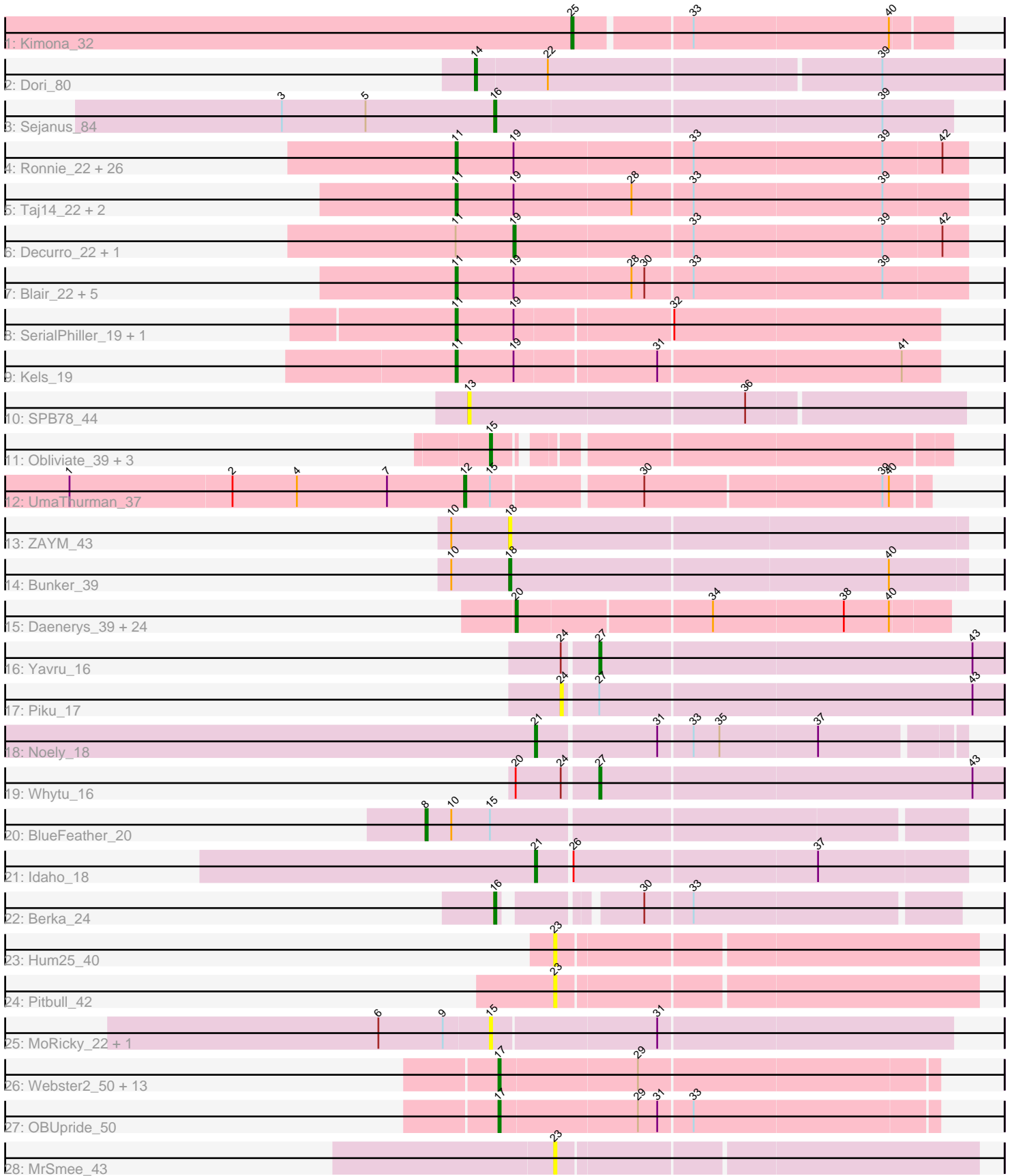


Pham 163476



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 163476 Report

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

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 163476 has 104 members, 10 are drafts.

Phages represented in each track:

- Track 1 : Kimona\_32
- Track 2 : Dori\_80
- Track 3 : Sejanus\_84
- Track 4 : Ronnie\_22, Inspire2\_22, Guntur\_22, Sandman\_22, Azathoth\_22, Courtney3\_22, CGermain\_22, Stratus\_22, Maggie\_22, Copper\_22, Link\_22, Seume\_22, Toulouse\_21, Massimo\_22, LouisXIV\_22, Arby\_22, Moloch\_22, TymAbreu\_22, Yank\_22, Chestnut\_22, Dewayne\_22, Hunnie\_22, Prospero\_22, Muttlie\_22, TinoCrisci\_22, Mariposa\_22, Sourignavong\_23
- Track 5 : Taj14\_22, Saphira\_23, Swenson\_22
- Track 6 : Decurro\_22, Jessica\_23
- Track 7 : Blair\_22, KylieMac\_23, Elkhorn\_22, StewieGriff\_22, Lore\_22, Laila\_24
- Track 8 : SerialPhiller\_19, Arielagos\_19
- Track 9 : Kels\_19
- Track 10 : SPB78\_44
- Track 11 : Obliviate\_39, Zaheer\_44, Petra\_40, Zarbodnamra\_42
- Track 12 : UmaThurman\_37
- Track 13 : ZAYM\_43
- Track 14 : Bunker\_39
- Track 15 : Daenerys\_39, Inventum\_39, Empress\_41, Leozinho\_42, Dante\_40, Pollywog\_41, Spoonbill\_40, Chuckly\_41, Job42\_43, Ogopogo\_43, Blexus\_40, Scottish\_41, Radiance\_41, Sassafras\_41, OwlsT2W\_40, Veteran\_40, JoeyJr\_40, GUmble\_40, Royals2015\_42, Tootsieroll\_44, IbOuu\_43, Polka14\_41, OlympiaSaint\_40, Sandalphon\_44, Eish\_41
- Track 16 : Yavru\_16
- Track 17 : Piku\_17
- Track 18 : Noely\_18
- Track 19 : Whytu\_16
- Track 20 : BlueFeather\_20
- Track 21 : Idaho\_18
- Track 22 : Berka\_24
- Track 23 : Hum25\_40
- Track 24 : Pitbull\_42
- Track 25 : MoRicky\_22, Smilerella\_21

- Track 26 : Webster2\_50, Luke\_50, LilHazelnut\_50, Evanesce\_49, Hadrien\_50, Gancho\_49, Ubuntu\_50, Forge\_48, Ein37\_50, DeepSoil15\_50, Amochick\_50, Daegal\_52, Kinbote\_50, Amymech\_50
- Track 27 : OBUpride\_50
- Track 28 : MrSmee\_43

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

The start number called the most often in the published annotations is 11, it was called in 38 of the 94 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Arby\_22, Arielagos\_19, Azathoth\_22, Blair\_22, CGermain\_22, Chestnut\_22, Copper\_22, Courtney3\_22, Dewayne\_22, Elkhorn\_22, Guntur\_22, Hunnie\_22, Inspire2\_22, Kels\_19, KylieMac\_23, Laila\_24, Link\_22, Lore\_22, LouisXIV\_22, Maggie\_22, Mariposa\_22, Massimo\_22, Moloch\_22, Muttie\_22, Prospero\_22, Ronnie\_22, Sandman\_22, Saphira\_23, SerialPhiller\_19, Seume\_22, Sourignavong\_23, StewieGriff\_22, Stratus\_22, Swenson\_22, Taj14\_22, TinoCrisci\_22, Toulouse\_21, TymAbreu\_22, Yank\_22,

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

- Decurro\_22, Jessica\_23,

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

- Amochick\_50, Amymech\_50, Berka\_24, Blexus\_40, BlueFeather\_20, Bunker\_39, Chuckly\_41, Daegal\_52, Daenerys\_39, Dante\_40, DeepSoil15\_50, Dori\_80, Ein37\_50, Eish\_41, Empress\_41, Evanesce\_49, Forge\_48, GUmbe\_40, Gancho\_49, Hadrien\_50, Hum25\_40, IbOuu\_43, Idaho\_18, Inventum\_39, Job42\_43, JoeyJr\_40, Kimona\_32, Kinbote\_50, Leozinho\_42, LilHazelnut\_50, Luke\_50, MoRicky\_22, MrSmee\_43, Noely\_18, OBUpride\_50, Obliviate\_39, Ogotogo\_43, OlympiaSaint\_40, OwlsT2W\_40, Petra\_40, Piku\_17, Pitbull\_42, Polka14\_41, Pollywog\_41, Radiance\_41, Royals2015\_42, SPB78\_44, Sandalphon\_44, Sassafras\_41, Scottish\_41, Sejanus\_84, Smilerella\_21, Spoonbill\_40, Tootsieroll\_44, Ubuntu\_50, UmaThurman\_37, Veteran\_40, Webster2\_50, Whytu\_16, Yavru\_16, ZAYM\_43, Zaheer\_44, Zarbodnamra\_42,

**Summary by start number:**

Start 8:

- Found in 1 of 104 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BlueFeather\_20 (FE),

Start 11:

- Found in 41 of 104 ( 39.4% ) of genes in pham
- Manual Annotations of this start: 38 of 94
- Called 95.1% of time when present
- Phage (with cluster) where this start called: Arby\_22 (AN), Arielagos\_19 (AN), Azathoth\_22 (AN), Blair\_22 (AN), CGermain\_22 (AN), Chestnut\_22 (AN), Copper\_22

(AN), Courtney3\_22 (AN), Dewayne\_22 (AN), Elkhorn\_22 (AN), Guntur\_22 (AN), Hunnie\_22 (AN), Inspire2\_22 (AN), Kels\_19 (AN), KylieMac\_23 (AN), Laila\_24 (AN), Link\_22 (AN), Lore\_22 (AN), LouisXIV\_22 (AN), Maggie\_22 (AN), Mariposa\_22 (AN), Massimo\_22 (AN), Moloch\_22 (AN), Muttie\_22 (AN), Prospero\_22 (AN), Ronnie\_22 (AN), Sandman\_22 (AN), Saphira\_23 (AN), SerialPhiller\_19 (AN), Seume\_22 (AN), Sourignavong\_23 (AN), StewieGriff\_22 (AN), Stratus\_22 (AN), Swenson\_22 (AN), Taj14\_22 (AN), TinoCrisci\_22 (AN), Toulouse\_21 (AN), TymAbreu\_22 (AN), Yank\_22 (AN),

#### Start 12:

- Found in 1 of 104 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: UmaThurman\_37 (CV),

#### Start 13:

- Found in 1 of 104 ( 1.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SPB78\_44 (BA),

#### Start 14:

- Found in 1 of 104 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dori\_80 (AD),

#### Start 15:

- Found in 8 of 104 ( 7.7% ) of genes in pham
- Manual Annotations of this start: 4 of 94
- Called 75.0% of time when present
- Phage (with cluster) where this start called: MoRicky\_22 (GH), Obliviate\_39 (CV), Petra\_40 (CV), Smilerella\_21 (GH), Zaheer\_44 (FF), Zarbodnamra\_42 (CV),

#### Start 16:

- Found in 2 of 104 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 2 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Berka\_24 (FE), Sejanus\_84 (AD),

#### Start 17:

- Found in 15 of 104 ( 14.4% ) of genes in pham
- Manual Annotations of this start: 15 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amochick\_50 (Q), Amymech\_50 (Q), Daegal\_52 (Q), DeepSoil15\_50 (Q), Ein37\_50 (Q), Evanesce\_49 (Q), Forge\_48 (Q), Gancho\_49 (Q), Hadrien\_50 (Q), Kinbote\_50 (Q), LilHazelNut\_50 (Q), Luke\_50 (Q), OBUpride\_50 (Q), Ubuntu\_50 (Q), Webster2\_50 (Q),

#### Start 18:

- Found in 2 of 104 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Bunker\_39 (DB), ZAYM\_43 (DB),

#### Start 19:

- Found in 41 of 104 ( 39.4% ) of genes in pham
- Manual Annotations of this start: 2 of 94
- Called 4.9% of time when present
- Phage (with cluster) where this start called: Decurro\_22 (AN), Jessica\_23 (AN),

#### Start 20:

- Found in 26 of 104 ( 25.0% ) of genes in pham
- Manual Annotations of this start: 24 of 94
- Called 96.2% of time when present
- Phage (with cluster) where this start called: Blexus\_40 (F1), Chuckly\_41 (F1), Daenerys\_39 (F1), Dante\_40 (F1), Eish\_41 (F1), Empress\_41 (F1), GUmbe\_40 (F1), IbOuu\_43 (F1), Inventum\_39 (F1), Job42\_43 (F1), JoeyJr\_40 (F1), Leozinho\_42 (F1), Ogoogo\_43 (F1), OlympiaSaint\_40 (F1), OwlsT2W\_40 (F1), Polka14\_41 (F1), Pollywog\_41 (F1), Radiance\_41 (F1), Royals2015\_42 (F1), Sandalphon\_44 (F1), Sassafras\_41 (F1), Scottish\_41 (F1), Spoonbill\_40 (F1), Tootsieroll\_44 (F1), Veteran\_40 (F1),

#### Start 21:

- Found in 2 of 104 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 2 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Idaho\_18 (FE), Noely\_18 (FE),

#### Start 23:

- Found in 3 of 104 ( 2.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hum25\_40 (FQ), MrSmee\_43 (UNK), Pitbull\_42 (FQ),

#### Start 24:

- Found in 3 of 104 ( 2.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Piku\_17 (FE),

#### Start 25:

- Found in 1 of 104 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kimona\_32 (A19),

#### Start 27:

- Found in 3 of 104 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 2 of 94
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Whytu\_16 (FE), Yavru\_16 (FE),

### Summary by clusters:

There are 13 clusters represented in this pham: F1, AD, FQ, A19, DB, AN, Q, FE, FF, BA, UNK, CV, GH,

Info for manual annotations of cluster A19:

- Start number 25 was manually annotated 1 time for cluster A19.

Info for manual annotations of cluster AD:

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

Info for manual annotations of cluster AN:

- Start number 11 was manually annotated 38 times for cluster AN.
- Start number 19 was manually annotated 2 times for cluster AN.

Info for manual annotations of cluster CV:

- Start number 12 was manually annotated 1 time for cluster CV.
- Start number 15 was manually annotated 3 times for cluster CV.

Info for manual annotations of cluster DB:

- Start number 18 was manually annotated 1 time for cluster DB.

Info for manual annotations of cluster F1:

- Start number 20 was manually annotated 24 times for cluster F1.

Info for manual annotations of cluster FE:

- Start number 8 was manually annotated 1 time for cluster FE.
- Start number 16 was manually annotated 1 time for cluster FE.
- Start number 21 was manually annotated 2 times for cluster FE.
- Start number 27 was manually annotated 2 times for cluster FE.

Info for manual annotations of cluster FF:

- Start number 15 was manually annotated 1 time for cluster FF.

Info for manual annotations of cluster Q:

- Start number 17 was manually annotated 15 times for cluster Q.

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

Gene: Amochick\_50 Start: 36955, Stop: 37152, Start Num: 17

Candidate Starts for Amochick\_50:

(Start: 17 @36955 has 15 MA's), (29, 37018),

Gene: Amymech\_50 Start: 36949, Stop: 37146, Start Num: 17

Candidate Starts for Amymech\_50:

(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: Arby\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for Arby\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Arielagos\_19 Start: 13063, Stop: 13281, Start Num: 11

Candidate Starts for Arielagos\_19:

(Start: 11 @13063 has 38 MA's), (Start: 19 @13090 has 2 MA's), (32, 13159),

Gene: Azathoth\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for Azathoth\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Berka\_24 Start: 13339, Stop: 13533, Start Num: 16

Candidate Starts for Berka\_24:

(Start: 16 @13339 has 2 MA's), (30, 13393), (33, 13414),

Gene: Blair\_22 Start: 13883, Stop: 14116, Start Num: 11

Candidate Starts for Blair\_22:

(Start: 11 @13883 has 38 MA's), (Start: 19 @13910 has 2 MA's), (28, 13964), (30, 13970), (33, 13991), (39, 14078),

Gene: Blexus\_40 Start: 31585, Stop: 31391, Start Num: 20

Candidate Starts for Blexus\_40:

(Start: 20 @31585 has 24 MA's), (34, 31498), (38, 31438), (40, 31417),

Gene: BlueFeather\_20 Start: 14165, Stop: 14407, Start Num: 8

Candidate Starts for BlueFeather\_20:

(Start: 8 @14165 has 1 MA's), (10, 14177), (Start: 15 @14195 has 4 MA's),

Gene: Bunker\_39 Start: 31881, Stop: 32090, Start Num: 18

Candidate Starts for Bunker\_39:

(10, 31854), (Start: 18 @31881 has 1 MA's), (40, 32055),

Gene: CGermain\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for CGermain\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Chestnut\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for Chestnut\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Chuckly\_41 Start: 31551, Stop: 31357, Start Num: 20

Candidate Starts for Chuckly\_41:

(Start: 20 @31551 has 24 MA's), (34, 31464), (38, 31404), (40, 31383),

Gene: Copper\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for Copper\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Courtney3\_22 Start: 13886, Stop: 14119, Start Num: 11  
Candidate Starts for Courtney3\_22:  
(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Daegal\_52 Start: 37533, Stop: 37730, Start Num: 17  
Candidate Starts for Daegal\_52:  
(Start: 17 @37533 has 15 MA's), (29, 37596),

Gene: Daenerys\_39 Start: 31164, Stop: 30970, Start Num: 20  
Candidate Starts for Daenerys\_39:  
(Start: 20 @31164 has 24 MA's), (34, 31077), (38, 31017), (40, 30996),

Gene: Dante\_40 Start: 31281, Stop: 31087, Start Num: 20  
Candidate Starts for Dante\_40:  
(Start: 20 @31281 has 24 MA's), (34, 31194), (38, 31134), (40, 31113),

Gene: Decurro\_22 Start: 13881, Stop: 14087, Start Num: 19  
Candidate Starts for Decurro\_22:  
(Start: 11 @13854 has 38 MA's), (Start: 19 @13881 has 2 MA's), (33, 13962), (39, 14049), (42, 14076),

Gene: DeepSoil15\_50 Start: 36949, Stop: 37146, Start Num: 17  
Candidate Starts for DeepSoil15\_50:  
(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: Dewayne\_22 Start: 13886, Stop: 14119, Start Num: 11  
Candidate Starts for Dewayne\_22:  
(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Dori\_80 Start: 57490, Stop: 57729, Start Num: 14  
Candidate Starts for Dori\_80:  
(Start: 14 @57490 has 1 MA's), (22, 57523), (39, 57673),

Gene: Ein37\_50 Start: 36949, Stop: 37146, Start Num: 17  
Candidate Starts for Ein37\_50:  
(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: Eish\_41 Start: 31869, Stop: 31675, Start Num: 20  
Candidate Starts for Eish\_41:  
(Start: 20 @31869 has 24 MA's), (34, 31782), (38, 31722), (40, 31701),

Gene: Elkhorn\_22 Start: 13883, Stop: 14116, Start Num: 11  
Candidate Starts for Elkhorn\_22:  
(Start: 11 @13883 has 38 MA's), (Start: 19 @13910 has 2 MA's), (28, 13964), (30, 13970), (33, 13991), (39, 14078),

Gene: Empress\_41 Start: 32577, Stop: 32383, Start Num: 20  
Candidate Starts for Empress\_41:  
(Start: 20 @32577 has 24 MA's), (34, 32490), (38, 32430), (40, 32409),

Gene: Evanesce\_49 Start: 36949, Stop: 37146, Start Num: 17



Candidate Starts for Evanesce\_49:  
(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: Forge\_48 Start: 36949, Stop: 37146, Start Num: 17  
Candidate Starts for Forge\_48:  
(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: GUmbie\_40 Start: 31183, Stop: 30989, Start Num: 20  
Candidate Starts for GUmbie\_40:  
(Start: 20 @31183 has 24 MA's), (34, 31096), (38, 31036), (40, 31015),

Gene: Gancho\_49 Start: 36672, Stop: 36869, Start Num: 17  
Candidate Starts for Gancho\_49:  
(Start: 17 @36672 has 15 MA's), (29, 36735),

Gene: Guntur\_22 Start: 13886, Stop: 14119, Start Num: 11  
Candidate Starts for Guntur\_22:  
(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Hadrien\_50 Start: 36949, Stop: 37146, Start Num: 17  
Candidate Starts for Hadrien\_50:  
(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: Hum25\_40 Start: 27639, Stop: 27827, Start Num: 23  
Candidate Starts for Hum25\_40:  
(23, 27639),

Gene: Hunnie\_22 Start: 13886, Stop: 14119, Start Num: 11  
Candidate Starts for Hunnie\_22:  
(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: lbOuu\_43 Start: 31738, Stop: 31544, Start Num: 20  
Candidate Starts for lbOuu\_43:  
(Start: 20 @31738 has 24 MA's), (34, 31651), (38, 31591), (40, 31570),

Gene: Idaho\_18 Start: 13771, Stop: 13965, Start Num: 21  
Candidate Starts for Idaho\_18:  
(Start: 21 @13771 has 2 MA's), (26, 13786), (37, 13897),

Gene: Inspire2\_22 Start: 13886, Stop: 14119, Start Num: 11  
Candidate Starts for Inspire2\_22:  
(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Inventum\_39 Start: 31844, Stop: 31650, Start Num: 20  
Candidate Starts for Inventum\_39:  
(Start: 20 @31844 has 24 MA's), (34, 31757), (38, 31697), (40, 31676),

Gene: Jessica\_23 Start: 13913, Stop: 14119, Start Num: 19  
Candidate Starts for Jessica\_23:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Job42\_43 Start: 33160, Stop: 32966, Start Num: 20

Candidate Starts for Job42\_43:

(Start: 20 @33160 has 24 MA's), (34, 33073), (38, 33013), (40, 32992),

Gene: JoeyJr\_40 Start: 31332, Stop: 31138, Start Num: 20

Candidate Starts for JoeyJr\_40:

(Start: 20 @31332 has 24 MA's), (34, 31245), (38, 31185), (40, 31164),

Gene: Kels\_19 Start: 13001, Stop: 13219, Start Num: 11

Candidate Starts for Kels\_19:

(Start: 11 @13001 has 38 MA's), (Start: 19 @13028 has 2 MA's), (31, 13091), (41, 13202),

Gene: Kimona\_32 Start: 25489, Stop: 25322, Start Num: 25

Candidate Starts for Kimona\_32:

(Start: 25 @25489 has 1 MA's), (33, 25438), (40, 25348),

Gene: Kinbote\_50 Start: 36949, Stop: 37146, Start Num: 17

Candidate Starts for Kinbote\_50:

(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: KylieMac\_23 Start: 13870, Stop: 14103, Start Num: 11

Candidate Starts for KylieMac\_23:

(Start: 11 @13870 has 38 MA's), (Start: 19 @13897 has 2 MA's), (28, 13951), (30, 13957), (33, 13978), (39, 14065),

Gene: Laila\_24 Start: 13883, Stop: 14116, Start Num: 11

Candidate Starts for Laila\_24:

(Start: 11 @13883 has 38 MA's), (Start: 19 @13910 has 2 MA's), (28, 13964), (30, 13970), (33, 13991), (39, 14078),

Gene: Leozinho\_42 Start: 31585, Stop: 31391, Start Num: 20

Candidate Starts for Leozinho\_42:

(Start: 20 @31585 has 24 MA's), (34, 31498), (38, 31438), (40, 31417),

Gene: LilHazelnut\_50 Start: 36949, Stop: 37146, Start Num: 17

Candidate Starts for LilHazelnut\_50:

(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: Link\_22 Start: 13851, Stop: 14084, Start Num: 11

Candidate Starts for Link\_22:

(Start: 11 @13851 has 38 MA's), (Start: 19 @13878 has 2 MA's), (33, 13959), (39, 14046), (42, 14073),

Gene: Lore\_22 Start: 13883, Stop: 14116, Start Num: 11

Candidate Starts for Lore\_22:

(Start: 11 @13883 has 38 MA's), (Start: 19 @13910 has 2 MA's), (28, 13964), (30, 13970), (33, 13991), (39, 14078),

Gene: LouisXIV\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for LouisXIV\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Luke\_50 Start: 36904, Stop: 37101, Start Num: 17

Candidate Starts for Luke\_50:

(Start: 17 @36904 has 15 MA's), (29, 36967),

Gene: Maggie\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for Maggie\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Mariposa\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for Mariposa\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Massimo\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for Massimo\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: MoRicky\_22 Start: 14364, Stop: 14573, Start Num: 15

Candidate Starts for MoRicky\_22:

(6, 14313), (9, 14343), (Start: 15 @14364 has 4 MA's), (31, 14439),

Gene: Moloch\_22 Start: 13960, Stop: 14193, Start Num: 11

Candidate Starts for Moloch\_22:

(Start: 11 @13960 has 38 MA's), (Start: 19 @13987 has 2 MA's), (33, 14068), (39, 14155), (42, 14182),

Gene: MrSmee\_43 Start: 28469, Stop: 28657, Start Num: 23

Candidate Starts for MrSmee\_43:

(23, 28469),

Gene: Muttie\_22 Start: 13854, Stop: 14087, Start Num: 11

Candidate Starts for Muttie\_22:

(Start: 11 @13854 has 38 MA's), (Start: 19 @13881 has 2 MA's), (33, 13962), (39, 14049), (42, 14076),

Gene: Noely\_18 Start: 12900, Stop: 13088, Start Num: 21

Candidate Starts for Noely\_18:

(Start: 21 @12900 has 2 MA's), (31, 12954), (33, 12969), (35, 12981), (37, 13026),

Gene: OBUpride\_50 Start: 36945, Stop: 37142, Start Num: 17

Candidate Starts for OBUpride\_50:

(Start: 17 @36945 has 15 MA's), (29, 37008), (31, 37017), (33, 37032),

Gene: Obliviate\_39 Start: 31330, Stop: 31524, Start Num: 15

Candidate Starts for Obliviate\_39:

(Start: 15 @31330 has 4 MA's),

Gene: Ogotogo\_43 Start: 31095, Stop: 30901, Start Num: 20

Candidate Starts for Ogopogo\_43:

(Start: 20 @31095 has 24 MA's), (34, 31008), (38, 30948), (40, 30927),

Gene: OlympiaSaint\_40 Start: 31613, Stop: 31419, Start Num: 20

Candidate Starts for OlympiaSaint\_40:

(Start: 20 @31613 has 24 MA's), (34, 31526), (38, 31466), (40, 31445),

Gene: OwlsT2W\_40 Start: 31588, Stop: 31394, Start Num: 20

Candidate Starts for OwlsT2W\_40:

(Start: 20 @31588 has 24 MA's), (34, 31501), (38, 31441), (40, 31420),

Gene: Petra\_40 Start: 31689, Stop: 31883, Start Num: 15

Candidate Starts for Petra\_40:

(Start: 15 @31689 has 4 MA's),

Gene: Piku\_17 Start: 12712, Stop: 12912, Start Num: 24

Candidate Starts for Piku\_17:

(24, 12712), (Start: 27 @12727 has 2 MA's), (43, 12898),

Gene: Pitbull\_42 Start: 26865, Stop: 27053, Start Num: 23

Candidate Starts for Pitbull\_42:

(23, 26865),

Gene: Polka14\_41 Start: 31785, Stop: 31591, Start Num: 20

Candidate Starts for Polka14\_41:

(Start: 20 @31785 has 24 MA's), (34, 31698), (38, 31638), (40, 31617),

Gene: Pollywog\_41 Start: 31707, Stop: 31513, Start Num: 20

Candidate Starts for Pollywog\_41:

(Start: 20 @31707 has 24 MA's), (34, 31620), (38, 31560), (40, 31539),

Gene: Prospero\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for Prospero\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Radiance\_41 Start: 31335, Stop: 31141, Start Num: 20

Candidate Starts for Radiance\_41:

(Start: 20 @31335 has 24 MA's), (34, 31248), (38, 31188), (40, 31167),

Gene: Ronnie\_22 Start: 13886, Stop: 14119, Start Num: 11

Candidate Starts for Ronnie\_22:

(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Royals2015\_42 Start: 31621, Stop: 31427, Start Num: 20

Candidate Starts for Royals2015\_42:

(Start: 20 @31621 has 24 MA's), (34, 31534), (38, 31474), (40, 31453),

Gene: SPB78\_44 Start: 32113, Stop: 32337, Start Num: 13

Candidate Starts for SPB78\_44:

(13, 32113), (36, 32239),

Gene: Sandalphon\_44 Start: 32523, Stop: 32329, Start Num: 20  
Candidate Starts for Sandalphon\_44:  
(Start: 20 @32523 has 24 MA's), (34, 32436), (38, 32376), (40, 32355),

Gene: Sandman\_22 Start: 13960, Stop: 14193, Start Num: 11  
Candidate Starts for Sandman\_22:  
(Start: 11 @13960 has 38 MA's), (Start: 19 @13987 has 2 MA's), (33, 14068), (39, 14155), (42, 14182),

Gene: Saphira\_23 Start: 13885, Stop: 14118, Start Num: 11  
Candidate Starts for Saphira\_23:  
(Start: 11 @13885 has 38 MA's), (Start: 19 @13912 has 2 MA's), (28, 13966), (33, 13993), (39, 14080),

Gene: Sassafras\_41 Start: 31844, Stop: 31650, Start Num: 20  
Candidate Starts for Sassafras\_41:  
(Start: 20 @31844 has 24 MA's), (34, 31757), (38, 31697), (40, 31676),

Gene: Scottish\_41 Start: 32465, Stop: 32271, Start Num: 20  
Candidate Starts for Scottish\_41:  
(Start: 20 @32465 has 24 MA's), (34, 32378), (38, 32318), (40, 32297),

Gene: Sejanus\_84 Start: 57638, Stop: 57847, Start Num: 16  
Candidate Starts for Sejanus\_84:  
(3, 57539), (5, 57578), (Start: 16 @57638 has 2 MA's), (39, 57815),

Gene: SerialPhiller\_19 Start: 13063, Stop: 13281, Start Num: 11  
Candidate Starts for SerialPhiller\_19:  
(Start: 11 @13063 has 38 MA's), (Start: 19 @13090 has 2 MA's), (32, 13159),

Gene: Seume\_22 Start: 13649, Stop: 13882, Start Num: 11  
Candidate Starts for Seume\_22:  
(Start: 11 @13649 has 38 MA's), (Start: 19 @13676 has 2 MA's), (33, 13757), (39, 13844), (42, 13871),

Gene: Smilerella\_21 Start: 14454, Stop: 14663, Start Num: 15  
Candidate Starts for Smilerella\_21:  
(6, 14403), (9, 14433), (Start: 15 @14454 has 4 MA's), (31, 14529),

Gene: Sourignavong\_23 Start: 13955, Stop: 14188, Start Num: 11  
Candidate Starts for Sourignavong\_23:  
(Start: 11 @13955 has 38 MA's), (Start: 19 @13982 has 2 MA's), (33, 14063), (39, 14150), (42, 14177),

Gene: Spoonbill\_40 Start: 31424, Stop: 31230, Start Num: 20  
Candidate Starts for Spoonbill\_40:  
(Start: 20 @31424 has 24 MA's), (34, 31337), (38, 31277), (40, 31256),

Gene: StewieGriff\_22 Start: 13883, Stop: 14116, Start Num: 11  
Candidate Starts for StewieGriff\_22:  
(Start: 11 @13883 has 38 MA's), (Start: 19 @13910 has 2 MA's), (28, 13964), (30, 13970), (33, 13991), (39, 14078),

Gene: Stratus\_22 Start: 13960, Stop: 14193, Start Num: 11  
Candidate Starts for Stratus\_22:  
(Start: 11 @13960 has 38 MA's), (Start: 19 @13987 has 2 MA's), (33, 14068), (39, 14155), (42, 14182),

Gene: Swenson\_22 Start: 14007, Stop: 14240, Start Num: 11  
Candidate Starts for Swenson\_22:  
(Start: 11 @14007 has 38 MA's), (Start: 19 @14034 has 2 MA's), (28, 14088), (33, 14115), (39, 14202),

Gene: Taj14\_22 Start: 13882, Stop: 14115, Start Num: 11  
Candidate Starts for Taj14\_22:  
(Start: 11 @13882 has 38 MA's), (Start: 19 @13909 has 2 MA's), (28, 13963), (33, 13990), (39, 14077),

Gene: TinoCrisci\_22 Start: 13886, Stop: 14119, Start Num: 11  
Candidate Starts for TinoCrisci\_22:  
(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Tootsieroll\_44 Start: 31573, Stop: 31379, Start Num: 20  
Candidate Starts for Tootsieroll\_44:  
(Start: 20 @31573 has 24 MA's), (34, 31486), (38, 31426), (40, 31405),

Gene: Toulouse\_21 Start: 13649, Stop: 13882, Start Num: 11  
Candidate Starts for Toulouse\_21:  
(Start: 11 @13649 has 38 MA's), (Start: 19 @13676 has 2 MA's), (33, 13757), (39, 13844), (42, 13871),

Gene: TymAbreu\_22 Start: 13886, Stop: 14119, Start Num: 11  
Candidate Starts for TymAbreu\_22:  
(Start: 11 @13886 has 38 MA's), (Start: 19 @13913 has 2 MA's), (33, 13994), (39, 14081), (42, 14108),

Gene: Ubuntu\_50 Start: 36949, Stop: 37146, Start Num: 17  
Candidate Starts for Ubuntu\_50:  
(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: UmaThurman\_37 Start: 31748, Stop: 31954, Start Num: 12  
Candidate Starts for UmaThurman\_37:  
(1, 31565), (2, 31640), (4, 31670), (7, 31712), (Start: 12 @31748 has 1 MA's), (Start: 15 @31760 has 4 MA's), (30, 31826), (39, 31934), (40, 31937),

Gene: Veteran\_40 Start: 31183, Stop: 30989, Start Num: 20  
Candidate Starts for Veteran\_40:  
(Start: 20 @31183 has 24 MA's), (34, 31096), (38, 31036), (40, 31015),

Gene: Webster2\_50 Start: 36949, Stop: 37146, Start Num: 17  
Candidate Starts for Webster2\_50:  
(Start: 17 @36949 has 15 MA's), (29, 37012),

Gene: Whytu\_16 Start: 12793, Stop: 12978, Start Num: 27  
Candidate Starts for Whytu\_16:

(Start: 20 @12757 has 24 MA's), (24, 12778), (Start: 27 @12793 has 2 MA's), (43, 12964),

Gene: Yank\_22 Start: 13854, Stop: 14087, Start Num: 11

Candidate Starts for Yank\_22:

(Start: 11 @13854 has 38 MA's), (Start: 19 @13881 has 2 MA's), (33, 13962), (39, 14049), (42, 14076),

Gene: Yavru\_16 Start: 12688, Stop: 12873, Start Num: 27

Candidate Starts for Yavru\_16:

(24, 12673), (Start: 27 @12688 has 2 MA's), (43, 12859),

Gene: ZAYM\_43 Start: 32247, Stop: 32456, Start Num: 18

Candidate Starts for ZAYM\_43:

(10, 32220), (Start: 18 @32247 has 1 MA's),

Gene: Zaheer\_44 Start: 31390, Stop: 31605, Start Num: 15

Candidate Starts for Zaheer\_44:

(Start: 15 @31390 has 4 MA's),

Gene: Zarbodnamra\_42 Start: 32451, Stop: 32645, Start Num: 15

Candidate Starts for Zarbodnamra\_42:

(Start: 15 @32451 has 4 MA's),