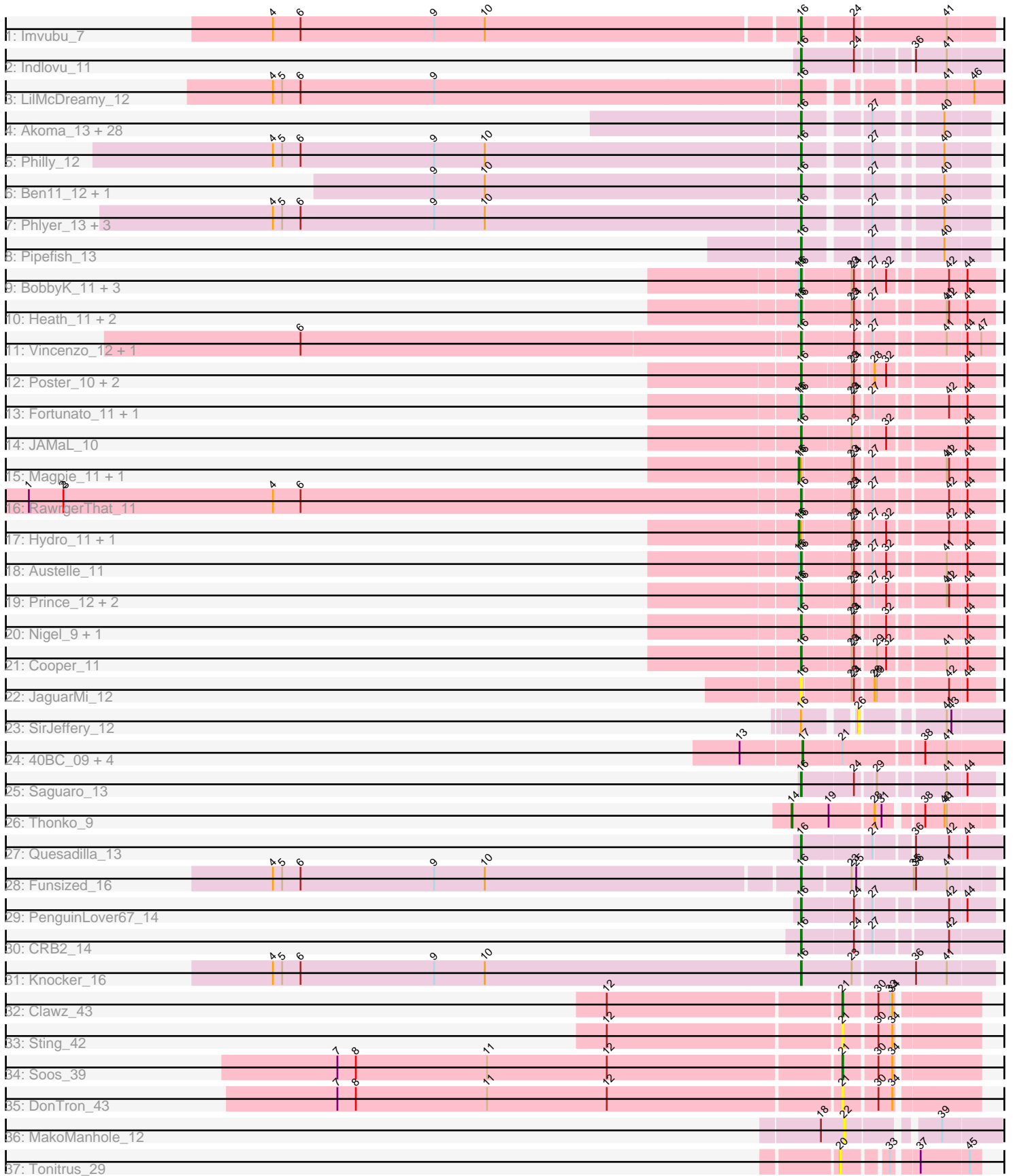


Pham 163524



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 163524 Report

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

Pham number 163524 has 87 members, 18 are drafts.

Phages represented in each track:

- Track 1 : lmvubu\_7
- Track 2 : Indlovu\_11
- Track 3 : LilMcDreamy\_12
- Track 4 : Akoma\_13, OrangeOswald\_13, HarveySr\_13, Jackstina\_12, Neos5\_13, Yinz\_13, Tydolla\_13, SynergyX\_13, LestyG\_13, Briakila\_13, Corofin\_13, RagingRooster\_13, Baloo\_13, Gadget\_14, Kronus\_12, Devonte\_13, Deenasa\_13, Audrey\_13, SlippinJimmy\_13, Mortcellus\_12, Halfpint\_12, MmasiCarm\_13, Phayeta\_13, Athena\_14, Phaedrus\_12, Casbah\_12, Kamiyu\_13, Nozo\_13, ChaChing\_13
- Track 5 : Philly\_12
- Track 6 : Ben11\_12, Abinghost\_13
- Track 7 : Phlyer\_13, Heathcliff\_13, GlenHope\_14, Bernardo\_13
- Track 8 : Pipefish\_13
- Track 9 : BobbyK\_11, Hangman\_11, Waleliano\_11, VioletZ\_11
- Track 10 : Heath\_11, Apex\_10, Lolalove\_11
- Track 11 : Vincenzo\_12, AlanGrant\_12
- Track 12 : Poster\_10, ChrisnMich\_10, Nanao\_10
- Track 13 : Fortunato\_11, Frederick\_11
- Track 14 : JAMaL\_10
- Track 15 : Magpie\_11, BrownCNA\_12
- Track 16 : RawrgerThat\_11
- Track 17 : Hydro\_11, Zemanar\_12
- Track 18 : Austelle\_11
- Track 19 : Prince\_12, Mudslide\_11, Mithril\_11
- Track 20 : Nigel\_9, Stinger\_9
- Track 21 : Cooper\_11
- Track 22 : JaguarMi\_12
- Track 23 : SirJeffery\_12
- Track 24 : 40BC\_09, Jolie1\_09, 39HC\_09, KayaCho\_9, Hosp\_07
- Track 25 : Saguaro\_13
- Track 26 : Thonko\_9
- Track 27 : Quesadilla\_13
- Track 28 : Funsized\_16
- Track 29 : PenguinLover67\_14
- Track 30 : CRB2\_14
- Track 31 : Knocker\_16
- Track 32 : Clawz\_43

- Track 33 : Sting\_42
- Track 34 : Soos\_39
- Track 35 : DonTron\_43
- Track 36 : MakoManhole\_12
- Track 37 : Tonitrus\_29

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

The start number called the most often in the published annotations is 16, it was called in 61 of the 69 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abinghost\_13, Akoma\_13, AlanGrant\_12, Apex\_10, Athena\_14, Audrey\_13, Austelle\_11, Baloo\_13, Ben11\_12, Bernardo\_13, BobbyK\_11, Briakila\_13, CRB2\_14, Casbah\_12, ChaChing\_13, ChrisMich\_10, Cooper\_11, Corofin\_13, Deenasa\_13, Devonte\_13, Fortunato\_11, Frederick\_11, Funsized\_16, Gadget\_14, GlenHope\_14, Halfpint\_12, Hangman\_11, HarveySr\_13, Heath\_11, Heathcliff\_13, Imvubu\_7, Indlovu\_11, JAMaL\_10, Jackstina\_12, JaguarMi\_12, Kamiyu\_13, Knocker\_16, Kronus\_12, LestyG\_13, LilMcDreamy\_12, Lolalove\_11, Mithril\_11, MmasiCarm\_13, Mortcellus\_12, Mudslide\_11, Nanao\_10, Neos5\_13, Nigel\_9, Nozo\_13, OrangeOswald\_13, PenguinLover67\_14, Phaedrus\_12, Phayeta\_13, Philly\_12, Phlyer\_13, Pipefish\_13, Poster\_10, Prince\_12, Quesadilla\_13, RagingRooster\_13, RawrgerThat\_11, Saguaro\_13, SlippinJimmy\_13, Stinger\_9, SynergyX\_13, Tydolla\_13, Vincenzo\_12, VioletZ\_11, Waleliano\_11, Yinz\_13,

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

- BrownCNA\_12, Hydro\_11, Magpie\_11, SirJeffery\_12, Zemanar\_12,

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

- 39HC\_09, 40BC\_09, Clawz\_43, DonTron\_43, Hosp\_07, Jolie1\_09, KayaCho\_9, MakoManhole\_12, Soos\_39, Sting\_42, Thonko\_9, Tonitrus\_29,

**Summary by start number:**

Start 14:

- Found in 1 of 87 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Thonko\_9 (B8),

Start 15:

- Found in 17 of 87 ( 19.5% ) of genes in pham
- Manual Annotations of this start: 4 of 69
- Called 23.5% of time when present
- Phage (with cluster) where this start called: BrownCNA\_12 (B4), Hydro\_11 (B4), Magpie\_11 (B4), Zemanar\_12 (B4),

Start 16:

- Found in 75 of 87 ( 86.2% ) of genes in pham
- Manual Annotations of this start: 61 of 69

- Called 93.3% of time when present
- Phage (with cluster) where this start called: Abinghost\_13 (B3), Akoma\_13 (B3), AlanGrant\_12 (B4), Apex\_10 (B4), Athena\_14 (B3), Audrey\_13 (B3), Austelle\_11 (B4), Baloo\_13 (B3), Ben11\_12 (B3), Bernardo\_13 (B3), BobbyK\_11 (B4), Briakila\_13 (B3), CRB2\_14 (B9), Casbah\_12 (B3), ChaChing\_13 (B3), ChrisnMich\_10 (B4), Cooper\_11 (B4), Corofin\_13 (B3), Deenasa\_13 (B3), Devonte\_13 (B3), Fortunato\_11 (B4), Frederick\_11 (B4), Funsized\_16 (B9), Gadget\_14 (B3), GlenHope\_14 (B3), Halfpint\_12 (B3), Hangman\_11 (B4), HarveySr\_13 (B3), Heath\_11 (B4), Heathcliff\_13 (B3), Imvubu\_7 (B10), Indlovu\_11 (B11), JAMaL\_10 (B4), Jackstina\_12 (B3), JaguarMi\_12 (B4), Kamiyu\_13 (B3), Knocker\_16 (B9), Kronus\_12 (B3), LestyG\_13 (B3), LilMcDreamy\_12 (B12), Lolalove\_11 (B4), Mithril\_11 (B4), MmasiCarm\_13 (B3), Mortcellus\_12 (B3), Mudslide\_11 (B4), Nanao\_10 (B4), Neos5\_13 (B3), Nigel\_9 (B4), Nozo\_13 (B3), OrangeOswald\_13 (B3), PenguinLover67\_14 (B9), Phaedrus\_12 (B3), Phayeta\_13 (B3), Philly\_12 (B3), Phlyer\_13 (B3), Pipefish\_13 (B3), Poster\_10 (B4), Prince\_12 (B4), Quesadilla\_13 (B9), RagingRooster\_13 (B3), RawrgerThat\_11 (B4), Saguaro\_13 (B7), SlippinJimmy\_13 (B3), Stinger\_9 (B4), SynergyX\_13 (B3), Tydolla\_13 (B3), Vincenzo\_12 (B4), VioletZ\_11 (B4), Waleliano\_11 (B4), Yinz\_13 (B3),

#### Start 17:

- Found in 5 of 87 ( 5.7% ) of genes in pham
- Manual Annotations of this start: 1 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: 39HC\_09 (B6), 40BC\_09 (B6), Hosp\_07 (B6), Jolie1\_09 (B6), KayaCho\_9 (B6),

#### Start 20:

- Found in 1 of 87 ( 1.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Tonitrus\_29 (singleton),

#### Start 21:

- Found in 9 of 87 ( 10.3% ) of genes in pham
- Manual Annotations of this start: 2 of 69
- Called 44.4% of time when present
- Phage (with cluster) where this start called: Clawz\_43 (CP), DonTron\_43 (CP), Soos\_39 (CP), Sting\_42 (CP),

#### Start 22:

- Found in 1 of 87 ( 1.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MakoManhole\_12 (DR),

#### Start 26:

- Found in 1 of 87 ( 1.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SirJeffery\_12 (B5),

### Summary by clusters:

There are 13 clusters represented in this pham: singleton, B8, B11, B4, B5, B6, B7, B12, B10, B3, CP, DR, B9,

Info for manual annotations of cluster B10:

- Start number 16 was manually annotated 1 time for cluster B10.

Info for manual annotations of cluster B11:

- Start number 16 was manually annotated 1 time for cluster B11.

Info for manual annotations of cluster B12:

- Start number 16 was manually annotated 1 time for cluster B12.

Info for manual annotations of cluster B3:

- Start number 16 was manually annotated 34 times for cluster B3.

Info for manual annotations of cluster B4:

- Start number 15 was manually annotated 4 times for cluster B4.
- Start number 16 was manually annotated 18 times for cluster B4.

Info for manual annotations of cluster B6:

- Start number 17 was manually annotated 1 time for cluster B6.

Info for manual annotations of cluster B7:

- Start number 16 was manually annotated 1 time for cluster B7.

Info for manual annotations of cluster B8:

- Start number 14 was manually annotated 1 time for cluster B8.

Info for manual annotations of cluster B9:

- Start number 16 was manually annotated 5 times for cluster B9.

Info for manual annotations of cluster CP:

- Start number 21 was manually annotated 2 times for cluster CP.

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

Gene: 39HC\_09 Start: 9546, Stop: 9785, Start Num: 17

Candidate Starts for 39HC\_09:

(13, 9468), (Start: 17 @9546 has 1 MA's), (Start: 21 @9594 has 2 MA's), (38, 9690), (41, 9717),

Gene: 40BC\_09 Start: 9546, Stop: 9785, Start Num: 17

Candidate Starts for 40BC\_09:

(13, 9468), (Start: 17 @9546 has 1 MA's), (Start: 21 @9594 has 2 MA's), (38, 9690), (41, 9717),

Gene: Abinghost\_13 Start: 10640, Stop: 10846, Start Num: 16

Candidate Starts for Abinghost\_13:

(9, 10166), (10, 10232), (Start: 16 @10640 has 61 MA's), (27, 10715), (40, 10790),

Gene: Akoma\_13 Start: 10640, Stop: 10846, Start Num: 16  
Candidate Starts for Akoma\_13:  
(Start: 16 @10640 has 61 MA's), (27, 10715), (40, 10790),

Gene: AlanGrant\_12 Start: 11855, Stop: 12076, Start Num: 16  
Candidate Starts for AlanGrant\_12:  
(6, 11213), (Start: 16 @11855 has 61 MA's), (24, 11918), (27, 11936), (41, 12017), (44, 12041), (47, 12059),

Gene: Apex\_10 Start: 10688, Stop: 10909, Start Num: 16  
Candidate Starts for Apex\_10:  
(Start: 15 @10685 has 4 MA's), (Start: 16 @10688 has 61 MA's), (23, 10748), (24, 10751), (27, 10769), (41, 10850), (42, 10853), (44, 10874),

Gene: Athena\_14 Start: 11403, Stop: 11609, Start Num: 16  
Candidate Starts for Athena\_14:  
(Start: 16 @11403 has 61 MA's), (27, 11478), (40, 11553),

Gene: Audrey\_13 Start: 10640, Stop: 10846, Start Num: 16  
Candidate Starts for Audrey\_13:  
(Start: 16 @10640 has 61 MA's), (27, 10715), (40, 10790),

Gene: Austelle\_11 Start: 11144, Stop: 11365, Start Num: 16  
Candidate Starts for Austelle\_11:  
(Start: 15 @11141 has 4 MA's), (Start: 16 @11144 has 61 MA's), (23, 11204), (24, 11207), (27, 11225), (32, 11240), (41, 11306), (44, 11330),

Gene: Baloo\_13 Start: 10640, Stop: 10846, Start Num: 16  
Candidate Starts for Baloo\_13:  
(Start: 16 @10640 has 61 MA's), (27, 10715), (40, 10790),

Gene: Ben11\_12 Start: 10488, Stop: 10694, Start Num: 16  
Candidate Starts for Ben11\_12:  
(9, 10014), (10, 10080), (Start: 16 @10488 has 61 MA's), (27, 10563), (40, 10638),

Gene: Bernardo\_13 Start: 10662, Stop: 10868, Start Num: 16  
Candidate Starts for Bernardo\_13:  
(4, 9978), (5, 9990), (6, 10014), (9, 10188), (10, 10254), (Start: 16 @10662 has 61 MA's), (27, 10737), (40, 10812),

Gene: BobbyK\_11 Start: 11141, Stop: 11362, Start Num: 16  
Candidate Starts for BobbyK\_11:  
(Start: 15 @11138 has 4 MA's), (Start: 16 @11141 has 61 MA's), (23, 11201), (24, 11204), (27, 11222), (32, 11237), (42, 11306), (44, 11327),

Gene: Briakila\_13 Start: 11429, Stop: 11635, Start Num: 16  
Candidate Starts for Briakila\_13:  
(Start: 16 @11429 has 61 MA's), (27, 11504), (40, 11579),

Gene: BrownCNA\_12 Start: 11392, Stop: 11616, Start Num: 15  
Candidate Starts for BrownCNA\_12:  
(Start: 15 @11392 has 4 MA's), (Start: 16 @11395 has 61 MA's), (23, 11455), (24, 11458), (27, 11476), (41, 11557), (42, 11560), (44, 11581),

Gene: CRB2\_14 Start: 11939, Stop: 12169, Start Num: 16  
Candidate Starts for CRB2\_14:  
(Start: 16 @11939 has 61 MA's), (24, 12002), (27, 12020), (42, 12104),

Gene: Casbah\_12 Start: 10492, Stop: 10698, Start Num: 16  
Candidate Starts for Casbah\_12:  
(Start: 16 @10492 has 61 MA's), (27, 10567), (40, 10642),

Gene: ChaChing\_13 Start: 10655, Stop: 10861, Start Num: 16  
Candidate Starts for ChaChing\_13:  
(Start: 16 @10655 has 61 MA's), (27, 10730), (40, 10805),

Gene: ChrisnMich\_10 Start: 10039, Stop: 10260, Start Num: 16  
Candidate Starts for ChrisnMich\_10:  
(Start: 16 @10039 has 61 MA's), (23, 10099), (24, 10102), (28, 10120), (32, 10135), (44, 10225),

Gene: Clawz\_43 Start: 22851, Stop: 23009, Start Num: 21  
Candidate Starts for Clawz\_43:  
(12, 22557), (Start: 21 @22851 has 2 MA's), (30, 22890), (33, 22905), (34, 22908),

Gene: Cooper\_11 Start: 10112, Stop: 10336, Start Num: 16  
Candidate Starts for Cooper\_11:  
(Start: 16 @10112 has 61 MA's), (23, 10172), (24, 10175), (29, 10199), (32, 10211), (41, 10277), (44, 10301),

Gene: Corofin\_13 Start: 10665, Stop: 10871, Start Num: 16  
Candidate Starts for Corofin\_13:  
(Start: 16 @10665 has 61 MA's), (27, 10740), (40, 10815),

Gene: Deenasa\_13 Start: 11403, Stop: 11609, Start Num: 16  
Candidate Starts for Deenasa\_13:  
(Start: 16 @11403 has 61 MA's), (27, 11478), (40, 11553),

Gene: Devonte\_13 Start: 10640, Stop: 10846, Start Num: 16  
Candidate Starts for Devonte\_13:  
(Start: 16 @10640 has 61 MA's), (27, 10715), (40, 10790),

Gene: DonTron\_43 Start: 23003, Stop: 23161, Start Num: 21  
Candidate Starts for DonTron\_43:  
(7, 22358), (8, 22382), (11, 22553), (12, 22709), (Start: 21 @23003 has 2 MA's), (30, 23042), (34, 23060),

Gene: Fortunato\_11 Start: 11135, Stop: 11356, Start Num: 16  
Candidate Starts for Fortunato\_11:  
(Start: 15 @11132 has 4 MA's), (Start: 16 @11135 has 61 MA's), (23, 11195), (24, 11198), (27, 11216), (42, 11300), (44, 11321),

Gene: Frederick\_11 Start: 11144, Stop: 11365, Start Num: 16  
Candidate Starts for Frederick\_11:  
(Start: 15 @11141 has 4 MA's), (Start: 16 @11144 has 61 MA's), (23, 11204), (24, 11207), (27, 11225), (42, 11309), (44, 11330),

Gene: Funsized\_16 Start: 13096, Stop: 13326, Start Num: 16

Candidate Starts for Funsized\_16:

(4, 12424), (5, 12436), (6, 12460), (9, 12634), (10, 12700), (Start: 16 @13096 has 61 MA's), (23, 13156), (25, 13162), (35, 13228), (36, 13231), (41, 13270),

Gene: Gadget\_14 Start: 10644, Stop: 10850, Start Num: 16

Candidate Starts for Gadget\_14:

(Start: 16 @10644 has 61 MA's), (27, 10719), (40, 10794),

Gene: GlenHope\_14 Start: 10654, Stop: 10860, Start Num: 16

Candidate Starts for GlenHope\_14:

(4, 9970), (5, 9982), (6, 10006), (9, 10180), (10, 10246), (Start: 16 @10654 has 61 MA's), (27, 10729), (40, 10804),

Gene: Halfpint\_12 Start: 10489, Stop: 10695, Start Num: 16

Candidate Starts for Halfpint\_12:

(Start: 16 @10489 has 61 MA's), (27, 10564), (40, 10639),

Gene: Hangman\_11 Start: 11144, Stop: 11365, Start Num: 16

Candidate Starts for Hangman\_11:

(Start: 15 @11141 has 4 MA's), (Start: 16 @11144 has 61 MA's), (23, 11204), (24, 11207), (27, 11225), (32, 11240), (42, 11309), (44, 11330),

Gene: HarveySr\_13 Start: 10641, Stop: 10847, Start Num: 16

Candidate Starts for HarveySr\_13:

(Start: 16 @10641 has 61 MA's), (27, 10716), (40, 10791),

Gene: Heath\_11 Start: 11144, Stop: 11365, Start Num: 16

Candidate Starts for Heath\_11:

(Start: 15 @11141 has 4 MA's), (Start: 16 @11144 has 61 MA's), (23, 11204), (24, 11207), (27, 11225), (41, 11306), (42, 11309), (44, 11330),

Gene: Heathcliff\_13 Start: 10626, Stop: 10832, Start Num: 16

Candidate Starts for Heathcliff\_13:

(4, 9942), (5, 9954), (6, 9978), (9, 10152), (10, 10218), (Start: 16 @10626 has 61 MA's), (27, 10701), (40, 10776),

Gene: Hosp\_07 Start: 7748, Stop: 7987, Start Num: 17

Candidate Starts for Hosp\_07:

(13, 7670), (Start: 17 @7748 has 1 MA's), (Start: 21 @7796 has 2 MA's), (38, 7892), (41, 7919),

Gene: Hydro\_11 Start: 11138, Stop: 11362, Start Num: 15

Candidate Starts for Hydro\_11:

(Start: 15 @11138 has 4 MA's), (Start: 16 @11141 has 61 MA's), (23, 11201), (24, 11204), (27, 11222), (32, 11237), (42, 11306), (44, 11327),

Gene: Imvubu\_7 Start: 7957, Stop: 8193, Start Num: 16

Candidate Starts for Imvubu\_7:

(4, 7288), (6, 7324), (9, 7498), (10, 7564), (Start: 16 @7957 has 61 MA's), (24, 8020), (41, 8134),

Gene: Indlovu\_11 Start: 10773, Stop: 11009, Start Num: 16

Candidate Starts for Indlovu\_11:

(Start: 16 @10773 has 61 MA's), (24, 10842), (36, 10902), (41, 10941),



Gene: JAMaL\_10 Start: 10664, Stop: 10885, Start Num: 16  
Candidate Starts for JAMaL\_10:  
(Start: 16 @10664 has 61 MA's), (23, 10724), (32, 10760), (44, 10850),

Gene: Jackstina\_12 Start: 10557, Stop: 10763, Start Num: 16  
Candidate Starts for Jackstina\_12:  
(Start: 16 @10557 has 61 MA's), (27, 10632), (40, 10707),

Gene: JaguarMi\_12 Start: 10965, Stop: 11189, Start Num: 16  
Candidate Starts for JaguarMi\_12:  
(Start: 16 @10965 has 61 MA's), (23, 11025), (24, 11028), (28, 11049), (29, 11052), (42, 11133), (44, 11154),

Gene: Jolie1\_09 Start: 9546, Stop: 9785, Start Num: 17  
Candidate Starts for Jolie1\_09:  
(13, 9468), (Start: 17 @9546 has 1 MA's), (Start: 21 @9594 has 2 MA's), (38, 9690), (41, 9717),

Gene: Kamiyu\_13 Start: 10635, Stop: 10841, Start Num: 16  
Candidate Starts for Kamiyu\_13:  
(Start: 16 @10635 has 61 MA's), (27, 10710), (40, 10785),

Gene: KayaCho\_9 Start: 9549, Stop: 9788, Start Num: 17  
Candidate Starts for KayaCho\_9:  
(13, 9471), (Start: 17 @9549 has 1 MA's), (Start: 21 @9597 has 2 MA's), (38, 9693), (41, 9720),

Gene: Kocker\_16 Start: 13569, Stop: 13811, Start Num: 16  
Candidate Starts for Kocker\_16:  
(4, 12882), (5, 12894), (6, 12918), (9, 13092), (10, 13158), (Start: 16 @13569 has 61 MA's), (23, 13635), (36, 13713), (41, 13752),

Gene: Kronus\_12 Start: 11247, Stop: 11453, Start Num: 16  
Candidate Starts for Kronus\_12:  
(Start: 16 @11247 has 61 MA's), (27, 11322), (40, 11397),

Gene: LestyG\_13 Start: 10644, Stop: 10850, Start Num: 16  
Candidate Starts for LestyG\_13:  
(Start: 16 @10644 has 61 MA's), (27, 10719), (40, 10794),

Gene: LilMcDreamy\_12 Start: 11806, Stop: 12027, Start Num: 16  
Candidate Starts for LilMcDreamy\_12:  
(4, 11131), (5, 11143), (6, 11167), (9, 11341), (Start: 16 @11806 has 61 MA's), (41, 11950), (46, 11983),

Gene: Lolalove\_11 Start: 11141, Stop: 11362, Start Num: 16  
Candidate Starts for Lolalove\_11:  
(Start: 15 @11138 has 4 MA's), (Start: 16 @11141 has 61 MA's), (23, 11201), (24, 11204), (27, 11222), (41, 11303), (42, 11306), (44, 11327),

Gene: Magpie\_11 Start: 11296, Stop: 11520, Start Num: 15  
Candidate Starts for Magpie\_11:  
(Start: 15 @11296 has 4 MA's), (Start: 16 @11299 has 61 MA's), (23, 11359), (24, 11362), (27, 11380), (41, 11461), (42, 11464), (44, 11485),

Gene: MakoManhole\_12 Start: 11060, Stop: 11233, Start Num: 22

Candidate Starts for MakoManhole\_12:

(18, 11030), (22, 11060), (39, 11159),

Gene: Mithril\_11 Start: 11144, Stop: 11365, Start Num: 16

Candidate Starts for Mithril\_11:

(Start: 15 @11141 has 4 MA's), (Start: 16 @11144 has 61 MA's), (23, 11204), (24, 11207), (27, 11225), (32, 11240), (41, 11306), (42, 11309), (44, 11330),

Gene: MmasiCarm\_13 Start: 10640, Stop: 10846, Start Num: 16

Candidate Starts for MmasiCarm\_13:

(Start: 16 @10640 has 61 MA's), (27, 10715), (40, 10790),

Gene: Mortcellus\_12 Start: 11278, Stop: 11484, Start Num: 16

Candidate Starts for Mortcellus\_12:

(Start: 16 @11278 has 61 MA's), (27, 11353), (40, 11428),

Gene: Mudslide\_11 Start: 11392, Stop: 11613, Start Num: 16

Candidate Starts for Mudslide\_11:

(Start: 15 @11389 has 4 MA's), (Start: 16 @11392 has 61 MA's), (23, 11452), (24, 11455), (27, 11473), (32, 11488), (41, 11554), (42, 11557), (44, 11578),

Gene: Nanao\_10 Start: 10039, Stop: 10260, Start Num: 16

Candidate Starts for Nanao\_10:

(Start: 16 @10039 has 61 MA's), (23, 10099), (24, 10102), (28, 10120), (32, 10135), (44, 10225),

Gene: Neos5\_13 Start: 11430, Stop: 11636, Start Num: 16

Candidate Starts for Neos5\_13:

(Start: 16 @11430 has 61 MA's), (27, 11505), (40, 11580),

Gene: Nigel\_9 Start: 9942, Stop: 10163, Start Num: 16

Candidate Starts for Nigel\_9:

(Start: 16 @9942 has 61 MA's), (23, 10002), (24, 10005), (32, 10038), (44, 10128),

Gene: Nozo\_13 Start: 11405, Stop: 11611, Start Num: 16

Candidate Starts for Nozo\_13:

(Start: 16 @11405 has 61 MA's), (27, 11480), (40, 11555),

Gene: OrangeOswald\_13 Start: 10640, Stop: 10846, Start Num: 16

Candidate Starts for OrangeOswald\_13:

(Start: 16 @10640 has 61 MA's), (27, 10715), (40, 10790),

Gene: PenguinLover67\_14 Start: 11948, Stop: 12169, Start Num: 16

Candidate Starts for PenguinLover67\_14:

(Start: 16 @11948 has 61 MA's), (24, 12011), (27, 12029), (42, 12113), (44, 12134),

Gene: Phaedrus\_12 Start: 10557, Stop: 10763, Start Num: 16

Candidate Starts for Phaedrus\_12:

(Start: 16 @10557 has 61 MA's), (27, 10632), (40, 10707),

Gene: Phayeta\_13 Start: 10516, Stop: 10722, Start Num: 16

Candidate Starts for Phayeta\_13:

(Start: 16 @10516 has 61 MA's), (27, 10591), (40, 10666),

Gene: Philly\_12 Start: 10530, Stop: 10736, Start Num: 16

Candidate Starts for Philly\_12:

(4, 9846), (5, 9858), (6, 9882), (9, 10056), (10, 10122), (Start: 16 @10530 has 61 MA's), (27, 10605), (40, 10680),

Gene: Phlyer\_13 Start: 11397, Stop: 11603, Start Num: 16

Candidate Starts for Phlyer\_13:

(4, 10713), (5, 10725), (6, 10749), (9, 10923), (10, 10989), (Start: 16 @11397 has 61 MA's), (27, 11472), (40, 11547),

Gene: Pipefish\_13 Start: 11526, Stop: 11732, Start Num: 16

Candidate Starts for Pipefish\_13:

(Start: 16 @11526 has 61 MA's), (27, 11601), (40, 11676),

Gene: Poster\_10 Start: 10039, Stop: 10260, Start Num: 16

Candidate Starts for Poster\_10:

(Start: 16 @10039 has 61 MA's), (23, 10099), (24, 10102), (28, 10120), (32, 10135), (44, 10225),

Gene: Prince\_12 Start: 11304, Stop: 11525, Start Num: 16

Candidate Starts for Prince\_12:

(Start: 15 @11301 has 4 MA's), (Start: 16 @11304 has 61 MA's), (23, 11364), (24, 11367), (27, 11385), (32, 11400), (41, 11466), (42, 11469), (44, 11490),

Gene: Quesadilla\_13 Start: 11758, Stop: 11988, Start Num: 16

Candidate Starts for Quesadilla\_13:

(Start: 16 @11758 has 61 MA's), (27, 11839), (36, 11881), (42, 11923), (44, 11944),

Gene: RagingRooster\_13 Start: 10641, Stop: 10847, Start Num: 16

Candidate Starts for RagingRooster\_13:

(Start: 16 @10641 has 61 MA's), (27, 10716), (40, 10791),

Gene: RawrgerThat\_11 Start: 11135, Stop: 11356, Start Num: 16

Candidate Starts for RawrgerThat\_11:

(1, 10139), (2, 10184), (3, 10187), (4, 10457), (6, 10493), (Start: 16 @11135 has 61 MA's), (23, 11195), (24, 11198), (27, 11216), (42, 11300), (44, 11321),

Gene: Saguaro\_13 Start: 12000, Stop: 12221, Start Num: 16

Candidate Starts for Saguaro\_13:

(Start: 16 @12000 has 61 MA's), (24, 12063), (29, 12084), (41, 12162), (44, 12186),

Gene: SirJeffery\_12 Start: 11124, Stop: 11288, Start Num: 26

Candidate Starts for SirJeffery\_12:

(Start: 16 @11070 has 61 MA's), (26, 11124), (41, 11214), (43, 11220),

Gene: SlippinJimmy\_13 Start: 11402, Stop: 11608, Start Num: 16

Candidate Starts for SlippinJimmy\_13:

(Start: 16 @11402 has 61 MA's), (27, 11477), (40, 11552),

Gene: Soos\_39 Start: 22170, Stop: 22328, Start Num: 21

Candidate Starts for Soos\_39:

(7, 21525), (8, 21549), (11, 21720), (12, 21876), (Start: 21 @22170 has 2 MA's), (30, 22209), (34, 22227),

Gene: Sting\_42 Start: 22609, Stop: 22767, Start Num: 21

Candidate Starts for Sting\_42:

(12, 22315), (Start: 21 @22609 has 2 MA's), (30, 22648), (34, 22666),

Gene: Stinger\_9 Start: 9575, Stop: 9799, Start Num: 16

Candidate Starts for Stinger\_9:

(Start: 16 @9575 has 61 MA's), (23, 9635), (24, 9638), (32, 9674), (44, 9764),

Gene: SynergyX\_13 Start: 10641, Stop: 10847, Start Num: 16

Candidate Starts for SynergyX\_13:

(Start: 16 @10641 has 61 MA's), (27, 10716), (40, 10791),

Gene: Thonko\_9 Start: 8053, Stop: 8286, Start Num: 14

Candidate Starts for Thonko\_9:

(Start: 14 @8053 has 1 MA's), (19, 8101), (28, 8155), (31, 8164), (38, 8203), (40, 8227), (41, 8230),

Gene: Tonitrus\_29 Start: 18735, Stop: 18884, Start Num: 20

Candidate Starts for Tonitrus\_29:

(20, 18735), (33, 18783), (37, 18810), (45, 18870),

Gene: Tydolla\_13 Start: 11402, Stop: 11608, Start Num: 16

Candidate Starts for Tydolla\_13:

(Start: 16 @11402 has 61 MA's), (27, 11477), (40, 11552),

Gene: Vincenzo\_12 Start: 11855, Stop: 12076, Start Num: 16

Candidate Starts for Vincenzo\_12:

(6, 11213), (Start: 16 @11855 has 61 MA's), (24, 11918), (27, 11936), (41, 12017), (44, 12041), (47, 12059),

Gene: VioletZ\_11 Start: 11144, Stop: 11365, Start Num: 16

Candidate Starts for VioletZ\_11:

(Start: 15 @11141 has 4 MA's), (Start: 16 @11144 has 61 MA's), (23, 11204), (24, 11207), (27, 11225), (32, 11240), (42, 11309), (44, 11330),

Gene: Waleliano\_11 Start: 11144, Stop: 11365, Start Num: 16

Candidate Starts for Waleliano\_11:

(Start: 15 @11141 has 4 MA's), (Start: 16 @11144 has 61 MA's), (23, 11204), (24, 11207), (27, 11225), (32, 11240), (42, 11309), (44, 11330),

Gene: Yinz\_13 Start: 10670, Stop: 10876, Start Num: 16

Candidate Starts for Yinz\_13:

(Start: 16 @10670 has 61 MA's), (27, 10745), (40, 10820),

Gene: Zemanar\_12 Start: 11141, Stop: 11365, Start Num: 15

Candidate Starts for Zemanar\_12:

(Start: 15 @11141 has 4 MA's), (Start: 16 @11144 has 61 MA's), (23, 11204), (24, 11207), (27, 11225), (32, 11240), (42, 11309), (44, 11330),