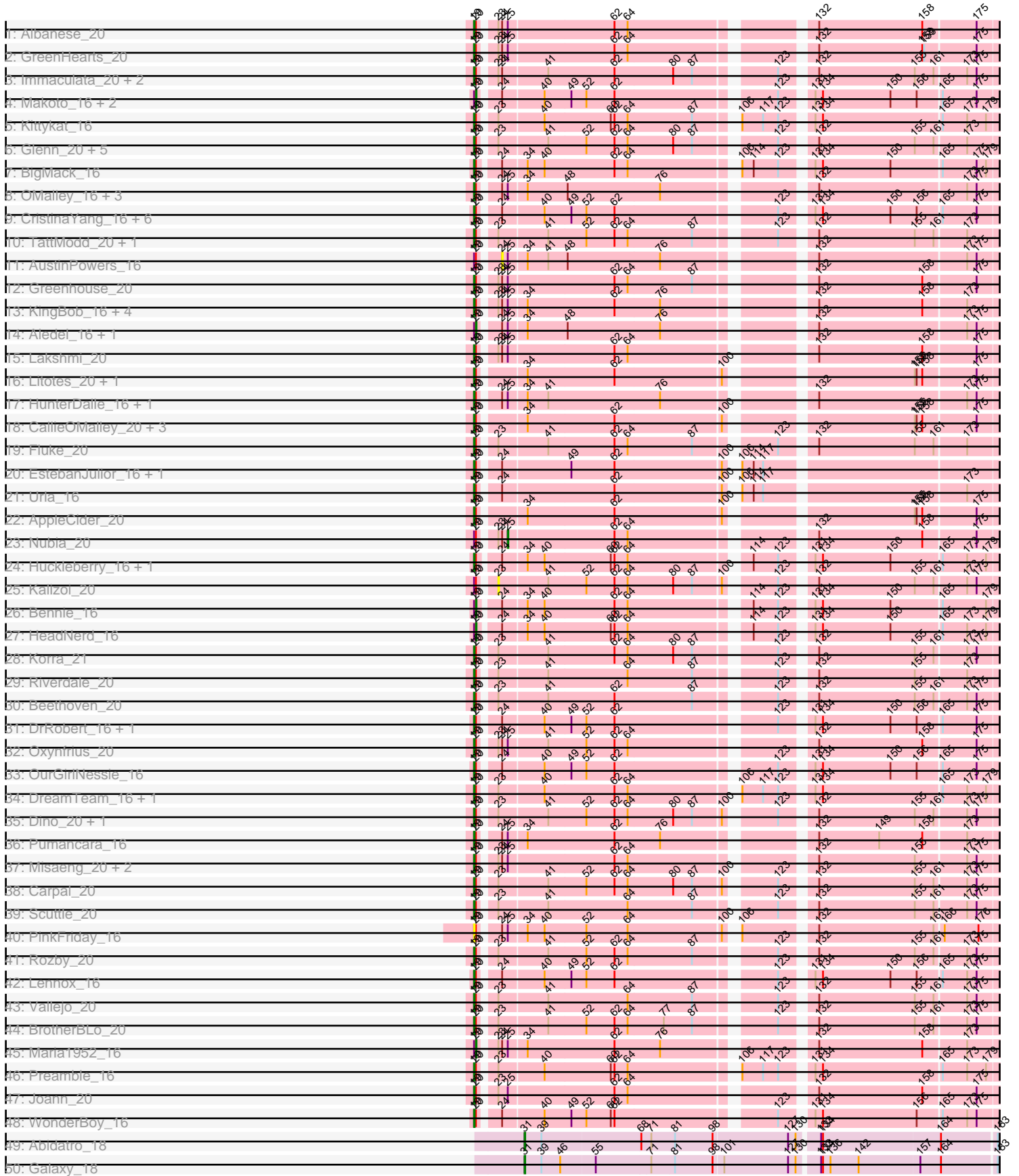
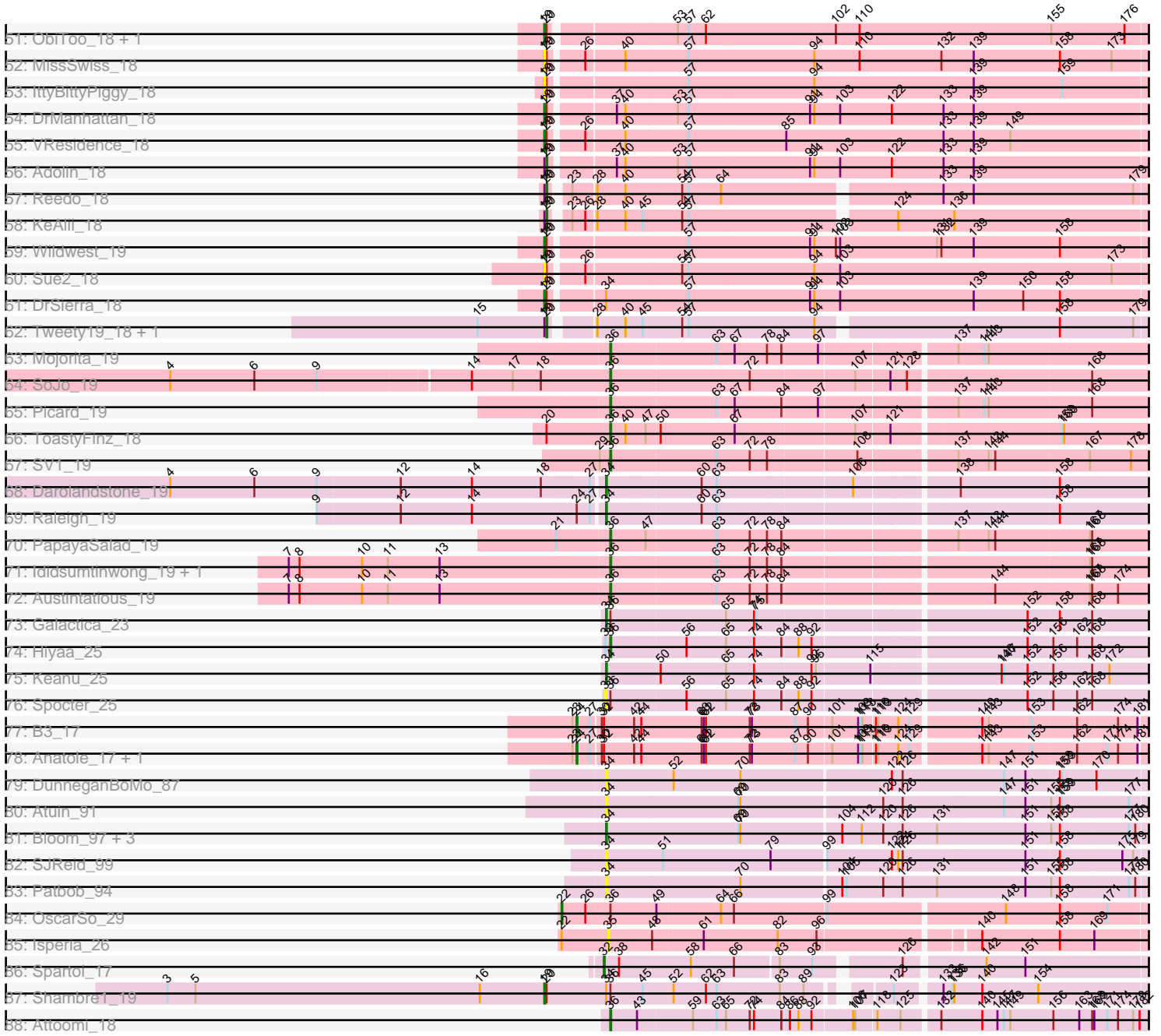


# Zoomed Pham 163435



# Zoomed Pham 163435



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 163435 Report

This analysis was run 04/28/24 on database version 559.

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 163435 has 131 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Albanese\_20
- Track 2 : GreenHearts\_20
- Track 3 : Immaculata\_20, Potatoes\_20, Cholula\_20
- Track 4 : Makoto\_16, ChewChew\_16, Pterodactyl\_16
- Track 5 : Kittykat\_16
- Track 6 : Glenn\_20, RAP15\_20, MeganNoll\_20, Savage2526\_20, MrGloopy\_20, Jumboset\_20
- Track 7 : BigMack\_16
- Track 8 : OMalley\_16, Eunoia\_16, Riovina\_16, Supakev\_16
- Track 9 : CristinaYang\_16, Lasagna\_16, LilStuart\_16, Nancia\_16, PitaDog\_16, Bodacious\_16, Lucy\_16
- Track 10 : TattModd\_20, Wawa\_20
- Track 11 : AustinPowers\_16
- Track 12 : Greenhouse\_20
- Track 13 : KingBob\_16, Herb\_16, Sergei\_16, Temper16\_16, Daiboju\_16
- Track 14 : Aledel\_16, Chridison\_16
- Track 15 : Lakshmi\_20
- Track 16 : Litotes\_20, Wayne\_20
- Track 17 : HunterDalle\_16, Vulture\_16
- Track 18 : CallieOMalley\_20, Suppi\_20, Canowicakte\_20, PartyCup\_20
- Track 19 : Fluke\_20
- Track 20 : EstebanJulior\_16, MamaPearl\_16
- Track 21 : Urla\_16
- Track 22 : AppleCider\_20
- Track 23 : Nubia\_20
- Track 24 : Huckleberry\_16, Moki\_16
- Track 25 : Kalizoi\_20
- Track 26 : Bennie\_16
- Track 27 : HeadNerd\_16
- Track 28 : Korra\_21
- Track 29 : Riverdale\_20
- Track 30 : Beethoven\_20
- Track 31 : DrRobert\_16, Christian\_16

- Track 32 : Oxynfrius\_20
- Track 33 : OurGirlNessie\_16
- Track 34 : DreamTeam\_16, Gisselle\_16
- Track 35 : Dino\_20, Zorro\_20
- Track 36 : Pumancara\_16
- Track 37 : Misaeng\_20, RcigaStruga\_20, Huntingdon\_20
- Track 38 : Carpal\_20
- Track 39 : Scuttle\_20
- Track 40 : PinkFriday\_16
- Track 41 : Rozby\_20
- Track 42 : Lennox\_16
- Track 43 : Vallejo\_20
- Track 44 : BrotherBLo\_20
- Track 45 : Maria1952\_16
- Track 46 : Preamble\_16
- Track 47 : Joann\_20
- Track 48 : WonderBoy\_16
- Track 49 : Abidatro\_18
- Track 50 : Galaxy\_18
- Track 51 : ObiToo\_18, Crewmate\_19
- Track 52 : MissSwiss\_18
- Track 53 : IttyBittyPiggy\_18
- Track 54 : DrManhattan\_18
- Track 55 : VResidence\_18
- Track 56 : Adolin\_18
- Track 57 : Reedo\_18
- Track 58 : KeAlii\_18
- Track 59 : Wildwest\_19
- Track 60 : Sue2\_18
- Track 61 : DrSierra\_18
- Track 62 : Tweety19\_18, Snek\_18
- Track 63 : Mojorita\_19
- Track 64 : SoJo\_19
- Track 65 : Picard\_19
- Track 66 : ToastyFinz\_18
- Track 67 : SV1\_19
- Track 68 : Darolandstone\_19
- Track 69 : Raleigh\_19
- Track 70 : PapayaSalad\_19
- Track 71 : Ididsumtinwong\_19, Bioscum\_19
- Track 72 : Austintatious\_19
- Track 73 : Galactica\_23
- Track 74 : Hiya\_25
- Track 75 : Keanu\_25
- Track 76 : Spocter\_25
- Track 77 : B3\_17
- Track 78 : Anatole\_17, E1\_17
- Track 79 : DunneganBoMo\_87
- Track 80 : Atuin\_91
- Track 81 : Bloom\_97, Mimi\_99, Racecar\_94, Talia1610\_96
- Track 82 : SJReid\_99
- Track 83 : Patbob\_94
- Track 84 : OscarSo\_29

- Track 85 : Isperia\_26
- Track 86 : Spartoi\_17
- Track 87 : Shambre1\_19
- Track 88 : Attoomi\_18

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

The start number called the most often in the published annotations is 19, it was called in 78 of the 115 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Albanese\_20, AppleCider\_20, Beethoven\_20, BigMack\_16, Bodacious\_16, BrotherBLo\_20, CallieOMalley\_20, Canowicakte\_20, Carpal\_20, Cholula\_20, Christian\_16, Crewmate\_19, CristinaYang\_16, Daiboju\_16, Dino\_20, DrManhattan\_18, DrRobert\_16, DrSierra\_18, DreamTeam\_16, EstebanJulior\_16, Eunoia\_16, Fluke\_20, Gisselle\_16, Glenn\_20, GreenHearts\_20, Greenhouse\_20, Herb\_16, Huckleberry\_16, HunterDalle\_16, Huntingdon\_20, Immaculata\_20, IttyBittyPiggy\_18, Joann\_20, Jumboset\_20, KingBob\_16, Kittykat\_16, Korra\_21, Lakshmi\_20, Lasagna\_16, Lennox\_16, LilStuart\_16, Litotes\_20, Lucy\_16, MamaPearl\_16, MeganNoll\_20, Misaeng\_20, MissSwiss\_18, Moki\_16, MrGloopy\_20, Nancia\_16, OMalley\_16, ObiToo\_18, OurGirlNessie\_16, Oxynfrius\_20, PartyCup\_20, PinkFriday\_16, PitaDog\_16, Potatoes\_20, Preamble\_16, Pumancara\_16, RAP15\_20, RcigaStruga\_20, Riovina\_16, Riverdale\_20, Rozby\_20, Savage2526\_20, Scuttle\_20, Sergei\_16, Shambre1\_19, Sue2\_18, Supakev\_16, Suppi\_20, TattModd\_20, Temper16\_16, Urla\_16, VResidence\_18, Vallejo\_20, Vulture\_16, Wawa\_20, Wayne\_20, Wildwest\_19, WonderBoy\_16, Zorro\_20,

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

- Adolin\_18, Aledel\_16, AustinPowers\_16, Bennie\_16, ChewChew\_16, Chridison\_16, HeadNerd\_16, Kalizoi\_20, KeAlii\_18, Makoto\_16, Maria1952\_16, Nubia\_20, Pterodactyl\_16, Reedo\_18, Snek\_18, Tweety19\_18,

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

- Abidatro\_18, Anatole\_17, Attoomi\_18, Atuin\_91, Austintatious\_19, B3\_17, Bioscum\_19, Bloom\_97, Darolandstone\_19, DunneganBoMo\_87, E1\_17, Galactica\_23, Galaxy\_18, Hiyaa\_25, Ididsumtinwong\_19, Isperia\_26, Keanu\_25, Mimi\_99, Mojorita\_19, OscarSo\_29, PapayaSalad\_19, Patbob\_94, Picard\_19, Racecar\_94, Raleigh\_19, SJReid\_99, SV1\_19, SoJo\_19, Spartoi\_17, Spocter\_25, Talia1610\_96, ToastyFinz\_18,

### **Summary by start number:**

Start 19:

- Found in 99 of 131 ( 75.6% ) of genes in pham
- Manual Annotations of this start: 78 of 115
- Called 83.8% of time when present
- Phage (with cluster) where this start called: Albanese\_20 (AK), AppleCider\_20 (AK), Beethoven\_20 (AK), BigMack\_16 (AK), Bodacious\_16 (AK), BrotherBLo\_20 (AK), CallieOMalley\_20 (AK), Canowicakte\_20 (AK), Carpal\_20 (AK), Cholula\_20 (AK), Christian\_16 (AK), Crewmate\_19 (AZ1), CristinaYang\_16 (AK), Daiboju\_16 (AK),

Dino\_20 (AK), DrManhattan\_18 (AZ1), DrRobert\_16 (AK), DrSierra\_18 (AZ1), DreamTeam\_16 (AK), EstebanJulior\_16 (AK), Eunoia\_16 (AK), Fluke\_20 (AK), Gisselle\_16 (AK), Glenn\_20 (AK), GreenHearts\_20 (AK), Greenhouse\_20 (AK), Herb\_16 (AK), Huckleberry\_16 (AK), HunterDalle\_16 (AK), Huntingdon\_20 (AK), Immaculata\_20 (AK), IttyBittyPiggy\_18 (AZ1), Joann\_20 (AK), Jumboset\_20 (AK), KingBob\_16 (AK), Kittykat\_16 (AK), Korra\_21 (AK), Lakshmi\_20 (AK), Lasagna\_16 (AK), Lennox\_16 (AK), LilStuart\_16 (AK), Litotes\_20 (AK), Lucy\_16 (AK), MamaPearl\_16 (AK), MeganNoll\_20 (AK), Misaeng\_20 (AK), MissSwiss\_18 (AZ1), Moki\_16 (AK), MrGloopy\_20 (AK), Nancia\_16 (AK), OMalley\_16 (AK), ObiToo\_18 (AZ1), OurGirlNessie\_16 (AK), Oxynfrius\_20 (AK), PartyCup\_20 (AK), PinkFriday\_16 (AK), PitaDog\_16 (AK), Potatoes\_20 (AK), Preamble\_16 (AK), Pumancara\_16 (AK), RAP15\_20 (AK), RcigaStruga\_20 (AK), Rivovina\_16 (AK), Riverdale\_20 (AK), Rozby\_20 (AK), Savage2526\_20 (AK), Scuttle\_20 (AK), Sergei\_16 (AK), Shambre1\_19 (singleton), Sue2\_18 (AZ1), Supakev\_16 (AK), Suppi\_20 (AK), TattModd\_20 (AK), Temper16\_16 (AK), Urla\_16 (AK), VResidence\_18 (AZ1), Vallejo\_20 (AK), Vulture\_16 (AK), Wawa\_20 (AK), Wayne\_20 (AK), Wildwest\_19 (AZ1), WonderBoy\_16 (AK), Zorro\_20 (AK),

Start 20:

- Found in 100 of 131 ( 76.3% ) of genes in pham
- Manual Annotations of this start: 13 of 115
- Called 13.0% of time when present
- Phage (with cluster) where this start called: Adolin\_18 (AZ1), Aledel\_16 (AK), Bennie\_16 (AK), ChewChew\_16 (AK), Chridison\_16 (AK), HeadNerd\_16 (AK), KeAalii\_18 (AZ1), Makoto\_16 (AK), Maria1952\_16 (AK), Pterodactyl\_16 (AK), Reedo\_18 (AZ1), SneK\_18 (AZ3), Tweety19\_18 (AZ3),

Start 22:

- Found in 2 of 131 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 115
- Called 50.0% of time when present
- Phage (with cluster) where this start called: OscarSo\_29 (GJ),

Start 23:

- Found in 48 of 131 ( 36.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.1% of time when present
- Phage (with cluster) where this start called: Kalizoi\_20 (AK),

Start 24:

- Found in 56 of 131 ( 42.7% ) of genes in pham
- Manual Annotations of this start: 3 of 115
- Called 7.1% of time when present
- Phage (with cluster) where this start called: Anatole\_17 (BV), AustinPowers\_16 (AK), B3\_17 (BV), E1\_17 (BV),

Start 25:

- Found in 27 of 131 ( 20.6% ) of genes in pham
- Manual Annotations of this start: 1 of 115
- Called 3.7% of time when present
- Phage (with cluster) where this start called: Nubia\_20 (AK),

Start 31:

- Found in 2 of 131 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 2 of 115
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abidatro\_18 (AS1), Galaxy\_18 (AS1),

#### Start 32:

- Found in 4 of 131 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 1 of 115
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Spartoi\_17 (singleton),

#### Start 33:

- Found in 2 of 131 ( 1.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Spocter\_25 (BQ),

#### Start 34:

- Found in 43 of 131 ( 32.8% ) of genes in pham
- Manual Annotations of this start: 5 of 115
- Called 27.9% of time when present
- Phage (with cluster) where this start called: Atuin\_91 (FC), Bloom\_97 (FC), Darolandstone\_19 (BC2), DunneganBoMo\_87 (FC), Galactica\_23 (BQ), Keanu\_25 (BQ), Mimi\_99 (FC), Patbob\_94 (FC), Racecar\_94 (FC), Raleigh\_19 (BC2), SJReid\_99 (FC), Talia1610\_96 (FC),

#### Start 35:

- Found in 1 of 131 ( 0.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Isperia\_26 (GJ),

#### Start 36:

- Found in 15 of 131 ( 11.5% ) of genes in pham
- Manual Annotations of this start: 11 of 115
- Called 73.3% of time when present
- Phage (with cluster) where this start called: Attoomi\_18 (singleton), Austintatious\_19 (BC3), Bioscum\_19 (BC3), Hiyaa\_25 (BQ), Ididsumtinwong\_19 (BC3), Mojoirita\_19 (BC1), PapayaSalad\_19 (BC3), Picard\_19 (BC1), SV1\_19 (BC1), SoJo\_19 (BC1), ToastyFinz\_18 (BC1),

### Summary by clusters:

There are 12 clusters represented in this pham: singleton, AK, AS1, GJ, BV, FC, BQ, AZ1, AZ3, BC1, BC2, BC3,

#### Info for manual annotations of cluster AK:

- Start number 19 was manually annotated 71 times for cluster AK.
- Start number 20 was manually annotated 8 times for cluster AK.
- Start number 25 was manually annotated 1 time for cluster AK.

#### Info for manual annotations of cluster AS1:

- Start number 31 was manually annotated 2 times for cluster AS1.

Info for manual annotations of cluster AZ1:

- Start number 19 was manually annotated 6 times for cluster AZ1.
- Start number 20 was manually annotated 3 times for cluster AZ1.

Info for manual annotations of cluster AZ3:

- Start number 20 was manually annotated 2 times for cluster AZ3.

Info for manual annotations of cluster BC1:

- Start number 36 was manually annotated 5 times for cluster BC1.

Info for manual annotations of cluster BC2:

- Start number 34 was manually annotated 2 times for cluster BC2.

Info for manual annotations of cluster BC3:

- Start number 36 was manually annotated 4 times for cluster BC3.

Info for manual annotations of cluster BQ:

- Start number 34 was manually annotated 2 times for cluster BQ.
- Start number 36 was manually annotated 1 time for cluster BQ.

Info for manual annotations of cluster BV:

- Start number 24 was manually annotated 3 times for cluster BV.

Info for manual annotations of cluster FC:

- Start number 34 was manually annotated 1 time for cluster FC.

Info for manual annotations of cluster GJ:

- Start number 22 was manually annotated 1 time for cluster GJ.

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

Gene: Abidatro\_18 Start: 13671, Stop: 14783, Start Num: 31

Candidate Starts for Abidatro\_18:

(Start: 31 @13671 has 2 MA's), (39, 13698), (68, 13854), (71, 13869), (81, 13905), (98, 13965), (127, 14082), (130, 14094), (133, 14124), (134, 14127), (164, 14313), (183, 14397), (191, 14442), (193, 14448), (198, 14472), (221, 14586), (226, 14604), (228, 14619), (231, 14643), (233, 14661), (249, 14745),

Gene: Adolin\_18 Start: 14366, Stop: 15577, Start Num: 20

Candidate Starts for Adolin\_18:

(Start: 19 @14363 has 78 MA's), (Start: 20 @14366 has 13 MA's), (37, 14447), (40, 14459), (53, 14531), (57, 14546), (91, 14714), (94, 14720), (103, 14756), (122, 14828), (133, 14900), (139, 14942), (184, 15185), (193, 15230), (237, 15476), (246, 15509), (255, 15560),

Gene: Albanese\_20 Start: 16081, Stop: 17238, Start Num: 19

Candidate Starts for Albanese\_20:

(Start: 19 @16081 has 78 MA's), (Start: 20 @16084 has 13 MA's), (23, 16105), (Start: 24 @16111 has 3 MA's), (Start: 25 @16120 has 1 MA's), (62, 16285), (64, 16306), (132, 16561), (158, 16726), (175, 16807), (184, 16843), (193, 16888), (197, 16912), (207, 16981), (216, 17023), (224, 17047), (244, 17161), (250, 17200), (251, 17206), (253, 17212), (257, 17233),



Gene: Aledel\_16 Start: 14404, Stop: 15558, Start Num: 20

Candidate Starts for Aledel\_16:

(Start: 19 @14401 has 78 MA's), (Start: 20 @14404 has 13 MA's), (Start: 24 @14431 has 3 MA's), (Start: 25 @14440 has 1 MA's), (Start: 34 @14467 has 5 MA's), (48, 14530), (76, 14677), (132, 14881), (173, 15112), (175, 15127), (193, 15208), (214, 15331), (224, 15367), (225, 15370), (236, 15442), (245, 15487), (257, 15553),

Gene: Anatole\_17 Start: 13815, Stop: 14933, Start Num: 24

Candidate Starts for Anatole\_17:

(23, 13809), (Start: 24 @13815 has 3 MA's), (27, 13833), (30, 13845), (Start: 32 @13848 has 1 MA's), (42, 13890), (44, 13899), (60, 13983), (61, 13986), (62, 13989), (72, 14049), (73, 14052), (87, 14112), (90, 14130), (101, 14160), (109, 14196), (111, 14199), (113, 14202), (116, 14217), (119, 14220), (124, 14247), (129, 14262), (140, 14352), (143, 14361), (153, 14418), (162, 14478), (171, 14517), (174, 14532), (181, 14559), (184, 14571), (202, 14661), (204, 14688), (226, 14772), (235, 14838), (240, 14868), (243, 14877), (248, 14901),

Gene: AppleCider\_20 Start: 16039, Stop: 17196, Start Num: 19

Candidate Starts for AppleCider\_20:

(Start: 19 @16039 has 78 MA's), (Start: 20 @16042 has 13 MA's), (Start: 34 @16105 has 5 MA's), (62, 16243), (100, 16408), (155, 16672), (156, 16675), (158, 16684), (175, 16765), (193, 16846), (195, 16858), (206, 16936), (207, 16939), (214, 16969), (224, 17005), (225, 17008), (251, 17164),

Gene: Attoomi\_18 Start: 15464, Stop: 16561, Start Num: 36

Candidate Starts for Attoomi\_18:

(Start: 36 @15464 has 11 MA's), (43, 15500), (59, 15575), (63, 15608), (65, 15620), (72, 15653), (74, 15659), (84, 15695), (86, 15704), (88, 15716), (92, 15734), (106, 15785), (107, 15788), (118, 15815), (125, 15845), (132, 15890), (140, 15944), (145, 15965), (147, 15974), (149, 15983), (156, 16043), (163, 16079), (168, 16097), (169, 16100), (171, 16118), (174, 16133), (179, 16154), (182, 16163), (185, 16187), (189, 16199), (204, 16301), (205, 16307), (224, 16379), (241, 16487), (242, 16490), (245, 16502),

Gene: Atuin\_91 Start: 61731, Stop: 62849, Start Num: 34

Candidate Starts for Atuin\_91:

(Start: 34 @61731 has 5 MA's), (69, 61914), (70, 61917), (120, 62109), (126, 62136), (147, 62274), (151, 62304), (155, 62337), (158, 62349), (159, 62352), (177, 62439), (184, 62466), (187, 62478), (194, 62517), (204, 62595), (233, 62736), (251, 62826),

Gene: AustinPowers\_16 Start: 14432, Stop: 15559, Start Num: 24

Candidate Starts for AustinPowers\_16:

(Start: 19 @14402 has 78 MA's), (Start: 20 @14405 has 13 MA's), (Start: 24 @14432 has 3 MA's), (Start: 25 @14441 has 1 MA's), (Start: 34 @14468 has 5 MA's), (41, 14501), (48, 14531), (76, 14678), (132, 14882), (173, 15113), (175, 15128), (193, 15209), (214, 15332), (224, 15368), (225, 15371), (236, 15443), (245, 15488), (257, 15554),

Gene: Austintatious\_19 Start: 14189, Stop: 15319, Start Num: 36

Candidate Starts for Austintatious\_19:

(7, 13745), (8, 13760), (10, 13847), (11, 13883), (13, 13955), (Start: 36 @14189 has 11 MA's), (63, 14333), (72, 14378), (78, 14402), (84, 14420), (144, 14693), (167, 14822), (168, 14825), (174, 14861), (193, 14951), (195, 14963), (204, 15032), (224, 15110), (241, 15221),

Gene: B3\_17 Start: 13818, Stop: 14936, Start Num: 24

Candidate Starts for B3\_17:

(23, 13812), (Start: 24 @13818 has 3 MA's), (27, 13836), (30, 13848), (Start: 32 @13851 has 1 MA's), (42, 13893), (44, 13902), (60, 13986), (61, 13989), (62, 13992), (72, 14052), (73, 14055), (87, 14115), (90, 14133), (101, 14163), (109, 14199), (111, 14202), (113, 14205), (116, 14220), (119, 14223), (124, 14250), (129, 14265), (140, 14355), (143, 14364), (153, 14421), (162, 14481), (174, 14535), (181, 14562), (184, 14574), (202, 14664), (204, 14691), (226, 14775), (235, 14841), (240, 14871), (243, 14880), (248, 14904),

Gene: Beethoven\_20 Start: 15985, Stop: 17142, Start Num: 19

Candidate Starts for Beethoven\_20:

(Start: 19 @15985 has 78 MA's), (Start: 20 @15988 has 13 MA's), (23, 16009), (41, 16084), (62, 16189), (87, 16312), (123, 16420), (132, 16465), (155, 16618), (161, 16648), (173, 16696), (175, 16711), (184, 16747), (193, 16792), (216, 16927), (224, 16951), (226, 16957), (250, 17104), (251, 17110), (257, 17137),

Gene: Bennie\_16 Start: 14410, Stop: 15564, Start Num: 20

Candidate Starts for Bennie\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14440 has 3 MA's), (Start: 34 @14476 has 5 MA's), (40, 14503), (62, 14614), (64, 14635), (114, 14806), (123, 14845), (131, 14884), (134, 14896), (150, 15004), (165, 15079), (179, 15148), (186, 15178), (193, 15214), (195, 15226), (224, 15373), (236, 15448), (239, 15463), (245, 15493), (250, 15526),

Gene: BigMack\_16 Start: 14394, Stop: 15551, Start Num: 19

Candidate Starts for BigMack\_16:

(Start: 19 @14394 has 78 MA's), (Start: 20 @14397 has 13 MA's), (Start: 24 @14427 has 3 MA's), (Start: 34 @14463 has 5 MA's), (40, 14490), (62, 14601), (64, 14622), (106, 14775), (114, 14793), (123, 14832), (131, 14871), (134, 14883), (150, 14991), (165, 15066), (175, 15120), (179, 15135), (184, 15156), (186, 15165), (193, 15201), (195, 15213), (224, 15360), (236, 15435), (239, 15450), (245, 15480), (250, 15513), (256, 15543),

Gene: Bioscum\_19 Start: 14225, Stop: 15355, Start Num: 36

Candidate Starts for Bioscum\_19:

(7, 13781), (8, 13796), (10, 13883), (11, 13919), (13, 13991), (Start: 36 @14225 has 11 MA's), (63, 14369), (72, 14414), (78, 14438), (84, 14456), (167, 14858), (168, 14861), (193, 14987), (195, 14999), (204, 15068), (224, 15146),

Gene: Bloom\_97 Start: 62603, Stop: 63721, Start Num: 34

Candidate Starts for Bloom\_97:

(Start: 34 @62603 has 5 MA's), (69, 62786), (70, 62789), (104, 62924), (112, 62948), (120, 62978), (126, 63005), (131, 63053), (151, 63176), (155, 63209), (158, 63221), (177, 63311), (180, 63320), (187, 63350), (194, 63389), (196, 63401), (210, 63488), (214, 63509), (251, 63698),

Gene: Bodacious\_16 Start: 14407, Stop: 15561, Start Num: 19

Candidate Starts for Bodacious\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14437 has 3 MA's), (40, 14500), (49, 14542), (52, 14566), (62, 14611), (123, 14842), (131, 14881), (134, 14893), (150, 15001), (156, 15043), (165, 15076), (175, 15130), (186, 15175), (193, 15211), (195, 15223), (206, 15301), (224, 15370), (236, 15445), (239, 15460), (245, 15490), (250, 15523), (256, 15553),

Gene: BrotherBLo\_20 Start: 15991, Stop: 17148, Start Num: 19

Candidate Starts for BrotherBLo\_20:

(Start: 19 @15991 has 78 MA's), (Start: 20 @15994 has 13 MA's), (23, 16015), (41, 16090), (52, 16150), (62, 16195), (64, 16216), (77, 16273), (87, 16318), (123, 16426), (132, 16471), (155, 16624), (161, 16654), (173, 16702), (175, 16717), (184, 16753), (193, 16798), (216, 16933), (224, 16957),

(226, 16963), (250, 17110), (251, 17116), (257, 17143),

Gene: CallieOMalley\_20 Start: 16039, Stop: 17196, Start Num: 19

Candidate Starts for CallieOMalley\_20:

(Start: 19 @16039 has 78 MA's), (Start: 20 @16042 has 13 MA's), (Start: 34 @16105 has 5 MA's), (62, 16243), (100, 16408), (155, 16672), (156, 16675), (158, 16684), (175, 16765), (193, 16846), (195, 16858), (206, 16936), (207, 16939), (214, 16969), (224, 17005), (251, 17164),

Gene: Canowicakte\_20 Start: 16074, Stop: 17231, Start Num: 19

Candidate Starts for Canowicakte\_20:

(Start: 19 @16074 has 78 MA's), (Start: 20 @16077 has 13 MA's), (Start: 34 @16140 has 5 MA's), (62, 16278), (100, 16443), (155, 16707), (156, 16710), (158, 16719), (175, 16800), (193, 16881), (195, 16893), (206, 16971), (207, 16974), (214, 17004), (224, 17040), (251, 17199),

Gene: Carpal\_20 Start: 15992, Stop: 17149, Start Num: 19

Candidate Starts for Carpal\_20:

(Start: 19 @15992 has 78 MA's), (Start: 20 @15995 has 13 MA's), (23, 16016), (41, 16091), (52, 16151), (62, 16196), (64, 16217), (80, 16289), (87, 16319), (100, 16361), (123, 16427), (132, 16472), (155, 16625), (161, 16655), (173, 16703), (175, 16718), (184, 16754), (193, 16799), (216, 16934), (224, 16958), (226, 16964), (250, 17111), (251, 17117), (257, 17144),

Gene: ChewChew\_16 Start: 14409, Stop: 15560, Start Num: 20

Candidate Starts for ChewChew\_16:

(Start: 19 @14406 has 78 MA's), (Start: 20 @14409 has 13 MA's), (Start: 24 @14436 has 3 MA's), (40, 14499), (49, 14541), (52, 14565), (62, 14610), (123, 14841), (131, 14880), (134, 14892), (150, 15000), (156, 15042), (165, 15075), (175, 15129), (186, 15174), (193, 15210), (195, 15222), (206, 15300), (224, 15369), (236, 15444), (239, 15459), (245, 15489), (250, 15522), (256, 15552),

Gene: Cholula\_20 Start: 16037, Stop: 17194, Start Num: 19

Candidate Starts for Cholula\_20:

(Start: 19 @16037 has 78 MA's), (Start: 20 @16040 has 13 MA's), (23, 16061), (Start: 24 @16067 has 3 MA's), (41, 16136), (62, 16241), (80, 16334), (87, 16364), (123, 16472), (132, 16517), (155, 16670), (161, 16700), (173, 16748), (175, 16763), (184, 16799), (193, 16844), (216, 16979), (224, 17003), (237, 17090), (250, 17156), (251, 17162), (257, 17189),

Gene: Chridison\_16 Start: 14405, Stop: 15559, Start Num: 20

Candidate Starts for Chridison\_16:

(Start: 19 @14402 has 78 MA's), (Start: 20 @14405 has 13 MA's), (Start: 24 @14432 has 3 MA's), (Start: 25 @14441 has 1 MA's), (Start: 34 @14468 has 5 MA's), (48, 14531), (76, 14678), (132, 14882), (173, 15113), (175, 15128), (193, 15209), (214, 15332), (224, 15368), (225, 15371), (236, 15443), (245, 15488), (257, 15554),

Gene: Christian\_16 Start: 14407, Stop: 15561, Start Num: 19

Candidate Starts for Christian\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14437 has 3 MA's), (40, 14500), (49, 14542), (52, 14566), (62, 14611), (123, 14842), (131, 14881), (134, 14893), (150, 15001), (156, 15043), (165, 15076), (175, 15130), (186, 15175), (193, 15211), (195, 15223), (206, 15301), (209, 15310), (224, 15370), (236, 15445), (239, 15460), (245, 15490), (250, 15523), (256, 15553),

Gene: Crewmate\_19 Start: 14349, Stop: 15560, Start Num: 19

Candidate Starts for Crewmate\_19:

(Start: 19 @14349 has 78 MA's), (Start: 20 @14352 has 13 MA's), (53, 14514), (57, 14529), (62, 14553), (102, 14733), (110, 14766), (155, 15033), (176, 15135), (184, 15168), (193, 15213), (237, 15459), (246, 15492), (247, 15498), (253, 15534), (255, 15543),

Gene: CristinaYang\_16 Start: 14407, Stop: 15561, Start Num: 19

Candidate Starts for CristinaYang\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14437 has 3 MA's), (40, 14500), (49, 14542), (52, 14566), (62, 14611), (123, 14842), (131, 14881), (134, 14893), (150, 15001), (156, 15043), (165, 15076), (175, 15130), (186, 15175), (193, 15211), (195, 15223), (206, 15301), (224, 15370), (236, 15445), (239, 15460), (245, 15490), (250, 15523), (256, 15553),

Gene: Daiboju\_16 Start: 14410, Stop: 15567, Start Num: 19

Candidate Starts for Daiboju\_16:

(Start: 19 @14410 has 78 MA's), (Start: 20 @14413 has 13 MA's), (23, 14434), (Start: 24 @14440 has 3 MA's), (Start: 25 @14449 has 1 MA's), (Start: 34 @14476 has 5 MA's), (62, 14614), (76, 14686), (132, 14890), (158, 15055), (173, 15121), (193, 15217), (211, 15325), (214, 15340), (217, 15355), (224, 15376), (226, 15382), (236, 15451), (245, 15496), (257, 15562),

Gene: Darolandstone\_19 Start: 14810, Stop: 15910, Start Num: 34

Candidate Starts for Darolandstone\_19:

(4, 14216), (6, 14333), (9, 14420), (12, 14534), (14, 14633), (18, 14729), (27, 14795), (Start: 34 @14810 has 5 MA's), (60, 14939), (63, 14960), (106, 15137), (138, 15266), (158, 15401), (220, 15713), (241, 15836), (245, 15851), (254, 15896),

Gene: Dino\_20 Start: 15990, Stop: 17147, Start Num: 19

Candidate Starts for Dino\_20:

(Start: 19 @15990 has 78 MA's), (Start: 20 @15993 has 13 MA's), (23, 16014), (41, 16089), (52, 16149), (62, 16194), (64, 16215), (80, 16287), (87, 16317), (100, 16359), (123, 16425), (132, 16470), (155, 16623), (161, 16653), (173, 16701), (175, 16716), (184, 16752), (193, 16797), (216, 16932), (224, 16956), (237, 17043), (250, 17109), (251, 17115), (257, 17142),

Gene: DrManhattan\_18 Start: 14353, Stop: 15567, Start Num: 19

Candidate Starts for DrManhattan\_18:

(Start: 19 @14353 has 78 MA's), (Start: 20 @14356 has 13 MA's), (37, 14437), (40, 14449), (53, 14521), (57, 14536), (91, 14704), (94, 14710), (103, 14746), (122, 14818), (133, 14890), (139, 14932), (184, 15175), (193, 15220), (237, 15466), (246, 15499), (255, 15550),

Gene: DrRobert\_16 Start: 14407, Stop: 15561, Start Num: 19

Candidate Starts for DrRobert\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14437 has 3 MA's), (40, 14500), (49, 14542), (52, 14566), (62, 14611), (123, 14842), (131, 14881), (134, 14893), (150, 15001), (156, 15043), (165, 15076), (175, 15130), (186, 15175), (193, 15211), (195, 15223), (206, 15301), (209, 15310), (224, 15370), (236, 15445), (239, 15460), (245, 15490), (250, 15523), (256, 15553),

Gene: DrSierra\_18 Start: 14444, Stop: 15658, Start Num: 19

Candidate Starts for DrSierra\_18:

(Start: 19 @14444 has 78 MA's), (Start: 20 @14447 has 13 MA's), (Start: 34 @14513 has 5 MA's), (57, 14627), (91, 14795), (94, 14801), (103, 14837), (139, 15023), (150, 15092), (158, 15143), (184, 15266), (193, 15311), (200, 15344), (208, 15407), (237, 15557), (246, 15590),

Gene: DreamTeam\_16 Start: 14447, Stop: 15601, Start Num: 19

Candidate Starts for DreamTeam\_16:

(Start: 19 @14447 has 78 MA's), (Start: 20 @14450 has 13 MA's), (23, 14471), (40, 14540), (62, 14651), (64, 14672), (106, 14825), (117, 14858), (123, 14882), (131, 14921), (134, 14933), (165, 15116), (173, 15155), (179, 15185), (186, 15215), (193, 15251), (224, 15410), (239, 15500), (245, 15530), (257, 15596),

Gene: DunneganBoMo\_87 Start: 58597, Stop: 59715, Start Num: 34

Candidate Starts for DunneganBoMo\_87:

(Start: 34 @58597 has 5 MA's), (52, 58690), (70, 58783), (122, 58987), (126, 59002), (147, 59140), (151, 59170), (158, 59215), (159, 59218), (170, 59260), (187, 59344), (194, 59383), (196, 59395), (251, 59692),

Gene: E1\_17 Start: 13815, Stop: 14933, Start Num: 24

Candidate Starts for E1\_17:

(23, 13809), (Start: 24 @13815 has 3 MA's), (27, 13833), (30, 13845), (Start: 32 @13848 has 1 MA's), (42, 13890), (44, 13899), (60, 13983), (61, 13986), (62, 13989), (72, 14049), (73, 14052), (87, 14112), (90, 14130), (101, 14160), (109, 14196), (111, 14199), (113, 14202), (116, 14217), (119, 14220), (124, 14247), (129, 14262), (140, 14352), (143, 14361), (153, 14418), (162, 14478), (171, 14517), (174, 14532), (181, 14559), (184, 14571), (202, 14661), (204, 14688), (226, 14772), (235, 14838), (240, 14868), (243, 14877), (248, 14901),

Gene: EstebanJulior\_16 Start: 14415, Stop: 15572, Start Num: 19

Candidate Starts for EstebanJulior\_16:

(Start: 19 @14415 has 78 MA's), (Start: 20 @14418 has 13 MA's), (Start: 24 @14445 has 3 MA's), (49, 14550), (62, 14619), (100, 14784), (106, 14793), (114, 14811), (117, 14826), (184, 15177), (186, 15186), (193, 15222), (208, 15318), (216, 15357), (224, 15381), (246, 15504), (251, 15540), (257, 15567),

Gene: Eunoia\_16 Start: 14401, Stop: 15558, Start Num: 19

Candidate Starts for Eunoia\_16:

(Start: 19 @14401 has 78 MA's), (Start: 20 @14404 has 13 MA's), (Start: 24 @14431 has 3 MA's), (Start: 25 @14440 has 1 MA's), (Start: 34 @14467 has 5 MA's), (48, 14530), (76, 14677), (132, 14881), (173, 15112), (175, 15127), (193, 15208), (214, 15331), (224, 15367), (225, 15370), (236, 15442), (245, 15487), (257, 15553),

Gene: Fluke\_20 Start: 16033, Stop: 17190, Start Num: 19

Candidate Starts for Fluke\_20:

(Start: 19 @16033 has 78 MA's), (Start: 20 @16036 has 13 MA's), (23, 16057), (41, 16132), (62, 16237), (64, 16258), (87, 16360), (123, 16468), (132, 16513), (155, 16666), (161, 16696), (173, 16744), (184, 16795), (193, 16840), (216, 16975), (224, 16999), (237, 17086), (250, 17152), (251, 17158), (257, 17185),

Gene: Galactica\_23 Start: 20117, Stop: 21220, Start Num: 34

Candidate Starts for Galactica\_23:

(Start: 34 @20117 has 5 MA's), (Start: 36 @20123 has 11 MA's), (65, 20279), (74, 20318), (75, 20321), (152, 20666), (158, 20708), (168, 20753), (193, 20879), (212, 20990), (225, 21038), (237, 21128),

Gene: Galaxy\_18 Start: 13677, Stop: 14789, Start Num: 31

Candidate Starts for Galaxy\_18:

(Start: 31 @13677 has 2 MA's), (39, 13704), (46, 13734), (55, 13788), (71, 13875), (81, 13911), (98, 13971), (101, 13986), (127, 14088), (130, 14100), (133, 14130), (134, 14133), (136, 14145), (142, 14190), (157, 14286), (164, 14319), (183, 14403), (191, 14448), (193, 14454), (198, 14478), (221, 14592), (226, 14610), (228, 14625), (231, 14649), (233, 14667), (234, 14676),

Gene: Gisselle\_16 Start: 14447, Stop: 15601, Start Num: 19

Candidate Starts for Gisselle\_16:

(Start: 19 @14447 has 78 MA's), (Start: 20 @14450 has 13 MA's), (23, 14471), (40, 14540), (62, 14651), (64, 14672), (106, 14825), (117, 14858), (123, 14882), (131, 14921), (134, 14933), (165, 15116), (173, 15155), (179, 15185), (186, 15215), (193, 15251), (224, 15410), (239, 15500), (245, 15530), (257, 15596),

Gene: Glenn\_20 Start: 16042, Stop: 17199, Start Num: 19

Candidate Starts for Glenn\_20:

(Start: 19 @16042 has 78 MA's), (Start: 20 @16045 has 13 MA's), (23, 16066), (41, 16141), (52, 16201), (62, 16246), (64, 16267), (80, 16339), (87, 16369), (123, 16477), (132, 16522), (155, 16675), (161, 16705), (173, 16753), (184, 16804), (193, 16849), (216, 16984), (224, 17008), (237, 17095), (250, 17161), (251, 17167), (257, 17194),

Gene: GreenHearts\_20 Start: 16128, Stop: 17285, Start Num: 19

Candidate Starts for GreenHearts\_20:

(Start: 19 @16128 has 78 MA's), (Start: 20 @16131 has 13 MA's), (23, 16152), (Start: 24 @16158 has 3 MA's), (Start: 25 @16167 has 1 MA's), (62, 16332), (64, 16353), (132, 16608), (158, 16773), (159, 16776), (175, 16854), (184, 16890), (193, 16935), (197, 16959), (207, 17028), (216, 17070), (224, 17094), (244, 17208), (250, 17247), (251, 17253), (253, 17259), (257, 17280),

Gene: Greenhouse\_20 Start: 16052, Stop: 17209, Start Num: 19

Candidate Starts for Greenhouse\_20:

(Start: 19 @16052 has 78 MA's), (Start: 20 @16055 has 13 MA's), (23, 16076), (Start: 24 @16082 has 3 MA's), (Start: 25 @16091 has 1 MA's), (62, 16256), (64, 16277), (87, 16379), (132, 16532), (158, 16697), (175, 16778), (184, 16814), (193, 16859), (197, 16883), (207, 16952), (216, 16994), (224, 17018), (244, 17132), (250, 17171), (251, 17177), (253, 17183), (257, 17204),

Gene: HeadNerd\_16 Start: 14410, Stop: 15564, Start Num: 20

Candidate Starts for HeadNerd\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14440 has 3 MA's), (Start: 34 @14476 has 5 MA's), (40, 14503), (60, 14608), (62, 14614), (64, 14635), (114, 14806), (123, 14845), (131, 14884), (134, 14896), (150, 15004), (165, 15079), (173, 15118), (179, 15148), (186, 15178), (193, 15214), (195, 15226), (224, 15373), (236, 15448), (239, 15463), (245, 15493), (250, 15526),

Gene: Herb\_16 Start: 14410, Stop: 15567, Start Num: 19

Candidate Starts for Herb\_16:

(Start: 19 @14410 has 78 MA's), (Start: 20 @14413 has 13 MA's), (23, 14434), (Start: 24 @14440 has 3 MA's), (Start: 25 @14449 has 1 MA's), (Start: 34 @14476 has 5 MA's), (62, 14614), (76, 14686), (132, 14890), (158, 15055), (173, 15121), (193, 15217), (211, 15325), (214, 15340), (217, 15355), (224, 15376), (226, 15382), (236, 15451), (245, 15496), (257, 15562),

Gene: Hiyaa\_25 Start: 21164, Stop: 22261, Start Num: 36

Candidate Starts for Hiyaa\_25:

(33, 21158), (Start: 36 @21164 has 11 MA's), (56, 21266), (65, 21320), (74, 21359), (84, 21395), (88, 21416), (92, 21434), (152, 21707), (156, 21740), (162, 21773), (168, 21794), (193, 21920), (212, 22031), (227, 22085),

Gene: Huckleberry\_16 Start: 14407, Stop: 15564, Start Num: 19

Candidate Starts for Huckleberry\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14440 has 3 MA's), (Start: 34 @14476 has 5 MA's), (40, 14503), (60, 14608), (62, 14614), (64, 14635), (114, 14806), (123, 14845), (131, 14884), (134, 14896), (150, 15004), (165, 15079), (173, 15118), (179, 15148), (186, 15178), (193, 15214), (195, 15226), (224, 15373), (236, 15448), (239, 15463), (245, 15493), (250, 15526),

Gene: HunterDalle\_16 Start: 14401, Stop: 15558, Start Num: 19

Candidate Starts for HunterDalle\_16:

(Start: 19 @14401 has 78 MA's), (Start: 20 @14404 has 13 MA's), (Start: 24 @14431 has 3 MA's), (Start: 25 @14440 has 1 MA's), (Start: 34 @14467 has 5 MA's), (41, 14500), (76, 14677), (132, 14881), (173, 15112), (175, 15127), (193, 15208), (214, 15331), (224, 15367), (225, 15370), (236, 15442), (245, 15487), (257, 15553),

Gene: Huntingdon\_20 Start: 16038, Stop: 17195, Start Num: 19

Candidate Starts for Huntingdon\_20:

(Start: 19 @16038 has 78 MA's), (Start: 20 @16041 has 13 MA's), (23, 16062), (Start: 24 @16068 has 3 MA's), (Start: 25 @16077 has 1 MA's), (62, 16242), (64, 16263), (132, 16518), (155, 16671), (173, 16749), (175, 16764), (184, 16800), (193, 16845), (200, 16878), (216, 16980), (224, 17004), (244, 17118), (251, 17163),

Gene: Ididsumtinwong\_19 Start: 14225, Stop: 15355, Start Num: 36

Candidate Starts for Ididsumtinwong\_19:

(7, 13781), (8, 13796), (10, 13883), (11, 13919), (13, 13991), (Start: 36 @14225 has 11 MA's), (63, 14369), (72, 14414), (78, 14438), (84, 14456), (167, 14858), (168, 14861), (193, 14987), (195, 14999), (204, 15068), (224, 15146),

Gene: Immaculata\_20 Start: 16036, Stop: 17193, Start Num: 19

Candidate Starts for Immaculata\_20:

(Start: 19 @16036 has 78 MA's), (Start: 20 @16039 has 13 MA's), (23, 16060), (Start: 24 @16066 has 3 MA's), (41, 16135), (62, 16240), (80, 16333), (87, 16363), (123, 16471), (132, 16516), (155, 16669), (161, 16699), (173, 16747), (175, 16762), (184, 16798), (193, 16843), (216, 16978), (224, 17002), (237, 17089), (250, 17155), (251, 17161), (257, 17188),

Gene: Isperia\_26 Start: 17304, Stop: 18395, Start Num: 35

Candidate Starts for Isperia\_26:

(Start: 22 @17241 has 1 MA's), (35, 17304), (48, 17364), (61, 17433), (82, 17535), (96, 17589), (140, 17787), (158, 17895), (169, 17943), (205, 18141), (213, 18174), (226, 18219), (251, 18378),

Gene: IttyBittyPiggy\_18 Start: 14438, Stop: 15652, Start Num: 19

Candidate Starts for IttyBittyPiggy\_18:

(Start: 19 @14438 has 78 MA's), (Start: 20 @14441 has 13 MA's), (57, 14621), (94, 14795), (139, 15017), (159, 15140), (184, 15260), (193, 15305), (237, 15551),

Gene: Joann\_20 Start: 16032, Stop: 17189, Start Num: 19

Candidate Starts for Joann\_20:

(Start: 19 @16032 has 78 MA's), (Start: 20 @16035 has 13 MA's), (23, 16056), (Start: 25 @16071 has 1 MA's), (62, 16236), (64, 16257), (132, 16512), (158, 16677), (175, 16758), (184, 16794), (193, 16839), (197, 16863), (207, 16932), (216, 16974), (224, 16998), (244, 17112), (250, 17151), (251, 17157), (253, 17163), (257, 17184),

Gene: Jumboset\_20 Start: 15985, Stop: 17142, Start Num: 19

Candidate Starts for Jumboset\_20:

(Start: 19 @15985 has 78 MA's), (Start: 20 @15988 has 13 MA's), (23, 16009), (41, 16084), (52, 16144), (62, 16189), (64, 16210), (80, 16282), (87, 16312), (123, 16420), (132, 16465), (155, 16618), (161, 16648), (173, 16696), (184, 16747), (193, 16792), (216, 16927), (224, 16951), (237, 17038), (250, 17104), (251, 17110), (257, 17137),

Gene: Kalizoi\_20 Start: 16008, Stop: 17141, Start Num: 23

Candidate Starts for Kalizoi\_20:

(Start: 19 @15984 has 78 MA's), (Start: 20 @15987 has 13 MA's), (23, 16008), (41, 16083), (52, 16143), (62, 16188), (64, 16209), (80, 16281), (87, 16311), (100, 16353), (123, 16419), (132, 16464), (155, 16617), (161, 16647), (173, 16695), (175, 16710), (184, 16746), (193, 16791), (216, 16926), (224, 16950), (237, 17037), (250, 17103), (251, 17109), (257, 17136),

Gene: KeAlii\_18 Start: 13937, Stop: 15121, Start Num: 20

Candidate Starts for KeAlii\_18:

(Start: 19 @13934 has 78 MA's), (Start: 20 @13937 has 13 MA's), (23, 13955), (26, 13973), (28, 13985), (40, 14024), (45, 14048), (54, 14102), (57, 14111), (124, 14381), (136, 14459), (184, 14729), (193, 14774), (237, 15020), (246, 15053), (255, 15104),

Gene: Keanu\_25 Start: 21193, Stop: 22296, Start Num: 34

Candidate Starts for Keanu\_25:

(Start: 34 @21193 has 5 MA's), (50, 21265), (65, 21355), (74, 21394), (92, 21469), (95, 21475), (115, 21544), (146, 21706), (147, 21709), (152, 21742), (156, 21775), (168, 21829), (172, 21853), (192, 21952), (193, 21955), (204, 22033), (237, 22204),

Gene: KingBob\_16 Start: 14410, Stop: 15567, Start Num: 19

Candidate Starts for KingBob\_16:

(Start: 19 @14410 has 78 MA's), (Start: 20 @14413 has 13 MA's), (23, 14434), (Start: 24 @14440 has 3 MA's), (Start: 25 @14449 has 1 MA's), (Start: 34 @14476 has 5 MA's), (62, 14614), (76, 14686), (132, 14890), (158, 15055), (173, 15121), (193, 15217), (211, 15325), (214, 15340), (217, 15355), (224, 15376), (226, 15382), (236, 15451), (245, 15496), (257, 15562),

Gene: Kittykat\_16 Start: 14431, Stop: 15585, Start Num: 19

Candidate Starts for Kittykat\_16:

(Start: 19 @14431 has 78 MA's), (Start: 20 @14434 has 13 MA's), (23, 14455), (40, 14524), (60, 14629), (62, 14635), (64, 14656), (87, 14758), (106, 14809), (117, 14842), (123, 14866), (131, 14905), (134, 14917), (165, 15100), (173, 15139), (179, 15169), (186, 15199), (193, 15235), (224, 15394), (245, 15514), (257, 15580),

Gene: Korra\_21 Start: 15990, Stop: 17147, Start Num: 19

Candidate Starts for Korra\_21:

(Start: 19 @15990 has 78 MA's), (Start: 20 @15993 has 13 MA's), (23, 16014), (41, 16089), (62, 16194), (64, 16215), (80, 16287), (87, 16317), (123, 16425), (132, 16470), (155, 16623), (161, 16653), (173, 16701), (175, 16716), (184, 16752), (193, 16797), (224, 16956), (226, 16962), (237, 17043), (250, 17109), (251, 17115), (257, 17142),

Gene: Lakshmi\_20 Start: 16057, Stop: 17214, Start Num: 19

Candidate Starts for Lakshmi\_20:

(Start: 19 @16057 has 78 MA's), (Start: 20 @16060 has 13 MA's), (23, 16081), (Start: 24 @16087 has 3 MA's), (Start: 25 @16096 has 1 MA's), (62, 16261), (64, 16282), (132, 16537), (158, 16702), (175, 16783), (184, 16819), (193, 16864), (197, 16888), (207, 16957), (216, 16999), (224, 17023), (239, 17113), (244, 17137), (250, 17176), (251, 17182), (253, 17188), (257, 17209),

Gene: Lasagna\_16 Start: 14407, Stop: 15561, Start Num: 19



Candidate Starts for Lasagna\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14437 has 3 MA's), (40, 14500), (49, 14542), (52, 14566), (62, 14611), (123, 14842), (131, 14881), (134, 14893), (150, 15001), (156, 15043), (165, 15076), (175, 15130), (186, 15175), (193, 15211), (195, 15223), (206, 15301), (224, 15370), (236, 15445), (239, 15460), (245, 15490), (250, 15523), (256, 15553),

Gene: Lennox\_16 Start: 14395, Stop: 15549, Start Num: 19

Candidate Starts for Lennox\_16:

(Start: 19 @14395 has 78 MA's), (Start: 20 @14398 has 13 MA's), (Start: 24 @14425 has 3 MA's), (40, 14488), (49, 14530), (52, 14554), (62, 14599), (123, 14830), (131, 14869), (134, 14881), (150, 14989), (156, 15031), (165, 15064), (173, 15103), (175, 15118), (186, 15163), (193, 15199), (195, 15211), (206, 15289), (224, 15358), (236, 15433), (239, 15448), (245, 15478), (250, 15511), (256, 15541),

Gene: LilStuart\_16 Start: 14395, Stop: 15549, Start Num: 19

Candidate Starts for LilStuart\_16:

(Start: 19 @14395 has 78 MA's), (Start: 20 @14398 has 13 MA's), (Start: 24 @14425 has 3 MA's), (40, 14488), (49, 14530), (52, 14554), (62, 14599), (123, 14830), (131, 14869), (134, 14881), (150, 14989), (156, 15031), (165, 15064), (175, 15118), (186, 15163), (193, 15199), (195, 15211), (206, 15289), (224, 15358), (236, 15433), (239, 15448), (245, 15478), (250, 15511), (256, 15541),

Gene: Litotes\_20 Start: 16024, Stop: 17181, Start Num: 19

Candidate Starts for Litotes\_20:

(Start: 19 @16024 has 78 MA's), (Start: 20 @16027 has 13 MA's), (Start: 34 @16090 has 5 MA's), (62, 16228), (100, 16393), (155, 16657), (156, 16660), (158, 16669), (175, 16750), (193, 16831), (195, 16843), (206, 16921), (214, 16954), (224, 16990), (225, 16993), (251, 17149),

Gene: Lucy\_16 Start: 14387, Stop: 15541, Start Num: 19

Candidate Starts for Lucy\_16:

(Start: 19 @14387 has 78 MA's), (Start: 20 @14390 has 13 MA's), (Start: 24 @14417 has 3 MA's), (40, 14480), (49, 14522), (52, 14546), (62, 14591), (123, 14822), (131, 14861), (134, 14873), (150, 14981), (156, 15023), (165, 15056), (175, 15110), (186, 15155), (193, 15191), (195, 15203), (206, 15281), (224, 15350), (236, 15425), (239, 15440), (245, 15470), (250, 15503), (256, 15533),

Gene: Makoto\_16 Start: 14411, Stop: 15562, Start Num: 20

Candidate Starts for Makoto\_16:

(Start: 19 @14408 has 78 MA's), (Start: 20 @14411 has 13 MA's), (Start: 24 @14438 has 3 MA's), (40, 14501), (49, 14543), (52, 14567), (62, 14612), (123, 14843), (131, 14882), (134, 14894), (150, 15002), (156, 15044), (165, 15077), (175, 15131), (186, 15176), (193, 15212), (195, 15224), (206, 15302), (224, 15371), (236, 15446), (239, 15461), (245, 15491), (250, 15524), (256, 15554),

Gene: MamaPearl\_16 Start: 14415, Stop: 15572, Start Num: 19

Candidate Starts for MamaPearl\_16:

(Start: 19 @14415 has 78 MA's), (Start: 20 @14418 has 13 MA's), (Start: 24 @14445 has 3 MA's), (49, 14550), (62, 14619), (100, 14784), (106, 14793), (114, 14811), (117, 14826), (184, 15177), (186, 15186), (193, 15222), (208, 15318), (216, 15357), (224, 15381), (246, 15504), (251, 15540), (257, 15567),

Gene: Maria1952\_16 Start: 14413, Stop: 15567, Start Num: 20

Candidate Starts for Maria1952\_16:

(Start: 19 @14410 has 78 MA's), (Start: 20 @14413 has 13 MA's), (23, 14434), (Start: 24 @14440 has 3 MA's), (Start: 25 @14449 has 1 MA's), (Start: 34 @14476 has 5 MA's), (62, 14614), (76, 14686), (132, 14890), (158, 15055), (173, 15121), (193, 15217), (211, 15325), (214, 15340), (217, 15355),

(224, 15376), (226, 15382), (236, 15451), (245, 15496), (257, 15562),

Gene: MeganNoll\_20 Start: 16042, Stop: 17199, Start Num: 19

Candidate Starts for MeganNoll\_20:

(Start: 19 @16042 has 78 MA's), (Start: 20 @16045 has 13 MA's), (23, 16066), (41, 16141), (52, 16201), (62, 16246), (64, 16267), (80, 16339), (87, 16369), (123, 16477), (132, 16522), (155, 16675), (161, 16705), (173, 16753), (184, 16804), (193, 16849), (216, 16984), (224, 17008), (237, 17095), (250, 17161), (251, 17167), (257, 17194),

Gene: Mimi\_99 Start: 61950, Stop: 63068, Start Num: 34

Candidate Starts for Mimi\_99:

(Start: 34 @61950 has 5 MA's), (69, 62133), (70, 62136), (104, 62271), (112, 62295), (120, 62325), (126, 62352), (131, 62400), (151, 62523), (155, 62556), (158, 62568), (177, 62658), (180, 62667), (187, 62697), (194, 62736), (196, 62748), (210, 62835), (214, 62856), (251, 63045),

Gene: Misaeng\_20 Start: 16102, Stop: 17259, Start Num: 19

Candidate Starts for Misaeng\_20:

(Start: 19 @16102 has 78 MA's), (Start: 20 @16105 has 13 MA's), (23, 16126), (Start: 24 @16132 has 3 MA's), (Start: 25 @16141 has 1 MA's), (62, 16306), (64, 16327), (132, 16582), (155, 16735), (173, 16813), (175, 16828), (184, 16864), (193, 16909), (200, 16942), (216, 17044), (224, 17068), (244, 17182), (251, 17227),

Gene: MissSwiss\_18 Start: 14395, Stop: 15609, Start Num: 19

Candidate Starts for MissSwiss\_18:

(Start: 19 @14395 has 78 MA's), (Start: 20 @14398 has 13 MA's), (26, 14440), (40, 14491), (57, 14578), (94, 14752), (110, 14815), (132, 14929), (139, 14974), (158, 15094), (173, 15166), (184, 15217), (188, 15235), (193, 15262), (203, 15328), (216, 15397), (237, 15508), (246, 15541), (255, 15592),

Gene: Mojorita\_19 Start: 14327, Stop: 15457, Start Num: 36

Candidate Starts for Mojorita\_19:

(Start: 36 @14327 has 11 MA's), (63, 14471), (67, 14495), (78, 14540), (84, 14558), (97, 14606), (137, 14780), (141, 14816), (143, 14822), (193, 15089), (195, 15101), (224, 15248),

Gene: Moki\_16 Start: 14407, Stop: 15564, Start Num: 19

Candidate Starts for Moki\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14440 has 3 MA's), (Start: 34 @14476 has 5 MA's), (40, 14503), (60, 14608), (62, 14614), (64, 14635), (114, 14806), (123, 14845), (131, 14884), (134, 14896), (150, 15004), (165, 15079), (173, 15118), (179, 15148), (186, 15178), (193, 15214), (195, 15226), (224, 15373), (236, 15448), (239, 15463), (245, 15493), (250, 15526),

Gene: MrGloopy\_20 Start: 15976, Stop: 17133, Start Num: 19

Candidate Starts for MrGloopy\_20:

(Start: 19 @15976 has 78 MA's), (Start: 20 @15979 has 13 MA's), (23, 16000), (41, 16075), (52, 16135), (62, 16180), (64, 16201), (80, 16273), (87, 16303), (123, 16411), (132, 16456), (155, 16609), (161, 16639), (173, 16687), (184, 16738), (193, 16783), (216, 16918), (224, 16942), (237, 17029), (250, 17095), (251, 17101), (257, 17128),

Gene: Nancia\_16 Start: 14407, Stop: 15561, Start Num: 19

Candidate Starts for Nancia\_16:

(Start: 19 @14407 has 78 MA's), (Start: 20 @14410 has 13 MA's), (Start: 24 @14437 has 3 MA's), (40, 14500), (49, 14542), (52, 14566), (62, 14611), (123, 14842), (131, 14881), (134, 14893), (150,

15001), (156, 15043), (165, 15076), (175, 15130), (186, 15175), (193, 15211), (195, 15223), (206, 15301), (224, 15370), (236, 15445), (239, 15460), (245, 15490), (250, 15523), (256, 15553),

Gene: Nubia\_20 Start: 16056, Stop: 17174, Start Num: 25

Candidate Starts for Nubia\_20:

(Start: 19 @16017 has 78 MA's), (Start: 20 @16020 has 13 MA's), (23, 16041), (Start: 24 @16047 has 3 MA's), (Start: 25 @16056 has 1 MA's), (62, 16221), (64, 16242), (132, 16497), (158, 16662), (175, 16743), (184, 16779), (193, 16824), (197, 16848), (207, 16917), (216, 16959), (224, 16983), (244, 17097), (250, 17136), (251, 17142), (253, 17148), (257, 17169),

Gene: OMalley\_16 Start: 14401, Stop: 15558, Start Num: 19

Candidate Starts for OMalley\_16:

(Start: 19 @14401 has 78 MA's), (Start: 20 @14404 has 13 MA's), (Start: 24 @14431 has 3 MA's), (Start: 25 @14440 has 1 MA's), (Start: 34 @14467 has 5 MA's), (48, 14530), (76, 14677), (132, 14881), (173, 15112), (175, 15127), (193, 15208), (214, 15331), (224, 15367), (225, 15370), (236, 15442), (245, 15487), (257, 15553),

Gene: ObiToo\_18 Start: 14086, Stop: 15297, Start Num: 19

Candidate Starts for ObiToo\_18:

(Start: 19 @14086 has 78 MA's), (Start: 20 @14089 has 13 MA's), (53, 14251), (57, 14266), (62, 14290), (102, 14470), (110, 14503), (155, 14770), (176, 14872), (184, 14905), (193, 14950), (237, 15196), (246, 15229), (247, 15235), (253, 15271), (255, 15280),

Gene: OscarSo\_29 Start: 19754, Stop: 20926, Start Num: 22

Candidate Starts for OscarSo\_29:

(Start: 22 @19754 has 1 MA's), (26, 19787), (Start: 36 @19820 has 11 MA's), (49, 19883), (64, 19970), (66, 19988), (99, 20111), (148, 20345), (158, 20420), (171, 20486), (204, 20663), (205, 20669), (218, 20723), (223, 20735), (232, 20798), (251, 20906), (252, 20909),

Gene: OurGirlNessie\_16 Start: 14387, Stop: 15541, Start Num: 19

Candidate Starts for OurGirlNessie\_16:

(Start: 19 @14387 has 78 MA's), (Start: 20 @14390 has 13 MA's), (Start: 24 @14417 has 3 MA's), (40, 14480), (49, 14522), (52, 14546), (62, 14591), (123, 14822), (131, 14861), (134, 14873), (150, 14981), (156, 15023), (165, 15056), (175, 15110), (186, 15155), (193, 15191), (195, 15203), (224, 15350), (236, 15425), (239, 15440), (245, 15470), (250, 15503), (256, 15533),

Gene: Oxynfrius\_20 Start: 16030, Stop: 17187, Start Num: 19

Candidate Starts for Oxynfrius\_20:

(Start: 19 @16030 has 78 MA's), (Start: 20 @16033 has 13 MA's), (23, 16054), (Start: 24 @16060 has 3 MA's), (Start: 25 @16069 has 1 MA's), (41, 16129), (52, 16189), (62, 16234), (64, 16255), (132, 16510), (158, 16675), (175, 16756), (184, 16792), (193, 16837), (197, 16861), (207, 16930), (216, 16972), (224, 16996), (244, 17110), (250, 17149), (251, 17155), (253, 17161), (257, 17182),

Gene: PapayaSalad\_19 Start: 14200, Stop: 15330, Start Num: 36

Candidate Starts for PapayaSalad\_19:

(21, 14128), (Start: 36 @14200 has 11 MA's), (47, 14248), (63, 14344), (72, 14389), (78, 14413), (84, 14431), (137, 14653), (143, 14695), (144, 14704), (167, 14833), (168, 14836), (193, 14962), (195, 14974), (204, 15043), (224, 15121),

Gene: PartyCup\_20 Start: 16071, Stop: 17228, Start Num: 19

Candidate Starts for PartyCup\_20:

(Start: 19 @16071 has 78 MA's), (Start: 20 @16074 has 13 MA's), (Start: 34 @16137 has 5 MA's), (62, 16275), (100, 16440), (155, 16704), (156, 16707), (158, 16716), (175, 16797), (193, 16878), (195,

16890), (206, 16968), (207, 16971), (214, 17001), (224, 17037), (251, 17196),

Gene: Patbob\_94 Start: 62822, Stop: 63940, Start Num: 34

Candidate Starts for Patbob\_94:

(Start: 34 @62822 has 5 MA's), (70, 63008), (104, 63143), (105, 63146), (120, 63197), (126, 63224), (131, 63272), (151, 63395), (155, 63428), (158, 63440), (177, 63530), (180, 63539), (187, 63569), (194, 63608), (196, 63620), (210, 63707), (214, 63728), (251, 63917),

Gene: Picard\_19 Start: 14321, Stop: 15451, Start Num: 36

Candidate Starts for Picard\_19:

(Start: 36 @14321 has 11 MA's), (63, 14465), (67, 14489), (84, 14552), (97, 14600), (137, 14774), (141, 14810), (143, 14816), (168, 14957), (193, 15083), (195, 15095), (224, 15242),

Gene: PinkFriday\_16 Start: 14431, Stop: 15588, Start Num: 19

Candidate Starts for PinkFriday\_16:

(Start: 19 @14431 has 78 MA's), (Start: 20 @14434 has 13 MA's), (Start: 24 @14461 has 3 MA's), (Start: 25 @14470 has 1 MA's), (Start: 34 @14497 has 5 MA's), (40, 14524), (52, 14590), (64, 14656), (100, 14800), (106, 14809), (132, 14911), (161, 15094), (166, 15106), (176, 15160), (186, 15202), (193, 15238), (211, 15346), (214, 15361), (224, 15397), (225, 15400), (245, 15517), (255, 15571), (257, 15583),

Gene: PitaDog\_16 Start: 14398, Stop: 15552, Start Num: 19

Candidate Starts for PitaDog\_16:

(Start: 19 @14398 has 78 MA's), (Start: 20 @14401 has 13 MA's), (Start: 24 @14428 has 3 MA's), (40, 14491), (49, 14533), (52, 14557), (62, 14602), (123, 14833), (131, 14872), (134, 14884), (150, 14992), (156, 15034), (165, 15067), (175, 15121), (186, 15166), (193, 15202), (195, 15214), (206, 15292), (224, 15361), (236, 15436), (239, 15451), (245, 15481), (250, 15514), (256, 15544),

Gene: Potatoes\_20 Start: 16037, Stop: 17194, Start Num: 19

Candidate Starts for Potatoes\_20:

(Start: 19 @16037 has 78 MA's), (Start: 20 @16040 has 13 MA's), (23, 16061), (Start: 24 @16067 has 3 MA's), (41, 16136), (62, 16241), (80, 16334), (87, 16364), (123, 16472), (132, 16517), (155, 16670), (161, 16700), (173, 16748), (175, 16763), (184, 16799), (193, 16844), (216, 16979), (224, 17003), (237, 17090), (250, 17156), (251, 17162), (257, 17189),

Gene: Preamble\_16 Start: 14408, Stop: 15562, Start Num: 19

Candidate Starts for Preamble\_16:

(Start: 19 @14408 has 78 MA's), (Start: 20 @14411 has 13 MA's), (23, 14432), (40, 14501), (60, 14606), (62, 14612), (64, 14633), (106, 14786), (117, 14819), (123, 14843), (131, 14882), (134, 14894), (165, 15077), (173, 15116), (179, 15146), (186, 15176), (193, 15212), (224, 15371), (239, 15461), (245, 15491), (257, 15557),

Gene: Pterodactyl\_16 Start: 14391, Stop: 15542, Start Num: 20

Candidate Starts for Pterodactyl\_16:

(Start: 19 @14388 has 78 MA's), (Start: 20 @14391 has 13 MA's), (Start: 24 @14418 has 3 MA's), (40, 14481), (49, 14523), (52, 14547), (62, 14592), (123, 14823), (131, 14862), (134, 14874), (150, 14982), (156, 15024), (165, 15057), (175, 15111), (186, 15156), (193, 15192), (195, 15204), (206, 15282), (224, 15351), (236, 15426), (239, 15441), (245, 15471), (250, 15504), (256, 15534),

Gene: Pumancara\_16 Start: 14412, Stop: 15569, Start Num: 19

Candidate Starts for Pumancara\_16:

(Start: 19 @14412 has 78 MA's), (Start: 20 @14415 has 13 MA's), (Start: 24 @14442 has 3 MA's), (Start: 25 @14451 has 1 MA's), (Start: 34 @14478 has 5 MA's), (62, 14616), (76, 14688), (132,

14892), (149, 14988), (158, 15057), (173, 15123), (193, 15219), (211, 15327), (214, 15342), (217, 15357), (224, 15378), (226, 15384), (236, 15453), (245, 15498), (250, 15531),

Gene: RAP15\_20 Start: 16042, Stop: 17199, Start Num: 19

Candidate Starts for RAP15\_20:

(Start: 19 @16042 has 78 MA's), (Start: 20 @16045 has 13 MA's), (23, 16066), (41, 16141), (52, 16201), (62, 16246), (64, 16267), (80, 16339), (87, 16369), (123, 16477), (132, 16522), (155, 16675), (161, 16705), (173, 16753), (184, 16804), (193, 16849), (216, 16984), (224, 17008), (237, 17095), (250, 17161), (251, 17167), (257, 17194),

Gene: Racecar\_94 Start: 62603, Stop: 63721, Start Num: 34

Candidate Starts for Racecar\_94:

(Start: 34 @62603 has 5 MA's), (69, 62786), (70, 62789), (104, 62924), (112, 62948), (120, 62978), (126, 63005), (131, 63053), (151, 63176), (155, 63209), (158, 63221), (177, 63311), (180, 63320), (187, 63350), (194, 63389), (196, 63401), (210, 63488), (214, 63509), (251, 63698),

Gene: Raleigh\_19 Start: 14995, Stop: 16095, Start Num: 34

Candidate Starts for Raleigh\_19:

(9, 14605), (12, 14719), (14, 14818), (Start: 24 @14962 has 3 MA's), (27, 14980), (Start: 34 @14995 has 5 MA's), (60, 15124), (63, 15145), (158, 15586), (220, 15898), (245, 16036), (251, 16075), (254, 16081),

Gene: RcigaStruga\_20 Start: 16038, Stop: 17195, Start Num: 19

Candidate Starts for RcigaStruga\_20:

(Start: 19 @16038 has 78 MA's), (Start: 20 @16041 has 13 MA's), (23, 16062), (Start: 24 @16068 has 3 MA's), (Start: 25 @16077 has 1 MA's), (62, 16242), (64, 16263), (132, 16518), (155, 16671), (173, 16749), (175, 16764), (184, 16800), (193, 16845), (200, 16878), (216, 16980), (224, 17004), (244, 17118), (251, 17163),

Gene: Reedo\_18 Start: 13956, Stop: 15140, Start Num: 20

Candidate Starts for Reedo\_18:

(Start: 19 @13953 has 78 MA's), (Start: 20 @13956 has 13 MA's), (23, 13974), (28, 14004), (40, 14043), (54, 14121), (57, 14130), (64, 14175), (133, 14463), (139, 14505), (179, 14727), (184, 14748), (188, 14766), (193, 14793), (200, 14826), (237, 15039), (246, 15072), (250, 15102), (253, 15114),

Gene: Riovina\_16 Start: 14401, Stop: 15558, Start Num: 19

Candidate Starts for Riovina\_16:

(Start: 19 @14401 has 78 MA's), (Start: 20 @14404 has 13 MA's), (Start: 24 @14431 has 3 MA's), (Start: 25 @14440 has 1 MA's), (Start: 34 @14467 has 5 MA's), (48, 14530), (76, 14677), (132, 14881), (173, 15112), (175, 15127), (193, 15208), (214, 15331), (224, 15367), (225, 15370), (236, 15442), (245, 15487), (257, 15553),

Gene: Riverdale\_20 Start: 15972, Stop: 17129, Start Num: 19

Candidate Starts for Riverdale\_20:

(Start: 19 @15972 has 78 MA's), (Start: 20 @15975 has 13 MA's), (23, 15996), (41, 16071), (64, 16197), (87, 16299), (123, 16407), (132, 16452), (155, 16605), (173, 16683), (184, 16734), (193, 16779), (216, 16914), (224, 16938), (226, 16944), (250, 17091), (251, 17097), (257, 17124),

Gene: Rozby\_20 Start: 15973, Stop: 17130, Start Num: 19

Candidate Starts for Rozby\_20:

(Start: 19 @15973 has 78 MA's), (Start: 20 @15976 has 13 MA's), (23, 15997), (41, 16072), (52, 16132), (62, 16177), (64, 16198), (87, 16300), (123, 16408), (132, 16453), (155, 16606), (161, 16636), (173, 16684), (175, 16699), (184, 16735), (193, 16780), (216, 16915), (224, 16939), (226, 16945),

(250, 17092), (251, 17098), (257, 17125),

Gene: SJReid\_99 Start: 62409, Stop: 63521, Start Num: 34

Candidate Starts for SJReid\_99:

(Start: 34 @62409 has 5 MA's), (51, 62487), (79, 62637), (99, 62709), (122, 62796), (124, 62805), (126, 62811), (151, 62976), (158, 63021), (175, 63105), (179, 63120), (195, 63198), (196, 63204), (214, 63309), (238, 63432), (244, 63453), (251, 63498),

Gene: SV1\_19 Start: 14433, Stop: 15563, Start Num: 36

Candidate Starts for SV1\_19:

(29, 14418), (Start: 36 @14433 has 11 MA's), (63, 14577), (72, 14622), (78, 14646), (108, 14763), (137, 14886), (143, 14928), (144, 14937), (167, 15066), (178, 15123), (193, 15195), (195, 15207), (199, 15225), (204, 15276), (224, 15354),

Gene: Savage2526\_20 Start: 16036, Stop: 17193, Start Num: 19

Candidate Starts for Savage2526\_20:

(Start: 19 @16036 has 78 MA's), (Start: 20 @16039 has 13 MA's), (23, 16060), (41, 16135), (52, 16195), (62, 16240), (64, 16261), (80, 16333), (87, 16363), (123, 16471), (132, 16516), (155, 16669), (161, 16699), (173, 16747), (184, 16798), (193, 16843), (216, 16978), (224, 17002), (237, 17089), (250, 17155), (251, 17161), (257, 17188),

Gene: Scuttle\_20 Start: 16041, Stop: 17198, Start Num: 19

Candidate Starts for Scuttle\_20:

(Start: 19 @16041 has 78 MA's), (Start: 20 @16044 has 13 MA's), (23, 16065), (41, 16140), (64, 16266), (87, 16368), (123, 16476), (132, 16521), (155, 16674), (161, 16704), (173, 16752), (175, 16767), (184, 16803), (193, 16848), (216, 16983), (224, 17007), (226, 17013), (250, 17160), (251, 17166), (257, 17193),

Gene: Sergei\_16 Start: 14410, Stop: 15567, Start Num: 19

Candidate Starts for Sergei\_16:

(Start: 19 @14410 has 78 MA's), (Start: 20 @14413 has 13 MA's), (23, 14434), (Start: 24 @14440 has 3 MA's), (Start: 25 @14449 has 1 MA's), (Start: 34 @14476 has 5 MA's), (62, 14614), (76, 14686), (132, 14890), (158, 15055), (173, 15121), (193, 15217), (211, 15325), (214, 15340), (217, 15355), (224, 15376), (226, 15382), (236, 15451), (245, 15496), (257, 15562),

Gene: Shambre1\_19 Start: 15533, Stop: 16816, Start Num: 19

Candidate Starts for Shambre1\_19:

(3, 15008), (5, 15047), (16, 15443), (Start: 19 @15533 has 78 MA's), (Start: 20 @15536 has 13 MA's), (Start: 34 @15617 has 5 MA's), (Start: 36 @15623 has 11 MA's), (45, 15668), (52, 15710), (62, 15755), (63, 15770), (83, 15857), (89, 15890), (123, 15977), (133, 16031), (135, 16043), (136, 16046), (140, 16085), (154, 16163), (193, 16361), (201, 16406), (208, 16457), (215, 16484), (222, 16508), (224, 16520), (230, 16550), (239, 16613), (246, 16643), (250, 16673),

Gene: Snek\_18 Start: 12989, Stop: 14173, Start Num: 20

Candidate Starts for Snek\_18:

(15, 12893), (Start: 19 @12986 has 78 MA's), (Start: 20 @12989 has 13 MA's), (28, 13037), (40, 13076), (45, 13100), (54, 13154), (57, 13163), (94, 13337), (158, 13658), (179, 13760), (184, 13781), (193, 13826), (213, 13946), (237, 14072), (246, 14105), (255, 14156),

Gene: SoJo\_19 Start: 14651, Stop: 15748, Start Num: 36

Candidate Starts for SoJo\_19:

(1, 13649), (2, 13706), (4, 14051), (6, 14168), (9, 14255), (14, 14459), (17, 14516), (18, 14555), (Start: 36 @14651 has 11 MA's), (72, 14840), (107, 14975), (121, 15020), (128, 15041), (168, 15281), (193,

15407), (204, 15485), (226, 15569), (227, 15572), (244, 15680), (254, 15731),

Gene: Spartoi\_17 Start: 13760, Stop: 14860, Start Num: 32

Candidate Starts for Spartoi\_17:

(Start: 32 @13760 has 1 MA's), (38, 13781), (58, 13880), (66, 13940), (83, 13997), (93, 14042), (126, 14147), (142, 14249), (151, 14303), (219, 14660), (244, 14789),

Gene: Spocter\_25 Start: 21146, Stop: 22249, Start Num: 33

Candidate Starts for Spocter\_25:

(33, 21146), (Start: 36 @21152 has 11 MA's), (56, 21254), (65, 21308), (74, 21347), (84, 21383), (88, 21404), (92, 21422), (152, 21695), (156, 21728), (162, 21761), (168, 21782), (193, 21908), (212, 22019), (227, 22073),

Gene: Sue2\_18 Start: 14593, Stop: 15807, Start Num: 19

Candidate Starts for Sue2\_18:

(Start: 19 @14593 has 78 MA's), (Start: 20 @14596 has 13 MA's), (26, 14638), (54, 14767), (57, 14776), (94, 14950), (103, 14986), (173, 15364), (184, 15415), (188, 15433), (193, 15460), (237, 15706), (246, 15739), (247, 15745),

Gene: Supakev\_16 Start: 14403, Stop: 15560, Start Num: 19

Candidate Starts for Supakev\_16:

(Start: 19 @14403 has 78 MA's), (Start: 20 @14406 has 13 MA's), (Start: 24 @14433 has 3 MA's), (Start: 25 @14442 has 1 MA's), (Start: 34 @14469 has 5 MA's), (48, 14532), (76, 14679), (132, 14883), (173, 15114), (175, 15129), (193, 15210), (214, 15333), (224, 15369), (225, 15372), (236, 15444), (245, 15489), (257, 15555),

Gene: Suppi\_20 Start: 16074, Stop: 17231, Start Num: 19

Candidate Starts for Suppi\_20:

(Start: 19 @16074 has 78 MA's), (Start: 20 @16077 has 13 MA's), (Start: 34 @16140 has 5 MA's), (62, 16278), (100, 16443), (155, 16707), (156, 16710), (158, 16719), (175, 16800), (193, 16881), (195, 16893), (206, 16971), (207, 16974), (214, 17004), (224, 17040), (251, 17199),

Gene: Talia1610\_96 Start: 61968, Stop: 63086, Start Num: 34

Candidate Starts for Talia1610\_96:

(Start: 34 @61968 has 5 MA's), (69, 62151), (70, 62154), (104, 62289), (112, 62313), (120, 62343), (126, 62370), (131, 62418), (151, 62541), (155, 62574), (158, 62586), (177, 62676), (180, 62685), (187, 62715), (194, 62754), (196, 62766), (210, 62853), (214, 62874), (251, 63063),

Gene: TattModd\_20 Start: 16035, Stop: 17192, Start Num: 19

Candidate Starts for TattModd\_20:

(Start: 19 @16035 has 78 MA's), (Start: 20 @16038 has 13 MA's), (23, 16059), (41, 16134), (52, 16194), (62, 16239), (64, 16260), (87, 16362), (123, 16470), (132, 16515), (155, 16668), (161, 16698), (173, 16746), (184, 16797), (193, 16842), (216, 16977), (224, 17001), (237, 17088), (250, 17154), (251, 17160), (257, 17187),

Gene: Temper16\_16 Start: 14410, Stop: 15567, Start Num: 19

Candidate Starts for Temper16\_16:

(Start: 19 @14410 has 78 MA's), (Start: 20 @14413 has 13 MA's), (23, 14434), (Start: 24 @14440 has 3 MA's), (Start: 25 @14449 has 1 MA's), (Start: 34 @14476 has 5 MA's), (62, 14614), (76, 14686), (132, 14890), (158, 15055), (173, 15121), (193, 15217), (211, 15325), (214, 15340), (217, 15355), (224, 15376), (226, 15382), (236, 15451), (245, 15496), (257, 15562),

Gene: ToastyFinz\_18 Start: 14328, Stop: 15425, Start Num: 36

Candidate Starts for ToastyFinz\_18:

(Start: 20 @14241 has 13 MA's), (Start: 36 @14328 has 11 MA's), (40, 14349), (47, 14376), (50, 14394), (67, 14496), (107, 14652), (121, 14697), (159, 14916), (160, 14919), (190, 15075), (193, 15084), (226, 15246), (227, 15249), (229, 15264), (254, 15408),

Gene: Tweety19\_18 Start: 12988, Stop: 14172, Start Num: 20

Candidate Starts for Tweety19\_18:

(15, 12892), (Start: 19 @12985 has 78 MA's), (Start: 20 @12988 has 13 MA's), (28, 13036), (40, 13075), (45, 13099), (54, 13153), (57, 13162), (94, 13336), (158, 13657), (179, 13759), (184, 13780), (193, 13825), (213, 13945), (237, 14071), (246, 14104), (255, 14155),

Gene: Urla\_16 Start: 14417, Stop: 15574, Start Num: 19

Candidate Starts for Urla\_16:

(Start: 19 @14417 has 78 MA's), (Start: 20 @14420 has 13 MA's), (Start: 24 @14447 has 3 MA's), (62, 14621), (100, 14786), (106, 14795), (114, 14813), (117, 14828), (173, 15128), (184, 15179), (186, 15188), (193, 15224), (208, 15320), (216, 15359), (224, 15383), (251, 15542), (257, 15569),

Gene: VResidence\_18 Start: 14006, Stop: 15220, Start Num: 19

Candidate Starts for VResidence\_18:

(Start: 19 @14006 has 78 MA's), (Start: 20 @14009 has 13 MA's), (26, 14051), (40, 14102), (57, 14189), (85, 14324), (133, 14543), (139, 14585), (149, 14636), (184, 14828), (193, 14873), (203, 14939), (206, 14963), (224, 15032), (237, 15119), (246, 15152),

Gene: Vallejo\_20 Start: 15974, Stop: 17131, Start Num: 19

Candidate Starts for Vallejo\_20:

(Start: 19 @15974 has 78 MA's), (Start: 20 @15977 has 13 MA's), (23, 15998), (41, 16073), (64, 16199), (87, 16301), (123, 16409), (132, 16454), (155, 16607), (161, 16637), (173, 16685), (175, 16700), (184, 16736), (193, 16781), (216, 16916), (224, 16940), (226, 16946), (246, 17063), (250, 17093), (251, 17099), (257, 17126),

Gene: Vulture\_16 Start: 14401, Stop: 15558, Start Num: 19

Candidate Starts for Vulture\_16:

(Start: 19 @14401 has 78 MA's), (Start: 20 @14404 has 13 MA's), (Start: 24 @14431 has 3 MA's), (Start: 25 @14440 has 1 MA's), (Start: 34 @14467 has 5 MA's), (41, 14500), (76, 14677), (132, 14881), (173, 15112), (175, 15127), (193, 15208), (214, 15331), (224, 15367), (225, 15370), (236, 15442), (245, 15487), (257, 15553),

Gene: Wawa\_20 Start: 16011, Stop: 17168, Start Num: 19

Candidate Starts for Wawa\_20:

(Start: 19 @16011 has 78 MA's), (Start: 20 @16014 has 13 MA's), (23, 16035), (41, 16110), (52, 16170), (62, 16215), (64, 16236), (87, 16338), (123, 16446), (132, 16491), (155, 16644), (161, 16674), (173, 16722), (184, 16773), (193, 16818), (216, 16953), (224, 16977), (237, 17064), (250, 17130), (251, 17136), (257, 17163),

Gene: Wayne\_20 Start: 16120, Stop: 17277, Start Num: 19

Candidate Starts for Wayne\_20:

(Start: 19 @16120 has 78 MA's), (Start: 20 @16123 has 13 MA's), (Start: 34 @16186 has 5 MA's), (62, 16324), (100, 16489), (155, 16753), (156, 16756), (158, 16765), (175, 16846), (193, 16927), (195, 16939), (206, 17017), (214, 17050), (224, 17086), (225, 17089), (251, 17245),

Gene: Wildwest\_19 Start: 15358, Stop: 16572, Start Num: 19

Candidate Starts for Wildwest\_19:



(Start: 19 @15358 has 78 MA's), (Start: 20 @15361 has 13 MA's), (57, 15541), (91, 15709), (94, 15715), (102, 15745), (103, 15751), (131, 15886), (132, 15892), (139, 15937), (158, 16057), (184, 16180), (188, 16198), (193, 16225), (208, 16321), (237, 16471), (246, 16504), (255, 16555),

Gene: WonderBoy\_16 Start: 14388, Stop: 15542, Start Num: 19

Candidate Starts for WonderBoy\_16:

(Start: 19 @14388 has 78 MA's), (Start: 20 @14391 has 13 MA's), (Start: 24 @14418 has 3 MA's), (40, 14481), (49, 14523), (52, 14547), (60, 14586), (62, 14592), (123, 14823), (131, 14862), (134, 14874), (156, 15024), (165, 15057), (173, 15096), (175, 15111), (186, 15156), (193, 15192), (195, 15204), (206, 15282), (224, 15351), (236, 15426), (239, 15441), (245, 15471), (250, 15504), (256, 15534),

Gene: Zorro\_20 Start: 15990, Stop: 17147, Start Num: 19

Candidate Starts for Zorro\_20:

(Start: 19 @15990 has 78 MA's), (Start: 20 @15993 has 13 MA's), (23, 16014), (41, 16089), (52, 16149), (62, 16194), (64, 16215), (80, 16287), (87, 16317), (100, 16359), (123, 16425), (132, 16470), (155, 16623), (161, 16653), (173, 16701), (175, 16716), (184, 16752), (193, 16797), (216, 16932), (224, 16956), (237, 17043), (250, 17109), (251, 17115), (257, 17142),