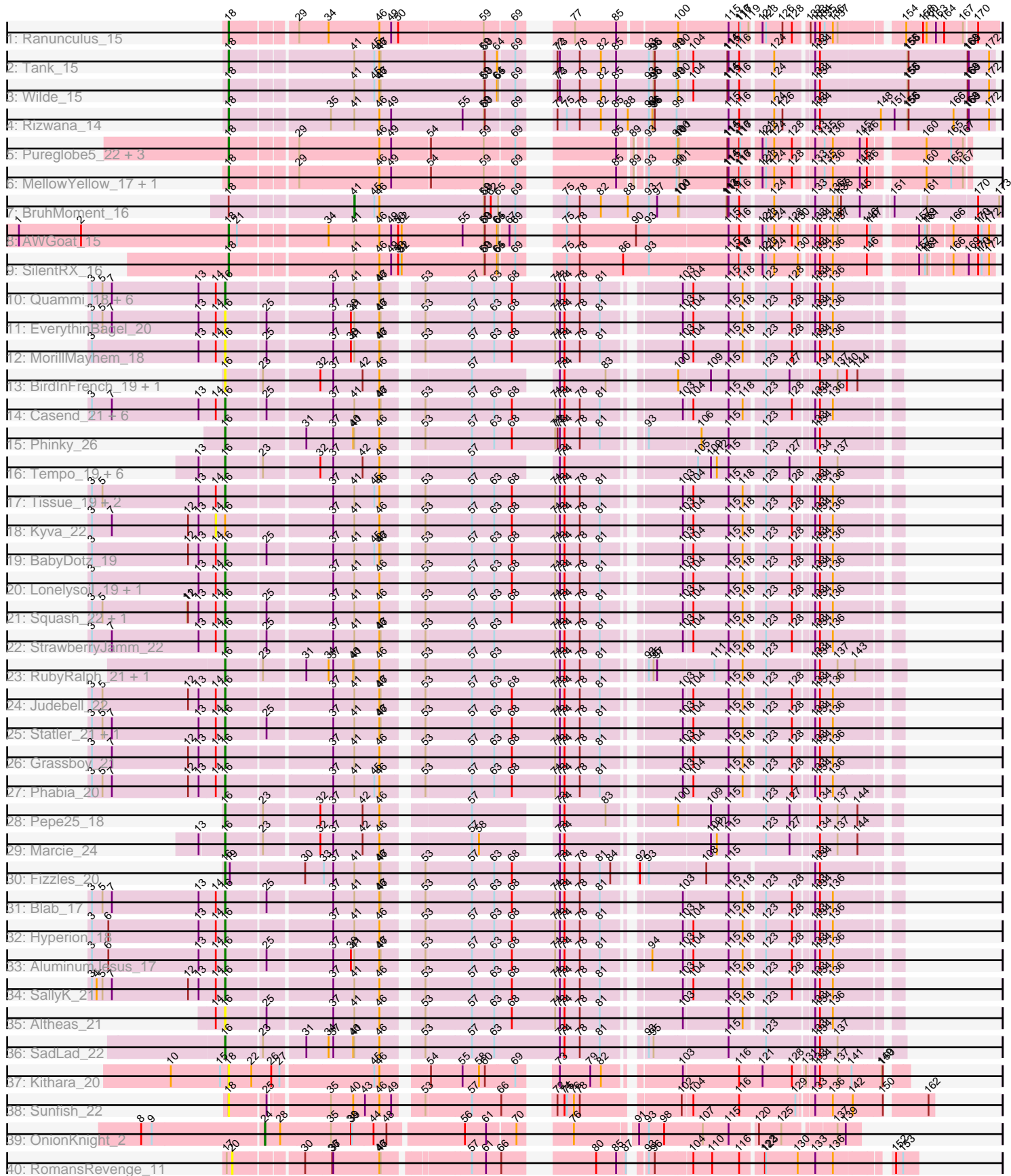


Pham 196510



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 196510 Report

This analysis was run 12/09/24 on database version 580.

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 196510 has 69 members, 18 are drafts.

Phages represented in each track:

- Track 1 : Ranunculus\_15
- Track 2 : Tank\_15
- Track 3 : Wilde\_15
- Track 4 : Rizwana\_14
- Track 5 : Pureglobe5\_22, Beagle\_21, Pointis\_20, Odyssey395\_22
- Track 6 : MellowYellow\_17, NyleyClemson\_17
- Track 7 : BruhMoment\_16
- Track 8 : AWGoat\_15
- Track 9 : SilentRX\_16
- Track 10 : Quammi\_18, Sillytadpoles\_20, Viceroy\_19, Llemily\_20, Rudy\_18, Rowlf\_16, Zagie\_20
- Track 11 : EverythinBagel\_20
- Track 12 : MorillMayhem\_18
- Track 13 : BirdInFrench\_19, Wilca\_19
- Track 14 : Casend\_21, Wayne3\_21, Jehoshaphat\_22, Wheelie\_19, FrankDeliGuy\_18, DonaldDuck\_20, Teehee\_21
- Track 15 : Phinky\_26
- Track 16 : Tempo\_19, Kelcole\_18, CandC\_18, Romm\_20, RobinRose\_20, OneinaGillian\_19, Fregley\_20
- Track 17 : Tissue\_19, Namago\_20, Zhafia\_23
- Track 18 : Kyva\_22
- Track 19 : BabyDotz\_19
- Track 20 : Lonelysoil\_19, Mashley\_17
- Track 21 : Squash\_22, Nike\_20
- Track 22 : StrawberryJamm\_22
- Track 23 : RubyRalph\_21, Fransoyer\_21
- Track 24 : Judebell\_22
- Track 25 : Statler\_21, Gazebo\_19
- Track 26 : Grassboy\_21
- Track 27 : Phabia\_20
- Track 28 : Pepe25\_18
- Track 29 : Marcie\_24
- Track 30 : Fizzles\_20

- Track 31 : Blab\_17
- Track 32 : Hyperion\_18
- Track 33 : AluminumJesus\_17
- Track 34 : SallyK\_21
- Track 35 : Altheas\_21
- Track 36 : SadLad\_22
- Track 37 : Kithara\_20
- Track 38 : Sunfish\_22
- Track 39 : OnionKnight\_2
- Track 40 : RomansRevenge\_11

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

The start number called the most often in the published annotations is 16, it was called in 38 of the 51 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Altheas\_21, AluminumJesus\_17, BabyDotz\_19, BirdInFrench\_19, Blab\_17, CandC\_18, Casend\_21, DonaldDuck\_20, EverythinBagel\_20, Fizzles\_20, FrankDeliGuy\_18, Fransoyer\_21, Fregley\_20, Gazebo\_19, Grassboy\_21, Hyperion\_18, Jehoshaphat\_22, Judebell\_22, Kelcole\_18, Llemily\_20, Lonelysoil\_19, Marcie\_24, Mashley\_17, MorillMayhem\_18, Namago\_20, Nike\_20, OneinaGillian\_19, Pepe25\_18, Phabia\_20, Phinky\_26, Quammi\_18, RobinRose\_20, Romm\_20, Rowlf\_16, RubyRalph\_21, Rudy\_18, SadLad\_22, SallyK\_21, Sillytadpoles\_20, Squash\_22, Statler\_21, StrawberryJamm\_22, Teehee\_21, Tempo\_19, Tissue\_19, Viceroy\_19, Wayne3\_21, Wheelie\_19, Wilca\_19, Zagie\_20, Zhafia\_23,

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

- Kyva\_22,

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

- AWGoat\_15, Beagle\_21, BruhMoment\_16, Kithara\_20, MellowYellow\_17, NyleyClemson\_17, Odyssey395\_22, OnionKnight\_2, Pointis\_20, Pureglobe5\_22, Ranunculus\_15, Rizwana\_14, RomansRevenge\_11, SilentRX\_16, Sunfish\_22, Tank\_15, Wilde\_15,

**Summary by start number:**

Start 14:

- Found in 36 of 69 ( 52.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.8% of time when present
- Phage (with cluster) where this start called: Kyva\_22 (EG),

Start 16:

- Found in 52 of 69 ( 75.4% ) of genes in pham
- Manual Annotations of this start: 38 of 51
- Called 98.1% of time when present
- Phage (with cluster) where this start called: Altheas\_21 (EG), AluminumJesus\_17 (EG), BabyDotz\_19 (EG), BirdInFrench\_19 (EG), Blab\_17 (EG), CandC\_18 (EG),

Casend\_21 (EG), DonaldDuck\_20 (EG), EverythinBagel\_20 (EG), Fizzles\_20 (EG), FrankDeliGuy\_18 (EG), Fransoyer\_21 (EG), Fregley\_20 (EG), Gazebo\_19 (EG), Grassboy\_21 (EG), Hyperion\_18 (EG), Jehoshaphat\_22 (EG), Judebell\_22 (EG), Kelcole\_18 (EG), Llemily\_20 (EG), Lonelysoil\_19 (EG), Marcie\_24 (EG), Mashley\_17 (EG), MorillMayhem\_18 (EG), Namago\_20 (EG), Nike\_20 (EG), OneinaGillian\_19 (EG), Pepe25\_18 (EG), Phabia\_20 (EG), Phinky\_26 (EG), Quammi\_18 (EG), RobinRose\_20 (EG), Romm\_20 (EG), Rowlf\_16 (EG), RubyRalph\_21 (EG), Rudy\_18 (EG), SadLad\_22 (EG), SallyK\_21 (EG), Sillytadpoles\_20 (EG), Squash\_22 (EG), Statler\_21 (EG), StrawberryJamm\_22 (EG), Teehee\_21 (EG), Tempo\_19 (EG), Tissue\_19 (EG), Viceroy\_19 (EG), Wayne3\_21 (EG), Wheelie\_19 (EG), Wilca\_19 (EG), Zagie\_20 (EG), Zhafia\_23 (EG),

Start 18:

- Found in 15 of 69 ( 21.7% ) of genes in pham
- Manual Annotations of this start: 11 of 51
- Called 93.3% of time when present
- Phage (with cluster) where this start called: AWGoat\_15 (AP4), Beagle\_21 (AP2), Kithara\_20 (singleton), MellowYellow\_17 (AP2), NyleyClemson\_17 (AP2), Odyssey395\_22 (AP2), Pointis\_20 (AP2), Pureglobe5\_22 (AP2), Ranunculus\_15 (AP), Rizwana\_14 (AP1), SilentRX\_16 (AP4), Sunfish\_22 (singleton), Tank\_15 (AP1), Wilde\_15 (AP1),

Start 20:

- Found in 1 of 69 ( 1.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: RomansRevenge\_11 (singleton),

Start 24:

- Found in 1 of 69 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 51
- Called 100.0% of time when present
- Phage (with cluster) where this start called: OnionKnight\_2 (singleton),

Start 41:

- Found in 47 of 69 ( 68.1% ) of genes in pham
- Manual Annotations of this start: 1 of 51
- Called 2.1% of time when present
- Phage (with cluster) where this start called: BruhMoment\_16 (AP3),

### Summary by clusters:

There are 7 clusters represented in this pham: singleton, AP2, AP3, EG, AP1, AP4, AP,

Info for manual annotations of cluster AP:

- Start number 18 was manually annotated 1 time for cluster AP.

Info for manual annotations of cluster AP1:

- Start number 18 was manually annotated 3 times for cluster AP1.

Info for manual annotations of cluster AP2:

- Start number 18 was manually annotated 5 times for cluster AP2.

Info for manual annotations of cluster AP3:

- Start number 41 was manually annotated 1 time for cluster AP3.

Info for manual annotations of cluster AP4:

- Start number 18 was manually annotated 2 times for cluster AP4.

Info for manual annotations of cluster EG:

- Start number 16 was manually annotated 38 times for cluster EG.

### **Gene Information:**

Gene: AWGoat\_15 Start: 6667, Stop: 8379, Start Num: 18

Candidate Starts for AWGoat\_15:

(1, 6130), (2, 6289), (Start: 18 @6667 has 11 MA's), (21, 6688), (34, 6883), (Start: 41 @6949 has 1 MA's), (46, 7012), (49, 7042), (50, 7060), (52, 7069), (55, 7222), (59, 7276), (60, 7279), (64, 7309), (65, 7312), (67, 7333), (69, 7348), (75, 7408), (78, 7441), (90, 7582), (93, 7615), (115, 7807), (116, 7834), (121, 7876), (123, 7885), (124, 7906), (128, 7951), (130, 7966), (133, 7990), (134, 8002), (136, 8032), (137, 8044), (146, 8113), (147, 8122), (157, 8209), (159, 8224), (161, 8230), (166, 8281), (170, 8338), (171, 8347), (172, 8365),

Gene: Altheas\_21 Start: 6863, Stop: 8374, Start Num: 16

Candidate Starts for Altheas\_21:

(14, 6839), (Start: 16 @6863 has 38 MA's), (25, 6956), (37, 7106), (Start: 41 @7160 has 1 MA's), (46, 7223), (53, 7298), (57, 7409), (63, 7466), (68, 7511), (71, 7622), (73, 7634), (74, 7646), (78, 7685), (81, 7736), (103, 7895), (115, 8003), (118, 8036), (123, 8078), (133, 8189), (134, 8201), (136, 8234),

Gene: AluminumJesus\_17 Start: 6227, Stop: 7738, Start Num: 16

Candidate Starts for AluminumJesus\_17:

(3, 5888), (6, 5930), (13, 6161), (14, 6203), (Start: 16 @6227 has 38 MA's), (25, 6320), (37, 6470), (38, 6515), (Start: 41 @6524 has 1 MA's), (46, 6587), (47, 6590), (53, 6662), (57, 6773), (63, 6830), (68, 6875), (71, 6986), (73, 6998), (74, 7010), (78, 7049), (81, 7100), (94, 7184), (103, 7259), (104, 7277), (115, 7367), (118, 7400), (123, 7442), (128, 7508), (133, 7553), (134, 7565), (136, 7598),

Gene: BabyDotz\_19 Start: 6678, Stop: 8189, Start Num: 16

Candidate Starts for BabyDotz\_19:

(3, 6339), (12, 6585), (13, 6612), (14, 6654), (Start: 16 @6678 has 38 MA's), (25, 6771), (37, 6921), (Start: 41 @6975 has 1 MA's), (45, 7026), (46, 7038), (47, 7041), (53, 7113), (57, 7224), (63, 7281), (68, 7326), (71, 7437), (73, 7449), (74, 7461), (78, 7500), (81, 7551), (103, 7710), (104, 7728), (115, 7818), (118, 7851), (123, 7893), (128, 7959), (133, 8004), (134, 8016), (136, 8049),

Gene: Beagle\_21 Start: 7242, Stop: 8873, Start Num: 18

Candidate Starts for Beagle\_21:

(Start: 18 @7242 has 11 MA's), (29, 7389), (46, 7590), (49, 7620), (54, 7713), (59, 7845), (69, 7917), (85, 8100), (89, 8130), (93, 8151), (99, 8220), (100, 8223), (101, 8226), (114, 8340), (115, 8343), (116, 8370), (117, 8373), (121, 8412), (123, 8421), (124, 8442), (128, 8487), (133, 8526), (135, 8547), (136, 8568), (145, 8631), (146, 8649), (160, 8769), (165, 8829), (167, 8859),

Gene: BirdInFrench\_19 Start: 5601, Stop: 7064, Start Num: 16

Candidate Starts for BirdInFrench\_19:

(Start: 16 @5601 has 38 MA's), (23, 5685), (32, 5814), (37, 5844), (42, 5919), (46, 5961), (57, 6147), (73, 6300), (74, 6312), (83, 6417), (100, 6549), (109, 6627), (115, 6672), (123, 6762), (127, 6822), (134, 6885), (137, 6930), (140, 6954), (144, 6978),

Gene: Blab\_17 Start: 6003, Stop: 7514, Start Num: 16

Candidate Starts for Blab\_17:

(3, 5664), (5, 5691), (7, 5715), (13, 5937), (14, 5979), (Start: 16 @6003 has 38 MA's), (25, 6096), (37, 6246), (Start: 41 @6300 has 1 MA's), (46, 6363), (47, 6366), (53, 6438), (57, 6549), (63, 6606), (68, 6651), (71, 6762), (73, 6774), (74, 6786), (78, 6825), (81, 6876), (103, 7035), (115, 7143), (118, 7176), (123, 7218), (128, 7284), (133, 7329), (134, 7341), (136, 7374),

Gene: BruhMoment\_16 Start: 6782, Stop: 8248, Start Num: 41

Candidate Starts for BruhMoment\_16:

(Start: 18 @6500 has 11 MA's), (Start: 41 @6782 has 1 MA's), (45, 6833), (46, 6845), (59, 7103), (60, 7106), (62, 7121), (65, 7139), (69, 7175), (75, 7235), (78, 7268), (82, 7322), (88, 7391), (93, 7445), (97, 7466), (100, 7517), (101, 7520), (113, 7631), (114, 7634), (115, 7637), (116, 7664), (124, 7736), (133, 7820), (136, 7862), (137, 7874), (138, 7883), (145, 7925), (151, 7991), (161, 8063), (170, 8186), (173, 8240),

Gene: CandC\_18 Start: 5287, Stop: 6750, Start Num: 16

Candidate Starts for CandC\_18:

(13, 5227), (Start: 16 @5287 has 38 MA's), (23, 5371), (32, 5500), (37, 5530), (42, 5605), (46, 5647), (57, 5833), (73, 5986), (74, 5998), (105, 6280), (109, 6313), (112, 6328), (115, 6358), (123, 6448), (127, 6508), (134, 6571), (137, 6616),

Gene: Casend\_21 Start: 7002, Stop: 8513, Start Num: 16

Candidate Starts for Casend\_21:

(3, 6663), (7, 6714), (13, 6936), (14, 6978), (Start: 16 @7002 has 38 MA's), (25, 7095), (37, 7245), (Start: 41 @7299 has 1 MA's), (46, 7362), (47, 7365), (53, 7437), (57, 7548), (63, 7605), (68, 7650), (71, 7761), (73, 7773), (74, 7785), (78, 7824), (81, 7875), (103, 8034), (104, 8052), (115, 8142), (118, 8175), (123, 8217), (128, 8283), (133, 8328), (134, 8340), (136, 8373),

Gene: DonaldDuck\_20 Start: 6348, Stop: 7859, Start Num: 16

Candidate Starts for DonaldDuck\_20:

(3, 6009), (7, 6060), (13, 6282), (14, 6324), (Start: 16 @6348 has 38 MA's), (25, 6441), (37, 6591), (Start: 41 @6645 has 1 MA's), (46, 6708), (47, 6711), (53, 6783), (57, 6894), (63, 6951), (68, 6996), (71, 7107), (73, 7119), (74, 7131), (78, 7170), (81, 7221), (103, 7380), (104, 7398), (115, 7488), (118, 7521), (123, 7563), (128, 7629), (133, 7674), (134, 7686), (136, 7719),

Gene: EverythinBagel\_20 Start: 6749, Stop: 8260, Start Num: 16

Candidate Starts for EverythinBagel\_20:

(3, 6410), (5, 6437), (7, 6461), (13, 6683), (14, 6725), (Start: 16 @6749 has 38 MA's), (25, 6842), (37, 6992), (38, 7037), (Start: 41 @7046 has 1 MA's), (46, 7109), (47, 7112), (53, 7184), (57, 7295), (63, 7352), (68, 7397), (71, 7508), (73, 7520), (74, 7532), (78, 7571), (81, 7622), (103, 7781), (104, 7799), (115, 7889), (118, 7922), (123, 7964), (128, 8030), (133, 8075), (134, 8087), (136, 8120),

Gene: Fizzles\_20 Start: 6291, Stop: 7814, Start Num: 16

Candidate Starts for Fizzles\_20:

(Start: 16 @6291 has 38 MA's), (19, 6303), (30, 6480), (33, 6525), (37, 6549), (Start: 41 @6603 has 1 MA's), (46, 6666), (47, 6669), (53, 6741), (57, 6852), (63, 6909), (68, 6954), (73, 7077), (74, 7089), (78, 7128), (81, 7179), (84, 7206), (92, 7239), (93, 7254), (108, 7386), (115, 7443), (133, 7629), (134, 7641),

Gene: FrankDeliGuy\_18 Start: 6207, Stop: 7718, Start Num: 16

Candidate Starts for FrankDeliGuy\_18:

(3, 5868), (7, 5919), (13, 6141), (14, 6183), (Start: 16 @6207 has 38 MA's), (25, 6300), (37, 6450), (Start: 41 @6504 has 1 MA's), (46, 6567), (47, 6570), (53, 6642), (57, 6753), (63, 6810), (68, 6855), (71, 6966), (73, 6978), (74, 6990), (78, 7029), (81, 7080), (103, 7239), (104, 7257), (115, 7347), (118, 7380), (123, 7422), (128, 7488), (133, 7533), (134, 7545), (136, 7578),

Gene: Fransoyer\_21 Start: 6468, Stop: 8003, Start Num: 16

Candidate Starts for Fransoyer\_21:

(Start: 16 @6468 has 38 MA's), (23, 6552), (31, 6645), (34, 6699), (37, 6711), (40, 6762), (Start: 41 @6765 has 1 MA's), (46, 6828), (53, 6903), (57, 7014), (63, 7071), (71, 7227), (73, 7239), (74, 7251), (78, 7290), (81, 7341), (93, 7416), (95, 7428), (97, 7437), (111, 7572), (115, 7608), (118, 7641), (123, 7698), (133, 7809), (134, 7821), (137, 7866), (143, 7908),

Gene: Fregley\_20 Start: 5825, Stop: 7288, Start Num: 16

Candidate Starts for Fregley\_20:

(13, 5765), (Start: 16 @5825 has 38 MA's), (23, 5909), (32, 6038), (37, 6068), (42, 6143), (46, 6185), (57, 6371), (73, 6524), (74, 6536), (105, 6818), (109, 6851), (112, 6866), (115, 6896), (123, 6986), (127, 7046), (134, 7109), (137, 7154),

Gene: Gazebo\_19 Start: 6569, Stop: 8080, Start Num: 16

Candidate Starts for Gazebo\_19:

(3, 6230), (5, 6257), (7, 6281), (13, 6503), (14, 6545), (Start: 16 @6569 has 38 MA's), (25, 6662), (37, 6812), (Start: 41 @6866 has 1 MA's), (46, 6929), (47, 6932), (53, 7004), (57, 7115), (63, 7172), (68, 7217), (71, 7328), (73, 7340), (74, 7352), (78, 7391), (81, 7442), (103, 7601), (104, 7619), (115, 7709), (118, 7742), (123, 7784), (128, 7850), (133, 7895), (134, 7907), (136, 7940),

Gene: Grassboy\_21 Start: 7024, Stop: 8535, Start Num: 16

Candidate Starts for Grassboy\_21:

(3, 6685), (7, 6736), (12, 6931), (13, 6958), (14, 7000), (Start: 16 @7024 has 38 MA's), (37, 7267), (Start: 41 @7321 has 1 MA's), (46, 7384), (53, 7459), (57, 7570), (63, 7627), (68, 7672), (71, 7783), (73, 7795), (74, 7807), (78, 7846), (81, 7897), (103, 8056), (104, 8074), (115, 8164), (118, 8197), (123, 8239), (128, 8305), (133, 8350), (134, 8362), (136, 8395),

Gene: Hyperion\_18 Start: 6272, Stop: 7783, Start Num: 16

Candidate Starts for Hyperion\_18:

(3, 5933), (6, 5975), (13, 6206), (14, 6248), (Start: 16 @6272 has 38 MA's), (37, 6515), (Start: 41 @6569 has 1 MA's), (46, 6632), (53, 6707), (57, 6818), (63, 6875), (68, 6920), (71, 7031), (73, 7043), (74, 7055), (78, 7094), (81, 7145), (103, 7304), (104, 7322), (115, 7412), (118, 7445), (123, 7487), (128, 7553), (133, 7598), (134, 7610), (136, 7643),

Gene: Jehoshaphat\_22 Start: 7267, Stop: 8778, Start Num: 16

Candidate Starts for Jehoshaphat\_22:

(3, 6928), (7, 6979), (13, 7201), (14, 7243), (Start: 16 @7267 has 38 MA's), (25, 7360), (37, 7510), (Start: 41 @7564 has 1 MA's), (46, 7627), (47, 7630), (53, 7702), (57, 7813), (63, 7870), (68, 7915), (71, 8026), (73, 8038), (74, 8050), (78, 8089), (81, 8140), (103, 8299), (104, 8317), (115, 8407), (118, 8440), (123, 8482), (128, 8548), (133, 8593), (134, 8605), (136, 8638),

Gene: Judebell\_22 Start: 6808, Stop: 8319, Start Num: 16

Candidate Starts for Judebell\_22:

(3, 6469), (5, 6496), (12, 6715), (13, 6742), (14, 6784), (Start: 16 @6808 has 38 MA's), (37, 7051), (Start: 41 @7105 has 1 MA's), (46, 7168), (47, 7171), (53, 7243), (57, 7354), (63, 7411), (68, 7456), (71, 7567), (73, 7579), (74, 7591), (78, 7630), (81, 7681), (103, 7840), (104, 7858), (115, 7948), (118,

7981), (123, 8023), (128, 8089), (133, 8134), (134, 8146), (136, 8179),

Gene: Kelcole\_18 Start: 5678, Stop: 7141, Start Num: 16

Candidate Starts for Kelcole\_18:

(13, 5618), (Start: 16 @5678 has 38 MA's), (23, 5762), (32, 5891), (37, 5921), (42, 5996), (46, 6038), (57, 6224), (73, 6377), (74, 6389), (105, 6671), (109, 6704), (112, 6719), (115, 6749), (123, 6839), (127, 6899), (134, 6962), (137, 7007),

Gene: Kithara\_20 Start: 7908, Stop: 9383, Start Num: 18

Candidate Starts for Kithara\_20:

(10, 7761), (15, 7887), (Start: 18 @7908 has 11 MA's), (22, 7962), (26, 8013), (27, 8034), (45, 8259), (46, 8271), (54, 8355), (55, 8433), (58, 8475), (60, 8490), (69, 8565), (73, 8607), (79, 8685), (82, 8712), (103, 8868), (116, 9003), (121, 9057), (128, 9132), (131, 9159), (133, 9177), (134, 9189), (137, 9231), (141, 9267), (149, 9336), (150, 9339),

Gene: Kyva\_22 Start: 7035, Stop: 8570, Start Num: 14

Candidate Starts for Kyva\_22:

(3, 6720), (7, 6771), (12, 6966), (13, 6993), (14, 7035), (Start: 16 @7059 has 38 MA's), (37, 7302), (Start: 41 @7356 has 1 MA's), (46, 7419), (53, 7494), (57, 7605), (63, 7662), (68, 7707), (71, 7818), (73, 7830), (74, 7842), (78, 7881), (81, 7932), (103, 8091), (104, 8109), (115, 8199), (118, 8232), (123, 8274), (128, 8340), (133, 8385), (134, 8397), (136, 8430),

Gene: Llemily\_20 Start: 6043, Stop: 7554, Start Num: 16

Candidate Starts for Llemily\_20:

(3, 5704), (5, 5731), (7, 5755), (13, 5977), (14, 6019), (Start: 16 @6043 has 38 MA's), (37, 6286), (Start: 41 @6340 has 1 MA's), (46, 6403), (47, 6406), (53, 6478), (57, 6589), (63, 6646), (68, 6691), (71, 6802), (73, 6814), (74, 6826), (78, 6865), (81, 6916), (103, 7075), (104, 7093), (115, 7183), (118, 7216), (123, 7258), (128, 7324), (133, 7369), (134, 7381), (136, 7414),

Gene: Lonelysoil\_19 Start: 6288, Stop: 7799, Start Num: 16

Candidate Starts for Lonelysoil\_19:

(3, 5949), (13, 6222), (14, 6264), (Start: 16 @6288 has 38 MA's), (37, 6531), (Start: 41 @6585 has 1 MA's), (46, 6648), (53, 6723), (57, 6834), (63, 6891), (68, 6936), (71, 7047), (73, 7059), (74, 7071), (78, 7110), (81, 7161), (103, 7320), (104, 7338), (115, 7428), (118, 7461), (123, 7503), (128, 7569), (133, 7614), (134, 7626), (136, 7659),

Gene: Marcie\_24 Start: 6383, Stop: 7846, Start Num: 16

Candidate Starts for Marcie\_24:

(13, 6323), (Start: 16 @6383 has 38 MA's), (23, 6467), (32, 6596), (37, 6626), (42, 6701), (46, 6743), (57, 6929), (58, 6947), (73, 7082), (74, 7094), (109, 7409), (112, 7424), (115, 7454), (123, 7544), (127, 7604), (134, 7667), (137, 7712), (144, 7760),

Gene: Mashley\_17 Start: 6083, Stop: 7594, Start Num: 16

Candidate Starts for Mashley\_17:

(3, 5744), (13, 6017), (14, 6059), (Start: 16 @6083 has 38 MA's), (37, 6326), (Start: 41 @6380 has 1 MA's), (46, 6443), (53, 6518), (57, 6629), (63, 6686), (68, 6731), (71, 6842), (73, 6854), (74, 6866), (78, 6905), (81, 6956), (103, 7115), (104, 7133), (115, 7223), (118, 7256), (123, 7298), (128, 7364), (133, 7409), (134, 7421), (136, 7454),

Gene: MellowYellow\_17 Start: 5986, Stop: 7617, Start Num: 18

Candidate Starts for MellowYellow\_17:

(Start: 18 @5986 has 11 MA's), (29, 6133), (46, 6334), (49, 6364), (54, 6457), (59, 6589), (69, 6661), (85, 6844), (89, 6874), (93, 6895), (99, 6964), (101, 6970), (114, 7084), (115, 7087), (116, 7114), (117,



7117), (121, 7156), (123, 7165), (124, 7186), (128, 7231), (133, 7270), (135, 7291), (136, 7312), (145, 7375), (146, 7393), (160, 7513), (165, 7573), (167, 7603),

Gene: MorillMayhem\_18 Start: 6091, Stop: 7602, Start Num: 16

Candidate Starts for MorillMayhem\_18:

(3, 5752), (13, 6025), (14, 6067), (Start: 16 @6091 has 38 MA's), (25, 6184), (37, 6334), (38, 6379), (Start: 41 @6388 has 1 MA's), (46, 6451), (47, 6454), (53, 6526), (57, 6637), (63, 6694), (68, 6739), (71, 6850), (73, 6862), (74, 6874), (78, 6913), (81, 6964), (103, 7123), (104, 7141), (115, 7231), (118, 7264), (123, 7306), (128, 7372), (133, 7417), (134, 7429), (136, 7462),

Gene: Namago\_20 Start: 6103, Stop: 7614, Start Num: 16

Candidate Starts for Namago\_20:

(3, 5764), (5, 5791), (13, 6037), (14, 6079), (Start: 16 @6103 has 38 MA's), (37, 6346), (Start: 41 @6400 has 1 MA's), (45, 6451), (46, 6463), (53, 6538), (57, 6649), (63, 6706), (68, 6751), (71, 6862), (73, 6874), (74, 6886), (78, 6925), (81, 6976), (103, 7135), (104, 7153), (115, 7243), (118, 7276), (123, 7318), (128, 7384), (133, 7429), (134, 7441), (136, 7474),

Gene: Nike\_20 Start: 7009, Stop: 8520, Start Num: 16

Candidate Starts for Nike\_20:

(3, 6670), (5, 6697), (11, 6913), (12, 6916), (13, 6943), (14, 6985), (Start: 16 @7009 has 38 MA's), (25, 7102), (37, 7252), (Start: 41 @7306 has 1 MA's), (46, 7369), (53, 7444), (57, 7555), (63, 7612), (68, 7657), (71, 7768), (73, 7780), (74, 7792), (78, 7831), (81, 7882), (103, 8041), (104, 8059), (115, 8149), (118, 8182), (123, 8224), (128, 8290), (133, 8335), (134, 8347), (136, 8380),

Gene: NyleyClemson\_17 Start: 5928, Stop: 7559, Start Num: 18

Candidate Starts for NyleyClemson\_17:

(Start: 18 @5928 has 11 MA's), (29, 6075), (46, 6276), (49, 6306), (54, 6399), (59, 6531), (69, 6603), (85, 6786), (89, 6816), (93, 6837), (99, 6906), (101, 6912), (114, 7026), (115, 7029), (116, 7056), (117, 7059), (121, 7098), (123, 7107), (124, 7128), (128, 7173), (133, 7212), (135, 7233), (136, 7254), (145, 7317), (146, 7335), (160, 7455), (165, 7515), (167, 7545),

Gene: Odyssey395\_22 Start: 7443, Stop: 9074, Start Num: 18

Candidate Starts for Odyssey395\_22:

(Start: 18 @7443 has 11 MA's), (29, 7590), (46, 7791), (49, 7821), (54, 7914), (59, 8046), (69, 8118), (85, 8301), (89, 8331), (93, 8352), (99, 8421), (100, 8424), (101, 8427), (114, 8541), (115, 8544), (116, 8571), (117, 8574), (121, 8613), (123, 8622), (124, 8643), (128, 8688), (133, 8727), (135, 8748), (136, 8769), (145, 8832), (146, 8850), (160, 8970), (165, 9030), (167, 9060),

Gene: OneinaGillian\_19 Start: 5360, Stop: 6823, Start Num: 16

Candidate Starts for OneinaGillian\_19:

(13, 5300), (Start: 16 @5360 has 38 MA's), (23, 5444), (32, 5573), (37, 5603), (42, 5678), (46, 5720), (57, 5906), (73, 6059), (74, 6071), (105, 6353), (109, 6386), (112, 6401), (115, 6431), (123, 6521), (127, 6581), (134, 6644), (137, 6689),

Gene: OnionKnight\_2 Start: 417, Stop: 1766, Start Num: 24

Candidate Starts for OnionKnight\_2:

(8, 111), (9, 138), (Start: 24 @417 has 1 MA's), (28, 456), (35, 585), (38, 636), (39, 639), (44, 693), (48, 726), (56, 909), (61, 963), (70, 1032), (76, 1107), (91, 1248), (93, 1269), (98, 1308), (107, 1407), (115, 1473), (120, 1536), (125, 1590), (137, 1707), (139, 1728),

Gene: Pepe25\_18 Start: 5618, Stop: 7081, Start Num: 16

Candidate Starts for Pepe25\_18:

(Start: 16 @5618 has 38 MA's), (23, 5702), (32, 5831), (37, 5861), (42, 5936), (46, 5978), (57, 6164), (73, 6317), (74, 6329), (83, 6434), (100, 6566), (109, 6644), (115, 6689), (123, 6779), (127, 6839), (134, 6902), (137, 6947), (144, 6995),

Gene: Phabia\_20 Start: 6461, Stop: 7972, Start Num: 16

Candidate Starts for Phabia\_20:

(3, 6122), (5, 6149), (7, 6173), (12, 6368), (13, 6395), (14, 6437), (Start: 16 @6461 has 38 MA's), (37, 6704), (Start: 41 @6758 has 1 MA's), (45, 6809), (46, 6821), (53, 6896), (57, 7007), (63, 7064), (68, 7109), (71, 7220), (73, 7232), (74, 7244), (78, 7283), (81, 7334), (103, 7493), (104, 7511), (115, 7601), (118, 7634), (123, 7676), (128, 7742), (133, 7787), (134, 7799), (136, 7832),

Gene: Phinky\_26 Start: 7321, Stop: 8835, Start Num: 16

Candidate Starts for Phinky\_26:

(Start: 16 @7321 has 38 MA's), (31, 7498), (37, 7564), (40, 7615), (Start: 41 @7618 has 1 MA's), (46, 7681), (53, 7756), (57, 7867), (63, 7924), (68, 7969), (71, 8080), (72, 8086), (73, 8092), (74, 8104), (78, 8143), (81, 8194), (93, 8269), (106, 8392), (115, 8461), (123, 8536), (133, 8647), (134, 8659),

Gene: Pointis\_20 Start: 7441, Stop: 9072, Start Num: 18

Candidate Starts for Pointis\_20:

(Start: 18 @7441 has 11 MA's), (29, 7588), (46, 7789), (49, 7819), (54, 7912), (59, 8044), (69, 8116), (85, 8299), (89, 8329), (93, 8350), (99, 8419), (100, 8422), (101, 8425), (114, 8539), (115, 8542), (116, 8569), (117, 8572), (121, 8611), (123, 8620), (124, 8641), (128, 8686), (133, 8725), (135, 8746), (136, 8767), (145, 8830), (146, 8848), (160, 8968), (165, 9028), (167, 9058),

Gene: Pureglobe5\_22 Start: 7457, Stop: 9088, Start Num: 18

Candidate Starts for Pureglobe5\_22:

(Start: 18 @7457 has 11 MA's), (29, 7604), (46, 7805), (49, 7835), (54, 7928), (59, 8060), (69, 8132), (85, 8315), (89, 8345), (93, 8366), (99, 8435), (100, 8438), (101, 8441), (114, 8555), (115, 8558), (116, 8585), (117, 8588), (121, 8627), (123, 8636), (124, 8657), (128, 8702), (133, 8741), (135, 8762), (136, 8783), (145, 8846), (146, 8864), (160, 8984), (165, 9044), (167, 9074),

Gene: Quammi\_18 Start: 6032, Stop: 7543, Start Num: 16

Candidate Starts for Quammi\_18:

(3, 5693), (5, 5720), (7, 5744), (13, 5966), (14, 6008), (Start: 16 @6032 has 38 MA's), (37, 6275), (Start: 41 @6329 has 1 MA's), (46, 6392), (47, 6395), (53, 6467), (57, 6578), (63, 6635), (68, 6680), (71, 6791), (73, 6803), (74, 6815), (78, 6854), (81, 6905), (103, 7064), (104, 7082), (115, 7172), (118, 7205), (123, 7247), (128, 7313), (133, 7358), (134, 7370), (136, 7403),

Gene: Ranunculus\_15 Start: 6341, Stop: 8053, Start Num: 18

Candidate Starts for Ranunculus\_15:

(Start: 18 @6341 has 11 MA's), (29, 6485), (34, 6557), (46, 6686), (49, 6716), (50, 6734), (59, 6941), (69, 7013), (77, 7094), (85, 7196), (100, 7331), (115, 7451), (116, 7478), (117, 7481), (119, 7502), (121, 7520), (123, 7529), (126, 7571), (128, 7595), (132, 7622), (133, 7634), (134, 7646), (135, 7655), (136, 7676), (137, 7688), (154, 7826), (158, 7868), (160, 7877), (163, 7901), (164, 7922), (167, 7970), (170, 8000),

Gene: Rizwana\_14 Start: 6254, Stop: 8020, Start Num: 18

Candidate Starts for Rizwana\_14:

(Start: 18 @6254 has 11 MA's), (35, 6476), (Start: 41 @6536 has 1 MA's), (46, 6599), (49, 6629), (55, 6803), (59, 6857), (60, 6860), (69, 6929), (72, 6965), (75, 6989), (78, 7022), (82, 7076), (85, 7115), (88, 7145), (93, 7199), (94, 7208), (95, 7211), (96, 7214), (99, 7268), (115, 7391), (116, 7418), (124, 7490), (126, 7511), (133, 7574), (134, 7586), (148, 7733), (151, 7766), (155, 7799), (156, 7802), (166, 7916), (168, 7952), (169, 7955), (172, 8006),

Gene: RobinRose\_20 Start: 5513, Stop: 6976, Start Num: 16

Candidate Starts for RobinRose\_20:

(13, 5453), (Start: 16 @5513 has 38 MA's), (23, 5597), (32, 5726), (37, 5756), (42, 5831), (46, 5873), (57, 6059), (73, 6212), (74, 6224), (105, 6506), (109, 6539), (112, 6554), (115, 6584), (123, 6674), (127, 6734), (134, 6797), (137, 6842),

Gene: RomansRevenge\_11 Start: 4548, Stop: 6038, Start Num: 20

Candidate Starts for RomansRevenge\_11:

(17, 4536), (20, 4548), (30, 4698), (36, 4764), (37, 4767), (46, 4884), (47, 4887), (57, 5082), (61, 5118), (66, 5157), (80, 5328), (85, 5379), (87, 5400), (93, 5421), (96, 5436), (104, 5523), (110, 5571), (116, 5640), (122, 5691), (123, 5694), (130, 5775), (133, 5820), (136, 5862), (152, 5982), (153, 6000),

Gene: Romm\_20 Start: 5513, Stop: 6976, Start Num: 16

Candidate Starts for Romm\_20:

(13, 5453), (Start: 16 @5513 has 38 MA's), (23, 5597), (32, 5726), (37, 5756), (42, 5831), (46, 5873), (57, 6059), (73, 6212), (74, 6224), (105, 6506), (109, 6539), (112, 6554), (115, 6584), (123, 6674), (127, 6734), (134, 6797), (137, 6842),

Gene: Rowlf\_16 Start: 5798, Stop: 7309, Start Num: 16

Candidate Starts for Rowlf\_16:

(3, 5459), (5, 5486), (7, 5510), (13, 5732), (14, 5774), (Start: 16 @5798 has 38 MA's), (37, 6041), (Start: 41 @6095 has 1 MA's), (46, 6158), (47, 6161), (53, 6233), (57, 6344), (63, 6401), (68, 6446), (71, 6557), (73, 6569), (74, 6581), (78, 6620), (81, 6671), (103, 6830), (104, 6848), (115, 6938), (118, 6971), (123, 7013), (128, 7079), (133, 7124), (134, 7136), (136, 7169),

Gene: RubyRalph\_21 Start: 6402, Stop: 7937, Start Num: 16

Candidate Starts for RubyRalph\_21:

(Start: 16 @6402 has 38 MA's), (23, 6486), (31, 6579), (34, 6633), (37, 6645), (40, 6696), (Start: 41 @6699 has 1 MA's), (46, 6762), (53, 6837), (57, 6948), (63, 7005), (71, 7161), (73, 7173), (74, 7185), (78, 7224), (81, 7275), (93, 7350), (95, 7362), (97, 7371), (111, 7506), (115, 7542), (118, 7575), (123, 7632), (133, 7743), (134, 7755), (137, 7800), (143, 7842),

Gene: Rudy\_18 Start: 6032, Stop: 7543, Start Num: 16

Candidate Starts for Rudy\_18:

(3, 5693), (5, 5720), (7, 5744), (13, 5966), (14, 6008), (Start: 16 @6032 has 38 MA's), (37, 6275), (Start: 41 @6329 has 1 MA's), (46, 6392), (47, 6395), (53, 6467), (57, 6578), (63, 6635), (68, 6680), (71, 6791), (73, 6803), (74, 6815), (78, 6854), (81, 6905), (103, 7064), (104, 7082), (115, 7172), (118, 7205), (123, 7247), (128, 7313), (133, 7358), (134, 7370), (136, 7403),

Gene: SadLad\_22 Start: 6859, Stop: 8394, Start Num: 16

Candidate Starts for SadLad\_22:

(Start: 16 @6859 has 38 MA's), (23, 6943), (31, 7036), (34, 7090), (37, 7102), (40, 7153), (Start: 41 @7156 has 1 MA's), (46, 7219), (53, 7294), (57, 7405), (63, 7462), (73, 7630), (74, 7642), (78, 7681), (81, 7732), (93, 7807), (95, 7819), (115, 7999), (123, 8089), (133, 8200), (134, 8212), (137, 8257),

Gene: SallyK\_21 Start: 7193, Stop: 8704, Start Num: 16

Candidate Starts for SallyK\_21:

(3, 6854), (4, 6866), (5, 6881), (7, 6905), (12, 7100), (13, 7127), (14, 7169), (Start: 16 @7193 has 38 MA's), (37, 7436), (Start: 41 @7490 has 1 MA's), (46, 7553), (53, 7628), (57, 7739), (63, 7796), (68, 7841), (71, 7952), (73, 7964), (74, 7976), (78, 8015), (81, 8066), (103, 8225), (104, 8243), (115, 8333), (118, 8366), (123, 8408), (128, 8474), (133, 8519), (134, 8531), (136, 8564),

Gene: SilentRX\_16 Start: 6460, Stop: 8172, Start Num: 18

Candidate Starts for SilentRX\_16:

(Start: 18 @6460 has 11 MA's), (Start: 41 @6742 has 1 MA's), (46, 6805), (49, 6835), (50, 6853), (51, 6859), (52, 6862), (59, 7069), (60, 7072), (64, 7102), (65, 7105), (69, 7141), (75, 7201), (78, 7234), (86, 7345), (93, 7408), (115, 7600), (116, 7627), (117, 7630), (121, 7669), (123, 7678), (124, 7699), (130, 7759), (133, 7783), (134, 7795), (136, 7825), (146, 7906), (157, 8002), (159, 8017), (161, 8023), (166, 8074), (169, 8107), (170, 8131), (171, 8140), (172, 8158),

Gene: Sillytadpoles\_20 Start: 6030, Stop: 7541, Start Num: 16

Candidate Starts for Sillytadpoles\_20:

(3, 5691), (5, 5718), (7, 5742), (13, 5964), (14, 6006), (Start: 16 @6030 has 38 MA's), (37, 6273), (Start: 41 @6327 has 1 MA's), (46, 6390), (47, 6393), (53, 6465), (57, 6576), (63, 6633), (68, 6678), (71, 6789), (73, 6801), (74, 6813), (78, 6852), (81, 6903), (103, 7062), (104, 7080), (115, 7170), (118, 7203), (123, 7245), (128, 7311), (133, 7356), (134, 7368), (136, 7401),

Gene: Squash\_22 Start: 7064, Stop: 8575, Start Num: 16

Candidate Starts for Squash\_22:

(3, 6725), (5, 6752), (11, 6968), (12, 6971), (13, 6998), (14, 7040), (Start: 16 @7064 has 38 MA's), (25, 7157), (37, 7307), (Start: 41 @7361 has 1 MA's), (46, 7424), (53, 7499), (57, 7610), (63, 7667), (68, 7712), (71, 7823), (73, 7835), (74, 7847), (78, 7886), (81, 7937), (103, 8096), (104, 8114), (115, 8204), (118, 8237), (123, 8279), (128, 8345), (133, 8390), (134, 8402), (136, 8435),

Gene: Statler\_21 Start: 6569, Stop: 8080, Start Num: 16

Candidate Starts for Statler\_21:

(3, 6230), (5, 6257), (7, 6281), (13, 6503), (14, 6545), (Start: 16 @6569 has 38 MA's), (25, 6662), (37, 6812), (Start: 41 @6866 has 1 MA's), (46, 6929), (47, 6932), (53, 7004), (57, 7115), (63, 7172), (68, 7217), (71, 7328), (73, 7340), (74, 7352), (78, 7391), (81, 7442), (103, 7601), (104, 7619), (115, 7709), (118, 7742), (123, 7784), (128, 7850), (133, 7895), (134, 7907), (136, 7940),

Gene: StrawberryJamm\_22 Start: 6332, Stop: 7843, Start Num: 16

Candidate Starts for StrawberryJamm\_22:

(3, 5993), (7, 6044), (13, 6266), (14, 6308), (Start: 16 @6332 has 38 MA's), (25, 6425), (37, 6575), (Start: 41 @6629 has 1 MA's), (46, 6692), (47, 6695), (53, 6767), (57, 6878), (63, 6935), (71, 7091), (73, 7103), (74, 7115), (78, 7154), (81, 7205), (103, 7364), (104, 7382), (115, 7472), (118, 7505), (123, 7547), (128, 7613), (133, 7658), (134, 7670), (136, 7703),

Gene: Sunfish\_22 Start: 7434, Stop: 8969, Start Num: 18

Candidate Starts for Sunfish\_22:

(Start: 18 @7434 has 11 MA's), (25, 7518), (35, 7653), (40, 7710), (43, 7740), (46, 7776), (49, 7806), (53, 7851), (57, 7962), (66, 8037), (72, 8109), (74, 8127), (75, 8133), (76, 8151), (78, 8166), (102, 8385), (104, 8406), (116, 8523), (129, 8667), (133, 8697), (136, 8739), (142, 8787), (150, 8862), (162, 8955),

Gene: Tank\_15 Start: 6269, Stop: 8035, Start Num: 18

Candidate Starts for Tank\_15:

(Start: 18 @6269 has 11 MA's), (Start: 41 @6551 has 1 MA's), (45, 6602), (46, 6614), (47, 6617), (59, 6872), (60, 6875), (64, 6905), (69, 6944), (72, 6980), (73, 6986), (78, 7037), (82, 7091), (85, 7130), (93, 7214), (95, 7226), (96, 7229), (99, 7283), (100, 7286), (104, 7316), (114, 7403), (115, 7406), (116, 7433), (124, 7505), (133, 7589), (134, 7601), (155, 7814), (156, 7817), (168, 7967), (169, 7970), (172, 8021),

Gene: Teehee\_21 Start: 7267, Stop: 8778, Start Num: 16

Candidate Starts for Teehee\_21:

(3, 6928), (7, 6979), (13, 7201), (14, 7243), (Start: 16 @7267 has 38 MA's), (25, 7360), (37, 7510), (Start: 41 @7564 has 1 MA's), (46, 7627), (47, 7630), (53, 7702), (57, 7813), (63, 7870), (68, 7915), (71, 8026), (73, 8038), (74, 8050), (78, 8089), (81, 8140), (103, 8299), (104, 8317), (115, 8407), (118, 8440), (123, 8482), (128, 8548), (133, 8593), (134, 8605), (136, 8638),

Gene: Tempo\_19 Start: 5705, Stop: 7168, Start Num: 16

Candidate Starts for Tempo\_19:

(13, 5645), (Start: 16 @5705 has 38 MA's), (23, 5789), (32, 5918), (37, 5948), (42, 6023), (46, 6065), (57, 6251), (73, 6404), (74, 6416), (105, 6698), (109, 6731), (112, 6746), (115, 6776), (123, 6866), (127, 6926), (134, 6989), (137, 7034),

Gene: Tissue\_19 Start: 6401, Stop: 7912, Start Num: 16

Candidate Starts for Tissue\_19:

(3, 6062), (5, 6089), (13, 6335), (14, 6377), (Start: 16 @6401 has 38 MA's), (37, 6644), (Start: 41 @6698 has 1 MA's), (45, 6749), (46, 6761), (53, 6836), (57, 6947), (63, 7004), (68, 7049), (71, 7160), (73, 7172), (74, 7184), (78, 7223), (81, 7274), (103, 7433), (104, 7451), (115, 7541), (118, 7574), (123, 7616), (128, 7682), (133, 7727), (134, 7739), (136, 7772),

Gene: Viceroy\_19 Start: 6032, Stop: 7543, Start Num: 16

Candidate Starts for Viceroy\_19:

(3, 5693), (5, 5720), (7, 5744), (13, 5966), (14, 6008), (Start: 16 @6032 has 38 MA's), (37, 6275), (Start: 41 @6329 has 1 MA's), (46, 6392), (47, 6395), (53, 6467), (57, 6578), (63, 6635), (68, 6680), (71, 6791), (73, 6803), (74, 6815), (78, 6854), (81, 6905), (103, 7064), (104, 7082), (115, 7172), (118, 7205), (123, 7247), (128, 7313), (133, 7358), (134, 7370), (136, 7403),

Gene: Wayne3\_21 Start: 6997, Stop: 8508, Start Num: 16

Candidate Starts for Wayne3\_21:

(3, 6658), (7, 6709), (13, 6931), (14, 6973), (Start: 16 @6997 has 38 MA's), (25, 7090), (37, 7240), (Start: 41 @7294 has 1 MA's), (46, 7357), (47, 7360), (53, 7432), (57, 7543), (63, 7600), (68, 7645), (71, 7756), (73, 7768), (74, 7780), (78, 7819), (81, 7870), (103, 8029), (104, 8047), (115, 8137), (118, 8170), (123, 8212), (128, 8278), (133, 8323), (134, 8335), (136, 8368),

Gene: Wheelie\_19 Start: 6348, Stop: 7859, Start Num: 16

Candidate Starts for Wheelie\_19:

(3, 6009), (7, 6060), (13, 6282), (14, 6324), (Start: 16 @6348 has 38 MA's), (25, 6441), (37, 6591), (Start: 41 @6645 has 1 MA's), (46, 6708), (47, 6711), (53, 6783), (57, 6894), (63, 6951), (68, 6996), (71, 7107), (73, 7119), (74, 7131), (78, 7170), (81, 7221), (103, 7380), (104, 7398), (115, 7488), (118, 7521), (123, 7563), (128, 7629), (133, 7674), (134, 7686), (136, 7719),

Gene: Wilca\_19 Start: 5601, Stop: 7064, Start Num: 16

Candidate Starts for Wilca\_19:

(Start: 16 @5601 has 38 MA's), (23, 5685), (32, 5814), (37, 5844), (42, 5919), (46, 5961), (57, 6147), (73, 6300), (74, 6312), (83, 6417), (100, 6549), (109, 6627), (115, 6672), (123, 6762), (127, 6822), (134, 6885), (137, 6930), (140, 6954), (144, 6978),

Gene: Wilde\_15 Start: 6197, Stop: 7963, Start Num: 18

Candidate Starts for Wilde\_15:

(Start: 18 @6197 has 11 MA's), (Start: 41 @6479 has 1 MA's), (45, 6530), (46, 6542), (47, 6545), (59, 6800), (60, 6803), (64, 6833), (65, 6836), (69, 6872), (72, 6908), (73, 6914), (78, 6965), (82, 7019), (85, 7058), (93, 7142), (95, 7154), (96, 7157), (99, 7211), (100, 7214), (104, 7244), (114, 7331), (115, 7334), (116, 7361), (124, 7433), (133, 7517), (134, 7529), (155, 7742), (156, 7745), (168, 7895), (169, 7898), (172, 7949),

Gene: Zagie\_20 Start: 6535, Stop: 8046, Start Num: 16

Candidate Starts for Zagie\_20:

(3, 6196), (5, 6223), (7, 6247), (13, 6469), (14, 6511), (Start: 16 @6535 has 38 MA's), (37, 6778), (Start: 41 @6832 has 1 MA's), (46, 6895), (47, 6898), (53, 6970), (57, 7081), (63, 7138), (68, 7183), (71, 7294), (73, 7306), (74, 7318), (78, 7357), (81, 7408), (103, 7567), (104, 7585), (115, 7675), (118, 7708), (123, 7750), (128, 7816), (133, 7861), (134, 7873), (136, 7906),

Gene: Zhafia\_23 Start: 6773, Stop: 8284, Start Num: 16

Candidate Starts for Zhafia\_23:

(3, 6434), (5, 6461), (13, 6707), (14, 6749), (Start: 16 @6773 has 38 MA's), (37, 7016), (Start: 41 @7070 has 1 MA's), (45, 7121), (46, 7133), (53, 7208), (57, 7319), (63, 7376), (68, 7421), (71, 7532), (73, 7544), (74, 7556), (78, 7595), (81, 7646), (103, 7805), (104, 7823), (115, 7913), (118, 7946), (123, 7988), (128, 8054), (133, 8099), (134, 8111), (136, 8144),