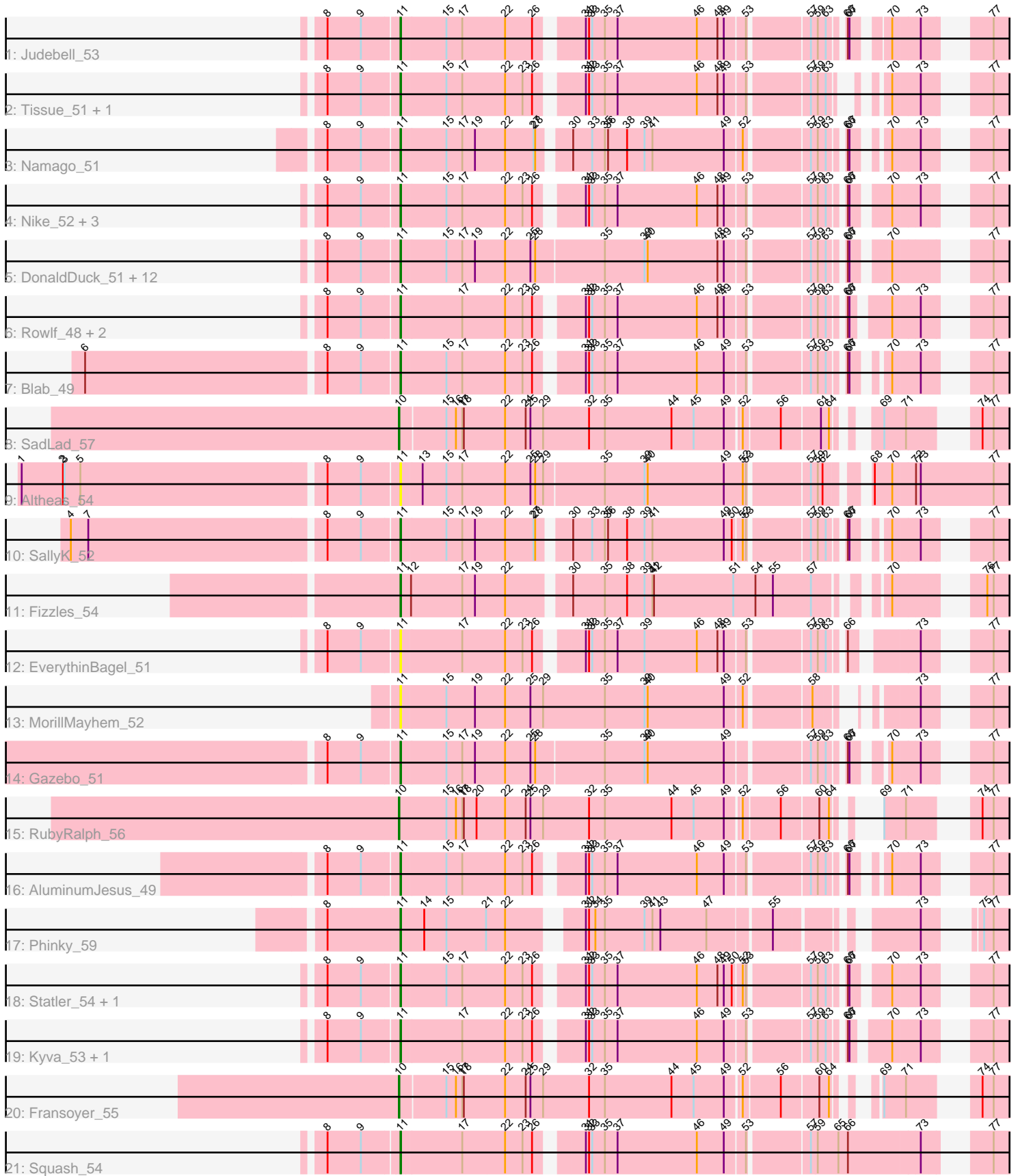


# Pham 194145



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 194145 Report

This analysis was run 11/02/24 on database version 579.

Pham number 194145 has 41 members, 11 are drafts.

Phages represented in each track:

- Track 1 : Judebell\_53
- 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, Rudy\_49, Wayne3\_53, Jehoshaphat\_53, Quammi\_49, Llemily\_51, Teehee\_52, Zhafia\_54, Sillytadpoles\_52, Phabia\_51
- Track 6 : Rowlf\_48, Zagie\_51, FrankDeliGuy\_49
- Track 7 : Blab\_49
- Track 8 : SadLad\_57
- Track 9 : Altheas\_54
- Track 10 : SallyK\_52
- Track 11 : Fizzles\_54
- Track 12 : EverythinBagel\_51
- Track 13 : MorillMayhem\_52
- Track 14 : Gazebo\_51
- Track 15 : RubyRalph\_56
- Track 16 : AluminumJesus\_49
- Track 17 : Phinky\_59
- Track 18 : Statler\_54, BabyDotz\_51
- Track 19 : Kyva\_53, StrawberryJamm\_54
- Track 20 : Fransoyer\_55
- Track 21 : 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 11, it was called in 27 of the 30 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Altheas\_54, AluminumJesus\_49, BabyDotz\_51, Blab\_49, Casend\_52, DonaldDuck\_51, EverythinBagel\_51, Fizzles\_54, FrankDeliGuy\_49, Gazebo\_51, Grassboy\_53, Hyperion\_51, Jehoshaphat\_53, Judebell\_53, Kyva\_53, Llemily\_51, Lonelysoil\_50, Mashley\_50, MorillMayhem\_52, Namago\_51, Nike\_52, Phabia\_51,

Phinky\_59, Quammi\_49, Rowlf\_48, Rudy\_49, SallyK\_52, Sillytadpoles\_52, Squash\_54, Statler\_54, StrawberryJamm\_54, Teehee\_52, Tissue\_51, Viceroy\_50, Wayne3\_53, Wheelie\_51, Zagie\_51, Zhafia\_54,

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

- 

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

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

### Summary by start number:

Start 10:

- Found in 3 of 41 ( 7.3% ) of genes in pham
- Manual Annotations of this start: 3 of 30
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fransoyer\_55 (EG), RubyRalph\_56 (EG), SadLad\_57 (EG),

Start 11:

- Found in 38 of 41 ( 92.7% ) of genes in pham
- Manual Annotations of this start: 27 of 30
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altheas\_54 (EG), AluminumJesus\_49 (EG), BabyDotz\_51 (EG), Blab\_49 (EG), Casend\_52 (EG), DonaldDuck\_51 (EG), EverythinBagel\_51 (EG), Fizzles\_54 (EG), FrankDeliGuy\_49 (EG), Gazebo\_51 (EG), Grassboy\_53 (EG), Hyperion\_51 (EG), Jehoshaphat\_53 (EG), Judebell\_53 (EG), Kyva\_53 (EG), Llemily\_51 (EG), Lonelysoil\_50 (EG), Mashley\_50 (EG), MorillMayhem\_52 (EG), Namago\_51 (EG), Nike\_52 (EG), Phabia\_51 (EG), Phinky\_59 (EG), Quammi\_49 (EG), Rowlf\_48 (EG), Rudy\_49 (EG), SallyK\_52 (EG), Sillytadpoles\_52 (EG), Squash\_54 (EG), Statler\_54 (EG), StrawberryJamm\_54 (EG), Teehee\_52 (EG), Tissue\_51 (EG), Viceroy\_50 (EG), Wayne3\_53 (EG), Wheelie\_51 (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 10 was manually annotated 3 times for cluster EG.
- Start number 11 was manually annotated 27 times for cluster EG.

### Gene Information:

Gene: Altheas\_54 Start: 41052, Stop: 39964, Start Num: 11

Candidate Starts for Altheas\_54:

(1, 41742), (2, 41664), (3, 41661), (5, 41631), (8, 41181), (9, 41118), (Start: 11 @41052 has 27 MA's), (13, 41016), (15, 40971), (17, 40941), (22, 40863), (25, 40815), (28, 40806), (29, 40791), (35, 40680), (39, 40605), (40, 40599), (49, 40455), (52, 40425), (53, 40419), (57, 40314), (59, 40302), (62, 40293), (68, 40239), (70, 40206), (72, 40167), (73, 40158), (77, 40020),

Gene: AluminumJesus\_49 Start: 40027, Stop: 39011, Start Num: 11

Candidate Starts for AluminumJesus\_49:

(8, 40156), (9, 40093), (Start: 11 @40027 has 27 MA's), (15, 39946), (17, 39916), (22, 39838), (23, 39805), (26, 39787), (31, 39718), (32, 39712), (33, 39706), (35, 39682), (37, 39658), (46, 39508), (49, 39457), (53, 39427), (57, 39322), (59, 39310), (63, 39295), (66, 39274), (67, 39271), (70, 39226), (73, 39178), (77, 39103),

Gene: BabyDotz\_51 Start: 41041, Stop: 40022, Start Num: 11

Candidate Starts for BabyDotz\_51:

(8, 41170), (9, 41107), (Start: 11 @41041 has 27 MA's), (15, 40960), (17, 40930), (22, 40852), (23, 40819), (26, 40801), (31, 40732), (32, 40726), (33, 40720), (35, 40696), (37, 40672), (46, 40522), (48, 40483), (49, 40471), (50, 40459), (52, 40447), (53, 40441), (57, 40336), (59, 40324), (63, 40309), (66, 40288), (67, 40285), (70, 40231), (73, 40183), (77, 40108),

Gene: Blab\_49 Start: 39874, Stop: 38894, Start Num: 11

Candidate Starts for Blab\_49:

(6, 40444), (8, 40003), (9, 39940), (Start: 11 @39874 has 27 MA's), (15, 39793), (17, 39763), (22, 39685), (23, 39652), (26, 39634), (31, 39565), (32, 39559), (33, 39553), (35, 39529), (37, 39505), (46, 39355), (49, 39304), (53, 39274), (57, 39169), (59, 39157), (63, 39142), (66, 39121), (67, 39118), (70, 39073), (73, 39025), (77, 38950),

Gene: Casend\_52 Start: 40845, Stop: 39802, Start Num: 11

Candidate Starts for Casend\_52:

(8, 40974), (9, 40911), (Start: 11 @40845 has 27 MA's), (15, 40764), (17, 40734), (19, 40710), (22, 40656), (25, 40608), (28, 40599), (35, 40473), (39, 40398), (40, 40392), (48, 40260), (49, 40248), (53, 40218), (57, 40113), (59, 40101), (63, 40086), (66, 40065), (67, 40062), (70, 40011), (77, 39888),

Gene: DonaldDuck\_51 Start: 40194, Stop: 39151, Start Num: 11

Candidate Starts for DonaldDuck\_51:

(8, 40323), (9, 40260), (Start: 11 @40194 has 27 MA's), (15, 40113), (17, 40083), (19, 40059), (22, 40005), (25, 39957), (28, 39948), (35, 39822), (39, 39747), (40, 39741), (48, 39609), (49, 39597), (53, 39567), (57, 39462), (59, 39450), (63, 39435), (66, 39414), (67, 39411), (70, 39360), (77, 39237),

Gene: EverythinBagel\_51 Start: 40555, Stop: 39539, Start Num: 11

Candidate Starts for EverythinBagel\_51:

(8, 40684), (9, 40621), (Start: 11 @40555 has 27 MA's), (17, 40444), (22, 40366), (23, 40333), (26, 40315), (31, 40246), (32, 40240), (33, 40234), (35, 40210), (37, 40186), (39, 40135), (46, 40036), (48, 39997), (49, 39985), (53, 39955), (57, 39850), (59, 39838), (63, 39823), (66, 39802), (73, 39700), (77, 39625),

Gene: Fizzles\_54 Start: 41170, Stop: 40166, Start Num: 11

Candidate Starts for Fizzles\_54:

(Start: 11 @41170 has 27 MA's), (12, 41152), (17, 41056), (19, 41032), (22, 40978), (30, 40876), (35, 40816), (38, 40774), (39, 40741), (41, 40726), (42, 40723), (51, 40573), (54, 40531), (55, 40498), (57, 40426), (70, 40336), (76, 40222), (77, 40210),

Gene: FrankDeliGuy\_49 Start: 40175, Stop: 39162, Start Num: 11

Candidate Starts for FrankDeliGuy\_49:

(8, 40304), (9, 40241), (Start: 11 @40175 has 27 MA's), (17, 40064), (22, 39986), (23, 39953), (26, 39935), (31, 39866), (32, 39860), (33, 39854), (35, 39830), (37, 39806), (46, 39656), (48, 39617), (49, 39605), (53, 39575), (57, 39470), (59, 39458), (63, 39443), (66, 39422), (67, 39419), (70, 39371), (73, 39323), (77, 39248),

Gene: Fransoyer\_55 Start: 42743, Stop: 41748, Start Num: 10

Candidate Starts for Fransoyer\_55:

(Start: 10 @42743 has 3 MA's), (15, 42659), (16, 42641), (17, 42629), (18, 42626), (22, 42551), (24, 42512), (25, 42503), (29, 42479), (32, 42392), (35, 42362), (44, 42236), (45, 42194), (49, 42137), (52, 42113), (56, 42047), (60, 41984), (64, 41966), (69, 41930), (71, 41891), (74, 41816), (77, 41795),

Gene: Gazebo\_51 Start: 40725, Stop: 39682, Start Num: 11

Candidate Starts for Gazebo\_51:

(8, 40854), (9, 40791), (Start: 11 @40725 has 27 MA's), (15, 40644), (17, 40614), (19, 40590), (22, 40536), (25, 40488), (28, 40479), (35, 40353), (39, 40278), (40, 40272), (49, 40128), (57, 39993), (59, 39981), (63, 39966), (66, 39945), (67, 39942), (70, 39897), (73, 39849), (77, 39774),

Gene: Grassboy\_53 Start: 40665, Stop: 39706, Start Num: 11

Candidate Starts for Grassboy\_53:

(8, 40794), (9, 40731), (Start: 11 @40665 has 27 MA's), (15, 40584), (17, 40554), (22, 40476), (23, 40443), (26, 40425), (31, 40356), (32, 40350), (33, 40344), (35, 40320), (37, 40296), (46, 40146), (48, 40107), (49, 40095), (53, 40065), (57, 39960), (59, 39948), (63, 39933), (70, 39885), (73, 39837), (77, 39762),

Gene: Hyperion\_51 Start: 40502, Stop: 39486, Start Num: 11

Candidate Starts for Hyperion\_51:

(8, 40631), (9, 40568), (Start: 11 @40502 has 27 MA's), (15, 40421), (17, 40391), (22, 40313), (23, 40280), (26, 40262), (31, 40193), (32, 40187), (33, 40181), (35, 40157), (37, 40133), (46, 39983), (48, 39944), (49, 39932), (53, 39902), (57, 39797), (59, 39785), (63, 39770), (66, 39749), (67, 39746), (70, 39701), (73, 39653), (77, 39578),

Gene: Jehoshaphat\_53 Start: 41113, Stop: 40070, Start Num: 11

Candidate Starts for Jehoshaphat\_53:

(8, 41242), (9, 41179), (Start: 11 @41113 has 27 MA's), (15, 41032), (17, 41002), (19, 40978), (22, 40924), (25, 40876), (28, 40867), (35, 40741), (39, 40666), (40, 40660), (48, 40528), (49, 40516), (53, 40486), (57, 40381), (59, 40369), (63, 40354), (66, 40333), (67, 40330), (70, 40279), (77, 40156),

Gene: Judebell\_53 Start: 40565, Stop: 39579, Start Num: 11

Candidate Starts for Judebell\_53:

(8, 40694), (9, 40631), (Start: 11 @40565 has 27 MA's), (15, 40484), (17, 40454), (22, 40376), (26, 40325), (31, 40256), (32, 40250), (33, 40244), (35, 40220), (37, 40196), (46, 40046), (48, 40007), (49, 39995), (53, 39965), (57, 39860), (59, 39848), (63, 39833), (66, 39812), (67, 39809), (70, 39758), (73, 39710), (77, 39635),

Gene: Kyva\_53 Start: 40722, Stop: 39730, Start Num: 11

Candidate Starts for Kyva\_53:

(8, 40851), (9, 40788), (Start: 11 @40722 has 27 MA's), (17, 40611), (22, 40533), (23, 40500), (26, 40482), (31, 40413), (32, 40407), (33, 40401), (35, 40377), (37, 40353), (46, 40203), (49, 40152), (53, 40122), (57, 40017), (59, 40005), (63, 39990), (66, 39969), (67, 39966), (70, 39909), (73, 39861), (77, 39786),

Gene: Llemily\_51 Start: 39889, Stop: 38846, Start Num: 11

Candidate Starts for Llemily\_51:

(8, 40018), (9, 39955), (Start: 11 @39889 has 27 MA's), (15, 39808), (17, 39778), (19, 39754), (22, 39700), (25, 39652), (28, 39643), (35, 39517), (39, 39442), (40, 39436), (48, 39304), (49, 39292), (53, 39262), (57, 39157), (59, 39145), (63, 39130), (66, 39109), (67, 39106), (70, 39055), (77, 38932),

Gene: Lonelysoil\_50 Start: 40098, Stop: 39088, Start Num: 11

Candidate Starts for Lonelysoil\_50:

(8, 40227), (9, 40164), (Start: 11 @40098 has 27 MA's), (15, 40017), (17, 39987), (22, 39909), (23, 39876), (26, 39858), (31, 39789), (32, 39783), (33, 39777), (35, 39753), (37, 39729), (46, 39579), (48, 39540), (49, 39528), (53, 39498), (57, 39393), (59, 39381), (63, 39366), (66, 39345), (67, 39342), (70, 39297), (73, 39249), (77, 39174),

Gene: Mashley\_50 Start: 40281, Stop: 39265, Start Num: 11

Candidate Starts for Mashley\_50:

(8, 40410), (9, 40347), (Start: 11 @40281 has 27 MA's), (15, 40200), (17, 40170), (22, 40092), (23, 40059), (26, 40041), (31, 39972), (32, 39966), (33, 39960), (35, 39936), (37, 39912), (46, 39762), (48, 39723), (49, 39711), (53, 39681), (57, 39576), (59, 39564), (63, 39549), (66, 39528), (67, 39525), (70, 39480), (73, 39432), (77, 39357),

Gene: MorillMayhem\_52 Start: 40626, Stop: 39640, Start Num: 11

Candidate Starts for MorillMayhem\_52:

(Start: 11 @40626 has 27 MA's), (15, 40545), (19, 40491), (22, 40437), (25, 40389), (29, 40365), (35, 40248), (39, 40173), (40, 40167), (49, 40023), (52, 39999), (58, 39885), (73, 39771), (77, 39696),

Gene: Namago\_51 Start: 39843, Stop: 38860, Start Num: 11

Candidate Starts for Namago\_51:

(8, 39972), (9, 39909), (Start: 11 @39843 has 27 MA's), (15, 39762), (17, 39732), (19, 39708), (22, 39654), (27, 39600), (28, 39597), (30, 39552), (33, 39516), (35, 39492), (36, 39486), (38, 39450), (39, 39417), (41, 39402), (49, 39267), (52, 39243), (57, 39132), (59, 39120), (63, 39105), (66, 39084), (67, 39081), (70, 39039), (73, 38991), (77, 38916),

Gene: Nike\_52 Start: 40816, Stop: 39824, Start Num: 11

Candidate Starts for Nike\_52:

(8, 40945), (9, 40882), (Start: 11 @40816 has 27 MA's), (15, 40735), (17, 40705), (22, 40627), (23, 40594), (26, 40576), (31, 40507), (32, 40501), (33, 40495), (35, 40471), (37, 40447), (46, 40297), (48, 40258), (49, 40246), (53, 40216), (57, 40111), (59, 40099), (63, 40084), (66, 40063), (67, 40060), (70, 40003), (73, 39955), (77, 39880),

Gene: Phabia\_51 Start: 40304, Stop: 39261, Start Num: 11

Candidate Starts for Phabia\_51:

(8, 40433), (9, 40370), (Start: 11 @40304 has 27 MA's), (15, 40223), (17, 40193), (19, 40169), (22, 40115), (25, 40067), (28, 40058), (35, 39932), (39, 39857), (40, 39851), (48, 39719), (49, 39707), (53, 39677), (57, 39572), (59, 39560), (63, 39545), (66, 39524), (67, 39521), (70, 39470), (77, 39347),

Gene: Phinky\_59 Start: 42437, Stop: 41463, Start Num: 11

Candidate Starts for Phinky\_59:

(8, 42569), (Start: 11 @42437 has 27 MA's), (14, 42395), (15, 42353), (21, 42278), (22, 42242), (31, 42131), (32, 42125), (34, 42113), (35, 42095), (39, 42020), (41, 42005), (43, 41990), (47, 41903), (55, 41795), (73, 41588), (75, 41540), (77, 41522),

Gene: Quammi\_49 Start: 40004, Stop: 38961, Start Num: 11

Candidate Starts for Quammi\_49:

(8, 40133), (9, 40070), (Start: 11 @40004 has 27 MA's), (15, 39923), (17, 39893), (19, 39869), (22, 39815), (25, 39767), (28, 39758), (35, 39632), (39, 39557), (40, 39551), (48, 39419), (49, 39407), (53, 39377), (57, 39272), (59, 39260), (63, 39245), (66, 39224), (67, 39221), (70, 39170), (77, 39047),

Gene: Rowlf\_48 Start: 39958, Stop: 38966, Start Num: 11

Candidate Starts for Rowlf\_48:

(8, 40087), (9, 40024), (Start: 11 @39958 has 27 MA's), (17, 39847), (22, 39769), (23, 39736), (26, 39718), (31, 39649), (32, 39643), (33, 39637), (35, 39613), (37, 39589), (46, 39439), (48, 39400), (49, 39388), (53, 39358), (57, 39253), (59, 39241), (63, 39226), (66, 39205), (67, 39202), (70, 39145), (73, 39097), (77, 39022),

Gene: RubyRalph\_56 Start: 42890, Stop: 41904, Start Num: 10

Candidate Starts for RubyRalph\_56:

(Start: 10 @42890 has 3 MA's), (15, 42800), (16, 42782), (17, 42770), (18, 42767), (20, 42743), (22, 42692), (24, 42653), (25, 42644), (29, 42620), (32, 42533), (35, 42503), (44, 42377), (45, 42335), (49, 42278), (52, 42254), (56, 42188), (60, 42125), (64, 42107), (69, 42086), (71, 42047), (74, 41972), (77, 41951),

Gene: Rudy\_49 Start: 40040, Stop: 38994, Start Num: 11

Candidate Starts for Rudy\_49:

(8, 40169), (9, 40106), (Start: 11 @40040 has 27 MA's), (15, 39959), (17, 39929), (19, 39905), (22, 39851), (25, 39803), (28, 39794), (35, 39668), (39, 39593), (40, 39587), (48, 39455), (49, 39443), (53, 39413), (57, 39308), (59, 39296), (63, 39281), (66, 39260), (67, 39257), (70, 39203), (77, 39080),

Gene: SadLad\_57 Start: 43744, Stop: 42740, Start Num: 10

Candidate Starts for SadLad\_57:

(Start: 10 @43744 has 3 MA's), (15, 43660), (16, 43642), (17, 43630), (18, 43627), (22, 43552), (24, 43513), (25, 43504), (29, 43480), (32, 43393), (35, 43363), (44, 43237), (45, 43195), (49, 43138), (52, 43114), (56, 43048), (61, 42982), (64, 42967), (69, 42922), (71, 42883), (74, 42808), (77, 42787),

Gene: SallyK\_52 Start: 40959, Stop: 39973, Start Num: 11

Candidate Starts for SallyK\_52:

(4, 41556), (7, 41523), (8, 41088), (9, 41025), (Start: 11 @40959 has 27 MA's), (15, 40878), (17, 40848), (19, 40824), (22, 40770), (27, 40716), (28, 40713), (30, 40668), (33, 40632), (35, 40608), (36, 40602), (38, 40566), (39, 40533), (41, 40518), (49, 40383), (50, 40371), (52, 40359), (53, 40353), (57, 40248), (59, 40236), (63, 40221), (66, 40200), (67, 40197), (70, 40152), (73, 40104), (77, 40029),

Gene: Sillytadpoles\_52 Start: 39877, Stop: 38834, Start Num: 11

Candidate Starts for Sillytadpoles\_52:

(8, 40006), (9, 39943), (Start: 11 @39877 has 27 MA's), (15, 39796), (17, 39766), (19, 39742), (22, 39688), (25, 39640), (28, 39631), (35, 39505), (39, 39430), (40, 39424), (48, 39292), (49, 39280), (53, 39250), (57, 39145), (59, 39133), (63, 39118), (66, 39097), (67, 39094), (70, 39043), (77, 38920),

Gene: Squash\_54 Start: 40675, Stop: 39638, Start Num: 11

Candidate Starts for Squash\_54:

(8, 40804), (9, 40741), (Start: 11 @40675 has 27 MA's), (17, 40564), (22, 40486), (23, 40453), (26, 40435), (31, 40366), (32, 40360), (33, 40354), (35, 40330), (37, 40306), (46, 40156), (49, 40105), (53, 40075), (57, 39970), (59, 39958), (65, 39919), (66, 39901), (73, 39769), (77, 39694),

Gene: Statler\_54 Start: 40677, Stop: 39664, Start Num: 11

Candidate Starts for Statler\_54:

(8, 40806), (9, 40743), (Start: 11 @40677 has 27 MA's), (15, 40596), (17, 40566), (22, 40488), (23, 40455), (26, 40437), (31, 40368), (32, 40362), (33, 40356), (35, 40332), (37, 40308), (46, 40158), (48, 40119), (49, 40107), (50, 40095), (52, 40083), (53, 40077), (57, 39972), (59, 39960), (63, 39945), (66, 39924), (67, 39921), (70, 39867), (73, 39819), (77, 39744),

Gene: StrawberryJamm\_54 Start: 40137, Stop: 39109, Start Num: 11

Candidate Starts for StrawberryJamm\_54:

(8, 40266), (9, 40203), (Start: 11 @40137 has 27 MA's), (17, 40026), (22, 39948), (23, 39915), (26, 39897), (31, 39828), (32, 39822), (33, 39816), (35, 39792), (37, 39768), (46, 39618), (49, 39567), (53, 39537), (57, 39432), (59, 39420), (63, 39405), (66, 39384), (67, 39381), (70, 39318), (73, 39270), (77, 39195),

Gene: Teehee\_52 Start: 41110, Stop: 40067, Start Num: 11

Candidate Starts for Teehee\_52:

(8, 41239), (9, 41176), (Start: 11 @41110 has 27 MA's), (15, 41029), (17, 40999), (19, 40975), (22, 40921), (25, 40873), (28, 40864), (35, 40738), (39, 40663), (40, 40657), (48, 40525), (49, 40513), (53, 40483), (57, 40378), (59, 40366), (63, 40351), (66, 40330), (67, 40327), (70, 40276), (77, 40153),

Gene: Tissue\_51 Start: 40561, Stop: 39602, Start Num: 11

Candidate Starts for Tissue\_51:

(8, 40690), (9, 40627), (Start: 11 @40561 has 27 MA's), (15, 40480), (17, 40450), (22, 40372), (23, 40339), (26, 40321), (31, 40252), (32, 40246), (33, 40240), (35, 40216), (37, 40192), (46, 40042), (48, 40003), (49, 39991), (53, 39961), (57, 39856), (59, 39844), (63, 39829), (70, 39781), (73, 39733), (77, 39658),

Gene: Viceroy\_50 Start: 40010, Stop: 38964, Start Num: 11

Candidate Starts for Viceroy\_50:

(8, 40139), (9, 40076), (Start: 11 @40010 has 27 MA's), (15, 39929), (17, 39899), (19, 39875), (22, 39821), (25, 39773), (28, 39764), (35, 39638), (39, 39563), (40, 39557), (48, 39425), (49, 39413), (53, 39383), (57, 39278), (59, 39266), (63, 39251), (66, 39230), (67, 39227), (70, 39173), (77, 39050),

Gene: Wayne3\_53 Start: 40873, Stop: 39830, Start Num: 11

Candidate Starts for Wayne3\_53:

(8, 41002), (9, 40939), (Start: 11 @40873 has 27 MA's), (15, 40792), (17, 40762), (19, 40738), (22, 40684), (25, 40636), (28, 40627), (35, 40501), (39, 40426), (40, 40420), (48, 40288), (49, 40276), (53, 40246), (57, 40141), (59, 40129), (63, 40114), (66, 40093), (67, 40090), (70, 40039), (77, 39916),

Gene: Wheelie\_51 Start: 40194, Stop: 39151, Start Num: 11

Candidate Starts for Wheelie\_51:

(8, 40323), (9, 40260), (Start: 11 @40194 has 27 MA's), (15, 40113), (17, 40083), (19, 40059), (22, 40005), (25, 39957), (28, 39948), (35, 39822), (39, 39747), (40, 39741), (48, 39609), (49, 39597), (53, 39567), (57, 39462), (59, 39450), (63, 39435), (66, 39414), (67, 39411), (70, 39360), (77, 39237),

Gene: Zagie\_51 Start: 40343, Stop: 39306, Start Num: 11

Candidate Starts for Zagie\_51:

(8, 40472), (9, 40409), (Start: 11 @40343 has 27 MA's), (17, 40232), (22, 40154), (23, 40121), (26, 40103), (31, 40034), (32, 40028), (33, 40022), (35, 39998), (37, 39974), (46, 39824), (48, 39785), (49, 39773), (53, 39743), (57, 39638), (59, 39626), (63, 39611), (66, 39590), (67, 39587), (70, 39515), (73, 39467), (77, 39392),

Gene: Zhafia\_54 Start: 40674, Stop: 39631, Start Num: 11

Candidate Starts for Zhafia\_54:

(8, 40803), (9, 40740), (Start: 11 @40674 has 27 MA's), (15, 40593), (17, 40563), (19, 40539), (22, 40485), (25, 40437), (28, 40428), (35, 40302), (39, 40227), (40, 40221), (48, 40089), (49, 40077), (53, 40047), (57, 39942), (59, 39930), (63, 39915), (66, 39894), (67, 39891), (70, 39840), (77, 39717),