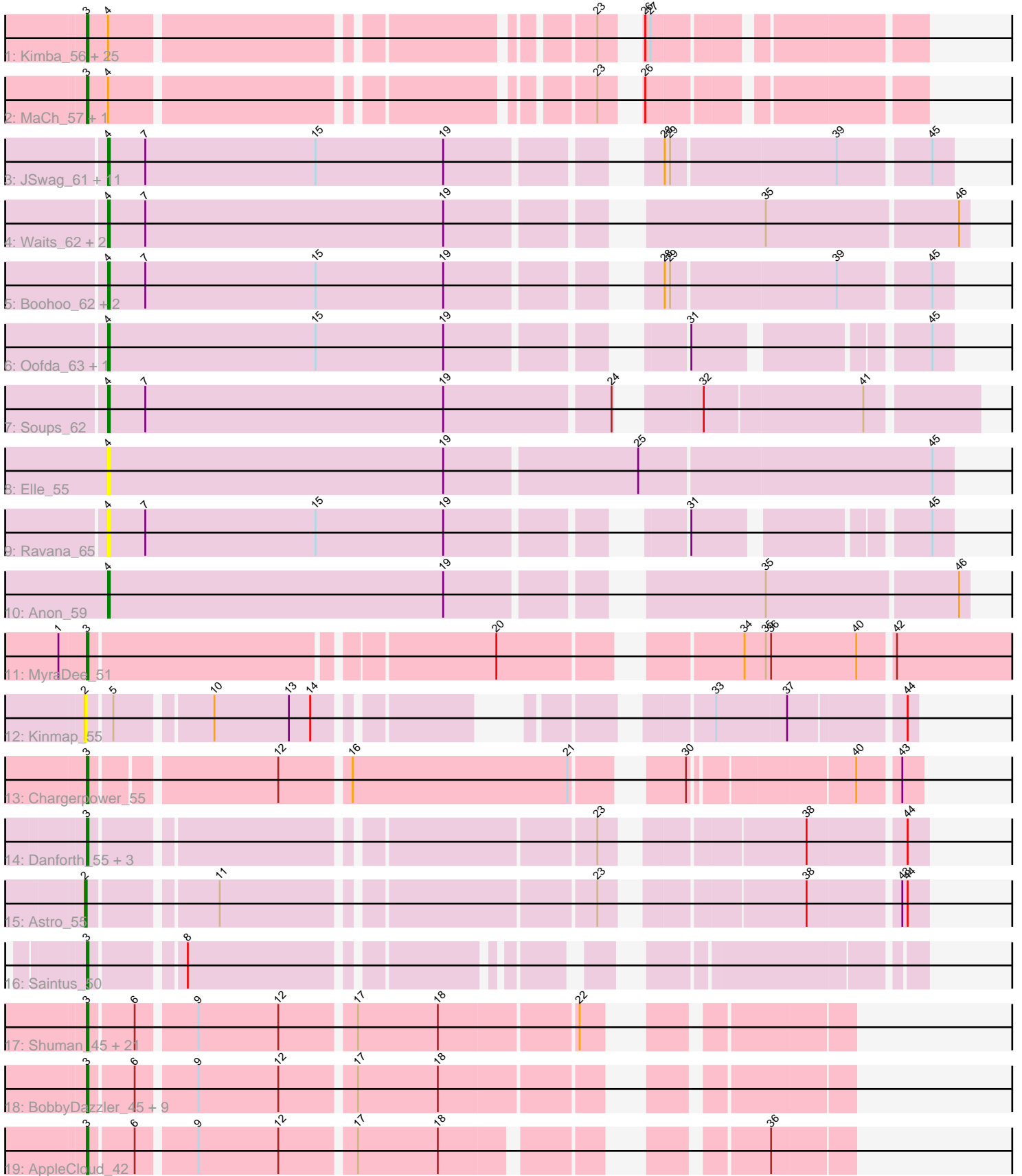


Pham 294612



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 294612 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294612 has 94 members, 8 are drafts.

Phages represented in each track:

- Track 1 : Kimba\_56, Ebony\_56, Bud\_56, Flaverint\_57, Mulciber\_56, Snape\_56, Fibonacci\_56, Petersenfast\_55, Mabel\_56, Timothy\_56, Orange\_56, Saskia\_57, Bowtie\_57, Wolpertinger\_55, Insomnia\_57, Munch\_57, Gilberta\_57, Jabith\_57, Hutc2\_56, TinyTimmy\_56, Aneem\_57, Joselito\_57, Salz\_55, Lucivia\_57, Et2Brutus\_55, Sham4\_56
- Track 2 : MaCh\_57, Bachome\_58
- Track 3 : JSwag\_61, LastResort\_60, Strosahl\_62, Battleship\_64, ShayRa\_62, DekHockey33\_63, Epsocamisio\_59, Looper\_61, ReMo\_60, KatherineG\_62, Remus\_62, Switzerland\_61
- Track 4 : Waits\_62, Rosalind\_60, MinecraftSteve\_62
- Track 5 : Boohoo\_62, Anaysia\_62, Nebulosus\_60
- Track 6 : Oofda\_63, Warrior24\_64
- Track 7 : Soups\_62
- Track 8 : Elle\_55
- Track 9 : Ravana\_65
- Track 10 : Anon\_59
- Track 11 : MyraDee\_51
- Track 12 : Kinmap\_55
- Track 13 : Chargerpower\_55
- Track 14 : Danforth\_55, NearlyHeadless\_55, Groundhog\_54, Roary\_56
- Track 15 : Astro\_55
- Track 16 : Saintus\_50
- Track 17 : Shuman\_45, CosmicSans\_45, UhSalsa\_45, StCroix\_44, Phrankenstien\_45, Lillie\_45, Natosaleda\_44, Gollum\_45, Nancinator\_45, Alatin\_44, Swann\_45, Rasputin\_45, Naiad\_44, Rhodalysa\_45, Erik\_45, TWAMP\_45, Belenaria\_45, Espica\_45, Bradshaw\_45, RER2\_38, RexFury\_44, Krishelle\_45
- Track 18 : BobbyDazzler\_45, Hiro\_45, Yogi\_44, Jester\_44, Bryce\_44, Alpacados\_44, Yoncess\_44, Bonanza\_45, Harlequin\_44, PhailMary\_44
- Track 19 : AppleCloud\_42

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

The start number called the most often in the published annotations is 3, it was called in 63 of the 86 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alatin\_44, Alpacados\_44, Aneem\_57, AppleCloud\_42, Bachome\_58, Belenaria\_45, BobbyDazzler\_45, Bonanza\_45, Bowtie\_57, Bradshaw\_45, Bryce\_44, Bud\_56, Chargerpower\_55, CosmicSans\_45, Danforth\_55, Ebony\_56, Erik\_45, Espica\_45, Et2Brutus\_55, Fibonacci\_56, Flaverint\_57, Gilberta\_57, Gollum\_45, Groundhog\_54, Harlequin\_44, Hiro\_45, Hutc2\_56, Insomnia\_57, Jabith\_57, Jester\_44, Joselito\_57, Kimba\_56, Krishelle\_45, Lillie\_45, Lucivia\_57, MaCh\_57, Mabel\_56, Mulciber\_56, Munch\_57, MyraDee\_51, Naiad\_44, Nancinator\_45, Natosaleda\_44, NearlyHeadless\_55, Orange\_56, Petersenfast\_55, PhailMary\_44, Phrankenstein\_45, RER2\_38, Rasputin\_45, RexFury\_44, Rhodalysa\_45, Roary\_56, Saintus\_50, Salz\_55, Saskia\_57, Sham4\_56, Shuman\_45, Snape\_56, StCroix\_44, Swann\_45, TWAMP\_45, Timothy\_56, TinyTimmy\_56, UhSalsa\_45, Wolpertinger\_55, Yogi\_44, Yoncess\_44,

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

- 

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

- Anaysia\_62, Anon\_59, Astro\_55, Battleship\_64, Boohoo\_62, DekHockey33\_63, Elle\_55, Epsocamisio\_59, JSwag\_61, KatherineG\_62, Kinmap\_55, LastResort\_60, Looper\_61, MinecraftSteve\_62, Nebulosus\_60, Oofda\_63, Ravana\_65, ReMo\_60, Remus\_62, Rosalind\_60, ShayRa\_62, Soups\_62, Strosahl\_62, Switzerland\_61, Waits\_62, Warrior24\_64,

### Summary by start number:

Start 2:

- Found in 2 of 94 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 1 of 86
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Astro\_55 (A8), Kinmap\_55 (A21),

Start 3:

- Found in 68 of 94 ( 72.3% ) of genes in pham
- Manual Annotations of this start: 63 of 86
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alatin\_44 (CA), Alpacados\_44 (CA), Aneem\_57 (A11), AppleCloud\_42 (CA), Bachome\_58 (A11), Belenaria\_45 (CA), BobbyDazzler\_45 (CA), Bonanza\_45 (CA), Bowtie\_57 (A11), Bradshaw\_45 (CA), Bryce\_44 (CA), Bud\_56 (A11), Chargerpower\_55 (A22), CosmicSans\_45 (CA), Danforth\_55 (A8), Ebony\_56 (A11), Erik\_45 (CA), Espica\_45 (CA), Et2Brutus\_55 (A11), Fibonacci\_56 (A11), Flaverint\_57 (A11), Gilberta\_57 (A11), Gollum\_45 (CA), Groundhog\_54 (A8), Harlequin\_44 (CA), Hiro\_45 (CA), Hutc2\_56 (A11), Insomnia\_57 (A11), Jabith\_57 (A11), Jester\_44 (CA), Joselito\_57 (A11), Kimba\_56 (A11), Krishelle\_45 (CA), Lillie\_45 (CA), Lucivia\_57 (A11), MaCh\_57 (A11), Mabel\_56 (A11), Mulciber\_56 (A11), Munch\_57 (A11), MyraDee\_51 (A18), Naiad\_44 (CA), Nancinator\_45 (CA), Natosaleda\_44 (CA), NearlyHeadless\_55 (A8), Orange\_56 (A11), Petersenfast\_55 (A11), PhailMary\_44 (CA), Phrankenstein\_45 (CA), RER2\_38 (CA), Rasputin\_45 (CA), RexFury\_44 (CA), Rhodalysa\_45 (CA), Roary\_56 (A8), Saintus\_50 (A8), Salz\_55 (A11), Saskia\_57 (A11), Sham4\_56 (A11), Shuman\_45 (CA), Snape\_56 (A11), StCroix\_44 (CA), Swann\_45 (CA), TWAMP\_45 (CA), Timothy\_56 (A11), TinyTimmy\_56 (A11), UhSalsa\_45 (CA), Wolpertinger\_55 (A11),

Yogi\_44 (CA), Yoncess\_44 (CA),

Start 4:

- Found in 52 of 94 ( 55.3% ) of genes in pham
- Manual Annotations of this start: 22 of 86
- Called 46.2% of time when present
- Phage (with cluster) where this start called: Anaysia\_62 (A15), Anon\_59 (A15), Battleship\_64 (A15), Boohoo\_62 (A15), DekHockey33\_63 (A15), Elle\_55 (A15), Epsocamisio\_59 (A15), JSwag\_61 (A15), KatherineG\_62 (A15), LastResort\_60 (A15), Looper\_61 (A15), MinecraftSteve\_62 (A15), Nebulosus\_60 (A15), Oofda\_63 (A15), Ravana\_65 (A15), ReMo\_60 (A15), Remus\_62 (A15), Rosalind\_60 (A15), ShayRa\_62 (A15), Soups\_62 (A15), Strosahl\_62 (A15), Switzerland\_61 (A15), Waits\_62 (A15), Warrior24\_64 (A15),

### **Summary by clusters:**

There are 7 clusters represented in this pham: A15, A21, A22, A11, CA, A18, A8,

Info for manual annotations of cluster A11:

- Start number 3 was manually annotated 24 times for cluster A11.

Info for manual annotations of cluster A15:

- Start number 4 was manually annotated 22 times for cluster A15.

Info for manual annotations of cluster A18:

- Start number 3 was manually annotated 1 time for cluster A18.

Info for manual annotations of cluster A22:

- Start number 3 was manually annotated 1 time for cluster A22.

Info for manual annotations of cluster A8:

- Start number 2 was manually annotated 1 time for cluster A8.
- Start number 3 was manually annotated 5 times for cluster A8.

Info for manual annotations of cluster CA:

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

### **Gene Information:**

Gene: Alatin\_44 Start: 34028, Stop: 33657, Start Num: 3

Candidate Starts for Alatin\_44:

(Start: 3 @34028 has 63 MA's), (6, 34004), (9, 33974), (12, 33929), (17, 33890), (18, 33845), (22, 33773),

Gene: Alpacados\_44 Start: 33933, Stop: 33562, Start Num: 3

Candidate Starts for Alpacados\_44:

(Start: 3 @33933 has 63 MA's), (6, 33909), (9, 33879), (12, 33834), (17, 33795), (18, 33750),

Gene: Anaysia\_62 Start: 37228, Stop: 36794, Start Num: 4

Candidate Starts for Anaysia\_62:

(Start: 4 @37228 has 22 MA's), (7, 37207), (15, 37111), (19, 37039), (28, 36946), (29, 36943), (39, 36853), (45, 36805),

Gene: Aneem\_57 Start: 37514, Stop: 37116, Start Num: 3

Candidate Starts for Aneem\_57:

(Start: 3 @37514 has 63 MA's), (Start: 4 @37502 has 22 MA's), (23, 37265), (26, 37253), (27, 37250),

Gene: Anon\_59 Start: 36768, Stop: 36319, Start Num: 4

Candidate Starts for Anon\_59:

(Start: 4 @36768 has 22 MA's), (19, 36579), (35, 36429), (46, 36324),

Gene: AppleCloud\_42 Start: 33752, Stop: 33387, Start Num: 3

Candidate Starts for AppleCloud\_42:

(Start: 3 @33752 has 63 MA's), (6, 33728), (9, 33698), (12, 33653), (17, 33614), (18, 33569), (36, 33431),

Gene: Astro\_55 Start: 36581, Stop: 36168, Start Num: 2

Candidate Starts for Astro\_55:

(Start: 2 @36581 has 1 MA's), (11, 36518), (23, 36326), (38, 36230), (43, 36182), (44, 36179),

Gene: Bachome\_58 Start: 37494, Stop: 37096, Start Num: 3

Candidate Starts for Bachome\_58:

(Start: 3 @37494 has 63 MA's), (Start: 4 @37482 has 22 MA's), (23, 37245), (26, 37233),

Gene: Battleship\_64 Start: 37434, Stop: 37000, Start Num: 4

Candidate Starts for Battleship\_64:

(Start: 4 @37434 has 22 MA's), (7, 37413), (15, 37317), (19, 37245), (28, 37152), (29, 37149), (39, 37059), (45, 37011),

Gene: Belenaria\_45 Start: 33894, Stop: 33523, Start Num: 3

Candidate Starts for Belenaria\_45:

(Start: 3 @33894 has 63 MA's), (6, 33870), (9, 33840), (12, 33795), (17, 33756), (18, 33711), (22, 33639),

Gene: BobbyDazzler\_45 Start: 34007, Stop: 33636, Start Num: 3

Candidate Starts for BobbyDazzler\_45:

(Start: 3 @34007 has 63 MA's), (6, 33983), (9, 33953), (12, 33908), (17, 33869), (18, 33824),

Gene: Bonanza\_45 Start: 33935, Stop: 33564, Start Num: 3

Candidate Starts for Bonanza\_45:

(Start: 3 @33935 has 63 MA's), (6, 33911), (9, 33881), (12, 33836), (17, 33797), (18, 33752),

Gene: Boohoo\_62 Start: 37228, Stop: 36794, Start Num: 4

Candidate Starts for Boohoo\_62:

(Start: 4 @37228 has 22 MA's), (7, 37207), (15, 37111), (19, 37039), (28, 36946), (29, 36943), (39, 36853), (45, 36805),

Gene: Bowtie\_57 Start: 37521, Stop: 37123, Start Num: 3

Candidate Starts for Bowtie\_57:

(Start: 3 @37521 has 63 MA's), (Start: 4 @37509 has 22 MA's), (23, 37272), (26, 37260), (27, 37257),

Gene: Bradshaw\_45 Start: 33961, Stop: 33590, Start Num: 3

Candidate Starts for Bradshaw\_45:

(Start: 3 @33961 has 63 MA's), (6, 33937), (9, 33907), (12, 33862), (17, 33823), (18, 33778), (22, 33706),

Gene: Bryce\_44 Start: 33715, Stop: 33344, Start Num: 3

Candidate Starts for Bryce\_44:

(Start: 3 @33715 has 63 MA's), (6, 33691), (9, 33661), (12, 33616), (17, 33577), (18, 33532),

Gene: Bud\_56 Start: 37068, Stop: 36670, Start Num: 3

Candidate Starts for Bud\_56:

(Start: 3 @37068 has 63 MA's), (Start: 4 @37056 has 22 MA's), (23, 36819), (26, 36807), (27, 36804),

Gene: Chargerpower\_55 Start: 36865, Stop: 36452, Start Num: 3

Candidate Starts for Chargerpower\_55:

(Start: 3 @36865 has 63 MA's), (12, 36769), (16, 36733), (21, 36613), (30, 36568), (40, 36484), (43, 36463),

Gene: CosmicSans\_45 Start: 33961, Stop: 33590, Start Num: 3

Candidate Starts for CosmicSans\_45:

(Start: 3 @33961 has 63 MA's), (6, 33937), (9, 33907), (12, 33862), (17, 33823), (18, 33778), (22, 33706),

Gene: Danforth\_55 Start: 36610, Stop: 36197, Start Num: 3

Candidate Starts for Danforth\_55:

(Start: 3 @36610 has 63 MA's), (23, 36355), (38, 36259), (44, 36208),

Gene: DekHockey33\_63 Start: 37520, Stop: 37086, Start Num: 4

Candidate Starts for DekHockey33\_63:

(Start: 4 @37520 has 22 MA's), (7, 37499), (15, 37403), (19, 37331), (28, 37238), (29, 37235), (39, 37145), (45, 37097),

Gene: Ebony\_56 Start: 37085, Stop: 36687, Start Num: 3

Candidate Starts for Ebony\_56:

(Start: 3 @37085 has 63 MA's), (Start: 4 @37073 has 22 MA's), (23, 36836), (26, 36824), (27, 36821),

Gene: Elle\_55 Start: 35262, Stop: 34795, Start Num: 4

Candidate Starts for Elle\_55:

(Start: 4 @35262 has 22 MA's), (19, 35073), (25, 34968), (45, 34806),

Gene: Epsocamisio\_59 Start: 36763, Stop: 36329, Start Num: 4

Candidate Starts for Epsocamisio\_59:

(Start: 4 @36763 has 22 MA's), (7, 36742), (15, 36646), (19, 36574), (28, 36481), (29, 36478), (39, 36388), (45, 36340),

Gene: Erik\_45 Start: 33893, Stop: 33522, Start Num: 3

Candidate Starts for Erik\_45:

(Start: 3 @33893 has 63 MA's), (6, 33869), (9, 33839), (12, 33794), (17, 33755), (18, 33710), (22, 33638),

Gene: Espica\_45 Start: 33894, Stop: 33523, Start Num: 3

Candidate Starts for Espica\_45:

(Start: 3 @33894 has 63 MA's), (6, 33870), (9, 33840), (12, 33795), (17, 33756), (18, 33711), (22, 33639),

Gene: Et2Brutus\_55 Start: 37048, Stop: 36650, Start Num: 3  
Candidate Starts for Et2Brutus\_55:  
(Start: 3 @37048 has 63 MA's), (Start: 4 @37036 has 22 MA's), (23, 36799), (26, 36787), (27, 36784),

Gene: Fibonacci\_56 Start: 37054, Stop: 36656, Start Num: 3  
Candidate Starts for Fibonacci\_56:  
(Start: 3 @37054 has 63 MA's), (Start: 4 @37042 has 22 MA's), (23, 36805), (26, 36793), (27, 36790),

Gene: Flaverint\_57 Start: 37512, Stop: 37114, Start Num: 3  
Candidate Starts for Flaverint\_57:  
(Start: 3 @37512 has 63 MA's), (Start: 4 @37500 has 22 MA's), (23, 37263), (26, 37251), (27, 37248),

Gene: Gilberta\_57 Start: 37505, Stop: 37107, Start Num: 3  
Candidate Starts for Gilberta\_57:  
(Start: 3 @37505 has 63 MA's), (Start: 4 @37493 has 22 MA's), (23, 37256), (26, 37244), (27, 37241),

Gene: Gollum\_45 Start: 33959, Stop: 33588, Start Num: 3  
Candidate Starts for Gollum\_45:  
(Start: 3 @33959 has 63 MA's), (6, 33935), (9, 33905), (12, 33860), (17, 33821), (18, 33776), (22, 33704),

Gene: Groundhog\_54 Start: 36525, Stop: 36112, Start Num: 3  
Candidate Starts for Groundhog\_54:  
(Start: 3 @36525 has 63 MA's), (23, 36270), (38, 36174), (44, 36123),

Gene: Harlequin\_44 Start: 33745, Stop: 33374, Start Num: 3  
Candidate Starts for Harlequin\_44:  
(Start: 3 @33745 has 63 MA's), (6, 33721), (9, 33691), (12, 33646), (17, 33607), (18, 33562),

Gene: Hiro\_45 Start: 34221, Stop: 33850, Start Num: 3  
Candidate Starts for Hiro\_45:  
(Start: 3 @34221 has 63 MA's), (6, 34197), (9, 34167), (12, 34122), (17, 34083), (18, 34038),

Gene: Hutc2\_56 Start: 37054, Stop: 36656, Start Num: 3  
Candidate Starts for Hutc2\_56:  
(Start: 3 @37054 has 63 MA's), (Start: 4 @37042 has 22 MA's), (23, 36805), (26, 36793), (27, 36790),

Gene: Insomnia\_57 Start: 37565, Stop: 37167, Start Num: 3  
Candidate Starts for Insomnia\_57:  
(Start: 3 @37565 has 63 MA's), (Start: 4 @37553 has 22 MA's), (23, 37316), (26, 37304), (27, 37301),

Gene: JSwag\_61 Start: 36952, Stop: 36518, Start Num: 4  
Candidate Starts for JSwag\_61:  
(Start: 4 @36952 has 22 MA's), (7, 36931), (15, 36835), (19, 36763), (28, 36670), (29, 36667), (39, 36577), (45, 36529),

Gene: Jabith\_57 Start: 37566, Stop: 37168, Start Num: 3  
Candidate Starts for Jabith\_57:  
(Start: 3 @37566 has 63 MA's), (Start: 4 @37554 has 22 MA's), (23, 37317), (26, 37305), (27, 37302),

Gene: Jester\_44 Start: 33676, Stop: 33305, Start Num: 3  
Candidate Starts for Jester\_44:  
(Start: 3 @33676 has 63 MA's), (6, 33652), (9, 33622), (12, 33577), (17, 33538), (18, 33493),

Gene: Joselito\_57 Start: 37514, Stop: 37116, Start Num: 3

Candidate Starts for Joselito\_57:

(Start: 3 @37514 has 63 MA's), (Start: 4 @37502 has 22 MA's), (23, 37265), (26, 37253), (27, 37250),

Gene: KatherineG\_62 Start: 37425, Stop: 36991, Start Num: 4

Candidate Starts for KatherineG\_62:

(Start: 4 @37425 has 22 MA's), (7, 37404), (15, 37308), (19, 37236), (28, 37143), (29, 37140), (39, 37050), (45, 37002),

Gene: Kimba\_56 Start: 37086, Stop: 36688, Start Num: 3

Candidate Starts for Kimba\_56:

(Start: 3 @37086 has 63 MA's), (Start: 4 @37074 has 22 MA's), (23, 36837), (26, 36825), (27, 36822),

Gene: Kinmap\_55 Start: 36580, Stop: 36203, Start Num: 2

Candidate Starts for Kinmap\_55:

(Start: 2 @36580 has 1 MA's), (5, 36568), (10, 36520), (13, 36478), (14, 36466), (33, 36307), (37, 36268), (44, 36208),

Gene: Krishelle\_45 Start: 34321, Stop: 33950, Start Num: 3

Candidate Starts for Krishelle\_45:

(Start: 3 @34321 has 63 MA's), (6, 34297), (9, 34267), (12, 34222), (17, 34183), (18, 34138), (22, 34066),

Gene: LastResort\_60 Start: 37004, Stop: 36570, Start Num: 4

Candidate Starts for LastResort\_60:

(Start: 4 @37004 has 22 MA's), (7, 36983), (15, 36887), (19, 36815), (28, 36722), (29, 36719), (39, 36629), (45, 36581),

Gene: Lillie\_45 Start: 33961, Stop: 33590, Start Num: 3

Candidate Starts for Lillie\_45:

(Start: 3 @33961 has 63 MA's), (6, 33937), (9, 33907), (12, 33862), (17, 33823), (18, 33778), (22, 33706),

Gene: Looper\_61 Start: 36916, Stop: 36482, Start Num: 4

Candidate Starts for Looper\_61:

(Start: 4 @36916 has 22 MA's), (7, 36895), (15, 36799), (19, 36727), (28, 36634), (29, 36631), (39, 36541), (45, 36493),

Gene: Lucivia\_57 Start: 37563, Stop: 37165, Start Num: 3

Candidate Starts for Lucivia\_57:

(Start: 3 @37563 has 63 MA's), (Start: 4 @37551 has 22 MA's), (23, 37314), (26, 37302), (27, 37299),

Gene: MaCh\_57 Start: 37493, Stop: 37095, Start Num: 3

Candidate Starts for MaCh\_57:

(Start: 3 @37493 has 63 MA's), (Start: 4 @37481 has 22 MA's), (23, 37244), (26, 37232),

Gene: Mabel\_56 Start: 37095, Stop: 36697, Start Num: 3

Candidate Starts for Mabel\_56:

(Start: 3 @37095 has 63 MA's), (Start: 4 @37083 has 22 MA's), (23, 36846), (26, 36834), (27, 36831),

Gene: MinecraftSteve\_62 Start: 37240, Stop: 36791, Start Num: 4

Candidate Starts for MinecraftSteve\_62:

(Start: 4 @37240 has 22 MA's), (7, 37219), (19, 37051), (35, 36901), (46, 36796),

Gene: Mulciber\_56 Start: 37051, Stop: 36653, Start Num: 3

Candidate Starts for Mulciber\_56:

(Start: 3 @37051 has 63 MA's), (Start: 4 @37039 has 22 MA's), (23, 36802), (26, 36790), (27, 36787),

Gene: Munch\_57 Start: 37514, Stop: 37116, Start Num: 3

Candidate Starts for Munch\_57:

(Start: 3 @37514 has 63 MA's), (Start: 4 @37502 has 22 MA's), (23, 37265), (26, 37253), (27, 37250),

Gene: MyraDee\_51 Start: 34558, Stop: 34052, Start Num: 3

Candidate Starts for MyraDee\_51:

(1, 34573), (Start: 3 @34558 has 63 MA's), (20, 34345), (34, 34231), (35, 34219), (36, 34216), (40, 34168), (42, 34150),

Gene: Naiad\_44 Start: 33974, Stop: 33603, Start Num: 3

Candidate Starts for Naiad\_44:

(Start: 3 @33974 has 63 MA's), (6, 33950), (9, 33920), (12, 33875), (17, 33836), (18, 33791), (22, 33719),

Gene: Nancinator\_45 Start: 33894, Stop: 33523, Start Num: 3

Candidate Starts for Nancinator\_45:

(Start: 3 @33894 has 63 MA's), (6, 33870), (9, 33840), (12, 33795), (17, 33756), (18, 33711), (22, 33639),

Gene: Natosaleda\_44 Start: 33893, Stop: 33522, Start Num: 3

Candidate Starts for Natosaleda\_44:

(Start: 3 @33893 has 63 MA's), (6, 33869), (9, 33839), (12, 33794), (17, 33755), (18, 33710), (22, 33638),

Gene: NearlyHeadless\_55 Start: 36376, Stop: 35963, Start Num: 3

Candidate Starts for NearlyHeadless\_55:

(Start: 3 @36376 has 63 MA's), (23, 36121), (38, 36025), (44, 35974),

Gene: Nebulosus\_60 Start: 37000, Stop: 36566, Start Num: 4

Candidate Starts for Nebulosus\_60:

(Start: 4 @37000 has 22 MA's), (7, 36979), (15, 36883), (19, 36811), (28, 36718), (29, 36715), (39, 36625), (45, 36577),

Gene: Oofda\_63 Start: 37203, Stop: 36784, Start Num: 4

Candidate Starts for Oofda\_63:

(Start: 4 @37203 has 22 MA's), (15, 37086), (19, 37014), (31, 36909), (45, 36795),

Gene: Orange\_56 Start: 37063, Stop: 36665, Start Num: 3

Candidate Starts for Orange\_56:

(Start: 3 @37063 has 63 MA's), (Start: 4 @37051 has 22 MA's), (23, 36814), (26, 36802), (27, 36799),

Gene: Petersenfast\_55 Start: 37062, Stop: 36664, Start Num: 3

Candidate Starts for Petersenfast\_55:

(Start: 3 @37062 has 63 MA's), (Start: 4 @37050 has 22 MA's), (23, 36813), (26, 36801), (27, 36798),

Gene: PhailMary\_44 Start: 34283, Stop: 33912, Start Num: 3

Candidate Starts for PhailMary\_44:

(Start: 3 @34283 has 63 MA's), (6, 34259), (9, 34229), (12, 34184), (17, 34145), (18, 34100),

Gene: Phrankenstein\_45 Start: 33907, Stop: 33536, Start Num: 3

Candidate Starts for Phrankenstein\_45:

(Start: 3 @33907 has 63 MA's), (6, 33883), (9, 33853), (12, 33808), (17, 33769), (18, 33724), (22, 33652),

Gene: RER2\_38 Start: 30833, Stop: 30462, Start Num: 3

Candidate Starts for RER2\_38:

(Start: 3 @30833 has 63 MA's), (6, 30809), (9, 30779), (12, 30734), (17, 30695), (18, 30650), (22, 30578),

Gene: Rasputin\_45 Start: 33931, Stop: 33560, Start Num: 3

Candidate Starts for Rasputin\_45:

(Start: 3 @33931 has 63 MA's), (6, 33907), (9, 33877), (12, 33832), (17, 33793), (18, 33748), (22, 33676),

Gene: Ravana\_65 Start: 38328, Stop: 37909, Start Num: 4

Candidate Starts for Ravana\_65:

(Start: 4 @38328 has 22 MA's), (7, 38307), (15, 38211), (19, 38139), (31, 38034), (45, 37920),

Gene: ReMo\_60 Start: 37001, Stop: 36567, Start Num: 4

Candidate Starts for ReMo\_60:

(Start: 4 @37001 has 22 MA's), (7, 36980), (15, 36884), (19, 36812), (28, 36719), (29, 36716), (39, 36626), (45, 36578),

Gene: Remus\_62 Start: 37007, Stop: 36573, Start Num: 4

Candidate Starts for Remus\_62:

(Start: 4 @37007 has 22 MA's), (7, 36986), (15, 36890), (19, 36818), (28, 36725), (29, 36722), (39, 36632), (45, 36584),

Gene: RexFury\_44 Start: 33992, Stop: 33621, Start Num: 3

Candidate Starts for RexFury\_44:

(Start: 3 @33992 has 63 MA's), (6, 33968), (9, 33938), (12, 33893), (17, 33854), (18, 33809), (22, 33737),

Gene: Rhodalysa\_45 Start: 33961, Stop: 33590, Start Num: 3

Candidate Starts for Rhodalysa\_45:

(Start: 3 @33961 has 63 MA's), (6, 33937), (9, 33907), (12, 33862), (17, 33823), (18, 33778), (22, 33706),

Gene: Roary\_56 Start: 36595, Stop: 36182, Start Num: 3

Candidate Starts for Roary\_56:

(Start: 3 @36595 has 63 MA's), (23, 36340), (38, 36244), (44, 36193),

Gene: Rosalind\_60 Start: 37159, Stop: 36710, Start Num: 4

Candidate Starts for Rosalind\_60:

(Start: 4 @37159 has 22 MA's), (7, 37138), (19, 36970), (35, 36820), (46, 36715),

Gene: Saintus\_50 Start: 33275, Stop: 32889, Start Num: 3

Candidate Starts for Saintus\_50:

(Start: 3 @33275 has 63 MA's), (8, 33230),

Gene: Salz\_55 Start: 37033, Stop: 36635, Start Num: 3  
Candidate Starts for Salz\_55:  
(Start: 3 @37033 has 63 MA's), (Start: 4 @37021 has 22 MA's), (23, 36784), (26, 36772), (27, 36769),

Gene: Saskia\_57 Start: 37061, Stop: 36663, Start Num: 3  
Candidate Starts for Saskia\_57:  
(Start: 3 @37061 has 63 MA's), (Start: 4 @37049 has 22 MA's), (23, 36812), (26, 36800), (27, 36797),

Gene: Sham4\_56 Start: 37061, Stop: 36663, Start Num: 3  
Candidate Starts for Sham4\_56:  
(Start: 3 @37061 has 63 MA's), (Start: 4 @37049 has 22 MA's), (23, 36812), (26, 36800), (27, 36797),

Gene: ShayRa\_62 Start: 37188, Stop: 36754, Start Num: 4  
Candidate Starts for ShayRa\_62:  
(Start: 4 @37188 has 22 MA's), (7, 37167), (15, 37071), (19, 36999), (28, 36906), (29, 36903), (39, 36813), (45, 36765),

Gene: Shuman\_45 Start: 33906, Stop: 33535, Start Num: 3  
Candidate Starts for Shuman\_45:  
(Start: 3 @33906 has 63 MA's), (6, 33882), (9, 33852), (12, 33807), (17, 33768), (18, 33723), (22, 33651),

Gene: Snape\_56 Start: 37053, Stop: 36655, Start Num: 3  
Candidate Starts for Snape\_56:  
(Start: 3 @37053 has 63 MA's), (Start: 4 @37041 has 22 MA's), (23, 36804), (26, 36792), (27, 36789),

Gene: Soups\_62 Start: 37451, Stop: 36993, Start Num: 4  
Candidate Starts for Soups\_62:  
(Start: 4 @37451 has 22 MA's), (7, 37430), (19, 37262), (24, 37172), (32, 37139), (41, 37052),

Gene: StCroix\_44 Start: 33974, Stop: 33603, Start Num: 3  
Candidate Starts for StCroix\_44:  
(Start: 3 @33974 has 63 MA's), (6, 33950), (9, 33920), (12, 33875), (17, 33836), (18, 33791), (22, 33719),

Gene: Strosahl\_62 Start: 37007, Stop: 36573, Start Num: 4  
Candidate Starts for Strosahl\_62:  
(Start: 4 @37007 has 22 MA's), (7, 36986), (15, 36890), (19, 36818), (28, 36725), (29, 36722), (39, 36632), (45, 36584),

Gene: Swann\_45 Start: 33959, Stop: 33588, Start Num: 3  
Candidate Starts for Swann\_45:  
(Start: 3 @33959 has 63 MA's), (6, 33935), (9, 33905), (12, 33860), (17, 33821), (18, 33776), (22, 33704),

Gene: Switzerland\_61 Start: 37327, Stop: 36893, Start Num: 4  
Candidate Starts for Switzerland\_61:  
(Start: 4 @37327 has 22 MA's), (7, 37306), (15, 37210), (19, 37138), (28, 37045), (29, 37042), (39, 36952), (45, 36904),

Gene: TWAMP\_45 Start: 33961, Stop: 33590, Start Num: 3  
Candidate Starts for TWAMP\_45:

(Start: 3 @33961 has 63 MA's), (6, 33937), (9, 33907), (12, 33862), (17, 33823), (18, 33778), (22, 33706),

Gene: Timothy\_56 Start: 37030, Stop: 36632, Start Num: 3

Candidate Starts for Timothy\_56:

(Start: 3 @37030 has 63 MA's), (Start: 4 @37018 has 22 MA's), (23, 36781), (26, 36769), (27, 36766),

Gene: TinyTimmy\_56 Start: 37079, Stop: 36681, Start Num: 3

Candidate Starts for TinyTimmy\_56:

(Start: 3 @37079 has 63 MA's), (Start: 4 @37067 has 22 MA's), (23, 36830), (26, 36818), (27, 36815),

Gene: UhSalsa\_45 Start: 33894, Stop: 33523, Start Num: 3

Candidate Starts for UhSalsa\_45:

(Start: 3 @33894 has 63 MA's), (6, 33870), (9, 33840), (12, 33795), (17, 33756), (18, 33711), (22, 33639),

Gene: Waits\_62 Start: 37224, Stop: 36775, Start Num: 4

Candidate Starts for Waits\_62:

(Start: 4 @37224 has 22 MA's), (7, 37203), (19, 37035), (35, 36885), (46, 36780),

Gene: Warrior24\_64 Start: 37658, Stop: 37239, Start Num: 4

Candidate Starts for Warrior24\_64:

(Start: 4 @37658 has 22 MA's), (15, 37541), (19, 37469), (31, 37364), (45, 37250),

Gene: Wolpertinger\_55 Start: 37062, Stop: 36664, Start Num: 3

Candidate Starts for Wolpertinger\_55:

(Start: 3 @37062 has 63 MA's), (Start: 4 @37050 has 22 MA's), (23, 36813), (26, 36801), (27, 36798),

Gene: Yogi\_44 Start: 33935, Stop: 33564, Start Num: 3

Candidate Starts for Yogi\_44:

(Start: 3 @33935 has 63 MA's), (6, 33911), (9, 33881), (12, 33836), (17, 33797), (18, 33752),

Gene: Yoncess\_44 Start: 33715, Stop: 33344, Start Num: 3

Candidate Starts for Yoncess\_44:

(Start: 3 @33715 has 63 MA's), (6, 33691), (9, 33661), (12, 33616), (17, 33577), (18, 33532),