

# Pham 161723



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 161723 Report

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

Pham number 161723 has 117 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Braelyn\_163, Persimmon\_161, Navo\_164, WhereRU\_165
- Track 2 : Flabslab\_167, Trinitium\_170, EmToTheThree\_173, Shrimp\_174, Ading\_173, Janiyra\_176, Phlegm\_176, Capablanca\_175, Tortoise16\_170, ChickenPhender\_169, Phusco\_171, Ngannou\_169, Nidhogg\_172, Blackbrain\_168, Turret\_167, BananaFence\_170, Gabriel\_174, Chargie21\_170, Shifa\_162, McGee\_173, Pio\_179, Drazdys\_172, StubbySaigey\_175, InigoMontoya\_175, Asterius\_169, Yucca\_170, Bonray\_173, Pleione\_174, Fludd\_173, Khaleesi\_170, Cactojaque\_168, LifeSavor\_170, SilverDipper\_174, Patter\_172, Gamgam\_173, Littleton\_173, Matsumoto\_170, Wally\_171, LinStu\_169, HyRo\_161, Chomp\_171, Babyland\_175, Dietrick\_162, Darko\_171, DTDevon\_174, Pivoine\_172, Audrick\_175, Jessibeth14\_171, PurduePete\_171, Sebata\_172, Lee7\_170, CindyLou\_174, Roots515\_175, Melpomini\_165, ValleyTerrace\_172, ErnieJ\_166, Kboogie\_175, Naija\_172, ArcherS7\_173, Delylah\_172, ChaylaJr\_169, Burrough\_174, Yassified\_168, Astraea\_167, Amataga\_172, EasyJones\_175, Quasimodo\_175, Breeniome\_173, Momo\_171, McWolfish\_169, Zeenon\_172, Shelob\_172, Loanshark\_169, Ghost\_171, Basquiat\_170, Napoleon13\_169, BackyardAgain\_169, EmmaElysia\_173, SmallFry\_172, LolaVinca\_172, Latch\_172, Atlantean\_171
- Track 3 : Catera\_167, Kamryn\_171, NoodleTree\_178, Rizal\_166, YemiJoy2021\_171, Dandelion\_178, Mikro\_169, Mangeria\_172, StephanieG\_170, RoMag\_167
- Track 4 : Salacia\_173
- Track 5 : Blubba\_76, Lukilu\_78
- Track 6 : Bxz1\_167
- Track 7 : Rabinovish\_81
- Track 8 : Alice\_148
- Track 9 : Zaria\_110, Calm\_111
- Track 10 : CicholasNage\_103
- Track 11 : Crossroads\_113, MkaliMitinis3\_113
- Track 12 : Auspice\_113
- Track 13 : Bricole\_94, Glaske16\_97, PegLeg\_96
- Track 14 : LilhomieP\_113, Skinny\_118, Glaske16\_116, PegLeg\_117
- Track 15 : SlimJimmy\_96
- Track 16 : Cosmo\_101

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

The start number called the most often in the published annotations is 8, it was called in 81 of the 110 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Ading\_173, Alice\_148, Amataga\_172, ArcherS7\_173, Asterius\_169, Astraea\_167, Atlantean\_171, Audrick\_175, Babyland\_175, BackyardAgain\_169, BananaFence\_170, Basquiat\_170, Blackbrain\_168, Bonray\_173, Braelyn\_163, Breeniome\_173, Burrough\_174, Cactojaque\_168, Capablanca\_175, Chargie21\_170, ChaylaJr\_169, ChickenPhender\_169, Chomp\_171, CindyLou\_174, DTDevon\_174, Darko\_171, Delylah\_172, Dietrick\_162, Drazdys\_172, EasyJones\_175, EmToTheThree\_173, EmmaElysia\_173, ErnieJ\_166, Flabslab\_167, Fludd\_173, Gabriel\_174, Gamgam\_173, Ghost\_171, HyRo\_161, InigoMontoya\_175, Janiyra\_176, Jessibeth14\_171, Kboogie\_175, Khaleesi\_170, Latch\_172, Lee7\_170, LifeSavor\_170, LinStu\_169, Littleton\_173, Loanshark\_169, LolaVinca\_172, Matsumoto\_170, McGee\_173, McWolfish\_169, Melpomini\_165, Momo\_171, Naija\_172, Napoleon13\_169, Navo\_164, Ngannou\_169, Nidhogg\_172, Patter\_172, Persimmon\_161, Phlegm\_176, Phusco\_171, Pio\_179, Pivoine\_172, Pleione\_174, PurduePete\_171, Quasimodo\_175, Roots515\_175, Sebata\_172, Shelob\_172, Shifa\_162, Shrimp\_174, SilverDipper\_174, SmallFry\_172, StubbySaigey\_175, Tortoise16\_170, Trinitium\_170, Turret\_167, ValleyTerrace\_172, Wally\_171, WhereRU\_165, Yassified\_168, Yucca\_170, Zeenon\_172,

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

- Bxz1\_167,

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

- Auspice\_113, Blubba\_76, Bricole\_94, Calm\_111, Catera\_167, CicholasNage\_103, Cosmo\_101, Crossroads\_113, Dandelion\_178, Glaske16\_116, Glaske16\_97, Kamryn\_171, LilhomieP\_113, Lukilu\_78, Mangeria\_172, Mikro\_169, MkaliMitinis3\_113, NoodleTree\_178, PegLeg\_117, PegLeg\_96, Rabinovish\_81, Rizal\_166, RoMag\_167, Salacia\_173, Skinny\_118, SlimJimmy\_96, StephanieG\_170, YemiJoy2021\_171, Zaria\_110,

### Summary by start number:

Start 5:

- Found in 4 of 117 ( 3.4% ) of genes in pham
- Manual Annotations of this start: 1 of 110
- Called 25.0% of time when present
- Phage (with cluster) where this start called: SlimJimmy\_96 (M1),

Start 7:

- Found in 1 of 117 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 110
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Rabinovish\_81 (C1),

Start 8:

- Found in 88 of 117 ( 75.2% ) of genes in pham
- Manual Annotations of this start: 81 of 110
- Called 98.9% of time when present

- Phage (with cluster) where this start called: Ading\_173 (C1), Alice\_148 (C1), Amataga\_172 (C1), ArcherS7\_173 (C1), Asterius\_169 (C1), Astraea\_167 (C1), Atlantean\_171 (C1), Audrick\_175 (C1), Babyland\_175 (C1), BackyardAgain\_169 (C1), BananaFence\_170 (C1), Basquiat\_170 (C1), Blackbrain\_168 (C1), Bonray\_173 (C1), Braelyn\_163 (BE1), Breeniome\_173 (C1), Burrough\_174 (C1), Cactojaque\_168 (C1), Capablanca\_175 (C1), Chargie21\_170 (C1), ChaylaJr\_169 (C1), ChickenPhender\_169 (C1), Chomp\_171 (C1), CindyLou\_174 (C1), DTDevon\_174 (C1), Darko\_171 (C1), Delylah\_172 (C1), Dietrick\_162 (C1), Drazdys\_172 (C1), EasyJones\_175 (C1), EmToTheThree\_173 (C1), EmmaElysia\_173 (C1), ErnieJ\_166 (C1), Flabslab\_167 (C1), Fludd\_173 (C1), Gabriel\_174 (C1), Gamgam\_173 (C1), Ghost\_171 (C1), HyRo\_161 (C1), InigoMontoya\_175 (C1), Janiyra\_176 (C1), Jessibeth14\_171 (C1), Kboogie\_175 (C1), Khaleesi\_170 (C1), Latch\_172 (C1), Lee7\_170 (C1), LifeSavor\_170 (C1), LinStu\_169 (C1), Littleton\_173 (C1), Loanshark\_169 (C1), LolaVinca\_172 (C1), Matsumoto\_170 (C1), McGee\_173 (C1), McWolfish\_169 (C1), Melpomini\_165 (C1), Momo\_171 (C1), Naija\_172 (C1), Napoleon13\_169 (C1), Navo\_164 (BE1), Ngannou\_169 (C1), Nidhogg\_172 (C1), Patter\_172 (C1), Persimmon\_161 (BE1), Phlegm\_176 (C1), Phusco\_171 (C1), Pio\_179 (C1), Pivoine\_172 (C1), Pleione\_174 (C1), PurduePete\_171 (C1), Quasimodo\_175 (C1), Roots515\_175 (C1), Sebata\_172 (C1), Shelob\_172 (C1), Shifa\_162 (C1), Shrimp\_174 (C1), SilverDipper\_174 (C1), SmallFry\_172 (C1), StubbySaigey\_175 (C1), Tortoise16\_170 (C1), Trinitium\_170 (C1), Turret\_167 (C1), ValleyTerrace\_172 (C1), Wally\_171 (C1), WhereRU\_165 (BE1), Yassified\_168 (C1), Yucca\_170 (C1), Zeenon\_172 (C1),

#### Start 11:

- Found in 1 of 117 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 110
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cosmo\_101 (V),

#### Start 12:

- Found in 105 of 117 ( 89.7% ) of genes in pham
- Manual Annotations of this start: 16 of 110
- Called 16.2% of time when present
- Phage (with cluster) where this start called: Auspice\_113 (M1), Blubba\_76 (C1), Bricole\_94 (M1), Bxz1\_167 (C1), Catera\_167 (C1), Dandelion\_178 (C1), Glaske16\_97 (M1), Kamryn\_171 (C1), Lukilu\_78 (C1), Mangeria\_172 (C1), Mikro\_169 (C1), NoodleTree\_178 (C1), PegLeg\_96 (M1), Rizal\_166 (C1), RoMag\_167 (C1), StephanieG\_170 (C1), YemiJoy2021\_171 (C1),

#### Start 13:

- Found in 5 of 117 ( 4.3% ) of genes in pham
- Manual Annotations of this start: 5 of 110
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Calm\_111 (L1), CicholasNage\_103 (L1), Crossroads\_113 (L2), MkaliMitinis3\_113 (L2), Zaria\_110 (L1),

#### Start 15:

- Found in 5 of 117 ( 4.3% ) of genes in pham
- Manual Annotations of this start: 4 of 110
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Glaske16\_116 (M1), LilhomieP\_113 (M1), PegLeg\_117 (M1), Skinny\_118 (M1),

Start 17:

- Found in 1 of 117 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 110
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Salacia\_173 (C1),

### **Summary by clusters:**

There are 6 clusters represented in this pham: V, M1, L1, L2, C1, BE1,

Info for manual annotations of cluster BE1:

- Start number 8 was manually annotated 2 times for cluster BE1.

Info for manual annotations of cluster C1:

- Start number 7 was manually annotated 1 time for cluster C1.
- Start number 8 was manually annotated 79 times for cluster C1.
- Start number 12 was manually annotated 12 times for cluster C1.
- Start number 17 was manually annotated 1 time for cluster C1.

Info for manual annotations of cluster L1:

- Start number 13 was manually annotated 3 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 13 was manually annotated 2 times for cluster L2.

Info for manual annotations of cluster M1:

- Start number 5 was manually annotated 1 time for cluster M1.
- Start number 12 was manually annotated 4 times for cluster M1.
- Start number 15 was manually annotated 4 times for cluster M1.

Info for manual annotations of cluster V:

- Start number 11 was manually annotated 1 time for cluster V.

### **Gene Information:**

Gene: Ading\_173 Start: 95509, Stop: 95883, Start Num: 8

Candidate Starts for Ading\_173:

(Start: 8 @95509 has 81 MA's), (Start: 12 @95515 has 16 MA's), (57, 95869),

Gene: Alice\_148 Start: 90900, Stop: 91289, Start Num: 8

Candidate Starts for Alice\_148:

(Start: 8 @90900 has 81 MA's), (26, 90993), (27, 91002), (34, 91062), (48, 91200), (56, 91254),

Gene: Amataga\_172 Start: 93925, Stop: 94299, Start Num: 8

Candidate Starts for Amataga\_172:

(Start: 8 @93925 has 81 MA's), (Start: 12 @93931 has 16 MA's), (57, 94285),

Gene: ArcherS7\_173 Start: 94955, Stop: 95329, Start Num: 8

Candidate Starts for ArcherS7\_173:

(Start: 8 @94955 has 81 MA's), (Start: 12 @94961 has 16 MA's), (57, 95315),

Gene: Asterius\_169 Start: 94642, Stop: 95016, Start Num: 8  
Candidate Starts for Asterius\_169:  
(Start: 8 @94642 has 81 MA's), (Start: 12 @94648 has 16 MA's), (57, 95002),

Gene: Astraea\_167 Start: 94016, Stop: 94390, Start Num: 8  
Candidate Starts for Astraea\_167:  
(Start: 8 @94016 has 81 MA's), (Start: 12 @94022 has 16 MA's), (57, 94376),

Gene: Atlantean\_171 Start: 93925, Stop: 94299, Start Num: 8  
Candidate Starts for Atlantean\_171:  
(Start: 8 @93925 has 81 MA's), (Start: 12 @93931 has 16 MA's), (57, 94285),

Gene: Audrick\_175 Start: 94607, Stop: 94981, Start Num: 8  
Candidate Starts for Audrick\_175:  
(Start: 8 @94607 has 81 MA's), (Start: 12 @94613 has 16 MA's), (57, 94967),

Gene: Auspice\_113 Start: 60196, Stop: 60597, Start Num: 12  
Candidate Starts for Auspice\_113:  
(1, 60025), (2, 60058), (3, 60112), (4, 60136), (Start: 12 @60196 has 16 MA's), (Start: 15 @60217 has 4 MA's), (18, 60232), (19, 60244), (26, 60289), (29, 60316), (40, 60391), (46, 60466), (52, 60511), (59, 60565), (60, 60589),

Gene: Babyland\_175 Start: 94702, Stop: 95076, Start Num: 8  
Candidate Starts for Babyland\_175:  
(Start: 8 @94702 has 81 MA's), (Start: 12 @94708 has 16 MA's), (57, 95062),

Gene: BackyardAgain\_169 Start: 93403, Stop: 93777, Start Num: 8  
Candidate Starts for BackyardAgain\_169:  
(Start: 8 @93403 has 81 MA's), (Start: 12 @93409 has 16 MA's), (57, 93763),

Gene: BananaFence\_170 Start: 94645, Stop: 95019, Start Num: 8  
Candidate Starts for BananaFence\_170:  
(Start: 8 @94645 has 81 MA's), (Start: 12 @94651 has 16 MA's), (57, 95005),

Gene: Basquiat\_170 Start: 94229, Stop: 94603, Start Num: 8  
Candidate Starts for Basquiat\_170:  
(Start: 8 @94229 has 81 MA's), (Start: 12 @94235 has 16 MA's), (57, 94589),

Gene: Blackbrain\_168 Start: 94274, Stop: 94648, Start Num: 8  
Candidate Starts for Blackbrain\_168:  
(Start: 8 @94274 has 81 MA's), (Start: 12 @94280 has 16 MA's), (57, 94634),

Gene: Blubba\_76 Start: 28848, Stop: 28441, Start Num: 12  
Candidate Starts for Blubba\_76:  
(Start: 12 @28848 has 16 MA's), (19, 28800), (25, 28758), (41, 28638), (44, 28596), (47, 28572),

Gene: Bonray\_173 Start: 95779, Stop: 96153, Start Num: 8  
Candidate Starts for Bonray\_173:  
(Start: 8 @95779 has 81 MA's), (Start: 12 @95785 has 16 MA's), (57, 96139),

Gene: Braelyn\_163 Start: 91668, Stop: 92042, Start Num: 8  
Candidate Starts for Braelyn\_163:

(Start: 8 @91668 has 81 MA's), (14, 91695), (16, 91707), (30, 91809), (33, 91827), (36, 91851), (54, 92019),

Gene: Breeniome\_173 Start: 93968, Stop: 94342, Start Num: 8

Candidate Starts for Breeniome\_173:

(Start: 8 @93968 has 81 MA's), (Start: 12 @93974 has 16 MA's), (57, 94328),

Gene: Bricole\_94 Start: 56369, Stop: 56746, Start Num: 12

Candidate Starts for Bricole\_94:

(Start: 5 @56309 has 1 MA's), (Start: 12 @56369 has 16 MA's), (31, 56507), (34, 56513), (39, 56555), (41, 56576), (49, 56666), (55, 56705),

Gene: Burrough\_174 Start: 96182, Stop: 96556, Start Num: 8

Candidate Starts for Burrough\_174:

(Start: 8 @96182 has 81 MA's), (Start: 12 @96188 has 16 MA's), (57, 96542),

Gene: Bxz1\_167 Start: 97386, Stop: 97754, Start Num: 12

Candidate Starts for Bxz1\_167:

(Start: 8 @97380 has 81 MA's), (Start: 12 @97386 has 16 MA's), (57, 97740),

Gene: Cactojaque\_168 Start: 94249, Stop: 94623, Start Num: 8

Candidate Starts for Cactojaque\_168:

(Start: 8 @94249 has 81 MA's), (Start: 12 @94255 has 16 MA's), (57, 94609),

Gene: Calm\_111 Start: 62392, Stop: 62778, Start Num: 13

Candidate Starts for Calm\_111:

(Start: 13 @62392 has 5 MA's), (20, 62440), (22, 62452), (23, 62458), (25, 62476), (37, 62575), (54, 62725),

Gene: Capablanca\_175 Start: 96374, Stop: 96748, Start Num: 8

Candidate Starts for Capablanca\_175:

(Start: 8 @96374 has 81 MA's), (Start: 12 @96380 has 16 MA's), (57, 96734),

Gene: Catera\_167 Start: 93327, Stop: 93818, Start Num: 12

Candidate Starts for Catera\_167:

(Start: 12 @93327 has 16 MA's), (32, 93474), (34, 93489), (50, 93648), (51, 93651), (58, 93723), (61, 93762),

Gene: Chargie21\_170 Start: 94229, Stop: 94603, Start Num: 8

Candidate Starts for Chargie21\_170:

(Start: 8 @94229 has 81 MA's), (Start: 12 @94235 has 16 MA's), (57, 94589),

Gene: ChaylaJr\_169 Start: 94097, Stop: 94471, Start Num: 8

Candidate Starts for ChaylaJr\_169:

(Start: 8 @94097 has 81 MA's), (Start: 12 @94103 has 16 MA's), (57, 94457),

Gene: ChickenPhender\_169 Start: 94376, Stop: 94750, Start Num: 8

Candidate Starts for ChickenPhender\_169:

(Start: 8 @94376 has 81 MA's), (Start: 12 @94382 has 16 MA's), (57, 94736),

Gene: Chomp\_171 Start: 95214, Stop: 95588, Start Num: 8

Candidate Starts for Chomp\_171:

(Start: 8 @95214 has 81 MA's), (Start: 12 @95220 has 16 MA's), (57, 95574),

Gene: CicholasNage\_103 Start: 61458, Stop: 61826, Start Num: 13  
Candidate Starts for CicholasNage\_103:  
(6, 61410), (9, 61437), (Start: 13 @61458 has 5 MA's), (23, 61524), (35, 61611), (37, 61641), (40, 61653), (53, 61776),

Gene: CindyLou\_174 Start: 95957, Stop: 96331, Start Num: 8  
Candidate Starts for CindyLou\_174:  
(Start: 8 @95957 has 81 MA's), (Start: 12 @95963 has 16 MA's), (57, 96317),

Gene: Cosmo\_101 Start: 58504, Stop: 58896, Start Num: 11  
Candidate Starts for Cosmo\_101:  
(Start: 11 @58504 has 1 MA's), (21, 58573), (22, 58576), (24, 58585), (26, 58603), (28, 58615), (36, 58684), (38, 58699), (39, 58705), (45, 58777),

Gene: Crossroads\_113 Start: 63942, Stop: 64328, Start Num: 13  
Candidate Starts for Crossroads\_113:  
(9, 63921), (Start: 13 @63942 has 5 MA's), (23, 64008), (25, 64026), (37, 64125), (54, 64275),

Gene: DTDevon\_174 Start: 96449, Stop: 96823, Start Num: 8  
Candidate Starts for DTDevon\_174:  
(Start: 8 @96449 has 81 MA's), (Start: 12 @96455 has 16 MA's), (57, 96809),

Gene: Dandelion\_178 Start: 98582, Stop: 99073, Start Num: 12  
Candidate Starts for Dandelion\_178:  
(Start: 12 @98582 has 16 MA's), (32, 98729), (34, 98744), (50, 98903), (51, 98906), (58, 98978), (61, 99017),

Gene: Darko\_171 Start: 94649, Stop: 95023, Start Num: 8  
Candidate Starts for Darko\_171:  
(Start: 8 @94649 has 81 MA's), (Start: 12 @94655 has 16 MA's), (57, 95009),

Gene: Delylah\_172 Start: 94774, Stop: 95148, Start Num: 8  
Candidate Starts for Delylah\_172:  
(Start: 8 @94774 has 81 MA's), (Start: 12 @94780 has 16 MA's), (57, 95134),

Gene: Dietrick\_162 Start: 93399, Stop: 93773, Start Num: 8  
Candidate Starts for Dietrick\_162:  
(Start: 8 @93399 has 81 MA's), (Start: 12 @93405 has 16 MA's), (57, 93759),

Gene: Drazdys\_172 Start: 94992, Stop: 95366, Start Num: 8  
Candidate Starts for Drazdys\_172:  
(Start: 8 @94992 has 81 MA's), (Start: 12 @94998 has 16 MA's), (57, 95352),

Gene: EasyJones\_175 Start: 94911, Stop: 95285, Start Num: 8  
Candidate Starts for EasyJones\_175:  
(Start: 8 @94911 has 81 MA's), (Start: 12 @94917 has 16 MA's), (57, 95271),

Gene: EmToTheThree\_173 Start: 95871, Stop: 96245, Start Num: 8  
Candidate Starts for EmToTheThree\_173:  
(Start: 8 @95871 has 81 MA's), (Start: 12 @95877 has 16 MA's), (57, 96231),

Gene: EmmaElysia\_173 Start: 94922, Stop: 95296, Start Num: 8



Candidate Starts for EmmaElysia\_173:  
(Start: 8 @94922 has 81 MA's), (Start: 12 @94928 has 16 MA's), (57, 95282),

Gene: ErnieJ\_166 Start: 93651, Stop: 94025, Start Num: 8  
Candidate Starts for ErnieJ\_166:  
(Start: 8 @93651 has 81 MA's), (Start: 12 @93657 has 16 MA's), (57, 94011),

Gene: Flabslab\_167 Start: 93233, Stop: 93607, Start Num: 8  
Candidate Starts for Flabslab\_167:  
(Start: 8 @93233 has 81 MA's), (Start: 12 @93239 has 16 MA's), (57, 93593),

Gene: Fludd\_173 Start: 95184, Stop: 95558, Start Num: 8  
Candidate Starts for Fludd\_173:  
(Start: 8 @95184 has 81 MA's), (Start: 12 @95190 has 16 MA's), (57, 95544),

Gene: Gabriel\_174 Start: 93942, Stop: 94316, Start Num: 8  
Candidate Starts for Gabriel\_174:  
(Start: 8 @93942 has 81 MA's), (Start: 12 @93948 has 16 MA's), (57, 94302),

Gene: Gamgam\_173 Start: 93915, Stop: 94289, Start Num: 8  
Candidate Starts for Gamgam\_173:  
(Start: 8 @93915 has 81 MA's), (Start: 12 @93921 has 16 MA's), (57, 94275),

Gene: Ghost\_171 Start: 94628, Stop: 95002, Start Num: 8  
Candidate Starts for Ghost\_171:  
(Start: 8 @94628 has 81 MA's), (Start: 12 @94634 has 16 MA's), (57, 94988),

Gene: Glaske16\_97 Start: 56773, Stop: 57150, Start Num: 12  
Candidate Starts for Glaske16\_97:  
(Start: 5 @56713 has 1 MA's), (Start: 12 @56773 has 16 MA's), (31, 56911), (34, 56917), (39, 56959),  
(41, 56980), (49, 57070), (55, 57109),

Gene: Glaske16\_116 Start: 60940, Stop: 61320, Start Num: 15  
Candidate Starts for Glaske16\_116:  
(1, 60748), (2, 60781), (3, 60835), (4, 60859), (Start: 12 @60919 has 16 MA's), (Start: 15 @60940 has  
4 MA's), (18, 60955), (19, 60967), (26, 61012), (29, 61039), (40, 61114), (46, 61189), (52, 61234), (59,  
61288), (60, 61312),

Gene: HyRo\_161 Start: 94254, Stop: 94628, Start Num: 8  
Candidate Starts for HyRo\_161:  
(Start: 8 @94254 has 81 MA's), (Start: 12 @94260 has 16 MA's), (57, 94614),

Gene: InigoMontoya\_175 Start: 94589, Stop: 94963, Start Num: 8  
Candidate Starts for InigoMontoya\_175:  
(Start: 8 @94589 has 81 MA's), (Start: 12 @94595 has 16 MA's), (57, 94949),

Gene: Janiyra\_176 Start: 95606, Stop: 95980, Start Num: 8  
Candidate Starts for Janiyra\_176:  
(Start: 8 @95606 has 81 MA's), (Start: 12 @95612 has 16 MA's), (57, 95966),

Gene: Jessibeth14\_171 Start: 95454, Stop: 95828, Start Num: 8  
Candidate Starts for Jessibeth14\_171:  
(Start: 8 @95454 has 81 MA's), (Start: 12 @95460 has 16 MA's), (57, 95814),

Gene: Kamryn\_171 Start: 95693, Stop: 96184, Start Num: 12

Candidate Starts for Kamryn\_171:

(Start: 12 @95693 has 16 MA's), (32, 95840), (34, 95855), (50, 96014), (51, 96017), (58, 96089), (61, 96128),

Gene: Kboogie\_175 Start: 94611, Stop: 94985, Start Num: 8

Candidate Starts for Kboogie\_175:

(Start: 8 @94611 has 81 MA's), (Start: 12 @94617 has 16 MA's), (57, 94971),

Gene: Khaleesi\_170 Start: 94921, Stop: 95295, Start Num: 8

Candidate Starts for Khaleesi\_170:

(Start: 8 @94921 has 81 MA's), (Start: 12 @94927 has 16 MA's), (57, 95281),

Gene: Latch\_172 Start: 93925, Stop: 94299, Start Num: 8

Candidate Starts for Latch\_172:

(Start: 8 @93925 has 81 MA's), (Start: 12 @93931 has 16 MA's), (57, 94285),

Gene: Lee7\_170 Start: 96301, Stop: 96675, Start Num: 8

Candidate Starts for Lee7\_170:

(Start: 8 @96301 has 81 MA's), (Start: 12 @96307 has 16 MA's), (57, 96661),

Gene: LifeSavor\_170 Start: 94834, Stop: 95208, Start Num: 8

Candidate Starts for LifeSavor\_170:

(Start: 8 @94834 has 81 MA's), (Start: 12 @94840 has 16 MA's), (57, 95194),

Gene: LilhomieP\_113 Start: 61111, Stop: 61491, Start Num: 15

Candidate Starts for LilhomieP\_113:

(1, 60919), (2, 60952), (3, 61006), (4, 61030), (Start: 12 @61090 has 16 MA's), (Start: 15 @61111 has 4 MA's), (18, 61126), (19, 61138), (26, 61183), (29, 61210), (40, 61285), (46, 61360), (52, 61405), (59, 61459), (60, 61483),

Gene: LinStu\_169 Start: 94979, Stop: 95353, Start Num: 8

Candidate Starts for LinStu\_169:

(Start: 8 @94979 has 81 MA's), (Start: 12 @94985 has 16 MA's), (57, 95339),

Gene: Littleton\_173 Start: 95085, Stop: 95459, Start Num: 8

Candidate Starts for Littleton\_173:

(Start: 8 @95085 has 81 MA's), (Start: 12 @95091 has 16 MA's), (57, 95445),

Gene: Loanshark\_169 Start: 94795, Stop: 95169, Start Num: 8

Candidate Starts for Loanshark\_169:

(Start: 8 @94795 has 81 MA's), (Start: 12 @94801 has 16 MA's), (57, 95155),

Gene: LolaVinca\_172 Start: 96204, Stop: 96578, Start Num: 8

Candidate Starts for LolaVinca\_172:

(Start: 8 @96204 has 81 MA's), (Start: 12 @96210 has 16 MA's), (57, 96564),

Gene: Lukilu\_78 Start: 31246, Stop: 30839, Start Num: 12

Candidate Starts for Lukilu\_78:

(Start: 12 @31246 has 16 MA's), (19, 31198), (25, 31156), (41, 31036), (44, 30994), (47, 30970),

Gene: Mangeria\_172 Start: 95675, Stop: 96166, Start Num: 12

Candidate Starts for Mangeria\_172:

(Start: 12 @95675 has 16 MA's), (32, 95822), (34, 95837), (50, 95996), (51, 95999), (58, 96071), (61, 96110),

Gene: Matsumoto\_170 Start: 94599, Stop: 94973, Start Num: 8

Candidate Starts for Matsumoto\_170:

(Start: 8 @94599 has 81 MA's), (Start: 12 @94605 has 16 MA's), (57, 94959),

Gene: McGee\_173 Start: 94353, Stop: 94727, Start Num: 8

Candidate Starts for McGee\_173:

(Start: 8 @94353 has 81 MA's), (Start: 12 @94359 has 16 MA's), (57, 94713),

Gene: McWolfish\_169 Start: 94692, Stop: 95066, Start Num: 8

Candidate Starts for McWolfish\_169:

(Start: 8 @94692 has 81 MA's), (Start: 12 @94698 has 16 MA's), (57, 95052),

Gene: Melpomini\_165 Start: 92899, Stop: 93273, Start Num: 8

Candidate Starts for Melpomini\_165:

(Start: 8 @92899 has 81 MA's), (Start: 12 @92905 has 16 MA's), (57, 93259),

Gene: Mikro\_169 Start: 96317, Stop: 96808, Start Num: 12

Candidate Starts for Mikro\_169:

(Start: 12 @96317 has 16 MA's), (32, 96464), (34, 96479), (50, 96638), (51, 96641), (58, 96713), (61, 96752),

Gene: MkaliMitinis3\_113 Start: 63922, Stop: 64308, Start Num: 13

Candidate Starts for MkaliMitinis3\_113:

(9, 63901), (Start: 13 @63922 has 5 MA's), (23, 63988), (25, 64006), (37, 64105), (54, 64255),

Gene: Momo\_171 Start: 93925, Stop: 94299, Start Num: 8

Candidate Starts for Momo\_171:

(Start: 8 @93925 has 81 MA's), (Start: 12 @93931 has 16 MA's), (57, 94285),

Gene: Naija\_172 Start: 94628, Stop: 95002, Start Num: 8

Candidate Starts for Naija\_172:

(Start: 8 @94628 has 81 MA's), (Start: 12 @94634 has 16 MA's), (57, 94988),

Gene: Napoleon13\_169 Start: 93888, Stop: 94262, Start Num: 8

Candidate Starts for Napoleon13\_169:

(Start: 8 @93888 has 81 MA's), (Start: 12 @93894 has 16 MA's), (57, 94248),

Gene: Navo\_164 Start: 91049, Stop: 91423, Start Num: 8

Candidate Starts for Navo\_164:

(Start: 8 @91049 has 81 MA's), (14, 91076), (16, 91088), (30, 91190), (33, 91208), (36, 91232), (54, 91400),

Gene: Ngannou\_169 Start: 92907, Stop: 93281, Start Num: 8

Candidate Starts for Ngannou\_169:

(Start: 8 @92907 has 81 MA's), (Start: 12 @92913 has 16 MA's), (57, 93267),

Gene: Nidhogg\_172 Start: 95203, Stop: 95577, Start Num: 8

Candidate Starts for Nidhogg\_172:

(Start: 8 @95203 has 81 MA's), (Start: 12 @95209 has 16 MA's), (57, 95563),

Gene: NoodleTree\_178 Start: 95068, Stop: 95559, Start Num: 12

Candidate Starts for NoodleTree\_178:

(Start: 12 @95068 has 16 MA's), (32, 95215), (34, 95230), (50, 95389), (51, 95392), (58, 95464), (61, 95503),

Gene: Patter\_172 Start: 93942, Stop: 94316, Start Num: 8

Candidate Starts for Patter\_172:

(Start: 8 @93942 has 81 MA's), (Start: 12 @93948 has 16 MA's), (57, 94302),

Gene: PegLeg\_117 Start: 60989, Stop: 61369, Start Num: 15

Candidate Starts for PegLeg\_117:

(1, 60797), (2, 60830), (3, 60884), (4, 60908), (Start: 12 @60968 has 16 MA's), (Start: 15 @60989 has 4 MA's), (18, 61004), (19, 61016), (26, 61061), (29, 61088), (40, 61163), (46, 61238), (52, 61283), (59, 61337), (60, 61361),

Gene: PegLeg\_96 Start: 56344, Stop: 56721, Start Num: 12

Candidate Starts for PegLeg\_96:

(Start: 5 @56284 has 1 MA's), (Start: 12 @56344 has 16 MA's), (31, 56482), (34, 56488), (39, 56530), (41, 56551), (49, 56641), (55, 56680),

Gene: Persimmon\_161 Start: 90365, Stop: 90739, Start Num: 8

Candidate Starts for Persimmon\_161:

(Start: 8 @90365 has 81 MA's), (14, 90392), (16, 90404), (30, 90506), (33, 90524), (36, 90548), (54, 90716),

Gene: Phlegm\_176 Start: 94628, Stop: 95002, Start Num: 8

Candidate Starts for Phlegm\_176:

(Start: 8 @94628 has 81 MA's), (Start: 12 @94634 has 16 MA's), (57, 94988),

Gene: Phusco\_171 Start: 94252, Stop: 94626, Start Num: 8

Candidate Starts for Phusco\_171:

(Start: 8 @94252 has 81 MA's), (Start: 12 @94258 has 16 MA's), (57, 94612),

Gene: Pio\_179 Start: 98036, Stop: 98410, Start Num: 8

Candidate Starts for Pio\_179:

(Start: 8 @98036 has 81 MA's), (Start: 12 @98042 has 16 MA's), (57, 98396),

Gene: Pivoine\_172 Start: 94628, Stop: 95002, Start Num: 8

Candidate Starts for Pivoine\_172:

(Start: 8 @94628 has 81 MA's), (Start: 12 @94634 has 16 MA's), (57, 94988),

Gene: Pleione\_174 Start: 95152, Stop: 95526, Start Num: 8

Candidate Starts for Pleione\_174:

(Start: 8 @95152 has 81 MA's), (Start: 12 @95158 has 16 MA's), (57, 95512),

Gene: PurduePete\_171 Start: 95379, Stop: 95753, Start Num: 8

Candidate Starts for PurduePete\_171:

(Start: 8 @95379 has 81 MA's), (Start: 12 @95385 has 16 MA's), (57, 95739),

Gene: Quasimodo\_175 Start: 96046, Stop: 96420, Start Num: 8

Candidate Starts for Quasimodo\_175:

(Start: 8 @96046 has 81 MA's), (Start: 12 @96052 has 16 MA's), (57, 96406),

Gene: Rabinovish\_81 Start: 31385, Stop: 31834, Start Num: 7  
Candidate Starts for Rabinovish\_81:  
(Start: 7 @31385 has 1 MA's), (10, 31412), (Start: 12 @31421 has 16 MA's), (40, 31616), (42, 31652),  
(43, 31655), (44, 31673), (47, 31694), (50, 31721),

Gene: Rizal\_166 Start: 93071, Stop: 93562, Start Num: 12  
Candidate Starts for Rizal\_166:  
(Start: 12 @93071 has 16 MA's), (32, 93218), (34, 93233), (50, 93392), (51, 93395), (58, 93467), (61,  
93506),

Gene: RoMag\_167 Start: 95115, Stop: 95606, Start Num: 12  
Candidate Starts for RoMag\_167:  
(Start: 12 @95115 has 16 MA's), (32, 95262), (34, 95277), (50, 95436), (51, 95439), (58, 95511), (61,  
95550),

Gene: Roots515\_175 Start: 96466, Stop: 96840, Start Num: 8  
Candidate Starts for Roots515\_175:  
(Start: 8 @96466 has 81 MA's), (Start: 12 @96472 has 16 MA's), (57, 96826),

Gene: Salacia\_173 Start: 95279, Stop: 95626, Start Num: 17  
Candidate Starts for Salacia\_173:  
(Start: 17 @95279 has 1 MA's), (57, 95612),

Gene: Sebata\_172 Start: 96156, Stop: 96530, Start Num: 8  
Candidate Starts for Sebata\_172:  
(Start: 8 @96156 has 81 MA's), (Start: 12 @96162 has 16 MA's), (57, 96516),

Gene: Shelob\_172 Start: 96186, Stop: 96560, Start Num: 8  
Candidate Starts for Shelob\_172:  
(Start: 8 @96186 has 81 MA's), (Start: 12 @96192 has 16 MA's), (57, 96546),

Gene: Shifa\_162 Start: 94223, Stop: 94597, Start Num: 8  
Candidate Starts for Shifa\_162:  
(Start: 8 @94223 has 81 MA's), (Start: 12 @94229 has 16 MA's), (57, 94583),

Gene: Shrimp\_174 Start: 95689, Stop: 96063, Start Num: 8  
Candidate Starts for Shrimp\_174:  
(Start: 8 @95689 has 81 MA's), (Start: 12 @95695 has 16 MA's), (57, 96049),

Gene: SilverDipper\_174 Start: 94624, Stop: 94998, Start Num: 8  
Candidate Starts for SilverDipper\_174:  
(Start: 8 @94624 has 81 MA's), (Start: 12 @94630 has 16 MA's), (57, 94984),

Gene: Skinny\_118 Start: 61708, Stop: 62088, Start Num: 15  
Candidate Starts for Skinny\_118:  
(1, 61516), (2, 61549), (3, 61603), (4, 61627), (Start: 12 @61687 has 16 MA's), (Start: 15 @61708 has  
4 MA's), (18, 61723), (19, 61735), (26, 61780), (29, 61807), (40, 61882), (46, 61957), (52, 62002), (59,  
62056), (60, 62080),

Gene: SlimJimmy\_96 Start: 57692, Stop: 58129, Start Num: 5  
Candidate Starts for SlimJimmy\_96:

(Start: 5 @57692 has 1 MA's), (Start: 12 @57752 has 16 MA's), (31, 57890), (34, 57896), (39, 57938), (41, 57959), (49, 58049), (55, 58088),

Gene: SmallFry\_172 Start: 94215, Stop: 94589, Start Num: 8

Candidate Starts for SmallFry\_172:

(Start: 8 @94215 has 81 MA's), (Start: 12 @94221 has 16 MA's), (57, 94575),

Gene: StephanieG\_170 Start: 95942, Stop: 96433, Start Num: 12

Candidate Starts for StephanieG\_170:

(Start: 12 @95942 has 16 MA's), (32, 96089), (34, 96104), (50, 96263), (51, 96266), (58, 96338), (61, 96377),

Gene: StubbySaigey\_175 Start: 94158, Stop: 94532, Start Num: 8

Candidate Starts for StubbySaigey\_175:

(Start: 8 @94158 has 81 MA's), (Start: 12 @94164 has 16 MA's), (57, 94518),

Gene: Tortoise16\_170 Start: 94858, Stop: 95232, Start Num: 8

Candidate Starts for Tortoise16\_170:

(Start: 8 @94858 has 81 MA's), (Start: 12 @94864 has 16 MA's), (57, 95218),

Gene: Trinitium\_170 Start: 94551, Stop: 94925, Start Num: 8

Candidate Starts for Trinitium\_170:

(Start: 8 @94551 has 81 MA's), (Start: 12 @94557 has 16 MA's), (57, 94911),

Gene: Turret\_167 Start: 94133, Stop: 94507, Start Num: 8

Candidate Starts for Turret\_167:

(Start: 8 @94133 has 81 MA's), (Start: 12 @94139 has 16 MA's), (57, 94493),

Gene: ValleyTerrace\_172 Start: 93925, Stop: 94299, Start Num: 8

Candidate Starts for ValleyTerrace\_172:

(Start: 8 @93925 has 81 MA's), (Start: 12 @93931 has 16 MA's), (57, 94285),

Gene: Wally\_171 Start: 94141, Stop: 94515, Start Num: 8

Candidate Starts for Wally\_171:

(Start: 8 @94141 has 81 MA's), (Start: 12 @94147 has 16 MA's), (57, 94501),

Gene: WhereRU\_165 Start: 91117, Stop: 91491, Start Num: 8

Candidate Starts for WhereRU\_165:

(Start: 8 @91117 has 81 MA's), (14, 91144), (16, 91156), (30, 91258), (33, 91276), (36, 91300), (54, 91468),

Gene: Yassified\_168 Start: 93839, Stop: 94213, Start Num: 8

Candidate Starts for Yassified\_168:

(Start: 8 @93839 has 81 MA's), (Start: 12 @93845 has 16 MA's), (57, 94199),

Gene: YemiJoy2021\_171 Start: 95286, Stop: 95777, Start Num: 12

Candidate Starts for YemiJoy2021\_171:

(Start: 12 @95286 has 16 MA's), (32, 95433), (34, 95448), (50, 95607), (51, 95610), (58, 95682), (61, 95721),

Gene: Yucca\_170 Start: 94885, Stop: 95259, Start Num: 8

Candidate Starts for Yucca\_170:

(Start: 8 @94885 has 81 MA's), (Start: 12 @94891 has 16 MA's), (57, 95245),

Gene: Zaria\_110 Start: 61857, Stop: 62243, Start Num: 13

Candidate Starts for Zaria\_110:

(Start: 13 @61857 has 5 MA's), (20, 61905), (22, 61917), (23, 61923), (25, 61941), (37, 62040), (54, 62190),

Gene: Zeenon\_172 Start: 94971, Stop: 95345, Start Num: 8

Candidate Starts for Zeenon\_172:

(Start: 8 @94971 has 81 MA's), (Start: 12 @94977 has 16 MA's), (57, 95331),