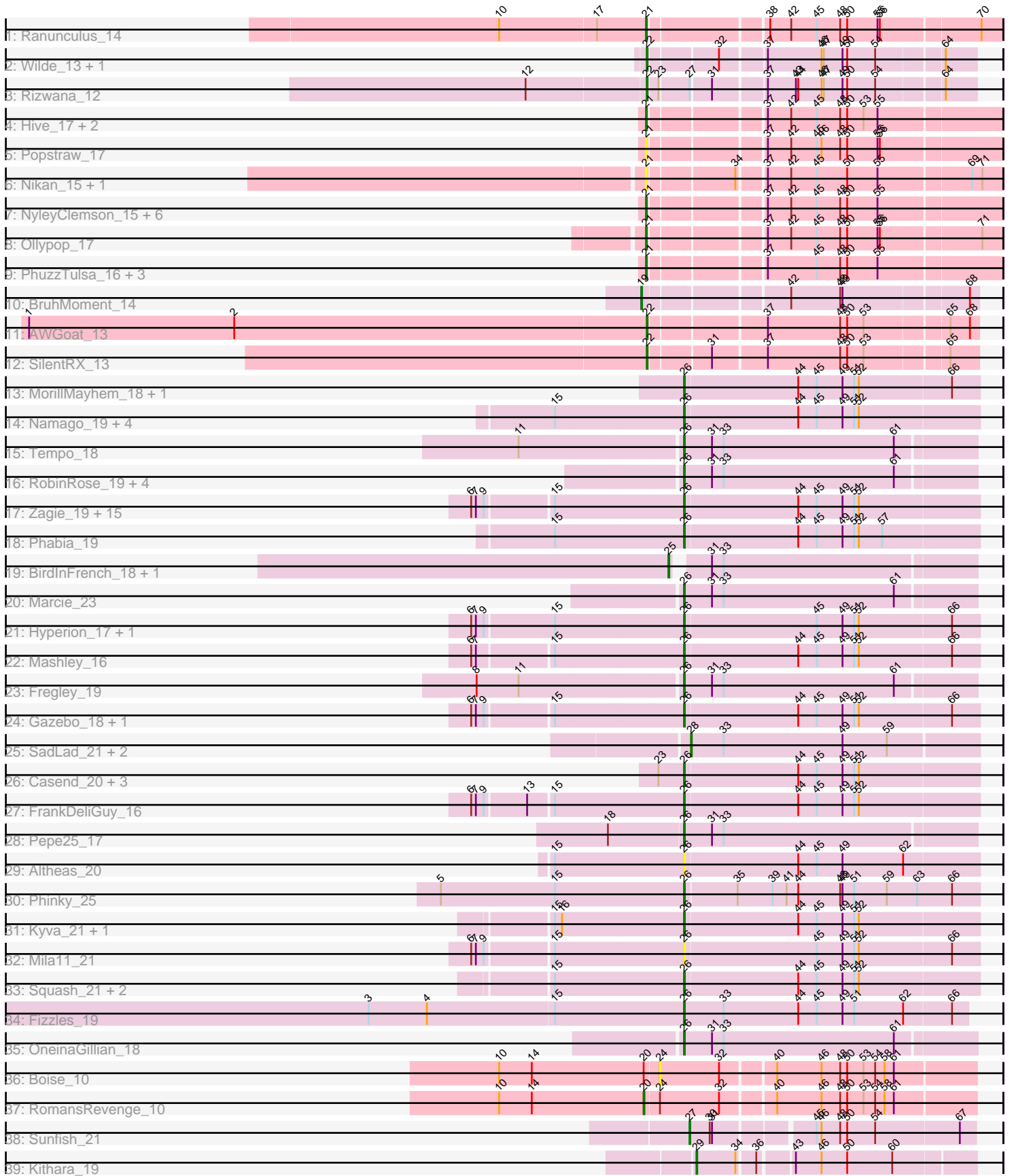


Pham 308438



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 308438 Report

This analysis was run 06/27/26 on database version 652.

Pham number 308438 has 87 members, 14 are drafts.

Phages represented in each track:

- Track 1 : Ranunculus_14
- Track 2 : Wilde_13, Tank_13
- Track 3 : Rizwana_12
- Track 4 : Hive_17, Forrestell_16, MellowYellow_16
- Track 5 : Popstraw_17
- Track 6 : Nikan_15, Ren19_13
- Track 7 : NyleyClemson_15, Odyssey395_20, RazzB_15, Pointis_18, Pureglobe5_20, RIPWilbur_16, BetaFish_18
- Track 8 : Ollypop_17
- Track 9 : PhuzzTulsa_16, Kubulix_19, DogYard_18, Beagle_19
- Track 10 : BruhMoment_14
- Track 11 : AWGoat_13
- Track 12 : SilentRX_13
- Track 13 : MorillMayhem_18, BaconCheese_21
- Track 14 : Namago_19, Zhafia_21, Statler_19, Tissue_18, WheelerS25_24
- Track 15 : Tempo_18
- Track 16 : RobinRose_19, CandC_17, Kelcole_17, KillerQueen_19, Romm_19
- Track 17 : Zagie_19, Mentos_23, Quammi_17, StrawberryJamm_21, Rudy_17, SlySloth_21, Jehoshaphat_21, EverythinBagel_18, Teehee_20, Rowlf_15, Llemily_18, Sillytadpoles_18, Viceroy_18, Lonelysoil_18, BabyDotz_18, SallyK_20
- Track 18 : Phabia_19
- Track 19 : BirdInFrench_18, Wilca_18
- Track 20 : Marcie_23
- Track 21 : Hyperion_17, AluminumJesus_16
- Track 22 : Mashley_16
- Track 23 : Fregley_19
- Track 24 : Gazebo_18, Blab_16
- Track 25 : SadLad_21, Fransoyer_20, RubyRalph_20
- Track 26 : Casend_20, Wheelie_18, DonaldDuck_18, Wayne3_20
- Track 27 : FrankDeliGuy_16
- Track 28 : Pepe25_17
- Track 29 : Altheas_20
- Track 30 : Phinky_25
- Track 31 : Kyva_21, Grassboy_20
- Track 32 : Mila11_21
- Track 33 : Squash_21, Judebell_21, Nike_19
- Track 34 : Fizzles_19

- Track 35 : OneinaGillian_18
- Track 36 : Boise_10
- Track 37 : RomansRevenge_10
- Track 38 : Sunfish_21
- Track 39 : Kithara_19

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

The start number called the most often in the published annotations is 26, it was called in 46 of the 73 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Altheas_20, AluminumJesus_16, BabyDotz_18, BaconCheese_21, Blab_16, CandC_17, Casend_20, DonaldDuck_18, EverythinBagel_18, Fizzles_19, FrankDeliGuy_16, Fregley_19, Gazebo_18, Grassboy_20, Hyperion_17, Jehoshaphat_21, Judebell_21, Kelcole_17, KillerQueen_19, Kyva_21, Llemily_18, Lonelysoil_18, Marcie_23, Mashley_16, Mentos_23, Mila11_21, MorillMayhem_18, Namago_19, Nike_19, OneinaGillian_18, Pepe25_17, Phabia_19, Phinky_25, Quammi_17, RobinRose_19, Romm_19, Rowlf_15, Rudy_17, SallyK_20, Sillytadpoles_18, SlySloth_21, Squash_21, Statler_19, StrawberryJamm_21, Teehee_20, Tempo_18, Tissue_18, Viceroy_18, Wayne3_20, WheelerS25_24, Wheelie_18, Zagie_19, Zhafia_21,

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

-

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

- AWGoat_13, Beagle_19, BetaFish_18, BirdInFrench_18, Boise_10, BruhMoment_14, DogYard_18, Forrestell_16, Fransoyer_20, Hive_17, Kithara_19, Kubulix_19, MellowYellow_16, Nikan_15, NyleyClemson_15, Odyssey395_20, Ollypop_17, PhuzzTulsa_16, Pointis_18, Popstraw_17, Pureglobe5_20, RIPWilbur_16, Ranunculus_14, RazzB_15, Ren19_13, Rizwana_12, RomansRevenge_10, RubyRalph_20, SadLad_21, SilentRX_13, Sunfish_21, Tank_13, Wilca_18, Wilde_13,

Summary by start number:

Start 19:

- Found in 1 of 87 (1.1%) of genes in pham
- Manual Annotations of this start: 1 of 73
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BruhMoment_14 (AP3),

Start 20:

- Found in 2 of 87 (2.3%) of genes in pham
- Manual Annotations of this start: 1 of 73
- Called 50.0% of time when present
- Phage (with cluster) where this start called: RomansRevenge_10 (FT),

Start 21:

- Found in 19 of 87 (21.8%) of genes in pham
- Manual Annotations of this start: 13 of 73
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beagle_19 (AP2), BetaFish_18 (AP2), DogYard_18 (AP2), Forrestell_16 (AP2), Hive_17 (AP2), Kubulix_19 (AP2), MellowYellow_16 (AP2), Nikan_15 (AP2), NyleyClemson_15 (AP2), Odyssey395_20 (AP2), Ollypop_17 (AP2), PhuzzTulsa_16 (AP2), Pointis_18 (AP2), Popstraw_17 (AP2), Pureglobe5_20 (AP2), RIPWilbur_16 (AP2), Ranunculus_14 (AP), RazzB_15 (AP2), Ren19_13 (AP2),

Start 22:

- Found in 5 of 87 (5.7%) of genes in pham
- Manual Annotations of this start: 5 of 73
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AWGoat_13 (AP4), Rizwana_12 (AP1), SilentRX_13 (AP4), Tank_13 (AP1), Wilde_13 (AP1),

Start 24:

- Found in 2 of 87 (2.3%) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Boise_10 (FT),

Start 25:

- Found in 2 of 87 (2.3%) of genes in pham
- Manual Annotations of this start: 2 of 73
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BirdInFrench_18 (EG), Wilca_18 (EG),

Start 26:

- Found in 53 of 87 (60.9%) of genes in pham
- Manual Annotations of this start: 46 of 73
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altheas_20 (EG), AluminumJesus_16 (EG), BabyDotz_18 (EG), BaconCheese_21 (EG), Blab_16 (EG), CandC_17 (EG), Casend_20 (EG), DonaldDuck_18 (EG), EverythinBagel_18 (EG), Fizzles_19 (EG), FrankDeliGuy_16 (EG), Fregley_19 (EG), Gazebo_18 (EG), Grassboy_20 (EG), Hyperion_17 (EG), Jehoshaphat_21 (EG), Judebell_21 (EG), Kelcole_17 (EG), KillerQueen_19 (EG), Kyva_21 (EG), Llemily_18 (EG), Lonelysoil_18 (EG), Marcie_23 (EG), Mashley_16 (EG), Mentos_23 (EG), Mila11_21 (EG), MorillMayhem_18 (EG), Namago_19 (EG), Nike_19 (EG), OneinaGillian_18 (EG), Pepe25_17 (EG), Phabia_19 (EG), Phinky_25 (EG), Quammi_17 (EG), RobinRose_19 (EG), Romm_19 (EG), Rowlf_15 (EG), Rudy_17 (EG), SallyK_20 (EG), Sillytadpoles_18 (EG), SlySloth_21 (EG), Squash_21 (EG), Statler_19 (EG), StrawberryJamm_21 (EG), Teehee_20 (EG), Tempo_18 (EG), Tissue_18 (EG), Viceroy_18 (EG), Wayne3_20 (EG), WheelerS25_24 (EG), Wheelie_18 (EG), Zagie_19 (EG), Zhafia_21 (EG),

Start 27:

- Found in 2 of 87 (2.3%) of genes in pham
- Manual Annotations of this start: 1 of 73
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Sunfish_21 (singleton),

Start 28:

- Found in 3 of 87 (3.4%) of genes in pham
- Manual Annotations of this start: 3 of 73
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fransoyer_20 (EG), RubyRalph_20 (EG), SadLad_21 (EG),

Start 29:

- Found in 1 of 87 (1.1%) of genes in pham
- Manual Annotations of this start: 1 of 73
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kithara_19 (singleton),

Summary by clusters:

There are 8 clusters represented in this pham: singleton, FT, AP2, AP3, EG, AP1, AP4, AP,

Info for manual annotations of cluster AP:

- Start number 21 was manually annotated 1 time for cluster AP.

Info for manual annotations of cluster AP1:

- Start number 22 was manually annotated 3 times for cluster AP1.

Info for manual annotations of cluster AP2:

- Start number 21 was manually annotated 12 times for cluster AP2.

Info for manual annotations of cluster AP3:

- Start number 19 was manually annotated 1 time for cluster AP3.

Info for manual annotations of cluster AP4:

- Start number 22 was manually annotated 2 times for cluster AP4.

Info for manual annotations of cluster EG:

- Start number 25 was manually annotated 2 times for cluster EG.
- Start number 26 was manually annotated 46 times for cluster EG.
- Start number 28 was manually annotated 3 times for cluster EG.

Info for manual annotations of cluster FT:

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

Gene Information:

Gene: AWGoat_13 Start: 5541, Stop: 5933, Start Num: 22

Candidate Starts for AWGoat_13:

(1, 4749), (2, 5013), (Start: 22 @5541 has 5 MA's), (37, 5676), (48, 5769), (50, 5778), (53, 5799), (65, 5898), (68, 5922),

Gene: Altheas_20 Start: 6514, Stop: 6888, Start Num: 26

Candidate Starts for Altheas_20:

(15, 6352), (Start: 26 @6514 has 46 MA's), (44, 6658), (45, 6682), (49, 6715), (62, 6793),

Gene: AluminumJesus_16 Start: 5878, Stop: 6252, Start Num: 26

Candidate Starts for AluminumJesus_16:

(6, 5614), (7, 5620), (9, 5629), (15, 5716), (Start: 26 @5878 has 46 MA's), (45, 6046), (49, 6079), (51, 6094), (52, 6100), (66, 6217),

Gene: BabyDotz_18 Start: 6329, Stop: 6703, Start Num: 26

Candidate Starts for BabyDotz_18:

(6, 6071), (7, 6077), (9, 6086), (15, 6167), (Start: 26 @6329 has 46 MA's), (44, 6473), (45, 6497), (49, 6530), (51, 6545), (52, 6551),

Gene: BaconCheese_21 Start: 7026, Stop: 7400, Start Num: 26

Candidate Starts for BaconCheese_21:

(Start: 26 @7026 has 46 MA's), (44, 7170), (45, 7194), (49, 7227), (51, 7242), (52, 7248), (66, 7365),

Gene: Beagle_19 Start: 6097, Stop: 6516, Start Num: 21

Candidate Starts for Beagle_19:

(Start: 21 @6097 has 13 MA's), (37, 6226), (45, 6289), (48, 6319), (50, 6328), (55, 6367),

Gene: BetaFish_18 Start: 6300, Stop: 6719, Start Num: 21

Candidate Starts for BetaFish_18:

(Start: 21 @6300 has 13 MA's), (37, 6429), (42, 6459), (45, 6492), (48, 6522), (50, 6531), (55, 6570),

Gene: BirdInFrench_18 Start: 5255, Stop: 5623, Start Num: 25

Candidate Starts for BirdInFrench_18:

(Start: 25 @5255 has 2 MA's), (31, 5291), (33, 5306),

Gene: Blab_16 Start: 5654, Stop: 6028, Start Num: 26

Candidate Starts for Blab_16:

(6, 5396), (7, 5402), (9, 5411), (15, 5492), (Start: 26 @5654 has 46 MA's), (44, 5798), (45, 5822), (49, 5855), (51, 5870), (52, 5876), (66, 5993),

Gene: Boise_10 Start: 4103, Stop: 4486, Start Num: 24

Candidate Starts for Boise_10:

(10, 3899), (14, 3941), (Start: 20 @4085 has 1 MA's), (24, 4103), (32, 4175), (40, 4238), (46, 4295), (48, 4319), (50, 4328), (53, 4349), (54, 4364), (58, 4376), (61, 4388),

Gene: BruhMoment_14 Start: 5813, Stop: 6208, Start Num: 19

Candidate Starts for BruhMoment_14:

(Start: 19 @5813 has 1 MA's), (42, 5981), (48, 6044), (49, 6047), (68, 6197),

Gene: CandC_17 Start: 4941, Stop: 5309, Start Num: 26

Candidate Starts for CandC_17:

(Start: 26 @4941 has 46 MA's), (31, 4977), (33, 4992), (61, 5211),

Gene: Casend_20 Start: 6653, Stop: 7027, Start Num: 26

Candidate Starts for Casend_20:

(23, 6620), (Start: 26 @6653 has 46 MA's), (44, 6797), (45, 6821), (49, 6854), (51, 6869), (52, 6875),

Gene: DogYard_18 Start: 6167, Stop: 6586, Start Num: 21

Candidate Starts for DogYard_18:

(Start: 21 @6167 has 13 MA's), (37, 6296), (45, 6359), (48, 6389), (50, 6398), (55, 6437),

Gene: DonaldDuck_18 Start: 5999, Stop: 6373, Start Num: 26

Candidate Starts for DonaldDuck_18:

(23, 5966), (Start: 26 @5999 has 46 MA's), (44, 6143), (45, 6167), (49, 6200), (51, 6215), (52, 6221),

Gene: EverythinBagel_18 Start: 6400, Stop: 6774, Start Num: 26

Candidate Starts for EverythinBagel_18:

(6, 6142), (7, 6148), (9, 6157), (15, 6238), (Start: 26 @6400 has 46 MA's), (44, 6544), (45, 6568), (49, 6601), (51, 6616), (52, 6622),

Gene: Fizzles_19 Start: 5939, Stop: 6301, Start Num: 26

Candidate Starts for Fizzles_19:

(3, 5540), (4, 5615), (15, 5777), (Start: 26 @5939 has 46 MA's), (33, 5990), (44, 6086), (45, 6110), (49, 6143), (51, 6158), (62, 6221), (66, 6281),

Gene: Forrestell_16 Start: 5524, Stop: 5943, Start Num: 21

Candidate Starts for Forrestell_16:

(Start: 21 @5524 has 13 MA's), (37, 5653), (42, 5683), (45, 5716), (48, 5746), (50, 5755), (53, 5776), (55, 5794),

Gene: FrankDeliGuy_16 Start: 5858, Stop: 6232, Start Num: 26

Candidate Starts for FrankDeliGuy_16:

(6, 5600), (7, 5606), (9, 5615), (13, 5666), (15, 5696), (Start: 26 @5858 has 46 MA's), (44, 6002), (45, 6026), (49, 6059), (51, 6074), (52, 6080),

Gene: Fransoyer_20 Start: 6128, Stop: 6493, Start Num: 28

Candidate Starts for Fransoyer_20:

(Start: 28 @6128 has 3 MA's), (33, 6170), (49, 6323), (59, 6380),

Gene: Fregley_19 Start: 5479, Stop: 5847, Start Num: 26

Candidate Starts for Fregley_19:

(8, 5227), (11, 5281), (Start: 26 @5479 has 46 MA's), (31, 5515), (33, 5530), (61, 5749),

Gene: Gazebo_18 Start: 6220, Stop: 6594, Start Num: 26

Candidate Starts for Gazebo_18:

(6, 5962), (7, 5968), (9, 5977), (15, 6058), (Start: 26 @6220 has 46 MA's), (44, 6364), (45, 6388), (49, 6421), (51, 6436), (52, 6442), (66, 6559),

Gene: Grassboy_20 Start: 6675, Stop: 7049, Start Num: 26

Candidate Starts for Grassboy_20:

(15, 6513), (16, 6522), (Start: 26 @6675 has 46 MA's), (44, 6819), (45, 6843), (49, 6876), (51, 6891), (52, 6897),

Gene: Hive_17 Start: 6181, Stop: 6600, Start Num: 21

Candidate Starts for Hive_17:

(Start: 21 @6181 has 13 MA's), (37, 6310), (42, 6340), (45, 6373), (48, 6403), (50, 6412), (53, 6433), (55, 6451),

Gene: Hyperion_17 Start: 5923, Stop: 6297, Start Num: 26

Candidate Starts for Hyperion_17:

(6, 5659), (7, 5665), (9, 5674), (15, 5761), (Start: 26 @5923 has 46 MA's), (45, 6091), (49, 6124), (51, 6139), (52, 6145), (66, 6262),

Gene: Jehoshaphat_21 Start: 6918, Stop: 7292, Start Num: 26
Candidate Starts for Jehoshaphat_21:
(6, 6660), (7, 6666), (9, 6675), (15, 6756), (Start: 26 @6918 has 46 MA's), (44, 7062), (45, 7086), (49, 7119), (51, 7134), (52, 7140),

Gene: Judebell_21 Start: 6459, Stop: 6833, Start Num: 26
Candidate Starts for Judebell_21:
(15, 6297), (Start: 26 @6459 has 46 MA's), (44, 6603), (45, 6627), (49, 6660), (51, 6675), (52, 6681),

Gene: Kelcole_17 Start: 5332, Stop: 5700, Start Num: 26
Candidate Starts for Kelcole_17:
(Start: 26 @5332 has 46 MA's), (31, 5368), (33, 5383), (61, 5602),

Gene: KillerQueen_19 Start: 5148, Stop: 5516, Start Num: 26
Candidate Starts for KillerQueen_19:
(Start: 26 @5148 has 46 MA's), (31, 5184), (33, 5199), (61, 5418),

Gene: Kithara_19 Start: 7582, Stop: 7911, Start Num: 29
Candidate Starts for Kithara_19:
(Start: 29 @7582 has 1 MA's), (34, 7630), (36, 7651), (43, 7690), (46, 7723), (50, 7756), (60, 7813),

Gene: Kubulix_19 Start: 6296, Stop: 6715, Start Num: 21
Candidate Starts for Kubulix_19:
(Start: 21 @6296 has 13 MA's), (37, 6425), (45, 6488), (48, 6518), (50, 6527), (55, 6566),

Gene: Kyva_21 Start: 6710, Stop: 7084, Start Num: 26
Candidate Starts for Kyva_21:
(15, 6548), (16, 6557), (Start: 26 @6710 has 46 MA's), (44, 6854), (45, 6878), (49, 6911), (51, 6926), (52, 6932),

Gene: Llemily_18 Start: 5694, Stop: 6068, Start Num: 26
Candidate Starts for Llemily_18:
(6, 5436), (7, 5442), (9, 5451), (15, 5532), (Start: 26 @5694 has 46 MA's), (44, 5838), (45, 5862), (49, 5895), (51, 5910), (52, 5916),

Gene: Lonelysoil_18 Start: 5939, Stop: 6313, Start Num: 26
Candidate Starts for Lonelysoil_18:
(6, 5681), (7, 5687), (9, 5696), (15, 5777), (Start: 26 @5939 has 46 MA's), (44, 6083), (45, 6107), (49, 6140), (51, 6155), (52, 6161),

Gene: Marcie_23 Start: 6037, Stop: 6405, Start Num: 26
Candidate Starts for Marcie_23:
(Start: 26 @6037 has 46 MA's), (31, 6073), (33, 6088), (61, 6307),

Gene: Mashley_16 Start: 5734, Stop: 6108, Start Num: 26
Candidate Starts for Mashley_16:
(6, 5476), (7, 5482), (15, 5572), (Start: 26 @5734 has 46 MA's), (44, 5878), (45, 5902), (49, 5935), (51, 5950), (52, 5956), (66, 6073),

Gene: MellowYellow_16 Start: 5554, Stop: 5973, Start Num: 21
Candidate Starts for MellowYellow_16:
(Start: 21 @5554 has 13 MA's), (37, 5683), (42, 5713), (45, 5746), (48, 5776), (50, 5785), (53, 5806), (55, 5824),

Gene: Mentos_23 Start: 7273, Stop: 7647, Start Num: 26

Candidate Starts for Mentos_23:

(6, 7015), (7, 7021), (9, 7030), (15, 7111), (Start: 26 @7273 has 46 MA's), (44, 7417), (45, 7441), (49, 7474), (51, 7489), (52, 7495),

Gene: Mila11_21 Start: 6809, Stop: 7183, Start Num: 26

Candidate Starts for Mila11_21:

(6, 6551), (7, 6557), (9, 6566), (15, 6647), (Start: 26 @6809 has 46 MA's), (45, 6977), (49, 7010), (51, 7025), (52, 7031), (66, 7148),

Gene: MorillMayhem_18 Start: 5742, Stop: 6116, Start Num: 26

Candidate Starts for MorillMayhem_18:

(Start: 26 @5742 has 46 MA's), (44, 5886), (45, 5910), (49, 5943), (51, 5958), (52, 5964), (66, 6081),

Gene: Namago_19 Start: 5754, Stop: 6128, Start Num: 26

Candidate Starts for Namago_19:

(15, 5592), (Start: 26 @5754 has 46 MA's), (44, 5898), (45, 5922), (49, 5955), (51, 5970), (52, 5976),

Gene: Nikan_15 Start: 6009, Stop: 6428, Start Num: 21

Candidate Starts for Nikan_15:

(Start: 21 @6009 has 13 MA's), (34, 6108), (37, 6138), (42, 6168), (45, 6201), (50, 6240), (55, 6279), (69, 6390), (71, 6402),

Gene: Nike_19 Start: 6660, Stop: 7034, Start Num: 26

Candidate Starts for Nike_19:

(15, 6498), (Start: 26 @6660 has 46 MA's), (44, 6804), (45, 6828), (49, 6861), (51, 6876), (52, 6882),

Gene: NyleyClemson_15 Start: 5496, Stop: 5915, Start Num: 21

Candidate Starts for NyleyClemson_15:

(Start: 21 @5496 has 13 MA's), (37, 5625), (42, 5655), (45, 5688), (48, 5718), (50, 5727), (55, 5766),

Gene: Odyssey395_20 Start: 6298, Stop: 6717, Start Num: 21

Candidate Starts for Odyssey395_20:

(Start: 21 @6298 has 13 MA's), (37, 6427), (42, 6457), (45, 6490), (48, 6520), (50, 6529), (55, 6568),

Gene: Ollypop_17 Start: 5974, Stop: 6393, Start Num: 21

Candidate Starts for Ollypop_17:

(Start: 21 @5974 has 13 MA's), (37, 6103), (42, 6133), (45, 6166), (48, 6196), (50, 6205), (55, 6244), (56, 6247), (71, 6367),

Gene: OneinaGillian_18 Start: 5014, Stop: 5382, Start Num: 26

Candidate Starts for OneinaGillian_18:

(Start: 26 @5014 has 46 MA's), (31, 5050), (33, 5065), (61, 5284),

Gene: Pepe25_17 Start: 5272, Stop: 5640, Start Num: 26

Candidate Starts for Pepe25_17:

(18, 5182), (Start: 26 @5272 has 46 MA's), (31, 5308), (33, 5323),

Gene: Phabia_19 Start: 6112, Stop: 6486, Start Num: 26

Candidate Starts for Phabia_19:

(15, 5950), (Start: 26 @6112 has 46 MA's), (44, 6256), (45, 6280), (49, 6313), (51, 6328), (52, 6334), (57, 6364),

Gene: Phinky_25 Start: 6972, Stop: 7346, Start Num: 26

Candidate Starts for Phinky_25:

(5, 6663), (15, 6810), (Start: 26 @6972 has 46 MA's), (35, 7035), (39, 7080), (41, 7098), (44, 7113), (48, 7167), (49, 7170), (51, 7185), (59, 7227), (63, 7266), (66, 7311),

Gene: PhuzzTulsa_16 Start: 6085, Stop: 6504, Start Num: 21

Candidate Starts for PhuzzTulsa_16:

(Start: 21 @6085 has 13 MA's), (37, 6214), (45, 6277), (48, 6307), (50, 6316), (55, 6355),

Gene: Pointis_18 Start: 6296, Stop: 6715, Start Num: 21

Candidate Starts for Pointis_18:

(Start: 21 @6296 has 13 MA's), (37, 6425), (42, 6455), (45, 6488), (48, 6518), (50, 6527), (55, 6566),

Gene: Popstraw_17 Start: 6085, Stop: 6504, Start Num: 21

Candidate Starts for Popstraw_17:

(Start: 21 @6085 has 13 MA's), (37, 6214), (42, 6244), (45, 6277), (46, 6283), (48, 6307), (50, 6316), (55, 6355), (56, 6358),

Gene: Pureglobe5_20 Start: 6312, Stop: 6731, Start Num: 21

Candidate Starts for Pureglobe5_20:

(Start: 21 @6312 has 13 MA's), (37, 6441), (42, 6471), (45, 6504), (48, 6534), (50, 6543), (55, 6582),

Gene: Quammi_17 Start: 5683, Stop: 6057, Start Num: 26

Candidate Starts for Quammi_17:

(6, 5425), (7, 5431), (9, 5440), (15, 5521), (Start: 26 @5683 has 46 MA's), (44, 5827), (45, 5851), (49, 5884), (51, 5899), (52, 5905),

Gene: RIPWilbur_16 Start: 5949, Stop: 6341, Start Num: 21

Candidate Starts for RIPWilbur_16:

(Start: 21 @5949 has 13 MA's), (37, 6078), (42, 6108), (45, 6141), (48, 6171), (50, 6180), (55, 6219),

Gene: Ranunculus_14 Start: 5906, Stop: 6328, Start Num: 21

Candidate Starts for Ranunculus_14:

(10, 5720), (17, 5843), (Start: 21 @5906 has 13 MA's), (38, 6041), (42, 6068), (45, 6101), (48, 6131), (50, 6140), (55, 6179), (56, 6182), (70, 6302),

Gene: RazzB_15 Start: 5324, Stop: 5743, Start Num: 21

Candidate Starts for RazzB_15:

(Start: 21 @5324 has 13 MA's), (37, 5453), (42, 5483), (45, 5516), (48, 5546), (50, 5555), (55, 5594),

Gene: Ren19_13 Start: 6009, Stop: 6428, Start Num: 21

Candidate Starts for Ren19_13:

(Start: 21 @6009 has 13 MA's), (34, 6108), (37, 6138), (42, 6168), (45, 6201), (50, 6240), (55, 6279), (69, 6390), (71, 6402),

Gene: Rizwana_12 Start: 5604, Stop: 5987, Start Num: 22

Candidate Starts for Rizwana_12:

(12, 5454), (Start: 22 @5604 has 5 MA's), (23, 5616), (Start: 27 @5649 has 1 MA's), (31, 5673), (37, 5733), (43, 5769), (44, 5772), (46, 5802), (47, 5805), (49, 5829), (50, 5835), (54, 5871), (64, 5949),

Gene: RobinRose_19 Start: 5167, Stop: 5535, Start Num: 26

Candidate Starts for RobinRose_19:

(Start: 26 @5167 has 46 MA's), (31, 5203), (33, 5218), (61, 5437),

Gene: RomansRevenge_10 Start: 4085, Stop: 4486, Start Num: 20

Candidate Starts for RomansRevenge_10:

(10, 3899), (14, 3941), (Start: 20 @4085 has 1 MA's), (24, 4103), (32, 4175), (40, 4238), (46, 4295), (48, 4319), (50, 4328), (53, 4349), (54, 4364), (58, 4376), (61, 4388),

Gene: Romm_19 Start: 5167, Stop: 5535, Start Num: 26

Candidate Starts for Romm_19:

(Start: 26 @5167 has 46 MA's), (31, 5203), (33, 5218), (61, 5437),

Gene: Rowlf_15 Start: 5449, Stop: 5823, Start Num: 26

Candidate Starts for Rowlf_15:

(6, 5191), (7, 5197), (9, 5206), (15, 5287), (Start: 26 @5449 has 46 MA's), (44, 5593), (45, 5617), (49, 5650), (51, 5665), (52, 5671),

Gene: RubyRalph_20 Start: 6062, Stop: 6427, Start Num: 28

Candidate Starts for RubyRalph_20:

(Start: 28 @6062 has 3 MA's), (33, 6104), (49, 6257), (59, 6314),

Gene: Rudy_17 Start: 5683, Stop: 6057, Start Num: 26

Candidate Starts for Rudy_17:

(6, 5425), (7, 5431), (9, 5440), (15, 5521), (Start: 26 @5683 has 46 MA's), (44, 5827), (45, 5851), (49, 5884), (51, 5899), (52, 5905),

Gene: SadLad_21 Start: 6519, Stop: 6884, Start Num: 28

Candidate Starts for SadLad_21:

(Start: 28 @6519 has 3 MA's), (33, 6561), (49, 6714), (59, 6771),

Gene: SallyK_20 Start: 6844, Stop: 7218, Start Num: 26

Candidate Starts for SallyK_20:

(6, 6586), (7, 6592), (9, 6601), (15, 6682), (Start: 26 @6844 has 46 MA's), (44, 6988), (45, 7012), (49, 7045), (51, 7060), (52, 7066),

Gene: SilentRX_13 Start: 5146, Stop: 5538, Start Num: 22

Candidate Starts for SilentRX_13:

(Start: 22 @5146 has 5 MA's), (31, 5215), (37, 5281), (48, 5374), (50, 5383), (53, 5404), (65, 5503),

Gene: Sillytadpoles_18 Start: 5681, Stop: 6055, Start Num: 26

Candidate Starts for Sillytadpoles_18:

(6, 5423), (7, 5429), (9, 5438), (15, 5519), (Start: 26 @5681 has 46 MA's), (44, 5825), (45, 5849), (49, 5882), (51, 5897), (52, 5903),

Gene: SlySloth_21 Start: 6635, Stop: 7009, Start Num: 26

Candidate Starts for SlySloth_21:

(6, 6377), (7, 6383), (9, 6392), (15, 6473), (Start: 26 @6635 has 46 MA's), (44, 6779), (45, 6803), (49, 6836), (51, 6851), (52, 6857),

Gene: Squash_21 Start: 6715, Stop: 7089, Start Num: 26

Candidate Starts for Squash_21:

(15, 6553), (Start: 26 @6715 has 46 MA's), (44, 6859), (45, 6883), (49, 6916), (51, 6931), (52, 6937),

Gene: Statler_19 Start: 6220, Stop: 6594, Start Num: 26

Candidate Starts for Statler_19:

(15, 6058), (Start: 26 @6220 has 46 MA's), (44, 6364), (45, 6388), (49, 6421), (51, 6436), (52, 6442),

Gene: StrawberryJamm_21 Start: 5983, Stop: 6357, Start Num: 26

Candidate Starts for StrawberryJamm_21:

(6, 5725), (7, 5731), (9, 5740), (15, 5821), (Start: 26 @5983 has 46 MA's), (44, 6127), (45, 6151), (49, 6184), (51, 6199), (52, 6205),

Gene: Sunfish_21 Start: 7106, Stop: 7447, Start Num: 27

Candidate Starts for Sunfish_21:

(Start: 27 @7106 has 1 MA's), (30, 7130), (31, 7133), (45, 7247), (46, 7253), (48, 7277), (50, 7286), (54, 7322), (67, 7427),

Gene: Tank_13 Start: 5619, Stop: 6002, Start Num: 22

Candidate Starts for Tank_13:

(Start: 22 @5619 has 5 MA's), (32, 5697), (37, 5748), (46, 5817), (47, 5820), (49, 5844), (50, 5850), (54, 5886), (64, 5964),

Gene: Teehee_20 Start: 6918, Stop: 7292, Start Num: 26

Candidate Starts for Teehee_20:

(6, 6660), (7, 6666), (9, 6675), (15, 6756), (Start: 26 @6918 has 46 MA's), (44, 7062), (45, 7086), (49, 7119), (51, 7134), (52, 7140),

Gene: Tempo_18 Start: 5359, Stop: 5727, Start Num: 26

Candidate Starts for Tempo_18:

(11, 5161), (Start: 26 @5359 has 46 MA's), (31, 5395), (33, 5410), (61, 5629),

Gene: Tissue_18 Start: 6052, Stop: 6426, Start Num: 26

Candidate Starts for Tissue_18:

(15, 5890), (Start: 26 @6052 has 46 MA's), (44, 6196), (45, 6220), (49, 6253), (51, 6268), (52, 6274),

Gene: Viceroy_18 Start: 5683, Stop: 6057, Start Num: 26

Candidate Starts for Viceroy_18:

(6, 5425), (7, 5431), (9, 5440), (15, 5521), (Start: 26 @5683 has 46 MA's), (44, 5827), (45, 5851), (49, 5884), (51, 5899), (52, 5905),

Gene: Wayne3_20 Start: 6648, Stop: 7022, Start Num: 26

Candidate Starts for Wayne3_20:

(23, 6615), (Start: 26 @6648 has 46 MA's), (44, 6792), (45, 6816), (49, 6849), (51, 6864), (52, 6870),

Gene: WheelerS25_24 Start: 7431, Stop: 7805, Start Num: 26

Candidate Starts for WheelerS25_24:

(15, 7269), (Start: 26 @7431 has 46 MA's), (44, 7575), (45, 7599), (49, 7632), (51, 7647), (52, 7653),

Gene: Wheelie_18 Start: 5999, Stop: 6373, Start Num: 26

Candidate Starts for Wheelie_18:

(23, 5966), (Start: 26 @5999 has 46 MA's), (44, 6143), (45, 6167), (49, 6200), (51, 6215), (52, 6221),

Gene: Wilca_18 Start: 5255, Stop: 5623, Start Num: 25

Candidate Starts for Wilca_18:

(Start: 25 @5255 has 2 MA's), (31, 5291), (33, 5306),

Gene: Wilde_13 Start: 5547, Stop: 5930, Start Num: 22

Candidate Starts for Wilde_13:

(Start: 22 @5547 has 5 MA's), (32, 5625), (37, 5676), (46, 5745), (47, 5748), (49, 5772), (50, 5778), (54, 5814), (64, 5892),

Gene: Zagie_19 Start: 6186, Stop: 6560, Start Num: 26

Candidate Starts for Zagie_19:

(6, 5928), (7, 5934), (9, 5943), (15, 6024), (Start: 26 @6186 has 46 MA's), (44, 6330), (45, 6354), (49, 6387), (51, 6402), (52, 6408),

Gene: Zhafia_21 Start: 6424, Stop: 6798, Start Num: 26

Candidate Starts for Zhafia_21:

(15, 6262), (Start: 26 @6424 has 46 MA's), (44, 6568), (45, 6592), (49, 6625), (51, 6640), (52, 6646),