfro\_93:  
(Start: 10 @49532 has 61 MA's), (12, 49496), (13, 49493),

Gene: Alvin\_85 Start: 48844, Stop: 48761, Start Num: 10  
Candidate Starts for Alvin\_85:  
(Start: 10 @48844 has 61 MA's), (12, 48808), (13, 48805), (14, 48796),

Gene: Anglerfish\_91 Start: 51304, Stop: 51206, Start Num: 7  
Candidate Starts for Anglerfish\_91:  
(Start: 7 @51304 has 34 MA's), (Start: 10 @51289 has 61 MA's), (12, 51253), (13, 51250), (14, 51241),

Gene: Arcanine\_93 Start: 51576, Stop: 51493, Start Num: 10  
Candidate Starts for Arcanine\_93:  
(Start: 7 @51591 has 34 MA's), (Start: 10 @51576 has 61 MA's), (11, 51561), (12, 51540),

Gene: Arlo\_95 Start: 52268, Stop: 52170, Start Num: 7  
Candidate Starts for Arlo\_95:  
(Start: 7 @52268 has 34 MA's), (Start: 10 @52253 has 61 MA's), (12, 52217), (13, 52214), (14, 52205),

Gene: BPBiebs31\_95 Start: 52180, Stop: 52097, Start Num: 10  
Candidate Starts for BPBiebs31\_95:  
(Start: 7 @52195 has 34 MA's), (Start: 10 @52180 has 61 MA's), (12, 52144), (13, 52141), (14, 52132),

Gene: BeesKnees\_93 Start: 50390, Stop: 50292, Start Num: 7  
Candidate Starts for BeesKnees\_93:  
(Start: 7 @50390 has 34 MA's), (Start: 10 @50375 has 61 MA's), (11, 50360), (12, 50339), (13, 50336), (14, 50327),

Gene: Bigfoot\_85 Start: 50934, Stop: 50848, Start Num: 10  
Candidate Starts for Bigfoot\_85:  
(Start: 10 @50934 has 61 MA's), (12, 50895), (13, 50892), (14, 50883),

Gene: BillKnuckles\_80 Start: 49695, Stop: 49612, Start Num: 10  
Candidate Starts for BillKnuckles\_80:  
(Start: 6 @49713 has 3 MA's), (Start: 7 @49710 has 34 MA's), (Start: 10 @49695 has 61 MA's), (12, 49659), (13, 49656), (14, 49647),

Gene: Briton15\_93 Start: 51953, Stop: 51855, Start Num: 7  
Candidate Starts for Briton15\_93:  
(Start: 7 @51953 has 34 MA's), (Start: 10 @51938 has 61 MA's), (11, 51923), (12, 51902), (13, 51899), (14, 51890),

Gene: Burton\_89 Start: 51911, Stop: 51834, Start Num: 10  
Candidate Starts for Burton\_89:  
(Start: 7 @51926 has 34 MA's), (Start: 10 @51911 has 61 MA's), (12, 51875), (13, 51872), (14, 51863),

Gene: Buttons\_81 Start: 47302, Stop: 47189, Start Num: 10  
Candidate Starts for Buttons\_81:  
(Start: 10 @47302 has 61 MA's), (11, 47287), (12, 47266), (14, 47254), (15, 47236),

Gene: CactusRose\_95 Start: 51947, Stop: 51864, Start Num: 10  
Candidate Starts for CactusRose\_95:  
(Start: 10 @51947 has 61 MA's), (12, 51911), (13, 51908), (14, 51899),

Gene: Carlyle\_89 Start: 50159, Stop: 50061, Start Num: 7  
Candidate Starts for Carlyle\_89:  
(Start: 7 @50159 has 34 MA's), (Start: 10 @50144 has 61 MA's), (12, 50108), (13, 50105), (14, 50096),

Gene: Ciao\_91 Start: 49638, Stop: 49555, Start Num: 10  
Candidate Starts for Ciao\_91:  
(Start: 7 @49653 has 34 MA's), (Start: 10 @49638 has 61 MA's), (12, 49602), (13, 49599), (14, 49590),

Gene: ConceptII\_95 Start: 52198, Stop: 52115, Start Num: 10  
Candidate Starts for ConceptII\_95:  
(3, 52234), (Start: 6 @52216 has 3 MA's), (Start: 10 @52198 has 61 MA's), (12, 52162), (13, 52159), (14, 52150),

Gene: Dexes\_91 Start: 53266, Stop: 53183, Start Num: 10  
Candidate Starts for Dexes\_91:  
(Start: 6 @53284 has 3 MA's), (Start: 7 @53281 has 34 MA's), (Start: 10 @53266 has 61 MA's), (12, 53230), (13, 53227), (14, 53218),

Gene: DrFeelGood\_84 Start: 49442, Stop: 49359, Start Num: 10  
Candidate Starts for DrFeelGood\_84:  
(Start: 10 @49442 has 61 MA's), (12, 49406), (13, 49403), (14, 49394),

Gene: DreamCatcher\_99 Start: 52317, Stop: 52240, Start Num: 10  
Candidate Starts for DreamCatcher\_99:  
(Start: 7 @52332 has 34 MA's), (Start: 10 @52317 has 61 MA's), (12, 52281), (13, 52278), (14, 52269),

Gene: Dulcie\_89 Start: 51953, Stop: 51864, Start Num: 9  
Candidate Starts for Dulcie\_89:  
(4, 51983), (Start: 6 @51968 has 3 MA's), (Start: 7 @51965 has 34 MA's), (Start: 9 @51953 has 1 MA's), (Start: 10 @51947 has 61 MA's), (12, 51911), (13, 51908), (14, 51899),

Gene: Dynamix\_90 Start: 49542, Stop: 49444, Start Num: 7  
Candidate Starts for Dynamix\_90:  
(Start: 7 @49542 has 34 MA's), (Start: 10 @49527 has 61 MA's), (11, 49512), (12, 49491), (13, 49488), (14, 49479),

Gene: Euphoria\_94 Start: 52885, Stop: 52793, Start Num: 7  
Candidate Starts for Euphoria\_94:  
(Start: 7 @52885 has 34 MA's), (Start: 10 @52870 has 61 MA's), (12, 52834), (13, 52831), (14, 52822),

Gene: Eyeball\_92 Start: 51159, Stop: 51076, Start Num: 10  
Candidate Starts for Eyeball\_92:  
(Start: 6 @51177 has 3 MA's), (Start: 7 @51174 has 34 MA's), (Start: 10 @51159 has 61 MA's), (12, 51123), (13, 51120), (14, 51111),

Gene: Fajezeel\_89 Start: 50383, Stop: 50270, Start Num: 10  
Candidate Starts for Fajezeel\_89:  
(8, 50398), (Start: 10 @50383 has 61 MA's), (11, 50368), (12, 50347), (14, 50335), (15, 50317),

Gene: Forsytheast\_95 Start: 51995, Stop: 51912, Start Num: 10  
Candidate Starts for Forsytheast\_95:  
(Start: 7 @52010 has 34 MA's), (Start: 10 @51995 has 61 MA's), (12, 51959), (13, 51956), (14, 51947),

Gene: Francis47\_91 Start: 52897, Stop: 52799, Start Num: 7  
Candidate Starts for Francis47\_91:  
(Start: 7 @52897 has 34 MA's), (Start: 10 @52882 has 61 MA's), (11, 52867), (12, 52846), (13, 52843), (14, 52834),

Gene: GageAP\_89 Start: 51224, Stop: 51126, Start Num: 7  
Candidate Starts for GageAP\_89:  
(Start: 7 @51224 has 34 MA's), (Start: 10 @51209 has 61 MA's), (12, 51173), (14, 51161),

Gene: Gandalf20\_88 Start: 49694, Stop: 49611, Start Num: 10  
Candidate Starts for Gandalf20\_88:  
(4, 49730), (Start: 6 @49715 has 3 MA's), (Start: 9 @49700 has 1 MA's), (Start: 10 @49694 has 61 MA's), (12, 49658), (13, 49655), (14, 49646),

Gene: Graduation\_90 Start: 50285, Stop: 50202, Start Num: 10  
Candidate Starts for Graduation\_90:  
(Start: 10 @50285 has 61 MA's), (12, 50249), (13, 50246), (14, 50237),

Gene: GrecoEtereo\_91 Start: 51493, Stop: 51395, Start Num: 7  
Candidate Starts for GrecoEtereo\_91:  
(Start: 7 @51493 has 34 MA's), (Start: 10 @51478 has 61 MA's), (11, 51463), (12, 51442),

Gene: Greg\_89 Start: 50383, Stop: 50270, Start Num: 10  
Candidate Starts for Greg\_89:

(8, 50398), (Start: 10 @50383 has 61 MA's), (11, 50368), (12, 50347), (14, 50335), (15, 50317),

Gene: Gwendoluna\_89 Start: 51027, Stop: 50929, Start Num: 7

Candidate Starts for Gwendoluna\_89:

(Start: 7 @51027 has 34 MA's), (Start: 10 @51012 has 61 MA's), (12, 50976), (13, 50973),

Gene: Gyzlar\_81 Start: 46954, Stop: 46871, Start Num: 10

Candidate Starts for Gyzlar\_81:

(Start: 10 @46954 has 61 MA's), (12, 46918), (13, 46915), (14, 46906),

Gene: Hermia\_79 Start: 48584, Stop: 48486, Start Num: 7

Candidate Starts for Hermia\_79:

(Start: 7 @48584 has 34 MA's), (Start: 10 @48569 has 61 MA's), (12, 48533), (13, 48530), (14, 48521),

Gene: Homines\_79 Start: 45760, Stop: 45662, Start Num: 7

Candidate Starts for Homines\_79:

(Start: 7 @45760 has 34 MA's), (Start: 10 @45745 has 61 MA's), (12, 45709), (13, 45706), (14, 45697),

Gene: Hope4ever\_85 Start: 49441, Stop: 49358, Start Num: 10

Candidate Starts for Hope4ever\_85:

(Start: 7 @49456 has 34 MA's), (Start: 10 @49441 has 61 MA's), (11, 49426), (12, 49405), (14, 49393),

Gene: ILeeKay\_90 Start: 50332, Stop: 50231, Start Num: 6

Candidate Starts for ILeeKay\_90:

(Start: 6 @50332 has 3 MA's), (Start: 7 @50329 has 34 MA's), (Start: 10 @50314 has 61 MA's), (12, 50278), (13, 50275), (14, 50266),

Gene: Ichabod\_94 Start: 52232, Stop: 52134, Start Num: 7

Candidate Starts for Ichabod\_94:

(Start: 7 @52232 has 34 MA's), (Start: 10 @52217 has 61 MA's), (11, 52202), (12, 52181), (13, 52178), (14, 52169),

Gene: Jerm2\_88 Start: 51345, Stop: 51244, Start Num: 7

Candidate Starts for Jerm2\_88:

(4, 51363), (Start: 6 @51348 has 3 MA's), (Start: 7 @51345 has 34 MA's), (Start: 9 @51333 has 1 MA's), (Start: 10 @51327 has 61 MA's), (12, 51291), (13, 51288), (14, 51279),

Gene: KSSJEB\_89 Start: 50056, Stop: 49979, Start Num: 10

Candidate Starts for KSSJEB\_89:

(Start: 7 @50071 has 34 MA's), (Start: 10 @50056 has 61 MA's), (12, 50020), (13, 50017), (14, 50008),

Gene: Kenmech\_92 Start: 51790, Stop: 51692, Start Num: 7

Candidate Starts for Kenmech\_92:

(Start: 7 @51790 has 34 MA's), (Start: 10 @51775 has 61 MA's), (12, 51739), (13, 51736), (14, 51727),

Gene: Kugel\_92 Start: 51304, Stop: 51206, Start Num: 7

Candidate Starts for Kugel\_92:



(Start: 7 @51304 has 34 MA's), (Start: 10 @51289 has 61 MA's), (12, 51253), (13, 51250), (14, 51241),

Gene: KyMonks1A\_94 Start: 51292, Stop: 51209, Start Num: 10

Candidate Starts for KyMonks1A\_94:

(Start: 7 @51307 has 34 MA's), (Start: 10 @51292 has 61 MA's), (12, 51256), (13, 51253), (14, 51244),

Gene: Kykar\_87 Start: 49592, Stop: 49509, Start Num: 10

Candidate Starts for Kykar\_87:

(Start: 10 @49592 has 61 MA's), (12, 49556), (13, 49553), (14, 49544), (16, 49523),

Gene: Lesedi\_87 Start: 49771, Stop: 49694, Start Num: 10

Candidate Starts for Lesedi\_87:

(Start: 10 @49771 has 61 MA's), (12, 49735), (13, 49732), (14, 49723),

Gene: Licorice\_89 Start: 52066, Stop: 51983, Start Num: 10

Candidate Starts for Licorice\_89:

(Start: 10 @52066 has 61 MA's), (11, 52051), (12, 52030), (13, 52027), (14, 52018),

Gene: Magnar\_89 Start: 50350, Stop: 50252, Start Num: 7

Candidate Starts for Magnar\_89:

(Start: 7 @50350 has 34 MA's), (Start: 10 @50335 has 61 MA's), (12, 50299), (13, 50296), (14, 50287),

Gene: Magnito\_90 Start: 50887, Stop: 50792, Start Num: 6

Candidate Starts for Magnito\_90:

(Start: 6 @50887 has 3 MA's), (Start: 7 @50884 has 34 MA's), (Start: 10 @50869 has 61 MA's), (12, 50833), (13, 50830), (14, 50821),

Gene: Makemake\_92 Start: 51796, Stop: 51698, Start Num: 7

Candidate Starts for Makemake\_92:

(Start: 7 @51796 has 34 MA's), (Start: 10 @51781 has 61 MA's), (12, 51745), (13, 51742), (14, 51733),

Gene: Manatee\_90 Start: 49955, Stop: 49857, Start Num: 7

Candidate Starts for Manatee\_90:

(Start: 7 @49955 has 34 MA's), (Start: 10 @49940 has 61 MA's), (11, 49925), (12, 49904), (13, 49901), (14, 49892),

Gene: Marcell\_82 Start: 48491, Stop: 48390, Start Num: 6

Candidate Starts for Marcell\_82:

(Start: 6 @48491 has 3 MA's), (Start: 7 @48488 has 34 MA's), (Start: 10 @48473 has 61 MA's), (12, 48437), (13, 48434), (14, 48425),

Gene: Maroc7\_91 Start: 52663, Stop: 52580, Start Num: 10

Candidate Starts for Maroc7\_91:

(Start: 10 @52663 has 61 MA's), (12, 52627), (13, 52624), (14, 52615),

Gene: Marsha\_91 Start: 52564, Stop: 52481, Start Num: 10

Candidate Starts for Marsha\_91:

(4, 52600), (Start: 6 @52585 has 3 MA's), (Start: 7 @52582 has 34 MA's), (Start: 9 @52570 has 1 MA's), (Start: 10 @52564 has 61 MA's), (12, 52528), (13, 52525), (14, 52516),

Gene: McGuire\_90 Start: 50189, Stop: 50091, Start Num: 7  
Candidate Starts for McGuire\_90:  
(Start: 7 @50189 has 34 MA's), (Start: 10 @50174 has 61 MA's), (12, 50138), (13, 50135), (14, 50126),

Gene: Michley\_90 Start: 50247, Stop: 50164, Start Num: 10  
Candidate Starts for Michley\_90:  
(Start: 7 @50262 has 34 MA's), (Start: 10 @50247 has 61 MA's), (12, 50211), (13, 50208), (14, 50199),

Gene: Molly\_86 Start: 48601, Stop: 48518, Start Num: 10  
Candidate Starts for Molly\_86:  
(Start: 10 @48601 has 61 MA's), (11, 48586), (12, 48565), (13, 48562), (14, 48553),

Gene: Monet\_88 Start: 50314, Stop: 50201, Start Num: 10  
Candidate Starts for Monet\_88:  
(Start: 10 @50314 has 61 MA's), (11, 50299), (12, 50278), (14, 50266), (15, 50248),

Gene: Moose\_94 Start: 51995, Stop: 51912, Start Num: 10  
Candidate Starts for Moose\_94:  
(Start: 7 @52010 has 34 MA's), (Start: 10 @51995 has 61 MA's), (12, 51959), (13, 51956), (14, 51947),

Gene: Mryolo\_83 Start: 48668, Stop: 48585, Start Num: 10  
Candidate Starts for Mryolo\_83:  
(Start: 10 @48668 has 61 MA's), (12, 48632), (13, 48629), (14, 48620),

Gene: Museum\_88 Start: 50349, Stop: 50251, Start Num: 7  
Candidate Starts for Museum\_88:  
(Start: 7 @50349 has 34 MA's), (Start: 10 @50334 has 61 MA's), (12, 50298), (14, 50286),

Gene: Niza\_88 Start: 50973, Stop: 50890, Start Num: 10  
Candidate Starts for Niza\_88:  
(Start: 7 @50988 has 34 MA's), (Start: 10 @50973 has 61 MA's), (12, 50937), (13, 50934), (14, 50925), (16, 50904),

Gene: Norz\_85 Start: 52077, Stop: 51979, Start Num: 5  
Candidate Starts for Norz\_85:  
(Start: 5 @52077 has 1 MA's), (Start: 7 @52071 has 34 MA's), (Start: 10 @52056 has 61 MA's), (12, 52020), (13, 52017), (14, 52008),

Gene: Ohno789\_94 Start: 52114, Stop: 52031, Start Num: 10  
Candidate Starts for Ohno789\_94:  
(1, 52180), (3, 52150), (Start: 7 @52129 has 34 MA's), (Start: 10 @52114 has 61 MA's), (12, 52078), (13, 52075), (14, 52066),

Gene: Oogway\_85 Start: 50664, Stop: 50581, Start Num: 10  
Candidate Starts for Oogway\_85:  
(Start: 6 @50682 has 3 MA's), (Start: 7 @50679 has 34 MA's), (Start: 10 @50664 has 61 MA's), (12, 50628), (13, 50625), (14, 50616),

Gene: PacerPaul\_91 Start: 51694, Stop: 51596, Start Num: 7

Candidate Starts for PacerPaul\_91:

(Start: 7 @51694 has 34 MA's), (Start: 10 @51679 has 61 MA's), (11, 51664), (12, 51643), (13, 51640), (14, 51631),

Gene: Papez\_92 Start: 51226, Stop: 51143, Start Num: 10

Candidate Starts for Papez\_92:

(Start: 7 @51241 has 34 MA's), (Start: 10 @51226 has 61 MA's), (11, 51211), (12, 51190),

Gene: PascalRango\_90 Start: 51385, Stop: 51287, Start Num: 7

Candidate Starts for PascalRango\_90:

(Start: 7 @51385 has 34 MA's), (Start: 10 @51370 has 61 MA's), (12, 51334), (13, 51331), (14, 51322),

Gene: PattyP\_86 Start: 49896, Stop: 49804, Start Num: 7

Candidate Starts for PattyP\_86:

(Start: 7 @49896 has 34 MA's), (Start: 10 @49881 has 61 MA's), (12, 49845), (13, 49842), (14, 49833),

Gene: Pelly\_90 Start: 53048, Stop: 52950, Start Num: 7

Candidate Starts for Pelly\_90:

(Start: 7 @53048 has 34 MA's), (Start: 10 @53033 has 61 MA's), (12, 52997), (13, 52994), (14, 52985),

Gene: Pepe\_85 Start: 49814, Stop: 49731, Start Num: 10

Candidate Starts for Pepe\_85:

(Start: 10 @49814 has 61 MA's), (12, 49778), (13, 49775), (14, 49766),

Gene: Peterson\_87 Start: 50656, Stop: 50558, Start Num: 7

Candidate Starts for Peterson\_87:

(Start: 7 @50656 has 34 MA's), (Start: 10 @50641 has 61 MA's), (11, 50626), (12, 50605), (13, 50602), (14, 50593),

Gene: Petp2012\_87 Start: 50639, Stop: 50547, Start Num: 7

Candidate Starts for Petp2012\_87:

(Start: 7 @50639 has 34 MA's), (Start: 10 @50624 has 61 MA's), (12, 50588), (13, 50585), (14, 50576),

Gene: Petruccio\_86 Start: 48307, Stop: 48224, Start Num: 10

Candidate Starts for Petruccio\_86:

(2, 48358), (Start: 10 @48307 has 61 MA's), (11, 48292), (12, 48271), (14, 48259),

Gene: Pippin\_91 Start: 50255, Stop: 50172, Start Num: 10

Candidate Starts for Pippin\_91:

(4, 50291), (Start: 6 @50276 has 3 MA's), (Start: 7 @50273 has 34 MA's), (Start: 9 @50261 has 1 MA's), (Start: 10 @50255 has 61 MA's), (12, 50219), (13, 50216), (14, 50207),

Gene: QTRlifeCrisis\_85 Start: 48537, Stop: 48424, Start Num: 10

Candidate Starts for QTRlifeCrisis\_85:

(Start: 10 @48537 has 61 MA's), (11, 48522), (12, 48501), (14, 48489), (15, 48471),

Gene: Rajelicia\_88 Start: 52146, Stop: 52063, Start Num: 10

Candidate Starts for Rajelicia\_88:

(Start: 7 @52161 has 34 MA's), (Start: 10 @52146 has 61 MA's), (11, 52131), (12, 52110),

Gene: Ringer\_89 Start: 51081, Stop: 50998, Start Num: 10  
Candidate Starts for Ringer\_89:  
(Start: 10 @51081 has 61 MA's), (12, 51045), (13, 51042), (14, 51033),

Gene: Rubeus\_87 Start: 48344, Stop: 48261, Start Num: 10  
Candidate Starts for Rubeus\_87:  
(Start: 7 @48359 has 34 MA's), (Start: 10 @48344 has 61 MA's), (12, 48308), (13, 48305), (14, 48296),

Gene: Rufus\_92 Start: 51661, Stop: 51578, Start Num: 10  
Candidate Starts for Rufus\_92:  
(Start: 7 @51676 has 34 MA's), (Start: 10 @51661 has 61 MA's), (12, 51625), (13, 51622), (14, 51613),

Gene: Ruotula\_93 Start: 51901, Stop: 51803, Start Num: 7  
Candidate Starts for Ruotula\_93:  
(Start: 7 @51901 has 34 MA's), (Start: 10 @51886 has 61 MA's), (12, 51850), (13, 51847), (14, 51838),

Gene: STLscum\_97 Start: 51040, Stop: 50942, Start Num: 7  
Candidate Starts for STLscum\_97:  
(Start: 7 @51040 has 34 MA's), (Start: 10 @51025 has 61 MA's), (12, 50989), (13, 50986), (14, 50977),

Gene: SarFire\_97 Start: 52989, Stop: 52906, Start Num: 10  
Candidate Starts for SarFire\_97:  
(Start: 7 @53004 has 34 MA's), (Start: 10 @52989 has 61 MA's), (12, 52953), (13, 52950), (14, 52941),

Gene: Seabiscuit\_92 Start: 50421, Stop: 50323, Start Num: 7  
Candidate Starts for Seabiscuit\_92:  
(Start: 7 @50421 has 34 MA's), (Start: 10 @50406 has 61 MA's), (11, 50391), (12, 50370), (13, 50367), (14, 50358),

Gene: Sibs6\_94 Start: 49530, Stop: 49432, Start Num: 7  
Candidate Starts for Sibs6\_94:  
(Start: 7 @49530 has 34 MA's), (Start: 10 @49515 has 61 MA's), (12, 49479), (13, 49476), (14, 49467),

Gene: Slagathor\_90 Start: 50887, Stop: 50804, Start Num: 10  
Candidate Starts for Slagathor\_90:  
(Start: 7 @50902 has 34 MA's), (Start: 10 @50887 has 61 MA's), (12, 50851), (13, 50848), (14, 50839),

Gene: Solon\_81 Start: 47450, Stop: 47349, Start Num: 7  
Candidate Starts for Solon\_81:  
(4, 47468), (Start: 6 @47453 has 3 MA's), (Start: 7 @47450 has 34 MA's), (Start: 9 @47438 has 1 MA's), (Start: 10 @47432 has 61 MA's), (12, 47396), (13, 47393), (14, 47384),

Gene: SwissCheese\_94 Start: 51121, Stop: 51038, Start Num: 10  
Candidate Starts for SwissCheese\_94:

(1, 51187), (3, 51157), (Start: 6 @51139 has 3 MA's), (Start: 10 @51121 has 61 MA's), (12, 51085), (13, 51082), (14, 51073),

Gene: Switzer\_89 Start: 51214, Stop: 51116, Start Num: 7

Candidate Starts for Switzer\_89:

(Start: 7 @51214 has 34 MA's), (Start: 10 @51199 has 61 MA's), (11, 51184), (12, 51163), (13, 51160), (14, 51151),

Gene: Teodoridan\_87 Start: 48628, Stop: 48527, Start Num: 6

Candidate Starts for Teodoridan\_87:

(Start: 6 @48628 has 3 MA's), (Start: 7 @48625 has 34 MA's), (Start: 10 @48610 has 61 MA's), (12, 48574), (13, 48571), (14, 48562),

Gene: TheloniousMonk\_89 Start: 51367, Stop: 51284, Start Num: 10

Candidate Starts for TheloniousMonk\_89:

(Start: 7 @51382 has 34 MA's), (Start: 10 @51367 has 61 MA's), (12, 51331), (13, 51328), (14, 51319),

Gene: Thor\_97 Start: 52362, Stop: 52264, Start Num: 7

Candidate Starts for Thor\_97:

(Start: 7 @52362 has 34 MA's), (Start: 10 @52347 has 61 MA's), (12, 52311), (13, 52308), (14, 52299),

Gene: Topgun\_87 Start: 48928, Stop: 48845, Start Num: 10

Candidate Starts for Topgun\_87:

(4, 48964), (Start: 6 @48949 has 3 MA's), (Start: 7 @48946 has 34 MA's), (Start: 9 @48934 has 1 MA's), (Start: 10 @48928 has 61 MA's), (12, 48892), (13, 48889), (14, 48880),

Gene: Treddle\_89 Start: 51278, Stop: 51195, Start Num: 10

Candidate Starts for Treddle\_89:

(Start: 10 @51278 has 61 MA's), (12, 51242), (13, 51239), (14, 51230),

Gene: Treddle\_85 Start: 49958, Stop: 49845, Start Num: 10

Candidate Starts for Treddle\_85:

(Start: 10 @49958 has 61 MA's), (11, 49943), (12, 49922), (14, 49910), (15, 49892),

Gene: Tripl3t\_90 Start: 52885, Stop: 52802, Start Num: 10

Candidate Starts for Tripl3t\_90:

(Start: 6 @52903 has 3 MA's), (Start: 7 @52900 has 34 MA's), (Start: 10 @52885 has 61 MA's), (12, 52849), (14, 52837),

Gene: Turj99\_85 Start: 50450, Stop: 50367, Start Num: 10

Candidate Starts for Turj99\_85:

(Start: 7 @50465 has 34 MA's), (Start: 10 @50450 has 61 MA's), (12, 50414), (13, 50411), (16, 50381),

Gene: Watermelon\_88 Start: 50262, Stop: 50149, Start Num: 10

Candidate Starts for Watermelon\_88:

(8, 50277), (Start: 10 @50262 has 61 MA's), (11, 50247), (12, 50226), (14, 50214), (15, 50196),

Gene: Wheeler\_94 Start: 52531, Stop: 52454, Start Num: 10

Candidate Starts for Wheeler\_94:

(Start: 6 @52549 has 3 MA's), (Start: 7 @52546 has 34 MA's), (Start: 10 @52531 has 61 MA's), (12, 52495), (13, 52492), (14, 52483),

Gene: Wilkins\_88 Start: 48858, Stop: 48775, Start Num: 10

Candidate Starts for Wilkins\_88:

(4, 48894), (Start: 6 @48879 has 3 MA's), (Start: 7 @48876 has 34 MA's), (Start: 9 @48864 has 1 MA's), (Start: 10 @48858 has 61 MA's), (12, 48822), (13, 48819), (14, 48810),

Gene: Zephyr\_91 Start: 51624, Stop: 51526, Start Num: 7

Candidate Starts for Zephyr\_91:

(Start: 7 @51624 has 34 MA's), (Start: 10 @51609 has 61 MA's), (12, 51573), (13, 51570), (14, 51561),

Gene: Zeuska\_90 Start: 51653, Stop: 51570, Start Num: 10

Candidate Starts for Zeuska\_90:

(Start: 6 @51674 has 3 MA's), (Start: 10 @51653 has 61 MA's), (13, 51614), (14, 51605),