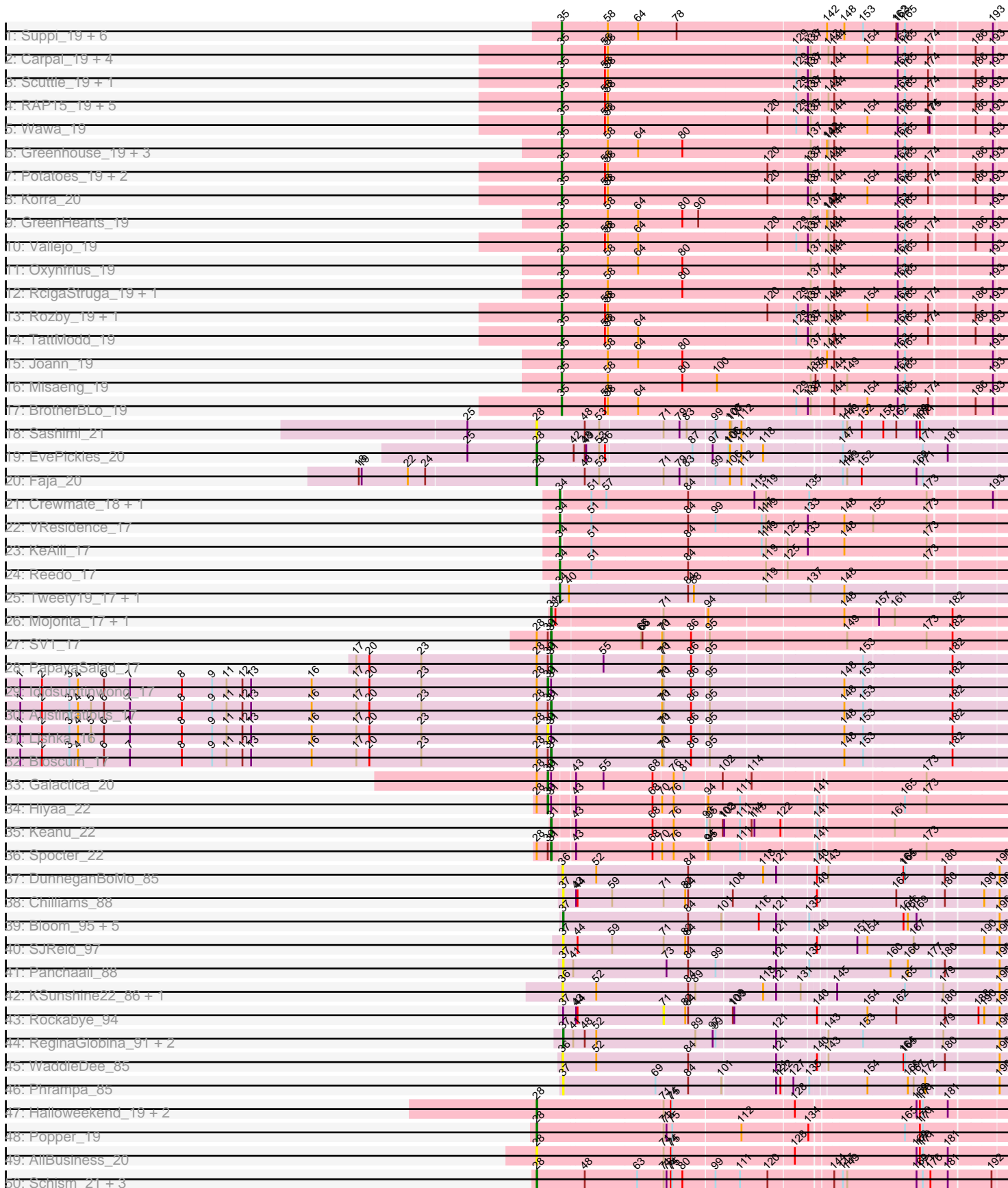
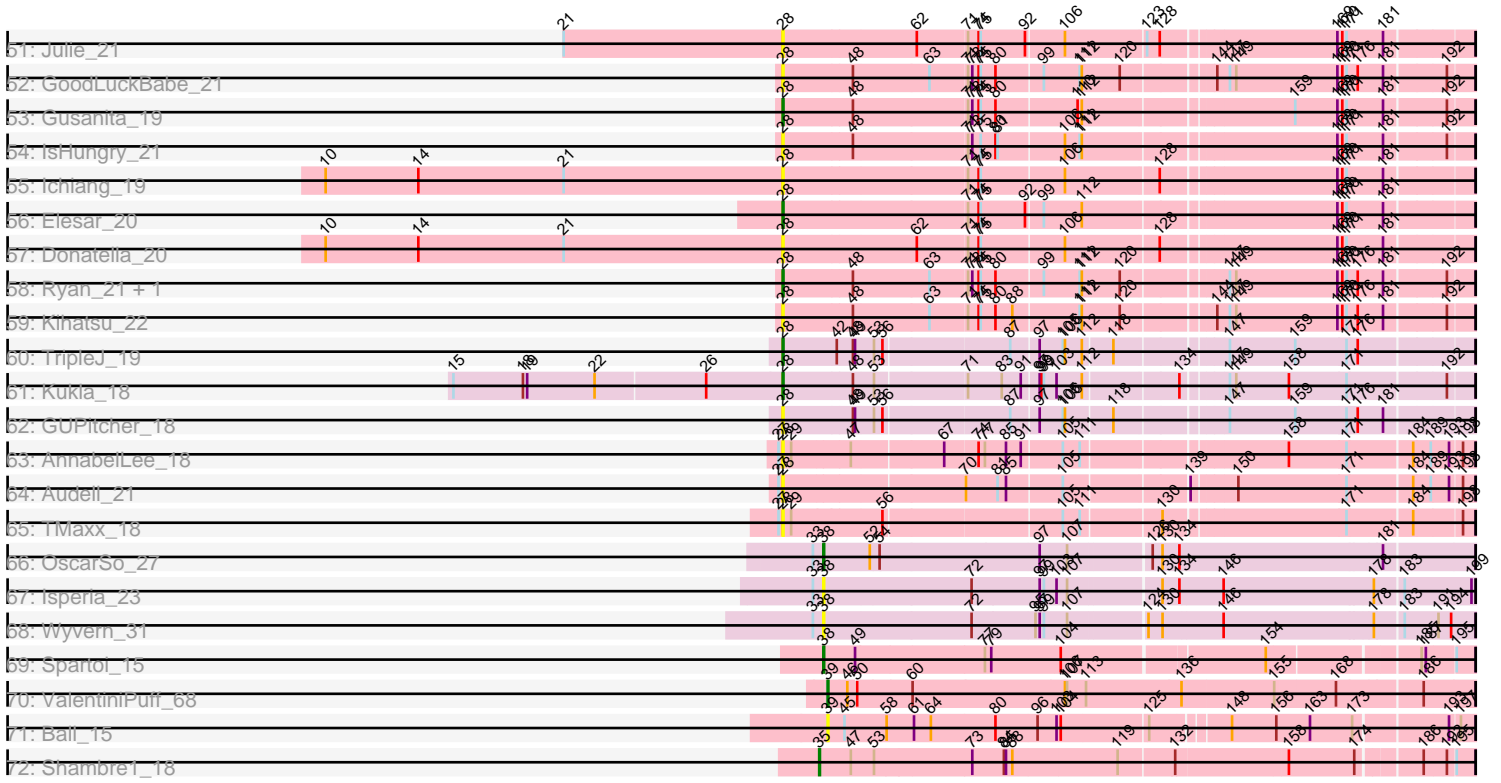


Pham 215993



Pham 215993



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 215993 Report

This analysis was run 02/22/25 on database version 588.

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 215993 has 112 members, 35 are drafts.

Phages represented in each track:

- Track 1 : Suppi\_19, Canowicakte\_19, Wayne\_19, Litotes\_19, PartyCup\_19, CallieOMalley\_19, AppleCider\_19
- Track 2 : Carpal\_19, Dino\_19, Glenn\_19, Kalizoi\_19, Zorro\_19
- Track 3 : Scuttle\_19, Beethoven\_19
- Track 4 : RAP15\_19, Fluke\_19, Jumboset\_19, MrGloopy\_19, MeganNoll\_19, Savage2526\_19
- Track 5 : Wawa\_19
- Track 6 : Greenhouse\_19, Lakshmi\_19, Albanese\_19, Nubia\_19
- Track 7 : Potatoes\_19, Cholula\_19, Immaculata\_19
- Track 8 : Korra\_20
- Track 9 : GreenHearts\_19
- Track 10 : Vallejo\_19
- Track 11 : Oxynfrius\_19
- Track 12 : RcigaStruga\_19, Huntingdon\_19
- Track 13 : Rozby\_19, Riverdale\_19
- Track 14 : TattModd\_19
- Track 15 : Joann\_19
- Track 16 : Misaeng\_19
- Track 17 : BrotherBLo\_19
- Track 18 : Sashimi\_21
- Track 19 : EvePickles\_20
- Track 20 : Faja\_20
- Track 21 : Crewmate\_18, ObiToo\_17
- Track 22 : VResidence\_17
- Track 23 : KeAlii\_17
- Track 24 : Reedo\_17
- Track 25 : Tweety19\_17, Snek\_17
- Track 26 : Mojourita\_17, Picard\_17
- Track 27 : SV1\_17
- Track 28 : PapayaSalad\_17
- Track 29 : Ididsumtinwong\_17
- Track 30 : Austintatious\_17
- Track 31 : Lishka\_16

- Track 32 : Bioscum\_17
- Track 33 : Galactica\_20
- Track 34 : Hiya\_22
- Track 35 : Keanu\_22
- Track 36 : Spocter\_22
- Track 37 : DunneganBoMo\_85
- Track 38 : Chilliams\_88
- Track 39 : Bloom\_95, Patbob\_92, Racecar\_92, GoldenEssence\_80, Talia1610\_91, Mimi\_91
- Track 40 : SJReid\_97
- Track 41 : Panchaali\_88
- Track 42 : KSunshine22\_86, Ellewin\_83
- Track 43 : Rockabye\_94
- Track 44 : ReginaGlobina\_91, Atuin\_86, LeoJr\_91
- Track 45 : WaddleDee\_85
- Track 46 : Phrampa\_85
- Track 47 : Halloween\_19, QuinnAvery\_21, Cole\_19
- Track 48 : Popper\_19
- Track 49 : AllBusiness\_20
- Track 50 : Schism\_21, Guinevere\_21, Lenoxika\_21, Nandita\_21
- Track 51 : Julie\_21
- Track 52 : GoodLuckBabe\_21
- Track 53 : Gusanita\_19
- Track 54 : IsHungry\_21
- Track 55 : Ichiang\_19
- Track 56 : Elesar\_20
- Track 57 : Donatella\_20
- Track 58 : Ryan\_21, Zaheer\_21
- Track 59 : Kihatsu\_22
- Track 60 : TripleJ\_19
- Track 61 : Kukla\_18
- Track 62 : GUPitcher\_18
- Track 63 : AnnabelLee\_18
- Track 64 : Audell\_21
- Track 65 : TMaxx\_18
- Track 66 : OscarSo\_27
- Track 67 : Isperia\_23
- Track 68 : Wyvern\_31
- Track 69 : Spartoi\_15
- Track 70 : ValentiniPuff\_68
- Track 71 : Ball\_15
- Track 72 : Shambre1\_18

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

The start number called the most often in the published annotations is 35, it was called in 40 of the 77 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Albanese\_19, AppleCider\_19, Beethoven\_19, BrotherBLo\_19, CallieOMalley\_19, Canowicakte\_19, Carpal\_19, Cholula\_19, Dino\_19, Fluke\_19, Glenn\_19, GreenHearts\_19, Greenhouse\_19, Huntingdon\_19, Immaculata\_19, Joann\_19, Jumboset\_19, Kalizoi\_19, Korra\_20, Lakshmi\_19, Litotes\_19, MeganNoll\_19, Misaeng\_19, MrGloopy\_19, Nubia\_19, Oxyfnrius\_19, PartyCup\_19, Potatoes\_19, RAP15\_19, RcigaStruga\_19, Riverdale\_19, Rozby\_19, Savage2526\_19, Scuttle\_19, Shambre1\_18, Suppi\_19, TattModd\_19, Vallejo\_19, Wawa\_19, Wayne\_19, Zorro\_19,

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

- 

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

- AllBusiness\_20, AnnabelLee\_18, Atuin\_86, Audell\_21, Austintatious\_17, Ball\_15, Bioscum\_17, Bloom\_95, Chilliams\_88, Cole\_19, Crewmate\_18, Donatella\_20, DunneganBoMo\_85, Elesar\_20, Ellewin\_83, EvePickles\_20, Faja\_20, GUPitcher\_18, Galactica\_20, GoldenEssence\_80, GoodLuckBabe\_21, Guinevere\_21, Gusanita\_19, Halloweekend\_19, Hiyaa\_22, Ichiang\_19, Ididsumtinwong\_17, IsHungry\_21, Isperia\_23, Julie\_21, KSunshine22\_86, KeAlii\_17, Keanu\_22, Kihatsu\_22, Kukla\_18, Lenoxika\_21, LeoJr\_91, Lishka\_16, Mimi\_91, Mojourita\_17, Nandita\_21, ObiToo\_17, OscarSo\_27, Panchaali\_88, PapayaSalad\_17, Patbob\_92, Phrampa\_85, Picard\_17, Popper\_19, QuinnAvery\_21, Racecar\_92, Reedo\_17, ReginaGlobina\_91, Rockabye\_94, Ryan\_21, SJReid\_97, SV1\_17, Sashimi\_21, Schism\_21, Snek\_17, Spartoi\_15, Spocter\_22, TMaxx\_18, Talia1610\_91, TripleJ\_19, Tweety19\_17, VResidence\_17, ValentiniPuff\_68, WaddleDee\_85, Wyvern\_31, Zaheer\_21,

### Summary by start number:

Start 28:

- Found in 37 of 112 ( 33.0% ) of genes in pham
- Manual Annotations of this start: 12 of 77
- Called 75.7% of time when present
- Phage (with cluster) where this start called: AllBusiness\_20 (FF), AnnabelLee\_18 (FR), Audell\_21 (FR), Cole\_19 (FF), Donatella\_20 (FF), Elesar\_20 (FF), EvePickles\_20 (AY), Faja\_20 (AY), GUPitcher\_18 (FJ), GoodLuckBabe\_21 (FF), Guinevere\_21 (FF), Gusanita\_19 (FF), Halloweekend\_19 (FF), Ichiang\_19 (FF), IsHungry\_21 (FF), Julie\_21 (FF), Kihatsu\_22 (FF), Kukla\_18 (FJ), Lenoxika\_21 (FF), Nandita\_21 (FF), Popper\_19 (FF), QuinnAvery\_21 (FF), Ryan\_21 (FF), Sashimi\_21 (AY), Schism\_21 (FF), TMaxx\_18 (FR), TripleJ\_19 (FJ), Zaheer\_21 (FF),

Start 30:

- Found in 9 of 112 ( 8.0% ) of genes in pham
- Manual Annotations of this start: 3 of 77
- Called 44.4% of time when present
- Phage (with cluster) where this start called: Galactica\_20 (BQ), Hiyaa\_22 (BQ), Ididsumtinwong\_17 (BC3), Lishka\_16 (BC3),

Start 31:

- Found in 12 of 112 ( 10.7% ) of genes in pham
- Manual Annotations of this start: 8 of 77
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Austintatious\_17 (BC3), Bioscum\_17 (BC3), Keanu\_22 (BQ), Mojourita\_17 (BC1), PapayaSalad\_17 (BC3), Picard\_17 (BC1), SV1\_17 (BC1), Spocter\_22 (BQ),

Start 34:

- Found in 7 of 112 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 7 of 77
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Crewmate\_18 (AZ1), KeAlii\_17 (AZ1), ObiToo\_17 (AZ1), Reedo\_17 (AZ1), Snek\_17 (AZ3), Tweety19\_17 (AZ3), VResidence\_17 (AZ1),

Start 35:

- Found in 41 of 112 ( 36.6% ) of genes in pham
- Manual Annotations of this start: 40 of 77
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Albanese\_19 (AK), AppleCider\_19 (AK), Beethoven\_19 (AK), BrotherBLo\_19 (AK), CallieOMalley\_19 (AK), Canowicakte\_19 (AK), Carpal\_19 (AK), Cholula\_19 (AK), Dino\_19 (AK), Fluke\_19 (AK), Glenn\_19 (AK), GreenHearts\_19 (AK), Greenhouse\_19 (AK), Huntingdon\_19 (AK), Immaculata\_19 (AK), Joann\_19 (AK), Jumboset\_19 (AK), Kalizoi\_19 (AK), Korra\_20 (AK), Lakshmi\_19 (AK), Litotes\_19 (AK), MeganNoll\_19 (AK), Misaeng\_19 (AK), MrGloopy\_19 (AK), Nubia\_19 (AK), Oxynfrius\_19 (AK), PartyCup\_19 (AK), Potatoes\_19 (AK), RAP15\_19 (AK), RcigaStruga\_19 (AK), Riverdale\_19 (AK), Rozby\_19 (AK), Savage2526\_19 (AK), Scuttle\_19 (AK), Shambre1\_18 (singleton), Suppi\_19 (AK), TattModd\_19 (AK), Vallejo\_19 (AK), Wawa\_19 (AK), Wayne\_19 (AK), Zorro\_19 (AK),

Start 36:

- Found in 4 of 112 ( 3.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DunneganBoMo\_85 (FC), Ellewin\_83 (FC), KSunshine22\_86 (FC), WaddleDee\_85 (FC),

Start 37:

- Found in 14 of 112 ( 12.5% ) of genes in pham
- Manual Annotations of this start: 4 of 77
- Called 92.9% of time when present
- Phage (with cluster) where this start called: Atuin\_86 (FC), Bloom\_95 (FC), Chilliams\_88 (FC), GoldenEssence\_80 (FC), LeoJr\_91 (FC), Mimi\_91 (FC), Panchaali\_88 (FC), Patbob\_92 (FC), Phrampa\_85 (FC), Racecar\_92 (FC), ReginaGlobina\_91 (FC), SJReid\_97 (FC), Talia1610\_91 (FC),

Start 38:

- Found in 4 of 112 ( 3.6% ) of genes in pham
- Manual Annotations of this start: 2 of 77
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Iperia\_23 (GJ), OscarSo\_27 (GJ), Spartoi\_15 (singleton), Wyvern\_31 (GJ),

Start 39:

- Found in 2 of 112 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 77
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Ball\_15 (singleton), ValentiniPuff\_68 (singleton),

Start 71:

- Found in 33 of 112 ( 29.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 3.0% of time when present
- Phage (with cluster) where this start called: Rockabye\_94 (FC),

### **Summary by clusters:**

There are 13 clusters represented in this pham: singleton, AK, FR, GJ, FC, BQ, FF, AY, AZ1, FJ, AZ3, BC1, BC3,

Info for manual annotations of cluster AK:

- Start number 35 was manually annotated 39 times for cluster AK.

Info for manual annotations of cluster AY:

- Start number 28 was manually annotated 2 times for cluster AY.

Info for manual annotations of cluster AZ1:

- Start number 34 was manually annotated 5 times for cluster AZ1.

Info for manual annotations of cluster AZ3:

- Start number 34 was manually annotated 2 times for cluster AZ3.

Info for manual annotations of cluster BC1:

- Start number 31 was manually annotated 3 times for cluster BC1.

Info for manual annotations of cluster BC3:

- Start number 30 was manually annotated 1 time for cluster BC3.
- Start number 31 was manually annotated 3 times for cluster BC3.

Info for manual annotations of cluster BQ:

- Start number 30 was manually annotated 2 times for cluster BQ.
- Start number 31 was manually annotated 2 times for cluster BQ.

Info for manual annotations of cluster FC:

- Start number 37 was manually annotated 4 times for cluster FC.

Info for manual annotations of cluster FF:

- Start number 28 was manually annotated 8 times for cluster FF.

Info for manual annotations of cluster FJ:

- Start number 28 was manually annotated 2 times for cluster FJ.

Info for manual annotations of cluster GJ:

- Start number 38 was manually annotated 1 time for cluster GJ.

### **Gene Information:**

Gene: Albanese\_19 Start: 15218, Stop: 16090, Start Num: 35

Candidate Starts for Albanese\_19:

(Start: 35 @15218 has 40 MA's), (58, 15311), (64, 15371), (80, 15461), (137, 15716), (142, 15740), (143, 15743), (144, 15755), (163, 15884), (165, 15899), (193, 16058),

Gene: AllBusiness\_20 Start: 15893, Stop: 16813, Start Num: 28

Candidate Starts for AllBusiness\_20:

(Start: 28 @15893 has 12 MA's), (71, 16145), (74, 16160), (75, 16163), (128, 16403), (169, 16634), (170, 16640), (171, 16646), (181, 16697),

Gene: AnnabelLee\_18 Start: 11910, Stop: 12815, Start Num: 28

Candidate Starts for AnnabelLee\_18:

(27, 11904), (Start: 28 @11910 has 12 MA's), (29, 11922), (47, 12000), (67, 12123), (74, 12168), (77, 12177), (85, 12207), (91, 12228), (105, 12282), (111, 12306), (158, 12567), (171, 12648), (184, 12735), (189, 12759), (193, 12783), (198, 12798),

Gene: AppleCider\_19 Start: 15167, Stop: 16048, Start Num: 35

Candidate Starts for AppleCider\_19:

(Start: 35 @15167 has 40 MA's), (58, 15260), (64, 15320), (78, 15398), (142, 15698), (148, 15734), (153, 15773), (162, 15839), (163, 15842), (165, 15857), (193, 16016),

Gene: Atuin\_86 Start: 59949, Stop: 60800, Start Num: 37

Candidate Starts for Atuin\_86:

(Start: 37 @59949 has 4 MA's), (41, 59970), (48, 59994), (52, 60015), (89, 60216), (97, 60249), (99, 60255), (121, 60375), (143, 60453), (153, 60525), (179, 60678), (196, 60777),

Gene: Audell\_21 Start: 15231, Stop: 16136, Start Num: 28

Candidate Starts for Audell\_21:

(27, 15225), (Start: 28 @15231 has 12 MA's), (70, 15471), (81, 15516), (85, 15528), (105, 15603), (139, 15762), (150, 15816), (171, 15969), (184, 16056), (189, 16080), (193, 16104), (198, 16119),

Gene: Austintatious\_17 Start: 12200, Stop: 13096, Start Num: 31

Candidate Starts for Austintatious\_17:

(1, 11099), (2, 11144), (3, 11201), (4, 11219), (5, 11246), (6, 11273), (7, 11327), (8, 11435), (9, 11498), (11, 11528), (12, 11561), (13, 11579), (16, 11705), (17, 11798), (20, 11825), (23, 11933), (Start: 28 @12173 has 12 MA's), (Start: 30 @12194 has 3 MA's), (Start: 31 @12200 has 8 MA's), (70, 12416), (71, 12419), (86, 12476), (95, 12506), (148, 12770), (153, 12809), (182, 12983),

Gene: Ball\_15 Start: 12363, Stop: 13217, Start Num: 39

Candidate Starts for Ball\_15:

(Start: 39 @12363 has 1 MA's), (45, 12387), (58, 12447), (61, 12483), (64, 12507), (80, 12597), (96, 12654), (103, 12681), (104, 12687), (125, 12801), (148, 12897), (156, 12957), (163, 13005), (173, 13065), (193, 13185), (197, 13197),

Gene: Beethoven\_19 Start: 15125, Stop: 15994, Start Num: 35

Candidate Starts for Beethoven\_19:

(Start: 35 @15125 has 40 MA's), (56, 15212), (58, 15218), (129, 15593), (133, 15614), (137, 15620), (144, 15659), (163, 15788), (165, 15803), (174, 15851), (186, 15929), (193, 15962),

Gene: Bioscum\_17 Start: 12236, Stop: 13132, Start Num: 31

Candidate Starts for Bioscum\_17:

(1, 11135), (2, 11180), (3, 11237), (4, 11255), (6, 11309), (7, 11363), (8, 11471), (9, 11534), (11, 11564), (12, 11597), (13, 11615), (16, 11741), (17, 11834), (20, 11861), (23, 11969), (Start: 28



@12209 has 12 MA's), (Start: 30 @12230 has 3 MA's), (Start: 31 @12236 has 8 MA's), (70, 12452), (71, 12455), (86, 12512), (95, 12542), (148, 12806), (153, 12845), (182, 13019),

Gene: Bloom\_95 Start: 60812, Stop: 61663, Start Num: 37

Candidate Starts for Bloom\_95:

(Start: 37 @60812 has 4 MA's), (84, 61064), (101, 61130), (116, 61202), (121, 61238), (135, 61292), (164, 61466), (166, 61475), (169, 61493), (196, 61640),

Gene: BrotherBLo\_19 Start: 15131, Stop: 16000, Start Num: 35

Candidate Starts for BrotherBLo\_19:

(Start: 35 @15131 has 40 MA's), (56, 15218), (58, 15224), (64, 15284), (129, 15599), (133, 15620), (137, 15626), (144, 15665), (154, 15734), (163, 15794), (165, 15809), (174, 15857), (186, 15935), (193, 15968),

Gene: CallieOMalley\_19 Start: 15167, Stop: 16048, Start Num: 35

Candidate Starts for CallieOMalley\_19:

(Start: 35 @15167 has 40 MA's), (58, 15260), (64, 15320), (78, 15398), (142, 15698), (148, 15734), (153, 15773), (162, 15839), (163, 15842), (165, 15857), (193, 16016),

Gene: Canowicakte\_19 Start: 15202, Stop: 16083, Start Num: 35

Candidate Starts for Canowicakte\_19:

(Start: 35 @15202 has 40 MA's), (58, 15295), (64, 15355), (78, 15433), (142, 15733), (148, 15769), (153, 15808), (162, 15874), (163, 15877), (165, 15892), (193, 16051),

Gene: Carpal\_19 Start: 15132, Stop: 16001, Start Num: 35

Candidate Starts for Carpal\_19:

(Start: 35 @15132 has 40 MA's), (56, 15219), (58, 15225), (129, 15600), (133, 15621), (137, 15627), (143, 15654), (144, 15666), (154, 15735), (163, 15795), (165, 15810), (174, 15858), (186, 15936), (193, 15969),

Gene: Chilliams\_88 Start: 61239, Stop: 62090, Start Num: 37

Candidate Starts for Chilliams\_88:

(Start: 37 @61239 has 4 MA's), (43, 61266), (44, 61269), (59, 61338), (71, 61440), (82, 61485), (84, 61491), (108, 61575), (140, 61731), (162, 61878), (180, 61971), (190, 62040), (196, 62067),

Gene: Cholula\_19 Start: 15177, Stop: 16046, Start Num: 35

Candidate Starts for Cholula\_19:

(Start: 35 @15177 has 40 MA's), (56, 15264), (58, 15270), (120, 15591), (133, 15666), (137, 15672), (143, 15699), (144, 15711), (163, 15840), (165, 15855), (174, 15903), (186, 15981), (193, 16014),

Gene: Cole\_19 Start: 15483, Stop: 16403, Start Num: 28

Candidate Starts for Cole\_19:

(Start: 28 @15483 has 12 MA's), (71, 15735), (74, 15750), (75, 15753), (128, 15993), (169, 16224), (170, 16230), (171, 16236), (181, 16287),

Gene: Crewmate\_18 Start: 13486, Stop: 14358, Start Num: 34

Candidate Starts for Crewmate\_18:

(Start: 34 @13486 has 7 MA's), (51, 13543), (57, 13573), (84, 13738), (115, 13870), (119, 13894), (135, 13972), (173, 14206), (193, 14326),

Gene: Dino\_19 Start: 15130, Stop: 15999, Start Num: 35

Candidate Starts for Dino\_19:

(Start: 35 @15130 has 40 MA's), (56, 15217), (58, 15223), (129, 15598), (133, 15619), (137, 15625), (143, 15652), (144, 15664), (154, 15733), (163, 15793), (165, 15808), (174, 15856), (186, 15934), (193, 15967),

Gene: Donatella\_20 Start: 15947, Stop: 16867, Start Num: 28

Candidate Starts for Donatella\_20:

(10, 15296), (14, 15428), (21, 15635), (Start: 28 @15947 has 12 MA's), (62, 16130), (71, 16199), (74, 16214), (75, 16217), (106, 16331), (128, 16457), (169, 16688), (170, 16694), (171, 16700), (181, 16751),

Gene: DunneganBoMo\_85 Start: 56806, Stop: 57657, Start Num: 36

Candidate Starts for DunneganBoMo\_85:

(36, 56806), (52, 56872), (84, 57058), (118, 57205), (121, 57232), (140, 57298), (143, 57310), (164, 57460), (165, 57463), (180, 57538), (196, 57634),

Gene: Elesar\_20 Start: 15874, Stop: 16794, Start Num: 28

Candidate Starts for Elesar\_20:

(Start: 28 @15874 has 12 MA's), (71, 16126), (74, 16141), (75, 16144), (92, 16207), (99, 16228), (112, 16282), (169, 16615), (170, 16621), (171, 16627), (181, 16678),

Gene: Ellewin\_83 Start: 56395, Stop: 57246, Start Num: 36

Candidate Starts for Ellewin\_83:

(36, 56395), (52, 56461), (84, 56647), (89, 56662), (118, 56794), (121, 56821), (131, 56863), (145, 56917), (165, 57052), (179, 57124), (196, 57223),

Gene: EvePickles\_20 Start: 15163, Stop: 16071, Start Num: 28

Candidate Starts for EvePickles\_20:

(25, 15019), (Start: 28 @15163 has 12 MA's), (42, 15238), (48, 15259), (49, 15262), (53, 15286), (56, 15298), (87, 15469), (97, 15505), (105, 15538), (106, 15541), (112, 15565), (118, 15604), (147, 15739), (171, 15904), (181, 15955),

Gene: Faja\_20 Start: 15058, Stop: 15966, Start Num: 28

Candidate Starts for Faja\_20:

(18, 14695), (19, 14701), (22, 14797), (24, 14833), (Start: 28 @15058 has 12 MA's), (48, 15154), (53, 15181), (71, 15304), (79, 15337), (83, 15352), (99, 15406), (106, 15436), (112, 15460), (147, 15634), (149, 15643), (152, 15673), (169, 15787), (171, 15799),

Gene: Fluke\_19 Start: 15173, Stop: 16042, Start Num: 35

Candidate Starts for Fluke\_19:

(Start: 35 @15173 has 40 MA's), (56, 15260), (58, 15266), (129, 15641), (133, 15662), (137, 15668), (143, 15695), (144, 15707), (163, 15836), (165, 15851), (174, 15899), (186, 15977), (193, 16010),

Gene: GUPitcher\_18 Start: 14815, Stop: 15723, Start Num: 28

Candidate Starts for GUPitcher\_18:

(Start: 28 @14815 has 12 MA's), (48, 14911), (49, 14914), (53, 14938), (56, 14950), (87, 15121), (97, 15157), (105, 15190), (106, 15193), (118, 15256), (147, 15391), (159, 15484), (171, 15556), (176, 15571), (181, 15607),

Gene: Galactica\_20 Start: 17668, Stop: 18558, Start Num: 30

Candidate Starts for Galactica\_20:

(Start: 28 @17647 has 12 MA's), (Start: 30 @17668 has 3 MA's), (Start: 31 @17674 has 8 MA's), (43, 17713), (55, 17767), (68, 17869), (76, 17908), (81, 17929), (102, 18004), (114, 18058), (173, 18385),

Gene: Glenn\_19 Start: 15182, Stop: 16051, Start Num: 35

Candidate Starts for Glenn\_19:

(Start: 35 @15182 has 40 MA's), (56, 15269), (58, 15275), (129, 15650), (133, 15671), (137, 15677), (143, 15704), (144, 15716), (154, 15785), (163, 15845), (165, 15860), (174, 15908), (186, 15986), (193, 16019),

Gene: GoldenEssence\_80 Start: 54608, Stop: 55459, Start Num: 37

Candidate Starts for GoldenEssence\_80:

(Start: 37 @54608 has 4 MA's), (84, 54860), (101, 54926), (116, 54998), (121, 55034), (135, 55088), (164, 55262), (166, 55271), (169, 55289), (196, 55436),

Gene: GoodLuckBabe\_21 Start: 15778, Stop: 16698, Start Num: 28

Candidate Starts for GoodLuckBabe\_21:

(Start: 28 @15778 has 12 MA's), (48, 15874), (63, 15979), (71, 16030), (73, 16036), (74, 16045), (75, 16048), (80, 16069), (99, 16132), (111, 16183), (112, 16186), (120, 16240), (144, 16351), (147, 16366), (149, 16375), (169, 16519), (170, 16525), (171, 16531), (176, 16546), (181, 16582), (192, 16663),

Gene: GreenHearts\_19 Start: 15265, Stop: 16137, Start Num: 35

Candidate Starts for GreenHearts\_19:

(Start: 35 @15265 has 40 MA's), (58, 15358), (64, 15418), (80, 15508), (90, 15541), (137, 15763), (142, 15787), (143, 15790), (144, 15802), (163, 15931), (165, 15946), (193, 16105),

Gene: Greenhouse\_19 Start: 15189, Stop: 16061, Start Num: 35

Candidate Starts for Greenhouse\_19:

(Start: 35 @15189 has 40 MA's), (58, 15282), (64, 15342), (80, 15432), (137, 15687), (142, 15711), (143, 15714), (144, 15726), (163, 15855), (165, 15870), (193, 16029),

Gene: Guinevere\_21 Start: 15809, Stop: 16729, Start Num: 28

Candidate Starts for Guinevere\_21:

(Start: 28 @15809 has 12 MA's), (48, 15905), (63, 16010), (71, 16061), (73, 16067), (74, 16076), (75, 16079), (80, 16100), (99, 16163), (111, 16214), (120, 16271), (144, 16382), (147, 16397), (149, 16406), (169, 16550), (171, 16562), (176, 16577), (181, 16613), (192, 16694),

Gene: Gusanita\_19 Start: 15698, Stop: 16618, Start Num: 28

Candidate Starts for Gusanita\_19:

(Start: 28 @15698 has 12 MA's), (48, 15794), (71, 15950), (73, 15956), (74, 15965), (75, 15968), (80, 15989), (110, 16100), (112, 16106), (159, 16379), (169, 16439), (170, 16445), (171, 16451), (181, 16502), (192, 16583),

Gene: Halloweekend\_19 Start: 15447, Stop: 16367, Start Num: 28

Candidate Starts for Halloweekend\_19:

(Start: 28 @15447 has 12 MA's), (71, 15699), (74, 15714), (75, 15717), (128, 15957), (169, 16188), (170, 16194), (171, 16200), (181, 16251),

Gene: Hiyaa\_22 Start: 18704, Stop: 19594, Start Num: 30

Candidate Starts for Hiyaa\_22:

(Start: 28 @18683 has 12 MA's), (Start: 30 @18704 has 3 MA's), (Start: 31 @18710 has 8 MA's), (43, 18749), (68, 18905), (70, 18920), (76, 18944), (94, 19010), (111, 19076), (141, 19214), (165, 19376), (173, 19421),

Gene: Huntingdon\_19 Start: 15175, Stop: 16047, Start Num: 35

Candidate Starts for Huntingdon\_19:

(Start: 35 @15175 has 40 MA's), (58, 15268), (80, 15418), (137, 15673), (144, 15712), (163, 15841), (165, 15856), (193, 16015),

Gene: Ichiang\_19 Start: 15464, Stop: 16384, Start Num: 28

Candidate Starts for Ichiang\_19:

(10, 14813), (14, 14945), (21, 15152), (Start: 28 @15464 has 12 MA's), (71, 15716), (74, 15731), (75, 15734), (106, 15848), (128, 15974), (169, 16205), (170, 16211), (171, 16217), (181, 16268),

Gene: Ididsumtinwong\_17 Start: 12230, Stop: 13132, Start Num: 30

Candidate Starts for Ididsumtinwong\_17:

(1, 11135), (2, 11180), (3, 11237), (4, 11255), (6, 11309), (7, 11363), (8, 11471), (9, 11534), (11, 11564), (12, 11597), (13, 11615), (16, 11741), (17, 11834), (20, 11861), (23, 11969), (Start: 28 @12209 has 12 MA's), (Start: 30 @12230 has 3 MA's), (Start: 31 @12236 has 8 MA's), (70, 12452), (71, 12455), (86, 12512), (95, 12542), (148, 12806), (153, 12845), (182, 13019),

Gene: Immaculata\_19 Start: 15176, Stop: 16045, Start Num: 35

Candidate Starts for Immaculata\_19:

(Start: 35 @15176 has 40 MA's), (56, 15263), (58, 15269), (120, 15590), (133, 15665), (137, 15671), (143, 15698), (144, 15710), (163, 15839), (165, 15854), (174, 15902), (186, 15980), (193, 16013),

Gene: IsHungry\_21 Start: 15775, Stop: 16695, Start Num: 28

Candidate Starts for IsHungry\_21:

(Start: 28 @15775 has 12 MA's), (48, 15871), (71, 16027), (73, 16033), (75, 16045), (80, 16066), (81, 16069), (106, 16159), (111, 16180), (112, 16183), (169, 16516), (170, 16522), (171, 16528), (181, 16579), (192, 16660),

Gene: Ispesia\_23 Start: 15256, Stop: 16134, Start Num: 38

Candidate Starts for Ispesia\_23:

(33, 15241), (Start: 38 @15256 has 2 MA's), (72, 15460), (97, 15553), (99, 15559), (103, 15577), (107, 15592), (130, 15712), (134, 15736), (146, 15793), (178, 16000), (183, 16036), (199, 16129),

Gene: Joann\_19 Start: 15169, Stop: 16041, Start Num: 35

Candidate Starts for Joann\_19:

(Start: 35 @15169 has 40 MA's), (58, 15262), (64, 15322), (80, 15412), (137, 15667), (142, 15691), (144, 15706), (163, 15835), (165, 15850), (193, 16009),

Gene: Julie\_21 Start: 16037, Stop: 16957, Start Num: 28

Candidate Starts for Julie\_21:

(21, 15725), (Start: 28 @16037 has 12 MA's), (62, 16220), (71, 16289), (74, 16304), (75, 16307), (92, 16370), (106, 16421), (123, 16529), (128, 16547), (169, 16778), (170, 16784), (171, 16790), (181, 16841),

Gene: Jumboset\_19 Start: 15125, Stop: 15994, Start Num: 35

Candidate Starts for Jumboset\_19:

(Start: 35 @15125 has 40 MA's), (56, 15212), (58, 15218), (129, 15593), (133, 15614), (137, 15620), (143, 15647), (144, 15659), (163, 15788), (165, 15803), (174, 15851), (186, 15929), (193, 15962),

Gene: KSunshine22\_86 Start: 58028, Stop: 58879, Start Num: 36

Candidate Starts for KSunshine22\_86:

(36, 58028), (52, 58094), (84, 58280), (89, 58295), (118, 58427), (121, 58454), (131, 58496), (145, 58550), (165, 58685), (179, 58757), (196, 58856),

Gene: Kalizoi\_19 Start: 15124, Stop: 15993, Start Num: 35

Candidate Starts for Kalizoi\_19:

(Start: 35 @15124 has 40 MA's), (56, 15211), (58, 15217), (129, 15592), (133, 15613), (137, 15619), (143, 15646), (144, 15658), (154, 15727), (163, 15787), (165, 15802), (174, 15850), (186, 15928), (193, 15961),

Gene: KeAlii\_17 Start: 13071, Stop: 13943, Start Num: 34

Candidate Starts for KeAlii\_17:

(Start: 34 @13071 has 7 MA's), (51, 13128), (84, 13323), (117, 13470), (119, 13479), (125, 13515), (133, 13554), (148, 13626), (173, 13791),

Gene: Keanu\_22 Start: 18751, Stop: 19635, Start Num: 31

Candidate Starts for Keanu\_22:

(Start: 31 @18751 has 8 MA's), (43, 18790), (68, 18946), (76, 18985), (93, 19048), (95, 19054), (102, 19081), (103, 19084), (111, 19117), (114, 19135), (115, 19141), (122, 19192), (141, 19255), (161, 19396),

Gene: Kihatsu\_22 Start: 16131, Stop: 17051, Start Num: 28

Candidate Starts for Kihatsu\_22:

(Start: 28 @16131 has 12 MA's), (48, 16227), (63, 16332), (71, 16383), (74, 16398), (75, 16401), (80, 16422), (88, 16446), (111, 16536), (112, 16539), (120, 16593), (144, 16704), (147, 16719), (149, 16728), (169, 16872), (170, 16878), (171, 16884), (176, 16899), (181, 16935), (192, 17016),

Gene: Korra\_20 Start: 15130, Stop: 15999, Start Num: 35

Candidate Starts for Korra\_20:

(Start: 35 @15130 has 40 MA's), (56, 15217), (58, 15223), (120, 15544), (133, 15619), (137, 15625), (144, 15664), (154, 15733), (163, 15793), (165, 15808), (174, 15856), (186, 15934), (193, 15967),

Gene: Kukla\_18 Start: 14545, Stop: 15453, Start Num: 28

Candidate Starts for Kukla\_18:

(15, 14086), (18, 14185), (19, 14191), (22, 14287), (26, 14437), (Start: 28 @14545 has 12 MA's), (48, 14641), (53, 14668), (71, 14791), (83, 14839), (91, 14866), (97, 14887), (98, 14890), (99, 14893), (103, 14911), (112, 14947), (134, 15070), (147, 15121), (149, 15130), (158, 15205), (171, 15286), (192, 15418),

Gene: Lakshmi\_19 Start: 15194, Stop: 16066, Start Num: 35

Candidate Starts for Lakshmi\_19:

(Start: 35 @15194 has 40 MA's), (58, 15287), (64, 15347), (80, 15437), (137, 15692), (142, 15716), (143, 15719), (144, 15731), (163, 15860), (165, 15875), (193, 16034),

Gene: Lenoxika\_21 Start: 15805, Stop: 16725, Start Num: 28

Candidate Starts for Lenoxika\_21:

(Start: 28 @15805 has 12 MA's), (48, 15901), (63, 16006), (71, 16057), (73, 16063), (74, 16072), (75, 16075), (80, 16096), (99, 16159), (111, 16210), (120, 16267), (144, 16378), (147, 16393), (149, 16402), (169, 16546), (171, 16558), (176, 16573), (181, 16609), (192, 16690),

Gene: LeoJr\_91 Start: 60077, Stop: 60928, Start Num: 37

Candidate Starts for LeoJr\_91:

(Start: 37 @60077 has 4 MA's), (41, 60098), (48, 60122), (52, 60143), (89, 60344), (97, 60377), (99, 60383), (121, 60503), (143, 60581), (153, 60653), (179, 60806), (196, 60905),

Gene: Lishka\_16 Start: 12194, Stop: 13096, Start Num: 30

Candidate Starts for Lishka\_16:

(1, 11099), (2, 11144), (3, 11201), (4, 11219), (5, 11246), (6, 11273), (7, 11327), (8, 11435), (9, 11498), (11, 11528), (12, 11561), (13, 11579), (16, 11705), (17, 11798), (20, 11825), (23, 11933), (Start: 28 @12173 has 12 MA's), (Start: 30 @12194 has 3 MA's), (Start: 31 @12200 has 8 MA's), (70, 12416), (71, 12419), (86, 12476), (95, 12506), (148, 12770), (153, 12809), (182, 12983),

Gene: Litotes\_19 Start: 15152, Stop: 16033, Start Num: 35

Candidate Starts for Litotes\_19:

(Start: 35 @15152 has 40 MA's), (58, 15245), (64, 15305), (78, 15383), (142, 15683), (148, 15719), (153, 15758), (162, 15824), (163, 15827), (165, 15842), (193, 16001),

Gene: MeganNoll\_19 Start: 15182, Stop: 16051, Start Num: 35

Candidate Starts for MeganNoll\_19:

(Start: 35 @15182 has 40 MA's), (56, 15269), (58, 15275), (129, 15650), (133, 15671), (137, 15677), (143, 15704), (144, 15716), (163, 15845), (165, 15860), (174, 15908), (186, 15986), (193, 16019),

Gene: Mimi\_91 Start: 60159, Stop: 61010, Start Num: 37

Candidate Starts for Mimi\_91:

(Start: 37 @60159 has 4 MA's), (84, 60411), (101, 60477), (116, 60549), (121, 60585), (135, 60639), (164, 60813), (166, 60822), (169, 60840), (196, 60987),

Gene: Misaeng\_19 Start: 15239, Stop: 16111, Start Num: 35

Candidate Starts for Misaeng\_19:

(Start: 35 @15239 has 40 MA's), (58, 15332), (80, 15482), (100, 15551), (137, 15737), (138, 15743), (144, 15776), (149, 15803), (163, 15905), (165, 15920), (193, 16079),

Gene: Mojorita\_17 Start: 12339, Stop: 13232, Start Num: 31

Candidate Starts for Mojorita\_17:

(Start: 31 @12339 has 8 MA's), (32, 12348), (71, 12555), (94, 12639), (148, 12906), (157, 12972), (161, 13002), (182, 13119),

Gene: MrGloopy\_19 Start: 15116, Stop: 15985, Start Num: 35

Candidate Starts for MrGloopy\_19:

(Start: 35 @15116 has 40 MA's), (56, 15203), (58, 15209), (129, 15584), (133, 15605), (137, 15611), (143, 15638), (144, 15650), (163, 15779), (165, 15794), (174, 15842), (186, 15920), (193, 15953),

Gene: Nandita\_21 Start: 15809, Stop: 16729, Start Num: 28

Candidate Starts for Nandita\_21:

(Start: 28 @15809 has 12 MA's), (48, 15905), (63, 16010), (71, 16061), (73, 16067), (74, 16076), (75, 16079), (80, 16100), (99, 16163), (111, 16214), (120, 16271), (144, 16382), (147, 16397), (149, 16406), (169, 16550), (171, 16562), (176, 16577), (181, 16613), (192, 16694),

Gene: Nubia\_19 Start: 15154, Stop: 16026, Start Num: 35

Candidate Starts for Nubia\_19:

(Start: 35 @15154 has 40 MA's), (58, 15247), (64, 15307), (80, 15397), (137, 15652), (142, 15676), (143, 15679), (144, 15691), (163, 15820), (165, 15835), (193, 15994),

Gene: ObiToo\_17 Start: 13223, Stop: 14095, Start Num: 34

Candidate Starts for ObiToo\_17:

(Start: 34 @13223 has 7 MA's), (51, 13280), (57, 13310), (84, 13475), (115, 13607), (119, 13631), (135, 13709), (173, 13943), (193, 14063),

Gene: OscarSo\_27 Start: 17801, Stop: 18682, Start Num: 38

Candidate Starts for OscarSo\_27:

(33, 17786), (Start: 38 @17801 has 2 MA's), (52, 17864), (54, 17876), (97, 18098), (107, 18137), (126, 18245), (130, 18257), (134, 18281), (181, 18560),

Gene: Oxynfrius\_19 Start: 15167, Stop: 16039, Start Num: 35

Candidate Starts for Oxynfrius\_19:

(Start: 35 @15167 has 40 MA's), (58, 15260), (64, 15320), (80, 15410), (137, 15665), (143, 15692), (144, 15704), (163, 15833), (165, 15848), (193, 16007),

Gene: Panchaali\_88 Start: 57905, Stop: 58756, Start Num: 37

Candidate Starts for Panchaali\_88:

(Start: 37 @57905 has 4 MA's), (41, 57926), (73, 58112), (84, 58157), (99, 58211), (121, 58331), (135, 58385), (160, 58532), (166, 58568), (177, 58616), (180, 58637), (196, 58733),

Gene: PapayaSalad\_17 Start: 12206, Stop: 13102, Start Num: 31

Candidate Starts for PapayaSalad\_17:

(17, 11804), (20, 11831), (23, 11939), (Start: 28 @12179 has 12 MA's), (Start: 30 @12200 has 3 MA's), (Start: 31 @12206 has 8 MA's), (55, 12305), (70, 12422), (71, 12425), (86, 12482), (95, 12512), (153, 12815), (182, 12989),

Gene: PartyCup\_19 Start: 15199, Stop: 16080, Start Num: 35

Candidate Starts for PartyCup\_19:

(Start: 35 @15199 has 40 MA's), (58, 15292), (64, 15352), (78, 15430), (142, 15730), (148, 15766), (153, 15805), (162, 15871), (163, 15874), (165, 15889), (193, 16048),

Gene: Patbob\_92 Start: 61031, Stop: 61882, Start Num: 37

Candidate Starts for Patbob\_92:

(Start: 37 @61031 has 4 MA's), (84, 61283), (101, 61349), (116, 61421), (121, 61457), (135, 61511), (164, 61685), (166, 61694), (169, 61712), (196, 61859),

Gene: Phrampa\_85 Start: 58344, Stop: 59195, Start Num: 37

Candidate Starts for Phrampa\_85:

(Start: 37 @58344 has 4 MA's), (69, 58530), (84, 58596), (101, 58662), (121, 58770), (122, 58779), (127, 58797), (135, 58824), (154, 58929), (166, 59007), (167, 59019), (172, 59043), (196, 59172),

Gene: Picard\_17 Start: 12333, Stop: 13226, Start Num: 31

Candidate Starts for Picard\_17:

(Start: 31 @12333 has 8 MA's), (32, 12342), (71, 12549), (94, 12633), (148, 12900), (157, 12966), (161, 12996), (182, 13113),

Gene: Popper\_19 Start: 15336, Stop: 16256, Start Num: 28

Candidate Starts for Popper\_19:

(Start: 28 @15336 has 12 MA's), (71, 15588), (73, 15594), (75, 15606), (112, 15744), (134, 15873), (165, 16053), (170, 16083), (171, 16089),

Gene: Potatoes\_19 Start: 15177, Stop: 16046, Start Num: 35

Candidate Starts for Potatoes\_19:

(Start: 35 @15177 has 40 MA's), (56, 15264), (58, 15270), (120, 15591), (133, 15666), (137, 15672), (143, 15699), (144, 15711), (163, 15840), (165, 15855), (174, 15903), (186, 15981), (193, 16014),

Gene: QuinnAvery\_21 Start: 15821, Stop: 16741, Start Num: 28

Candidate Starts for QuinnAvery\_21:

(Start: 28 @15821 has 12 MA's), (71, 16073), (74, 16088), (75, 16091), (128, 16331), (169, 16562), (170, 16568), (171, 16574), (181, 16625),

Gene: RAP15\_19 Start: 15182, Stop: 16051, Start Num: 35

Candidate Starts for RAP15\_19:

(Start: 35 @15182 has 40 MA's), (56, 15269), (58, 15275), (129, 15650), (133, 15671), (137, 15677), (143, 15704), (144, 15716), (163, 15845), (165, 15860), (174, 15908), (186, 15986), (193, 16019),

Gene: Racecar\_92 Start: 60812, Stop: 61663, Start Num: 37

Candidate Starts for Racecar\_92:

(Start: 37 @60812 has 4 MA's), (84, 61064), (101, 61130), (116, 61202), (121, 61238), (135, 61292), (164, 61466), (166, 61475), (169, 61493), (196, 61640),

Gene: RcigaStruga\_19 Start: 15175, Stop: 16047, Start Num: 35

Candidate Starts for RcigaStruga\_19:

(Start: 35 @15175 has 40 MA's), (58, 15268), (80, 15418), (137, 15673), (144, 15712), (163, 15841), (165, 15856), (193, 16015),

Gene: Reedo\_17 Start: 13087, Stop: 13962, Start Num: 34

Candidate Starts for Reedo\_17:

(Start: 34 @13087 has 7 MA's), (51, 13147), (84, 13342), (119, 13498), (125, 13534), (173, 13810),

Gene: ReginaGlobina\_91 Start: 60830, Stop: 61681, Start Num: 37

Candidate Starts for ReginaGlobina\_91:

(Start: 37 @60830 has 4 MA's), (41, 60851), (48, 60875), (52, 60896), (89, 61097), (97, 61130), (99, 61136), (121, 61256), (143, 61334), (153, 61406), (179, 61559), (196, 61658),

Gene: Riverdale\_19 Start: 15112, Stop: 15981, Start Num: 35

Candidate Starts for Riverdale\_19:

(Start: 35 @15112 has 40 MA's), (56, 15199), (58, 15205), (120, 15526), (129, 15580), (133, 15601), (137, 15607), (143, 15634), (144, 15646), (154, 15715), (163, 15775), (165, 15790), (174, 15838), (186, 15916), (193, 15949),

Gene: Rockabye\_94 Start: 61799, Stop: 62449, Start Num: 71

Candidate Starts for Rockabye\_94:

(Start: 37 @61598 has 4 MA's), (43, 61625), (44, 61628), (71, 61799), (82, 61844), (84, 61850), (108, 61934), (109, 61937), (140, 62090), (154, 62183), (162, 62237), (180, 62330), (188, 62390), (190, 62399), (196, 62426),

Gene: Rozby\_19 Start: 15113, Stop: 15982, Start Num: 35

Candidate Starts for Rozby\_19:

(Start: 35 @15113 has 40 MA's), (56, 15200), (58, 15206), (120, 15527), (129, 15581), (133, 15602), (137, 15608), (143, 15635), (144, 15647), (154, 15716), (163, 15776), (165, 15791), (174, 15839), (186, 15917), (193, 15950),

Gene: Ryan\_21 Start: 15955, Stop: 16875, Start Num: 28

Candidate Starts for Ryan\_21:

(Start: 28 @15955 has 12 MA's), (48, 16051), (63, 16156), (71, 16207), (73, 16213), (74, 16222), (75, 16225), (80, 16246), (99, 16309), (111, 16360), (112, 16363), (120, 16417), (147, 16543), (149, 16552), (169, 16696), (170, 16702), (171, 16708), (176, 16723), (181, 16759), (192, 16840),

Gene: SJReid\_97 Start: 60651, Stop: 61502, Start Num: 37

Candidate Starts for SJReid\_97:

(Start: 37 @60651 has 4 MA's), (44, 60681), (59, 60750), (71, 60852), (82, 60897), (84, 60903), (121, 61077), (140, 61143), (151, 61215), (154, 61236), (167, 61326), (190, 61452), (196, 61479),



Gene: SV1\_17 Start: 12442, Stop: 13338, Start Num: 31

Candidate Starts for SV1\_17:

(Start: 28 @12415 has 12 MA's), (Start: 30 @12436 has 3 MA's), (Start: 31 @12442 has 8 MA's), (65, 12619), (66, 12622), (70, 12658), (71, 12661), (86, 12718), (95, 12748), (149, 13018), (173, 13174), (182, 13225),

Gene: Sashimi\_21 Start: 15164, Stop: 16072, Start Num: 28

Candidate Starts for Sashimi\_21:

(25, 15020), (Start: 28 @15164 has 12 MA's), (48, 15260), (53, 15287), (71, 15410), (79, 15443), (83, 15458), (99, 15512), (106, 15542), (107, 15545), (112, 15566), (147, 15740), (149, 15749), (152, 15779), (158, 15824), (162, 15851), (169, 15893), (170, 15899), (171, 15905),

Gene: Savage2526\_19 Start: 15176, Stop: 16045, Start Num: 35

Candidate Starts for Savage2526\_19:

(Start: 35 @15176 has 40 MA's), (56, 15263), (58, 15269), (129, 15644), (133, 15665), (137, 15671), (143, 15698), (144, 15710), (163, 15839), (165, 15854), (174, 15902), (186, 15980), (193, 16013),

Gene: Schism\_21 Start: 15809, Stop: 16729, Start Num: 28

Candidate Starts for Schism\_21:

(Start: 28 @15809 has 12 MA's), (48, 15905), (63, 16010), (71, 16061), (73, 16067), (74, 16076), (75, 16079), (80, 16100), (99, 16163), (111, 16214), (120, 16271), (144, 16382), (147, 16397), (149, 16406), (169, 16550), (171, 16562), (176, 16577), (181, 16613), (192, 16694),

Gene: Scuttle\_19 Start: 15181, Stop: 16050, Start Num: 35

Candidate Starts for Scuttle\_19:

(Start: 35 @15181 has 40 MA's), (56, 15268), (58, 15274), (129, 15649), (133, 15670), (137, 15676), (144, 15715), (163, 15844), (165, 15859), (174, 15907), (186, 15985), (193, 16018),

Gene: Shambre1\_18 Start: 14673, Stop: 15542, Start Num: 35

Candidate Starts for Shambre1\_18:

(Start: 35 @14673 has 40 MA's), (47, 14718), (53, 14751), (73, 14883), (84, 14928), (85, 14931), (88, 14940), (119, 15084), (132, 15159), (158, 15309), (174, 15402), (186, 15480), (192, 15507), (195, 15516),

Gene: Snek\_17 Start: 12117, Stop: 12995, Start Num: 34

Candidate Starts for Snek\_17:

(Start: 34 @12117 has 7 MA's), (40, 12135), (84, 12375), (88, 12387), (119, 12531), (137, 12612), (148, 12678),

Gene: Spartoi\_15 Start: 11996, Stop: 12856, Start Num: 38

Candidate Starts for Spartoi\_15:

(Start: 38 @11996 has 2 MA's), (49, 12041), (77, 12218), (79, 12227), (104, 12320), (154, 12593), (185, 12788), (187, 12794), (195, 12830),

Gene: Spocter\_22 Start: 18698, Stop: 19582, Start Num: 31

Candidate Starts for Spocter\_22:

(Start: 28 @18671 has 12 MA's), (Start: 30 @18692 has 3 MA's), (Start: 31 @18698 has 8 MA's), (43, 18737), (68, 18893), (70, 18908), (76, 18932), (94, 18998), (95, 19001), (111, 19064), (141, 19202), (173, 19409),

Gene: Suppi\_19 Start: 15202, Stop: 16083, Start Num: 35

Candidate Starts for Suppi\_19:

(Start: 35 @15202 has 40 MA's), (58, 15295), (64, 15355), (78, 15433), (142, 15733), (148, 15769), (153, 15808), (162, 15874), (163, 15877), (165, 15892), (193, 16051),

Gene: TMaxx\_18 Start: 11767, Stop: 12675, Start Num: 28

Candidate Starts for TMaxx\_18:

(27, 11761), (Start: 28 @11767 has 12 MA's), (29, 11779), (56, 11902), (105, 12142), (111, 12166), (130, 12268), (171, 12508), (184, 12595), (198, 12658),

Gene: Talia1610\_91 Start: 60177, Stop: 61028, Start Num: 37

Candidate Starts for Talia1610\_91:

(Start: 37 @60177 has 4 MA's), (84, 60429), (101, 60495), (116, 60567), (121, 60603), (135, 60657), (164, 60831), (166, 60840), (169, 60858), (196, 61005),

Gene: TattModd\_19 Start: 15175, Stop: 16044, Start Num: 35

Candidate Starts for TattModd\_19:

(Start: 35 @15175 has 40 MA's), (56, 15262), (58, 15268), (64, 15328), (129, 15643), (133, 15664), (137, 15670), (143, 15697), (144, 15709), (163, 15838), (165, 15853), (174, 15901), (186, 15979), (193, 16012),

Gene: TripleJ\_19 Start: 15465, Stop: 16373, Start Num: 28

Candidate Starts for TripleJ\_19:

(Start: 28 @15465 has 12 MA's), (42, 15540), (48, 15561), (49, 15564), (53, 15588), (56, 15600), (87, 15771), (97, 15807), (105, 15840), (106, 15843), (112, 15867), (118, 15906), (147, 16041), (159, 16134), (171, 16206), (176, 16221),

Gene: Tweety19\_17 Start: 12116, Stop: 12994, Start Num: 34

Candidate Starts for Tweety19\_17:

(Start: 34 @12116 has 7 MA's), (40, 12134), (84, 12374), (88, 12386), (119, 12530), (137, 12611), (148, 12677),

Gene: VResidence\_17 Start: 13143, Stop: 14015, Start Num: 34

Candidate Starts for VResidence\_17:

(Start: 34 @13143 has 7 MA's), (51, 13200), (84, 13395), (99, 13449), (117, 13542), (119, 13551), (133, 13626), (148, 13698), (155, 13755), (173, 13863),

Gene: ValentiniPuff\_68 Start: 36653, Stop: 37528, Start Num: 39

Candidate Starts for ValentiniPuff\_68:

(Start: 39 @36653 has 1 MA's), (46, 36680), (50, 36689), (60, 36761), (106, 36974), (107, 36977), (113, 37004), (136, 37136), (155, 37262), (168, 37343), (186, 37457),

Gene: Vallejo\_19 Start: 15114, Stop: 15983, Start Num: 35

Candidate Starts for Vallejo\_19:

(Start: 35 @15114 has 40 MA's), (56, 15201), (58, 15207), (64, 15267), (120, 15528), (129, 15582), (133, 15603), (137, 15609), (143, 15636), (144, 15648), (163, 15777), (165, 15792), (174, 15840), (186, 15918), (193, 15951),

Gene: WaddleDee\_85 Start: 56661, Stop: 57512, Start Num: 36

Candidate Starts for WaddleDee\_85:

(36, 56661), (52, 56727), (84, 56913), (121, 57087), (140, 57153), (143, 57165), (164, 57315), (165, 57318), (180, 57393), (196, 57489),

Gene: Wawa\_19 Start: 15151, Stop: 16020, Start Num: 35

Candidate Starts for Wawa\_19:

(Start: 35 @15151 has 40 MA's), (56, 15238), (58, 15244), (120, 15565), (129, 15619), (133, 15640), (137, 15646), (144, 15685), (154, 15754), (163, 15814), (165, 15829), (174, 15877), (175, 15880), (186, 15955), (193, 15988),

Gene: Wayne\_19 Start: 15248, Stop: 16129, Start Num: 35

Candidate Starts for Wayne\_19:

(Start: 35 @15248 has 40 MA's), (58, 15341), (64, 15401), (78, 15479), (142, 15779), (148, 15815), (153, 15854), (162, 15920), (163, 15923), (165, 15938), (193, 16097),

Gene: Wyvern\_31 Start: 16066, Stop: 16947, Start Num: 38

Candidate Starts for Wyvern\_31:

(33, 16051), (Start: 38 @16066 has 2 MA's), (72, 16273), (95, 16360), (97, 16366), (99, 16372), (107, 16405), (124, 16507), (130, 16525), (146, 16606), (178, 16813), (183, 16849), (191, 16897), (194, 16915),

Gene: Zaheer\_21 Start: 16044, Stop: 16964, Start Num: 28

Candidate Starts for Zaheer\_21:

(Start: 28 @16044 has 12 MA's), (48, 16140), (63, 16245), (71, 16296), (73, 16302), (74, 16311), (75, 16314), (80, 16335), (99, 16398), (111, 16449), (112, 16452), (120, 16506), (147, 16632), (149, 16641), (169, 16785), (170, 16791), (171, 16797), (176, 16812), (181, 16848), (192, 16929),

Gene: Zorro\_19 Start: 15130, Stop: 15999, Start Num: 35

Candidate Starts for Zorro\_19:

(Start: 35 @15130 has 40 MA's), (56, 15217), (58, 15223), (129, 15598), (133, 15619), (137, 15625), (143, 15652), (144, 15664), (154, 15733), (163, 15793), (165, 15808), (174, 15856), (186, 15934), (193, 15967),