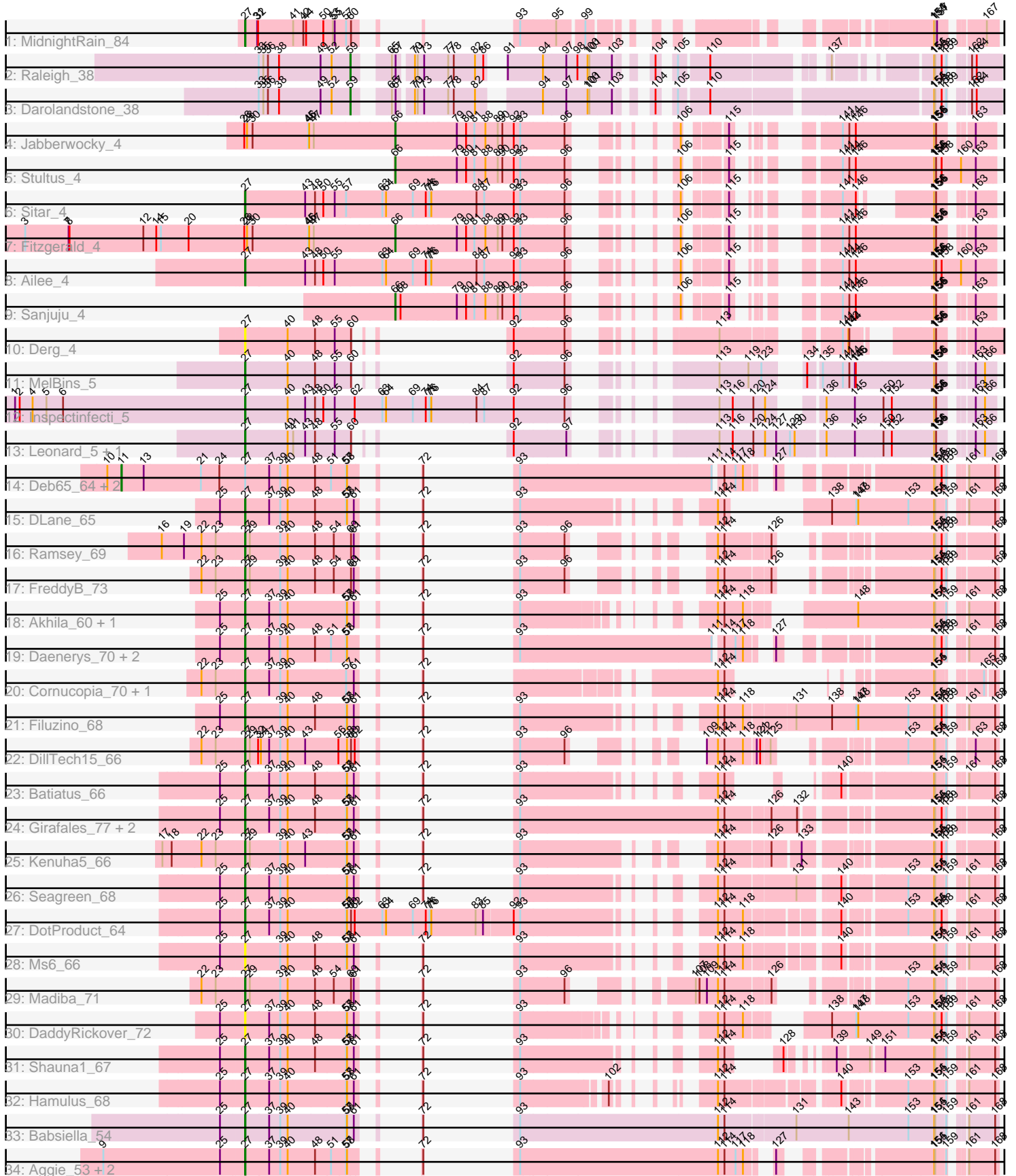


Pham 176349



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 176349 Report

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

Pham number 176349 has 45 members, 3 are drafts.

Phages represented in each track:

- Track 1 : MidnightRain\_84
- Track 2 : Raleigh\_38
- Track 3 : Darolandstone\_38
- Track 4 : Jabberwocky\_4
- Track 5 : Stultus\_4
- Track 6 : Sitar\_4
- Track 7 : Fitzgerald\_4
- Track 8 : Ailee\_4
- Track 9 : Sanjuju\_4
- Track 10 : Derg\_4
- Track 11 : MelBins\_5
- Track 12 : Inspectinfecti\_5
- Track 13 : Leonard\_5, Phinally\_5
- Track 14 : Deb65\_64, Nimbo\_63, Geralt\_64
- Track 15 : DLane\_65
- Track 16 : Ramsey\_69
- Track 17 : FreddyB\_73
- Track 18 : Akhila\_60, MilanaBonita\_59
- Track 19 : Daenerys\_70, PHappiness\_71, OldBen\_68
- Track 20 : Cornucopia\_70, VRedHorse\_68
- Track 21 : Filuzino\_68
- Track 22 : DillTech15\_66
- Track 23 : Batiatus\_66
- Track 24 : Girafales\_77, Quico\_77, Florinda\_80
- Track 25 : Kenuha5\_66
- Track 26 : Seagreen\_68
- Track 27 : DotProduct\_64
- Track 28 : Ms6\_66
- Track 29 : Madiba\_71
- Track 30 : DaddyRickover\_72
- Track 31 : Shauna1\_67
- Track 32 : Hamulus\_68
- Track 33 : Babsiella\_54
- Track 34 : Aggie\_53, Silvy\_53, Philonius\_55

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

The start number called the most often in the published annotations is 27, it was called in 33 of the 42 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aggie\_53, Ailee\_4, Akhila\_60, Babsiella\_54, Batiatus\_66, Cornucopia\_70, DLane\_65, DaddyRickover\_72, Daenerys\_70, Derg\_4, DillTech15\_66, DotProduct\_64, Filuzino\_68, Florinda\_80, FreddyB\_73, Girafales\_77, Hamulus\_68, Inspectinfecti\_5, Kenuha5\_66, Leonard\_5, Madiba\_71, MelBins\_5, MidnightRain\_84, MilanaBonita\_59, Ms6\_66, OldBen\_68, PHappiness\_71, Philonius\_55, Phinally\_5, Quico\_77, Ramsey\_69, Seagreen\_68, Shauna1\_67, Silvy\_53, Sitar\_4, VRedHorse\_68,

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

- Deb65\_64, Geralt\_64, Nimbo\_63,

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

- Darolandstone\_38, Fitzgerald\_4, Jabberwocky\_4, Raleigh\_38, Sanjuju\_4, Stultus\_4,

### **Summary by start number:**

Start 11:

- Found in 3 of 45 ( 6.7% ) of genes in pham
- Manual Annotations of this start: 3 of 42
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Deb65\_64 (F1), Geralt\_64 (F1), Nimbo\_63 (F1),

Start 27:

- Found in 39 of 45 ( 86.7% ) of genes in pham
- Manual Annotations of this start: 33 of 42
- Called 92.3% of time when present
- Phage (with cluster) where this start called: Aggie\_53 (N), Ailee\_4 (DE1), Akhila\_60 (F1), Babsiella\_54 (I1), Batiatus\_66 (F1), Cornucopia\_70 (F1), DLane\_65 (F1), DaddyRickover\_72 (F1), Daenerys\_70 (F1), Derg\_4 (DE1), DillTech15\_66 (F1), DotProduct\_64 (F1), Filuzino\_68 (F1), Florinda\_80 (F1), FreddyB\_73 (F1), Girafales\_77 (F1), Hamulus\_68 (F1), Inspectinfecti\_5 (DE2), Kenuha5\_66 (F1), Leonard\_5 (DE2), Madiba\_71 (F1), MelBins\_5 (DE2), MidnightRain\_84 (AY), MilanaBonita\_59 (F1), Ms6\_66 (F1), OldBen\_68 (F1), PHappiness\_71 (F1), Philonius\_55 (N), Phinally\_5 (DE2), Quico\_77 (F1), Ramsey\_69 (F1), Seagreen\_68 (F1), Shauna1\_67 (F1), Silvy\_53 (N), Sitar\_4 (DE1), VRedHorse\_68 (F1),

Start 59:

- Found in 2 of 45 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 2 of 42
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Darolandstone\_38 (BC2), Raleigh\_38 (BC2),

Start 66:

- Found in 4 of 45 ( 8.9% ) of genes in pham

- Manual Annotations of this start: 4 of 42
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fitzgerald\_4 (DE1), Jabberwocky\_4 (DE1), Sanjuju\_4 (DE1), Stultus\_4 (DE1),

### **Summary by clusters:**

There are 7 clusters represented in this pham: F1, I1, DE1, DE2, N, AY, BC2,

Info for manual annotations of cluster AY:

- Start number 27 was manually annotated 1 time for cluster AY.

Info for manual annotations of cluster BC2:

- Start number 59 was manually annotated 2 times for cluster BC2.

Info for manual annotations of cluster DE1:

- Start number 27 was manually annotated 2 times for cluster DE1.
- Start number 66 was manually annotated 4 times for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 27 was manually annotated 4 times for cluster DE2.

Info for manual annotations of cluster F1:

- Start number 11 was manually annotated 3 times for cluster F1.
- Start number 27 was manually annotated 22 times for cluster F1.

Info for manual annotations of cluster I1:

- Start number 27 was manually annotated 1 time for cluster I1.

Info for manual annotations of cluster N:

- Start number 27 was manually annotated 3 times for cluster N.

### **Gene Information:**

Gene: Aggie\_53 Start: 35734, Stop: 37386, Start Num: 27

Candidate Starts for Aggie\_53:

(9, 35296), (25, 35668), (Start: 27 @35734 has 33 MA's), (37, 35809), (39, 35845), (40, 35869), (48, 35956), (51, 36007), (57, 36055), (58, 36058), (72, 36106), (93, 36127), (112, 36757), (114, 36778), (117, 36814), (118, 36838), (127, 36883), (154, 37234), (155, 37237), (159, 37267), (161, 37294), (168, 37375),

Gene: Ailee\_4 Start: 2435, Stop: 4309, Start Num: 27

Candidate Starts for Ailee\_4:

(Start: 27 @2435 has 33 MA's), (43, 2627), (48, 2657), (50, 2684), (55, 2720), (63, 2873), (64, 2885), (69, 2972), (74, 3014), (75, 3026), (76, 3032), (84, 3176), (87, 3200), (92, 3296), (93, 3317), (96, 3452), (106, 3557), (115, 3653), (141, 3821), (144, 3842), (146, 3863), (154, 4112), (155, 4115), (156, 4118), (158, 4136), (160, 4199), (163, 4247),

Gene: Akhila\_60 Start: 39092, Stop: 40543, Start Num: 27

Candidate Starts for Akhila\_60:

(25, 39011), (Start: 27 @39092 has 33 MA's), (37, 39167), (39, 39203), (40, 39227), (57, 39413), (58, 39416), (61, 39437), (72, 39464), (93, 39485), (112, 39830), (114, 39851), (118, 39911), (148, 40151), (154, 40391), (155, 40394), (159, 40424), (161, 40451), (168, 40532),

Gene: Babsiella\_54 Start: 36714, Stop: 38561, Start Num: 27

Candidate Starts for Babsiella\_54:

(25, 36648), (Start: 27 @36714 has 33 MA's), (37, 36789), (39, 36825), (40, 36849), (57, 37035), (58, 37038), (61, 37059), (72, 37086), (93, 37107), (112, 37737), (114, 37758), (131, 37974), (143, 38139), (153, 38331), (154, 38409), (155, 38412), (159, 38442), (161, 38469), (168, 38550),

Gene: Batiatus\_66 Start: 42780, Stop: 44096, Start Num: 27

Candidate Starts for Batiatus\_66:

(25, 42714), (Start: 27 @42780 has 33 MA's), (37, 42855), (39, 42891), (40, 42915), (48, 43002), (57, 43101), (58, 43104), (61, 43125), (72, 43152), (93, 43173), (112, 43572), (114, 43593), (140, 43695), (154, 43944), (155, 43947), (159, 43977), (161, 44004), (168, 44085),

Gene: Cornucopia\_70 Start: 43350, Stop: 44651, Start Num: 27

Candidate Starts for Cornucopia\_70:

(22, 43227), (23, 43269), (Start: 27 @43350 has 33 MA's), (37, 43425), (39, 43461), (40, 43485), (57, 43671), (61, 43695), (72, 43722), (112, 44238), (114, 44259), (154, 44508), (155, 44511), (165, 44616), (168, 44640),

Gene: DLane\_65 Start: 42636, Stop: 44030, Start Num: 27

Candidate Starts for DLane\_65:

(25, 42555), (Start: 27 @42636 has 33 MA's), (37, 42711), (39, 42747), (40, 42771), (48, 42858), (57, 42957), (58, 42960), (61, 42981), (72, 43008), (93, 43029), (112, 43428), (114, 43449), (138, 43554), (147, 43632), (148, 43638), (153, 43800), (154, 43878), (155, 43881), (159, 43911), (161, 43938), (168, 44019),

Gene: DaddyRickover\_72 Start: 45172, Stop: 46629, Start Num: 27

Candidate Starts for DaddyRickover\_72:

(25, 45091), (Start: 27 @45172 has 33 MA's), (37, 45247), (39, 45283), (40, 45307), (48, 45394), (57, 45493), (58, 45496), (61, 45517), (72, 45544), (93, 45565), (112, 45910), (114, 45931), (118, 45991), (138, 46153), (147, 46231), (148, 46237), (153, 46399), (154, 46477), (155, 46480), (158, 46501), (159, 46510), (161, 46537), (168, 46618),

Gene: Daenerys\_70 Start: 45291, Stop: 46922, Start Num: 27

Candidate Starts for Daenerys\_70:

(25, 45210), (Start: 27 @45291 has 33 MA's), (37, 45366), (39, 45402), (40, 45426), (48, 45513), (51, 45564), (57, 45612), (58, 45615), (72, 45663), (93, 45684), (111, 46293), (114, 46314), (117, 46350), (118, 46374), (127, 46419), (154, 46770), (155, 46773), (158, 46794), (159, 46803), (161, 46830), (168, 46911),

Gene: Darolandstone\_38 Start: 28753, Stop: 30447, Start Num: 59

Candidate Starts for Darolandstone\_38:

(33, 28456), (35, 28471), (36, 28486), (38, 28522), (49, 28657), (52, 28693), (Start: 59 @28753 has 2 MA's), (65, 28831), (67, 28843), (70, 28885), (71, 28894), (73, 28915), (77, 28993), (78, 29011), (82, 29080), (94, 29233), (97, 29308), (100, 29377), (101, 29383), (103, 29452), (104, 29512), (105, 29545), (110, 29635), (154, 30283), (155, 30286), (158, 30307), (159, 30316), (162, 30352), (164, 30367),

Gene: Deb65\_64 Start: 42619, Stop: 44643, Start Num: 11

Candidate Starts for Deb65\_64:

(10, 42574), (Start: 11 @42619 has 3 MA's), (13, 42688), (21, 42871), (24, 42928), (Start: 27 @43012 has 33 MA's), (37, 43087), (39, 43123), (40, 43147), (48, 43234), (51, 43285), (57, 43333), (58, 43336), (72, 43384), (93, 43405), (111, 44014), (114, 44035), (117, 44071), (118, 44095), (127, 44140), (154, 44491), (155, 44494), (158, 44515), (159, 44524), (161, 44551), (168, 44632),

Gene: Derg\_4 Start: 2405, Stop: 3790, Start Num: 27

Candidate Starts for Derg\_4:

(Start: 27 @2405 has 33 MA's), (40, 2540), (48, 2627), (55, 2690), (60, 2741), (92, 2777), (96, 2933), (113, 3158), (141, 3425), (142, 3443), (144, 3446), (154, 3617), (155, 3620), (156, 3623), (163, 3701),

Gene: DillTech15\_66 Start: 41528, Stop: 42871, Start Num: 27

Candidate Starts for DillTech15\_66:

(22, 41405), (23, 41447), (Start: 27 @41528 has 33 MA's), (29, 41543), (32, 41570), (34, 41576), (37, 41603), (39, 41639), (40, 41663), (43, 41720), (56, 41825), (58, 41852), (60, 41864), (62, 41876), (72, 41900), (93, 41921), (96, 42056), (109, 42206), (112, 42242), (114, 42263), (118, 42323), (121, 42359), (122, 42368), (125, 42395), (153, 42638), (154, 42719), (155, 42722), (159, 42752), (163, 42800), (168, 42860),

Gene: DotProduct\_64 Start: 41819, Stop: 43810, Start Num: 27

Candidate Starts for DotProduct\_64:

(25, 41753), (Start: 27 @41819 has 33 MA's), (37, 41894), (39, 41930), (40, 41954), (57, 42140), (58, 42143), (60, 42155), (62, 42167), (63, 42257), (64, 42269), (69, 42356), (74, 42398), (75, 42410), (76, 42416), (83, 42560), (85, 42584), (92, 42677), (93, 42698), (112, 43097), (114, 43118), (118, 43178), (140, 43418), (153, 43580), (154, 43658), (155, 43661), (158, 43682), (161, 43718), (168, 43799),

Gene: Filuzino\_68 Start: 42971, Stop: 44581, Start Num: 27

Candidate Starts for Filuzino\_68:

(25, 42890), (Start: 27 @42971 has 33 MA's), (39, 43082), (40, 43106), (48, 43193), (57, 43292), (58, 43295), (61, 43316), (72, 43343), (93, 43364), (112, 43763), (114, 43784), (118, 43844), (131, 43994), (138, 44105), (147, 44183), (148, 44189), (153, 44351), (154, 44429), (155, 44432), (158, 44453), (159, 44462), (161, 44489), (168, 44570),

Gene: Fitzgerald\_4 Start: 2397, Stop: 3731, Start Num: 66

Candidate Starts for Fitzgerald\_4:

(3, 1218), (7, 1359), (8, 1362), (12, 1602), (14, 1644), (15, 1659), (20, 1749), (26, 1923), (28, 1932), (30, 1950), (45, 2127), (46, 2130), (47, 2142), (Start: 66 @2397 has 4 MA's), (79, 2589), (80, 2619), (81, 2646), (88, 2682), (89, 2718), (90, 2733), (92, 2769), (93, 2790), (96, 2925), (106, 3030), (115, 3126), (141, 3294), (144, 3315), (146, 3336), (154, 3585), (155, 3588), (156, 3591), (163, 3669),

Gene: Florinda\_80 Start: 44991, Stop: 46736, Start Num: 27

Candidate Starts for Florinda\_80:

(25, 44925), (Start: 27 @44991 has 33 MA's), (37, 45066), (39, 45102), (40, 45126), (48, 45213), (57, 45312), (58, 45315), (61, 45336), (72, 45363), (93, 45384), (112, 46014), (114, 46035), (126, 46170), (132, 46251), (154, 46584), (155, 46587), (158, 46608), (159, 46617), (168, 46725),

Gene: FreddyB\_73 Start: 44628, Stop: 45971, Start Num: 27

Candidate Starts for FreddyB\_73:

(22, 44505), (23, 44547), (Start: 27 @44628 has 33 MA's), (29, 44643), (39, 44739), (40, 44763), (48, 44850), (54, 44910), (60, 44964), (61, 44973), (72, 45000), (93, 45021), (96, 45156), (112, 45342), (114, 45363), (126, 45498), (154, 45819), (155, 45822), (158, 45843), (159, 45852), (168, 45960),

Gene: Geralt\_64 Start: 42618, Stop: 44642, Start Num: 11

Candidate Starts for Geralt\_64:

(10, 42573), (Start: 11 @42618 has 3 MA's), (13, 42687), (21, 42870), (24, 42927), (Start: 27 @43011 has 33 MA's), (37, 43086), (39, 43122), (40, 43146), (48, 43233), (51, 43284), (57, 43332), (58, 43335), (72, 43383), (93, 43404), (111, 44013), (114, 44034), (117, 44070), (118, 44094), (127, 44139), (154, 44490), (155, 44493), (158, 44514), (159, 44523), (161, 44550), (168, 44631),

Gene: Girafales\_77 Start: 44782, Stop: 46527, Start Num: 27

Candidate Starts for Girafales\_77:

(25, 44716), (Start: 27 @44782 has 33 MA's), (37, 44857), (39, 44893), (40, 44917), (48, 45004), (57, 45103), (58, 45106), (61, 45127), (72, 45154), (93, 45175), (112, 45805), (114, 45826), (126, 45961), (132, 46042), (154, 46375), (155, 46378), (158, 46399), (159, 46408), (168, 46516),

Gene: Hamulus\_68 Start: 43189, Stop: 44649, Start Num: 27

Candidate Starts for Hamulus\_68:

(25, 43123), (Start: 27 @43189 has 33 MA's), (37, 43264), (39, 43300), (40, 43324), (57, 43510), (58, 43513), (61, 43534), (72, 43561), (93, 43582), (102, 43828), (112, 43936), (114, 43957), (140, 44257), (153, 44419), (154, 44497), (155, 44500), (159, 44530), (161, 44557), (168, 44638),

Gene: Inspectinfecti\_5 Start: 2791, Stop: 4749, Start Num: 27

Candidate Starts for Inspectinfecti\_5:

(1, 2047), (2, 2062), (4, 2104), (5, 2149), (6, 2203), (Start: 27 @2791 has 33 MA's), (40, 2926), (43, 2983), (48, 3013), (50, 3040), (55, 3076), (62, 3139), (63, 3229), (64, 3241), (69, 3328), (74, 3370), (75, 3382), (76, 3388), (84, 3532), (87, 3556), (92, 3652), (96, 3808), (113, 4033), (116, 4075), (120, 4138), (124, 4174), (136, 4270), (145, 4360), (150, 4444), (152, 4471), (154, 4603), (155, 4606), (156, 4609), (163, 4687), (166, 4717),

Gene: Jabberwocky\_4 Start: 2397, Stop: 3731, Start Num: 66

Candidate Starts for Jabberwocky\_4:

(26, 1923), (28, 1932), (30, 1950), (45, 2127), (46, 2130), (47, 2142), (Start: 66 @2397 has 4 MA's), (79, 2589), (80, 2619), (81, 2646), (88, 2682), (89, 2718), (90, 2733), (92, 2769), (93, 2790), (96, 2925), (106, 3030), (115, 3126), (141, 3294), (144, 3315), (146, 3336), (154, 3585), (155, 3588), (156, 3591), (163, 3669),

Gene: Kenuha5\_66 Start: 44310, Stop: 45839, Start Num: 27

Candidate Starts for Kenuha5\_66:

(17, 44061), (18, 44091), (22, 44187), (23, 44229), (Start: 27 @44310 has 33 MA's), (29, 44325), (39, 44421), (40, 44445), (43, 44502), (57, 44631), (58, 44634), (61, 44655), (72, 44682), (93, 44703), (112, 45117), (114, 45138), (126, 45273), (133, 45354), (154, 45687), (155, 45690), (158, 45711), (159, 45720), (168, 45828),

Gene: Leonard\_5 Start: 2785, Stop: 4344, Start Num: 27

Candidate Starts for Leonard\_5:

(Start: 27 @2785 has 33 MA's), (40, 2920), (41, 2938), (43, 2977), (48, 3007), (55, 3070), (60, 3121), (92, 3157), (97, 3319), (113, 3538), (116, 3580), (120, 3643), (124, 3679), (127, 3715), (129, 3760), (130, 3775), (136, 3862), (145, 3952), (150, 4039), (152, 4066), (154, 4198), (155, 4201), (156, 4204), (163, 4282), (166, 4312),

Gene: Madiba\_71 Start: 44963, Stop: 46402, Start Num: 27

Candidate Starts for Madiba\_71:

(22, 44840), (23, 44882), (Start: 27 @44963 has 33 MA's), (29, 44978), (39, 45074), (40, 45098), (48, 45185), (54, 45245), (60, 45299), (61, 45308), (72, 45335), (93, 45356), (96, 45491), (107, 45698), (108, 45710), (109, 45734), (112, 45770), (114, 45791), (126, 45926), (153, 46169), (154, 46250), (155, 46253), (159, 46283), (168, 46391),

Gene: MelBins\_5 Start: 2786, Stop: 4273, Start Num: 27

Candidate Starts for MelBins\_5:

(Start: 27 @2786 has 33 MA's), (40, 2921), (48, 3008), (55, 3071), (60, 3122), (92, 3158), (96, 3314), (113, 3539), (119, 3632), (123, 3674), (134, 3737), (135, 3773), (141, 3836), (144, 3857), (145, 3875), (146, 3878), (154, 4127), (155, 4130), (156, 4133), (163, 4211), (166, 4241),

Gene: MidnightRain\_84 Start: 45169, Stop: 46623, Start Num: 27

Candidate Starts for MidnightRain\_84:

(Start: 27 @45169 has 33 MA's), (31, 45208), (32, 45211), (41, 45322), (42, 45355), (44, 45364), (50, 45418), (53, 45448), (55, 45454), (57, 45490), (60, 45505), (93, 45562), (95, 45673), (99, 45751), (154, 46465), (155, 46468), (157, 46474), (167, 46585),

Gene: MilanaBonita\_59 Start: 39092, Stop: 40543, Start Num: 27

Candidate Starts for MilanaBonita\_59:

(25, 39011), (Start: 27 @39092 has 33 MA's), (37, 39167), (39, 39203), (40, 39227), (57, 39413), (58, 39416), (61, 39437), (72, 39464), (93, 39485), (112, 39830), (114, 39851), (118, 39911), (148, 40151), (154, 40391), (155, 40394), (159, 40424), (161, 40451), (168, 40532),

Gene: Ms6\_66 Start: 38754, Stop: 40259, Start Num: 27

Candidate Starts for Ms6\_66:

(25, 38688), (Start: 27 @38754 has 33 MA's), (39, 38865), (40, 38889), (48, 38976), (57, 39075), (58, 39078), (61, 39099), (72, 39126), (93, 39147), (112, 39546), (114, 39567), (118, 39627), (140, 39867), (154, 40107), (155, 40110), (159, 40140), (161, 40167), (168, 40248),

Gene: Nimbo\_63 Start: 42621, Stop: 44645, Start Num: 11

Candidate Starts for Nimbo\_63:

(10, 42576), (Start: 11 @42621 has 3 MA's), (13, 42690), (21, 42873), (24, 42930), (Start: 27 @43014 has 33 MA's), (37, 43089), (39, 43125), (40, 43149), (48, 43236), (51, 43287), (57, 43335), (58, 43338), (72, 43386), (93, 43407), (111, 44016), (114, 44037), (117, 44073), (118, 44097), (127, 44142), (154, 44493), (155, 44496), (158, 44517), (159, 44526), (161, 44553), (168, 44634),

Gene: OldBen\_68 Start: 44406, Stop: 46037, Start Num: 27

Candidate Starts for OldBen\_68:

(25, 44325), (Start: 27 @44406 has 33 MA's), (37, 44481), (39, 44517), (40, 44541), (48, 44628), (51, 44679), (57, 44727), (58, 44730), (72, 44778), (93, 44799), (111, 45408), (114, 45429), (117, 45465), (118, 45489), (127, 45534), (154, 45885), (155, 45888), (158, 45909), (159, 45918), (161, 45945), (168, 46026),

Gene: PHappiness\_71 Start: 45235, Stop: 46866, Start Num: 27

Candidate Starts for PHappiness\_71:

(25, 45154), (Start: 27 @45235 has 33 MA's), (37, 45310), (39, 45346), (40, 45370), (48, 45457), (51, 45508), (57, 45556), (58, 45559), (72, 45607), (93, 45628), (111, 46237), (114, 46258), (117, 46294), (118, 46318), (127, 46363), (154, 46714), (155, 46717), (158, 46738), (159, 46747), (161, 46774), (168, 46855),

Gene: Philonius\_55 Start: 35263, Stop: 36915, Start Num: 27

Candidate Starts for Philonius\_55:

(9, 34825), (25, 35197), (Start: 27 @35263 has 33 MA's), (37, 35338), (39, 35374), (40, 35398), (48, 35485), (51, 35536), (57, 35584), (58, 35587), (72, 35635), (93, 35656), (112, 36286), (114, 36307), (117, 36343), (118, 36367), (127, 36412), (154, 36763), (155, 36766), (159, 36796), (161, 36823), (168, 36904),

Gene: Phinally\_5 Start: 2785, Stop: 4341, Start Num: 27



Candidate Starts for Phinally\_5:

(Start: 27 @2785 has 33 MA's), (40, 2920), (41, 2938), (43, 2977), (48, 3007), (55, 3070), (60, 3121), (92, 3157), (97, 3319), (113, 3538), (116, 3580), (120, 3643), (124, 3679), (127, 3715), (129, 3760), (130, 3775), (136, 3862), (145, 3952), (150, 4036), (152, 4063), (154, 4195), (155, 4198), (156, 4201), (163, 4279), (166, 4309),

Gene: Quico\_77 Start: 44811, Stop: 46556, Start Num: 27

Candidate Starts for Quico\_77:

(25, 44745), (Start: 27 @44811 has 33 MA's), (37, 44886), (39, 44922), (40, 44946), (48, 45033), (57, 45132), (58, 45135), (61, 45156), (72, 45183), (93, 45204), (112, 45834), (114, 45855), (126, 45990), (132, 46071), (154, 46404), (155, 46407), (158, 46428), (159, 46437), (168, 46545),

Gene: Raleigh\_38 Start: 29256, Stop: 30815, Start Num: 59

Candidate Starts for Raleigh\_38:

(33, 28959), (35, 28974), (36, 28989), (38, 29025), (49, 29160), (52, 29196), (Start: 59 @29256 has 2 MA's), (65, 29334), (67, 29346), (70, 29388), (71, 29397), (73, 29418), (77, 29496), (78, 29514), (82, 29583), (86, 29610), (91, 29622), (94, 29736), (97, 29811), (98, 29847), (100, 29880), (101, 29886), (103, 29955), (104, 30015), (105, 30048), (110, 30138), (137, 30435), (154, 30651), (155, 30654), (158, 30675), (159, 30684), (162, 30720), (164, 30735),

Gene: Ramsey\_69 Start: 45364, Stop: 46707, Start Num: 27

Candidate Starts for Ramsey\_69:

(16, 45112), (19, 45184), (22, 45241), (23, 45283), (Start: 27 @45364 has 33 MA's), (29, 45379), (39, 45475), (40, 45499), (48, 45586), (54, 45646), (60, 45700), (61, 45709), (72, 45736), (93, 45757), (96, 45892), (112, 46078), (114, 46099), (126, 46234), (154, 46555), (155, 46558), (158, 46579), (159, 46588), (168, 46696),

Gene: Sanjuju\_4 Start: 2435, Stop: 3769, Start Num: 66

Candidate Starts for Sanjuju\_4:

(Start: 66 @2435 has 4 MA's), (68, 2450), (79, 2627), (80, 2657), (81, 2684), (88, 2720), (89, 2756), (90, 2771), (92, 2807), (93, 2828), (96, 2963), (106, 3068), (115, 3164), (141, 3332), (144, 3353), (146, 3374), (154, 3623), (155, 3626), (156, 3629), (163, 3707),

Gene: Seagreen\_68 Start: 42620, Stop: 44155, Start Num: 27

Candidate Starts for Seagreen\_68:

(25, 42554), (Start: 27 @42620 has 33 MA's), (37, 42695), (39, 42731), (40, 42755), (57, 42941), (58, 42944), (61, 42965), (72, 42992), (93, 43013), (112, 43412), (114, 43433), (131, 43649), (140, 43754), (153, 43925), (154, 44003), (155, 44006), (159, 44036), (161, 44063), (168, 44144),

Gene: Shauna1\_67 Start: 43160, Stop: 44527, Start Num: 27

Candidate Starts for Shauna1\_67:

(25, 43094), (Start: 27 @43160 has 33 MA's), (37, 43235), (39, 43271), (40, 43295), (48, 43382), (57, 43481), (58, 43484), (61, 43505), (72, 43532), (93, 43553), (112, 43952), (114, 43973), (128, 44033), (139, 44105), (149, 44189), (151, 44222), (154, 44375), (155, 44378), (159, 44408), (161, 44435), (168, 44516),

Gene: Silvy\_53 Start: 35734, Stop: 37386, Start Num: 27

Candidate Starts for Silvy\_53:

(9, 35296), (25, 35668), (Start: 27 @35734 has 33 MA's), (37, 35809), (39, 35845), (40, 35869), (48, 35956), (51, 36007), (57, 36055), (58, 36058), (72, 36106), (93, 36127), (112, 36757), (114, 36778), (117, 36814), (118, 36838), (127, 36883), (154, 37234), (155, 37237), (159, 37267), (161, 37294), (168, 37375),

Gene: Sitar\_4 Start: 2434, Stop: 4143, Start Num: 27

Candidate Starts for Sitar\_4:

(Start: 27 @2434 has 33 MA's), (43, 2626), (48, 2656), (50, 2683), (55, 2719), (57, 2755), (63, 2872), (64, 2884), (69, 2971), (74, 3013), (75, 3025), (76, 3031), (84, 3175), (87, 3199), (92, 3295), (93, 3316), (96, 3451), (106, 3556), (115, 3652), (141, 3820), (146, 3862), (154, 3997), (155, 4000), (156, 4003), (163, 4081),

Gene: Stultus\_4 Start: 2433, Stop: 3818, Start Num: 66

Candidate Starts for Stultus\_4:

(Start: 66 @2433 has 4 MA's), (79, 2625), (80, 2655), (81, 2682), (88, 2718), (89, 2754), (90, 2769), (92, 2805), (93, 2826), (96, 2961), (106, 3066), (115, 3162), (141, 3330), (144, 3351), (146, 3372), (154, 3621), (155, 3624), (156, 3627), (158, 3645), (160, 3708), (163, 3756),

Gene: VRedHorse\_68 Start: 42168, Stop: 43469, Start Num: 27

Candidate Starts for VRedHorse\_68:

(22, 42045), (23, 42087), (Start: 27 @42168 has 33 MA's), (37, 42243), (39, 42279), (40, 42303), (57, 42489), (61, 42513), (72, 42540), (112, 43056), (114, 43077), (154, 43326), (155, 43329), (165, 43434), (168, 43458),