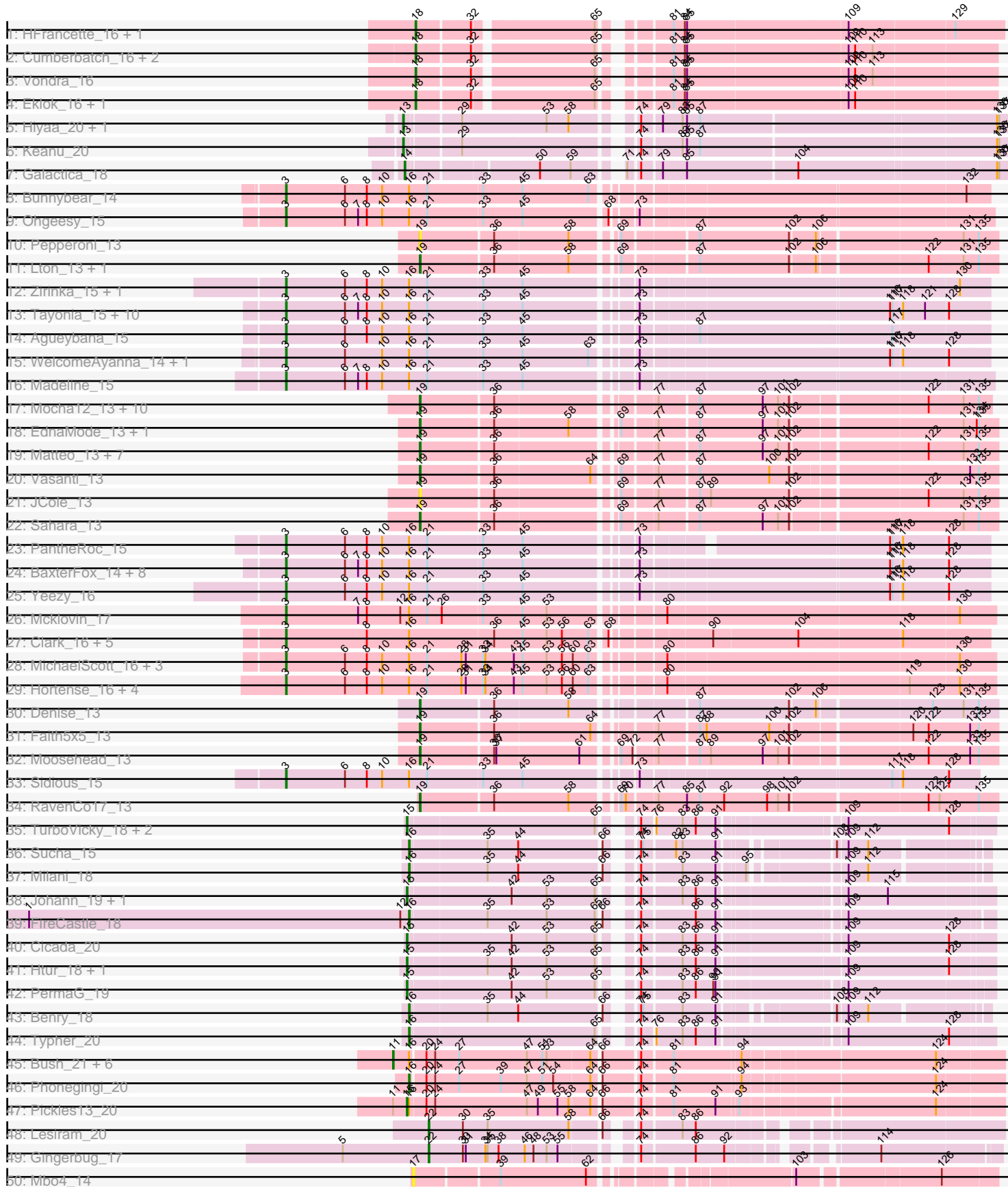


Pham 186756





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 186756 Report

This analysis was run 11/02/24 on database version 579.

Pham number 186756 has 121 members, 4 are drafts.

Phages represented in each track:

- Track 1 : HFrancette\_16, Ignacio\_16
- Track 2 : Cumberbatch\_16, Eastland\_16, Piccadilly\_16
- Track 3 : Vondra\_16
- Track 4 : Eklok\_16, AxeJC\_16
- Track 5 : Hiya\_20, Spocter\_20
- Track 6 : Keanu\_20
- Track 7 : Galactica\_18
- Track 8 : Bunnybear\_14
- Track 9 : Ohgeesy\_15
- Track 10 : Pepperoni\_13
- Track 11 : Lton\_13, OneDirection\_13
- Track 12 : Zirinka\_15, Bialota\_15
- Track 13 : Tayonia\_15, Maridalia\_84, Zameen\_15, Kita\_15, Suscepit\_15, Neobush\_15, Antonio\_15, Manasvini\_15, Polly\_15, Eudoria\_15, Trumpet\_15
- Track 14 : Agueybana\_15
- Track 15 : WelcomeAyanna\_14, ThankyouJordi\_14
- Track 16 : Madeline\_15
- Track 17 : Mocha12\_13, Gizermo\_13, Clap\_13, Haley23\_13, GemG\_13, TuertoX\_13, Sproutie\_13, Savage\_13, Whiteclaw\_13, Cynthia\_13, Ebert\_13
- Track 18 : EdnaMode\_13, Lamberg\_13
- Track 19 : Matteo\_13, Attis\_13, SoilAssassin\_13, Bjanes7\_13, Pickett\_13, Nettuno\_13, Yeet412\_13, LordFarquaad\_13
- Track 20 : Vasanti\_13
- Track 21 : JCole\_13
- Track 22 : Sahara\_13
- Track 23 : PantheRoc\_15
- Track 24 : BaxterFox\_14, Bosnia\_15, TimTam\_15, Herod\_15, Eviarto\_15, BatStarr\_15, AlumE\_15, BoyNamedSue\_15, Nymphadora\_15
- Track 25 : Yeezy\_16
- Track 26 : Mcklovin\_17
- Track 27 : Clark\_16, Easley\_16, Dolores\_16, Samman98\_16, Suerte\_15, Powerball\_15
- Track 28 : MichaelScott\_16, Oregano\_16, Beenie\_15, Sekhmet\_16
- Track 29 : Hortense\_16, Twinkle\_16, Howe\_16, Adora\_16, Shlim410\_16
- Track 30 : Denise\_13
- Track 31 : Faith5x5\_13
- Track 32 : Moosehead\_13

- Track 33 : Sidious\_15
- Track 34 : RavenCo17\_13
- Track 35 : TurboVicky\_18, SBlackberry\_18, Zanella\_18
- Track 36 : Sucha\_15
- Track 37 : Milani\_18
- Track 38 : Johann\_19, Goodman\_19
- Track 39 : FireCastle\_18
- Track 40 : Cicada\_20
- Track 41 : Htur\_18, Rasovi\_18
- Track 42 : PermaG\_19
- Track 43 : Benry\_18
- Track 44 : Typher\_20
- Track 45 : Bush\_21, Antuna\_21, Blett\_21, Warren\_21, MenE\_21, Dropshot\_20, Appa\_20
- Track 46 : Phonegingi\_20
- Track 47 : Pickles13\_20
- Track 48 : Lesiram\_20
- Track 49 : Gingerbug\_17
- Track 50 : Mbo4\_14
- Track 51 : Jace\_14
- Track 52 : GMA1\_15
- Track 53 : Eyre\_13
- Track 54 : Finkle\_15
- Track 55 : Gudmit\_14

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

The start number called the most often in the published annotations is 3, it was called in 48 of the 117 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• Adora\_16, Agueybana\_15, AlumE\_15, Antonio\_15, BatStarr\_15, BaxterFox\_14, Beenie\_15, Bialota\_15, Bosnia\_15, BoyNamedSue\_15, Bunnybear\_14, Clark\_16, Dolores\_16, Easley\_16, Eudoria\_15, Eviarto\_15, Finkle\_15, GMA1\_15, Herod\_15, Hortense\_16, Howe\_16, Kita\_15, Madeline\_15, Manasvini\_15, Maridalia\_84, Mcklovin\_17, MichaelScott\_16, Neobush\_15, Nymphadora\_15, Ohgeesy\_15, Oregano\_16, PantheRoc\_15, Polly\_15, Powerball\_15, Samman98\_16, Sekhmet\_16, Shlim410\_16, Sidious\_15, Suerte\_15, Suscepit\_15, Tayonia\_15, ThankyouJordi\_14, TimTam\_15, Trumpet\_15, Twinkle\_16, WelcomeAyanna\_14, Yeezy\_16, Zameen\_15, Zirinka\_15,

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

•

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

• Antuna\_21, Appa\_20, Attis\_13, AxeJC\_16, Benry\_18, Bjanes7\_13, Blett\_21, Bush\_21, Cicada\_20, Clap\_13, Cumberbatch\_16, Cynthia\_13, Denise\_13, Dropshot\_20, Eastland\_16, Ebert\_13, EdnaMode\_13, Eklok\_16, Eyre\_13, Faith5x5\_13, FireCastle\_18, Galactica\_18, GemG\_13, Gingerbug\_17, Gizermo\_13, Goodman\_19, Gudmit\_14, HFrancette\_16, Haley23\_13, Hiyaa\_20, Htur\_18,

Ignacio\_16, JCole\_13, Jace\_14, Johann\_19, Keanu\_20, Lamberg\_13, Lesiram\_20, LordFarquaad\_13, Lton\_13, Matteo\_13, Mbo4\_14, MenE\_21, Milani\_18, Mocha12\_13, Moosehead\_13, Nettuno\_13, OneDirection\_13, Pepperoni\_13, PermaG\_19, Phoningingi\_20, Piccadilly\_16, Pickett\_13, Pickles13\_20, Rasovi\_18, RavenCo17\_13, SBlackberry\_18, Sahara\_13, Savage\_13, SoilAssassin\_13, Spocter\_20, Sproutie\_13, Sucha\_15, TueritoX\_13, TurboVicky\_18, Typher\_20, Vasanti\_13, Vondra\_16, Warren\_21, Whiteclaw\_13, Yeet412\_13, Zanella\_18,

### Summary by start number:

#### Start 3:

- Found in 49 of 121 ( 40.5% ) of genes in pham
- Manual Annotations of this start: 48 of 117
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adora\_16 (CZ4), Agueybana\_15 (CZ1), AlumE\_15 (CZ1), Antonio\_15 (CZ1), BatStarr\_15 (CZ1), BaxterFox\_14 (CZ3), Beenie\_15 (CZ4), Bialota\_15 (CZ1), Bosnia\_15 (CZ1), BoyNamedSue\_15 (CZ1), Bunnybear\_14 (CZ), Clark\_16 (CZ4), Dolores\_16 (CZ4), Easley\_16 (CZ4), Eudoria\_15 (CZ1), Eviarto\_15 (CZ1), Finkle\_15 (singleton), GMA1\_15 (singleton), Herod\_15 (CZ1), Hortense\_16 (CZ4), Howe\_16 (CZ4), Kita\_15 (CZ1), Madeline\_15 (CZ1), Manasvini\_15 (CZ1), Maridalia\_84 (CZ1), Mcklovin\_17 (CZ4), MichaelScott\_16 (CZ4), Neobush\_15 (CZ1), Nymphadora\_15 (CZ1), Ohgeesy\_15 (CZ), Oregano\_16 (CZ4), PantheRoc\_15 (CZ3), Polly\_15 (CZ1), Powerball\_15 (CZ4), Samman98\_16 (CZ4), Sekhmet\_16 (CZ4), Shlim410\_16 (CZ4), Sidious\_15 (CZ7), Suerte\_15 (CZ4), Suscepit\_15 (CZ1), Tayonia\_15 (CZ1), ThankyouJordi\_14 (CZ1), TimTam\_15 (CZ1), Trumpet\_15 (CZ1), Twinkle\_16 (CZ4), WelcomeAyanna\_14 (CZ1), Yeezy\_16 (CZ3), Zameen\_15 (CZ1), Zirinka\_15 (CZ1),

#### Start 4:

- Found in 1 of 121 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 117
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jace\_14 (singleton),

#### Start 11:

- Found in 8 of 121 ( 6.6% ) of genes in pham
- Manual Annotations of this start: 7 of 117
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Antuna\_21 (GA), Appa\_20 (GA), Blett\_21 (GA), Bush\_21 (GA), Dropshot\_20 (GA), MenE\_21 (GA), Warren\_21 (GA),

#### Start 13:

- Found in 3 of 121 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 3 of 117
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hiyaa\_20 (BQ), Keanu\_20 (BQ), Spocter\_20 (BQ),

#### Start 14:

- Found in 1 of 121 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 117
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Galactica\_18 (BQ),

Start 15:

- Found in 10 of 121 ( 8.3% ) of genes in pham
- Manual Annotations of this start: 10 of 117
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cicada\_20 (EJ), Goodman\_19 (EJ), Htur\_18 (EJ), Johann\_19 (EJ), PermaG\_19 (EJ), Pickles13\_20 (GA), Rasovi\_18 (EJ), SBlackberry\_18 (EJ), TurboVicky\_18 (EJ), Zanella\_18 (EJ),

Start 16:

- Found in 62 of 121 ( 51.2% ) of genes in pham
- Manual Annotations of this start: 6 of 117
- Called 9.7% of time when present
- Phage (with cluster) where this start called: Benry\_18 (EJ), FireCastle\_18 (EJ), Milani\_18 (EJ), Phonegingi\_20 (GA), Sucha\_15 (EJ), Typher\_20 (EJ),

Start 17:

- Found in 1 of 121 ( 0.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mbo4\_14 (singleton),

Start 18:

- Found in 8 of 121 ( 6.6% ) of genes in pham
- Manual Annotations of this start: 8 of 117
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AxeJC\_16 (BP), Cumberbatch\_16 (BP), Eastland\_16 (BP), Eklok\_16 (BP), HFrancette\_16 (BP), Ignacio\_16 (BP), Piccadilly\_16 (BP), Vondra\_16 (BP),

Start 19:

- Found in 33 of 121 ( 27.3% ) of genes in pham
- Manual Annotations of this start: 31 of 117
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Attis\_13 (CZ2), Bjanes7\_13 (CZ2), Clap\_13 (CZ2), Cynthia\_13 (CZ2), Denise\_13 (CZ5), Ebert\_13 (CZ2), EdnaMode\_13 (CZ2), Eyre\_13 (singleton), Faith5x5\_13 (CZ6), GemG\_13 (CZ2), Gizermo\_13 (CZ2), Gudmit\_14 (singleton), Haley23\_13 (CZ2), JCole\_13 (CZ2), Lamberg\_13 (CZ2), LordFarquaad\_13 (CZ2), Lton\_13 (CZ), Matteo\_13 (CZ2), Mocha12\_13 (CZ2), Moosehead\_13 (CZ6), Nettuno\_13 (CZ2), OneDirection\_13 (CZ6), Pepperoni\_13 (CZ), Pickett\_13 (CZ2), RavenCo17\_13 (CZ8), Sahara\_13 (CZ2), Savage\_13 (CZ2), SoilAssassin\_13 (CZ2), Sproutie\_13 (CZ2), TuertoX\_13 (CZ2), Vasanti\_13 (CZ2), Whiteclaw\_13 (CZ2), Yeet412\_13 (CZ2),

Start 22:

- Found in 2 of 121 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 2 of 117
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gingerbug\_17 (GF), Lesiram\_20 (GF),

**Summary by clusters:**

There are 15 clusters represented in this pham: CZ7, singleton, GF, EJ, CZ2, CZ3, CZ1, CZ6, CZ8, CZ4, CZ5, CZ, BP, BQ, GA,

Info for manual annotations of cluster BP:

- Start number 18 was manually annotated 8 times for cluster BP.

Info for manual annotations of cluster BQ:

- Start number 13 was manually annotated 3 times for cluster BQ.
- Start number 14 was manually annotated 1 time for cluster BQ.

Info for manual annotations of cluster CZ:

- Start number 3 was manually annotated 2 times for cluster CZ.
- Start number 19 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ1:

- Start number 3 was manually annotated 25 times for cluster CZ1.

Info for manual annotations of cluster CZ2:

- Start number 19 was manually annotated 23 times for cluster CZ2.

Info for manual annotations of cluster CZ3:

- Start number 3 was manually annotated 3 times for cluster CZ3.

Info for manual annotations of cluster CZ4:

- Start number 3 was manually annotated 16 times for cluster CZ4.

Info for manual annotations of cluster CZ5:

- Start number 19 was manually annotated 1 time for cluster CZ5.

Info for manual annotations of cluster CZ6:

- Start number 19 was manually annotated 3 times for cluster CZ6.

Info for manual annotations of cluster CZ7:

- Start number 3 was manually annotated 1 time for cluster CZ7.

Info for manual annotations of cluster CZ8:

- Start number 19 was manually annotated 1 time for cluster CZ8.

Info for manual annotations of cluster EJ:

- Start number 15 was manually annotated 9 times for cluster EJ.
- Start number 16 was manually annotated 5 times for cluster EJ.

Info for manual annotations of cluster GA:

- Start number 11 was manually annotated 7 times for cluster GA.
- Start number 15 was manually annotated 1 time for cluster GA.
- Start number 16 was manually annotated 1 time for cluster GA.

Info for manual annotations of cluster GF:

- Start number 22 was manually annotated 2 times for cluster GF.

**Gene Information:**

Gene: Adora\_16 Start: 8998, Stop: 9920, Start Num: 3

Candidate Starts for Adora\_16:

(Start: 3 @8998 has 48 MA's), (6, 9079), (8, 9109), (10, 9130), (Start: 16 @9166 has 6 MA's), (21, 9190), (28, 9235), (31, 9241), (33, 9265), (34, 9268), (43, 9307), (45, 9319), (53, 9352), (56, 9373), (60, 9388), (63, 9409), (80, 9487), (119, 9805), (130, 9871),

Gene: Agueybana\_15 Start: 9286, Stop: 10190, Start Num: 3

Candidate Starts for Agueybana\_15:

(Start: 3 @9286 has 48 MA's), (6, 9367), (8, 9397), (10, 9418), (Start: 16 @9454 has 6 MA's), (21, 9478), (33, 9550), (45, 9604), (73, 9739), (87, 9811), (117, 10063),

Gene: AlumE\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for AlumE\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (128, 10134),

Gene: Antonio\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Antonio\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: Antuna\_21 Start: 10705, Stop: 11480, Start Num: 11

Candidate Starts for Antuna\_21:

(Start: 11 @10705 has 7 MA's), (Start: 16 @10726 has 6 MA's), (20, 10744), (24, 10756), (27, 10789), (47, 10882), (51, 10903), (53, 10909), (64, 10966), (66, 10975), (74, 11020), (81, 11059), (94, 11146), (124, 11392),

Gene: Appa\_20 Start: 10567, Stop: 11342, Start Num: 11

Candidate Starts for Appa\_20:

(Start: 11 @10567 has 7 MA's), (Start: 16 @10588 has 6 MA's), (20, 10606), (24, 10618), (27, 10651), (47, 10744), (51, 10765), (53, 10771), (64, 10828), (66, 10837), (74, 10882), (81, 10921), (94, 11008), (124, 11254),

Gene: Attis\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for Attis\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (122, 8994), (131, 9042), (135, 9063),

Gene: AxeJC\_16 Start: 9272, Stop: 9981, Start Num: 18

Candidate Starts for AxeJC\_16:

(Start: 18 @9272 has 8 MA's), (32, 9341), (65, 9491), (81, 9554), (84, 9569), (85, 9572), (109, 9785), (110, 9794),

Gene: BatStarr\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for BatStarr\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (128, 10134),

Gene: BaxterFox\_14 Start: 8633, Stop: 9537, Start Num: 3

Candidate Starts for BaxterFox\_14:



(Start: 3 @8633 has 48 MA's), (6, 8714), (7, 8732), (8, 8744), (10, 8765), (Start: 16 @8801 has 6 MA's), (21, 8825), (33, 8897), (45, 8951), (73, 9086), (116, 9407), (117, 9410), (118, 9422), (128, 9482),

Gene: Beenie\_15 Start: 8840, Stop: 9762, Start Num: 3

Candidate Starts for Beenie\_15:

(Start: 3 @8840 has 48 MA's), (6, 8921), (8, 8951), (10, 8972), (Start: 16 @9008 has 6 MA's), (21, 9032), (28, 9077), (31, 9083), (33, 9107), (34, 9110), (43, 9149), (45, 9161), (53, 9194), (56, 9215), (60, 9230), (63, 9251), (80, 9329), (130, 9713),

Gene: Benry\_18 Start: 10815, Stop: 11500, Start Num: 16

Candidate Starts for Benry\_18:

(Start: 16 @10815 has 6 MA's), (35, 10917), (44, 10959), (66, 11067), (74, 11091), (75, 11094), (83, 11142), (91, 11187), (108, 11316), (109, 11328), (112, 11355),

Gene: Bialota\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Bialota\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (130, 10149),

Gene: Bjaner7\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for Bjaner7\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (122, 8994), (131, 9042), (135, 9063),

Gene: Blett\_21 Start: 10720, Stop: 11495, Start Num: 11

Candidate Starts for Blett\_21:

(Start: 11 @10720 has 7 MA's), (Start: 16 @10741 has 6 MA's), (20, 10759), (24, 10771), (27, 10804), (47, 10897), (51, 10918), (53, 10924), (64, 10981), (66, 10990), (74, 11035), (81, 11074), (94, 11161), (124, 11407),

Gene: Bosnia\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Bosnia\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (128, 10134),

Gene: BoyNamedSue\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for BoyNamedSue\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (128, 10134),

Gene: Bunnybear\_14 Start: 9302, Stop: 10206, Start Num: 3

Candidate Starts for Bunnybear\_14:

(Start: 3 @9302 has 48 MA's), (6, 9383), (8, 9413), (10, 9434), (Start: 16 @9470 has 6 MA's), (21, 9494), (33, 9566), (45, 9620), (63, 9710), (132, 10175),

Gene: Bush\_21 Start: 10701, Stop: 11476, Start Num: 11

Candidate Starts for Bush\_21:

(Start: 11 @10701 has 7 MA's), (Start: 16 @10722 has 6 MA's), (20, 10740), (24, 10752), (27, 10785), (47, 10878), (51, 10899), (53, 10905), (64, 10962), (66, 10971), (74, 11016), (81, 11055), (94, 11142), (124, 11388),

Gene: Cicada\_20 Start: 12850, Stop: 13571, Start Num: 15

Candidate Starts for Cicada\_20:

(Start: 15 @12850 has 10 MA's), (42, 12988), (53, 13036), (65, 13102), (74, 13129), (83, 13180), (86, 13198), (91, 13225), (109, 13378), (128, 13513),

Gene: Clap\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for Clap\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Clark\_16 Start: 8856, Stop: 9763, Start Num: 3

Candidate Starts for Clark\_16:

(Start: 3 @8856 has 48 MA's), (8, 8967), (Start: 16 @9024 has 6 MA's), (36, 9135), (45, 9174), (53, 9207), (56, 9228), (63, 9264), (68, 9282), (90, 9399), (104, 9513), (118, 9648),

Gene: Cumberbatch\_16 Start: 9256, Stop: 9965, Start Num: 18

Candidate Starts for Cumberbatch\_16:

(Start: 18 @9256 has 8 MA's), (32, 9325), (65, 9475), (81, 9538), (84, 9553), (85, 9556), (109, 9769), (110, 9778), (113, 9802),

Gene: Cynthia\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for Cynthia\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Denise\_13 Start: 8374, Stop: 9102, Start Num: 19

Candidate Starts for Denise\_13:

(Start: 19 @8374 has 31 MA's), (36, 8470), (58, 8569), (87, 8713), (102, 8833), (106, 8866), (123, 9013), (131, 9055), (135, 9076),

Gene: Dolores\_16 Start: 8841, Stop: 9748, Start Num: 3

Candidate Starts for Dolores\_16:

(Start: 3 @8841 has 48 MA's), (8, 8952), (Start: 16 @9009 has 6 MA's), (36, 9120), (45, 9159), (53, 9192), (56, 9213), (63, 9249), (68, 9267), (90, 9384), (104, 9498), (118, 9633),

Gene: Dropshot\_20 Start: 10567, Stop: 11342, Start Num: 11

Candidate Starts for Dropshot\_20:

(Start: 11 @10567 has 7 MA's), (Start: 16 @10588 has 6 MA's), (20, 10606), (24, 10618), (27, 10651), (47, 10744), (51, 10765), (53, 10771), (64, 10828), (66, 10837), (74, 10882), (81, 10921), (94, 11008), (124, 11254),

Gene: Easley\_16 Start: 8845, Stop: 9752, Start Num: 3

Candidate Starts for Easley\_16:

(Start: 3 @8845 has 48 MA's), (8, 8956), (Start: 16 @9013 has 6 MA's), (36, 9124), (45, 9163), (53, 9196), (56, 9217), (63, 9253), (68, 9271), (90, 9388), (104, 9502), (118, 9637),

Gene: Eastland\_16 Start: 9257, Stop: 9966, Start Num: 18

Candidate Starts for Eastland\_16:

(Start: 18 @9257 has 8 MA's), (32, 9326), (65, 9476), (81, 9539), (84, 9554), (85, 9557), (109, 9770), (110, 9779), (113, 9803),

Gene: Ebert\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for Ebert\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: EdnaMode\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for EdnaMode\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (58, 8556), (69, 8607), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (131, 9042), (134, 9060), (135, 9063),

Gene: Eklok\_16 Start: 9272, Stop: 9981, Start Num: 18

Candidate Starts for Eklok\_16:

(Start: 18 @9272 has 8 MA's), (32, 9341), (65, 9491), (81, 9554), (84, 9569), (85, 9572), (109, 9785), (110, 9794),

Gene: Eudoria\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Eudoria\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: Eviarto\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Eviarto\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (128, 10134),

Gene: Eyre\_13 Start: 9038, Stop: 9778, Start Num: 19

Candidate Starts for Eyre\_13:

(Start: 19 @9038 has 31 MA's), (36, 9134), (58, 9236), (69, 9287), (70, 9293), (77, 9329), (85, 9368), (87, 9386), (89, 9401), (98, 9476), (101, 9491), (102, 9506), (107, 9548), (122, 9683), (125, 9698), (135, 9752),

Gene: Faith5x5\_13 Start: 8333, Stop: 9061, Start Num: 19

Candidate Starts for Faith5x5\_13:

(Start: 19 @8333 has 31 MA's), (36, 8429), (64, 8558), (77, 8621), (87, 8672), (88, 8681), (100, 8765), (102, 8792), (120, 8945), (122, 8966), (133, 9023), (135, 9035),

Gene: Finkle\_15 Start: 8643, Stop: 9571, Start Num: 3

Candidate Starts for Finkle\_15:

(Start: 3 @8643 has 48 MA's), (9, 8757), (Start: 16 @8805 has 6 MA's), (26, 8847), (40, 8928), (45, 8955), (48, 8970), (52, 8985), (53, 8988), (57, 9012), (60, 9024), (61, 9033), (90, 9216), (111, 9420), (128, 9534), (133, 9561),

Gene: FireCastle\_18 Start: 12516, Stop: 13228, Start Num: 16

Candidate Starts for FireCastle\_18:

(1, 11994), (12, 12504), (Start: 16 @12516 has 6 MA's), (35, 12618), (53, 12699), (65, 12765), (66, 12768), (74, 12792), (86, 12861), (91, 12888), (109, 13041),

Gene: GMA1\_15 Start: 8784, Stop: 9703, Start Num: 3

Candidate Starts for GMA1\_15:

(Start: 3 @8784 has 48 MA's), (21, 8970), (25, 8982), (35, 9048), (45, 9096), (48, 9111), (53, 9129), (60, 9165), (65, 9195), (67, 9204), (78, 9270), (99, 9414), (104, 9456), (105, 9465), (119, 9606), (127, 9651), (133, 9684),

Gene: Galactica\_18 Start: 14113, Stop: 14858, Start Num: 14

Candidate Starts for Galactica\_18:

(Start: 14 @14113 has 1 MA's), (50, 14272), (59, 14314), (71, 14362), (74, 14374), (79, 14398), (85, 14431), (104, 14578), (136, 14839), (137, 14842),

Gene: GemG\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for GemG\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Gingerbug\_17 Start: 10503, Stop: 11179, Start Num: 22

Candidate Starts for Gingerbug\_17:

(5, 10386), (Start: 22 @10503 has 2 MA's), (30, 10548), (31, 10551), (34, 10578), (35, 10581), (38, 10596), (46, 10632), (48, 10644), (53, 10662), (55, 10677), (74, 10755), (86, 10824), (92, 10863), (114, 11025),

Gene: Gizermo\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for Gizermo\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Goodman\_19 Start: 12763, Stop: 13484, Start Num: 15

Candidate Starts for Goodman\_19:

(Start: 15 @12763 has 10 MA's), (42, 12901), (53, 12949), (65, 13015), (74, 13042), (83, 13093), (86, 13111), (91, 13138), (109, 13291), (115, 13345),

Gene: Gudmit\_14 Start: 9147, Stop: 9878, Start Num: 19

Candidate Starts for Gudmit\_14:

(Start: 19 @9147 has 31 MA's), (36, 9243), (58, 9342), (69, 9393), (77, 9435), (97, 9573), (102, 9609), (122, 9783), (131, 9831), (135, 9852),

Gene: HFrancette\_16 Start: 9271, Stop: 9989, Start Num: 18

Candidate Starts for HFrancette\_16:

(Start: 18 @9271 has 8 MA's), (32, 9340), (65, 9490), (81, 9553), (84, 9568), (85, 9571), (109, 9784), (129, 9925),

Gene: Haley23\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for Haley23\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Herod\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Herod\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (128, 10134),

Gene: Hiyaa\_20 Start: 15134, Stop: 15891, Start Num: 13

Candidate Starts for Hiyaa\_20:

(Start: 13 @15134 has 3 MA's), (29, 15197), (53, 15311), (58, 15341), (74, 15404), (79, 15428), (83, 15455), (85, 15461), (87, 15479), (136, 15872), (137, 15875),

Gene: Hortense\_16 Start: 9045, Stop: 9967, Start Num: 3

Candidate Starts for Hortense\_16:

(Start: 3 @9045 has 48 MA's), (6, 9126), (8, 9156), (10, 9177), (Start: 16 @9213 has 6 MA's), (21, 9237), (28, 9282), (31, 9288), (33, 9312), (34, 9315), (43, 9354), (45, 9366), (53, 9399), (56, 9420), (60, 9435), (63, 9456), (80, 9534), (119, 9852), (130, 9918),

Gene: Howe\_16 Start: 9045, Stop: 9967, Start Num: 3

Candidate Starts for Howe\_16:

(Start: 3 @9045 has 48 MA's), (6, 9126), (8, 9156), (10, 9177), (Start: 16 @9213 has 6 MA's), (21, 9237), (28, 9282), (31, 9288), (33, 9312), (34, 9315), (43, 9354), (45, 9366), (53, 9399), (56, 9420), (60, 9435), (63, 9456), (80, 9534), (119, 9852), (130, 9918),

Gene: Htur\_18 Start: 12781, Stop: 13508, Start Num: 15

Candidate Starts for Htur\_18:

(Start: 15 @12781 has 10 MA's), (35, 12886), (42, 12919), (53, 12967), (65, 13033), (74, 13060), (83, 13111), (86, 13129), (91, 13156), (109, 13315), (128, 13450),

Gene: Ignacio\_16 Start: 9271, Stop: 9989, Start Num: 18

Candidate Starts for Ignacio\_16:

(Start: 18 @9271 has 8 MA's), (32, 9340), (65, 9490), (81, 9553), (84, 9568), (85, 9571), (109, 9784), (129, 9925),

Gene: JCole\_13 Start: 8428, Stop: 9156, Start Num: 19

Candidate Starts for JCole\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (69, 8674), (77, 8716), (87, 8767), (89, 8782), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Jace\_14 Start: 8989, Stop: 9902, Start Num: 4

Candidate Starts for Jace\_14:

(2, 8959), (Start: 4 @8989 has 1 MA's), (23, 9184), (26, 9193), (31, 9223), (41, 9280), (45, 9301), (53, 9334), (56, 9355), (68, 9409), (95, 9568), (96, 9580),

Gene: Johann\_19 Start: 12763, Stop: 13484, Start Num: 15

Candidate Starts for Johann\_19:

(Start: 15 @12763 has 10 MA's), (42, 12901), (53, 12949), (65, 13015), (74, 13042), (83, 13093), (86, 13111), (91, 13138), (109, 13291), (115, 13345),

Gene: Keanu\_20 Start: 15177, Stop: 15934, Start Num: 13

Candidate Starts for Keanu\_20:

(Start: 13 @15177 has 3 MA's), (29, 15240), (74, 15447), (83, 15498), (85, 15504), (87, 15522), (136, 15915), (137, 15918),

Gene: Kita\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Kita\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: Lamberg\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for Lamberg\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (58, 8556), (69, 8607), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (131, 9042), (134, 9060), (135, 9063),

Gene: Lesiram\_20 Start: 11288, Stop: 11985, Start Num: 22

Candidate Starts for Lesiram\_20:

(Start: 22 @11288 has 2 MA's), (30, 11333), (35, 11366), (58, 11477), (66, 11513), (74, 11540), (83, 11591), (86, 11609),

Gene: LordFarquaad\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for LordFarquaad\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (122, 8994), (131, 9042), (135, 9063),

Gene: Lton\_13 Start: 8390, Stop: 9118, Start Num: 19

Candidate Starts for Lton\_13:

(Start: 19 @8390 has 31 MA's), (36, 8486), (58, 8585), (69, 8636), (87, 8729), (102, 8849), (106, 8882), (122, 9023), (131, 9071), (135, 9092),

Gene: Madeline\_15 Start: 9287, Stop: 10197, Start Num: 3

Candidate Starts for Madeline\_15:

(Start: 3 @9287 has 48 MA's), (6, 9368), (7, 9386), (8, 9398), (10, 9419), (Start: 16 @9455 has 6 MA's), (21, 9479), (33, 9551), (45, 9605), (73, 9740),

Gene: Manasvini\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Manasvini\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: Maridalia\_84 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Maridalia\_84:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: Matteo\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for Matteo\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (122, 8994), (131, 9042), (135, 9063),

Gene: Mbo4\_14 Start: 9106, Stop: 9801, Start Num: 17

Candidate Starts for Mbo4\_14:

(17, 9106), (39, 9211), (62, 9325), (103, 9550), (126, 9727),

Gene: Mcklovin\_17 Start: 10161, Stop: 11080, Start Num: 3

Candidate Starts for Mcklovin\_17:

(Start: 3 @10161 has 48 MA's), (7, 10260), (8, 10272), (12, 10317), (Start: 16 @10329 has 6 MA's), (21, 10353), (26, 10371), (33, 10425), (45, 10479), (53, 10512), (80, 10647), (130, 11031),

Gene: MenE\_21 Start: 10835, Stop: 11610, Start Num: 11

Candidate Starts for MenE\_21:

(Start: 11 @10835 has 7 MA's), (Start: 16 @10856 has 6 MA's), (20, 10874), (24, 10886), (27, 10919), (47, 11012), (51, 11033), (53, 11039), (64, 11096), (66, 11105), (74, 11150), (81, 11189), (94, 11276), (124, 11522),

Gene: MichaelScott\_16 Start: 8840, Stop: 9762, Start Num: 3

Candidate Starts for MichaelScott\_16:

(Start: 3 @8840 has 48 MA's), (6, 8921), (8, 8951), (10, 8972), (Start: 16 @9008 has 6 MA's), (21, 9032), (28, 9077), (31, 9083), (33, 9107), (34, 9110), (43, 9149), (45, 9161), (53, 9194), (56, 9215), (60, 9230), (63, 9251), (80, 9329), (130, 9713),

Gene: Milani\_18 Start: 11474, Stop: 12159, Start Num: 16

Candidate Starts for Milani\_18:

(Start: 16 @11474 has 6 MA's), (35, 11576), (44, 11618), (66, 11726), (74, 11750), (83, 11801), (91, 11846), (95, 11876), (109, 11987), (112, 12014),

Gene: Mocha12\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for Mocha12\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Moosehead\_13 Start: 8336, Stop: 9064, Start Num: 19

Candidate Starts for Moosehead\_13:

(Start: 19 @8336 has 31 MA's), (36, 8432), (37, 8435), (61, 8546), (69, 8582), (72, 8597), (77, 8624), (87, 8675), (89, 8690), (97, 8759), (101, 8780), (102, 8795), (122, 8969), (133, 9026), (135, 9038),

Gene: Neobush\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Neobush\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: Nettuno\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for Nettuno\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (122, 8994), (131, 9042), (135, 9063),

Gene: Nymphadora\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Nymphadora\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (128, 10134),

Gene: Ohgeesy\_15 Start: 8633, Stop: 9543, Start Num: 3

Candidate Starts for Ohgeesy\_15:

(Start: 3 @8633 has 48 MA's), (6, 8714), (7, 8732), (8, 8744), (10, 8765), (Start: 16 @8801 has 6 MA's), (21, 8825), (33, 8897), (45, 8951), (68, 9059), (73, 9086),

Gene: OneDirection\_13 Start: 8334, Stop: 9062, Start Num: 19

Candidate Starts for OneDirection\_13:

(Start: 19 @8334 has 31 MA's), (36, 8430), (58, 8529), (69, 8580), (87, 8673), (102, 8793), (106, 8826), (122, 8967), (131, 9015), (135, 9036),

Gene: Oregano\_16 Start: 8511, Stop: 9433, Start Num: 3

Candidate Starts for Oregano\_16:

(Start: 3 @8511 has 48 MA's), (6, 8592), (8, 8622), (10, 8643), (Start: 16 @8679 has 6 MA's), (21, 8703), (28, 8748), (31, 8754), (33, 8778), (34, 8781), (43, 8820), (45, 8832), (53, 8865), (56, 8886), (60, 8901), (63, 8922), (80, 9000), (130, 9384),

Gene: PantheRoc\_15 Start: 8634, Stop: 9523, Start Num: 3

Candidate Starts for PantheRoc\_15:

(Start: 3 @8634 has 48 MA's), (6, 8715), (8, 8745), (10, 8766), (Start: 16 @8802 has 6 MA's), (21, 8826), (33, 8898), (45, 8952), (73, 9087), (116, 9393), (117, 9396), (118, 9408), (128, 9468),

Gene: Pepperoni\_13 Start: 8684, Stop: 9412, Start Num: 19

Candidate Starts for Pepperoni\_13:

(Start: 19 @8684 has 31 MA's), (36, 8780), (58, 8879), (69, 8930), (87, 9023), (102, 9143), (106, 9176), (131, 9365), (135, 9386),

Gene: PermaG\_19 Start: 12827, Stop: 13545, Start Num: 15

Candidate Starts for PermaG\_19:

(Start: 15 @12827 has 10 MA's), (42, 12965), (53, 13013), (65, 13079), (74, 13106), (83, 13157), (86, 13175), (90, 13199), (91, 13202), (109, 13355),

Gene: Phonegingi\_20 Start: 10589, Stop: 11340, Start Num: 16

Candidate Starts for Phonegingi\_20:

(Start: 16 @10589 has 6 MA's), (20, 10607), (24, 10619), (27, 10652), (39, 10709), (47, 10745), (51, 10766), (54, 10781), (64, 10829), (66, 10838), (74, 10883), (81, 10922), (94, 11009), (124, 11252),

Gene: Piccadilly\_16 Start: 9256, Stop: 9965, Start Num: 18

Candidate Starts for Piccadilly\_16:

(Start: 18 @9256 has 8 MA's), (32, 9325), (65, 9475), (81, 9538), (84, 9553), (85, 9556), (109, 9769), (110, 9778), (113, 9802),

Gene: Pickett\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for Pickett\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (122, 8994), (131, 9042), (135, 9063),

Gene: Pickles13\_20 Start: 10749, Stop: 11503, Start Num: 15

Candidate Starts for Pickles13\_20:

(Start: 11 @10731 has 7 MA's), (Start: 15 @10749 has 10 MA's), (Start: 16 @10752 has 6 MA's), (20, 10773), (24, 10785), (47, 10911), (49, 10926), (55, 10953), (58, 10968), (64, 10995), (66, 11004), (74, 11049), (81, 11088), (91, 11145), (93, 11172), (124, 11415),

Gene: Polly\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Polly\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: Powerball\_15 Start: 8347, Stop: 9254, Start Num: 3

Candidate Starts for Powerball\_15:

(Start: 3 @8347 has 48 MA's), (8, 8458), (Start: 16 @8515 has 6 MA's), (36, 8626), (45, 8665), (53, 8698), (56, 8719), (63, 8755), (68, 8773), (90, 8890), (104, 9004), (118, 9139),

Gene: Rasovi\_18 Start: 12781, Stop: 13508, Start Num: 15

Candidate Starts for Rasovi\_18:

(Start: 15 @12781 has 10 MA's), (35, 12886), (42, 12919), (53, 12967), (65, 13033), (74, 13060), (83, 13111), (86, 13129), (91, 13156), (109, 13315), (128, 13450),

Gene: RavenCo17\_13 Start: 9219, Stop: 9959, Start Num: 19



Candidate Starts for RavenCo17\_13:

(Start: 19 @9219 has 31 MA's), (36, 9315), (58, 9417), (69, 9468), (70, 9474), (77, 9510), (85, 9549), (87, 9567), (92, 9600), (98, 9657), (101, 9672), (102, 9687), (122, 9864), (125, 9879), (135, 9933),

Gene: SBlackberry\_18 Start: 12619, Stop: 13340, Start Num: 15

Candidate Starts for SBlackberry\_18:

(Start: 15 @12619 has 10 MA's), (65, 12871), (74, 12898), (76, 12913), (83, 12949), (86, 12967), (91, 12994), (109, 13147), (128, 13282),

Gene: Sahara\_13 Start: 8445, Stop: 9173, Start Num: 19

Candidate Starts for Sahara\_13:

(Start: 19 @8445 has 31 MA's), (36, 8541), (69, 8691), (77, 8733), (87, 8784), (97, 8868), (101, 8889), (102, 8904), (131, 9126), (135, 9147),

Gene: Samman98\_16 Start: 8856, Stop: 9763, Start Num: 3

Candidate Starts for Samman98\_16:

(Start: 3 @8856 has 48 MA's), (8, 8967), (Start: 16 @9024 has 6 MA's), (36, 9135), (45, 9174), (53, 9207), (56, 9228), (63, 9264), (68, 9282), (90, 9399), (104, 9513), (118, 9648),

Gene: Savage\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for Savage\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Sekhmet\_16 Start: 8840, Stop: 9762, Start Num: 3

Candidate Starts for Sekhmet\_16:

(Start: 3 @8840 has 48 MA's), (6, 8921), (8, 8951), (10, 8972), (Start: 16 @9008 has 6 MA's), (21, 9032), (28, 9077), (31, 9083), (33, 9107), (34, 9110), (43, 9149), (45, 9161), (53, 9194), (56, 9215), (60, 9230), (63, 9251), (80, 9329), (130, 9713),

Gene: Shlim410\_16 Start: 9045, Stop: 9967, Start Num: 3

Candidate Starts for Shlim410\_16:

(Start: 3 @9045 has 48 MA's), (6, 9126), (8, 9156), (10, 9177), (Start: 16 @9213 has 6 MA's), (21, 9237), (28, 9282), (31, 9288), (33, 9312), (34, 9315), (43, 9354), (45, 9366), (53, 9399), (56, 9420), (60, 9435), (63, 9456), (80, 9534), (119, 9852), (130, 9918),

Gene: Sidious\_15 Start: 8632, Stop: 9521, Start Num: 3

Candidate Starts for Sidious\_15:

(Start: 3 @8632 has 48 MA's), (6, 8713), (8, 8743), (10, 8764), (Start: 16 @8800 has 6 MA's), (21, 8824), (33, 8896), (45, 8950), (73, 9085), (117, 9409), (118, 9421), (128, 9481),

Gene: SoilAssassin\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for SoilAssassin\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (122, 8994), (131, 9042), (135, 9063),

Gene: Spocter\_20 Start: 15122, Stop: 15879, Start Num: 13

Candidate Starts for Spocter\_20:

(Start: 13 @15122 has 3 MA's), (29, 15185), (53, 15299), (58, 15329), (74, 15392), (79, 15416), (83, 15443), (85, 15449), (87, 15467), (136, 15860), (137, 15863),

Gene: Sproutie\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for Sproutie\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Sucha\_15 Start: 9812, Stop: 10497, Start Num: 16

Candidate Starts for Sucha\_15:

(Start: 16 @9812 has 6 MA's), (35, 9914), (44, 9956), (66, 10064), (74, 10088), (75, 10091), (82, 10130), (83, 10139), (91, 10184), (108, 10313), (109, 10325), (112, 10352),

Gene: Suerte\_15 Start: 8339, Stop: 9246, Start Num: 3

Candidate Starts for Suerte\_15:

(Start: 3 @8339 has 48 MA's), (8, 8450), (Start: 16 @8507 has 6 MA's), (36, 8618), (45, 8657), (53, 8690), (56, 8711), (63, 8747), (68, 8765), (90, 8882), (104, 8996), (118, 9131),

Gene: Suscepit\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Suscepit\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: Tayonia\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Tayonia\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: ThankyouJordi\_14 Start: 9309, Stop: 10216, Start Num: 3

Candidate Starts for ThankyouJordi\_14:

(Start: 3 @9309 has 48 MA's), (6, 9390), (10, 9441), (Start: 16 @9477 has 6 MA's), (21, 9501), (33, 9573), (45, 9627), (63, 9717), (73, 9762), (116, 10086), (117, 10089), (118, 10101), (128, 10161),

Gene: TimTam\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for TimTam\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (128, 10134),

Gene: Trumpet\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Trumpet\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: TuertoX\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for TuertoX\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: TurboVicky\_18 Start: 12613, Stop: 13334, Start Num: 15

Candidate Starts for TurboVicky\_18:

(Start: 15 @12613 has 10 MA's), (65, 12865), (74, 12892), (76, 12907), (83, 12943), (86, 12961), (91, 12988), (109, 13141), (128, 13276),

Gene: Twinkle\_16 Start: 9045, Stop: 9967, Start Num: 3

Candidate Starts for Twinkle\_16:

(Start: 3 @9045 has 48 MA's), (6, 9126), (8, 9156), (10, 9177), (Start: 16 @9213 has 6 MA's), (21, 9237), (28, 9282), (31, 9288), (33, 9312), (34, 9315), (43, 9354), (45, 9366), (53, 9399), (56, 9420), (60, 9435), (63, 9456), (80, 9534), (119, 9852), (130, 9918),

Gene: Typher\_20 Start: 12746, Stop: 13464, Start Num: 16

Candidate Starts for Typher\_20:

(Start: 16 @12746 has 6 MA's), (65, 12995), (74, 13022), (76, 13037), (83, 13073), (86, 13091), (91, 13118), (109, 13271), (128, 13406),

Gene: Vasanti\_13 Start: 8380, Stop: 9105, Start Num: 19

Candidate Starts for Vasanti\_13:

(Start: 19 @8380 has 31 MA's), (36, 8476), (64, 8605), (69, 8626), (77, 8668), (87, 8719), (100, 8812), (102, 8839), (133, 9067), (135, 9079),

Gene: Vondra\_16 Start: 9268, Stop: 9977, Start Num: 18

Candidate Starts for Vondra\_16:

(Start: 18 @9268 has 8 MA's), (32, 9337), (65, 9487), (81, 9550), (84, 9565), (85, 9568), (109, 9781), (110, 9790), (113, 9814),

Gene: Warren\_21 Start: 10765, Stop: 11540, Start Num: 11

Candidate Starts for Warren\_21:

(Start: 11 @10765 has 7 MA's), (Start: 16 @10786 has 6 MA's), (20, 10804), (24, 10816), (27, 10849), (47, 10942), (51, 10963), (53, 10969), (64, 11026), (66, 11035), (74, 11080), (81, 11119), (94, 11206), (124, 11452),

Gene: WelcomeAyanna\_14 Start: 9309, Stop: 10216, Start Num: 3

Candidate Starts for WelcomeAyanna\_14:

(Start: 3 @9309 has 48 MA's), (6, 9390), (10, 9441), (Start: 16 @9477 has 6 MA's), (21, 9501), (33, 9573), (45, 9627), (63, 9717), (73, 9762), (116, 10086), (117, 10089), (118, 10101), (128, 10161),

Gene: Whiteclaw\_13 Start: 8428, Stop: 9147, Start Num: 19

Candidate Starts for Whiteclaw\_13:

(Start: 19 @8428 has 31 MA's), (36, 8524), (77, 8716), (87, 8767), (97, 8851), (101, 8872), (102, 8887), (122, 9061), (131, 9109), (135, 9130),

Gene: Yeet412\_13 Start: 8361, Stop: 9089, Start Num: 19

Candidate Starts for Yeet412\_13:

(Start: 19 @8361 has 31 MA's), (36, 8457), (77, 8649), (87, 8700), (97, 8784), (101, 8805), (102, 8820), (122, 8994), (131, 9042), (135, 9063),

Gene: Yeezy\_16 Start: 8643, Stop: 9547, Start Num: 3

Candidate Starts for Yeezy\_16:

(Start: 3 @8643 has 48 MA's), (6, 8724), (8, 8754), (10, 8775), (Start: 16 @8811 has 6 MA's), (21, 8835), (33, 8907), (45, 8961), (73, 9096), (116, 9417), (117, 9420), (118, 9432), (128, 9492),

Gene: Zameen\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Zameen\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (7, 9384), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (116, 10059), (117, 10062), (118, 10074), (121, 10104), (128, 10134),

Gene: Zanelle\_18 Start: 12616, Stop: 13337, Start Num: 15

Candidate Starts for Zanella\_18:

(Start: 15 @12616 has 10 MA's), (65, 12868), (74, 12895), (76, 12910), (83, 12946), (86, 12964), (91, 12991), (109, 13144), (128, 13279),

Gene: Zirinka\_15 Start: 9285, Stop: 10189, Start Num: 3

Candidate Starts for Zirinka\_15:

(Start: 3 @9285 has 48 MA's), (6, 9366), (8, 9396), (10, 9417), (Start: 16 @9453 has 6 MA's), (21, 9477), (33, 9549), (45, 9603), (73, 9738), (130, 10149),