

Pham 163514



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 163514 Report

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

Pham number 163514 has 91 members, 4 are drafts.

Phages represented in each track:

- Track 1 : Edison31\_43, Rebeuca\_45, Topanga\_43, WalterMcMickey\_43, Kristoff\_45, Twister\_43
- Track 2 : Chupacabra\_44, OKCentral2016\_44, Goose\_45
- Track 3 : Eaglepride\_46
- Track 4 : RhynO\_46
- Track 5 : Flaverint\_48, Bowtie\_48, Mabel\_47, Munch\_48, Aneem\_48, Joselito\_48
- Track 6 : Refuge\_46
- Track 7 : Pharaoh\_41
- Track 8 : Zimmer\_44
- Track 9 : Luchador\_52, Jeeves\_52
- Track 10 : Gail\_52
- Track 11 : SororFago\_50
- Track 12 : EagleEye\_49, PainterBoy\_48, Lucyedi\_48
- Track 13 : XianYue\_46
- Track 14 : MissWhite\_46
- Track 15 : Journey13\_41
- Track 16 : Phighter1804\_46, DirtyDunning\_45
- Track 17 : Datway\_45
- Track 18 : Cindaradix\_43
- Track 19 : Arturo\_45, Kratak\_46
- Track 20 : Shygu2\_45
- Track 21 : Eidsmoe\_47, Phaeder\_47, Myxus\_47, Priya\_47, Beemo\_47, ExplosioNervosa\_47, EmyBug\_44, PackMan\_46, Ugenie5\_44, HortumSL17\_47, Scherzo\_47, Conquerage\_47, Aliter\_47, Fayely\_47, Phonnegut\_47, Qobbit\_47, Tubs\_47, Pioneer\_47, Alma\_47, Spouty\_45, Catalina\_48
- Track 22 : Toaka\_46
- Track 23 : Rahalelujah\_46
- Track 24 : Elephantoon\_46
- Track 25 : BogosyJay\_46, Maminiaina\_46
- Track 26 : LoneWolf\_47
- Track 27 : Darrell\_47
- Track 28 : Yecey3\_48
- Track 29 : Keziacharles14\_47
- Track 30 : Vanisoa\_46
- Track 31 : Swann\_37, CosmicSans\_37, Rhodalysa\_37, Natosaleda\_37, Rasputin\_37, Lillie\_37, Erik\_37, Nancinator\_37, TWAMP\_37, Shuman\_37, Espica\_37, Phrankenstein\_37, RexFury\_37, Belenaria\_37, UhSalsa\_37, Gollum\_37

- Track 32 : Krishelle\_37, Dinger\_37, AppleCloud\_35
- Track 33 : Bradshaw\_37, StCroix\_37, Naiad\_37, Alatin\_37

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

The start number called the most often in the published annotations is 18, it was called in 25 of the 87 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aliter\_47, Alma\_47, Beemo\_47, Catalina\_48, Conquerage\_47, Eidsmoe\_47, EmyBug\_44, ExplosioNervosa\_47, Fayely\_47, Gail\_52, HortumSL17\_47, Jeeves\_52, Luchador\_52, Myxus\_47, PackMan\_46, Phaeder\_47, Pharaoh\_41, Phonnegut\_47, Pioneer\_47, Priya\_47, Qobbit\_47, Scherzo\_47, SororFago\_50, Spouty\_45, Tubs\_47, Yegenie5\_44, Yecey3\_48,

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

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

- Alatin\_37, Aneem\_48, AppleCloud\_35, Arturo\_45, Belenaria\_37, BogosyJay\_46, Bowtie\_48, Bradshaw\_37, Chupacabra\_44, Cindaradix\_43, CosmicSans\_37, Darrell\_47, Datway\_45, Dinger\_37, DirtyDunning\_45, EagleEye\_49, Eaglepride\_46, Edison31\_43, Elephantoon\_46, Erik\_37, Espica\_37, Flaverint\_48, Gollum\_37, Goose\_45, Joselito\_48, Journey13\_41, Keziacharles14\_47, Kratark\_46, Krishelle\_37, Kristoff\_45, Lillie\_37, LoneWolf\_47, Lucyedi\_48, Mabel\_47, Maminiaina\_46, MissWhite\_46, Munch\_48, Naiad\_37, Nancinator\_37, Natosaleda\_37, OKCentral2016\_44, PainterBoy\_48, Phighter1804\_46, Phrankenstein\_37, Rahalelujah\_46, Rasputin\_37, Rebeuca\_45, Refuge\_46, RexFury\_37, Rhodalysa\_37, RhynO\_46, Shuman\_37, Shygu2\_45, StCroix\_37, Swann\_37, TWAMP\_37, Toaka\_46, Topanga\_43, Twister\_43, UhSalsa\_37, Vanisoa\_46, WalterMcMickey\_43, XianYue\_46, Zimmer\_44,

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

Start 11:

- Found in 3 of 91 ( 3.3% ) of genes in pham
- Manual Annotations of this start: 3 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EagleEye\_49 (A16), Lucyedi\_48 (A16), PainterBoy\_48 (A16),

Start 12:

- Found in 6 of 91 ( 6.6% ) of genes in pham
- Manual Annotations of this start: 6 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aneem\_48 (A11), Bowtie\_48 (A11), Flaverint\_48 (A11), Joselito\_48 (A11), Mabel\_47 (A11), Munch\_48 (A11),

Start 13:

- Found in 2 of 91 ( 2.2% ) of genes in pham

- Manual Annotations of this start: 1 of 87
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Journey13\_41 (A2),

#### Start 14:

- Found in 2 of 91 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 1 of 87
- Called 50.0% of time when present
- Phage (with cluster) where this start called: MissWhite\_46 (A2),

#### Start 15:

- Found in 3 of 91 ( 3.3% ) of genes in pham
- Manual Annotations of this start: 3 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LoneWolf\_47 (A9), Refuge\_46 (A12), Zimmer\_44 (A12),

#### Start 16:

- Found in 1 of 91 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: XianYue\_46 (A2),

#### Start 17:

- Found in 6 of 91 ( 6.6% ) of genes in pham
- Manual Annotations of this start: 5 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Darrell\_47 (A9), Elephantoon\_46 (A9), Keziacharles14\_47 (A9), Rahalelujah\_46 (A9), Toaka\_46 (A9), Vanisoa\_46 (A9),

#### Start 18:

- Found in 27 of 91 ( 29.7% ) of genes in pham
- Manual Annotations of this start: 25 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aliter\_47 (A9), Alma\_47 (A9), Beemo\_47 (A9), Catalina\_48 (A9), Conquerage\_47 (A9), Eidsmoe\_47 (A9), EmyBug\_44 (A9), ExplosioNervosa\_47 (A9), Fayely\_47 (A9), Gail\_52 (A14), HortumSL17\_47 (A9), Jeeves\_52 (A14), Luchador\_52 (A14), Myxus\_47 (A9), PackMan\_46 (A9), Phaeder\_47 (A9), Pharaoh\_41 (A12), Phonnegut\_47 (A9), Pioneer\_47 (A9), Priya\_47 (A9), Qobbit\_47 (A9), Scherzo\_47 (A9), SororFago\_50 (A14), Spouty\_45 (A9), Tubs\_47 (A9), Ugenie5\_44 (A9), Yecy3\_48 (A9),

#### Start 20:

- Found in 4 of 91 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 2 of 87
- Called 50.0% of time when present
- Phage (with cluster) where this start called: BogosyJay\_46 (A9), Maminiaina\_46 (A9),

#### Start 24:

- Found in 10 of 91 ( 11.0% ) of genes in pham
- Manual Annotations of this start: 7 of 87
- Called 70.0% of time when present

- Phage (with cluster) where this start called: Arturo\_45 (A4), Cindaradix\_43 (A4), Datway\_45 (A4), DirtyDunning\_45 (A4), Kratak\_46 (A4), Phighter1804\_46 (A4), Shygu2\_45 (A4),

Start 28:

- Found in 1 of 91 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Eaglepride\_46 (A10),

Start 29:

- Found in 10 of 91 ( 11.0% ) of genes in pham
- Manual Annotations of this start: 9 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chupacabra\_44 (A10), Edison31\_43 (A10), Goose\_45 (A10), Kristoff\_45 (A10), OKCentral2016\_44 (A10), Rebeuca\_45 (A10), RhynO\_46 (A10), Topanga\_43 (A10), Twister\_43 (A10), WalterMcMickey\_43 (A10),

Start 31:

- Found in 23 of 91 ( 25.3% ) of genes in pham
- Manual Annotations of this start: 23 of 87
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alatin\_37 (CA), AppleCloud\_35 (CA), Belenaria\_37 (CA), Bradshaw\_37 (CA), CosmicSans\_37 (CA), Dinger\_37 (CA), Erik\_37 (CA), Espica\_37 (CA), Gollum\_37 (CA), Krishelle\_37 (CA), Lillie\_37 (CA), Naiad\_37 (CA), Nancinator\_37 (CA), Natosaleda\_37 (CA), Phrankenstein\_37 (CA), Rasputin\_37 (CA), RexFury\_37 (CA), Rhodalysa\_37 (CA), Shuman\_37 (CA), StCroix\_37 (CA), Swann\_37 (CA), TWAMP\_37 (CA), UhSalsa\_37 (CA),

### Summary by clusters:

There are 9 clusters represented in this pham: A14, A16, A11, A10, A12, CA, A2, A4, A9,

Info for manual annotations of cluster A10:

- Start number 28 was manually annotated 1 time for cluster A10.
- Start number 29 was manually annotated 9 times for cluster A10.

Info for manual annotations of cluster A11:

- Start number 12 was manually annotated 6 times for cluster A11.

Info for manual annotations of cluster A12:

- Start number 15 was manually annotated 2 times for cluster A12.
- Start number 18 was manually annotated 1 time for cluster A12.

Info for manual annotations of cluster A14:

- Start number 18 was manually annotated 4 times for cluster A14.

Info for manual annotations of cluster A16:

- Start number 11 was manually annotated 3 times for cluster A16.

Info for manual annotations of cluster A2:

- Start number 13 was manually annotated 1 time for cluster A2.
- Start number 14 was manually annotated 1 time for cluster A2.
- Start number 16 was manually annotated 1 time for cluster A2.

Info for manual annotations of cluster A4:

- Start number 24 was manually annotated 7 times for cluster A4.

Info for manual annotations of cluster A9:

- Start number 15 was manually annotated 1 time for cluster A9.
- Start number 17 was manually annotated 5 times for cluster A9.
- Start number 18 was manually annotated 20 times for cluster A9.
- Start number 20 was manually annotated 2 times for cluster A9.

Info for manual annotations of cluster CA:

- Start number 31 was manually annotated 23 times for cluster CA.

### **Gene Information:**

Gene: Alatin\_37 Start: 28461, Stop: 28189, Start Num: 31

Candidate Starts for Alatin\_37:

(Start: 31 @28461 has 23 MA's), (52, 28245), (54, 28209),

Gene: Aliter\_47 Start: 32037, Stop: 31711, Start Num: 18

Candidate Starts for Aliter\_47:

(Start: 18 @32037 has 25 MA's), (23, 32013), (33, 31971), (54, 31731),

Gene: Alma\_47 Start: 32160, Stop: 31834, Start Num: 18

Candidate Starts for Alma\_47:

(Start: 18 @32160 has 25 MA's), (23, 32136), (33, 32094), (54, 31854),

Gene: Aneem\_48 Start: 31705, Stop: 31358, Start Num: 12

Candidate Starts for Aneem\_48:

(Start: 12 @31705 has 6 MA's), (21, 31672), (25, 31651), (50, 31438), (53, 31405),

Gene: AppleCloud\_35 Start: 28336, Stop: 28064, Start Num: 31

Candidate Starts for AppleCloud\_35:

(Start: 24 @28369 has 7 MA's), (Start: 31 @28336 has 23 MA's), (43, 28249), (52, 28120), (54, 28084),

Gene: Arturo\_45 Start: 32157, Stop: 31834, Start Num: 24

Candidate Starts for Arturo\_45:

(Start: 24 @32157 has 7 MA's), (27, 32142), (42, 32004), (50, 31917), (53, 31884),

Gene: Beemo\_47 Start: 32159, Stop: 31833, Start Num: 18

Candidate Starts for Beemo\_47:

(Start: 18 @32159 has 25 MA's), (23, 32135), (33, 32093), (54, 31853),

Gene: Belenaria\_37 Start: 28395, Stop: 28123, Start Num: 31

Candidate Starts for Belenaria\_37:

(Start: 31 @28395 has 23 MA's), (40, 28329), (52, 28179), (54, 28143),

Gene: BogosyJay\_46 Start: 31869, Stop: 31543, Start Num: 20  
Candidate Starts for BogosyJay\_46:  
(Start: 20 @31869 has 2 MA's), (23, 31845), (33, 31803), (38, 31761), (54, 31563),

Gene: Bowtie\_48 Start: 31712, Stop: 31365, Start Num: 12  
Candidate Starts for Bowtie\_48:  
(Start: 12 @31712 has 6 MA's), (21, 31679), (25, 31658), (50, 31445), (53, 31412),

Gene: Bradshaw\_37 Start: 28394, Stop: 28122, Start Num: 31  
Candidate Starts for Bradshaw\_37:  
(Start: 31 @28394 has 23 MA's), (52, 28178), (54, 28142),

Gene: Catalina\_48 Start: 32110, Stop: 31784, Start Num: 18  
Candidate Starts for Catalina\_48:  
(Start: 18 @32110 has 25 MA's), (23, 32086), (33, 32044), (54, 31804),

Gene: Chupacabra\_44 Start: 31467, Stop: 31129, Start Num: 29  
Candidate Starts for Chupacabra\_44:  
(5, 31611), (8, 31560), (Start: 29 @31467 has 9 MA's), (36, 31407), (44, 31317), (46, 31302), (49, 31224),

Gene: Cindaradix\_43 Start: 31493, Stop: 31170, Start Num: 24  
Candidate Starts for Cindaradix\_43:  
(Start: 24 @31493 has 7 MA's), (37, 31385), (42, 31340), (49, 31265), (53, 31220),

Gene: Conquerage\_47 Start: 32133, Stop: 31807, Start Num: 18  
Candidate Starts for Conquerage\_47:  
(Start: 18 @32133 has 25 MA's), (23, 32109), (33, 32067), (54, 31827),

Gene: CosmicSans\_37 Start: 28394, Stop: 28122, Start Num: 31  
Candidate Starts for CosmicSans\_37:  
(Start: 31 @28394 has 23 MA's), (40, 28328), (52, 28178), (54, 28142),

Gene: Darrell\_47 Start: 32497, Stop: 32153, Start Num: 17  
Candidate Starts for Darrell\_47:  
(7, 32539), (10, 32518), (Start: 17 @32497 has 5 MA's), (22, 32482), (33, 32434), (34, 32413), (39, 32359), (54, 32173),

Gene: Datway\_45 Start: 31839, Stop: 31516, Start Num: 24  
Candidate Starts for Datway\_45:  
(Start: 24 @31839 has 7 MA's), (37, 31731), (53, 31566),

Gene: Dinger\_37 Start: 28378, Stop: 28106, Start Num: 31  
Candidate Starts for Dinger\_37:  
(Start: 24 @28411 has 7 MA's), (Start: 31 @28378 has 23 MA's), (43, 28291), (52, 28162), (54, 28126),

Gene: DirtyDunning\_45 Start: 31898, Stop: 31575, Start Num: 24  
Candidate Starts for DirtyDunning\_45:  
(Start: 24 @31898 has 7 MA's), (27, 31883), (42, 31745), (48, 31706), (50, 31658), (53, 31625),

Gene: EagleEye\_49 Start: 31670, Stop: 31308, Start Num: 11  
Candidate Starts for EagleEye\_49:

(Start: 11 @31670 has 3 MA's), (19, 31646), (50, 31388),

Gene: Eaglepride\_46 Start: 31543, Stop: 31214, Start Num: 28

Candidate Starts for Eaglepride\_46:

(5, 31681), (6, 31654), (Start: 28 @31543 has 1 MA's), (44, 31393), (49, 31309),

Gene: Edison31\_43 Start: 31487, Stop: 31149, Start Num: 29

Candidate Starts for Edison31\_43:

(5, 31631), (8, 31580), (Start: 29 @31487 has 9 MA's), (44, 31337), (46, 31322), (49, 31244),

Gene: Eidsmoe\_47 Start: 32173, Stop: 31847, Start Num: 18

Candidate Starts for Eidsmoe\_47:

(Start: 18 @32173 has 25 MA's), (23, 32149), (33, 32107), (54, 31867),

Gene: Elephantoon\_46 Start: 31477, Stop: 31130, Start Num: 17

Candidate Starts for Elephantoon\_46:

(Start: 17 @31477 has 5 MA's), (23, 31453), (33, 31411), (39, 31336), (41, 31318), (54, 31150),

Gene: EmyBug\_44 Start: 32175, Stop: 31849, Start Num: 18

Candidate Starts for EmyBug\_44:

(Start: 18 @32175 has 25 MA's), (23, 32151), (33, 32109), (54, 31869),

Gene: Erik\_37 Start: 28392, Stop: 28120, Start Num: 31

Candidate Starts for Erik\_37:

(Start: 31 @28392 has 23 MA's), (40, 28326), (52, 28176), (54, 28140),

Gene: Espica\_37 Start: 28395, Stop: 28123, Start Num: 31

Candidate Starts for Espica\_37:

(Start: 31 @28395 has 23 MA's), (40, 28329), (52, 28179), (54, 28143),

Gene: ExplosioNervosa\_47 Start: 32193, Stop: 31867, Start Num: 18

Candidate Starts for ExplosioNervosa\_47:

(Start: 18 @32193 has 25 MA's), (23, 32169), (33, 32127), (54, 31887),

Gene: Fayely\_47 Start: 32142, Stop: 31816, Start Num: 18

Candidate Starts for Fayely\_47:

(Start: 18 @32142 has 25 MA's), (23, 32118), (33, 32076), (54, 31836),

Gene: Flaverint\_48 Start: 31706, Stop: 31359, Start Num: 12

Candidate Starts for Flaverint\_48:

(Start: 12 @31706 has 6 MA's), (21, 31673), (25, 31652), (50, 31439), (53, 31406),

Gene: Gail\_52 Start: 33875, Stop: 33528, Start Num: 18

Candidate Starts for Gail\_52:

(9, 33899), (Start: 18 @33875 has 25 MA's), (33, 33815), (50, 33608), (54, 33548), (55, 33539),

Gene: Gollum\_37 Start: 28394, Stop: 28122, Start Num: 31

Candidate Starts for Gollum\_37:

(Start: 31 @28394 has 23 MA's), (40, 28328), (52, 28178), (54, 28142),

Gene: Goose\_45 Start: 31271, Stop: 30933, Start Num: 29

Candidate Starts for Goose\_45:



(5, 31415), (8, 31364), (Start: 29 @31271 has 9 MA's), (36, 31211), (44, 31121), (46, 31106), (49, 31028),

Gene: HortumSL17\_47 Start: 32109, Stop: 31783, Start Num: 18  
Candidate Starts for HortumSL17\_47:  
(Start: 18 @32109 has 25 MA's), (23, 32085), (33, 32043), (54, 31803),

Gene: Jeeves\_52 Start: 32647, Stop: 32300, Start Num: 18  
Candidate Starts for Jeeves\_52:  
(9, 32671), (Start: 18 @32647 has 25 MA's), (33, 32587), (50, 32380), (54, 32320),

Gene: Joselito\_48 Start: 31705, Stop: 31358, Start Num: 12  
Candidate Starts for Joselito\_48:  
(Start: 12 @31705 has 6 MA's), (21, 31672), (25, 31651), (50, 31438), (53, 31405),

Gene: Journey13\_41 Start: 30529, Stop: 30176, Start Num: 13  
Candidate Starts for Journey13\_41:  
(Start: 13 @30529 has 1 MA's), (Start: 14 @30526 has 1 MA's), (Start: 20 @30508 has 2 MA's), (23, 30484), (50, 30256),

Gene: Keziacharles14\_47 Start: 33144, Stop: 32797, Start Num: 17  
Candidate Starts for Keziacharles14\_47:  
(Start: 17 @33144 has 5 MA's), (23, 33120), (33, 33078), (38, 33015), (39, 33003), (54, 32817), (55, 32808),

Gene: Kratak\_46 Start: 32040, Stop: 31717, Start Num: 24  
Candidate Starts for Kratak\_46:  
(Start: 24 @32040 has 7 MA's), (27, 32025), (42, 31887), (50, 31800), (53, 31767),

Gene: Krishelle\_37 Start: 28678, Stop: 28406, Start Num: 31  
Candidate Starts for Krishelle\_37:  
(Start: 24 @28711 has 7 MA's), (Start: 31 @28678 has 23 MA's), (43, 28591), (52, 28462), (54, 28426),

Gene: Kristoff\_45 Start: 31839, Stop: 31501, Start Num: 29  
Candidate Starts for Kristoff\_45:  
(5, 31983), (8, 31932), (Start: 29 @31839 has 9 MA's), (44, 31689), (46, 31674), (49, 31596),

Gene: Lillie\_37 Start: 28394, Stop: 28122, Start Num: 31  
Candidate Starts for Lillie\_37:  
(Start: 31 @28394 has 23 MA's), (40, 28328), (52, 28178), (54, 28142),

Gene: LoneWolf\_47 Start: 31870, Stop: 31502, Start Num: 15  
Candidate Starts for LoneWolf\_47:  
(2, 32050), (3, 31999), (4, 31975), (Start: 15 @31870 has 3 MA's), (23, 31846), (33, 31804), (36, 31762), (54, 31522),

Gene: Luchador\_52 Start: 34435, Stop: 34088, Start Num: 18  
Candidate Starts for Luchador\_52:  
(9, 34459), (Start: 18 @34435 has 25 MA's), (33, 34375), (50, 34168), (54, 34108),

Gene: Lucyedi\_48 Start: 31865, Stop: 31503, Start Num: 11  
Candidate Starts for Lucyedi\_48:

(Start: 11 @31865 has 3 MA's), (19, 31841), (50, 31583),

Gene: Mabel\_47 Start: 31294, Stop: 30947, Start Num: 12

Candidate Starts for Mabel\_47:

(Start: 12 @31294 has 6 MA's), (21, 31261), (25, 31240), (50, 31027), (53, 30994),

Gene: Maminiaina\_46 Start: 31851, Stop: 31525, Start Num: 20

Candidate Starts for Maminiaina\_46:

(Start: 20 @31851 has 2 MA's), (23, 31827), (33, 31785), (38, 31743), (54, 31545),

Gene: MissWhite\_46 Start: 30606, Stop: 30256, Start Num: 14

Candidate Starts for MissWhite\_46:

(Start: 14 @30606 has 1 MA's), (Start: 20 @30588 has 2 MA's), (45, 30426), (50, 30336), (51, 30315),

Gene: Munch\_48 Start: 31705, Stop: 31358, Start Num: 12

Candidate Starts for Munch\_48:

(Start: 12 @31705 has 6 MA's), (21, 31672), (25, 31651), (50, 31438), (53, 31405),

Gene: Myxus\_47 Start: 32109, Stop: 31783, Start Num: 18

Candidate Starts for Myxus\_47:

(Start: 18 @32109 has 25 MA's), (23, 32085), (33, 32043), (54, 31803),

Gene: Naiad\_37 Start: 28407, Stop: 28135, Start Num: 31

Candidate Starts for Naiad\_37:

(Start: 31 @28407 has 23 MA's), (52, 28191), (54, 28155),

Gene: Nancinator\_37 Start: 28395, Stop: 28123, Start Num: 31

Candidate Starts for Nancinator\_37:

(Start: 31 @28395 has 23 MA's), (40, 28329), (52, 28179), (54, 28143),

Gene: Natosaleda\_37 Start: 28394, Stop: 28122, Start Num: 31

Candidate Starts for Natosaleda\_37:

(Start: 31 @28394 has 23 MA's), (40, 28328), (52, 28178), (54, 28142),

Gene: OKCentral2016\_44 Start: 31174, Stop: 30836, Start Num: 29

Candidate Starts for OKCentral2016\_44:

(5, 31318), (8, 31267), (Start: 29 @31174 has 9 MA's), (36, 31114), (44, 31024), (46, 31009), (49, 30931),

Gene: PackMan\_46 Start: 32109, Stop: 31783, Start Num: 18

Candidate Starts for PackMan\_46:

(Start: 18 @32109 has 25 MA's), (23, 32085), (33, 32043), (54, 31803),

Gene: PainterBoy\_48 Start: 31801, Stop: 31439, Start Num: 11

Candidate Starts for PainterBoy\_48:

(Start: 11 @31801 has 3 MA's), (19, 31777), (50, 31519),

Gene: Phaeder\_47 Start: 32109, Stop: 31783, Start Num: 18

Candidate Starts for Phaeder\_47:

(Start: 18 @32109 has 25 MA's), (23, 32085), (33, 32043), (54, 31803),

Gene: Pharaoh\_41 Start: 31682, Stop: 31311, Start Num: 18

Candidate Starts for Pharaoh\_41:

(1, 32006), (Start: 18 @31682 has 25 MA's), (33, 31619), (39, 31523), (50, 31391),

Gene: Phighter1804\_46 Start: 31943, Stop: 31620, Start Num: 24

Candidate Starts for Phighter1804\_46:

(Start: 24 @31943 has 7 MA's), (27, 31928), (42, 31790), (48, 31751), (50, 31703), (53, 31670),

Gene: Phonnegut\_47 Start: 32158, Stop: 31832, Start Num: 18

Candidate Starts for Phonnegut\_47:

(Start: 18 @32158 has 25 MA's), (23, 32134), (33, 32092), (54, 31852),

Gene: Phrankenstein\_37 Start: 28340, Stop: 28068, Start Num: 31

Candidate Starts for Phrankenstein\_37:

(Start: 31 @28340 has 23 MA's), (40, 28274), (52, 28124), (54, 28088),

Gene: Pioneer\_47 Start: 32158, Stop: 31832, Start Num: 18

Candidate Starts for Pioneer\_47:

(Start: 18 @32158 has 25 MA's), (23, 32134), (33, 32092), (54, 31852),

Gene: Priya\_47 Start: 32176, Stop: 31850, Start Num: 18

Candidate Starts for Priya\_47:

(Start: 18 @32176 has 25 MA's), (23, 32152), (33, 32110), (54, 31870),

Gene: Qobbit\_47 Start: 32138, Stop: 31812, Start Num: 18

Candidate Starts for Qobbit\_47:

(Start: 18 @32138 has 25 MA's), (23, 32114), (33, 32072), (54, 31832),

Gene: Rahalelujah\_46 Start: 31411, Stop: 31040, Start Num: 17

Candidate Starts for Rahalelujah\_46:

(2, 31597), (3, 31546), (4, 31522), (Start: 17 @31411 has 5 MA's), (32, 31351), (33, 31348), (54, 31060),

Gene: Rasputin\_37 Start: 28364, Stop: 28092, Start Num: 31

Candidate Starts for Rasputin\_37:

(Start: 31 @28364 has 23 MA's), (40, 28298), (52, 28148), (54, 28112),

Gene: Rebeuca\_45 Start: 31840, Stop: 31502, Start Num: 29

Candidate Starts for Rebeuca\_45:

(5, 31984), (8, 31933), (Start: 29 @31840 has 9 MA's), (44, 31690), (46, 31675), (49, 31597),

Gene: Refuge\_46 Start: 33330, Stop: 32986, Start Num: 15

Candidate Starts for Refuge\_46:

(Start: 13 @33342 has 1 MA's), (Start: 15 @33330 has 3 MA's), (25, 33288), (26, 33285), (30, 33267), (38, 33213), (39, 33201), (50, 33066), (54, 33006),

Gene: RexFury\_37 Start: 28425, Stop: 28153, Start Num: 31

Candidate Starts for RexFury\_37:

(Start: 31 @28425 has 23 MA's), (40, 28359), (52, 28209), (54, 28173),

Gene: Rhodalysa\_37 Start: 28394, Stop: 28122, Start Num: 31

Candidate Starts for Rhodalysa\_37:

(Start: 31 @28394 has 23 MA's), (40, 28328), (52, 28178), (54, 28142),

Gene: RhynO\_46 Start: 31639, Stop: 31301, Start Num: 29

Candidate Starts for RhynO\_46:

(Start: 29 @31639 has 9 MA's), (36, 31579), (46, 31474), (49, 31396),

Gene: Scherzo\_47 Start: 32347, Stop: 32021, Start Num: 18

Candidate Starts for Scherzo\_47:

(Start: 18 @32347 has 25 MA's), (23, 32323), (33, 32281), (54, 32041),

Gene: Shuman\_37 Start: 28407, Stop: 28135, Start Num: 31

Candidate Starts for Shuman\_37:

(Start: 31 @28407 has 23 MA's), (40, 28341), (52, 28191), (54, 28155),

Gene: Shygu2\_45 Start: 31853, Stop: 31530, Start Num: 24

Candidate Starts for Shygu2\_45:

(Start: 24 @31853 has 7 MA's), (42, 31700), (48, 31661), (53, 31580),

Gene: SororFago\_50 Start: 33759, Stop: 33412, Start Num: 18

Candidate Starts for SororFago\_50:

(9, 33783), (Start: 18 @33759 has 25 MA's), (39, 33624), (40, 33618), (50, 33492), (54, 33432),

Gene: Spouty\_45 Start: 32175, Stop: 31849, Start Num: 18

Candidate Starts for Spouty\_45:

(Start: 18 @32175 has 25 MA's), (23, 32151), (33, 32109), (54, 31869),

Gene: StCroix\_37 Start: 28407, Stop: 28135, Start Num: 31

Candidate Starts for StCroix\_37:

(Start: 31 @28407 has 23 MA's), (52, 28191), (54, 28155),

Gene: Swann\_37 Start: 28394, Stop: 28122, Start Num: 31

Candidate Starts for Swann\_37:

(Start: 31 @28394 has 23 MA's), (40, 28328), (52, 28178), (54, 28142),

Gene: TWAMP\_37 Start: 28394, Stop: 28122, Start Num: 31

Candidate Starts for TWAMP\_37:

(Start: 31 @28394 has 23 MA's), (40, 28328), (52, 28178), (54, 28142),

Gene: Toaka\_46 Start: 31676, Stop: 31308, Start Num: 17

Candidate Starts for Toaka\_46:

(Start: 17 @31676 has 5 MA's), (23, 31652), (33, 31610), (54, 31328), (55, 31319),

Gene: Topanga\_43 Start: 31489, Stop: 31151, Start Num: 29

Candidate Starts for Topanga\_43:

(5, 31633), (8, 31582), (Start: 29 @31489 has 9 MA's), (44, 31339), (46, 31324), (49, 31246),

Gene: Tubs\_47 Start: 32109, Stop: 31783, Start Num: 18

Candidate Starts for Tubs\_47:

(Start: 18 @32109 has 25 MA's), (23, 32085), (33, 32043), (54, 31803),

Gene: Twister\_43 Start: 31400, Stop: 31062, Start Num: 29

Candidate Starts for Twister\_43:

(5, 31544), (8, 31493), (Start: 29 @31400 has 9 MA's), (44, 31250), (46, 31235), (49, 31157),

Gene: Ugenie5\_44 Start: 32346, Stop: 32020, Start Num: 18

Candidate Starts for Ugenie5\_44:

(Start: 18 @32346 has 25 MA's), (23, 32322), (33, 32280), (54, 32040),

Gene: UhSalsa\_37 Start: 28395, Stop: 28123, Start Num: 31

Candidate Starts for UhSalsa\_37:

(Start: 31 @28395 has 23 MA's), (40, 28329), (52, 28179), (54, 28143),

Gene: Vanisoa\_46 Start: 32705, Stop: 32358, Start Num: 17

Candidate Starts for Vanisoa\_46:

(2, 32888), (3, 32837), (4, 32813), (Start: 17 @32705 has 5 MA's), (23, 32681), (33, 32639), (35, 32609), (54, 32378),

Gene: WalterMcMickey\_43 Start: 31400, Stop: 31062, Start Num: 29

Candidate Starts for WalterMcMickey\_43:

(5, 31544), (8, 31493), (Start: 29 @31400 has 9 MA's), (44, 31250), (46, 31235), (49, 31157),

Gene: XianYue\_46 Start: 31886, Stop: 31548, Start Num: 16

Candidate Starts for XianYue\_46:

(Start: 16 @31886 has 1 MA's), (47, 31712), (53, 31595),

Gene: Yecey3\_48 Start: 31582, Stop: 31238, Start Num: 18

Candidate Starts for Yecey3\_48:

(Start: 18 @31582 has 25 MA's), (23, 31561), (33, 31519), (36, 31477), (39, 31444), (54, 31258),

Gene: Zimmer\_44 Start: 32823, Stop: 32467, Start Num: 15

Candidate Starts for Zimmer\_44:

(Start: 15 @32823 has 3 MA's), (25, 32781), (38, 32706), (39, 32694), (41, 32676), (50, 32547), (54, 32487),