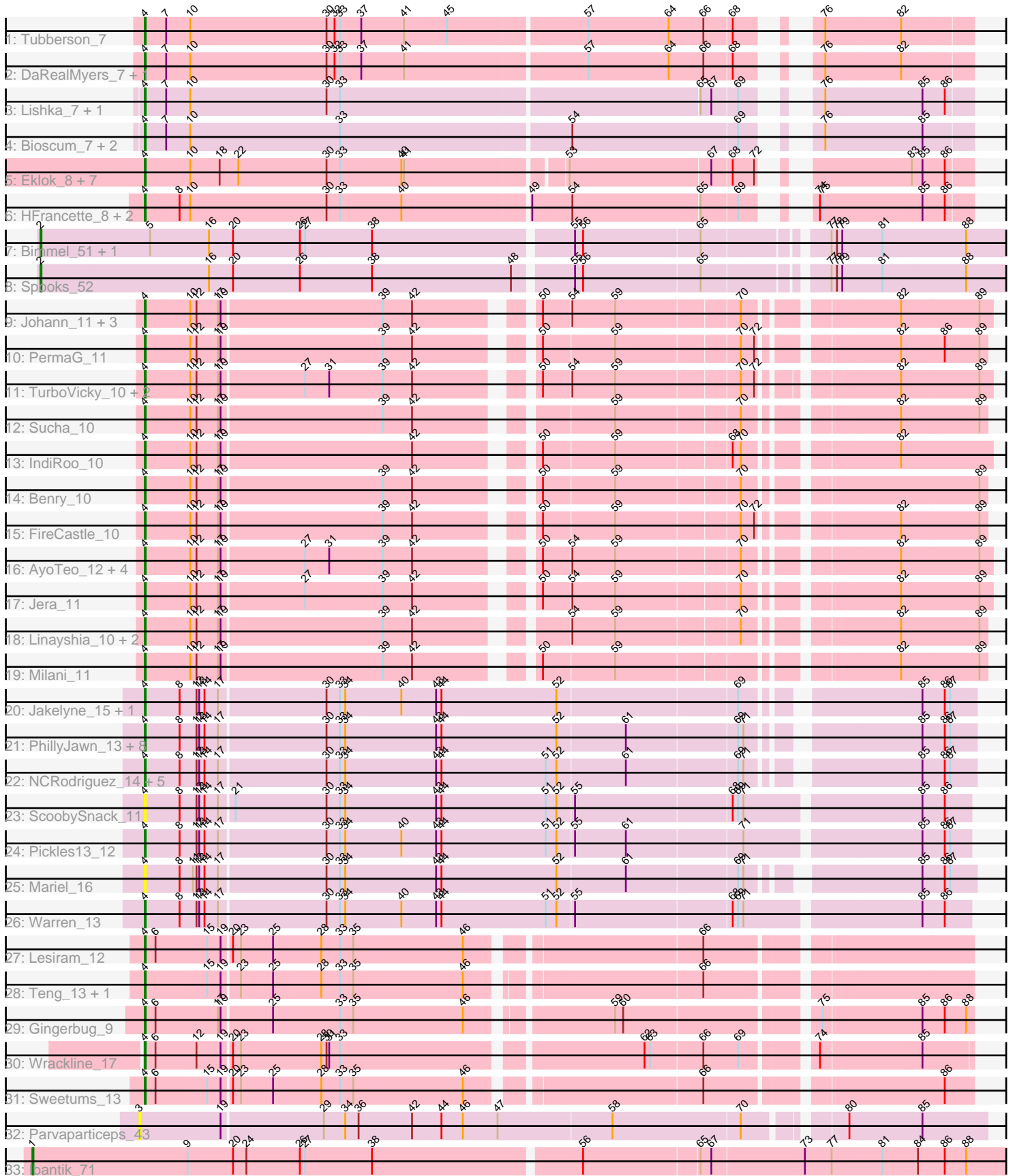


Pham 311536



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 311536 Report

This analysis was run 06/27/26 on database version 652.

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 311536 has 73 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Tubberson\_7
- Track 2 : DaRealMyers\_7, SoJo\_7
- Track 3 : Lishka\_7, Austintatious\_7
- Track 4 : Bioscum\_7, PapayaSalad\_7, Ididsumtinwong\_7
- Track 5 : Eklok\_8, Piccadilly\_8, ArizonaGT\_8, Cumberbatch\_8, AxeJC\_8, FrumpyGal\_8, Schlegelian\_8, Eastland\_8
- Track 6 : HFrancette\_8, Ignacio\_8, Vondra\_8
- Track 7 : Bimmel\_51, Success\_53
- Track 8 : Spooks\_52
- Track 9 : Johann\_11, Cicada\_12, Olympi\_12, Goodman\_11
- Track 10 : PermaG\_11
- Track 11 : TurboVicky\_10, Rootkit7\_10, Alove\_10
- Track 12 : Sucha\_10
- Track 13 : IndiRoo\_10
- Track 14 : Benry\_10
- Track 15 : FireCastle\_10
- Track 16 : AyoTeo\_12, Typher\_12, SBlackberry\_10, Labella\_12, Zanella\_10
- Track 17 : Jera\_11
- Track 18 : Linayshia\_10, Rasovi\_10, Htur\_10
- Track 19 : Milani\_11
- Track 20 : Jakelyne\_15, Phonegingi\_12
- Track 21 : PhillyJawn\_13, Guzman\_14, MenE\_13, Antuna\_13, Dropshot\_12, Violeta\_14, Appa\_12, Carrillo\_14, Winchester007\_28
- Track 22 : NCRodriguez\_14, Phingu\_15, CookieDog\_13, Bush\_13, Losacky\_14, Blett\_13
- Track 23 : ScoobySnack\_11
- Track 24 : Pickles13\_12
- Track 25 : Mariel\_16
- Track 26 : Warren\_13
- Track 27 : Lesiram\_12
- Track 28 : Teng\_13, DelaGarza\_12
- Track 29 : Gingerbug\_9
- Track 30 : Wrackline\_17

- Track 31 : Sweetums\_13
- Track 32 : Parvaparticeps\_43
- Track 33 : Ibantik\_71

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

The start number called the most often in the published annotations is 4, it was called in 53 of the 57 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alove\_10, Antuna\_13, Appa\_12, ArizonaGT\_8, Austintatious\_7, AxeJC\_8, AyoTeo\_12, Benry\_10, Bioscum\_7, Blett\_13, Bush\_13, Carrillo\_14, Cicada\_12, CookieDog\_13, Cumberbatch\_8, DaRealMyers\_7, DelaGarza\_12, Dropshot\_12, Eastland\_8, Eklok\_8, FireCastle\_10, FrumpyGal\_8, Gingerbug\_9, Goodman\_11, Guzman\_14, HFrancette\_8, Htur\_10, Ididsumtinwong\_7, Ignacio\_8, IndiRoo\_10, Jakelyne\_15, Jera\_11, Johann\_11, Labella\_12, Lesiram\_12, Linayshia\_10, Lishka\_7, Losacky\_14, Mariel\_16, MenE\_13, Milani\_11, NCRodriguez\_14, Olympi\_12, PapayaSalad\_7, PermaG\_11, PhillyJawn\_13, Phingu\_15, Phonegingi\_12, Piccadilly\_8, Pickles13\_12, Rasovi\_10, Rootkit7\_10, SBlackberry\_10, Schlegelian\_8, ScoobySnack\_11, SoJo\_7, Sucha\_10, Sweetums\_13, Teng\_13, Tubberson\_7, TurboVicky\_10, Typher\_12, Violeta\_14, Vondra\_8, Warren\_13, Winchester007\_28, Wrackline\_17, Zanella\_10,

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

- 

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

- Bimmel\_51, Ibantik\_71, Parvaparticeps\_43, Spooks\_52, Success\_53,

**Summary by start number:**

Start 1:

- Found in 1 of 73 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 57
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ibantik\_71 (singleton),

Start 2:

- Found in 3 of 73 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 3 of 57
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bimmel\_51 (BT), Spooks\_52 (BT), Success\_53 (BT),

Start 3:

- Found in 1 of 73 ( 1.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Parvaparticeps\_43 (UNK),

Start 4:

- Found in 68 of 73 ( 93.2% ) of genes in pham
- Manual Annotations of this start: 53 of 57
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alove\_10 (EJ), Antuna\_13 (GA), Appa\_12 (GA), ArizonaGT\_8 (BP), Austintatious\_7 (BC3), AxeJC\_8 (BP), AyoTeo\_12 (EJ), Benry\_10 (EJ), Bioscum\_7 (BC3), Blett\_13 (GA), Bush\_13 (GA), Carrillo\_14 (GA), Cicada\_12 (EJ), CookieDog\_13 (GA), Cumberbatch\_8 (BP), DaRealMyers\_7 (BC1), DelaGarza\_12 (GF), Dropshot\_12 (GA), Eastland\_8 (BP), Eklok\_8 (BP), FireCastle\_10 (EJ), FrumpyGal\_8 (BP), Gingerbug\_9 (GF), Goodman\_11 (EJ), Guzman\_14 (GA), HFrancette\_8 (BP), Htur\_10 (EJ), Ididsumtinwong\_7 (BC3), Ignacio\_8 (BP), IndiRoo\_10 (EJ), Jakelyne\_15 (GA), Jera\_11 (EJ), Johann\_11 (EJ), Labella\_12 (EJ), Lesiram\_12 (GF), Linayshia\_10 (EJ), Lishka\_7 (BC3), Losacky\_14 (GA), Mariel\_16 (GA), MenE\_13 (GA), Milani\_11 (EJ), NCRodriguez\_14 (GA), Olympi\_12 (EJ), PapayaSalad\_7 (BC3), PermaG\_11 (EJ), PhillyJawn\_13 (GA), Phingu\_15 (GA), Phonegingi\_12 (GA), Piccadilly\_8 (BP), Pickles13\_12 (GA), Rasovi\_10 (EJ), Rootkit7\_10 (EJ), SBlackberry\_10 (EJ), Schlegelian\_8 (BP), ScoobySnack\_11 (GA), SoJo\_7 (BC1), Sucha\_10 (EJ), Sweetums\_13 (GF), Teng\_13 (GF), Tubberson\_7 (BC1), TurboVicky\_10 (EJ), Typher\_12 (EJ), Violeta\_14 (GA), Vondra\_8 (BP), Warren\_13 (GA), Winchester007\_28 (GA), Wrackline\_17 (GF), Zanella\_10 (EJ),

### **Summary by clusters:**

There are 9 clusters represented in this pham: singleton, EJ, BT, GF, BP, GA, UNK, BC1, BC3,

Info for manual annotations of cluster BC1:

- Start number 4 was manually annotated 2 times for cluster BC1.

Info for manual annotations of cluster BC3:

- Start number 4 was manually annotated 5 times for cluster BC3.

Info for manual annotations of cluster BP:

- Start number 4 was manually annotated 11 times for cluster BP.

Info for manual annotations of cluster BT:

- Start number 2 was manually annotated 3 times for cluster BT.

Info for manual annotations of cluster EJ:

- Start number 4 was manually annotated 19 times for cluster EJ.

Info for manual annotations of cluster GA:

- Start number 4 was manually annotated 11 times for cluster GA.

Info for manual annotations of cluster GF:

- Start number 4 was manually annotated 5 times for cluster GF.

### **Gene Information:**

Gene: Alove\_10 Start: 8953, Stop: 9813, Start Num: 4

Candidate Starts for Alove\_10:

(Start: 4 @8953 has 53 MA's), (10, 9004), (12, 9010), (17, 9034), (19, 9037), (27, 9127), (31, 9154), (39, 9214), (42, 9247), (50, 9358), (54, 9388), (59, 9436), (70, 9568), (72, 9583), (82, 9712), (89, 9799),

Gene: Antuna\_13 Start: 7069, Stop: 7947, Start Num: 4

Candidate Starts for Antuna\_13:

(Start: 4 @7069 has 53 MA's), (8, 7108), (12, 7126), (13, 7129), (14, 7135), (17, 7150), (30, 7267), (33, 7282), (34, 7288), (43, 7390), (44, 7396), (52, 7525), (61, 7600), (69, 7720), (71, 7726), (85, 7888), (86, 7912), (87, 7918),

Gene: Appa\_12 Start: 6931, Stop: 7809, Start Num: 4

Candidate Starts for Appa\_12:

(Start: 4 @6931 has 53 MA's), (8, 6970), (12, 6988), (13, 6991), (14, 6997), (17, 7012), (30, 7129), (33, 7144), (34, 7150), (43, 7252), (44, 7258), (52, 7387), (61, 7462), (69, 7582), (71, 7588), (85, 7750), (86, 7774), (87, 7780),

Gene: ArizonaGT\_8 Start: 6284, Stop: 7129, Start Num: 4

Candidate Starts for ArizonaGT\_8:

(Start: 4 @6284 has 53 MA's), (10, 6335), (18, 6368), (22, 6389), (30, 6488), (33, 6503), (40, 6572), (41, 6575), (53, 6743), (67, 6899), (68, 6920), (72, 6944), (83, 7064), (85, 7076), (86, 7100),

Gene: Austintatious\_7 Start: 6011, Stop: 6865, Start Num: 4

Candidate Starts for Austintatious\_7:

(Start: 4 @6011 has 53 MA's), (7, 6035), (10, 6062), (30, 6215), (33, 6230), (65, 6623), (67, 6635), (69, 6662), (76, 6704), (85, 6812), (86, 6836),

Gene: AxeJC\_8 Start: 6297, Stop: 7142, Start Num: 4

Candidate Starts for AxeJC\_8:

(Start: 4 @6297 has 53 MA's), (10, 6348), (18, 6381), (22, 6402), (30, 6501), (33, 6516), (40, 6585), (41, 6588), (53, 6756), (67, 6912), (68, 6933), (72, 6957), (83, 7077), (85, 7089), (86, 7113),

Gene: AyoTeo\_12 Start: 9080, Stop: 9943, Start Num: 4

Candidate Starts for AyoTeo\_12:

(Start: 4 @9080 has 53 MA's), (10, 9131), (12, 9137), (17, 9161), (19, 9164), (27, 9254), (31, 9281), (39, 9341), (42, 9374), (50, 9485), (54, 9515), (59, 9563), (70, 9695), (82, 9842), (89, 9929),

Gene: Benry\_10 Start: 7142, Stop: 7999, Start Num: 4

Candidate Starts for Benry\_10:

(Start: 4 @7142 has 53 MA's), (10, 7193), (12, 7199), (17, 7223), (19, 7226), (39, 7403), (42, 7436), (50, 7547), (59, 7625), (70, 7757), (89, 7991),

Gene: Bimmel\_51 Start: 29040, Stop: 30080, Start Num: 2

Candidate Starts for Bimmel\_51:

(Start: 2 @29040 has 3 MA's), (5, 29160), (16, 29226), (20, 29253), (26, 29328), (27, 29334), (38, 29409), (55, 29625), (56, 29634), (65, 29763), (77, 29883), (78, 29889), (79, 29895), (81, 29940), (88, 30033),

Gene: Bioscum\_7 Start: 6045, Stop: 6902, Start Num: 4

Candidate Starts for Bioscum\_7:

(Start: 4 @6045 has 53 MA's), (7, 6069), (10, 6096), (33, 6264), (54, 6516), (69, 6699), (76, 6741), (85, 6849),

Gene: Blett\_13 Start: 7083, Stop: 7961, Start Num: 4

Candidate Starts for Blett\_13:

(Start: 4 @7083 has 53 MA's), (8, 7122), (12, 7140), (13, 7143), (14, 7149), (17, 7164), (30, 7281), (33, 7296), (34, 7302), (43, 7404), (44, 7410), (51, 7527), (52, 7539), (61, 7614), (69, 7734), (71, 7740), (85, 7902), (86, 7926), (87, 7932),

Gene: Bush\_13 Start: 7075, Stop: 7947, Start Num: 4

Candidate Starts for Bush\_13:

(Start: 4 @7075 has 53 MA's), (8, 7114), (12, 7132), (13, 7135), (14, 7141), (17, 7156), (30, 7273), (33, 7288), (34, 7294), (43, 7396), (44, 7402), (51, 7519), (52, 7531), (61, 7606), (69, 7726), (71, 7732), (85, 7894), (86, 7918), (87, 7924),

Gene: Carrillo\_14 Start: 7038, Stop: 7916, Start Num: 4

Candidate Starts for Carrillo\_14:

(Start: 4 @7038 has 53 MA's), (8, 7077), (12, 7095), (13, 7098), (14, 7104), (17, 7119), (30, 7236), (33, 7251), (34, 7257), (43, 7359), (44, 7365), (52, 7494), (61, 7569), (69, 7689), (71, 7695), (85, 7857), (86, 7881), (87, 7887),

Gene: Cicada\_12 Start: 9206, Stop: 10066, Start Num: 4

Candidate Starts for Cicada\_12:

(Start: 4 @9206 has 53 MA's), (10, 9257), (12, 9263), (17, 9287), (19, 9290), (39, 9467), (42, 9500), (50, 9611), (54, 9641), (59, 9689), (70, 9821), (82, 9965), (89, 10052),

Gene: CookieDog\_13 Start: 7075, Stop: 7947, Start Num: 4

Candidate Starts for CookieDog\_13:

(Start: 4 @7075 has 53 MA's), (8, 7114), (12, 7132), (13, 7135), (14, 7141), (17, 7156), (30, 7273), (33, 7288), (34, 7294), (43, 7396), (44, 7402), (51, 7519), (52, 7531), (61, 7606), (69, 7726), (71, 7732), (85, 7894), (86, 7918), (87, 7924),

Gene: Cumberbatch\_8 Start: 6284, Stop: 7129, Start Num: 4

Candidate Starts for Cumberbatch\_8:

(Start: 4 @6284 has 53 MA's), (10, 6335), (18, 6368), (22, 6389), (30, 6488), (33, 6503), (40, 6572), (41, 6575), (53, 6743), (67, 6899), (68, 6920), (72, 6944), (83, 7064), (85, 7076), (86, 7100),

Gene: DaRealMyers\_7 Start: 6353, Stop: 7210, Start Num: 4

Candidate Starts for DaRealMyers\_7:

(Start: 4 @6353 has 53 MA's), (7, 6377), (10, 6404), (30, 6557), (32, 6566), (33, 6572), (37, 6596), (41, 6644), (57, 6842), (64, 6932), (66, 6971), (68, 7001), (76, 7049), (82, 7133),

Gene: DelaGarza\_12 Start: 7432, Stop: 8292, Start Num: 4

Candidate Starts for DelaGarza\_12:

(Start: 4 @7432 has 53 MA's), (15, 7501), (19, 7516), (23, 7534), (25, 7570), (28, 7624), (33, 7645), (35, 7660), (46, 7783), (66, 8017),

Gene: Dropshot\_12 Start: 6931, Stop: 7809, Start Num: 4

Candidate Starts for Dropshot\_12:

(Start: 4 @6931 has 53 MA's), (8, 6970), (12, 6988), (13, 6991), (14, 6997), (17, 7012), (30, 7129), (33, 7144), (34, 7150), (43, 7252), (44, 7258), (52, 7387), (61, 7462), (69, 7582), (71, 7588), (85, 7750), (86, 7774), (87, 7780),

Gene: Eastland\_8 Start: 6285, Stop: 7130, Start Num: 4

Candidate Starts for Eastland\_8:

(Start: 4 @6285 has 53 MA's), (10, 6336), (18, 6369), (22, 6390), (30, 6489), (33, 6504), (40, 6573), (41, 6576), (53, 6744), (67, 6900), (68, 6921), (72, 6945), (83, 7065), (85, 7077), (86, 7101),

Gene: Eklok\_8 Start: 6297, Stop: 7142, Start Num: 4

Candidate Starts for Eklok\_8:

(Start: 4 @6297 has 53 MA's), (10, 6348), (18, 6381), (22, 6402), (30, 6501), (33, 6516), (40, 6585), (41, 6588), (53, 6756), (67, 6912), (68, 6933), (72, 6957), (83, 7077), (85, 7089), (86, 7113),

Gene: FireCastle\_10 Start: 8876, Stop: 9733, Start Num: 4

Candidate Starts for FireCastle\_10:

(Start: 4 @8876 has 53 MA's), (10, 8927), (12, 8933), (17, 8957), (19, 8960), (39, 9137), (42, 9170), (50, 9281), (59, 9359), (70, 9491), (72, 9506), (82, 9638), (89, 9725),

Gene: FrumpyGal\_8 Start: 6285, Stop: 7130, Start Num: 4

Candidate Starts for FrumpyGal\_8:

(Start: 4 @6285 has 53 MA's), (10, 6336), (18, 6369), (22, 6390), (30, 6489), (33, 6504), (40, 6573), (41, 6576), (53, 6744), (67, 6900), (68, 6921), (72, 6945), (83, 7065), (85, 7077), (86, 7101),

Gene: Gingerbug\_9 Start: 6620, Stop: 7483, Start Num: 4

Candidate Starts for Gingerbug\_9:

(Start: 4 @6620 has 53 MA's), (6, 6632), (17, 6701), (19, 6704), (25, 6758), (33, 6833), (35, 6848), (46, 6971), (59, 7112), (60, 7121), (75, 7319), (85, 7427), (86, 7451), (88, 7475),

Gene: Goodman\_11 Start: 9115, Stop: 9978, Start Num: 4

Candidate Starts for Goodman\_11:

(Start: 4 @9115 has 53 MA's), (10, 9166), (12, 9172), (17, 9196), (19, 9199), (39, 9376), (42, 9409), (50, 9520), (54, 9550), (59, 9598), (70, 9730), (82, 9877), (89, 9964),

Gene: Guzman\_14 Start: 7346, Stop: 8224, Start Num: 4

Candidate Starts for Guzman\_14:

(Start: 4 @7346 has 53 MA's), (8, 7385), (12, 7403), (13, 7406), (14, 7412), (17, 7427), (30, 7544), (33, 7559), (34, 7565), (43, 7667), (44, 7673), (52, 7802), (61, 7877), (69, 7997), (71, 8003), (85, 8165), (86, 8189), (87, 8195),

Gene: HFrancette\_8 Start: 6287, Stop: 7141, Start Num: 4

Candidate Starts for HFrancette\_8:

(Start: 4 @6287 has 53 MA's), (8, 6326), (10, 6338), (30, 6491), (33, 6506), (40, 6575), (49, 6713), (54, 6758), (65, 6899), (69, 6938), (74, 6974), (75, 6977), (85, 7088), (86, 7112),

Gene: Htur\_10 Start: 9054, Stop: 9911, Start Num: 4

Candidate Starts for Htur\_10:

(Start: 4 @9054 has 53 MA's), (10, 9105), (12, 9111), (17, 9135), (19, 9138), (39, 9315), (42, 9348), (54, 9489), (59, 9537), (70, 9669), (82, 9816), (89, 9903),

Gene: Ibantik\_71 Start: 32975, Stop: 34063, Start Num: 1

Candidate Starts for Ibantik\_71:

(Start: 1 @32975 has 1 MA's), (9, 33149), (20, 33200), (24, 33215), (26, 33275), (27, 33281), (38, 33356), (56, 33581), (65, 33707), (67, 33719), (73, 33821), (77, 33851), (81, 33908), (84, 33947), (86, 33977), (88, 34001),

Gene: Ididsumtinwong\_7 Start: 6045, Stop: 6902, Start Num: 4

Candidate Starts for Ididsumtinwong\_7:

(Start: 4 @6045 has 53 MA's), (7, 6069), (10, 6096), (33, 6264), (54, 6516), (69, 6699), (76, 6741), (85, 6849),

Gene: Ignacio\_8 Start: 6287, Stop: 7141, Start Num: 4

Candidate Starts for Ignacio\_8:

(Start: 4 @6287 has 53 MA's), (8, 6326), (10, 6338), (30, 6491), (33, 6506), (40, 6575), (49, 6713), (54, 6758), (65, 6899), (69, 6938), (74, 6974), (75, 6977), (85, 7088), (86, 7112),

Gene: IndiRoo\_10 Start: 7144, Stop: 8007, Start Num: 4

Candidate Starts for IndiRoo\_10:

(Start: 4 @7144 has 53 MA's), (10, 7195), (12, 7201), (17, 7225), (19, 7228), (42, 7438), (50, 7549), (59, 7627), (68, 7750), (70, 7759), (82, 7906),

Gene: Jakelyne\_15 Start: 7082, Stop: 7960, Start Num: 4

Candidate Starts for Jakelyne\_15:

(Start: 4 @7082 has 53 MA's), (8, 7121), (12, 7139), (13, 7142), (14, 7148), (17, 7163), (30, 7280), (33, 7295), (34, 7301), (40, 7364), (43, 7403), (44, 7409), (52, 7538), (69, 7733), (85, 7901), (86, 7925), (87, 7931),

Gene: Jera\_11 Start: 8197, Stop: 9060, Start Num: 4

Candidate Starts for Jera\_11:

(Start: 4 @8197 has 53 MA's), (10, 8248), (12, 8254), (17, 8278), (19, 8281), (27, 8371), (39, 8458), (42, 8491), (50, 8602), (54, 8632), (59, 8680), (70, 8812), (82, 8959), (89, 9046),

Gene: Johann\_11 Start: 9115, Stop: 9978, Start Num: 4

Candidate Starts for Johann\_11:

(Start: 4 @9115 has 53 MA's), (10, 9166), (12, 9172), (17, 9196), (19, 9199), (39, 9376), (42, 9409), (50, 9520), (54, 9550), (59, 9598), (70, 9730), (82, 9877), (89, 9964),

Gene: Labella\_12 Start: 9084, Stop: 9947, Start Num: 4

Candidate Starts for Labella\_12:

(Start: 4 @9084 has 53 MA's), (10, 9135), (12, 9141), (17, 9165), (19, 9168), (27, 9258), (31, 9285), (39, 9345), (42, 9378), (50, 9489), (54, 9519), (59, 9567), (70, 9699), (82, 9846), (89, 9933),

Gene: Lesiram\_12 Start: 7405, Stop: 8268, Start Num: 4

Candidate Starts for Lesiram\_12:

(Start: 4 @7405 has 53 MA's), (6, 7417), (15, 7474), (19, 7489), (20, 7498), (23, 7507), (25, 7543), (28, 7597), (33, 7618), (35, 7633), (46, 7756), (66, 7993),

Gene: Linayshia\_10 Start: 9048, Stop: 9905, Start Num: 4

Candidate Starts for Linayshia\_10:

(Start: 4 @9048 has 53 MA's), (10, 9099), (12, 9105), (17, 9129), (19, 9132), (39, 9309), (42, 9342), (54, 9483), (59, 9531), (70, 9663), (82, 9810), (89, 9897),

Gene: Lishka\_7 Start: 6011, Stop: 6865, Start Num: 4

Candidate Starts for Lishka\_7:

(Start: 4 @6011 has 53 MA's), (7, 6035), (10, 6062), (30, 6215), (33, 6230), (65, 6623), (67, 6635), (69, 6662), (76, 6704), (85, 6812), (86, 6836),

Gene: Losacky\_14 Start: 7221, Stop: 8093, Start Num: 4

Candidate Starts for Losacky\_14:

(Start: 4 @7221 has 53 MA's), (8, 7260), (12, 7278), (13, 7281), (14, 7287), (17, 7302), (30, 7419), (33, 7434), (34, 7440), (43, 7542), (44, 7548), (51, 7665), (52, 7677), (61, 7752), (69, 7872), (71, 7878), (85,

8040), (86, 8064), (87, 8070),

Gene: Mariel\_16 Start: 7242, Stop: 8120, Start Num: 4

Candidate Starts for Mariel\_16:

(Start: 4 @7242 has 53 MA's), (8, 7281), (11, 7296), (12, 7299), (13, 7302), (14, 7308), (17, 7323), (30, 7440), (33, 7455), (34, 7461), (43, 7563), (44, 7569), (52, 7698), (61, 7773), (69, 7893), (71, 7899), (85, 8061), (86, 8085), (87, 8091),

Gene: MenE\_13 Start: 7199, Stop: 8077, Start Num: 4

Candidate Starts for MenE\_13:

(Start: 4 @7199 has 53 MA's), (8, 7238), (12, 7256), (13, 7259), (14, 7265), (17, 7280), (30, 7397), (33, 7412), (34, 7418), (43, 7520), (44, 7526), (52, 7655), (61, 7730), (69, 7850), (71, 7856), (85, 8018), (86, 8042), (87, 8048),

Gene: Milani\_11 Start: 7798, Stop: 8655, Start Num: 4

Candidate Starts for Milani\_11:

(Start: 4 @7798 has 53 MA's), (10, 7849), (12, 7855), (17, 7879), (19, 7882), (39, 8059), (42, 8092), (50, 8203), (59, 8281), (82, 8560), (89, 8647),

Gene: NCRodriguez\_14 Start: 7199, Stop: 8077, Start Num: 4

Candidate Starts for NCRodriguez\_14:

(Start: 4 @7199 has 53 MA's), (8, 7238), (12, 7256), (13, 7259), (14, 7265), (17, 7280), (30, 7397), (33, 7412), (34, 7418), (43, 7520), (44, 7526), (51, 7643), (52, 7655), (61, 7730), (69, 7850), (71, 7856), (85, 8018), (86, 8042), (87, 8048),

Gene: Olympi\_12 Start: 9106, Stop: 9969, Start Num: 4

Candidate Starts for Olympi\_12:

(Start: 4 @9106 has 53 MA's), (10, 9157), (12, 9163), (17, 9187), (19, 9190), (39, 9367), (42, 9400), (50, 9511), (54, 9541), (59, 9589), (70, 9721), (82, 9868), (89, 9955),

Gene: PapayaSalad\_7 Start: 6017, Stop: 6874, Start Num: 4

Candidate Starts for PapayaSalad\_7:

(Start: 4 @6017 has 53 MA's), (7, 6041), (10, 6068), (33, 6236), (54, 6488), (69, 6671), (76, 6713), (85, 6821),

Gene: Parvaparticeps\_43 Start: 31069, Stop: 30161, Start Num: 3

Candidate Starts for Parvaparticeps\_43:

(3, 31069), (19, 30979), (29, 30868), (34, 30844), (36, 30829), (42, 30769), (44, 30736), (46, 30712), (47, 30673), (58, 30547), (70, 30406), (80, 30313), (85, 30232),

Gene: PermaG\_11 Start: 9137, Stop: 9994, Start Num: 4

Candidate Starts for PermaG\_11:

(Start: 4 @9137 has 53 MA's), (10, 9188), (12, 9194), (17, 9218), (19, 9221), (39, 9398), (42, 9431), (50, 9542), (59, 9620), (70, 9752), (72, 9767), (82, 9899), (86, 9947), (89, 9986),

Gene: PhillyJawn\_13 Start: 6931, Stop: 7809, Start Num: 4

Candidate Starts for PhillyJawn\_13:

(Start: 4 @6931 has 53 MA's), (8, 6970), (12, 6988), (13, 6991), (14, 6997), (17, 7012), (30, 7129), (33, 7144), (34, 7150), (43, 7252), (44, 7258), (52, 7387), (61, 7462), (69, 7582), (71, 7588), (85, 7750), (86, 7774), (87, 7780),

Gene: Phingu\_15 Start: 7089, Stop: 7967, Start Num: 4

Candidate Starts for Phingu\_15:

(Start: 4 @7089 has 53 MA's), (8, 7128), (12, 7146), (13, 7149), (14, 7155), (17, 7170), (30, 7287), (33, 7302), (34, 7308), (43, 7410), (44, 7416), (51, 7533), (52, 7545), (61, 7620), (69, 7740), (71, 7746), (85, 7908), (86, 7932), (87, 7938),

Gene: Phonegingi\_12 Start: 6925, Stop: 7803, Start Num: 4

Candidate Starts for Phonegingi\_12:

(Start: 4 @6925 has 53 MA's), (8, 6964), (12, 6982), (13, 6985), (14, 6991), (17, 7006), (30, 7123), (33, 7138), (34, 7144), (40, 7207), (43, 7246), (44, 7252), (52, 7381), (69, 7576), (85, 7744), (86, 7768), (87, 7774),

Gene: Piccadilly\_8 Start: 6284, Stop: 7129, Start Num: 4

Candidate Starts for Piccadilly\_8:

(Start: 4 @6284 has 53 MA's), (10, 6335), (18, 6368), (22, 6389), (30, 6488), (33, 6503), (40, 6572), (41, 6575), (53, 6743), (67, 6899), (68, 6920), (72, 6944), (83, 7064), (85, 7076), (86, 7100),

Gene: Pickles13\_12 Start: 7077, Stop: 7973, Start Num: 4

Candidate Starts for Pickles13\_12:

(Start: 4 @7077 has 53 MA's), (8, 7116), (12, 7134), (13, 7137), (14, 7143), (17, 7158), (30, 7275), (33, 7290), (34, 7296), (40, 7359), (43, 7398), (44, 7404), (51, 7521), (52, 7533), (55, 7551), (61, 7608), (71, 7734), (85, 7920), (86, 7944), (87, 7950),

Gene: Rasovi\_10 Start: 9054, Stop: 9911, Start Num: 4

Candidate Starts for Rasovi\_10:

(Start: 4 @9054 has 53 MA's), (10, 9105), (12, 9111), (17, 9135), (19, 9138), (39, 9315), (42, 9348), (54, 9489), (59, 9537), (70, 9669), (82, 9816), (89, 9903),

Gene: Rootkit7\_10 Start: 8953, Stop: 9813, Start Num: 4

Candidate Starts for Rootkit7\_10:

(Start: 4 @8953 has 53 MA's), (10, 9004), (12, 9010), (17, 9034), (19, 9037), (27, 9127), (31, 9154), (39, 9214), (42, 9247), (50, 9358), (54, 9388), (59, 9436), (70, 9568), (72, 9583), (82, 9712), (89, 9799),

Gene: SBlackberry\_10 Start: 8956, Stop: 9819, Start Num: 4

Candidate Starts for SBlackberry\_10:

(Start: 4 @8956 has 53 MA's), (10, 9007), (12, 9013), (17, 9037), (19, 9040), (27, 9130), (31, 9157), (39, 9217), (42, 9250), (50, 9361), (54, 9391), (59, 9439), (70, 9571), (82, 9718), (89, 9805),

Gene: Schlegelian\_8 Start: 6284, Stop: 7129, Start Num: 4

Candidate Starts for Schlegelian\_8:

(Start: 4 @6284 has 53 MA's), (10, 6335), (18, 6368), (22, 6389), (30, 6488), (33, 6503), (40, 6572), (41, 6575), (53, 6743), (67, 6899), (68, 6920), (72, 6944), (83, 7064), (85, 7076), (86, 7100),

Gene: ScoobySnack\_11 Start: 6783, Stop: 7679, Start Num: 4

Candidate Starts for ScoobySnack\_11:

(Start: 4 @6783 has 53 MA's), (8, 6822), (12, 6840), (13, 6843), (14, 6849), (17, 6864), (21, 6879), (30, 6981), (33, 6996), (34, 7002), (43, 7104), (44, 7110), (51, 7227), (52, 7239), (55, 7257), (68, 7428), (69, 7434), (71, 7440), (85, 7626), (86, 7650),

Gene: SoJo\_7 Start: 6353, Stop: 7210, Start Num: 4

Candidate Starts for SoJo\_7:

(Start: 4 @6353 has 53 MA's), (7, 6377), (10, 6404), (30, 6557), (32, 6566), (33, 6572), (37, 6596), (41, 6644), (57, 6842), (64, 6932), (66, 6971), (68, 7001), (76, 7049), (82, 7133),

Gene: Spooks\_52 Start: 30341, Stop: 31381, Start Num: 2

Candidate Starts for Spooks\_52:

(Start: 2 @30341 has 3 MA's), (16, 30527), (20, 30554), (26, 30629), (38, 30710), (48, 30866), (55, 30926), (56, 30935), (65, 31064), (77, 31184), (78, 31190), (79, 31196), (81, 31241), (88, 31334),

Gene: Success\_53 Start: 29460, Stop: 30500, Start Num: 2

Candidate Starts for Success\_53:

(Start: 2 @29460 has 3 MA's), (5, 29580), (16, 29646), (20, 29673), (26, 29748), (27, 29754), (38, 29829), (55, 30045), (56, 30054), (65, 30183), (77, 30303), (78, 30309), (79, 30315), (81, 30360), (88, 30453),

Gene: Sucha\_10 Start: 7139, Stop: 7996, Start Num: 4

Candidate Starts for Sucha\_10:

(Start: 4 @7139 has 53 MA's), (10, 7190), (12, 7196), (17, 7220), (19, 7223), (39, 7400), (42, 7433), (59, 7622), (70, 7754), (82, 7901), (89, 7988),

Gene: Sweetums\_13 Start: 7503, Stop: 8366, Start Num: 4

Candidate Starts for Sweetums\_13:

(Start: 4 @7503 has 53 MA's), (6, 7515), (15, 7572), (19, 7587), (20, 7596), (23, 7605), (25, 7641), (28, 7695), (33, 7716), (35, 7731), (46, 7854), (66, 8091), (86, 8334),

Gene: Teng\_13 Start: 7429, Stop: 8289, Start Num: 4

Candidate Starts for Teng\_13:

(Start: 4 @7429 has 53 MA's), (15, 7498), (19, 7513), (23, 7531), (25, 7567), (28, 7621), (33, 7642), (35, 7657), (46, 7780), (66, 8014),

Gene: Tubberson\_7 Start: 6353, Stop: 7210, Start Num: 4

Candidate Starts for Tubberson\_7:

(Start: 4 @6353 has 53 MA's), (7, 6377), (10, 6404), (30, 6557), (32, 6566), (33, 6572), (37, 6596), (41, 6644), (45, 6692), (57, 6842), (64, 6932), (66, 6971), (68, 7001), (76, 7049), (82, 7133),

Gene: TurboVicky\_10 Start: 8953, Stop: 9813, Start Num: 4

Candidate Starts for TurboVicky\_10:

(Start: 4 @8953 has 53 MA's), (10, 9004), (12, 9010), (17, 9034), (19, 9037), (27, 9127), (31, 9154), (39, 9214), (42, 9247), (50, 9358), (54, 9388), (59, 9436), (70, 9568), (72, 9583), (82, 9712), (89, 9799),

Gene: Typher\_12 Start: 9083, Stop: 9946, Start Num: 4

Candidate Starts for Typher\_12:

(Start: 4 @9083 has 53 MA's), (10, 9134), (12, 9140), (17, 9164), (19, 9167), (27, 9257), (31, 9284), (39, 9344), (42, 9377), (50, 9488), (54, 9518), (59, 9566), (70, 9698), (82, 9845), (89, 9932),

Gene: Violeta\_14 Start: 7029, Stop: 7907, Start Num: 4

Candidate Starts for Violeta\_14:

(Start: 4 @7029 has 53 MA's), (8, 7068), (12, 7086), (13, 7089), (14, 7095), (17, 7110), (30, 7227), (33, 7242), (34, 7248), (43, 7350), (44, 7356), (52, 7485), (61, 7560), (69, 7680), (71, 7686), (85, 7848), (86, 7872), (87, 7878),

Gene: Vondra\_8 Start: 6287, Stop: 7141, Start Num: 4

Candidate Starts for Vondra\_8:

(Start: 4 @6287 has 53 MA's), (8, 6326), (10, 6338), (30, 6491), (33, 6506), (40, 6575), (49, 6713), (54, 6758), (65, 6899), (69, 6938), (74, 6974), (75, 6977), (85, 7088), (86, 7112),

Gene: Warren\_13 Start: 7110, Stop: 8006, Start Num: 4

Candidate Starts for Warren\_13:

(Start: 4 @7110 has 53 MA's), (8, 7149), (12, 7167), (13, 7170), (14, 7176), (17, 7191), (30, 7308), (33, 7323), (34, 7329), (40, 7392), (43, 7431), (44, 7437), (51, 7554), (52, 7566), (55, 7584), (68, 7755), (69, 7761), (71, 7767), (85, 7953), (86, 7977),

Gene: Winchester007\_28 Start: 13048, Stop: 13926, Start Num: 4

Candidate Starts for Winchester007\_28:

(Start: 4 @13048 has 53 MA's), (8, 13087), (12, 13105), (13, 13108), (14, 13114), (17, 13129), (30, 13246), (33, 13261), (34, 13267), (43, 13369), (44, 13375), (52, 13504), (61, 13579), (69, 13699), (71, 13705), (85, 13867), (86, 13891), (87, 13897),

Gene: Wrackline\_17 Start: 8196, Stop: 9062, Start Num: 4

Candidate Starts for Wrackline\_17:

(Start: 4 @8196 has 53 MA's), (6, 8208), (12, 8253), (19, 8280), (20, 8289), (23, 8298), (28, 8388), (30, 8394), (31, 8397), (33, 8409), (62, 8727), (63, 8733), (66, 8790), (69, 8829), (74, 8898), (85, 9009),

Gene: Zanella\_10 Start: 8953, Stop: 9816, Start Num: 4

Candidate Starts for Zanella\_10:

(Start: 4 @8953 has 53 MA's), (10, 9004), (12, 9010), (17, 9034), (19, 9037), (27, 9127), (31, 9154), (39, 9214), (42, 9247), (50, 9358), (54, 9388), (59, 9436), (70, 9568), (82, 9715), (89, 9802),