

# Pham 163681

1: Judebell_54		12	13	15	20	22	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
2: Tissue_51 + 1		12	13	15	20	22	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
3: Namago_51		12	13	15	20	22	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
4: Nike_52 + 3		12	13	15	20	22	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
5: DonaldDuck_51 + 12	2		13	15	20	22	27	31	36	40	44	50	53		65	74									
6: Kelcble_57 + 2			13	15	20	22	27	31	36	40	44	50	53		65	74									
7: Tempo_59		12	13	15	22	24	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
8: Rowlf_48 + 1		12	13	15	20	22	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
9: Blab_49				14	20	22	27	31	36	40	44	51	52	56	59	64	73	76	79	81	84	87			
10: SadLad_57	1	6	1		12	13	15	18	20	22	27	31	36	40	44	50	53	56	60	69	72	78	80	83	87
11: Altheas_54			13	15	20	22	27	31	36	40	44	50	53		65	74									
12: Fregley_59				15	20	22	27	31	36	40	44	50	53		65	74									
13: BirdInFrench_59 + 1	6	9			12	13	15	20	22	24	27	31	36	40	44	50	53	56	60	69	72	78	80	83	87
14: SallyK_52				15	20	22	27	31	36	40	44	50	53		65	74									
15: Fizzles_54				15	20	22	27	31	36	40	44	50	53		65	74									
16: Gazebo_51				14	20	22	27	31	36	40	44	51	52	56	59	64	72	76	79	81	84	87			
17: RubyRalph_56			13	15	20	22	27	31	36	40	44	50	53		65	74									
18: CandC_58			13	15	20	22	27	31	36	40	44	50	53		65	74									
19: Marcie_64 + 1		12		15	19	20	26	27	31	36	40	44	50	53	54	63							83	87	
20: Phinky_59	3	6	10	11		12	13	15	18	20	22	27	31	36	40	44	50	53	56	62	66	79	74		
21: Pepe25_58				15	20	22	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
22: AluminumJesus_49				15	22	24	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
23: Kyva_53 + 1				14	20	22	27	31	36	40	44	51	52	56	59	64	72	76	79	81	84	87			
24: Fransoyer_55				15	20	22	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
25: BabyDotz_51				15	22	24	27	31	36	40	44	53	56	60	69	72	78	80	83	87					
26: Squash_54				15	22	24	27	31	36	40	44	53	56	60	69	72	78	80	83	87					

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 163681 Report

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

Pham number 163681 has 48 members, 12 are drafts.

Phages represented in each track:

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

### ***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 33 of the 36 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Altheas\_54, AluminumJesus\_49, BabyDotz\_51, BirdInFrench\_59, Blab\_49, CandC\_58, Casend\_52, DonaldDuck\_51, Fizzles\_54, Fregley\_59, Gazebo\_51, Grassboy\_53, Hyperion\_51, Jehoshaphat\_53, Judebell\_54, Kelcole\_57, Kyva\_53, Llemily\_51, Lonelysoil\_50, Marcie\_64, Mashley\_50, 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, Squash\_54, StrawberryJamm\_54, Teehee\_52, Tempo\_59, Tissue\_51, Viceroy\_50, Wayne3\_53, 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 48 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 3 of 36
- 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 45 of 48 ( 93.8% ) of genes in pham
- Manual Annotations of this start: 33 of 36
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altheas\_54 (EG), AluminumJesus\_49 (EG), BabyDotz\_51 (EG), BirdInFrench\_59 (EG), Blab\_49 (EG), CandC\_58 (EG), Casend\_52 (EG), DonaldDuck\_51 (EG), Fizzles\_54 (EG), Fregley\_59 (EG), Gazebo\_51 (EG), Grassboy\_53 (EG), Hyperion\_51 (EG), Jehoshaphat\_53 (EG), Judebell\_54 (EG), Kelcole\_57 (EG), Kyva\_53 (EG), Llemily\_51 (EG), Lonelysoil\_50 (EG), Marcie\_64 (EG), Mashley\_50 (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), Squash\_54 (EG), StrawberryJamm\_54 (EG), Teehee\_52 (EG), Tempo\_59 (EG), Tissue\_51 (EG), Viceroy\_50 (EG), Wayne3\_53 (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 33 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 33 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), (78, 40239), (80, 40206), (82, 40167), (83, 40158), (87, 40020),

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

Candidate Starts for AluminumJesus\_49:

(12, 40156), (13, 40093), (Start: 15 @40027 has 33 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), (72, 39295), (76, 39274), (77, 39271), (80, 39226), (83, 39178), (87, 39103),

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

Candidate Starts for BabyDotz\_51:

(12, 41170), (13, 41107), (Start: 15 @41041 has 33 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), (72, 40309), (76, 40288), (77, 40285), (80, 40231), (83, 40183), (87, 40108),

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

Candidate Starts for BirdInFrench\_59:

(Start: 15 @41149 has 33 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), (70, 40453), (74, 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 33 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), (72, 39142), (76, 39121), (77, 39118), (80, 39073), (83, 39025), (87, 38950),

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

Candidate Starts for CandC\_58:

(13, 40861), (Start: 15 @40798 has 33 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), (74, 40060),

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

Candidate Starts for Casend\_52:

(12, 40974), (13, 40911), (Start: 15 @40845 has 33 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), (72, 40086), (76, 40065), (77, 40062), (80, 40011), (87, 39888),

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

Candidate Starts for DonaldDuck\_51:

(12, 40323), (13, 40260), (Start: 15 @40194 has 33 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), (72, 39435), (76, 39414), (77, 39411), (80, 39360), (87, 39237),

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

Candidate Starts for Fizzles\_54:

(Start: 15 @41170 has 33 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), (86, 40222), (87, 40210),

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), (72, 41984), (76, 41966), (79, 41930), (81, 41891), (84, 41816), (87, 41795),

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

Candidate Starts for Fregley\_59:

(13, 41126), (Start: 15 @41063 has 33 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), (74, 40325),

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

Candidate Starts for Gazebo\_51:

(12, 40854), (13, 40791), (Start: 15 @40725 has 33 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), (72, 39966), (76, 39945), (77, 39942), (80, 39897), (83, 39849), (87, 39774),

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

Candidate Starts for Grassboy\_53:

(12, 40794), (13, 40731), (Start: 15 @40665 has 33 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), (72, 39933), (80, 39885), (83, 39837), (87, 39762),

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

Candidate Starts for Hyperion\_51:

(12, 40631), (13, 40568), (Start: 15 @40502 has 33 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), (72, 39770), (76, 39749), (77, 39746), (80, 39701), (83, 39653), (87, 39578),

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

Candidate Starts for Jehoshaphat\_53:

(12, 41242), (13, 41179), (Start: 15 @41113 has 33 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), (72, 40354), (76, 40333), (77, 40330), (80, 40279), (87, 40156),

Gene: Judebell\_54 Start: 40565, Stop: 39579, Start Num: 15

Candidate Starts for Judebell\_54:

(12, 40694), (13, 40631), (Start: 15 @40565 has 33 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), (72, 39833), (76, 39812), (77, 39809), (80, 39758), (83, 39710), (87, 39635),

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

Candidate Starts for Kelcole\_57:

(2, 41662), (13, 41089), (Start: 15 @41026 has 33 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), (74, 40288),

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

Candidate Starts for Kyva\_53:

(12, 40851), (13, 40788), (Start: 15 @40722 has 33 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), (72, 39990), (76, 39969), (77, 39966), (80, 39909), (83, 39861), (87, 39786),

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

Candidate Starts for Llemily\_51:

(12, 40018), (13, 39955), (Start: 15 @39889 has 33 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), (72, 39130), (76, 39109), (77, 39106), (80, 39055), (87, 38932),

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

Candidate Starts for Lonelysoil\_50:

(12, 40227), (13, 40164), (Start: 15 @40098 has 33 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), (72, 39366), (76, 39345), (77, 39342), (80, 39297), (83, 39249), (87, 39174),

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

Candidate Starts for Marcie\_64:

(13, 41988), (Start: 15 @41925 has 33 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), (74, 41187),

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

Candidate Starts for Mashley\_50:

(12, 40410), (13, 40347), (Start: 15 @40281 has 33 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), (72, 39549), (76, 39528), (77, 39525), (80, 39480), (83, 39432), (87, 39357),

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

Candidate Starts for Namago\_51:

(12, 39972), (13, 39909), (Start: 15 @39843 has 33 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), (72, 39105), (76, 39084), (77, 39081), (80, 39039), (83, 38991), (87, 38916),

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

Candidate Starts for Nike\_52:

(12, 40945), (13, 40882), (Start: 15 @40816 has 33 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), (72, 40084), (76, 40063), (77, 40060), (80, 40003), (83, 39955), (87, 39880),

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

Candidate Starts for OneinaGillian\_59:

(13, 40991), (Start: 15 @40928 has 33 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), (74, 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 33 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), (70, 39763), (74, 39751),

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

Candidate Starts for Phabia\_51:

(12, 40433), (13, 40370), (Start: 15 @40304 has 33 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), (72, 39545), (76, 39524), (77, 39521), (80, 39470), (87, 39347),

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

Candidate Starts for Phinky\_59:

(12, 42569), (Start: 15 @42437 has 33 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), (83, 41588), (85, 41540), (87, 41522),

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

Candidate Starts for Quammi\_49:

(12, 40133), (13, 40070), (Start: 15 @40004 has 33 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), (72, 39245), (76, 39224), (77, 39221), (80, 39170), (87, 39047),

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

Candidate Starts for RobinRose\_61:

(2, 42076), (13, 41503), (Start: 15 @41440 has 33 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), (74, 40702),

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

Candidate Starts for Romm\_61:

(2, 42073), (13, 41500), (Start: 15 @41437 has 33 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), (74, 40699),

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

Candidate Starts for Rowlf\_48:

(12, 40087), (13, 40024), (Start: 15 @39958 has 33 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), (72, 39226), (76, 39205), (77, 39202), (80, 39145), (83, 39097), (87, 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), (72, 42125), (76, 42107), (79, 42086), (81, 42047), (84, 41972), (87,

41951),

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

Candidate Starts for Rudy\_49:

(12, 40169), (13, 40106), (Start: 15 @40040 has 33 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), (72, 39281), (76, 39260), (77, 39257), (80, 39203), (87, 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), (73, 42982), (76, 42967), (79, 42922), (81, 42883), (84, 42808), (87, 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 33 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), (72, 40221), (76, 40200), (77, 40197), (80, 40152), (83, 40104), (87, 40029),

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

Candidate Starts for Sillytadpoles\_52:

(12, 40006), (13, 39943), (Start: 15 @39877 has 33 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), (72, 39118), (76, 39097), (77, 39094), (80, 39043), (87, 38920),

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

Candidate Starts for Squash\_54:

(12, 40804), (13, 40741), (Start: 15 @40675 has 33 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), (75, 39919), (76, 39901), (83, 39769), (87, 39694),

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

Candidate Starts for StrawberryJamm\_54:

(12, 40266), (13, 40203), (Start: 15 @40137 has 33 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), (72, 39405), (76, 39384), (77, 39381), (80, 39318), (83, 39270), (87, 39195),

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

Candidate Starts for Teehee\_52:

(12, 41239), (13, 41176), (Start: 15 @41110 has 33 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), (72, 40351), (76, 40330), (77, 40327), (80, 40276), (87, 40153),

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

Candidate Starts for Tempo\_59:

(13, 41368), (Start: 15 @41305 has 33 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), (74, 40567),

Gene: Tissue\_51 Start: 40561, Stop: 39602, Start Num: 15



Candidate Starts for Tissue\_51:

(12, 40690), (13, 40627), (Start: 15 @40561 has 33 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), (72, 39829), (80, 39781), (83, 39733), (87, 39658),

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

Candidate Starts for Viceroy\_50:

(12, 40139), (13, 40076), (Start: 15 @40010 has 33 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), (72, 39251), (76, 39230), (77, 39227), (80, 39173), (87, 39050),

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

Candidate Starts for Wayne3\_53:

(12, 41002), (13, 40939), (Start: 15 @40873 has 33 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), (72, 40114), (76, 40093), (77, 40090), (80, 40039), (87, 39916),

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

Candidate Starts for Wheelie\_51:

(12, 40323), (13, 40260), (Start: 15 @40194 has 33 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), (72, 39435), (76, 39414), (77, 39411), (80, 39360), (87, 39237),

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

Candidate Starts for Wilca\_59:

(Start: 15 @41149 has 33 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), (70, 40453), (74, 40441),

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

Candidate Starts for Zagie\_51:

(12, 40472), (13, 40409), (Start: 15 @40343 has 33 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), (72, 39611), (76, 39590), (77, 39587), (80, 39515), (83, 39467), (87, 39392),

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

Candidate Starts for Zhafia\_54:

(12, 40803), (13, 40740), (Start: 15 @40674 has 33 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), (72, 39915), (76, 39894), (77, 39891), (80, 39840), (87, 39717),