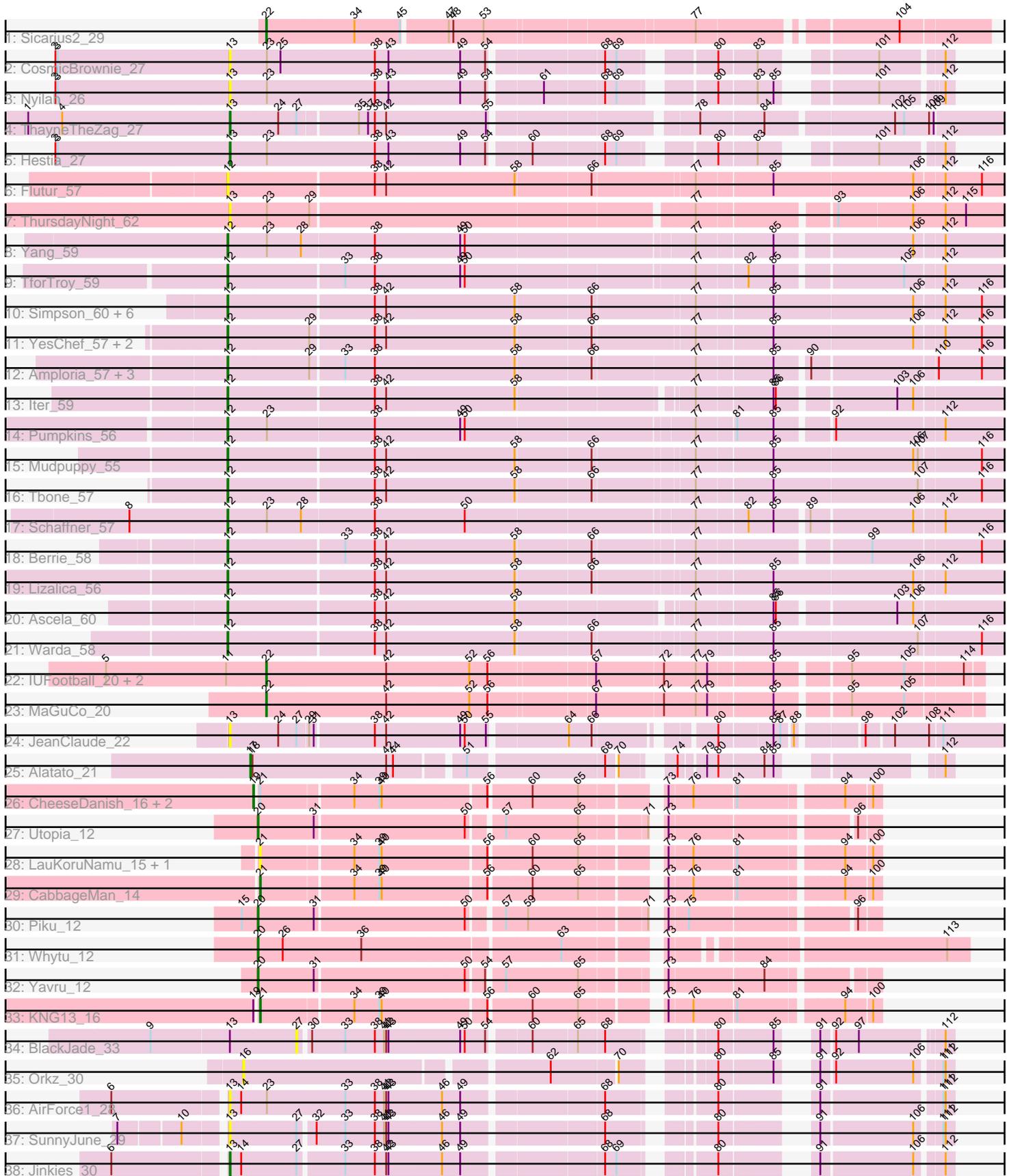


Pham 291219



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 291219 Report

This analysis was run 03/28/26 on database version 641.

Pham number 291219 has 54 members, 19 are drafts.

Phages represented in each track:

- Track 1 : Sicarius2\_29
- Track 2 : CosmicBrownie\_27
- Track 3 : Nyilah\_26
- Track 4 : ThayneTheZag\_27
- Track 5 : Hestia\_27
- Track 6 : Flutur\_57
- Track 7 : ThursdayNight\_62
- Track 8 : Yang\_59
- Track 9 : TforTroy\_59
- Track 10 : Simpson\_60, Lego\_57, JohnDoe\_58, Cyan\_58, Kaylissa\_59, Tutumahutu\_59, Joemato\_58
- Track 11 : YesChef\_57, AGrandiflora\_59, Powerpuff\_59
- Track 12 : Amploria\_57, AEgle\_55, Adumb2043\_56, Turab\_56
- Track 13 : Iter\_59
- Track 14 : Pumpkins\_56
- Track 15 : Mudpuppy\_55
- Track 16 : Tbone\_57
- Track 17 : Schaffner\_57
- Track 18 : Berrie\_58
- Track 19 : Lizalica\_56
- Track 20 : Ascela\_60
- Track 21 : Warda\_58
- Track 22 : IUFootball\_20, Maureen\_20, Liebe\_20
- Track 23 : MaGuCo\_20
- Track 24 : JeanClaude\_22
- Track 25 : Alatato\_21
- Track 26 : CheeseDanish\_16, Corgi\_16, Nebulanyx\_16
- Track 27 : Utopia\_12
- Track 28 : LauKoruNamu\_15, Pauu\_15
- Track 29 : CabbageMan\_14
- Track 30 : Piku\_12
- Track 31 : Whytu\_12
- Track 32 : Yavru\_12
- Track 33 : KNG13\_16
- Track 34 : BlackJade\_33
- Track 35 : Orkz\_30
- Track 36 : AirForce1\_28

- Track 37 : SunnyJune\_29
- Track 38 : Jinkies\_30

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

The start number called the most often in the published annotations is 12, it was called in 20 of the 35 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AEgle\_55, AGrandiflora\_59, Adumb2043\_56, Amploria\_57, Ascela\_60, Berrie\_58, Cyan\_58, Flutur\_57, Iter\_59, Joemato\_58, JohnDoe\_58, Kaylissa\_59, Lego\_57, Lizalica\_56, Mudpuppy\_55, Powerpuff\_59, Pumpkins\_56, Schaffner\_57, Simpson\_60, Tbone\_57, TforTroy\_59, Turab\_56, Tutumahutu\_59, Warda\_58, Yang\_59, YesChef\_57,

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

- 

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

- AirForce1\_28, Alatato\_21, BlackJade\_33, CabbageMan\_14, CheeseDanish\_16, Corgi\_16, CosmicBrownie\_27, Hestia\_27, IUFootball\_20, JeanClaude\_22, Jinkies\_30, KNG13\_16, LauKoruNamu\_15, Liebe\_20, MaGuCo\_20, Maureen\_20, Nebulanyx\_16, Nyilah\_26, Orkz\_30, Pauu\_15, Piku\_12, Sicarius2\_29, SunnyJune\_29, ThayneTheZag\_27, ThursdayNight\_62, Utopia\_12, Whytu\_12, Yavru\_12,

**Summary by start number:**

Start 12:

- Found in 26 of 54 ( 48.1% ) of genes in pham
- Manual Annotations of this start: 20 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AEgle\_55 (AZ1), AGrandiflora\_59 (AZ1), Adumb2043\_56 (AZ1), Amploria\_57 (AZ1), Ascela\_60 (AZ1), Berrie\_58 (AZ1), Cyan\_58 (AZ1), Flutur\_57 (AZ), Iter\_59 (AZ1), Joemato\_58 (AZ1), JohnDoe\_58 (AZ1), Kaylissa\_59 (AZ1), Lego\_57 (AZ1), Lizalica\_56 (AZ1), Mudpuppy\_55 (AZ1), Powerpuff\_59 (AZ1), Pumpkins\_56 (AZ1), Schaffner\_57 (AZ1), Simpson\_60 (AZ1), Tbone\_57 (AZ1), TforTroy\_59 (AZ1), Turab\_56 (AZ1), Tutumahutu\_59 (AZ1), Warda\_58 (AZ1), Yang\_59 (AZ1), YesChef\_57 (AZ1),

Start 13:

- Found in 10 of 54 ( 18.5% ) of genes in pham
- Manual Annotations of this start: 3 of 35
- Called 90.0% of time when present
- Phage (with cluster) where this start called: AirForce1\_28 (FL), CosmicBrownie\_27 (AY), Hestia\_27 (AY), JeanClaude\_22 (FB), Jinkies\_30 (FL), Nyilah\_26 (AY), SunnyJune\_29 (FL), ThayneTheZag\_27 (AY), ThursdayNight\_62 (AZ),

Start 16:

- Found in 1 of 54 ( 1.9% ) of genes in pham

- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Orkz\_30 (FL),

Start 17:

- Found in 1 of 54 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alatato\_21 (FB),

Start 19:

- Found in 4 of 54 ( 7.4% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 75.0% of time when present
- Phage (with cluster) where this start called: CheeseDanish\_16 (FE), Corgi\_16 (FE), Nebulanyx\_16 (FE),

Start 20:

- Found in 4 of 54 ( 7.4% ) of genes in pham
- Manual Annotations of this start: 4 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Piku\_12 (FE), Utopia\_12 (FE), Whytu\_12 (FE), Yavru\_12 (FE),

Start 21:

- Found in 7 of 54 ( 13.0% ) of genes in pham
- Manual Annotations of this start: 2 of 35
- Called 57.1% of time when present
- Phage (with cluster) where this start called: CabbageMan\_14 (FE), KNG13\_16 (FE), LauKoruNamu\_15 (FE), Pauu\_15 (FE),

Start 22:

- Found in 5 of 54 ( 9.3% ) of genes in pham
- Manual Annotations of this start: 4 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: IUFootball\_20 (AZ2), Liebe\_20 (AZ2), MaGuCo\_20 (AZ2), Maureen\_20 (AZ2), Sicarius2\_29 (AO2),

Start 27:

- Found in 5 of 54 ( 9.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 20.0% of time when present
- Phage (with cluster) where this start called: BlackJade\_33 (FL),

### **Summary by clusters:**

There are 8 clusters represented in this pham: FB, FE, AY, AZ1, AZ2, AZ, FL, AO2,

Info for manual annotations of cluster AO2:

- Start number 22 was manually annotated 1 time for cluster AO2.

Info for manual annotations of cluster AY:

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

Info for manual annotations of cluster AZ1:

- Start number 12 was manually annotated 20 times for cluster AZ1.

Info for manual annotations of cluster AZ2:

- Start number 22 was manually annotated 3 times for cluster AZ2.

Info for manual annotations of cluster FB:

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

Info for manual annotations of cluster FE:

- Start number 19 was manually annotated 1 time for cluster FE.
- Start number 20 was manually annotated 4 times for cluster FE.
- Start number 21 was manually annotated 2 times for cluster FE.

Info for manual annotations of cluster FL:

- Start number 13 was manually annotated 1 time for cluster FL.

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

Gene: AEgle\_55 Start: 38287, Stop: 39267, Start Num: 12

Candidate Starts for AEgle\_55:

(Start: 12 @38287 has 20 MA's), (29, 38392), (33, 38434), (38, 38473), (58, 38656), (66, 38752), (77, 38884), (85, 38980), (90, 39016), (110, 39172), (116, 39229),

Gene: AGrandiflora\_59 Start: 39228, Stop: 40220, Start Num: 12

Candidate Starts for AGrandiflora\_59:

(Start: 12 @39228 has 20 MA's), (29, 39333), (38, 39414), (42, 39429), (58, 39597), (66, 39693), (77, 39822), (85, 39918), (106, 40098), (112, 40134), (116, 40182),

Gene: Adumb2043\_56 Start: 38310, Stop: 39290, Start Num: 12

Candidate Starts for Adumb2043\_56:

(Start: 12 @38310 has 20 MA's), (29, 38415), (33, 38457), (38, 38496), (58, 38679), (66, 38775), (77, 38907), (85, 39003), (90, 39039), (110, 39195), (116, 39252),

Gene: AirForce1\_28 Start: 21441, Stop: 22262, Start Num: 13

Candidate Starts for AirForce1\_28:

(6, 21303), (Start: 13 @21441 has 3 MA's), (14, 21456), (23, 21489), (33, 21591), (38, 21630), (41, 21642), (42, 21645), (43, 21648), (46, 21717), (49, 21741), (68, 21912), (80, 22017), (91, 22104), (111, 22248), (112, 22251),

Gene: Alatato\_21 Start: 16711, Stop: 17466, Start Num: 17

Candidate Starts for Alatato\_21:

(Start: 17 @16711 has 1 MA's), (18, 16714), (42, 16888), (44, 16897), (51, 16972), (68, 17140), (70, 17152), (74, 17197), (79, 17221), (80, 17236), (84, 17290), (85, 17302), (112, 17455),

Gene: Amploria\_57 Start: 38491, Stop: 39471, Start Num: 12

Candidate Starts for Amploria\_57:

(Start: 12 @38491 has 20 MA's), (29, 38596), (33, 38638), (38, 38677), (58, 38860), (66, 38956), (77, 39088), (85, 39184), (90, 39220), (110, 39376), (116, 39433),

Gene: Ascela\_60 Start: 39485, Stop: 40450, Start Num: 12

Candidate Starts for Ascela\_60:

(Start: 12 @39485 has 20 MA's), (38, 39671), (42, 39686), (58, 39854), (77, 40064), (85, 40160), (86, 40163), (103, 40304), (106, 40325),

Gene: Berrie\_58 Start: 39288, Stop: 40256, Start Num: 12

Candidate Starts for Berrie\_58:

(Start: 12 @39288 has 20 MA's), (33, 39435), (38, 39474), (42, 39489), (58, 39657), (66, 39753), (77, 39876), (99, 40083), (116, 40221),

Gene: BlackJade\_33 Start: 24154, Stop: 24873, Start Num: 27

Candidate Starts for BlackJade\_33:

(9, 23965), (Start: 13 @24067 has 3 MA's), (27, 24154), (30, 24166), (33, 24208), (38, 24247), (41, 24259), (42, 24262), (43, 24265), (49, 24358), (50, 24364), (54, 24391), (60, 24439), (65, 24496), (68, 24529), (80, 24631), (85, 24697), (91, 24718), (92, 24733), (97, 24763), (112, 24862),

Gene: CabbageMan\_14 Start: 11695, Stop: 12432, Start Num: 21

Candidate Starts for CabbageMan\_14:

(Start: 21 @11695 has 2 MA's), (34, 11809), (39, 11842), (40, 11845), (56, 11977), (60, 12028), (65, 12088), (73, 12178), (76, 12208), (81, 12262), (94, 12388), (100, 12421),

Gene: CheeseDanish\_16 Start: 11850, Stop: 12590, Start Num: 19

Candidate Starts for CheeseDanish\_16:

(Start: 19 @11850 has 1 MA's), (Start: 21 @11853 has 2 MA's), (34, 11967), (39, 12000), (40, 12003), (56, 12135), (60, 12186), (65, 12246), (73, 12336), (76, 12366), (81, 12420), (94, 12546), (100, 12579),

Gene: Corgi\_16 Start: 11850, Stop: 12590, Start Num: 19

Candidate Starts for Corgi\_16:

(Start: 19 @11850 has 1 MA's), (Start: 21 @11853 has 2 MA's), (34, 11967), (39, 12000), (40, 12003), (56, 12135), (60, 12186), (65, 12246), (73, 12336), (76, 12366), (81, 12420), (94, 12546), (100, 12579),

Gene: CosmicBrownie\_27 Start: 19359, Stop: 20186, Start Num: 13

Candidate Starts for CosmicBrownie\_27:

(2, 19131), (3, 19134), (Start: 13 @19359 has 3 MA's), (23, 19407), (25, 19425), (38, 19548), (43, 19566), (49, 19659), (54, 19692), (68, 19830), (69, 19845), (80, 19941), (83, 19986), (101, 20100), (112, 20175),

Gene: Cyan\_58 Start: 38971, Stop: 39963, Start Num: 12

Candidate Starts for Cyan\_58:

(Start: 12 @38971 has 20 MA's), (38, 39157), (42, 39172), (58, 39340), (66, 39436), (77, 39565), (85, 39661), (106, 39841), (112, 39877), (116, 39925),

Gene: Flutur\_57 Start: 39276, Stop: 40268, Start Num: 12

Candidate Starts for Flutur\_57:

(Start: 12 @39276 has 20 MA's), (38, 39462), (42, 39477), (58, 39645), (66, 39741), (77, 39870), (85, 39966), (106, 40146), (112, 40182), (116, 40230),

Gene: Hestia\_27 Start: 19579, Stop: 20406, Start Num: 13

Candidate Starts for Hestia\_27:

(2, 19351), (3, 19354), (Start: 13 @19579 has 3 MA's), (23, 19627), (38, 19768), (43, 19786), (49, 19879), (54, 19912), (60, 19960), (68, 20050), (69, 20065), (80, 20161), (83, 20206), (101, 20320), (112, 20395),

Gene: IUFootball\_20 Start: 17855, Stop: 18736, Start Num: 22

Candidate Starts for IUFootball\_20:

(5, 17645), (11, 17804), (Start: 22 @17855 has 4 MA's), (42, 18011), (52, 18116), (56, 18137), (67, 18266), (72, 18353), (77, 18392), (79, 18407), (85, 18488), (95, 18572), (105, 18641), (114, 18713),

Gene: Iter\_59 Start: 39256, Stop: 40221, Start Num: 12

Candidate Starts for Iter\_59:

(Start: 12 @39256 has 20 MA's), (38, 39442), (42, 39457), (58, 39625), (77, 39835), (85, 39931), (86, 39934), (103, 40075), (106, 40096),

Gene: JeanClaude\_22 Start: 17290, Stop: 18198, Start Num: 13

Candidate Starts for JeanClaude\_22:

(Start: 13 @17290 has 3 MA's), (24, 17353), (27, 17377), (29, 17389), (31, 17395), (38, 17470), (42, 17485), (49, 17581), (50, 17587), (55, 17614), (64, 17707), (66, 17737), (80, 17866), (85, 17932), (87, 17941), (88, 17953), (98, 18025), (102, 18058), (108, 18103), (111, 18118),

Gene: Jinkies\_30 Start: 23927, Stop: 24739, Start Num: 13

Candidate Starts for Jinkies\_30:

(6, 23789), (Start: 13 @23927 has 3 MA's), (14, 23942), (27, 24014), (33, 24068), (38, 24107), (42, 24122), (43, 24125), (46, 24194), (49, 24218), (68, 24389), (69, 24404), (80, 24494), (91, 24581), (106, 24698), (112, 24728),

Gene: Joemato\_58 Start: 39052, Stop: 40044, Start Num: 12

Candidate Starts for Joemato\_58:

(Start: 12 @39052 has 20 MA's), (38, 39238), (42, 39253), (58, 39421), (66, 39517), (77, 39646), (85, 39742), (106, 39922), (112, 39958), (116, 40006),

Gene: JohnDoe\_58 Start: 39032, Stop: 40024, Start Num: 12

Candidate Starts for JohnDoe\_58:

(Start: 12 @39032 has 20 MA's), (38, 39218), (42, 39233), (58, 39401), (66, 39497), (77, 39626), (85, 39722), (106, 39902), (112, 39938), (116, 39986),

Gene: KNG13\_16 Start: 11850, Stop: 12587, Start Num: 21

Candidate Starts for KNG13\_16:

(Start: 19 @11847 has 1 MA's), (Start: 21 @11850 has 2 MA's), (34, 11964), (39, 11997), (40, 12000), (56, 12132), (60, 12183), (65, 12243), (73, 12333), (76, 12363), (81, 12417), (94, 12543), (100, 12576),

Gene: Kaylissa\_59 Start: 39430, Stop: 40422, Start Num: 12

Candidate Starts for Kaylissa\_59:

(Start: 12 @39430 has 20 MA's), (38, 39616), (42, 39631), (58, 39799), (66, 39895), (77, 40024), (85, 40120), (106, 40300), (112, 40336), (116, 40384),

Gene: LauKoruNamu\_15 Start: 11695, Stop: 12432, Start Num: 21

Candidate Starts for LauKoruNamu\_15:

(Start: 21 @11695 has 2 MA's), (34, 11809), (39, 11842), (40, 11845), (56, 11977), (60, 12028), (65, 12088), (73, 12178), (76, 12208), (81, 12262), (94, 12388), (100, 12421),

Gene: Lego\_57 Start: 38749, Stop: 39741, Start Num: 12

Candidate Starts for Lego\_57:

(Start: 12 @38749 has 20 MA's), (38, 38935), (42, 38950), (58, 39118), (66, 39214), (77, 39343), (85, 39439), (106, 39619), (112, 39655), (116, 39703),

Gene: Liebe\_20 Start: 17855, Stop: 18736, Start Num: 22

Candidate Starts for Liebe\_20:

(5, 17645), (11, 17804), (Start: 22 @17855 has 4 MA's), (42, 18011), (52, 18116), (56, 18137), (67, 18266), (72, 18353), (77, 18392), (79, 18407), (85, 18488), (95, 18572), (105, 18641), (114, 18713),

Gene: Lizalica\_56 Start: 38292, Stop: 39275, Start Num: 12

Candidate Starts for Lizalica\_56:

(Start: 12 @38292 has 20 MA's), (38, 38478), (42, 38493), (58, 38661), (66, 38757), (77, 38880), (85, 38976), (106, 39156), (112, 39192),

Gene: MaGuCo\_20 Start: 17788, Stop: 18669, Start Num: 22

Candidate Starts for MaGuCo\_20:

(Start: 22 @17788 has 4 MA's), (42, 17944), (52, 18049), (56, 18070), (67, 18199), (72, 18286), (77, 18325), (79, 18340), (85, 18421), (95, 18505), (105, 18574),

Gene: Maureen\_20 Start: 17855, Stop: 18736, Start Num: 22

Candidate Starts for Maureen\_20:

(5, 17645), (11, 17804), (Start: 22 @17855 has 4 MA's), (42, 18011), (52, 18116), (56, 18137), (67, 18266), (72, 18353), (77, 18392), (79, 18407), (85, 18488), (95, 18572), (105, 18641), (114, 18713),

Gene: Mudpuppy\_55 Start: 38904, Stop: 39890, Start Num: 12

Candidate Starts for Mudpuppy\_55:

(Start: 12 @38904 has 20 MA's), (38, 39090), (42, 39105), (58, 39273), (66, 39369), (77, 39492), (85, 39588), (106, 39768), (107, 39774), (116, 39852),

Gene: Nebulanyx\_16 Start: 11847, Stop: 12587, Start Num: 19

Candidate Starts for Nebulanyx\_16:

(Start: 19 @11847 has 1 MA's), (Start: 21 @11850 has 2 MA's), (34, 11964), (39, 11997), (40, 12000), (56, 12132), (60, 12183), (65, 12243), (73, 12333), (76, 12363), (81, 12417), (94, 12543), (100, 12576),

Gene: Nyilah\_26 Start: 19391, Stop: 20215, Start Num: 13

Candidate Starts for Nyilah\_26:

(2, 19163), (3, 19166), (Start: 13 @19391 has 3 MA's), (23, 19439), (38, 19580), (43, 19598), (49, 19691), (54, 19724), (61, 19787), (68, 19862), (69, 19877), (80, 19973), (83, 20018), (85, 20039), (101, 20132), (112, 20204),

Gene: Orkz\_30 Start: 20685, Stop: 21464, Start Num: 16

Candidate Starts for Orkz\_30:

(16, 20685), (62, 21051), (70, 21132), (80, 21219), (85, 21285), (91, 21306), (92, 21321), (106, 21423), (111, 21450), (112, 21453),

Gene: Pauu\_15 Start: 11695, Stop: 12432, Start Num: 21

Candidate Starts for Pauu\_15:

(Start: 21 @11695 has 2 MA's), (34, 11809), (39, 11842), (40, 11845), (56, 11977), (60, 12028), (65, 12088), (73, 12178), (76, 12208), (81, 12262), (94, 12388), (100, 12421),

Gene: Piku\_12 Start: 11038, Stop: 11766, Start Num: 20

Candidate Starts for Piku\_12:

(15, 11020), (Start: 20 @11038 has 4 MA's), (31, 11110), (50, 11302), (57, 11341), (59, 11368), (71, 11515), (73, 11521), (75, 11545), (96, 11740),

Gene: Powerpuff\_59 Start: 39951, Stop: 40943, Start Num: 12

Candidate Starts for Powerpuff\_59:

(Start: 12 @39951 has 20 MA's), (29, 40056), (38, 40137), (42, 40152), (58, 40320), (66, 40416), (77, 40545), (85, 40641), (106, 40821), (112, 40857), (116, 40905),

Gene: Pumpkins\_56 Start: 39599, Stop: 40567, Start Num: 12

Candidate Starts for Pumpkins\_56:

(Start: 12 @39599 has 20 MA's), (23, 39650), (38, 39788), (49, 39899), (50, 39905), (77, 40187), (81, 40235), (85, 40283), (92, 40346), (112, 40484),

Gene: Schaffner\_57 Start: 39442, Stop: 40410, Start Num: 12

Candidate Starts for Schaffner\_57:

(8, 39316), (Start: 12 @39442 has 20 MA's), (23, 39493), (28, 39538), (38, 39631), (50, 39748), (77, 40030), (82, 40093), (85, 40126), (89, 40162), (106, 40291), (112, 40327),

Gene: Sicarius2\_29 Start: 24015, Stop: 24896, Start Num: 22

Candidate Starts for Sicarius2\_29:

(Start: 22 @24015 has 4 MA's), (34, 24129), (45, 24189), (47, 24243), (48, 24249), (53, 24288), (77, 24549), (104, 24783),

Gene: Simpson\_60 Start: 39056, Stop: 40048, Start Num: 12

Candidate Starts for Simpson\_60:

(Start: 12 @39056 has 20 MA's), (38, 39242), (42, 39257), (58, 39425), (66, 39521), (77, 39650), (85, 39746), (106, 39926), (112, 39962), (116, 40010),

Gene: SunnyJune\_29 Start: 22626, Stop: 23438, Start Num: 13

Candidate Starts for SunnyJune\_29:

(7, 22503), (10, 22578), (Start: 13 @22626 has 3 MA's), (27, 22713), (32, 22731), (33, 22767), (38, 22806), (41, 22818), (42, 22821), (43, 22824), (46, 22893), (49, 22917), (68, 23088), (80, 23193), (91, 23280), (106, 23397), (111, 23424), (112, 23427),

Gene: Tbone\_57 Start: 39387, Stop: 40373, Start Num: 12

Candidate Starts for Tbone\_57:

(Start: 12 @39387 has 20 MA's), (38, 39573), (42, 39588), (58, 39756), (66, 39852), (77, 39975), (85, 40071), (107, 40257), (116, 40335),

Gene: TforTroy\_59 Start: 39527, Stop: 40492, Start Num: 12

Candidate Starts for TforTroy\_59:

(Start: 12 @39527 has 20 MA's), (33, 39674), (38, 39713), (49, 39824), (50, 39830), (77, 40112), (82, 40175), (85, 40208), (105, 40361), (112, 40409),

Gene: ThayneTheZag\_27 Start: 19570, Stop: 20526, Start Num: 13

Candidate Starts for ThayneTheZag\_27:

(1, 19303), (4, 19348), (Start: 13 @19570 has 3 MA's), (24, 19633), (27, 19657), (35, 19729), (37, 19741), (38, 19750), (42, 19765), (55, 19894), (78, 20137), (84, 20218), (102, 20377), (105, 20389), (108, 20422), (109, 20428),

Gene: ThursdayNight\_62 Start: 40518, Stop: 41483, Start Num: 13

Candidate Starts for ThursdayNight\_62:

(Start: 13 @40518 has 3 MA's), (23, 40566), (29, 40620), (77, 41100), (93, 41262), (106, 41358), (112, 41400), (115, 41427),

Gene: Turab\_56 Start: 38331, Stop: 39311, Start Num: 12

Candidate Starts for Turab\_56:

(Start: 12 @38331 has 20 MA's), (29, 38436), (33, 38478), (38, 38517), (58, 38700), (66, 38796), (77, 38928), (85, 39024), (90, 39060), (110, 39216), (116, 39273),

Gene: Tutumahutu\_59 Start: 39023, Stop: 40015, Start Num: 12

Candidate Starts for Tutumahutu\_59:

(Start: 12 @39023 has 20 MA's), (38, 39209), (42, 39224), (58, 39392), (66, 39488), (77, 39617), (85, 39713), (106, 39893), (112, 39929), (116, 39977),

Gene: Utopia\_12 Start: 11012, Stop: 11740, Start Num: 20

Candidate Starts for Utopia\_12:

(Start: 20 @11012 has 4 MA's), (31, 11084), (50, 11276), (57, 11315), (65, 11408), (71, 11489), (73, 11495), (96, 11714),

Gene: Warda\_58 Start: 39113, Stop: 40099, Start Num: 12

Candidate Starts for Warda\_58:

(Start: 12 @39113 has 20 MA's), (38, 39299), (42, 39314), (58, 39482), (66, 39578), (77, 39701), (85, 39797), (107, 39983), (116, 40061),

Gene: Whytu\_12 Start: 10993, Stop: 11844, Start Num: 20

Candidate Starts for Whytu\_12:

(Start: 20 @10993 has 4 MA's), (26, 11026), (36, 11125), (63, 11371), (73, 11482), (113, 11815),

Gene: Yang\_59 Start: 39529, Stop: 40497, Start Num: 12

Candidate Starts for Yang\_59:

(Start: 12 @39529 has 20 MA's), (23, 39580), (28, 39625), (38, 39718), (49, 39829), (50, 39835), (77, 40117), (85, 40213), (106, 40378), (112, 40414),

Gene: Yavru\_12 Start: 11017, Stop: 11745, Start Num: 20

Candidate Starts for Yavru\_12:

(Start: 20 @11017 has 4 MA's), (31, 11089), (50, 11281), (54, 11302), (57, 11320), (65, 11413), (73, 11500), (84, 11620),

Gene: YesChef\_57 Start: 38810, Stop: 39802, Start Num: 12

Candidate Starts for YesChef\_57:

(Start: 12 @38810 has 20 MA's), (29, 38915), (38, 38996), (42, 39011), (58, 39179), (66, 39275), (77, 39404), (85, 39500), (106, 39680), (112, 39716), (116, 39764),