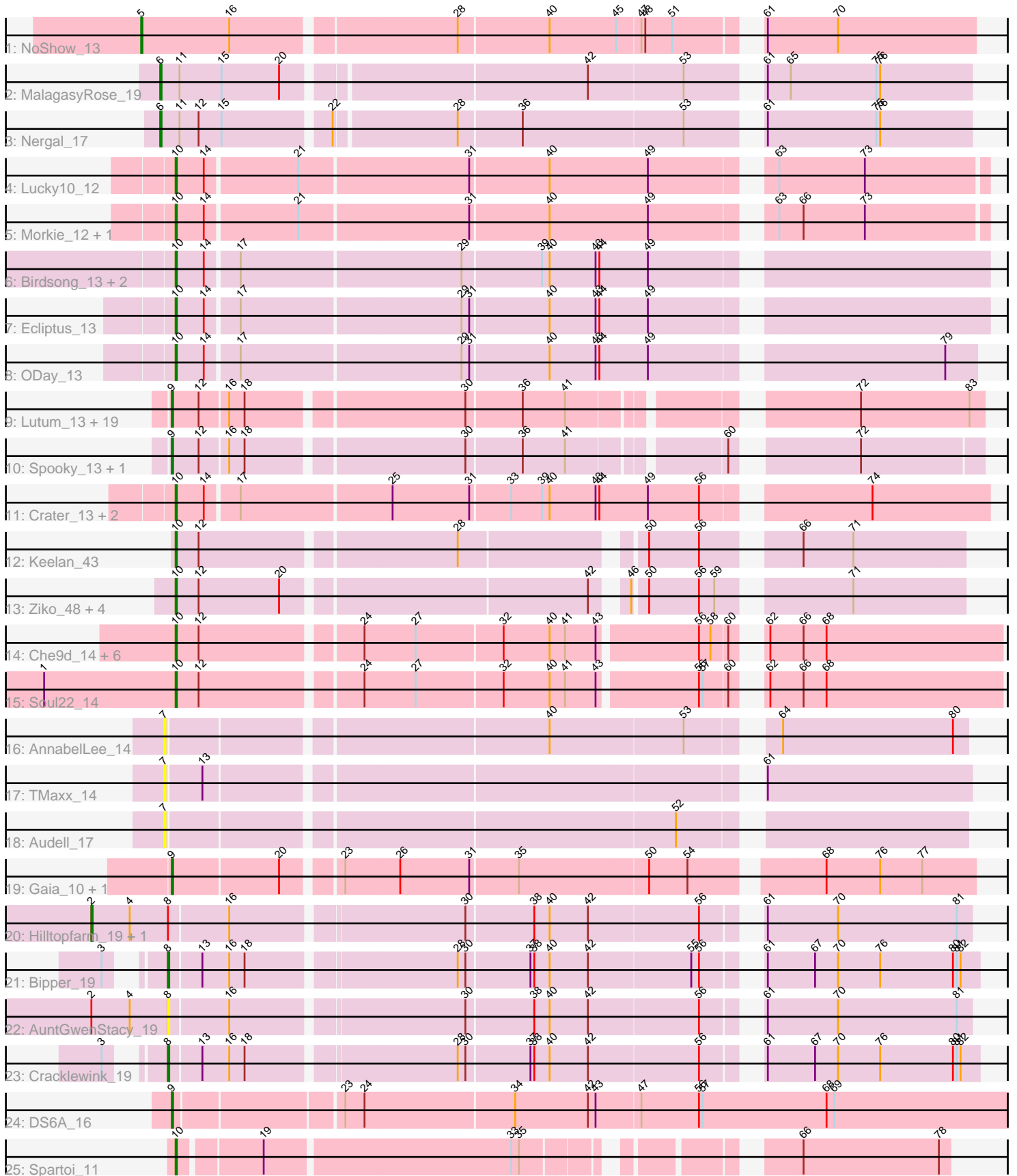


Pham 202946



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 202946 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202946 has 62 members, 9 are drafts.

Phages represented in each track:

- Track 1 : NoShow\_13
- Track 2 : MalagasyRose\_19
- Track 3 : Nergal\_17
- Track 4 : Lucky10\_12
- Track 5 : Morkie\_12, PhorbesPhlower\_12
- Track 6 : Birdsong\_13, BearBQ\_13, MortyNRick\_13
- Track 7 : Ecliptus\_13
- Track 8 : ODay\_13
- Track 9 : Lutum\_13, Kamaru\_13, Frickyeah\_13, Asapag\_13, BENtherdunthat\_13, Holliday\_13, LitninMcQueen\_13, CheeseTouch\_13, Whitney\_13, Periwinkle\_13, Leroy\_13, Squiddly\_14, Horus\_13, ShawBrad\_13, BotCity\_13, Getalong\_13, Budski\_13, Kenna\_13, Phabuloso\_13, Phistory\_13
- Track 10 : Spooky\_13, Malisha\_13
- Track 11 : Crater\_13, Apricot\_13, Kuwabara\_13
- Track 12 : Keelan\_43
- Track 13 : Ziko\_48, Ronaldo\_48, Volt\_47, Fryberger\_45, Guey18\_50
- Track 14 : Che9d\_14, Blarby\_15, Zapner\_15, Jabbawokkie\_15, Demsculpinboyz\_14, Avani\_14, Yoshi\_14
- Track 15 : Soul22\_14
- Track 16 : AnnabelLee\_14
- Track 17 : TMaxx\_14
- Track 18 : Audell\_17
- Track 19 : Gaia\_10, Nebkiss\_10
- Track 20 : Hilltopfarm\_19, Typha\_19
- Track 21 : Bipper\_19
- Track 22 : AuntGwenStacy\_19
- Track 23 : Cracklewink\_19
- Track 24 : DS6A\_16
- Track 25 : Spartoi\_11

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

The start number called the most often in the published annotations is 10, it was called in 24 of the 53 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Apricot\_13, Avani\_14, BearBQ\_13, Birdsong\_13, Blarby\_15, Che9d\_14, Crater\_13, Demsculpinboyz\_14, Ecliptus\_13, Fryberger\_45, Guey18\_50, Jabbawokkie\_15, Keelan\_43, Kuwabara\_13, Lucky10\_12, Morkie\_12, MortyNRick\_13, ODay\_13, PhorbesPhlower\_12, Ronaldo\_48, Soul22\_14, Spartoi\_11, Volt\_47, Yoshi\_14, Zapner\_15, Ziko\_48,

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

- 

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

- AnnabelLee\_14, Asapag\_13, Audell\_17, AuntGwenStacy\_19, BENtherdunthat\_13, Bipper\_19, BotCity\_13, Budski\_13, CheeseTouch\_13, Cracklewink\_19, DS6A\_16, Frickyeah\_13, Gaia\_10, Getalong\_13, Hilltopfarm\_19, Holliday\_13, Horus\_13, Kamaru\_13, Kenna\_13, Leroy\_13, LitninMcQueen\_13, Lutum\_13, MalagasyRose\_19, Malisha\_13, Nebkiss\_10, Nergal\_17, NoShow\_13, Periwinkle\_13, Phabuloso\_13, Phistory\_13, ShawBrad\_13, Spooky\_13, Squiddly\_14, TMaxx\_14, Typha\_19, Whitney\_13,

### Summary by start number:

Start 2:

- Found in 3 of 62 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 2 of 53
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Hilltopfarm\_19 (Y), Typha\_19 (Y),

Start 5:

- Found in 1 of 62 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 53
- Called 100.0% of time when present
- Phage (with cluster) where this start called: NoShow\_13 (AB),

Start 6:

- Found in 2 of 62 ( 3.2% ) of genes in pham
- Manual Annotations of this start: 2 of 53
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MalagasyRose\_19 (AG), Nergal\_17 (AG),

Start 7:

- Found in 3 of 62 ( 4.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AnnabelLee\_14 (FR), Audell\_17 (FR), TMaxx\_14 (FR),

Start 8:

- Found in 5 of 62 ( 8.1% ) of genes in pham
- Manual Annotations of this start: 2 of 53
- Called 60.0% of time when present

- Phage (with cluster) where this start called: AuntGwenStacy\_19 (Y), Bipper\_19 (Y), Cracklewink\_19 (Y),

#### Start 9:

- Found in 25 of 62 ( 40.3% ) of genes in pham
- Manual Annotations of this start: 22 of 53
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Asapag\_13 (DN1), BENtherdunthat\_13 (DN1), BotCity\_13 (DN), Budski\_13 (DN), CheeseTouch\_13 (DN1), DS6A\_16 (singleton), Frickyeah\_13 (DN1), Gaia\_10 (X), Getalong\_13 (DN1), Holliday\_13 (DN1), Horus\_13 (DN1), Kamaru\_13 (DN1), Kenna\_13 (DN1), Leroy\_13 (DN1), LitninMcQueen\_13 (DN1), Lutum\_13 (DN1), Malisha\_13 (DN), Nebkiss\_10 (X), Periwinkle\_13 (DN1), Phabuloso\_13 (DN1), Phistory\_13 (DN1), ShawBrad\_13 (DN1), Spooky\_13 (DN2), Squiddly\_14 (DN2), Whitney\_13 (DN1),

#### Start 10:

- Found in 26 of 62 ( 41.9% ) of genes in pham
- Manual Annotations of this start: 24 of 53
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Apricot\_13 (DN3), Avani\_14 (F2), BearBQ\_13 (DN), Birdsong\_13 (DN), Blarby\_15 (F), Che9d\_14 (F2), Crater\_13 (DN3), Demsculpinboyz\_14 (F2), Ecliptus\_13 (DN), Fryberger\_45 (DP), Guey18\_50 (DP), Jabbawokkie\_15 (F2), Keelan\_43 (DP), Kuwabara\_13 (DN4), Lucky10\_12 (DH), Morkie\_12 (DH), MortyNRick\_13 (DN), ODay\_13 (DN), PhorbesPhlower\_12 (DH), Ronaldo\_48 (DP), Soul22\_14 (F2), Spartoi\_11 (singleton), Volt\_47 (DP), Yoshi\_14 (F2), Zapner\_15 (F2), Ziko\_48 (DP),

### Summary by clusters:

There are 15 clusters represented in this pham: DN, F2, AB, DH, AG, F, FR, DN4, DN1, DN3, DN2, Y, X, singleton, DP,

Info for manual annotations of cluster AB:

- Start number 5 was manually annotated 1 time for cluster AB.

Info for manual annotations of cluster AG:

- Start number 6 was manually annotated 2 times for cluster AG.

Info for manual annotations of cluster DH:

- Start number 10 was manually annotated 3 times for cluster DH.

Info for manual annotations of cluster DN:

- Start number 9 was manually annotated 2 times for cluster DN.
- Start number 10 was manually annotated 4 times for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 9 was manually annotated 15 times for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 9 was manually annotated 2 times for cluster DN2.

Info for manual annotations of cluster DN3:

- Start number 10 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DN4:

- Start number 10 was manually annotated 1 time for cluster DN4.

Info for manual annotations of cluster DP:

- Start number 10 was manually annotated 6 times for cluster DP.

Info for manual annotations of cluster F2:

- Start number 10 was manually annotated 7 times for cluster F2.

Info for manual annotations of cluster X:

- Start number 9 was manually annotated 2 times for cluster X.

Info for manual annotations of cluster Y:

- Start number 2 was manually annotated 2 times for cluster Y.
- Start number 8 was manually annotated 2 times for cluster Y.

### **Gene Information:**

Gene: AnnabelLee\_14 Start: 8154, Stop: 8732, Start Num: 7

Candidate Starts for AnnabelLee\_14:

(7, 8154), (40, 8433), (53, 8535), (64, 8589), (80, 8721),

Gene: Apricot\_13 Start: 7836, Stop: 8429, Start Num: 10

Candidate Starts for Apricot\_13:

(Start: 10 @7836 has 24 MA's), (14, 7857), (17, 7881), (25, 7995), (31, 8055), (33, 8085), (39, 8109), (40, 8115), (43, 8151), (44, 8154), (49, 8190), (56, 8229), (74, 8340),

Gene: Asapag\_13 Start: 7514, Stop: 8086, Start Num: 9

Candidate Starts for Asapag\_13:

(Start: 9 @7514 has 22 MA's), (12, 7535), (16, 7556), (18, 7568), (30, 7727), (36, 7769), (41, 7802), (72, 7991), (83, 8075),

Gene: Audell\_17 Start: 11494, Stop: 12072, Start Num: 7

Candidate Starts for Audell\_17:

(7, 11494), (52, 11869),

Gene: AuntGwenStacy\_19 Start: 12547, Stop: 13128, Start Num: 8

Candidate Starts for AuntGwenStacy\_19:

(Start: 2 @12487 has 2 MA's), (4, 12517), (Start: 8 @12547 has 2 MA's), (16, 12592), (30, 12763), (38, 12814), (40, 12826), (42, 12856), (56, 12940), (61, 12970), (70, 13024), (81, 13117),

Gene: Avani\_14 Start: 7679, Stop: 8272, Start Num: 10

Candidate Starts for Avani\_14:

(Start: 10 @7679 has 24 MA's), (12, 7697), (24, 7814), (27, 7853), (32, 7919), (40, 7952), (41, 7964), (43, 7988), (56, 8060), (58, 8069), (60, 8081), (62, 8093), (66, 8117), (68, 8135),

Gene: BENtherdunthat\_13 Start: 7514, Stop: 8086, Start Num: 9

Candidate Starts for BENtherdunthat\_13:

(Start: 9 @7514 has 22 MA's), (12, 7535), (16, 7556), (18, 7568), (30, 7727), (36, 7769), (41, 7802), (72, 7991), (83, 8075),

Gene: BearBQ\_13 Start: 7836, Stop: 8429, Start Num: 10

Candidate Starts for BearBQ\_13:

(Start: 10 @7836 has 24 MA's), (14, 7857), (17, 7881), (29, 8049), (39, 8109), (40, 8115), (43, 8151), (44, 8154), (49, 8190),

Gene: Bipper\_19 Start: 12607, Stop: 13194, Start Num: 8

Candidate Starts for Bipper\_19:

(3, 12580), (Start: 8 @12607 has 2 MA's), (13, 12631), (16, 12652), (18, 12664), (28, 12817), (30, 12823), (37, 12871), (38, 12874), (40, 12886), (42, 12916), (55, 12994), (56, 13000), (61, 13030), (67, 13066), (70, 13084), (76, 13117), (80, 13174), (81, 13177), (82, 13180),

Gene: Birdsong\_13 Start: 7836, Stop: 8429, Start Num: 10

Candidate Starts for Birdsong\_13:

(Start: 10 @7836 has 24 MA's), (14, 7857), (17, 7881), (29, 8049), (39, 8109), (40, 8115), (43, 8151), (44, 8154), (49, 8190),

Gene: Blarby\_15 Start: 8203, Stop: 8796, Start Num: 10

Candidate Starts for Blarby\_15:

(Start: 10 @8203 has 24 MA's), (12, 8221), (24, 8338), (27, 8377), (32, 8443), (40, 8476), (41, 8488), (43, 8512), (56, 8584), (58, 8593), (60, 8605), (62, 8617), (66, 8641), (68, 8659),

Gene: BotCity\_13 Start: 7512, Stop: 8084, Start Num: 9

Candidate Starts for BotCity\_13:

(Start: 9 @7512 has 22 MA's), (12, 7533), (16, 7554), (18, 7566), (30, 7725), (36, 7767), (41, 7800), (72, 7989), (83, 8073),

Gene: Budski\_13 Start: 7501, Stop: 8073, Start Num: 9

Candidate Starts for Budski\_13:

(Start: 9 @7501 has 22 MA's), (12, 7522), (16, 7543), (18, 7555), (30, 7714), (36, 7756), (41, 7789), (72, 7978), (83, 8062),

Gene: Che9d\_14 Start: 7688, Stop: 8281, Start Num: 10

Candidate Starts for Che9d\_14:

(Start: 10 @7688 has 24 MA's), (12, 7706), (24, 7823), (27, 7862), (32, 7928), (40, 7961), (41, 7973), (43, 7997), (56, 8069), (58, 8078), (60, 8090), (62, 8102), (66, 8126), (68, 8144),

Gene: CheeseTouch\_13 Start: 7501, Stop: 8073, Start Num: 9

Candidate Starts for CheeseTouch\_13:

(Start: 9 @7501 has 22 MA's), (12, 7522), (16, 7543), (18, 7555), (30, 7714), (36, 7756), (41, 7789), (72, 7978), (83, 8062),

Gene: Cracklewink\_19 Start: 12607, Stop: 13194, Start Num: 8

Candidate Starts for Cracklewink\_19:

(3, 12580), (Start: 8 @12607 has 2 MA's), (13, 12631), (16, 12652), (18, 12664), (28, 12817), (30, 12823), (37, 12871), (38, 12874), (40, 12886), (42, 12916), (56, 13000), (61, 13030), (67, 13066), (70, 13084), (76, 13117), (80, 13174), (81, 13177), (82, 13180),

Gene: Crater\_13 Start: 7836, Stop: 8429, Start Num: 10

Candidate Starts for Crater\_13:

(Start: 10 @7836 has 24 MA's), (14, 7857), (17, 7881), (25, 7995), (31, 8055), (33, 8085), (39, 8109), (40, 8115), (43, 8151), (44, 8154), (49, 8190), (56, 8229), (74, 8340),

Gene: DS6A\_16 Start: 10775, Stop: 11446, Start Num: 9

Candidate Starts for DS6A\_16:

(Start: 9 @10775 has 22 MA's), (23, 10898), (24, 10913), (34, 11027), (42, 11084), (43, 11090), (47, 11123), (56, 11168), (57, 11171), (68, 11267), (69, 11273),

Gene: Demsculpinboyz\_14 Start: 7679, Stop: 8272, Start Num: 10

Candidate Starts for Demsculpinboyz\_14:

(Start: 10 @7679 has 24 MA's), (12, 7697), (24, 7814), (27, 7853), (32, 7919), (40, 7952), (41, 7964), (43, 7988), (56, 8060), (58, 8069), (60, 8081), (62, 8093), (66, 8117), (68, 8135),

Gene: Ecliptus\_13 Start: 7565, Stop: 8158, Start Num: 10

Candidate Starts for Ecliptus\_13:

(Start: 10 @7565 has 24 MA's), (14, 7586), (17, 7610), (29, 7778), (31, 7784), (40, 7844), (43, 7880), (44, 7883), (49, 7919),

Gene: Frickyeah\_13 Start: 7514, Stop: 8086, Start Num: 9

Candidate Starts for Frickyeah\_13:

(Start: 9 @7514 has 22 MA's), (12, 7535), (16, 7556), (18, 7568), (30, 7727), (36, 7769), (41, 7802), (72, 7991), (83, 8075),

Gene: Fryberger\_45 Start: 16970, Stop: 17527, Start Num: 10

Candidate Starts for Fryberger\_45:

(Start: 10 @16970 has 24 MA's), (12, 16988), (20, 17051), (42, 17276), (46, 17294), (50, 17303), (56, 17342), (59, 17354), (71, 17441),

Gene: Gaia\_10 Start: 8073, Stop: 8660, Start Num: 9

Candidate Starts for Gaia\_10:

(Start: 9 @8073 has 22 MA's), (20, 8154), (23, 8193), (26, 8235), (31, 8289), (35, 8325), (50, 8424), (54, 8454), (68, 8544), (76, 8586), (77, 8619),

Gene: Getalong\_13 Start: 7496, Stop: 8068, Start Num: 9

Candidate Starts for Getalong\_13:

(Start: 9 @7496 has 22 MA's), (12, 7517), (16, 7538), (18, 7550), (30, 7709), (36, 7751), (41, 7784), (72, 7973), (83, 8057),

Gene: Guey18\_50 Start: 18163, Stop: 18720, Start Num: 10

Candidate Starts for Guey18\_50:

(Start: 10 @18163 has 24 MA's), (12, 18181), (20, 18244), (42, 18469), (46, 18487), (50, 18496), (56, 18535), (59, 18547), (71, 18634),

Gene: Hilltopfarm\_19 Start: 12517, Stop: 13158, Start Num: 2

Candidate Starts for Hilltopfarm\_19:

(Start: 2 @12517 has 2 MA's), (4, 12547), (Start: 8 @12577 has 2 MA's), (16, 12622), (30, 12793), (38, 12844), (40, 12856), (42, 12886), (56, 12970), (61, 13000), (70, 13054), (81, 13147),

Gene: Holliday\_13 Start: 7501, Stop: 8073, Start Num: 9

Candidate Starts for Holliday\_13:

(Start: 9 @7501 has 22 MA's), (12, 7522), (16, 7543), (18, 7555), (30, 7714), (36, 7756), (41, 7789), (72, 7978), (83, 8062),

Gene: Horus\_13 Start: 7514, Stop: 8086, Start Num: 9

Candidate Starts for Horus\_13:

(Start: 9 @7514 has 22 MA's), (12, 7535), (16, 7556), (18, 7568), (30, 7727), (36, 7769), (41, 7802), (72, 7991), (83, 8075),

Gene: Jabbawokkie\_15 Start: 8202, Stop: 8795, Start Num: 10

Candidate Starts for Jabbawokkie\_15:

(Start: 10 @8202 has 24 MA's), (12, 8220), (24, 8337), (27, 8376), (32, 8442), (40, 8475), (41, 8487), (43, 8511), (56, 8583), (58, 8592), (60, 8604), (62, 8616), (66, 8640), (68, 8658),

Gene: Kamaru\_13 Start: 7501, Stop: 8073, Start Num: 9

Candidate Starts for Kamaru\_13:

(Start: 9 @7501 has 22 MA's), (12, 7522), (16, 7543), (18, 7555), (30, 7714), (36, 7756), (41, 7789), (72, 7978), (83, 8062),

Gene: Keelan\_43 Start: 16946, Stop: 17503, Start Num: 10

Candidate Starts for Keelan\_43:

(Start: 10 @16946 has 24 MA's), (12, 16964), (28, 17153), (50, 17279), (56, 17318), (66, 17378), (71, 17417),

Gene: Kenna\_13 Start: 7514, Stop: 8086, Start Num: 9

Candidate Starts for Kenna\_13:

(Start: 9 @7514 has 22 MA's), (12, 7535), (16, 7556), (18, 7568), (30, 7727), (36, 7769), (41, 7802), (72, 7991), (83, 8075),

Gene: Kuwabara\_13 Start: 7836, Stop: 8429, Start Num: 10

Candidate Starts for Kuwabara\_13:

(Start: 10 @7836 has 24 MA's), (14, 7857), (17, 7881), (25, 7995), (31, 8055), (33, 8085), (39, 8109), (40, 8115), (43, 8151), (44, 8154), (49, 8190), (56, 8229), (74, 8340),

Gene: Leroy\_13 Start: 7515, Stop: 8087, Start Num: 9

Candidate Starts for Leroy\_13:

(Start: 9 @7515 has 22 MA's), (12, 7536), (16, 7557), (18, 7569), (30, 7728), (36, 7770), (41, 7803), (72, 7992), (83, 8076),

Gene: LitninMcQueen\_13 Start: 7501, Stop: 8073, Start Num: 9

Candidate Starts for LitninMcQueen\_13:

(Start: 9 @7501 has 22 MA's), (12, 7522), (16, 7543), (18, 7555), (30, 7714), (36, 7756), (41, 7789), (72, 7978), (83, 8062),

Gene: Lucky10\_12 Start: 7042, Stop: 7632, Start Num: 10

Candidate Starts for Lucky10\_12:

(Start: 10 @7042 has 24 MA's), (14, 7063), (21, 7132), (31, 7261), (40, 7321), (49, 7396), (63, 7474), (73, 7540),

Gene: Lutum\_13 Start: 7514, Stop: 8086, Start Num: 9

Candidate Starts for Lutum\_13:

(Start: 9 @7514 has 22 MA's), (12, 7535), (16, 7556), (18, 7568), (30, 7727), (36, 7769), (41, 7802), (72, 7991), (83, 8075),

Gene: MalagasyRose\_19 Start: 10934, Stop: 11524, Start Num: 6

Candidate Starts for MalagasyRose\_19:



(Start: 6 @10934 has 2 MA's), (11, 10949), (15, 10982), (20, 11027), (42, 11249), (53, 11321), (61, 11366), (65, 11384), (75, 11450), (76, 11453),

Gene: Malisha\_13 Start: 8564, Stop: 9133, Start Num: 9

Candidate Starts for Malisha\_13:

(Start: 9 @8564 has 22 MA's), (12, 8585), (16, 8606), (18, 8618), (30, 8777), (36, 8819), (41, 8852), (60, 8960), (72, 9041),

Gene: Morkie\_12 Start: 7004, Stop: 7594, Start Num: 10

Candidate Starts for Morkie\_12:

(Start: 10 @7004 has 24 MA's), (14, 7025), (21, 7094), (31, 7223), (40, 7283), (49, 7358), (63, 7436), (66, 7454), (73, 7502),

Gene: MortyNRick\_13 Start: 7836, Stop: 8429, Start Num: 10

Candidate Starts for MortyNRick\_13:

(Start: 10 @7836 has 24 MA's), (14, 7857), (17, 7881), (29, 8049), (39, 8109), (40, 8115), (43, 8151), (44, 8154), (49, 8190),

Gene: Nebkiss\_10 Start: 8074, Stop: 8661, Start Num: 9

Candidate Starts for Nebkiss\_10:

(Start: 9 @8074 has 22 MA's), (20, 8155), (23, 8194), (26, 8236), (31, 8290), (35, 8326), (50, 8425), (54, 8455), (68, 8545), (76, 8587), (77, 8620),

Gene: Nergal\_17 Start: 11411, Stop: 12001, Start Num: 6

Candidate Starts for Nergal\_17:

(Start: 6 @11411 has 2 MA's), (11, 11426), (12, 11441), (15, 11459), (22, 11537), (28, 11627), (36, 11675), (53, 11798), (61, 11843), (75, 11927), (76, 11930),

Gene: NoShow\_13 Start: 8694, Stop: 9302, Start Num: 5

Candidate Starts for NoShow\_13:

(Start: 5 @8694 has 1 MA's), (16, 8763), (28, 8928), (40, 8997), (45, 9048), (47, 9066), (48, 9069), (51, 9090), (61, 9141), (70, 9195),

Gene: ODay\_13 Start: 7563, Stop: 8147, Start Num: 10

Candidate Starts for ODay\_13:

(Start: 10 @7563 has 24 MA's), (14, 7584), (17, 7608), (29, 7776), (31, 7782), (40, 7842), (43, 7878), (44, 7881), (49, 7917), (79, 8124),

Gene: Periwinkle\_13 Start: 7496, Stop: 8068, Start Num: 9

Candidate Starts for Periwinkle\_13:

(Start: 9 @7496 has 22 MA's), (12, 7517), (16, 7538), (18, 7550), (30, 7709), (36, 7751), (41, 7784), (72, 7973), (83, 8057),

Gene: Phabuloso\_13 Start: 7501, Stop: 8073, Start Num: 9

Candidate Starts for Phabuloso\_13:

(Start: 9 @7501 has 22 MA's), (12, 7522), (16, 7543), (18, 7555), (30, 7714), (36, 7756), (41, 7789), (72, 7978), (83, 8062),

Gene: Phistory\_13 Start: 7485, Stop: 8057, Start Num: 9

Candidate Starts for Phistory\_13:

(Start: 9 @7485 has 22 MA's), (12, 7506), (16, 7527), (18, 7539), (30, 7698), (36, 7740), (41, 7773), (72, 7962), (83, 8046),

Gene: PhorbesPhlower\_12 Start: 7004, Stop: 7594, Start Num: 10  
Candidate Starts for PhorbesPhlower\_12:  
(Start: 10 @7004 has 24 MA's), (14, 7025), (21, 7094), (31, 7223), (40, 7283), (49, 7358), (63, 7436), (66, 7454), (73, 7502),

Gene: Ronaldo\_48 Start: 17900, Stop: 18457, Start Num: 10  
Candidate Starts for Ronaldo\_48:  
(Start: 10 @17900 has 24 MA's), (12, 17918), (20, 17981), (42, 18206), (46, 18224), (50, 18233), (56, 18272), (59, 18284), (71, 18371),

Gene: ShawBrad\_13 Start: 7519, Stop: 8091, Start Num: 9  
Candidate Starts for ShawBrad\_13:  
(Start: 9 @7519 has 22 MA's), (12, 7540), (16, 7561), (18, 7573), (30, 7732), (36, 7774), (41, 7807), (72, 7996), (83, 8080),

Gene: Soul22\_14 Start: 7679, Stop: 8272, Start Num: 10  
Candidate Starts for Soul22\_14:  
(1, 7577), (Start: 10 @7679 has 24 MA's), (12, 7697), (24, 7814), (27, 7853), (32, 7919), (40, 7952), (41, 7964), (43, 7988), (56, 8060), (57, 8063), (60, 8081), (62, 8093), (66, 8117), (68, 8135),

Gene: Spartoi\_11 Start: 7044, Stop: 7571, Start Num: 10  
Candidate Starts for Spartoi\_11:  
(Start: 10 @7044 has 24 MA's), (19, 7104), (33, 7290), (35, 7296), (66, 7458), (78, 7563),

Gene: Spooky\_13 Start: 7512, Stop: 8081, Start Num: 9  
Candidate Starts for Spooky\_13:  
(Start: 9 @7512 has 22 MA's), (12, 7533), (16, 7554), (18, 7566), (30, 7725), (36, 7767), (41, 7800), (60, 7908), (72, 7989),

Gene: Squiddly\_14 Start: 8181, Stop: 8753, Start Num: 9  
Candidate Starts for Squiddly\_14:  
(Start: 9 @8181 has 22 MA's), (12, 8202), (16, 8223), (18, 8235), (30, 8394), (36, 8436), (41, 8469), (72, 8658), (83, 8742),

Gene: TMaxx\_14 Start: 8024, Stop: 8605, Start Num: 7  
Candidate Starts for TMaxx\_14:  
(7, 8024), (13, 8051), (61, 8447),

Gene: Typha\_19 Start: 12487, Stop: 13128, Start Num: 2  
Candidate Starts for Typha\_19:  
(Start: 2 @12487 has 2 MA's), (4, 12517), (Start: 8 @12547 has 2 MA's), (16, 12592), (30, 12763), (38, 12814), (40, 12826), (42, 12856), (56, 12940), (61, 12970), (70, 13024), (81, 13117),

Gene: Volt\_47 Start: 17900, Stop: 18457, Start Num: 10  
Candidate Starts for Volt\_47:  
(Start: 10 @17900 has 24 MA's), (12, 17918), (20, 17981), (42, 18206), (46, 18224), (50, 18233), (56, 18272), (59, 18284), (71, 18371),

Gene: Whitney\_13 Start: 7496, Stop: 8068, Start Num: 9  
Candidate Starts for Whitney\_13:  
(Start: 9 @7496 has 22 MA's), (12, 7517), (16, 7538), (18, 7550), (30, 7709), (36, 7751), (41, 7784), (72, 7973), (83, 8057),

Gene: Yoshi\_14 Start: 7678, Stop: 8271, Start Num: 10

Candidate Starts for Yoshi\_14:

(Start: 10 @7678 has 24 MA's), (12, 7696), (24, 7813), (27, 7852), (32, 7918), (40, 7951), (41, 7963), (43, 7987), (56, 8059), (58, 8068), (60, 8080), (62, 8092), (66, 8116), (68, 8134),

Gene: Zapner\_15 Start: 8203, Stop: 8796, Start Num: 10

Candidate Starts for Zapner\_15:

(Start: 10 @8203 has 24 MA's), (12, 8221), (24, 8338), (27, 8377), (32, 8443), (40, 8476), (41, 8488), (43, 8512), (56, 8584), (58, 8593), (60, 8605), (62, 8617), (66, 8641), (68, 8659),

Gene: Ziko\_48 Start: 17840, Stop: 18397, Start Num: 10

Candidate Starts for Ziko\_48:

(Start: 10 @17840 has 24 MA's), (12, 17858), (20, 17921), (42, 18146), (46, 18164), (50, 18173), (56, 18212), (59, 18224), (71, 18311),