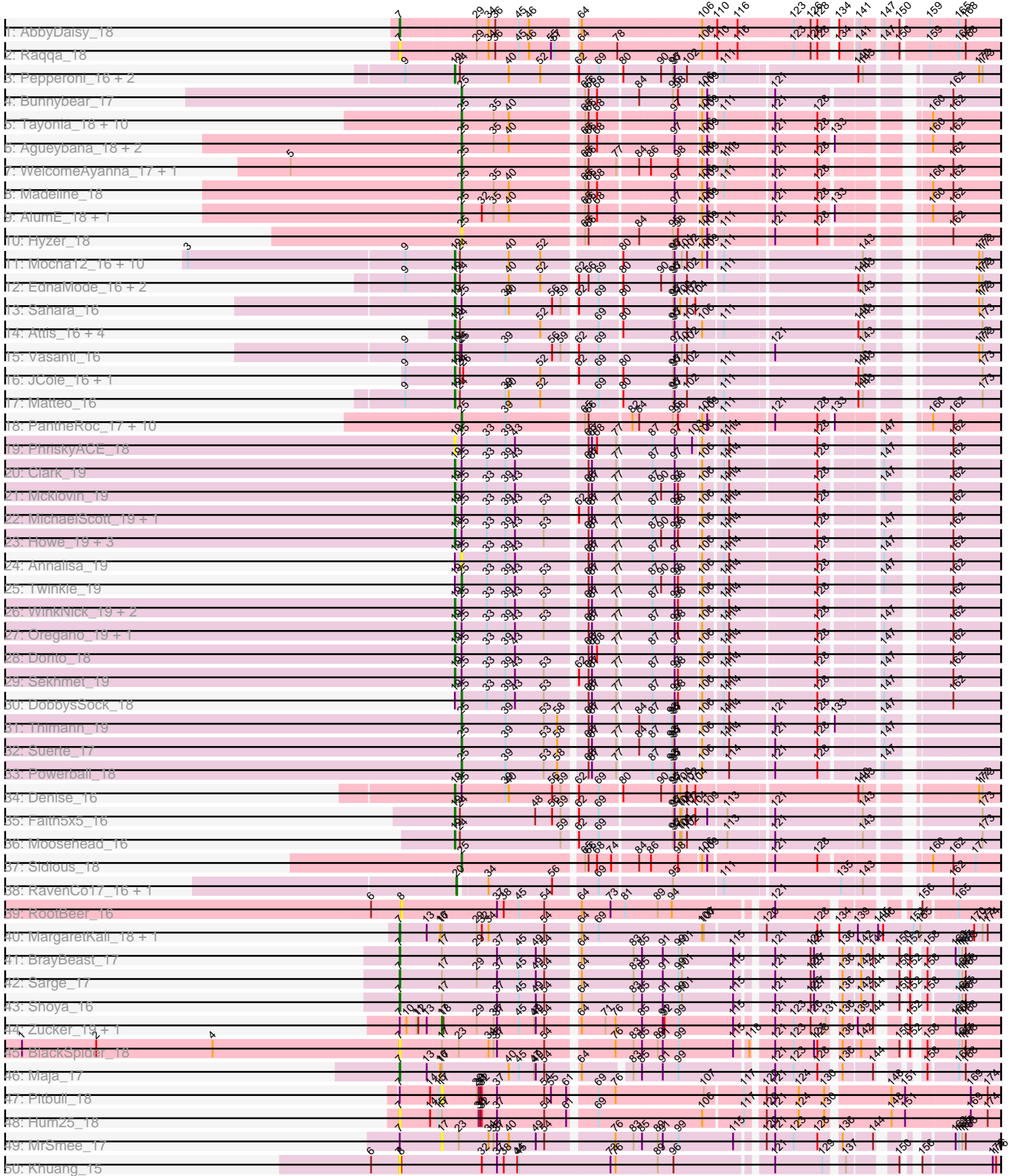
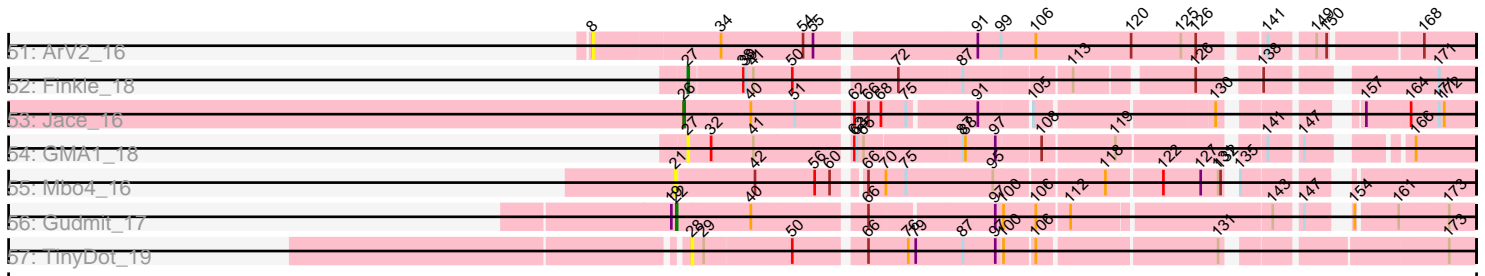


Pham 156254



Pham 156254



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 156254 Report

This analysis was run 04/12/24 on database version 558.

Pham number 156254 has 110 members, 19 are drafts.

Phages represented in each track:

- Track 1 : AbbyDaisy\_18
- Track 2 : Raqqa\_18
- Track 3 : Pepperoni\_16, Lton\_16, OneDirection\_16
- Track 4 : Bunnybear\_17
- Track 5 : Tayonia\_18, Suscepit\_18, Kita\_18, Neobush\_18, Antonio\_18, Zameen\_18, Maridalia\_17, Manasvini\_18, Polly\_18, Eudoria\_18, Trumpet\_18
- Track 6 : Agueybana\_18, Zirinka\_18, Bialota\_18
- Track 7 : WelcomeAyanna\_17, ThankyouJordi\_17
- Track 8 : Madeline\_18
- Track 9 : AlumE\_18, BoyNamedSue\_18
- Track 10 : Hyzer\_18
- Track 11 : Mocha12\_16, Gizermo\_16, Whiteclaw\_16, Clap\_16, Haley23\_16, GemG\_16, TuertoX\_16, Sproutie\_16, Savage\_16, Cynthia\_16, Ebert\_16
- Track 12 : EdnaMode\_16, Lamberg\_16, Nettuno\_16
- Track 13 : Sahara\_16
- Track 14 : Attis\_16, SoilAssassin\_16, Bjanes7\_16, Yeet412\_16, LordFarquaad\_16
- Track 15 : Vasanti\_16
- Track 16 : JCole\_16, Pickett\_16
- Track 17 : Matteo\_16
- Track 18 : PantheRoc\_17, BaxterFox\_17, Hugley\_18, Ohgeesy\_18, TimTam\_18, Bosnia\_18, Eviarto\_18, BatStarr\_18, Herod\_18, Nymphadora\_18, Yeezy\_19
- Track 19 : PhriskyACE\_18
- Track 20 : Clark\_19
- Track 21 : Mcklovin\_19
- Track 22 : MichaelScott\_19, Beenie\_19
- Track 23 : Howe\_19, Hortense\_19, Adora\_19, Shlim410\_19
- Track 24 : Annalisa\_19
- Track 25 : Twinkle\_19
- Track 26 : WinkNick\_19, Dolores\_19, Samman98\_19
- Track 27 : Oregano\_19, Easley\_19
- Track 28 : Dorito\_18
- Track 29 : Sekhmet\_19
- Track 30 : DobbysSock\_18
- Track 31 : Thimann\_19
- Track 32 : Suerte\_17
- Track 33 : Powerball\_18
- Track 34 : Denise\_16

- Track 35 : Faith5x5\_16
- Track 36 : Moosehead\_16
- Track 37 : Sidious\_18
- Track 38 : RavenCo17\_16, Eyre\_16
- Track 39 : RootBeer\_16
- Track 40 : MargaretKali\_18, Kumotta\_18
- Track 41 : BrayBeast\_17
- Track 42 : Sarge\_17
- Track 43 : Shoya\_16
- Track 44 : Zucker\_19, Bauer\_20
- Track 45 : BlackSpider\_18
- Track 46 : Maja\_17
- Track 47 : Pitbull\_18
- Track 48 : Hum25\_18
- Track 49 : MrSmee\_17
- Track 50 : Khuang\_15
- Track 51 : ArV2\_16
- Track 52 : Finkle\_18
- Track 53 : Jace\_16
- Track 54 : GMA1\_18
- Track 55 : Mbo4\_16
- Track 56 : Gudmit\_17
- Track 57 : TinyDot\_19

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

The start number called the most often in the published annotations is 19, it was called in 42 of the 91 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Adora\_19, Attis\_16, Beenie\_19, Bjanes7\_16, Clap\_16, Clark\_19, Cynthia\_16, Denise\_16, Dolores\_19, Dorito\_18, Easley\_19, Ebert\_16, EdnaMode\_16, Faith5x5\_16, GemG\_16, Gizermo\_16, Haley23\_16, Hortense\_19, Howe\_19, JCole\_16, Lamberg\_16, LordFarquaad\_16, Lton\_16, Matteo\_16, Mcklovin\_19, MichaelScott\_19, Mocha12\_16, Moosehead\_16, Nettuno\_16, OneDirection\_16, Oregano\_19, Pepperoni\_16, PhriskyACE\_18, Pickett\_16, Sahara\_16, Samman98\_19, Savage\_16, Sekhmet\_19, Shlim410\_19, SoilAssassin\_16, Sproutie\_16, TuertoX\_16, Vasanti\_16, Whiteclaw\_16, WinkNick\_19, Yeet412\_16,

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

- Annalisa\_19, DobbysSock\_18, Gudmit\_17, Twinkle\_19,

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

- AbbyDaisy\_18, Agueybana\_18, AlumE\_18, Antonio\_18, ArV2\_16, BatStarr\_18, Bauer\_20, BaxterFox\_17, Bialota\_18, BlackSpider\_18, Bosnia\_18, BoyNamedSue\_18, BrayBeast\_17, Bunnybear\_17, Eudoria\_18, Eviarto\_18, Eyre\_16, Finkle\_18, GMA1\_18, Herod\_18, Hugley\_18, Hum25\_18, Hyzer\_18, Jace\_16, Khuang\_15, Kita\_18, Kumotta\_18, Madeline\_18, Maja\_17, Manasvini\_18, MargaretKali\_18, Maridalia\_17, Mbo4\_16, MrSmee\_17, Neobush\_18, Nymphadora\_18, Ohgeesy\_18, PantheRoc\_17, Pitbull\_18, Polly\_18, Powerball\_18,

Raqqa\_18, RavenCo17\_16, RootBeer\_16, Sarge\_17, Shoya\_16, Sidious\_18, Suerte\_17, Suscepit\_18, Tayonia\_18, ThankyouJordi\_17, Thimann\_19, TimTam\_18, TinyDot\_19, Trumpet\_18, WelcomeAyanna\_17, Yeezy\_19, Zameen\_18, Zirinka\_18, Zucker\_19,

### Summary by start number:

#### Start 7:

- Found in 15 of 110 ( 13.6% ) of genes in pham
- Manual Annotations of this start: 7 of 91
- Called 73.3% of time when present
- Phage (with cluster) where this start called: AbbyDaisy\_18 (AY), BlackSpider\_18 (FN), BrayBeast\_17 (FB), Hum25\_18 (FQ), Khuang\_15 (UNK), Kumotta\_18 (FB), Maja\_17 (FO), MargaretKali\_18 (FB), Raqqa\_18 (AY), Sarge\_17 (FB), Shoya\_16 (FB),

#### Start 8:

- Found in 3 of 110 ( 2.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 66.7% of time when present
- Phage (with cluster) where this start called: ArV2\_16 (singleton), RootBeer\_16 (FA),

#### Start 17:

- Found in 12 of 110 ( 10.9% ) of genes in pham
- Manual Annotations of this start: 2 of 91
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Bauer\_20 (FN), MrSmee\_17 (UNK), Pitbull\_18 (FQ), Zucker\_19 (FN),

#### Start 19:

- Found in 50 of 110 ( 45.5% ) of genes in pham
- Manual Annotations of this start: 42 of 91
- Called 92.0% of time when present
- Phage (with cluster) where this start called: Adora\_19 (CZ4), Attis\_16 (CZ2), Beenie\_19 (CZ4), Bjanes7\_16 (CZ2), Clap\_16 (CZ2), Clark\_19 (CZ4), Cynthia\_16 (CZ2), Denise\_16 (CZ5), Dolores\_19 (CZ4), Dorito\_18 (CZ4), Easley\_19 (CZ4), Ebert\_16 (CZ2), EdnaMode\_16 (CZ2), Faith5x5\_16 (CZ6), GemG\_16 (CZ2), Gizermo\_16 (CZ2), Haley23\_16 (CZ2), Hortense\_19 (CZ4), Howe\_19 (CZ4), JCole\_16 (CZ2), Lamberg\_16 (CZ2), LordFarquaad\_16 (CZ2), Lton\_16 (CZ), Matteo\_16 (CZ2), Mcklovin\_19 (CZ4), MichaelScott\_19 (CZ4), Mocha12\_16 (CZ2), Moosehead\_16 (CZ6), Nettuno\_16 (CZ2), OneDirection\_16 (CZ6), Oregano\_19 (CZ4), Pepperoni\_16 (CZ), PhriskyACE\_18 (CZ4), Pickett\_16 (CZ2), Sahara\_16 (CZ2), Samman98\_19 (CZ4), Savage\_16 (CZ2), Sekhmet\_19 (CZ4), Shlim410\_19 (CZ4), SoilAssassin\_16 (CZ2), Sproutie\_16 (CZ2), TuertoX\_16 (CZ2), Vasanti\_16 (CZ2), Whiteclaw\_16 (CZ2), WinkNick\_19 (CZ4), Yeet412\_16 (CZ2),

#### Start 20:

- Found in 2 of 110 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 2 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Eyre\_16 (singleton), RavenCo17\_16 (CZ8),

Start 21:

- Found in 1 of 110 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mbo4\_16 (singleton),

Start 22:

- Found in 1 of 110 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gudmit\_17 (singleton),

Start 25:

- Found in 58 of 110 ( 52.7% ) of genes in pham
- Manual Annotations of this start: 35 of 91
- Called 67.2% of time when present
- Phage (with cluster) where this start called: Agueybana\_18 (CZ1), AlumE\_18 (CZ1), Annalisa\_19 (CZ4), Antonio\_18 (CZ1), BatStarr\_18 (CZ1), BaxterFox\_17 (CZ3), Bialota\_18 (CZ1), Bosnia\_18 (CZ1), BoyNamedSue\_18 (CZ1), Bunnybear\_17 (CZ), DobbysSock\_18 (CZ4), Eudoria\_18 (CZ1), Eviarto\_18 (CZ1), Herod\_18 (CZ1), Hugley\_18 (CZ1), Hyzer\_18 (CZ1), Kita\_18 (CZ1), Madeline\_18 (CZ1), Manasvini\_18 (CZ1), Maridalia\_17 (CZ1), Neobush\_18 (CZ1), Nymphadora\_18 (CZ1), Ohgeesy\_18 (CZ), PantheRoc\_17 (CZ3), Polly\_18 (CZ1), Powerball\_18 (CZ4), Sidious\_18 (CZ7), Suerte\_17 (CZ4), Suscepit\_18 (CZ1), Tayonia\_18 (CZ1), ThankyouJordi\_17 (CZ1), Thimann\_19 (CZ4), TimTam\_18 (CZ1), Trumpet\_18 (CZ1), Twinkle\_19 (CZ4), WelcomeAyanna\_17 (CZ1), Yeezy\_19 (CZ3), Zameen\_18 (CZ1), Zirinka\_18 (CZ1),

Start 26:

- Found in 3 of 110 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 91
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Jace\_16 (singleton),

Start 27:

- Found in 2 of 110 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Finkle\_18 (singleton), GMA1\_18 (singleton),

Start 28:

- Found in 1 of 110 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TinyDot\_19 (singleton),

**Summary by clusters:**

There are 17 clusters represented in this pham: CZ7, FQ, singleton, FA, CZ2, CZ3, CZ1, CZ6, CZ8, CZ4, CZ5, CZ, FB, AY, UNK, FN, FO,

Info for manual annotations of cluster AY:

- Start number 7 was manually annotated 1 time for cluster AY.

Info for manual annotations of cluster CZ:

- Start number 19 was manually annotated 1 time for cluster CZ.
- Start number 25 was manually annotated 2 times for cluster CZ.

Info for manual annotations of cluster CZ1:

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

Info for manual annotations of cluster CZ2:

- Start number 19 was manually annotated 22 times for cluster CZ2.

Info for manual annotations of cluster CZ3:

- Start number 25 was manually annotated 2 times for cluster CZ3.

Info for manual annotations of cluster CZ4:

- Start number 19 was manually annotated 15 times for cluster CZ4.
- Start number 25 was manually annotated 5 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 25 was manually annotated 1 time for cluster CZ7.

Info for manual annotations of cluster CZ8:

- Start number 20 was manually annotated 1 time for cluster CZ8.

Info for manual annotations of cluster FB:

- Start number 7 was manually annotated 5 times for cluster FB.

Info for manual annotations of cluster FN:

- Start number 17 was manually annotated 2 times for cluster FN.

Info for manual annotations of cluster FO:

- Start number 7 was manually annotated 1 time for cluster FO.

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

Gene: AbbyDaisy\_18 Start: 14442, Stop: 15422, Start Num: 7

Candidate Starts for AbbyDaisy\_18:

(Start: 7 @14442 has 7 MA's), (29, 14571), (34, 14589), (36, 14601), (45, 14643), (46, 14661), (64, 14736), (106, 14943), (110, 14970), (116, 15006), (123, 15105), (126, 15135), (128, 15147), (134, 15168), (141, 15198), (147, 15231), (150, 15258), (159, 15300), (165, 15351), (168, 15363),

Gene: Adora\_19 Start: 17022, Stop: 17858, Start Num: 19

Candidate Starts for Adora\_19:

(Start: 19 @17022 has 42 MA's), (Start: 25 @17031 has 35 MA's), (33, 17073), (39, 17106), (43, 17121), (53, 17169), (66, 17232), (67, 17238), (77, 17277), (87, 17331), (90, 17346), (97, 17370), (98, 17376), (106, 17412), (111, 17442), (114, 17451), (128, 17601), (147, 17691), (162, 17778),

Gene: Agueybana\_18 Start: 16953, Stop: 17780, Start Num: 25

Candidate Starts for Agueybana\_18:

(Start: 25 @16953 has 35 MA's), (35, 17007), (40, 17034), (65, 17148), (66, 17154), (68, 17169), (97, 17292), (106, 17334), (109, 17343), (121, 17448), (128, 17523), (133, 17544), (160, 17667), (162, 17700),

Gene: AlumE\_18 Start: 16952, Stop: 17779, Start Num: 25

Candidate Starts for AlumE\_18:

(Start: 25 @16952 has 35 MA's), (32, 16985), (35, 17006), (40, 17033), (65, 17147), (66, 17153), (68, 17168), (97, 17291), (106, 17333), (109, 17342), (121, 17447), (128, 17522), (133, 17543), (160, 17666), (162, 17699),

Gene: Annalisa\_19 Start: 16522, Stop: 17349, Start Num: 25

Candidate Starts for Annalisa\_19:

(Start: 19 @16513 has 42 MA's), (Start: 25 @16522 has 35 MA's), (33, 16564), (39, 16597), (43, 16612), (66, 16723), (67, 16729), (77, 16768), (87, 16822), (97, 16861), (106, 16903), (111, 16933), (114, 16942), (128, 17092), (147, 17182), (162, 17269),

Gene: Antonio\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Antonio\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: ArV2\_16 Start: 12791, Stop: 13762, Start Num: 8

Candidate Starts for ArV2\_16:

(8, 12791), (34, 12935), (54, 13034), (55, 13046), (91, 13220), (99, 13247), (106, 13289), (120, 13403), (125, 13463), (126, 13481), (141, 13544), (149, 13592), (150, 13604), (168, 13703),

Gene: Attis\_16 Start: 13903, Stop: 14751, Start Num: 19

Candidate Starts for Attis\_16:

(Start: 19 @13903 has 42 MA's), (24, 13909), (52, 14044), (69, 14131), (80, 14164), (95, 14251), (97, 14254), (102, 14275), (106, 14299), (111, 14332), (140, 14554), (143, 14560), (173, 14722),

Gene: BatStarr\_18 Start: 16940, Stop: 17767, Start Num: 25

Candidate Starts for BatStarr\_18:

(Start: 25 @16940 has 35 MA's), (39, 17015), (65, 17135), (66, 17141), (82, 17207), (84, 17219), (95, 17276), (98, 17285), (106, 17321), (109, 17330), (111, 17351), (121, 17435), (128, 17510), (133, 17531), (160, 17654), (162, 17687),

Gene: Bauer\_20 Start: 15182, Stop: 16024, Start Num: 17

Candidate Starts for Bauer\_20:

(Start: 7 @15113 has 7 MA's), (10, 15122), (11, 15140), (12, 15143), (13, 15158), (Start: 17 @15182 has 2 MA's), (18, 15185), (29, 15239), (35, 15269), (37, 15275), (45, 15314), (47, 15341), (49, 15344), (54, 15359), (64, 15407), (71, 15449), (76, 15467), (85, 15512), (91, 15548), (92, 15551), (99, 15575), (115, 15668), (121, 15713), (123, 15746), (126, 15776), (131, 15803), (136, 15815), (139, 15836), (144, 15863), (152, 15893), (163, 15947), (165, 15953), (168, 15965),



Gene: BaxterFox\_17 Start: 16279, Stop: 17106, Start Num: 25

Candidate Starts for BaxterFox\_17:

(Start: 25 @16279 has 35 MA's), (39, 16354), (65, 16474), (66, 16480), (82, 16546), (84, 16558), (95, 16615), (98, 16624), (106, 16660), (109, 16669), (111, 16690), (121, 16774), (128, 16849), (133, 16870), (160, 16993), (162, 17026),

Gene: Beenie\_19 Start: 16864, Stop: 17706, Start Num: 19

Candidate Starts for Beenie\_19:

(Start: 19 @16864 has 42 MA's), (Start: 25 @16873 has 35 MA's), (33, 16915), (39, 16948), (43, 16963), (53, 17011), (62, 17059), (66, 17074), (67, 17080), (77, 17119), (87, 17173), (97, 17212), (98, 17218), (106, 17254), (111, 17284), (114, 17293), (128, 17449), (162, 17626),

Gene: Bialota\_18 Start: 16952, Stop: 17779, Start Num: 25

Candidate Starts for Bialota\_18:

(Start: 25 @16952 has 35 MA's), (35, 17006), (40, 17033), (65, 17147), (66, 17153), (68, 17168), (97, 17291), (106, 17333), (109, 17342), (121, 17447), (128, 17522), (133, 17543), (160, 17666), (162, 17699),

Gene: Bjaner7\_16 Start: 13903, Stop: 14751, Start Num: 19

Candidate Starts for Bjaner7\_16:

(Start: 19 @13903 has 42 MA's), (24, 13909), (52, 14044), (69, 14131), (80, 14164), (95, 14251), (97, 14254), (102, 14275), (106, 14299), (111, 14332), (140, 14554), (143, 14560), (173, 14722),

Gene: BlackSpider\_18 Start: 14770, Stop: 15681, Start Num: 7

Candidate Starts for BlackSpider\_18:

(1, 14101), (2, 14233), (4, 14440), (Start: 7 @14770 has 7 MA's), (Start: 17 @14839 has 2 MA's), (23, 14866), (34, 14917), (35, 14926), (37, 14932), (54, 15016), (76, 15124), (83, 15154), (85, 15169), (89, 15196), (91, 15205), (99, 15232), (115, 15325), (118, 15340), (121, 15370), (123, 15403), (127, 15439), (128, 15445), (136, 15472), (142, 15499), (150, 15544), (152, 15550), (158, 15562), (165, 15610), (167, 15616), (168, 15622),

Gene: Bosnia\_18 Start: 16940, Stop: 17767, Start Num: 25

Candidate Starts for Bosnia\_18:

(Start: 25 @16940 has 35 MA's), (39, 17015), (65, 17135), (66, 17141), (82, 17207), (84, 17219), (95, 17276), (98, 17285), (106, 17321), (109, 17330), (111, 17351), (121, 17435), (128, 17510), (133, 17531), (160, 17654), (162, 17687),

Gene: BoyNamedSue\_18 Start: 16952, Stop: 17779, Start Num: 25

Candidate Starts for BoyNamedSue\_18:

(Start: 25 @16952 has 35 MA's), (32, 16985), (35, 17006), (40, 17033), (65, 17147), (66, 17153), (68, 17168), (97, 17291), (106, 17333), (109, 17342), (121, 17447), (128, 17522), (133, 17543), (160, 17666), (162, 17699),

Gene: BrayBeast\_17 Start: 13162, Stop: 14070, Start Num: 7

Candidate Starts for BrayBeast\_17:

(Start: 7 @13162 has 7 MA's), (Start: 17 @13231 has 2 MA's), (29, 13288), (37, 13321), (45, 13360), (49, 13390), (54, 13405), (64, 13453), (83, 13543), (85, 13558), (91, 13594), (99, 13621), (101, 13627), (115, 13714), (121, 13759), (126, 13822), (127, 13828), (136, 13861), (142, 13888), (144, 13909), (150, 13933), (152, 13939), (158, 13951), (163, 13993), (165, 13999), (167, 14005), (168, 14011),

Gene: Bunnybear\_17 Start: 16957, Stop: 17784, Start Num: 25

Candidate Starts for Bunnybear\_17:

(Start: 25 @16957 has 35 MA's), (65, 17152), (66, 17158), (68, 17173), (84, 17236), (95, 17293), (98, 17302), (106, 17338), (109, 17347), (121, 17452), (162, 17704),

Gene: Clap\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for Clap\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: Clark\_19 Start: 16513, Stop: 17349, Start Num: 19

Candidate Starts for Clark\_19:

(Start: 19 @16513 has 42 MA's), (Start: 25 @16522 has 35 MA's), (33, 16564), (39, 16597), (43, 16612), (66, 16723), (67, 16729), (77, 16768), (87, 16822), (97, 16861), (106, 16903), (111, 16933), (114, 16942), (128, 17092), (147, 17182), (162, 17269),

Gene: Cynthia\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for Cynthia\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: Denise\_16 Start: 13946, Stop: 14794, Start Num: 19

Candidate Starts for Denise\_16:

(Start: 19 @13946 has 42 MA's), (Start: 25 @13955 has 35 MA's), (39, 14030), (40, 14036), (56, 14108), (59, 14123), (62, 14141), (69, 14174), (80, 14207), (90, 14273), (95, 14294), (97, 14297), (100, 14306), (102, 14318), (104, 14333), (140, 14597), (143, 14603), (172, 14759), (173, 14765),

Gene: DobbysSock\_18 Start: 15996, Stop: 16823, Start Num: 25

Candidate Starts for DobbysSock\_18:

(Start: 19 @15987 has 42 MA's), (Start: 25 @15996 has 35 MA's), (33, 16038), (39, 16071), (43, 16086), (53, 16134), (66, 16197), (67, 16203), (77, 16242), (87, 16296), (97, 16335), (98, 16341), (106, 16377), (111, 16407), (114, 16416), (128, 16566), (147, 16656), (162, 16743),

Gene: Dolores\_19 Start: 16489, Stop: 17325, Start Num: 19

Candidate Starts for Dolores\_19:

(Start: 19 @16489 has 42 MA's), (Start: 25 @16498 has 35 MA's), (33, 16540), (39, 16573), (43, 16588), (53, 16636), (66, 16699), (67, 16705), (77, 16744), (87, 16798), (97, 16837), (98, 16843), (106, 16879), (111, 16909), (114, 16918), (128, 17068), (162, 17245),

Gene: Dorito\_18 Start: 15989, Stop: 16825, Start Num: 19

Candidate Starts for Dorito\_18:

(Start: 19 @15989 has 42 MA's), (Start: 25 @15998 has 35 MA's), (33, 16040), (39, 16073), (43, 16088), (66, 16199), (67, 16205), (68, 16214), (77, 16244), (87, 16298), (97, 16337), (106, 16379), (111, 16409), (114, 16418), (128, 16568), (147, 16658), (162, 16745),

Gene: Easley\_19 Start: 16499, Stop: 17335, Start Num: 19

Candidate Starts for Easley\_19:

(Start: 19 @16499 has 42 MA's), (Start: 25 @16508 has 35 MA's), (33, 16550), (39, 16583), (43, 16598), (53, 16646), (66, 16709), (67, 16715), (77, 16754), (87, 16808), (97, 16847), (98, 16853), (106, 16889), (111, 16919), (114, 16928), (128, 17078), (147, 17168), (162, 17255),

Gene: Ebert\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for Ebert\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: EdnaMode\_16 Start: 13846, Stop: 14694, Start Num: 19

Candidate Starts for EdnaMode\_16:

(9, 13759), (Start: 19 @13846 has 42 MA's), (24, 13852), (40, 13936), (52, 13987), (62, 14041), (66, 14056), (69, 14074), (80, 14107), (90, 14173), (95, 14194), (97, 14197), (102, 14218), (111, 14275), (140, 14497), (143, 14503), (172, 14659), (173, 14665),

Gene: Eudoria\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Eudoria\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: Eviarto\_18 Start: 16940, Stop: 17767, Start Num: 25

Candidate Starts for Eviarto\_18:

(Start: 25 @16940 has 35 MA's), (39, 17015), (65, 17135), (66, 17141), (82, 17207), (84, 17219), (95, 17276), (98, 17285), (106, 17321), (109, 17330), (111, 17351), (121, 17435), (128, 17510), (133, 17531), (160, 17654), (162, 17687),

Gene: Eyre\_16 Start: 14536, Stop: 15369, Start Num: 20

Candidate Starts for Eyre\_16:

(Start: 20 @14536 has 2 MA's), (34, 14578), (56, 14686), (69, 14752), (95, 14872), (111, 14950), (135, 15145), (143, 15178), (162, 15289),

Gene: Faith5x5\_16 Start: 13806, Stop: 14654, Start Num: 19

Candidate Starts for Faith5x5\_16:

(Start: 19 @13806 has 42 MA's), (24, 13812), (48, 13938), (56, 13968), (59, 13983), (62, 14001), (69, 14034), (95, 14154), (97, 14157), (100, 14166), (101, 14169), (102, 14178), (104, 14193), (109, 14211), (113, 14241), (121, 14313), (143, 14463), (173, 14625),

Gene: Finkle\_18 Start: 15435, Stop: 16259, Start Num: 27

Candidate Starts for Finkle\_18:

(Start: 27 @15435 has 1 MA's), (38, 15498), (39, 15501), (41, 15510), (50, 15555), (72, 15666), (87, 15741), (113, 15861), (126, 15990), (138, 16047), (171, 16215),

Gene: GMA1\_18 Start: 15118, Stop: 15930, Start Num: 27

Candidate Starts for GMA1\_18:

(Start: 27 @15118 has 1 MA's), (32, 15145), (41, 15196), (62, 15301), (63, 15304), (65, 15310), (87, 15421), (88, 15424), (97, 15460), (108, 15508), (119, 15589), (141, 15739), (147, 15772), (166, 15859),

Gene: GemG\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for GemG\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: Gizermo\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for Gizermo\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: Gudmit\_17 Start: 14713, Stop: 15558, Start Num: 22

Candidate Starts for Gudmit\_17:

(Start: 19 @14707 has 42 MA's), (Start: 22 @14713 has 1 MA's), (40, 14800), (66, 14920), (97, 15061), (100, 15070), (106, 15106), (112, 15142), (143, 15367), (147, 15394), (154, 15427), (161, 15472), (173, 15529),

Gene: Haley23\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for Haley23\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: Herod\_18 Start: 16940, Stop: 17767, Start Num: 25

Candidate Starts for Herod\_18:

(Start: 25 @16940 has 35 MA's), (39, 17015), (65, 17135), (66, 17141), (82, 17207), (84, 17219), (95, 17276), (98, 17285), (106, 17321), (109, 17330), (111, 17351), (121, 17435), (128, 17510), (133, 17531), (160, 17654), (162, 17687),

Gene: Hortense\_19 Start: 17069, Stop: 17905, Start Num: 19

Candidate Starts for Hortense\_19:

(Start: 19 @17069 has 42 MA's), (Start: 25 @17078 has 35 MA's), (33, 17120), (39, 17153), (43, 17168), (53, 17216), (66, 17279), (67, 17285), (77, 17324), (87, 17378), (90, 17393), (97, 17417), (98, 17423), (106, 17459), (111, 17489), (114, 17498), (128, 17648), (147, 17738), (162, 17825),

Gene: Howe\_19 Start: 17069, Stop: 17905, Start Num: 19

Candidate Starts for Howe\_19:

(Start: 19 @17069 has 42 MA's), (Start: 25 @17078 has 35 MA's), (33, 17120), (39, 17153), (43, 17168), (53, 17216), (66, 17279), (67, 17285), (77, 17324), (87, 17378), (90, 17393), (97, 17417), (98, 17423), (106, 17459), (111, 17489), (114, 17498), (128, 17648), (147, 17738), (162, 17825),

Gene: Hugley\_18 Start: 16940, Stop: 17767, Start Num: 25

Candidate Starts for Hugley\_18:

(Start: 25 @16940 has 35 MA's), (39, 17015), (65, 17135), (66, 17141), (82, 17207), (84, 17219), (95, 17276), (98, 17285), (106, 17321), (109, 17330), (111, 17351), (121, 17435), (128, 17510), (133, 17531), (160, 17654), (162, 17687),

Gene: Hum25\_18 Start: 12574, Stop: 13560, Start Num: 7

Candidate Starts for Hum25\_18:

(Start: 7 @12574 has 7 MA's), (14, 12628), (15, 12640), (Start: 17 @12646 has 2 MA's), (30, 12706), (31, 12709), (32, 12712), (37, 12736), (54, 12820), (61, 12859), (69, 12898), (106, 13078), (117, 13144), (120, 13168), (121, 13183), (124, 13225), (130, 13270), (148, 13372), (151, 13396), (169, 13510), (174, 13540),

Gene: Hyzer\_18 Start: 17011, Stop: 17838, Start Num: 25

Candidate Starts for Hyzer\_18:

(Start: 25 @17011 has 35 MA's), (65, 17206), (66, 17212), (84, 17290), (95, 17347), (98, 17356), (106, 17392), (109, 17401), (111, 17422), (121, 17506), (128, 17581), (162, 17758),

Gene: JCole\_16 Start: 13901, Stop: 14749, Start Num: 19

Candidate Starts for JCole\_16:

(9, 13814), (Start: 19 @13901 has 42 MA's), (24, 13907), (Start: 26 @13913 has 1 MA's), (52, 14042), (62, 14096), (69, 14129), (80, 14162), (95, 14249), (97, 14252), (102, 14273), (111, 14330), (140, 14552), (143, 14558), (173, 14720),

Gene: Jace\_16 Start: 13933, Stop: 14742, Start Num: 26

Candidate Starts for Jace\_16:

(Start: 26 @13933 has 1 MA's), (40, 14011), (51, 14062), (62, 14119), (66, 14134), (68, 14149), (75, 14176), (91, 14251), (105, 14305), (130, 14503), (157, 14614), (164, 14665), (171, 14698), (172, 14704),

Gene: Khuang\_15 Start: 13016, Stop: 13963, Start Num: 7

Candidate Starts for Khuang\_15:

(6, 12965), (Start: 7 @13016 has 7 MA's), (8, 13019), (32, 13160), (37, 13187), (38, 13199), (44, 13223), (45, 13226), (73, 13388), (76, 13397), (89, 13469), (96, 13496), (121, 13652), (129, 13736), (137, 13760), (150, 13826), (156, 13835), (175, 13952), (176, 13958),

Gene: Kita\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Kita\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: Kumotta\_18 Start: 14074, Stop: 15051, Start Num: 7

Candidate Starts for Kumotta\_18:

(Start: 7 @14074 has 7 MA's), (13, 14119), (16, 14140), (Start: 17 @14143 has 2 MA's), (29, 14197), (32, 14206), (34, 14215), (54, 14314), (64, 14362), (69, 14392), (106, 14572), (107, 14575), (120, 14659), (128, 14749), (134, 14770), (139, 14803), (145, 14839), (146, 14848), (153, 14902), (155, 14914), (170, 15007), (173, 15022), (174, 15031),

Gene: Lamberg\_16 Start: 13846, Stop: 14694, Start Num: 19

Candidate Starts for Lamberg\_16:

(9, 13759), (Start: 19 @13846 has 42 MA's), (24, 13852), (40, 13936), (52, 13987), (62, 14041), (66, 14056), (69, 14074), (80, 14107), (90, 14173), (95, 14194), (97, 14197), (102, 14218), (111, 14275), (140, 14497), (143, 14503), (172, 14659), (173, 14665),

Gene: LordFarquaad\_16 Start: 13903, Stop: 14751, Start Num: 19

Candidate Starts for LordFarquaad\_16:

(Start: 19 @13903 has 42 MA's), (24, 13909), (52, 14044), (69, 14131), (80, 14164), (95, 14251), (97, 14254), (102, 14275), (106, 14299), (111, 14332), (140, 14554), (143, 14560), (173, 14722),

Gene: Lton\_16 Start: 13875, Stop: 14723, Start Num: 19

Candidate Starts for Lton\_16:

(9, 13788), (Start: 19 @13875 has 42 MA's), (24, 13881), (40, 13965), (52, 14016), (62, 14070), (69, 14103), (80, 14136), (90, 14202), (95, 14223), (97, 14226), (102, 14247), (111, 14304), (140, 14526), (143, 14532), (172, 14688), (173, 14694),

Gene: Madeline\_18 Start: 17238, Stop: 18065, Start Num: 25

Candidate Starts for Madeline\_18:

(Start: 25 @17238 has 35 MA's), (35, 17292), (40, 17319), (65, 17433), (66, 17439), (68, 17454), (97, 17577), (106, 17619), (109, 17628), (111, 17649), (121, 17733), (128, 17808), (160, 17952), (162, 17985),

Gene: Maja\_17 Start: 13790, Stop: 14692, Start Num: 7

Candidate Starts for Maja\_17:

(Start: 7 @13790 has 7 MA's), (13, 13838), (16, 13859), (Start: 17 @13862 has 2 MA's), (40, 13973), (45, 13991), (47, 14018), (49, 14021), (54, 14036), (64, 14084), (83, 14159), (85, 14174), (91, 14210), (99, 14237), (121, 14381), (123, 14414), (128, 14456), (136, 14483), (144, 14531), (158, 14573), (165, 14621), (168, 14633),

Gene: Manasvini\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Manasvini\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: MargaretKali\_18 Start: 13709, Stop: 14686, Start Num: 7

Candidate Starts for MargaretKali\_18:

(Start: 7 @13709 has 7 MA's), (13, 13754), (16, 13775), (Start: 17 @13778 has 2 MA's), (29, 13832), (32, 13841), (34, 13850), (54, 13949), (64, 13997), (69, 14027), (106, 14207), (107, 14210), (120, 14294), (128, 14384), (134, 14405), (139, 14438), (145, 14474), (146, 14483), (153, 14537), (155, 14549), (170, 14642), (173, 14657), (174, 14666),

Gene: Maridalia\_17 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Maridalia\_17:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: Matteo\_16 Start: 13846, Stop: 14694, Start Num: 19

Candidate Starts for Matteo\_16:

(9, 13759), (Start: 19 @13846 has 42 MA's), (24, 13852), (39, 13930), (40, 13936), (52, 13987), (69, 14074), (80, 14107), (95, 14194), (97, 14197), (102, 14218), (111, 14275), (140, 14497), (143, 14503), (173, 14665),

Gene: Mbo4\_16 Start: 14927, Stop: 15760, Start Num: 21

Candidate Starts for Mbo4\_16:

(21, 14927), (42, 15017), (56, 15086), (60, 15104), (66, 15128), (70, 15149), (75, 15173), (95, 15278), (118, 15401), (122, 15464), (127, 15509), (131, 15530), (132, 15533), (135, 15536),

Gene: Mcklovin\_19 Start: 19238, Stop: 20074, Start Num: 19

Candidate Starts for Mcklovin\_19:

(Start: 19 @19238 has 42 MA's), (Start: 25 @19247 has 35 MA's), (33, 19289), (39, 19322), (43, 19337), (66, 19448), (67, 19454), (77, 19493), (87, 19547), (90, 19562), (97, 19586), (98, 19592), (106, 19628), (111, 19658), (114, 19667), (128, 19817), (147, 19907), (162, 19994),

Gene: MichaelScott\_19 Start: 16864, Stop: 17706, Start Num: 19

Candidate Starts for MichaelScott\_19:

(Start: 19 @16864 has 42 MA's), (Start: 25 @16873 has 35 MA's), (33, 16915), (39, 16948), (43, 16963), (53, 17011), (62, 17059), (66, 17074), (67, 17080), (77, 17119), (87, 17173), (97, 17212), (98, 17218), (106, 17254), (111, 17284), (114, 17293), (128, 17449), (162, 17626),

Gene: Mocha12\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for Mocha12\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111,

14339), (143, 14567), (172, 14723), (173, 14729),

Gene: Moosehead\_16 Start: 13815, Stop: 14663, Start Num: 19

Candidate Starts for Moosehead\_16:

(Start: 19 @13815 has 42 MA's), (24, 13821), (59, 13992), (62, 14010), (69, 14043), (95, 14163), (97, 14166), (100, 14175), (101, 14178), (102, 14187), (113, 14250), (121, 14322), (143, 14472), (173, 14634),

Gene: MrSmee\_17 Start: 12921, Stop: 13763, Start Num: 17

Candidate Starts for MrSmee\_17:

(Start: 7 @12852 has 7 MA's), (Start: 17 @12921 has 2 MA's), (23, 12948), (34, 12999), (35, 13008), (37, 13014), (40, 13035), (49, 13083), (54, 13098), (76, 13206), (83, 13236), (85, 13251), (89, 13278), (91, 13287), (99, 13314), (115, 13407), (120, 13437), (121, 13452), (123, 13485), (128, 13527), (136, 13554), (144, 13602), (163, 13686), (165, 13692), (167, 13698), (168, 13704),

Gene: Neobush\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Neobush\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: Nettuno\_16 Start: 13849, Stop: 14697, Start Num: 19

Candidate Starts for Nettuno\_16:

(9, 13762), (Start: 19 @13849 has 42 MA's), (24, 13855), (40, 13939), (52, 13990), (62, 14044), (66, 14059), (69, 14077), (80, 14110), (90, 14176), (95, 14197), (97, 14200), (102, 14221), (111, 14278), (140, 14500), (143, 14506), (172, 14662), (173, 14668),

Gene: Nymphadora\_18 Start: 16940, Stop: 17767, Start Num: 25

Candidate Starts for Nymphadora\_18:

(Start: 25 @16940 has 35 MA's), (39, 17015), (65, 17135), (66, 17141), (82, 17207), (84, 17219), (95, 17276), (98, 17285), (106, 17321), (109, 17330), (111, 17351), (121, 17435), (128, 17510), (133, 17531), (160, 17654), (162, 17687),

Gene: Ohgeesy\_18 Start: 16563, Stop: 17390, Start Num: 25

Candidate Starts for Ohgeesy\_18:

(Start: 25 @16563 has 35 MA's), (39, 16638), (65, 16758), (66, 16764), (82, 16830), (84, 16842), (95, 16899), (98, 16908), (106, 16944), (109, 16953), (111, 16974), (121, 17058), (128, 17133), (133, 17154), (160, 17277), (162, 17310),

Gene: OneDirection\_16 Start: 13816, Stop: 14664, Start Num: 19

Candidate Starts for OneDirection\_16:

(9, 13729), (Start: 19 @13816 has 42 MA's), (24, 13822), (40, 13906), (52, 13957), (62, 14011), (69, 14044), (80, 14077), (90, 14143), (95, 14164), (97, 14167), (102, 14188), (111, 14245), (140, 14467), (143, 14473), (172, 14629), (173, 14635),

Gene: Oregano\_19 Start: 16535, Stop: 17371, Start Num: 19

Candidate Starts for Oregano\_19:

(Start: 19 @16535 has 42 MA's), (Start: 25 @16544 has 35 MA's), (33, 16586), (39, 16619), (43, 16634), (53, 16682), (66, 16745), (67, 16751), (77, 16790), (87, 16844), (97, 16883), (98, 16889), (106, 16925), (111, 16955), (114, 16964), (128, 17114), (147, 17204), (162, 17291),

Gene: PantheRoc\_17 Start: 16271, Stop: 17098, Start Num: 25

Candidate Starts for PantheRoc\_17:

(Start: 25 @16271 has 35 MA's), (39, 16346), (65, 16466), (66, 16472), (82, 16538), (84, 16550), (95, 16607), (98, 16616), (106, 16652), (109, 16661), (111, 16682), (121, 16766), (128, 16841), (133, 16862), (160, 16985), (162, 17018),

Gene: Pepperoni\_16 Start: 14166, Stop: 15014, Start Num: 19

Candidate Starts for Pepperoni\_16:

(9, 14079), (Start: 19 @14166 has 42 MA's), (24, 14172), (40, 14256), (52, 14307), (62, 14361), (69, 14394), (80, 14427), (90, 14493), (95, 14514), (97, 14517), (102, 14538), (111, 14595), (140, 14817), (143, 14823), (172, 14979), (173, 14985),

Gene: PhriskyACE\_18 Start: 15989, Stop: 16825, Start Num: 19

Candidate Starts for PhriskyACE\_18:

(Start: 19 @15989 has 42 MA's), (Start: 25 @15998 has 35 MA's), (33, 16040), (39, 16073), (43, 16088), (66, 16199), (67, 16205), (68, 16214), (77, 16244), (87, 16298), (97, 16337), (103, 16367), (106, 16379), (111, 16409), (114, 16418), (128, 16568), (147, 16658), (162, 16745),

Gene: Pickett\_16 Start: 13834, Stop: 14682, Start Num: 19

Candidate Starts for Pickett\_16:

(9, 13747), (Start: 19 @13834 has 42 MA's), (24, 13840), (Start: 26 @13846 has 1 MA's), (52, 13975), (62, 14029), (69, 14062), (80, 14095), (95, 14182), (97, 14185), (102, 14206), (111, 14263), (140, 14485), (143, 14491), (173, 14653),

Gene: Pitbull\_18 Start: 12276, Stop: 13190, Start Num: 17

Candidate Starts for Pitbull\_18:

(Start: 7 @12204 has 7 MA's), (14, 12258), (15, 12270), (Start: 17 @12276 has 2 MA's), (29, 12333), (30, 12336), (31, 12339), (32, 12342), (37, 12366), (54, 12450), (55, 12462), (61, 12489), (69, 12528), (76, 12558), (107, 12711), (117, 12774), (120, 12798), (121, 12813), (124, 12855), (130, 12900), (148, 13002), (151, 13026), (169, 13140), (174, 13170),

Gene: Polly\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Polly\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: Powerball\_18 Start: 15995, Stop: 16822, Start Num: 25

Candidate Starts for Powerball\_18:

(Start: 25 @15995 has 35 MA's), (39, 16070), (53, 16133), (58, 16157), (66, 16196), (67, 16202), (77, 16241), (87, 16295), (93, 16328), (95, 16331), (97, 16334), (106, 16376), (114, 16415), (121, 16490), (128, 16565), (147, 16655),

Gene: Raqqa\_18 Start: 14740, Stop: 15720, Start Num: 7

Candidate Starts for Raqqa\_18:

(Start: 7 @14740 has 7 MA's), (29, 14869), (34, 14887), (36, 14899), (45, 14941), (46, 14959), (55, 14998), (57, 15004), (64, 15034), (78, 15097), (106, 15241), (110, 15268), (116, 15304), (123, 15403), (126, 15433), (128, 15445), (134, 15466), (141, 15496), (147, 15529), (150, 15556), (159, 15598), (165, 15649), (168, 15661),

Gene: RavenCo17\_16 Start: 14717, Stop: 15550, Start Num: 20

Candidate Starts for RavenCo17\_16:

(Start: 20 @14717 has 2 MA's), (34, 14759), (56, 14867), (69, 14933), (95, 15053), (111, 15131), (135, 15326), (143, 15359), (162, 15470),



Gene: RootBeer\_16 Start: 13240, Stop: 14184, Start Num: 8

Candidate Starts for RootBeer\_16:

(6, 13192), (8, 13240), (37, 13408), (38, 13420), (45, 13447), (54, 13492), (64, 13558), (73, 13609), (81, 13633), (89, 13690), (94, 13714), (121, 13873), (156, 14056), (165, 14113),

Gene: Sahara\_16 Start: 13936, Stop: 14784, Start Num: 19

Candidate Starts for Sahara\_16:

(Start: 19 @13936 has 42 MA's), (Start: 25 @13945 has 35 MA's), (39, 14020), (40, 14026), (56, 14098), (59, 14113), (62, 14131), (69, 14164), (80, 14197), (95, 14284), (97, 14287), (100, 14296), (102, 14308), (104, 14323), (143, 14593), (172, 14749), (173, 14755),

Gene: Samman98\_19 Start: 16504, Stop: 17340, Start Num: 19

Candidate Starts for Samman98\_19:

(Start: 19 @16504 has 42 MA's), (Start: 25 @16513 has 35 MA's), (33, 16555), (39, 16588), (43, 16603), (53, 16651), (66, 16714), (67, 16720), (77, 16759), (87, 16813), (97, 16852), (98, 16858), (106, 16894), (111, 16924), (114, 16933), (128, 17083), (162, 17260),

Gene: Sarge\_17 Start: 13073, Stop: 13981, Start Num: 7

Candidate Starts for Sarge\_17:

(Start: 7 @13073 has 7 MA's), (Start: 17 @13142 has 2 MA's), (29, 13199), (37, 13232), (45, 13271), (49, 13301), (54, 13316), (64, 13364), (83, 13454), (85, 13469), (91, 13505), (99, 13532), (101, 13538), (115, 13625), (121, 13670), (126, 13733), (127, 13739), (136, 13772), (142, 13799), (144, 13820), (150, 13844), (152, 13850), (158, 13862), (165, 13910), (167, 13916), (168, 13922),

Gene: Savage\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for Savage\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: Sekhmet\_19 Start: 16864, Stop: 17700, Start Num: 19

Candidate Starts for Sekhmet\_19:

(Start: 19 @16864 has 42 MA's), (Start: 25 @16873 has 35 MA's), (33, 16915), (39, 16948), (43, 16963), (53, 17011), (62, 17059), (66, 17074), (67, 17080), (77, 17119), (87, 17173), (97, 17212), (98, 17218), (106, 17254), (111, 17284), (114, 17293), (128, 17443), (147, 17533), (162, 17620),

Gene: Shlim410\_19 Start: 17069, Stop: 17905, Start Num: 19

Candidate Starts for Shlim410\_19:

(Start: 19 @17069 has 42 MA's), (Start: 25 @17078 has 35 MA's), (33, 17120), (39, 17153), (43, 17168), (53, 17216), (66, 17279), (67, 17285), (77, 17324), (87, 17378), (90, 17393), (97, 17417), (98, 17423), (106, 17459), (111, 17489), (114, 17498), (128, 17648), (147, 17738), (162, 17825),

Gene: Shoya\_16 Start: 12709, Stop: 13617, Start Num: 7

Candidate Starts for Shoya\_16:

(Start: 7 @12709 has 7 MA's), (Start: 17 @12778 has 2 MA's), (37, 12868), (45, 12907), (49, 12937), (54, 12952), (64, 13000), (83, 13090), (85, 13105), (91, 13141), (99, 13168), (101, 13174), (115, 13261), (121, 13306), (126, 13369), (127, 13375), (136, 13408), (142, 13435), (144, 13456), (150, 13480), (152, 13486), (158, 13498), (165, 13546), (167, 13552), (168, 13558),

Gene: Sidious\_18 Start: 16465, Stop: 17292, Start Num: 25

Candidate Starts for Sidious\_18:

(Start: 25 @16465 has 35 MA's), (65, 16660), (66, 16666), (68, 16681), (74, 16702), (84, 16744), (86, 16762), (98, 16810), (106, 16846), (109, 16855), (121, 16960), (128, 17035), (160, 17179), (162,

17212), (171, 17251),

Gene: SoilAssassin\_16 Start: 13903, Stop: 14751, Start Num: 19

Candidate Starts for SoilAssassin\_16:

(Start: 19 @13903 has 42 MA's), (24, 13909), (52, 14044), (69, 14131), (80, 14164), (95, 14251), (97, 14254), (102, 14275), (106, 14299), (111, 14332), (140, 14554), (143, 14560), (173, 14722),

Gene: Sproutie\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for Sproutie\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: Suerte\_17 Start: 15987, Stop: 16814, Start Num: 25

Candidate Starts for Suerte\_17:

(Start: 25 @15987 has 35 MA's), (39, 16062), (53, 16125), (58, 16149), (66, 16188), (67, 16194), (77, 16233), (84, 16266), (87, 16287), (93, 16320), (95, 16323), (97, 16326), (106, 16368), (111, 16398), (114, 16407), (121, 16482), (128, 16557), (147, 16647),

Gene: Suscepit\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Suscepit\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: Tayonia\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Tayonia\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: ThankyouJordi\_17 Start: 16982, Stop: 17809, Start Num: 25

Candidate Starts for ThankyouJordi\_17:

(5, 16682), (Start: 25 @16982 has 35 MA's), (65, 17177), (66, 17183), (77, 17228), (84, 17261), (86, 17279), (98, 17327), (106, 17363), (109, 17372), (111, 17393), (113, 17399), (121, 17477), (128, 17552), (162, 17729),

Gene: Thimann\_19 Start: 16471, Stop: 17298, Start Num: 25

Candidate Starts for Thimann\_19:

(Start: 25 @16471 has 35 MA's), (39, 16546), (53, 16609), (58, 16633), (66, 16672), (67, 16678), (77, 16717), (84, 16750), (87, 16771), (93, 16804), (95, 16807), (97, 16810), (106, 16852), (111, 16882), (114, 16891), (121, 16966), (128, 17041), (133, 17062), (147, 17131),

Gene: TimTam\_18 Start: 16940, Stop: 17767, Start Num: 25

Candidate Starts for TimTam\_18:

(Start: 25 @16940 has 35 MA's), (39, 17015), (65, 17135), (66, 17141), (82, 17207), (84, 17219), (95, 17276), (98, 17285), (106, 17321), (109, 17330), (111, 17351), (121, 17435), (128, 17510), (133, 17531), (160, 17654), (162, 17687),

Gene: TinyDot\_19 Start: 14464, Stop: 15303, Start Num: 28

Candidate Starts for TinyDot\_19:

(28, 14464), (29, 14476), (50, 14572), (66, 14647), (76, 14695), (79, 14704), (87, 14761), (97, 14800), (100, 14806), (106, 14839), (131, 15043), (173, 15274),

Gene: Trumpet\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Trumpet\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: TuertoX\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for TuertoX\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: Twinkle\_19 Start: 18137, Stop: 18964, Start Num: 25

Candidate Starts for Twinkle\_19:

(Start: 19 @18128 has 42 MA's), (Start: 25 @18137 has 35 MA's), (33, 18179), (39, 18212), (43, 18227), (53, 18275), (66, 18338), (67, 18344), (77, 18383), (87, 18437), (90, 18452), (97, 18476), (98, 18482), (106, 18518), (111, 18548), (114, 18557), (128, 18707), (147, 18797), (162, 18884),

Gene: Vasanti\_16 Start: 13856, Stop: 14704, Start Num: 19

Candidate Starts for Vasanti\_16:

(9, 13769), (Start: 19 @13856 has 42 MA's), (24, 13862), (Start: 25 @13865 has 35 MA's), (39, 13940), (56, 14018), (59, 14033), (62, 14051), (69, 14084), (97, 14207), (101, 14219), (102, 14228), (121, 14363), (143, 14513), (172, 14669), (173, 14675),

Gene: WelcomeAyanna\_17 Start: 16982, Stop: 17809, Start Num: 25

Candidate Starts for WelcomeAyanna\_17:

(5, 16682), (Start: 25 @16982 has 35 MA's), (65, 17177), (66, 17183), (77, 17228), (84, 17261), (86, 17279), (98, 17327), (106, 17363), (109, 17372), (111, 17393), (113, 17399), (121, 17477), (128, 17552), (162, 17729),

Gene: Whiteclaw\_16 Start: 13910, Stop: 14758, Start Num: 19

Candidate Starts for Whiteclaw\_16:

(3, 13442), (9, 13823), (Start: 19 @13910 has 42 MA's), (24, 13916), (40, 14000), (52, 14051), (80, 14171), (95, 14258), (97, 14261), (101, 14273), (102, 14282), (106, 14309), (109, 14318), (111, 14339), (143, 14567), (172, 14723), (173, 14729),

Gene: WinkNick\_19 Start: 16489, Stop: 17325, Start Num: 19

Candidate Starts for WinkNick\_19:

(Start: 19 @16489 has 42 MA's), (Start: 25 @16498 has 35 MA's), (33, 16540), (39, 16573), (43, 16588), (53, 16636), (66, 16699), (67, 16705), (77, 16744), (87, 16798), (97, 16837), (98, 16843), (106, 16879), (111, 16909), (114, 16918), (128, 17068), (162, 17245),

Gene: Yeet412\_16 Start: 13903, Stop: 14751, Start Num: 19

Candidate Starts for Yeet412\_16:

(Start: 19 @13903 has 42 MA's), (24, 13909), (52, 14044), (69, 14131), (80, 14164), (95, 14251), (97, 14254), (102, 14275), (106, 14299), (111, 14332), (140, 14554), (143, 14560), (173, 14722),

Gene: Yeezy\_19 Start: 16295, Stop: 17122, Start Num: 25

Candidate Starts for Yeezy\_19:

(Start: 25 @16295 has 35 MA's), (39, 16370), (65, 16490), (66, 16496), (82, 16562), (84, 16574), (95, 16631), (98, 16640), (106, 16676), (109, 16685), (111, 16706), (121, 16790), (128, 16865), (133, 16886), (160, 17009), (162, 17042),

Gene: Zameen\_18 Start: 16949, Stop: 17776, Start Num: 25

Candidate Starts for Zameen\_18:

(Start: 25 @16949 has 35 MA's), (35, 17003), (40, 17030), (65, 17144), (66, 17150), (68, 17165), (97, 17288), (106, 17330), (109, 17339), (111, 17360), (121, 17444), (128, 17519), (160, 17663), (162, 17696),

Gene: Zirinka\_18 Start: 16952, Stop: 17779, Start Num: 25

Candidate Starts for Zirinka\_18:

(Start: 25 @16952 has 35 MA's), (35, 17006), (40, 17033), (65, 17147), (66, 17153), (68, 17168), (97, 17291), (106, 17333), (109, 17342), (121, 17447), (128, 17522), (133, 17543), (160, 17666), (162, 17699),

Gene: Zucker\_19 Start: 14495, Stop: 15337, Start Num: 17

Candidate Starts for Zucker\_19:

(Start: 7 @14426 has 7 MA's), (10, 14435), (11, 14453), (12, 14456), (13, 14471), (Start: 17 @14495 has 2 MA's), (18, 14498), (29, 14552), (35, 14582), (37, 14588), (45, 14627), (47, 14654), (49, 14657), (54, 14672), (64, 14720), (71, 14762), (76, 14780), (85, 14825), (91, 14861), (92, 14864), (99, 14888), (115, 14981), (121, 15026), (123, 15059), (126, 15089), (131, 15116), (136, 15128), (139, 15149), (144, 15176), (152, 15206), (163, 15260), (165, 15266), (168, 15278),