

Pham 294766

1: Judebell_53				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
2: BaconCheese_55 + 2				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
3: Mentos_55 + 3				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
4: Tissue_52 + 1				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
5: Namago_51				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
6: Nike_52 + 4				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
7: DonaldDuck_51 + 12				12	13	15	20	22	21	31	38	42	44	50	53	65	69	71	78						
8: KillerQueen_60				12	13	15	20	22	21	31	38	42	44	50	53	65	69	71	78						
9: Tempo_59				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
10: Gazebo_51				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
11: Fizzles_54				12	13	15	20	22	21	31	38	42	44	51	52	56	59	64	68	72	75	79	82	85	88
12: SadLad_57				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	80					
13: Altheas_54				12	13	15	20	22	21	31	38	42	44	50	53	65	69	71	78						
14: Fregley_59				12	13	15	20	22	21	31	38	42	44	50	53	65	69	71	78						
15: BirdInFrench_59 + 1				12	13	15	20	22	21	31	38	42	44	50	53	65	69	71	78						
16: KelCole_57 + 2				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
17: SallyKl_52				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
18: Blab_49				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
19: EverythinBagel_50				12	13	15	20	22	21	31	38	42	44	51	52	56	59	64	71	75	79	82	85	88	
20: RubyRalph_56				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
21: BabyDotz_51 + 1				12	13	15	20	22	21	31	38	42	44	50	53	65	69	71	78						
22: CandC_58				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
23: AluminumJesus_49				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
24: Phinky_59				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
25: Pepe25_58				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
26: Kyva_53 + 1				12	13	15	20	22	21	31	38	42	44	51	52	56	59	64	71	75	79	82	85	88	
27: Fransoyer_55				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
28: Squash_54				12	13	15	20	22	21	31	38	42	44	50	53	65	69	71	78						
29: OneinaGillian_59 + 1				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			
30: WheelerS25_57				12	13	15	20	22	21	31	38	42	44	53	55	60	69	71	78	81	83	88			

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 294766 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294766 has 58 members, 8 are drafts.

Phages represented in each track:

- Track 1 : Judebell\_53
- Track 2 : BaconCheese\_55, MorillMayhem\_52, Mila11\_54
- Track 3 : Mentos\_55, Rowlf\_48, Zagie\_51, FrankDeliGuy\_48
- Track 4 : Tissue\_52, Grassboy\_53
- Track 5 : Namago\_51
- Track 6 : Nike\_52, Mashley\_50, Hyperion\_51, Lonelysoil\_50, SlySloth\_54
- Track 7 : DonaldDuck\_51, Viceroy\_50, Wheelie\_51, Casend\_52, Zhafia\_54, Wayne3\_53, Quammi\_49, Rudy\_49, Jehoshaphat\_53, Llemily\_51, Teehee\_52, Sillytadpoles\_52, Phabia\_51
- Track 8 : KillerQueen\_60
- Track 9 : Tempo\_59
- Track 10 : Gazebo\_51
- Track 11 : Fizzles\_54
- Track 12 : SadLad\_57
- Track 13 : Altheas\_54
- Track 14 : Fregley\_59
- Track 15 : BirdInFrench\_59, Wilca\_59
- Track 16 : Kelcole\_57, Romm\_61, RobinRose\_61
- Track 17 : SallyK\_52
- Track 18 : Blab\_49
- Track 19 : EverythinBagel\_50
- Track 20 : RubyRalph\_56
- Track 21 : BabyDotz\_51, Statler\_53
- Track 22 : CandC\_58
- Track 23 : AluminumJesus\_49
- Track 24 : Phinky\_59
- Track 25 : Pepe25\_58
- Track 26 : Kyva\_53, StrawberryJamm\_54
- Track 27 : Fransoyer\_55
- Track 28 : Squash\_54
- Track 29 : OneinaGillian\_59, Marcie\_64
- Track 30 : WheelerS25\_57

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

The start number called the most often in the published annotations is 15, it was called in 47 of the 50 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Altheas\_54, AluminumJesus\_49, BabyDotz\_51, BaconCheese\_55, BirdInFrench\_59, Blab\_49, CandC\_58, Casend\_52, DonaldDuck\_51, EverythinBagel\_50, Fizzles\_54, FrankDeliGuy\_48, Fregley\_59, Gazebo\_51, Grassboy\_53, Hyperion\_51, Jehoshaphat\_53, Judebell\_53, Kelcole\_57, KillerQueen\_60, Kyva\_53, Llemily\_51, Lonelysoil\_50, Marcie\_64, Mashley\_50, Mentos\_55, Mila11\_54, MorillMayhem\_52, Namago\_51, Nike\_52, OneinaGillian\_59, Pepe25\_58, Phabia\_51, Phinky\_59, Quammi\_49, RobinRose\_61, Romm\_61, Rowlf\_48, Rudy\_49, SallyK\_52, Sillytadpoles\_52, SlySloth\_54, Squash\_54, Statler\_53, StrawberryJamm\_54, Teehee\_52, Tempo\_59, Tissue\_52, Viceroy\_50, Wayne3\_53, WheelerS25\_57, Wheelie\_51, Wilca\_59, Zagie\_51, Zhafia\_54,

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

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

- Fransoyer\_55, RubyRalph\_56, SadLad\_57,

### Summary by start number:

Start 14:

- Found in 3 of 58 ( 5.2% ) of genes in pham
- Manual Annotations of this start: 3 of 50
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fransoyer\_55 (EG), RubyRalph\_56 (EG), SadLad\_57 (EG),

Start 15:

- Found in 55 of 58 ( 94.8% ) of genes in pham
- Manual Annotations of this start: 47 of 50
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altheas\_54 (EG), AluminumJesus\_49 (EG), BabyDotz\_51 (EG), BaconCheese\_55 (EG), BirdInFrench\_59 (EG), Blab\_49 (EG), CandC\_58 (EG), Casend\_52 (EG), DonaldDuck\_51 (EG), EverythinBagel\_50 (EG), Fizzles\_54 (EG), FrankDeliGuy\_48 (EG), Fregley\_59 (EG), Gazebo\_51 (EG), Grassboy\_53 (EG), Hyperion\_51 (EG), Jehoshaphat\_53 (EG), Judebell\_53 (EG), Kelcole\_57 (EG), KillerQueen\_60 (EG), Kyva\_53 (EG), Llemily\_51 (EG), Lonelysoil\_50 (EG), Marcie\_64 (EG), Mashley\_50 (EG), Mentos\_55 (EG), Mila11\_54 (EG), MorillMayhem\_52 (EG), Namago\_51 (EG), Nike\_52 (EG), OneinaGillian\_59 (EG), Pepe25\_58 (EG), Phabia\_51 (EG), Phinky\_59 (EG), Quammi\_49 (EG), RobinRose\_61 (EG), Romm\_61 (EG), Rowlf\_48 (EG), Rudy\_49 (EG), SallyK\_52 (EG), Sillytadpoles\_52 (EG), SlySloth\_54 (EG), Squash\_54 (EG), Statler\_53 (EG), StrawberryJamm\_54 (EG), Teehee\_52 (EG), Tempo\_59 (EG), Tissue\_52 (EG), Viceroy\_50 (EG), Wayne3\_53 (EG), WheelerS25\_57 (EG), Wheelie\_51 (EG), Wilca\_59 (EG), Zagie\_51 (EG), Zhafia\_54 (EG),

### Summary by clusters:

There is one cluster represented in this pham: EG

Info for manual annotations of cluster EG:

- Start number 14 was manually annotated 3 times for cluster EG.
- Start number 15 was manually annotated 47 times for cluster EG.

### **Gene Information:**

Gene: Altheas\_54 Start: 41052, Stop: 39964, Start Num: 15

Candidate Starts for Altheas\_54:

(1, 41742), (4, 41664), (5, 41661), (7, 41631), (12, 41181), (13, 41118), (Start: 15 @41052 has 47 MA's), (18, 41016), (20, 40971), (22, 40941), (27, 40863), (30, 40815), (33, 40806), (34, 40791), (42, 40680), (46, 40605), (47, 40599), (56, 40455), (59, 40425), (60, 40419), (67, 40314), (69, 40302), (71, 40293), (77, 40239), (78, 40206), (79, 40167), (80, 40158), (88, 40020),

Gene: AluminumJesus\_49 Start: 40027, Stop: 39011, Start Num: 15

Candidate Starts for AluminumJesus\_49:

(12, 40156), (13, 40093), (Start: 15 @40027 has 47 MA's), (20, 39946), (22, 39916), (27, 39838), (28, 39805), (31, 39787), (38, 39718), (39, 39712), (40, 39706), (42, 39682), (44, 39658), (53, 39508), (56, 39457), (60, 39427), (67, 39322), (69, 39310), (71, 39295), (75, 39274), (76, 39271), (81, 39226), (83, 39178), (88, 39103),

Gene: BabyDotz\_51 Start: 41041, Stop: 40022, Start Num: 15

Candidate Starts for BabyDotz\_51:

(12, 41170), (13, 41107), (Start: 15 @41041 has 47 MA's), (20, 40960), (22, 40930), (27, 40852), (28, 40819), (31, 40801), (38, 40732), (39, 40726), (40, 40720), (42, 40696), (44, 40672), (53, 40522), (55, 40483), (56, 40471), (57, 40459), (59, 40447), (60, 40441), (67, 40336), (69, 40324), (71, 40309), (75, 40288), (76, 40285), (81, 40231), (83, 40183), (88, 40108),

Gene: BaconCheese\_55 Start: 41934, Stop: 40948, Start Num: 15

Candidate Starts for BaconCheese\_55:

(Start: 15 @41934 has 47 MA's), (20, 41853), (24, 41799), (27, 41745), (30, 41697), (34, 41673), (42, 41556), (46, 41481), (47, 41475), (56, 41331), (59, 41307), (70, 41193), (83, 41079), (88, 41004),

Gene: BirdInFrench\_59 Start: 41149, Stop: 40379, Start Num: 15

Candidate Starts for BirdInFrench\_59:

(Start: 15 @41149 has 47 MA's), (16, 41137), (20, 41074), (22, 41044), (27, 40966), (31, 40915), (33, 40909), (36, 40864), (37, 40852), (40, 40828), (41, 40822), (42, 40804), (44, 40780), (56, 40579), (62, 40549), (66, 40507), (73, 40453), (78, 40441),

Gene: Blab\_49 Start: 39874, Stop: 38894, Start Num: 15

Candidate Starts for Blab\_49:

(8, 40444), (12, 40003), (13, 39940), (Start: 15 @39874 has 47 MA's), (20, 39793), (22, 39763), (27, 39685), (28, 39652), (31, 39634), (38, 39565), (39, 39559), (40, 39553), (42, 39529), (44, 39505), (53, 39355), (56, 39304), (60, 39274), (67, 39169), (69, 39157), (71, 39142), (75, 39121), (76, 39118), (81, 39073), (83, 39025), (88, 38950),

Gene: CandC\_58 Start: 40798, Stop: 39998, Start Num: 15

Candidate Starts for CandC\_58:

(13, 40861), (Start: 15 @40798 has 47 MA's), (16, 40786), (20, 40723), (22, 40693), (27, 40615), (31, 40564), (33, 40558), (36, 40513), (40, 40477), (42, 40453), (44, 40429), (50, 40348), (53, 40279), (65, 40138), (78, 40060),

Gene: Casend\_52 Start: 40845, Stop: 39802, Start Num: 15

Candidate Starts for Casend\_52:

(12, 40974), (13, 40911), (Start: 15 @40845 has 47 MA's), (20, 40764), (22, 40734), (24, 40710), (27, 40656), (30, 40608), (33, 40599), (42, 40473), (46, 40398), (47, 40392), (55, 40260), (56, 40248), (60, 40218), (67, 40113), (69, 40101), (71, 40086), (75, 40065), (76, 40062), (81, 40011), (88, 39888),

Gene: DonaldDuck\_51 Start: 40194, Stop: 39151, Start Num: 15

Candidate Starts for DonaldDuck\_51:

(12, 40323), (13, 40260), (Start: 15 @40194 has 47 MA's), (20, 40113), (22, 40083), (24, 40059), (27, 40005), (30, 39957), (33, 39948), (42, 39822), (46, 39747), (47, 39741), (55, 39609), (56, 39597), (60, 39567), (67, 39462), (69, 39450), (71, 39435), (75, 39414), (76, 39411), (81, 39360), (88, 39237),

Gene: EverythinBagel\_50 Start: 40555, Stop: 39539, Start Num: 15

Candidate Starts for EverythinBagel\_50:

(12, 40684), (13, 40621), (Start: 15 @40555 has 47 MA's), (22, 40444), (27, 40366), (28, 40333), (31, 40315), (38, 40246), (39, 40240), (40, 40234), (42, 40210), (44, 40186), (46, 40135), (53, 40036), (55, 39997), (56, 39985), (60, 39955), (67, 39850), (69, 39838), (71, 39823), (75, 39802), (83, 39700), (88, 39625),

Gene: Fizzles\_54 Start: 41170, Stop: 40166, Start Num: 15

Candidate Starts for Fizzles\_54:

(Start: 15 @41170 has 47 MA's), (17, 41152), (22, 41056), (24, 41032), (27, 40978), (36, 40876), (42, 40816), (45, 40774), (46, 40741), (48, 40726), (49, 40723), (58, 40573), (61, 40531), (63, 40498), (68, 40426), (80, 40336), (87, 40222), (88, 40210),

Gene: FrankDeliGuy\_48 Start: 40175, Stop: 39162, Start Num: 15

Candidate Starts for FrankDeliGuy\_48:

(12, 40304), (13, 40241), (Start: 15 @40175 has 47 MA's), (22, 40064), (27, 39986), (28, 39953), (31, 39935), (38, 39866), (39, 39860), (40, 39854), (42, 39830), (44, 39806), (53, 39656), (55, 39617), (56, 39605), (60, 39575), (67, 39470), (69, 39458), (71, 39443), (75, 39422), (76, 39419), (81, 39371), (83, 39323), (88, 39248),

Gene: Fransoyer\_55 Start: 42743, Stop: 41748, Start Num: 14

Candidate Starts for Fransoyer\_55:

(Start: 14 @42743 has 3 MA's), (20, 42659), (21, 42641), (22, 42629), (23, 42626), (27, 42551), (29, 42512), (30, 42503), (34, 42479), (39, 42392), (42, 42362), (51, 42236), (52, 42194), (56, 42137), (59, 42113), (64, 42047), (71, 41984), (75, 41966), (79, 41930), (82, 41891), (85, 41816), (88, 41795),

Gene: Fregley\_59 Start: 41063, Stop: 40263, Start Num: 15

Candidate Starts for Fregley\_59:

(13, 41126), (Start: 15 @41063 has 47 MA's), (16, 41051), (20, 40988), (22, 40958), (27, 40880), (31, 40829), (33, 40823), (35, 40787), (36, 40778), (40, 40742), (42, 40718), (44, 40694), (50, 40613), (53, 40544), (65, 40403), (78, 40325),

Gene: Gazebo\_51 Start: 40725, Stop: 39682, Start Num: 15

Candidate Starts for Gazebo\_51:

(12, 40854), (13, 40791), (Start: 15 @40725 has 47 MA's), (20, 40644), (22, 40614), (24, 40590), (27, 40536), (30, 40488), (33, 40479), (42, 40353), (46, 40278), (47, 40272), (56, 40128), (67, 39993), (69, 39981), (71, 39966), (75, 39945), (76, 39942), (81, 39897), (83, 39849), (88, 39774),

Gene: Grassboy\_53 Start: 40665, Stop: 39706, Start Num: 15

Candidate Starts for Grassboy\_53:

(12, 40794), (13, 40731), (Start: 15 @40665 has 47 MA's), (20, 40584), (22, 40554), (27, 40476), (28, 40443), (31, 40425), (38, 40356), (39, 40350), (40, 40344), (42, 40320), (44, 40296), (53, 40146), (55, 40107), (56, 40095), (60, 40065), (67, 39960), (69, 39948), (71, 39933), (81, 39885), (83, 39837), (88, 39762),

Gene: Hyperion\_51 Start: 40502, Stop: 39486, Start Num: 15

Candidate Starts for Hyperion\_51:

(12, 40631), (13, 40568), (Start: 15 @40502 has 47 MA's), (20, 40421), (22, 40391), (27, 40313), (28, 40280), (31, 40262), (38, 40193), (39, 40187), (40, 40181), (42, 40157), (44, 40133), (53, 39983), (55, 39944), (56, 39932), (60, 39902), (67, 39797), (69, 39785), (71, 39770), (75, 39749), (76, 39746), (81, 39701), (83, 39653), (88, 39578),

Gene: Jehoshaphat\_53 Start: 41113, Stop: 40070, Start Num: 15

Candidate Starts for Jehoshaphat\_53:

(12, 41242), (13, 41179), (Start: 15 @41113 has 47 MA's), (20, 41032), (22, 41002), (24, 40978), (27, 40924), (30, 40876), (33, 40867), (42, 40741), (46, 40666), (47, 40660), (55, 40528), (56, 40516), (60, 40486), (67, 40381), (69, 40369), (71, 40354), (75, 40333), (76, 40330), (81, 40279), (88, 40156),

Gene: Judebell\_53 Start: 40565, Stop: 39579, Start Num: 15

Candidate Starts for Judebell\_53:

(12, 40694), (13, 40631), (Start: 15 @40565 has 47 MA's), (20, 40484), (22, 40454), (27, 40376), (31, 40325), (38, 40256), (39, 40250), (40, 40244), (42, 40220), (44, 40196), (53, 40046), (55, 40007), (56, 39995), (60, 39965), (67, 39860), (69, 39848), (71, 39833), (75, 39812), (76, 39809), (81, 39758), (83, 39710), (88, 39635),

Gene: Kelcole\_57 Start: 41026, Stop: 40226, Start Num: 15

Candidate Starts for Kelcole\_57:

(2, 41662), (13, 41089), (Start: 15 @41026 has 47 MA's), (16, 41014), (20, 40951), (22, 40921), (27, 40843), (31, 40792), (33, 40786), (35, 40750), (36, 40741), (40, 40705), (42, 40681), (44, 40657), (50, 40576), (53, 40507), (65, 40366), (78, 40288),

Gene: KillerQueen\_60 Start: 41276, Stop: 40476, Start Num: 15

Candidate Starts for KillerQueen\_60:

(2, 41912), (13, 41339), (Start: 15 @41276 has 47 MA's), (16, 41264), (20, 41201), (22, 41171), (27, 41093), (31, 41042), (33, 41036), (35, 41000), (40, 40955), (42, 40931), (44, 40907), (50, 40826), (53, 40757), (65, 40616), (78, 40538),

Gene: Kyva\_53 Start: 40722, Stop: 39730, Start Num: 15

Candidate Starts for Kyva\_53:

(12, 40851), (13, 40788), (Start: 15 @40722 has 47 MA's), (22, 40611), (27, 40533), (28, 40500), (31, 40482), (38, 40413), (39, 40407), (40, 40401), (42, 40377), (44, 40353), (53, 40203), (56, 40152), (60, 40122), (67, 40017), (69, 40005), (71, 39990), (75, 39969), (76, 39966), (81, 39909), (83, 39861), (88, 39786),

Gene: Llemily\_51 Start: 39889, Stop: 38846, Start Num: 15

Candidate Starts for Llemily\_51:

(12, 40018), (13, 39955), (Start: 15 @39889 has 47 MA's), (20, 39808), (22, 39778), (24, 39754), (27, 39700), (30, 39652), (33, 39643), (42, 39517), (46, 39442), (47, 39436), (55, 39304), (56, 39292), (60, 39262), (67, 39157), (69, 39145), (71, 39130), (75, 39109), (76, 39106), (81, 39055), (88, 38932),

Gene: Lonelysoil\_50 Start: 40098, Stop: 39088, Start Num: 15

Candidate Starts for Lonelysoil\_50:

(12, 40227), (13, 40164), (Start: 15 @40098 has 47 MA's), (20, 40017), (22, 39987), (27, 39909), (28, 39876), (31, 39858), (38, 39789), (39, 39783), (40, 39777), (42, 39753), (44, 39729), (53, 39579), (55, 39540), (56, 39528), (60, 39498), (67, 39393), (69, 39381), (71, 39366), (75, 39345), (76, 39342), (81, 39297), (83, 39249), (88, 39174),

Gene: Marcie\_64 Start: 41925, Stop: 41125, Start Num: 15

Candidate Starts for Marcie\_64:

(13, 41988), (Start: 15 @41925 has 47 MA's), (16, 41913), (20, 41850), (22, 41820), (27, 41742), (31, 41691), (33, 41685), (35, 41649), (36, 41640), (40, 41604), (42, 41580), (44, 41556), (50, 41475), (53, 41406), (65, 41265), (78, 41187),

Gene: Mashley\_50 Start: 40281, Stop: 39265, Start Num: 15

Candidate Starts for Mashley\_50:

(12, 40410), (13, 40347), (Start: 15 @40281 has 47 MA's), (20, 40200), (22, 40170), (27, 40092), (28, 40059), (31, 40041), (38, 39972), (39, 39966), (40, 39960), (42, 39936), (44, 39912), (53, 39762), (55, 39723), (56, 39711), (60, 39681), (67, 39576), (69, 39564), (71, 39549), (75, 39528), (76, 39525), (81, 39480), (83, 39432), (88, 39357),

Gene: Mentos\_55 Start: 41473, Stop: 40448, Start Num: 15

Candidate Starts for Mentos\_55:

(12, 41602), (13, 41539), (Start: 15 @41473 has 47 MA's), (22, 41362), (27, 41284), (28, 41251), (31, 41233), (38, 41164), (39, 41158), (40, 41152), (42, 41128), (44, 41104), (53, 40954), (55, 40915), (56, 40903), (60, 40873), (67, 40768), (69, 40756), (71, 40741), (75, 40720), (76, 40717), (81, 40657), (83, 40609), (88, 40534),

Gene: Mila11\_54 Start: 41749, Stop: 40763, Start Num: 15

Candidate Starts for Mila11\_54:

(Start: 15 @41749 has 47 MA's), (20, 41668), (24, 41614), (27, 41560), (30, 41512), (34, 41488), (42, 41371), (46, 41296), (47, 41290), (56, 41146), (59, 41122), (70, 41008), (83, 40894), (88, 40819),

Gene: MorillMayhem\_52 Start: 40626, Stop: 39640, Start Num: 15

Candidate Starts for MorillMayhem\_52:

(Start: 15 @40626 has 47 MA's), (20, 40545), (24, 40491), (27, 40437), (30, 40389), (34, 40365), (42, 40248), (46, 40173), (47, 40167), (56, 40023), (59, 39999), (70, 39885), (83, 39771), (88, 39696),

Gene: Namago\_51 Start: 39843, Stop: 38860, Start Num: 15

Candidate Starts for Namago\_51:

(12, 39972), (13, 39909), (Start: 15 @39843 has 47 MA's), (20, 39762), (22, 39732), (24, 39708), (27, 39654), (32, 39600), (33, 39597), (36, 39552), (40, 39516), (42, 39492), (43, 39486), (45, 39450), (46, 39417), (48, 39402), (56, 39267), (59, 39243), (67, 39132), (69, 39120), (71, 39105), (75, 39084), (76, 39081), (81, 39039), (83, 38991), (88, 38916),

Gene: Nike\_52 Start: 40816, Stop: 39824, Start Num: 15

Candidate Starts for Nike\_52:

(12, 40945), (13, 40882), (Start: 15 @40816 has 47 MA's), (20, 40735), (22, 40705), (27, 40627), (28, 40594), (31, 40576), (38, 40507), (39, 40501), (40, 40495), (42, 40471), (44, 40447), (53, 40297), (55, 40258), (56, 40246), (60, 40216), (67, 40111), (69, 40099), (71, 40084), (75, 40063), (76, 40060), (81, 40003), (83, 39955), (88, 39880),

Gene: OneinaGillian\_59 Start: 40928, Stop: 40128, Start Num: 15

Candidate Starts for OneinaGillian\_59:

(13, 40991), (Start: 15 @40928 has 47 MA's), (16, 40916), (20, 40853), (22, 40823), (27, 40745), (31, 40694), (33, 40688), (35, 40652), (36, 40643), (40, 40607), (42, 40583), (44, 40559), (50, 40478), (53,

40409), (65, 40268), (78, 40190),

Gene: Pepe25\_58 Start: 40459, Stop: 39689, Start Num: 15

Candidate Starts for Pepe25\_58:

(2, 41095), (3, 41089), (6, 41059), (10, 41008), (11, 40798), (12, 40585), (13, 40522), (Start: 15 @40459 has 47 MA's), (16, 40447), (20, 40384), (22, 40354), (27, 40276), (31, 40225), (33, 40219), (36, 40174), (37, 40162), (40, 40138), (41, 40132), (42, 40114), (44, 40090), (56, 39889), (62, 39859), (66, 39817), (73, 39763), (78, 39751),

Gene: Phabia\_51 Start: 40304, Stop: 39261, Start Num: 15

Candidate Starts for Phabia\_51:

(12, 40433), (13, 40370), (Start: 15 @40304 has 47 MA's), (20, 40223), (22, 40193), (24, 40169), (27, 40115), (30, 40067), (33, 40058), (42, 39932), (46, 39857), (47, 39851), (55, 39719), (56, 39707), (60, 39677), (67, 39572), (69, 39560), (71, 39545), (75, 39524), (76, 39521), (81, 39470), (88, 39347),

Gene: Phinky\_59 Start: 42437, Stop: 41463, Start Num: 15

Candidate Starts for Phinky\_59:

(12, 42569), (Start: 15 @42437 has 47 MA's), (19, 42395), (20, 42353), (26, 42278), (27, 42242), (38, 42131), (39, 42125), (41, 42113), (42, 42095), (46, 42020), (48, 42005), (50, 41990), (54, 41903), (63, 41795), (84, 41588), (86, 41540), (88, 41522),

Gene: Quammi\_49 Start: 40004, Stop: 38961, Start Num: 15

Candidate Starts for Quammi\_49:

(12, 40133), (13, 40070), (Start: 15 @40004 has 47 MA's), (20, 39923), (22, 39893), (24, 39869), (27, 39815), (30, 39767), (33, 39758), (42, 39632), (46, 39557), (47, 39551), (55, 39419), (56, 39407), (60, 39377), (67, 39272), (69, 39260), (71, 39245), (75, 39224), (76, 39221), (81, 39170), (88, 39047),

Gene: RobinRose\_61 Start: 41440, Stop: 40640, Start Num: 15

Candidate Starts for RobinRose\_61:

(2, 42076), (13, 41503), (Start: 15 @41440 has 47 MA's), (16, 41428), (20, 41365), (22, 41335), (27, 41257), (31, 41206), (33, 41200), (35, 41164), (36, 41155), (40, 41119), (42, 41095), (44, 41071), (50, 40990), (53, 40921), (65, 40780), (78, 40702),

Gene: Romm\_61 Start: 41437, Stop: 40637, Start Num: 15

Candidate Starts for Romm\_61:

(2, 42073), (13, 41500), (Start: 15 @41437 has 47 MA's), (16, 41425), (20, 41362), (22, 41332), (27, 41254), (31, 41203), (33, 41197), (35, 41161), (36, 41152), (40, 41116), (42, 41092), (44, 41068), (50, 40987), (53, 40918), (65, 40777), (78, 40699),

Gene: Rowlf\_48 Start: 39958, Stop: 38966, Start Num: 15

Candidate Starts for Rowlf\_48:

(12, 40087), (13, 40024), (Start: 15 @39958 has 47 MA's), (22, 39847), (27, 39769), (28, 39736), (31, 39718), (38, 39649), (39, 39643), (40, 39637), (42, 39613), (44, 39589), (53, 39439), (55, 39400), (56, 39388), (60, 39358), (67, 39253), (69, 39241), (71, 39226), (75, 39205), (76, 39202), (81, 39145), (83, 39097), (88, 39022),

Gene: RubyRalph\_56 Start: 42890, Stop: 41904, Start Num: 14

Candidate Starts for RubyRalph\_56:

(Start: 14 @42890 has 3 MA's), (20, 42800), (21, 42782), (22, 42770), (23, 42767), (25, 42743), (27, 42692), (29, 42653), (30, 42644), (34, 42620), (39, 42533), (42, 42503), (51, 42377), (52, 42335), (56, 42278), (59, 42254), (64, 42188), (71, 42125), (75, 42107), (79, 42086), (82, 42047), (85, 41972), (88, 41951),

Gene: Rudy\_49 Start: 40040, Stop: 38994, Start Num: 15

Candidate Starts for Rudy\_49:

(12, 40169), (13, 40106), (Start: 15 @40040 has 47 MA's), (20, 39959), (22, 39929), (24, 39905), (27, 39851), (30, 39803), (33, 39794), (42, 39668), (46, 39593), (47, 39587), (55, 39455), (56, 39443), (60, 39413), (67, 39308), (69, 39296), (71, 39281), (75, 39260), (76, 39257), (81, 39203), (88, 39080),

Gene: SadLad\_57 Start: 43744, Stop: 42740, Start Num: 14

Candidate Starts for SadLad\_57:

(Start: 14 @43744 has 3 MA's), (20, 43660), (21, 43642), (22, 43630), (23, 43627), (27, 43552), (29, 43513), (30, 43504), (34, 43480), (39, 43393), (42, 43363), (51, 43237), (52, 43195), (56, 43138), (59, 43114), (64, 43048), (72, 42982), (75, 42967), (79, 42922), (82, 42883), (85, 42808), (88, 42787),

Gene: SallyK\_52 Start: 40959, Stop: 39973, Start Num: 15

Candidate Starts for SallyK\_52:

(6, 41556), (9, 41523), (12, 41088), (13, 41025), (Start: 15 @40959 has 47 MA's), (20, 40878), (22, 40848), (24, 40824), (27, 40770), (32, 40716), (33, 40713), (36, 40668), (40, 40632), (42, 40608), (43, 40602), (45, 40566), (46, 40533), (48, 40518), (56, 40383), (57, 40371), (59, 40359), (60, 40353), (67, 40248), (69, 40236), (71, 40221), (75, 40200), (76, 40197), (81, 40152), (83, 40104), (88, 40029),

Gene: Sillytadpoles\_52 Start: 39877, Stop: 38834, Start Num: 15

Candidate Starts for Sillytadpoles\_52:

(12, 40006), (13, 39943), (Start: 15 @39877 has 47 MA's), (20, 39796), (22, 39766), (24, 39742), (27, 39688), (30, 39640), (33, 39631), (42, 39505), (46, 39430), (47, 39424), (55, 39292), (56, 39280), (60, 39250), (67, 39145), (69, 39133), (71, 39118), (75, 39097), (76, 39094), (81, 39043), (88, 38920),

Gene: SlySloth\_54 Start: 40602, Stop: 39580, Start Num: 15

Candidate Starts for SlySloth\_54:

(12, 40731), (13, 40668), (Start: 15 @40602 has 47 MA's), (20, 40521), (22, 40491), (27, 40413), (28, 40380), (31, 40362), (38, 40293), (39, 40287), (40, 40281), (42, 40257), (44, 40233), (53, 40083), (55, 40044), (56, 40032), (60, 40002), (67, 39897), (69, 39885), (71, 39870), (75, 39849), (76, 39846), (81, 39789), (83, 39741), (88, 39666),

Gene: Squash\_54 Start: 40675, Stop: 39638, Start Num: 15

Candidate Starts for Squash\_54:

(12, 40804), (13, 40741), (Start: 15 @40675 has 47 MA's), (22, 40564), (27, 40486), (28, 40453), (31, 40435), (38, 40366), (39, 40360), (40, 40354), (42, 40330), (44, 40306), (53, 40156), (56, 40105), (60, 40075), (67, 39970), (69, 39958), (74, 39919), (75, 39901), (83, 39769), (88, 39694),

Gene: Statler\_53 Start: 40677, Stop: 39664, Start Num: 15

Candidate Starts for Statler\_53:

(12, 40806), (13, 40743), (Start: 15 @40677 has 47 MA's), (20, 40596), (22, 40566), (27, 40488), (28, 40455), (31, 40437), (38, 40368), (39, 40362), (40, 40356), (42, 40332), (44, 40308), (53, 40158), (55, 40119), (56, 40107), (57, 40095), (59, 40083), (60, 40077), (67, 39972), (69, 39960), (71, 39945), (75, 39924), (76, 39921), (81, 39867), (83, 39819), (88, 39744),

Gene: StrawberryJamm\_54 Start: 40137, Stop: 39109, Start Num: 15

Candidate Starts for StrawberryJamm\_54:

(12, 40266), (13, 40203), (Start: 15 @40137 has 47 MA's), (22, 40026), (27, 39948), (28, 39915), (31, 39897), (38, 39828), (39, 39822), (40, 39816), (42, 39792), (44, 39768), (53, 39618), (56, 39567), (60, 39537), (67, 39432), (69, 39420), (71, 39405), (75, 39384), (76, 39381), (81, 39318), (83, 39270), (88, 39195),

Gene: Teehee\_52 Start: 41110, Stop: 40067, Start Num: 15

Candidate Starts for Teehee\_52:

(12, 41239), (13, 41176), (Start: 15 @41110 has 47 MA's), (20, 41029), (22, 40999), (24, 40975), (27, 40921), (30, 40873), (33, 40864), (42, 40738), (46, 40663), (47, 40657), (55, 40525), (56, 40513), (60, 40483), (67, 40378), (69, 40366), (71, 40351), (75, 40330), (76, 40327), (81, 40276), (88, 40153),

Gene: Tempo\_59 Start: 41305, Stop: 40505, Start Num: 15

Candidate Starts for Tempo\_59:

(13, 41368), (Start: 15 @41305 has 47 MA's), (16, 41293), (20, 41230), (22, 41200), (27, 41122), (31, 41071), (33, 41065), (36, 41020), (40, 40984), (42, 40960), (44, 40936), (50, 40855), (53, 40786), (65, 40645), (78, 40567),

Gene: Tissue\_52 Start: 40561, Stop: 39602, Start Num: 15

Candidate Starts for Tissue\_52:

(12, 40690), (13, 40627), (Start: 15 @40561 has 47 MA's), (20, 40480), (22, 40450), (27, 40372), (28, 40339), (31, 40321), (38, 40252), (39, 40246), (40, 40240), (42, 40216), (44, 40192), (53, 40042), (55, 40003), (56, 39991), (60, 39961), (67, 39856), (69, 39844), (71, 39829), (81, 39781), (83, 39733), (88, 39658),

Gene: Viceroy\_50 Start: 40010, Stop: 38964, Start Num: 15

Candidate Starts for Viceroy\_50:

(12, 40139), (13, 40076), (Start: 15 @40010 has 47 MA's), (20, 39929), (22, 39899), (24, 39875), (27, 39821), (30, 39773), (33, 39764), (42, 39638), (46, 39563), (47, 39557), (55, 39425), (56, 39413), (60, 39383), (67, 39278), (69, 39266), (71, 39251), (75, 39230), (76, 39227), (81, 39173), (88, 39050),

Gene: Wayne3\_53 Start: 40873, Stop: 39830, Start Num: 15

Candidate Starts for Wayne3\_53:

(12, 41002), (13, 40939), (Start: 15 @40873 has 47 MA's), (20, 40792), (22, 40762), (24, 40738), (27, 40684), (30, 40636), (33, 40627), (42, 40501), (46, 40426), (47, 40420), (55, 40288), (56, 40276), (60, 40246), (67, 40141), (69, 40129), (71, 40114), (75, 40093), (76, 40090), (81, 40039), (88, 39916),

Gene: WheelerS25\_57 Start: 41451, Stop: 40438, Start Num: 15

Candidate Starts for WheelerS25\_57:

(12, 41580), (13, 41517), (Start: 15 @41451 has 47 MA's), (20, 41370), (24, 41316), (27, 41262), (30, 41214), (34, 41190), (42, 41073), (46, 40998), (47, 40992), (56, 40848), (57, 40836), (59, 40824), (60, 40818), (69, 40701), (71, 40686), (75, 40665), (76, 40662), (81, 40617), (83, 40569), (88, 40494),

Gene: Wheelie\_51 Start: 40194, Stop: 39151, Start Num: 15

Candidate Starts for Wheelie\_51:

(12, 40323), (13, 40260), (Start: 15 @40194 has 47 MA's), (20, 40113), (22, 40083), (24, 40059), (27, 40005), (30, 39957), (33, 39948), (42, 39822), (46, 39747), (47, 39741), (55, 39609), (56, 39597), (60, 39567), (67, 39462), (69, 39450), (71, 39435), (75, 39414), (76, 39411), (81, 39360), (88, 39237),

Gene: Wilca\_59 Start: 41149, Stop: 40379, Start Num: 15

Candidate Starts for Wilca\_59:

(Start: 15 @41149 has 47 MA's), (16, 41137), (20, 41074), (22, 41044), (27, 40966), (31, 40915), (33, 40909), (36, 40864), (37, 40852), (40, 40828), (41, 40822), (42, 40804), (44, 40780), (56, 40579), (62, 40549), (66, 40507), (73, 40453), (78, 40441),

Gene: Zagie\_51 Start: 40343, Stop: 39306, Start Num: 15

Candidate Starts for Zagie\_51:

(12, 40472), (13, 40409), (Start: 15 @40343 has 47 MA's), (22, 40232), (27, 40154), (28, 40121), (31, 40103), (38, 40034), (39, 40028), (40, 40022), (42, 39998), (44, 39974), (53, 39824), (55, 39785), (56, 39773), (60, 39743), (67, 39638), (69, 39626), (71, 39611), (75, 39590), (76, 39587), (81, 39515), (83,

39467), (88, 39392),

Gene: Zhafia\_54 Start: 40674, Stop: 39631, Start Num: 15

Candidate Starts for Zhafia\_54:

(12, 40803), (13, 40740), (Start: 15 @40674 has 47 MA's), (20, 40593), (22, 40563), (24, 40539), (27, 40485), (30, 40437), (33, 40428), (42, 40302), (46, 40227), (47, 40221), (55, 40089), (56, 40077), (60, 40047), (67, 39942), (69, 39930), (71, 39915), (75, 39894), (76, 39891), (81, 39840), (88, 39717),