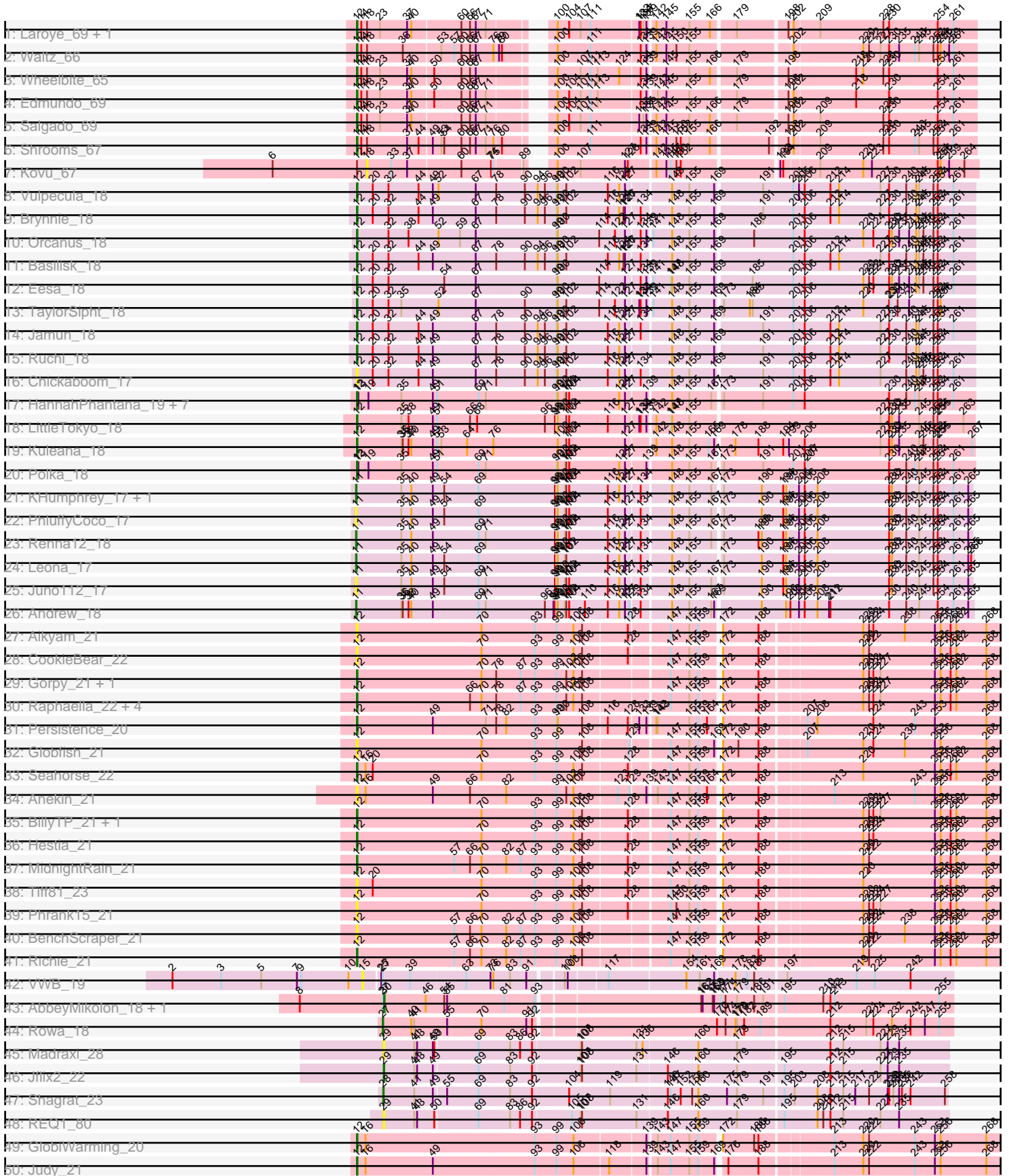


Pham 157807





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 157807 Report

This analysis was run 04/13/24 on database version 558.

Pham number 157807 has 80 members, 24 are drafts.

Phages represented in each track:

- Track 1 : Laroye\_69, LiSara\_66
- Track 2 : Waltz\_66
- Track 3 : Wheelbite\_65
- Track 4 : Edmundo\_69
- Track 5 : Salgado\_69
- Track 6 : Shrooms\_67
- Track 7 : Kovu\_67
- Track 8 : Vulpecula\_18
- Track 9 : Brynnie\_18
- Track 10 : Orcanus\_18
- Track 11 : Basilisk\_18
- Track 12 : Eesa\_18
- Track 13 : TaylorSipht\_18
- Track 14 : Jamun\_18
- Track 15 : Ruchi\_18
- Track 16 : Chickaboom\_17
- Track 17 : HannahPhantana\_19, Amelia\_19, Kepler\_18, Cote\_19, Coral\_18, Lunar\_19, Melons\_19, Daob\_19
- Track 18 : LittleTokyo\_18
- Track 19 : Kuleana\_18
- Track 20 : Polka\_18
- Track 21 : KHumphrey\_17, RedFox\_17
- Track 22 : PhluffyCoco\_17
- Track 23 : Renna12\_18
- Track 24 : Leona\_17
- Track 25 : Juno112\_17
- Track 26 : Andrew\_18
- Track 27 : Aikyam\_21
- Track 28 : CookieBear\_22
- Track 29 : Gorpy\_21, Sakai\_21
- Track 30 : Raphaella\_22, YoungHarleezy\_21, Auxilium\_21, RadFad\_21, Hillester\_21
- Track 31 : Persistence\_20
- Track 32 : Globfish\_21
- Track 33 : Seahorse\_22
- Track 34 : Anekin\_21
- Track 35 : BillyTP\_21, Isolde\_21

- Track 36 : Hestia\_21
- Track 37 : MidnightRain\_21
- Track 38 : Tiff81\_23
- Track 39 : Phrank15\_21
- Track 40 : BenchScraper\_21
- Track 41 : Richie\_21
- Track 42 : VWB\_19
- Track 43 : AbbeyMikolon\_18, Nesbitt\_18
- Track 44 : Rowa\_18
- Track 45 : Madraxi\_28
- Track 46 : Jflix2\_22
- Track 47 : Shagrat\_23
- Track 48 : REQ1\_80
- Track 49 : GlobiWarming\_20
- Track 50 : Judy\_21
- Track 51 : Bridgette\_20, Karkharias\_20
- Track 52 : ChuckDuck\_20
- Track 53 : PeggyLeg03\_20, Constance\_20
- Track 54 : Peas\_20, Eileen\_20
- Track 55 : Pucara\_20
- Track 56 : Kharcho\_45, Ottawa\_45
- Track 57 : Footloose\_20
- Track 58 : Samy\_23
- Track 59 : Wollypog\_19
- Track 60 : phiAsp2\_30

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

The start number called the most often in the published annotations is 12, it was called in 44 of the 56 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aikyam\_21, Amelia\_19, Anekin\_21, Auxilium\_21, Basilisk\_18, BenchScraper\_21, BillyTP\_21, Bridgette\_20, Brynnie\_18, Chickaboom\_17, ChuckDuck\_20, Constance\_20, CookieBear\_22, Coral\_18, Cote\_19, Daob\_19, Edmundo\_69, Eesa\_18, Eileen\_20, Globfish\_21, GlobiWarming\_20, Gorpy\_21, HannahPhantana\_19, Hestia\_21, Hillester\_21, Isolde\_21, Jamun\_18, Judy\_21, Karkharias\_20, Kepler\_18, Kharcho\_45, Kuleana\_18, Laroye\_69, LiSara\_66, LittleTokyo\_18, Lunar\_19, Melons\_19, MidnightRain\_21, Orcanus\_18, Ottawa\_45, Peas\_20, PeggyLeg03\_20, Persistence\_20, Phrank15\_21, Polka\_18, Pucara\_20, RadFad\_21, Raphaella\_22, Richie\_21, Ruchi\_18, Sakai\_21, Salgado\_69, Seahorse\_22, Shrooms\_67, TaylorSipht\_18, Tiff81\_23, Vulpecula\_18, Waltz\_66, Wheelbite\_65, YoungHarleezy\_21,

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

- Kovu\_67,

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

- AbbeyMikolon\_18, Andrew\_18, Footloose\_20, Jflix2\_22, Juno112\_17, KHumphrey\_17, Leona\_17, Madraxi\_28, Nesbitt\_18, PhluffyCoco\_17, REQ1\_80,

RedFox\_17, Renna12\_18, Rowa\_18, Samy\_23, Shagrat\_23, VWB\_19, Wollypog\_19, phiAsp2\_30,

### Summary by start number:

#### Start 11:

- Found in 7 of 80 ( 8.8% ) of genes in pham
- Manual Annotations of this start: 4 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Andrew\_18 (AS3), Juno112\_17 (AS3), KHumphrey\_17 (AS3), Leona\_17 (AS3), PhluffyCoco\_17 (AS3), RedFox\_17 (AS3), Renna12\_18 (AS3),

#### Start 12:

- Found in 61 of 80 ( 76.2% ) of genes in pham
- Manual Annotations of this start: 44 of 56
- Called 98.4% of time when present
- Phage (with cluster) where this start called: Aikyam\_21 (AY), Amelia\_19 (AS2), Anekin\_21 (AY), Auxilium\_21 (AY), Basilisk\_18 (AS1), BenchScraper\_21 (AY), BillyTP\_21 (AY), Bridgette\_20 (FA), Brynnie\_18 (AS1), Chickaboom\_17 (AS1), ChuckDuck\_20 (FA), Constance\_20 (FA), CookieBear\_22 (AY), Coral\_18 (AS2), Cote\_19 (AS2), Daob\_19 (AS2), Edmundo\_69 (AL), Eesa\_18 (AS1), Eileen\_20 (FA), Globfish\_21 (AY), GlobiWarming\_20 (FA), Gorpy\_21 (AY), HannahPhantana\_19 (AS2), Hestia\_21 (AY), Hillester\_21 (AY), Isolde\_21 (AY), Jamun\_18 (AS1), Judy\_21 (FA), Karkharias\_20 (FA), Kepler\_18 (AS2), Kharcho\_45 (FM), Kuleana\_18 (AS2), Laroye\_69 (AL), LiSara\_66 (AL), LittleTokyo\_18 (AS2), Lunar\_19 (AS2), Melons\_19 (AS2), MidnightRain\_21 (AY), Orcanus\_18 (AS1), Ottawa\_45 (FM), Peas\_20 (FA), PeggyLeg03\_20 (FA), Persistence\_20 (AY), Phrank15\_21 (AY), Polka\_18 (AS2), Pucara\_20 (FA), RadFad\_21 (AY), Raphaella\_22 (AY), Richie\_21 (AY), Ruchi\_18 (AS1), Sakai\_21 (AY), Salgado\_69 (AL), Seahorse\_22 (AY), Shrooms\_67 (AL), TaylorSipt\_18 (AS1), Tiff81\_23 (AY), Vulpecula\_18 (AS1), Waltz\_66 (AL), Wheelbite\_65 (AL), YoungHarleezy\_21 (AY),

#### Start 15:

- Found in 1 of 80 ( 1.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: VWB\_19 (BA),

#### Start 17:

- Found in 1 of 80 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Footloose\_20 (singleton),

#### Start 18:

- Found in 10 of 80 ( 12.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 10.0% of time when present
- Phage (with cluster) where this start called: Kovu\_67 (AL),

#### Start 24:

- Found in 1 of 80 ( 1.2% ) of genes in pham

- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: phiAsp2\_30 (singleton),

#### Start 27:

- Found in 5 of 80 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 2 of 56
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Rowa\_18 (BL), Samy\_23 (singleton),

#### Start 28:

- Found in 1 of 80 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Shagrat\_23 (CF),

#### Start 29:

- Found in 3 of 80 ( 3.8% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jflix2\_22 (CF), Madraxi\_28 (CF), REQ1\_80 (CF),

#### Start 30:

- Found in 2 of 80 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 2 of 56
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AbbeyMikolon\_18 (BL), Nesbitt\_18 (BL),

#### Start 36:

- Found in 4 of 80 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 1 of 56
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Wollypog\_19 (singleton),

### **Summary by clusters:**

There are 11 clusters represented in this pham: AS3, AS2, AS1, BA, BL, AL, CF, FA, AY, singleton, FM,

Info for manual annotations of cluster AL:

- Start number 12 was manually annotated 7 times for cluster AL.

Info for manual annotations of cluster AS1:

- Start number 12 was manually annotated 8 times for cluster AS1.

Info for manual annotations of cluster AS2:

- Start number 12 was manually annotated 10 times for cluster AS2.

Info for manual annotations of cluster AS3:

- Start number 11 was manually annotated 4 times for cluster AS3.

Info for manual annotations of cluster AY:

- Start number 12 was manually annotated 10 times for cluster AY.

Info for manual annotations of cluster BL:

- Start number 27 was manually annotated 1 time for cluster BL.
- Start number 30 was manually annotated 2 times for cluster BL.

Info for manual annotations of cluster CF:

- Start number 28 was manually annotated 1 time for cluster CF.
- Start number 29 was manually annotated 1 time for cluster CF.

Info for manual annotations of cluster FA:

- Start number 12 was manually annotated 7 times for cluster FA.

Info for manual annotations of cluster FM:

- Start number 12 was manually annotated 2 times for cluster FM.

### **Gene Information:**

Gene: AbbeyMikolon\_18 Start: 15163, Stop: 16281, Start Num: 30

Candidate Starts for AbbeyMikolon\_18:

(8, 14986), (Start: 27 @15160 has 2 MA's), (Start: 30 @15163 has 2 MA's), (46, 15247), (54, 15286), (55, 15292), (81, 15403), (93, 15463), (162, 15775), (163, 15778), (168, 15799), (169, 15802), (171, 15814), (174, 15823), (179, 15847), (186, 15883), (191, 15901), (195, 15937), (210, 16015), (212, 16030), (213, 16039), (255, 16252),

Gene: Aikyam\_21 Start: 15624, Stop: 16925, Start Num: 12

Candidate Starts for Aikyam\_21:

(Start: 12 @15624 has 44 MA's), (70, 15885), (93, 15993), (99, 16035), (106, 16071), (108, 16089), (128, 16179), (147, 16254), (155, 16293), (159, 16311), (172, 16344), (188, 16416), (220, 16614), (222, 16626), (224, 16635), (238, 16701), (253, 16764), (256, 16776), (260, 16797), (262, 16809), (268, 16872),

Gene: Amelia\_19 Start: 13377, Stop: 14630, Start Num: 12

Candidate Starts for Amelia\_19:

(Start: 12 @13377 has 44 MA's), (13, 13380), (19, 13401), (35, 13470), (49, 13536), (51, 13545), (69, 13632), (71, 13647), (99, 13791), (100, 13794), (101, 13809), (102, 13812), (104, 13818), (124, 13923), (127, 13935), (139, 13974), (148, 14019), (155, 14055), (167, 14097), (173, 14112), (191, 14190), (201, 14253), (206, 14277), (230, 14454), (240, 14490), (243, 14508), (245, 14517), (252, 14544), (254, 14553), (261, 14586),

Gene: Andrew\_18 Start: 13390, Stop: 14640, Start Num: 11

Candidate Starts for Andrew\_18:

(Start: 11 @13390 has 4 MA's), (35, 13483), (Start: 36 @13486 has 1 MA's), (38, 13498), (40, 13504), (49, 13549), (69, 13645), (71, 13660), (96, 13780), (97, 13798), (98, 13801), (99, 13804), (100, 13807), (101, 13822), (102, 13825), (104, 13831), (110, 13864), (116, 13912), (124, 13936), (127, 13948), (129, 13957), (134, 13975), (148, 14032), (155, 14068), (167, 14110), (169, 14116), (190, 14200), (196, 14251), (200, 14260), (205, 14278), (206, 14290), (208, 14317), (211, 14341), (212, 14344), (230, 14467), (240, 14503), (245, 14530), (254, 14566), (261, 14599), (265, 14629),

Gene: Anekin\_21 Start: 15586, Stop: 16887, Start Num: 12

Candidate Starts for Anekin\_21:

(Start: 12 @15586 has 44 MA's), (16, 15604), (49, 15745), (66, 15823), (82, 15895), (99, 15997), (102, 16018), (106, 16033), (123, 16120), (129, 16144), (139, 16174), (143, 16189), (147, 16216), (155, 16255), (159, 16273), (164, 16288), (172, 16306), (188, 16378), (213, 16516), (243, 16684), (253, 16726), (256, 16738), (268, 16834),

Gene: Auxilium\_21 Start: 15623, Stop: 16924, Start Num: 12

Candidate Starts for Auxilium\_21:

(Start: 12 @15623 has 44 MA's), (66, 15860), (70, 15884), (78, 15911), (87, 15962), (93, 15992), (99, 16034), (102, 16055), (106, 16070), (108, 16088), (147, 16253), (155, 16292), (159, 16310), (172, 16343), (188, 16415), (220, 16613), (222, 16625), (224, 16634), (227, 16649), (253, 16763), (256, 16775), (260, 16796), (262, 16808), (268, 16871),

Gene: Basilisk\_18 Start: 14668, Stop: 15918, Start Num: 12

Candidate Starts for Basilisk\_18:

(Start: 12 @14668 has 44 MA's), (20, 14701), (32, 14734), (44, 14797), (49, 14827), (67, 14917), (78, 14956), (90, 15016), (94, 15040), (96, 15055), (99, 15079), (100, 15082), (102, 15100), (116, 15187), (124, 15211), (126, 15220), (127, 15223), (134, 15250), (148, 15307), (155, 15343), (169, 15391), (201, 15541), (206, 15565), (212, 15619), (214, 15637), (227, 15724), (230, 15742), (240, 15778), (244, 15799), (245, 15805), (246, 15811), (252, 15832), (254, 15841), (261, 15874),

Gene: BenchScraper\_21 Start: 15638, Stop: 16939, Start Num: 12

Candidate Starts for BenchScraper\_21:

(Start: 12 @15638 has 44 MA's), (57, 15842), (66, 15875), (70, 15899), (82, 15947), (87, 15977), (93, 16007), (99, 16049), (106, 16085), (108, 16103), (147, 16268), (155, 16307), (159, 16325), (172, 16358), (188, 16430), (220, 16628), (222, 16640), (224, 16649), (238, 16715), (253, 16778), (256, 16790), (260, 16811), (262, 16823), (268, 16886),

Gene: BillyTP\_21 Start: 15407, Stop: 16708, Start Num: 12

Candidate Starts for BillyTP\_21:

(Start: 12 @15407 has 44 MA's), (70, 15668), (93, 15776), (99, 15818), (106, 15854), (108, 15872), (128, 15962), (147, 16037), (155, 16076), (159, 16094), (172, 16127), (188, 16199), (220, 16397), (222, 16409), (224, 16418), (227, 16433), (253, 16547), (256, 16559), (260, 16580), (262, 16592), (268, 16655),

Gene: Bridgette\_20 Start: 15685, Stop: 16986, Start Num: 12

Candidate Starts for Bridgette\_20:

(Start: 12 @15685 has 44 MA's), (16, 15703), (31, 15745), (49, 15844), (93, 16054), (99, 16096), (106, 16132), (134, 16261), (139, 16273), (143, 16288), (147, 16315), (149, 16324), (155, 16354), (159, 16372), (172, 16405), (180, 16435), (186, 16468), (188, 16477), (213, 16615), (220, 16675), (222, 16687), (243, 16783), (253, 16825), (256, 16837), (262, 16870), (268, 16933),

Gene: Brynnie\_18 Start: 14480, Stop: 15730, Start Num: 12

Candidate Starts for Brynnie\_18:

(Start: 12 @14480 has 44 MA's), (20, 14513), (32, 14546), (44, 14609), (49, 14639), (67, 14729), (78, 14768), (90, 14828), (94, 14852), (96, 14867), (99, 14891), (100, 14894), (102, 14912), (116, 14999), (124, 15023), (126, 15032), (127, 15035), (134, 15062), (148, 15119), (155, 15155), (169, 15203), (191, 15290), (201, 15353), (206, 15377), (212, 15431), (214, 15449), (227, 15536), (230, 15554), (240, 15590), (244, 15611), (245, 15617), (252, 15644), (254, 15653), (261, 15686),

Gene: Chickaboom\_17 Start: 13406, Stop: 14656, Start Num: 12

Candidate Starts for Chickaboom\_17:



(Start: 12 @13406 has 44 MA's), (20, 13439), (32, 13472), (44, 13535), (49, 13565), (67, 13655), (78, 13694), (90, 13754), (94, 13778), (96, 13793), (99, 13817), (100, 13820), (102, 13838), (116, 13925), (124, 13949), (127, 13961), (134, 13988), (148, 14045), (155, 14081), (169, 14129), (191, 14216), (201, 14279), (206, 14303), (212, 14357), (214, 14375), (227, 14462), (240, 14516), (244, 14537), (245, 14543), (246, 14549), (252, 14570), (254, 14579), (261, 14612),

Gene: ChuckDuck\_20 Start: 15527, Stop: 16828, Start Num: 12

Candidate Starts for ChuckDuck\_20:

(Start: 12 @15527 has 44 MA's), (16, 15545), (49, 15686), (59, 15743), (66, 15764), (99, 15938), (105, 15971), (106, 15974), (143, 16130), (155, 16196), (159, 16214), (169, 16244), (172, 16247), (188, 16319), (220, 16517), (222, 16529), (243, 16625), (253, 16667), (256, 16679), (268, 16775),

Gene: Constance\_20 Start: 15667, Stop: 16968, Start Num: 12

Candidate Starts for Constance\_20:

(Start: 12 @15667 has 44 MA's), (16, 15685), (49, 15826), (93, 16036), (99, 16078), (106, 16114), (118, 16183), (139, 16255), (143, 16270), (147, 16297), (155, 16336), (159, 16354), (169, 16384), (172, 16387), (176, 16396), (188, 16459), (213, 16597), (220, 16657), (222, 16669), (243, 16765), (253, 16807), (256, 16819), (268, 16915),

Gene: CookieBear\_22 Start: 15623, Stop: 16924, Start Num: 12

Candidate Starts for CookieBear\_22:

(Start: 12 @15623 has 44 MA's), (70, 15884), (93, 15992), (99, 16034), (106, 16070), (108, 16088), (128, 16178), (147, 16253), (155, 16292), (159, 16310), (172, 16343), (188, 16415), (220, 16613), (222, 16625), (253, 16763), (256, 16775), (260, 16796), (262, 16808), (268, 16871),

Gene: Coral\_18 Start: 13216, Stop: 14469, Start Num: 12

Candidate Starts for Coral\_18:

(Start: 12 @13216 has 44 MA's), (13, 13219), (19, 13240), (35, 13309), (49, 13375), (51, 13384), (69, 13471), (71, 13486), (99, 13630), (100, 13633), (101, 13648), (102, 13651), (104, 13657), (124, 13762), (127, 13774), (139, 13813), (148, 13858), (155, 13894), (167, 13936), (173, 13951), (191, 14029), (201, 14092), (206, 14116), (230, 14293), (240, 14329), (243, 14347), (245, 14356), (252, 14383), (254, 14392), (261, 14425),

Gene: Cote\_19 Start: 13377, Stop: 14630, Start Num: 12

Candidate Starts for Cote\_19:

(Start: 12 @13377 has 44 MA's), (13, 13380), (19, 13401), (35, 13470), (49, 13536), (51, 13545), (69, 13632), (71, 13647), (99, 13791), (100, 13794), (101, 13809), (102, 13812), (104, 13818), (124, 13923), (127, 13935), (139, 13974), (148, 14019), (155, 14055), (167, 14097), (173, 14112), (191, 14190), (201, 14253), (206, 14277), (230, 14454), (240, 14490), (243, 14508), (245, 14517), (252, 14544), (254, 14553), (261, 14586),

Gene: Daob\_19 Start: 13380, Stop: 14633, Start Num: 12

Candidate Starts for Daob\_19:

(Start: 12 @13380 has 44 MA's), (13, 13383), (19, 13404), (35, 13473), (49, 13539), (51, 13548), (69, 13635), (71, 13650), (99, 13794), (100, 13797), (101, 13812), (102, 13815), (104, 13821), (124, 13926), (127, 13938), (139, 13977), (148, 14022), (155, 14058), (167, 14100), (173, 14115), (191, 14193), (201, 14256), (206, 14280), (230, 14457), (240, 14493), (243, 14511), (245, 14520), (252, 14547), (254, 14556), (261, 14589),

Gene: Edmundo\_69 Start: 42213, Stop: 43382, Start Num: 12

Candidate Starts for Edmundo\_69:

(Start: 12 @42213 has 44 MA's), (14, 42222), (18, 42234), (23, 42261), (37, 42318), (40, 42324), (50, 42366), (60, 42423), (66, 42441), (67, 42453), (71, 42474), (100, 42567), (104, 42591), (107, 42615),

(111, 42636), (113, 42651), (134, 42732), (139, 42744), (143, 42759), (145, 42777), (155, 42825), (179, 42909), (198, 43002), (202, 43008), (218, 43134), (230, 43203), (254, 43302), (261, 43335),

Gene: Eesa\_18 Start: 14631, Stop: 15881, Start Num: 12

Candidate Starts for Eesa\_18:

(Start: 12 @14631 has 44 MA's), (20, 14664), (32, 14697), (54, 14814), (67, 14880), (99, 15042), (100, 15045), (114, 15132), (127, 15186), (134, 15213), (139, 15225), (141, 15231), (147, 15267), (148, 15270), (155, 15306), (169, 15354), (185, 15420), (201, 15504), (206, 15528), (220, 15651), (222, 15663), (224, 15672), (230, 15705), (232, 15711), (235, 15726), (241, 15747), (244, 15762), (245, 15768), (246, 15774), (252, 15795), (254, 15804), (261, 15837),

Gene: Eileen\_20 Start: 15628, Stop: 16929, Start Num: 12

Candidate Starts for Eileen\_20:

(Start: 12 @15628 has 44 MA's), (16, 15646), (31, 15688), (49, 15787), (93, 15997), (99, 16039), (106, 16075), (139, 16216), (143, 16231), (147, 16258), (149, 16267), (155, 16297), (159, 16315), (172, 16348), (188, 16420), (213, 16558), (220, 16618), (222, 16630), (243, 16726), (253, 16768), (256, 16780), (268, 16876),

Gene: Footloose\_20 Start: 13870, Stop: 14982, Start Num: 17

Candidate Starts for Footloose\_20:

(Start: 17 @13870 has 1 MA's), (22, 13891), (26, 13903), (34, 13933), (42, 13972), (45, 13993), (48, 14005), (56, 14044), (58, 14056), (61, 14071), (65, 14080), (68, 14098), (72, 14119), (77, 14131), (84, 14164), (85, 14170), (88, 14185), (95, 14215), (102, 14263), (121, 14353), (123, 14362), (125, 14371), (132, 14398), (135, 14404), (138, 14413), (141, 14419), (145, 14446), (147, 14455), (149, 14464), (151, 14473), (155, 14494), (169, 14545), (174, 14554), (176, 14560), (181, 14587), (190, 14629), (204, 14680), (206, 14695), (207, 14701), (211, 14746), (216, 14791), (225, 14842), (226, 14851), (237, 14899), (239, 14902), (248, 14941), (249, 14944), (250, 14950), (251, 14956), (257, 14974),

Gene: Globfish\_21 Start: 15696, Stop: 16997, Start Num: 12

Candidate Starts for Globfish\_21:

(Start: 12 @15696 has 44 MA's), (70, 15957), (93, 16065), (99, 16107), (108, 16161), (129, 16254), (147, 16326), (155, 16365), (159, 16383), (169, 16413), (172, 16416), (180, 16446), (188, 16488), (207, 16569), (220, 16686), (224, 16707), (238, 16773), (253, 16836), (256, 16848), (268, 16944),

Gene: GlobiWarming\_20 Start: 15621, Stop: 16922, Start Num: 12

Candidate Starts for GlobiWarming\_20:

(Start: 12 @15621 has 44 MA's), (16, 15639), (93, 15990), (99, 16032), (106, 16068), (139, 16209), (143, 16224), (147, 16251), (155, 16290), (159, 16308), (172, 16341), (186, 16404), (188, 16413), (213, 16551), (220, 16611), (222, 16623), (243, 16719), (253, 16761), (256, 16773), (268, 16869),

Gene: Gorpy\_21 Start: 15632, Stop: 16933, Start Num: 12

Candidate Starts for Gorpy\_21:

(Start: 12 @15632 has 44 MA's), (70, 15893), (78, 15920), (87, 15971), (93, 16001), (99, 16043), (102, 16064), (106, 16079), (108, 16097), (147, 16262), (155, 16301), (159, 16319), (172, 16352), (188, 16424), (220, 16622), (222, 16634), (224, 16643), (227, 16658), (253, 16772), (256, 16784), (260, 16805), (262, 16817), (268, 16880),

Gene: HannahPhantana\_19 Start: 13380, Stop: 14633, Start Num: 12

Candidate Starts for HannahPhantana\_19:

(Start: 12 @13380 has 44 MA's), (13, 13383), (19, 13404), (35, 13473), (49, 13539), (51, 13548), (69, 13635), (71, 13650), (99, 13794), (100, 13797), (101, 13812), (102, 13815), (104, 13821), (124, 13926), (127, 13938), (139, 13977), (148, 14022), (155, 14058), (167, 14100), (173, 14115), (191, 14193), (201, 14256), (206, 14280), (230, 14457), (240, 14493), (243, 14511), (245, 14520), (252,

14547), (254, 14556), (261, 14589),

Gene: Hestia\_21 Start: 15801, Stop: 17102, Start Num: 12

Candidate Starts for Hestia\_21:

(Start: 12 @15801 has 44 MA's), (70, 16062), (93, 16170), (99, 16212), (106, 16248), (108, 16266), (128, 16356), (147, 16431), (155, 16470), (159, 16488), (172, 16521), (188, 16593), (220, 16791), (222, 16803), (224, 16812), (253, 16941), (256, 16953), (260, 16974), (262, 16986), (268, 17049),

Gene: Hillester\_21 Start: 15623, Stop: 16924, Start Num: 12

Candidate Starts for Hillester\_21:

(Start: 12 @15623 has 44 MA's), (66, 15860), (70, 15884), (78, 15911), (87, 15962), (93, 15992), (99, 16034), (102, 16055), (106, 16070), (108, 16088), (147, 16253), (155, 16292), (159, 16310), (172, 16343), (188, 16415), (220, 16613), (222, 16625), (224, 16634), (227, 16649), (253, 16763), (256, 16775), (260, 16796), (262, 16808), (268, 16871),

Gene: Isolde\_21 Start: 15458, Stop: 16759, Start Num: 12

Candidate Starts for Isolde\_21:

(Start: 12 @15458 has 44 MA's), (70, 15719), (93, 15827), (99, 15869), (106, 15905), (108, 15923), (128, 16013), (147, 16088), (155, 16127), (159, 16145), (172, 16178), (188, 16250), (220, 16448), (222, 16460), (224, 16469), (227, 16484), (253, 16598), (256, 16610), (260, 16631), (262, 16643), (268, 16706),

Gene: Jamun\_18 Start: 14074, Stop: 15324, Start Num: 12

Candidate Starts for Jamun\_18:

(Start: 12 @14074 has 44 MA's), (20, 14107), (32, 14140), (44, 14203), (49, 14233), (67, 14323), (78, 14362), (90, 14422), (94, 14446), (96, 14461), (99, 14485), (100, 14488), (102, 14506), (116, 14593), (124, 14617), (127, 14629), (134, 14656), (148, 14713), (155, 14749), (169, 14797), (191, 14884), (201, 14947), (206, 14971), (212, 15025), (214, 15043), (227, 15130), (230, 15148), (240, 15184), (244, 15205), (245, 15211), (252, 15238), (254, 15247), (261, 15280),

Gene: Jflix2\_22 Start: 23249, Stop: 24382, Start Num: 29

Candidate Starts for Jflix2\_22:

(Start: 29 @23249 has 1 MA's), (41, 23312), (43, 23318), (49, 23351), (69, 23441), (83, 23504), (92, 23546), (107, 23642), (108, 23645), (131, 23756), (146, 23816), (160, 23879), (179, 23957), (195, 24047), (212, 24140), (215, 24167), (227, 24242), (229, 24257), (235, 24281),

Gene: Judy\_21 Start: 15938, Stop: 17239, Start Num: 12

Candidate Starts for Judy\_21:

(Start: 12 @15938 has 44 MA's), (16, 15956), (49, 16097), (93, 16307), (99, 16349), (106, 16385), (118, 16454), (139, 16526), (143, 16541), (147, 16568), (155, 16607), (159, 16625), (169, 16655), (176, 16667), (188, 16730), (213, 16868), (220, 16928), (222, 16940), (243, 17036), (253, 17078), (256, 17090), (268, 17186),

Gene: Juno112\_17 Start: 12932, Stop: 14176, Start Num: 11

Candidate Starts for Juno112\_17:

(Start: 11 @12932 has 4 MA's), (35, 13025), (40, 13046), (49, 13091), (54, 13115), (69, 13187), (71, 13202), (98, 13343), (99, 13346), (100, 13349), (101, 13364), (102, 13367), (104, 13373), (116, 13454), (124, 13478), (127, 13490), (134, 13517), (148, 13574), (155, 13610), (167, 13652), (173, 13667), (190, 13742), (194, 13784), (196, 13790), (205, 13817), (206, 13829), (208, 13856), (230, 14006), (232, 14012), (240, 14042), (245, 14069), (252, 14096), (254, 14105), (261, 14138), (265, 14168),

Gene: KHumphrey\_17 Start: 12929, Stop: 14173, Start Num: 11

Candidate Starts for KHumphrey\_17:

(Start: 11 @12929 has 4 MA's), (35, 13022), (40, 13043), (49, 13088), (54, 13112), (69, 13184), (98, 13340), (99, 13343), (100, 13346), (101, 13361), (102, 13364), (104, 13370), (116, 13451), (124, 13475), (127, 13487), (134, 13514), (148, 13571), (155, 13607), (167, 13649), (173, 13664), (190, 13739), (194, 13781), (196, 13787), (205, 13814), (206, 13826), (208, 13853), (230, 14003), (232, 14009), (240, 14039), (245, 14066), (252, 14093), (254, 14102), (261, 14135), (265, 14165),

Gene: Karkharias\_20 Start: 15625, Stop: 16926, Start Num: 12

Candidate Starts for Karkharias\_20:

(Start: 12 @15625 has 44 MA's), (16, 15643), (31, 15685), (49, 15784), (93, 15994), (99, 16036), (106, 16072), (134, 16201), (139, 16213), (143, 16228), (147, 16255), (149, 16264), (155, 16294), (159, 16312), (172, 16345), (180, 16375), (186, 16408), (188, 16417), (213, 16555), (220, 16615), (222, 16627), (243, 16723), (253, 16765), (256, 16777), (262, 16810), (268, 16873),

Gene: Kepler\_18 Start: 13215, Stop: 14468, Start Num: 12

Candidate Starts for Kepler\_18:

(Start: 12 @13215 has 44 MA's), (13, 13218), (19, 13239), (35, 13308), (49, 13374), (51, 13383), (69, 13470), (71, 13485), (99, 13629), (100, 13632), (101, 13647), (102, 13650), (104, 13656), (124, 13761), (127, 13773), (139, 13812), (148, 13857), (155, 13893), (167, 13935), (173, 13950), (191, 14028), (201, 14091), (206, 14115), (230, 14292), (240, 14328), (243, 14346), (245, 14355), (252, 14382), (254, 14391), (261, 14424),

Gene: Kharcho\_45 Start: 24006, Stop: 25181, Start Num: 12

Candidate Starts for Kharcho\_45:

(1, 23298), (4, 23742), (6, 23829), (Start: 12 @24006 has 44 MA's), (18, 24027), (21, 24042), (50, 24156), (60, 24213), (66, 24231), (71, 24264), (98, 24351), (107, 24405), (109, 24411), (127, 24495), (129, 24504), (145, 24573), (147, 24582), (150, 24594), (152, 24603), (177, 24696), (179, 24705), (193, 24783), (194, 24789), (220, 24945), (222, 24957), (230, 24999), (233, 25008), (254, 25098), (259, 25122),

Gene: Kovu\_67 Start: 42102, Stop: 43256, Start Num: 18

Candidate Starts for Kovu\_67:

(6, 41904), (Start: 12 @42081 has 44 MA's), (18, 42102), (33, 42150), (37, 42183), (60, 42288), (74, 42348), (75, 42351), (89, 42405), (100, 42432), (107, 42480), (127, 42570), (128, 42576), (142, 42627), (145, 42648), (147, 42657), (150, 42669), (152, 42678), (193, 42858), (194, 42864), (209, 42930), (220, 43020), (223, 43038), (254, 43173), (256, 43179), (259, 43197), (264, 43227),

Gene: Kuleana\_18 Start: 13395, Stop: 14642, Start Num: 12

Candidate Starts for Kuleana\_18:

(Start: 12 @13395 has 44 MA's), (35, 13488), (Start: 36 @13491 has 1 MA's), (38, 13503), (40, 13509), (49, 13554), (51, 13563), (53, 13572), (64, 13626), (76, 13680), (100, 13812), (102, 13830), (104, 13836), (127, 13953), (142, 14001), (148, 14034), (155, 14070), (165, 14106), (169, 14118), (178, 14148), (188, 14196), (194, 14247), (199, 14259), (206, 14292), (227, 14451), (230, 14469), (232, 14475), (235, 14490), (245, 14532), (246, 14538), (252, 14559), (254, 14568), (255, 14571), (267, 14637),

Gene: Laroye\_69 Start: 41604, Stop: 42773, Start Num: 12

Candidate Starts for Laroye\_69:

(Start: 12 @41604 has 44 MA's), (14, 41613), (18, 41625), (23, 41652), (37, 41709), (40, 41715), (60, 41814), (66, 41832), (67, 41844), (71, 41865), (100, 41958), (104, 41982), (107, 42006), (111, 42027), (133, 42120), (134, 42123), (137, 42129), (139, 42135), (142, 42147), (145, 42168), (155, 42216), (166, 42255), (179, 42300), (198, 42393), (202, 42399), (209, 42450), (228, 42582), (230, 42594), (254, 42693), (261, 42726),

Gene: Leona\_17 Start: 12982, Stop: 14229, Start Num: 11

Candidate Starts for Leona\_17:

(Start: 11 @12982 has 4 MA's), (35, 13075), (40, 13096), (49, 13141), (54, 13165), (69, 13237), (98, 13393), (99, 13396), (100, 13399), (101, 13414), (102, 13417), (116, 13504), (124, 13528), (127, 13540), (134, 13567), (148, 13624), (155, 13660), (173, 13717), (190, 13792), (194, 13834), (196, 13840), (205, 13867), (206, 13879), (208, 13906), (230, 14056), (232, 14062), (240, 14092), (245, 14119), (252, 14146), (254, 14155), (261, 14188), (265, 14218), (266, 14224),

Gene: LiSara\_66 Start: 41766, Stop: 42935, Start Num: 12

Candidate Starts for LiSara\_66:

(Start: 12 @41766 has 44 MA's), (14, 41775), (18, 41787), (23, 41814), (37, 41871), (40, 41877), (60, 41976), (66, 41994), (67, 42006), (71, 42027), (100, 42120), (104, 42144), (107, 42168), (111, 42189), (133, 42282), (134, 42285), (137, 42291), (139, 42297), (142, 42309), (145, 42330), (155, 42378), (166, 42417), (179, 42462), (198, 42555), (202, 42561), (209, 42612), (228, 42744), (230, 42756), (254, 42855), (261, 42888),

Gene: LittleTokyo\_18 Start: 13345, Stop: 14595, Start Num: 12

Candidate Starts for LittleTokyo\_18:

(Start: 12 @13345 has 44 MA's), (35, 13438), (38, 13453), (49, 13504), (51, 13513), (66, 13582), (68, 13597), (96, 13735), (98, 13756), (99, 13759), (100, 13762), (102, 13780), (104, 13786), (116, 13867), (127, 13903), (133, 13924), (134, 13927), (139, 13939), (142, 13951), (147, 13981), (148, 13984), (155, 14020), (227, 14401), (230, 14419), (232, 14425), (235, 14440), (245, 14482), (252, 14509), (254, 14518), (255, 14521), (263, 14572),

Gene: Lunar\_19 Start: 13377, Stop: 14630, Start Num: 12

Candidate Starts for Lunar\_19:

(Start: 12 @13377 has 44 MA's), (13, 13380), (19, 13401), (35, 13470), (49, 13536), (51, 13545), (69, 13632), (71, 13647), (99, 13791), (100, 13794), (101, 13809), (102, 13812), (104, 13818), (124, 13923), (127, 13935), (139, 13974), (148, 14019), (155, 14055), (167, 14097), (173, 14112), (191, 14190), (201, 14253), (206, 14277), (230, 14454), (240, 14490), (243, 14508), (245, 14517), (252, 14544), (254, 14553), (261, 14586),

Gene: Madraxi\_28 Start: 25619, Stop: 26752, Start Num: 29

Candidate Starts for Madraxi\_28:

(Start: 29 @25619 has 1 MA's), (41, 25682), (43, 25688), (49, 25721), (50, 25724), (69, 25811), (83, 25874), (86, 25895), (92, 25916), (107, 26012), (108, 26015), (131, 26126), (136, 26138), (160, 26249), (179, 26327), (212, 26510), (215, 26537), (227, 26612), (229, 26627), (235, 26651),

Gene: Melons\_19 Start: 13377, Stop: 14630, Start Num: 12

Candidate Starts for Melons\_19:

(Start: 12 @13377 has 44 MA's), (13, 13380), (19, 13401), (35, 13470), (49, 13536), (51, 13545), (69, 13632), (71, 13647), (99, 13791), (100, 13794), (101, 13809), (102, 13812), (104, 13818), (124, 13923), (127, 13935), (139, 13974), (148, 14019), (155, 14055), (167, 14097), (173, 14112), (191, 14190), (201, 14253), (206, 14277), (230, 14454), (240, 14490), (243, 14508), (245, 14517), (252, 14544), (254, 14553), (261, 14586),

Gene: MidnightRain\_21 Start: 15622, Stop: 16923, Start Num: 12

Candidate Starts for MidnightRain\_21:

(Start: 12 @15622 has 44 MA's), (57, 15826), (66, 15859), (70, 15883), (82, 15931), (87, 15961), (93, 15991), (99, 16033), (106, 16069), (108, 16087), (128, 16177), (147, 16252), (155, 16291), (159, 16309), (172, 16342), (188, 16414), (220, 16612), (222, 16624), (253, 16762), (256, 16774), (260, 16795), (262, 16807), (268, 16870),

Gene: Nesbitt\_18 Start: 15235, Stop: 16353, Start Num: 30

Candidate Starts for Nesbitt\_18:

(8, 15058), (Start: 27 @15232 has 2 MA's), (Start: 30 @15235 has 2 MA's), (46, 15319), (54, 15358), (55, 15364), (81, 15475), (93, 15535), (162, 15847), (163, 15850), (168, 15871), (169, 15874), (171, 15886), (174, 15895), (179, 15919), (186, 15955), (191, 15973), (195, 16009), (210, 16087), (212, 16102), (213, 16111), (255, 16324),

Gene: Orcanus\_18 Start: 14331, Stop: 15581, Start Num: 12

Candidate Starts for Orcanus\_18:

(Start: 12 @14331 has 44 MA's), (32, 14397), (38, 14439), (52, 14502), (59, 14547), (67, 14580), (99, 14742), (100, 14745), (114, 14832), (122, 14865), (127, 14886), (134, 14913), (139, 14925), (141, 14931), (148, 14970), (155, 15006), (169, 15054), (186, 15123), (201, 15204), (206, 15228), (220, 15351), (224, 15372), (230, 15405), (232, 15411), (235, 15426), (241, 15447), (244, 15462), (245, 15468), (246, 15474), (252, 15495), (254, 15504), (261, 15537),

Gene: Ottawa\_45 Start: 24004, Stop: 25179, Start Num: 12

Candidate Starts for Ottawa\_45:

(1, 23296), (4, 23740), (6, 23827), (Start: 12 @24004 has 44 MA's), (18, 24025), (21, 24040), (50, 24154), (60, 24211), (66, 24229), (71, 24262), (98, 24349), (107, 24403), (109, 24409), (127, 24493), (129, 24502), (145, 24571), (147, 24580), (150, 24592), (152, 24601), (177, 24694), (179, 24703), (193, 24781), (194, 24787), (220, 24943), (222, 24955), (230, 24997), (233, 25006), (254, 25096), (259, 25120),

Gene: Peas\_20 Start: 15628, Stop: 16929, Start Num: 12

Candidate Starts for Peas\_20:

(Start: 12 @15628 has 44 MA's), (16, 15646), (31, 15688), (49, 15787), (93, 15997), (99, 16039), (106, 16075), (139, 16216), (143, 16231), (147, 16258), (149, 16267), (155, 16297), (159, 16315), (172, 16348), (188, 16420), (213, 16558), (220, 16618), (222, 16630), (243, 16726), (253, 16768), (256, 16780), (268, 16876),

Gene: PeggyLeg03\_20 Start: 15667, Stop: 16968, Start Num: 12

Candidate Starts for PeggyLeg03\_20:

(Start: 12 @15667 has 44 MA's), (16, 15685), (49, 15826), (93, 16036), (99, 16078), (106, 16114), (118, 16183), (139, 16255), (143, 16270), (147, 16297), (155, 16336), (159, 16354), (169, 16384), (172, 16387), (176, 16396), (188, 16459), (213, 16597), (220, 16657), (222, 16669), (243, 16765), (253, 16807), (256, 16819), (268, 16915),

Gene: Persistence\_20 Start: 15544, Stop: 16845, Start Num: 12

Candidate Starts for Persistence\_20:

(Start: 12 @15544 has 44 MA's), (49, 15703), (71, 15814), (78, 15832), (82, 15853), (93, 15913), (99, 15955), (100, 15958), (108, 16009), (116, 16057), (128, 16099), (133, 16117), (139, 16132), (142, 16144), (143, 16147), (155, 16213), (159, 16231), (164, 16246), (172, 16264), (188, 16336), (207, 16417), (208, 16438), (224, 16555), (243, 16642), (253, 16684), (268, 16792),

Gene: PhluffyCoco\_17 Start: 12931, Stop: 14175, Start Num: 11

Candidate Starts for PhluffyCoco\_17:

(Start: 11 @12931 has 4 MA's), (35, 13024), (40, 13045), (49, 13090), (54, 13114), (69, 13186), (98, 13342), (99, 13345), (100, 13348), (101, 13363), (102, 13366), (104, 13372), (116, 13453), (127, 13489), (134, 13516), (148, 13573), (155, 13609), (167, 13651), (173, 13666), (190, 13741), (194, 13783), (196, 13789), (205, 13816), (206, 13828), (208, 13855), (230, 14005), (232, 14011), (240, 14041), (245, 14068), (252, 14095), (254, 14104), (261, 14137), (265, 14167),

Gene: Phrank15\_21 Start: 15557, Stop: 16858, Start Num: 12

Candidate Starts for Phrank15\_21:

(Start: 12 @15557 has 44 MA's), (70, 15818), (93, 15926), (99, 15968), (106, 16004), (108, 16022), (128, 16112), (147, 16187), (150, 16199), (155, 16226), (159, 16244), (172, 16277), (188, 16349), (220, 16547), (222, 16559), (224, 16568), (227, 16583), (253, 16697), (256, 16709), (260, 16730), (262, 16742), (268, 16805),

Gene: Polka\_18 Start: 13219, Stop: 14472, Start Num: 12

Candidate Starts for Polka\_18:

(Start: 12 @13219 has 44 MA's), (13, 13222), (19, 13243), (35, 13312), (49, 13378), (51, 13387), (69, 13474), (71, 13489), (99, 13633), (100, 13636), (101, 13651), (102, 13654), (104, 13660), (124, 13765), (127, 13777), (139, 13816), (148, 13861), (155, 13897), (167, 13939), (173, 13954), (191, 14032), (201, 14095), (206, 14119), (207, 14125), (230, 14296), (240, 14332), (243, 14350), (245, 14359), (252, 14386), (254, 14395), (261, 14428),

Gene: Pucara\_20 Start: 15628, Stop: 16929, Start Num: 12

Candidate Starts for Pucara\_20:

(Start: 12 @15628 has 44 MA's), (16, 15646), (49, 15787), (93, 15997), (99, 16039), (106, 16075), (139, 16216), (143, 16231), (147, 16258), (149, 16267), (155, 16297), (159, 16315), (172, 16348), (188, 16420), (213, 16558), (220, 16618), (222, 16630), (243, 16726), (253, 16768), (256, 16780), (268, 16876),

Gene: REQ1\_80 Start: 46988, Stop: 48121, Start Num: 29

Candidate Starts for REQ1\_80:

(Start: 29 @46988 has 1 MA's), (41, 47051), (43, 47057), (50, 47093), (69, 47180), (83, 47243), (86, 47264), (92, 47285), (105, 47363), (107, 47381), (108, 47384), (131, 47495), (146, 47555), (160, 47618), (179, 47696), (195, 47786), (208, 47852), (210, 47864), (212, 47879), (215, 47906), (227, 47981), (235, 48020),

Gene: RadFad\_21 Start: 15623, Stop: 16924, Start Num: 12

Candidate Starts for RadFad\_21:

(Start: 12 @15623 has 44 MA's), (66, 15860), (70, 15884), (78, 15911), (87, 15962), (93, 15992), (99, 16034), (102, 16055), (106, 16070), (108, 16088), (147, 16253), (155, 16292), (159, 16310), (172, 16343), (188, 16415), (220, 16613), (222, 16625), (224, 16634), (227, 16649), (253, 16763), (256, 16775), (260, 16796), (262, 16808), (268, 16871),

Gene: Raphaella\_22 Start: 15623, Stop: 16924, Start Num: 12

Candidate Starts for Raphaella\_22:

(Start: 12 @15623 has 44 MA's), (66, 15860), (70, 15884), (78, 15911), (87, 15962), (93, 15992), (99, 16034), (102, 16055), (106, 16070), (108, 16088), (147, 16253), (155, 16292), (159, 16310), (172, 16343), (188, 16415), (220, 16613), (222, 16625), (224, 16634), (227, 16649), (253, 16763), (256, 16775), (260, 16796), (262, 16808), (268, 16871),

Gene: RedFox\_17 Start: 12931, Stop: 14175, Start Num: 11

Candidate Starts for RedFox\_17:

(Start: 11 @12931 has 4 MA's), (35, 13024), (40, 13045), (49, 13090), (54, 13114), (69, 13186), (98, 13342), (99, 13345), (100, 13348), (101, 13363), (102, 13366), (104, 13372), (116, 13453), (124, 13477), (127, 13489), (134, 13516), (148, 13573), (155, 13609), (167, 13651), (173, 13666), (190, 13741), (194, 13783), (196, 13789), (205, 13816), (206, 13828), (208, 13855), (230, 14005), (232, 14011), (240, 14041), (245, 14068), (252, 14095), (254, 14104), (261, 14137), (265, 14167),

Gene: Renna12\_18 Start: 13275, Stop: 14519, Start Num: 11

Candidate Starts for Renna12\_18:

(Start: 11 @13275 has 4 MA's), (35, 13368), (40, 13389), (49, 13434), (69, 13530), (71, 13545), (98, 13686), (99, 13689), (100, 13692), (101, 13707), (102, 13710), (104, 13716), (116, 13797), (124, 13821), (127, 13833), (134, 13860), (148, 13917), (155, 13953), (167, 13995), (173, 14010), (188, 14079), (190, 14085), (194, 14127), (196, 14133), (205, 14160), (206, 14172), (208, 14199), (230, 14349), (232, 14355), (240, 14385), (245, 14412), (252, 14439), (254, 14448), (261, 14481), (265, 14511),

Gene: Richie\_21 Start: 15638, Stop: 16939, Start Num: 12

Candidate Starts for Richie\_21:

(Start: 12 @15638 has 44 MA's), (57, 15842), (66, 15875), (70, 15899), (82, 15947), (87, 15977), (93, 16007), (99, 16049), (106, 16085), (108, 16103), (147, 16268), (155, 16307), (159, 16325), (172, 16358), (188, 16430), (220, 16628), (222, 16640), (253, 16778), (256, 16790), (260, 16811), (262, 16823), (268, 16886),

Gene: Rowa\_18 Start: 15046, Stop: 16164, Start Num: 27

Candidate Starts for Rowa\_18:

(Start: 27 @15046 has 2 MA's), (40, 15103), (41, 15109), (55, 15175), (70, 15241), (91, 15328), (92, 15340), (170, 15691), (174, 15709), (178, 15730), (179, 15733), (182, 15748), (189, 15781), (212, 15916), (221, 15988), (224, 16003), (232, 16042), (242, 16081), (247, 16108), (255, 16138),

Gene: Ruchi\_18 Start: 14614, Stop: 15864, Start Num: 12

Candidate Starts for Ruchi\_18:

(Start: 12 @14614 has 44 MA's), (20, 14647), (32, 14680), (44, 14743), (49, 14773), (67, 14863), (78, 14902), (90, 14962), (94, 14986), (96, 15001), (99, 15025), (100, 15028), (102, 15046), (116, 15133), (124, 15157), (127, 15169), (148, 15253), (155, 15289), (169, 15337), (191, 15424), (201, 15487), (206, 15511), (212, 15565), (214, 15583), (227, 15670), (230, 15688), (240, 15724), (244, 15745), (245, 15751), (252, 15778), (254, 15787),

Gene: Sakai\_21 Start: 15632, Stop: 16933, Start Num: 12

Candidate Starts for Sakai\_21:

(Start: 12 @15632 has 44 MA's), (70, 15893), (78, 15920), (87, 15971), (93, 16001), (99, 16043), (102, 16064), (106, 16079), (108, 16097), (147, 16262), (155, 16301), (159, 16319), (172, 16352), (188, 16424), (220, 16622), (222, 16634), (224, 16643), (227, 16658), (253, 16772), (256, 16784), (260, 16805), (262, 16817), (268, 16880),

Gene: Salgado\_69 Start: 41420, Stop: 42589, Start Num: 12

Candidate Starts for Salgado\_69:

(Start: 12 @41420 has 44 MA's), (14, 41429), (18, 41441), (23, 41468), (37, 41525), (40, 41531), (60, 41630), (66, 41648), (67, 41660), (71, 41681), (100, 41774), (104, 41798), (107, 41822), (111, 41843), (133, 41936), (137, 41945), (139, 41951), (142, 41963), (145, 41984), (155, 42032), (166, 42071), (179, 42116), (198, 42209), (202, 42215), (209, 42266), (228, 42398), (230, 42410), (254, 42509), (261, 42542),

Gene: Samy\_23 Start: 18462, Stop: 19574, Start Num: 27

Candidate Starts for Samy\_23:

(Start: 27 @18462 has 2 MA's), (38, 18513), (47, 18552), (81, 18702), (102, 18807), (106, 18822), (115, 18876), (121, 18897), (131, 18945), (140, 18978), (152, 19038), (183, 19170), (208, 19305), (227, 19434), (242, 19491), (252, 19536),

Gene: Seahorse\_22 Start: 15990, Stop: 17291, Start Num: 12

Candidate Starts for Seahorse\_22:

(Start: 12 @15990 has 44 MA's), (16, 16008), (20, 16023), (70, 16251), (93, 16359), (99, 16401), (106, 16437), (108, 16455), (128, 16545), (147, 16620), (155, 16659), (159, 16677), (172, 16710), (188,



16782), (220, 16980), (253, 17130), (256, 17142), (260, 17163), (262, 17175), (268, 17238),

Gene: Shagrat\_23 Start: 22765, Stop: 23892, Start Num: 28

Candidate Starts for Shagrat\_23:

(Start: 28 @22765 has 1 MA's), (41, 22828), (49, 22867), (55, 22891), (69, 22957), (83, 23020), (92, 23062), (104, 23131), (119, 23215), (146, 23329), (147, 23335), (152, 23356), (156, 23380), (160, 23392), (175, 23449), (179, 23470), (191, 23524), (195, 23560), (203, 23581), (208, 23626), (212, 23653), (215, 23680), (217, 23704), (222, 23731), (229, 23770), (230, 23773), (233, 23782), (235, 23794), (236, 23800), (242, 23818), (258, 23887),

Gene: Shrooms\_67 Start: 39941, Stop: 41110, Start Num: 12

Candidate Starts for Shrooms\_67:

(Start: 12 @39941 has 44 MA's), (14, 39950), (18, 39962), (37, 40046), (44, 40067), (49, 40091), (53, 40109), (54, 40115), (60, 40151), (66, 40169), (67, 40181), (71, 40202), (76, 40217), (80, 40229), (100, 40295), (111, 40364), (134, 40460), (139, 40472), (142, 40484), (145, 40505), (150, 40526), (152, 40535), (155, 40553), (166, 40592), (192, 40703), (198, 40730), (202, 40736), (209, 40787), (228, 40919), (230, 40931), (243, 40985), (245, 40994), (252, 41021), (254, 41030), (261, 41063),

Gene: TaylorSipt\_18 Start: 13348, Stop: 14598, Start Num: 12

Candidate Starts for TaylorSipt\_18:

(Start: 12 @13348 has 44 MA's), (20, 13381), (32, 13414), (35, 13441), (52, 13519), (67, 13597), (90, 13696), (99, 13759), (100, 13762), (102, 13780), (114, 13849), (122, 13882), (127, 13903), (133, 13927), (134, 13930), (139, 13942), (141, 13948), (148, 13987), (155, 14023), (169, 14071), (173, 14080), (184, 14131), (185, 14137), (201, 14221), (206, 14245), (220, 14368), (230, 14422), (231, 14425), (234, 14440), (241, 14464), (252, 14512), (254, 14521), (256, 14527),

Gene: Tiff81\_23 Start: 15718, Stop: 17019, Start Num: 12

Candidate Starts for Tiff81\_23:

(Start: 12 @15718 has 44 MA's), (20, 15751), (70, 15979), (93, 16087), (99, 16129), (106, 16165), (108, 16183), (128, 16273), (147, 16348), (155, 16387), (159, 16405), (172, 16438), (188, 16510), (220, 16708), (253, 16858), (256, 16870), (260, 16891), (262, 16903), (268, 16966),

Gene: VWB\_19 Start: 16658, Stop: 17779, Start Num: 15

Candidate Starts for VWB\_19:

(2, 16259), (3, 16361), (5, 16445), (7, 16520), (9, 16529), (10, 16628), (15, 16658), (25, 16688), (Start: 27 @16691 has 2 MA's), (39, 16745), (63, 16853), (73, 16901), (76, 16907), (83, 16940), (91, 16967), (101, 17027), (103, 17033), (117, 17105), (154, 17258), (161, 17285), (169, 17315), (178, 17354), (183, 17378), (186, 17393), (197, 17453), (219, 17594), (225, 17630), (242, 17696),

Gene: Vulpecula\_18 Start: 14072, Stop: 15322, Start Num: 12

Candidate Starts for Vulpecula\_18:

(Start: 12 @14072 has 44 MA's), (20, 14105), (32, 14138), (44, 14201), (49, 14231), (52, 14243), (67, 14321), (78, 14360), (90, 14420), (94, 14444), (96, 14459), (99, 14483), (100, 14486), (102, 14504), (116, 14591), (124, 14615), (127, 14627), (148, 14711), (155, 14747), (169, 14795), (191, 14882), (201, 14945), (205, 14957), (206, 14969), (212, 15023), (214, 15041), (227, 15128), (230, 15146), (240, 15182), (244, 15203), (245, 15209), (252, 15236), (254, 15245), (261, 15278),

Gene: Waltz\_66 Start: 39954, Stop: 41123, Start Num: 12

Candidate Starts for Waltz\_66:

(Start: 12 @39954 has 44 MA's), (14, 39963), (18, 39975), (Start: 36 @40050 has 1 MA's), (53, 40122), (57, 40149), (60, 40164), (66, 40182), (67, 40194), (76, 40230), (79, 40236), (80, 40242), (100, 40308), (111, 40377), (134, 40473), (139, 40485), (142, 40497), (145, 40518), (150, 40539), (155, 40566), (202, 40749), (220, 40890), (222, 40902), (227, 40926), (230, 40944), (235, 40965),

(243, 40998), (245, 41007), (252, 41034), (254, 41043), (256, 41049), (259, 41067), (261, 41076),

Gene: Wheelbite\_65 Start: 41577, Stop: 42746, Start Num: 12

Candidate Starts for Wheelbite\_65:

(Start: 12 @41577 has 44 MA's), (14, 41586), (18, 41598), (23, 41625), (37, 41682), (40, 41688), (50, 41730), (60, 41787), (66, 41805), (67, 41817), (100, 41931), (107, 41979), (111, 42000), (113, 42015), (124, 42057), (134, 42096), (139, 42108), (145, 42141), (155, 42189), (166, 42228), (179, 42273), (198, 42366), (218, 42498), (220, 42513), (228, 42555), (230, 42567), (254, 42666), (261, 42699),

Gene: Wollypog\_19 Start: 17989, Stop: 19074, Start Num: 36

Candidate Starts for Wollypog\_19:

(Start: 36 @17989 has 1 MA's), (50, 18055), (57, 18097), (62, 18118), (80, 18193), (83, 18208), (112, 18373), (116, 18391), (130, 18439), (143, 18481), (153, 18538), (154, 18541), (158, 18556), (174, 18616), (190, 18691), (191, 18694), (199, 18736), (201, 18745), (227, 18922),

Gene: YoungHarleezy\_21 Start: 15636, Stop: 16937, Start Num: 12

Candidate Starts for YoungHarleezy\_21:

(Start: 12 @15636 has 44 MA's), (66, 15873), (70, 15897), (78, 15924), (87, 15975), (93, 16005), (99, 16047), (102, 16068), (106, 16083), (108, 16101), (147, 16266), (155, 16305), (159, 16323), (172, 16356), (188, 16428), (220, 16626), (222, 16638), (224, 16647), (227, 16662), (253, 16776), (256, 16788), (260, 16809), (262, 16821), (268, 16884),

Gene: phiAsp2\_30 Start: 25990, Stop: 27063, Start Num: 24

Candidate Starts for phiAsp2\_30:

(24, 25990), (48, 26092), (86, 26269), (90, 26275), (102, 26341), (108, 26374), (113, 26407), (120, 26434), (123, 26446), (128, 26467), (132, 26488), (140, 26515), (144, 26530), (149, 26563), (157, 26602), (163, 26617), (187, 26713), (193, 26758), (213, 26866), (218, 26911), (229, 26974), (230, 26977), (236, 27004),