



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 291348 Report

This analysis was run 03/28/26 on database version 641.

Pham number 291348 has 37 members, 2 are drafts.

Phages represented in each track:

- Track 1 : Lilac\_101
- Track 2 : BlueCrab\_67, FreddyB\_67
- Track 3 : Mantra\_64
- Track 4 : Akhila\_67, MilanaBonita\_66
- Track 5 : Totinger\_66
- Track 6 : Philus\_70, DRBy19\_70
- Track 7 : Bobi\_73
- Track 8 : RedBird\_75, Dorothy\_75
- Track 9 : PatoPoderoso\_67
- Track 10 : Misha28\_75, TootsiePop\_75
- Track 11 : OwlsT2W\_66
- Track 12 : Corium\_67, KingJulian\_72
- Track 13 : Martik\_66
- Track 14 : StAnnes\_70
- Track 15 : Bipolar\_76
- Track 16 : ShiLan\_65
- Track 17 : Filuzino\_74
- Track 18 : Pollywog\_67
- Track 19 : Starcevich\_66
- Track 20 : Awesomesauce\_76
- Track 21 : Kersh\_68
- Track 22 : Hannaconda\_142
- Track 23 : Megiddo\_53
- Track 24 : KilKor\_53, Willsammy\_52
- Track 25 : CactusJack\_53, StressBall\_53, Phalm\_53, Glaske\_53, Gavriela\_53
- Track 26 : Atcoo\_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 15 of the 35 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• BlueCrab\_67, CactusJack\_53, DRBy19\_70, FreddyB\_67, Gavriela\_53, Glaske\_53, KilKor\_53, Martik\_66, Megiddo\_53, Phalm\_53, Philus\_70, ShiLan\_65, Starcevich\_66, StressBall\_53, Willsammy\_52,

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

•

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

• Akhila\_67, Atcoo\_55, Awesomesauce\_76, Bipolar\_76, Bobi\_73, Corium\_67, Dorothy\_75, Filuzino\_74, Hannaconda\_142, Kersh\_68, KingJulian\_72, Lilac\_101, Mantra\_64, MilanaBonita\_66, Misha28\_75, OwlsT2W\_66, PatoPoderoso\_67, Pollywog\_67, RedBird\_75, StAnnes\_70, TootsiePop\_75, Totinger\_66,

### Summary by start number:

Start 7:

- Found in 2 of 37 ( 5.4% ) of genes in pham
- Manual Annotations of this start: 2 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Akhila\_67 (F1), MilanaBonita\_66 (F1),

Start 17:

- Found in 3 of 37 ( 8.1% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Corium\_67 (F1), KingJulian\_72 (F1),

Start 24:

- Found in 2 of 37 ( 5.4% ) of genes in pham
- Manual Annotations of this start: 2 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dorothy\_75 (F1), RedBird\_75 (F1),

Start 25:

- Found in 3 of 37 ( 8.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 33.3% of time when present
- Phage (with cluster) where this start called: PatoPoderoso\_67 (F1),

Start 26:

- Found in 4 of 37 ( 10.8% ) of genes in pham
- Manual Annotations of this start: 4 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Atcoo\_55 (P1), Awesomesauce\_76 (F1), Misha28\_75 (F1), TootsiePop\_75 (F1),

Start 27:

- Found in 15 of 37 ( 40.5% ) of genes in pham
- Manual Annotations of this start: 15 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BlueCrab\_67 (F1), CactusJack\_53 (P1), DRBy19\_70 (F1), FreddyB\_67 (F1), Gavriela\_53 (P1), Glaske\_53 (P1), KilKor\_53 (P1), Martik\_66 (F1), Megiddo\_53 (P1), Phalm\_53 (P1), Philus\_70 (F1), ShiLan\_65

(F1), Starcevich\_66 (F1), StressBall\_53 (P1), Willsammy\_52 (P1),

Start 37:

- Found in 1 of 37 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: StAnnes\_70 (F1),

Start 40:

- Found in 1 of 37 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hannaconda\_142 (J),

Start 50:

- Found in 1 of 37 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bobi\_73 (F1),

Start 53:

- Found in 1 of 37 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lilac\_101 (E),

Start 56:

- Found in 3 of 37 ( 8.1% ) of genes in pham
- Manual Annotations of this start: 3 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kersh\_68 (F1), Mantra\_64 (F1), Totinger\_66 (F1),

Start 73:

- Found in 1 of 37 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 35
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bipolar\_76 (F1),

Start 86:

- Found in 4 of 37 ( 10.8% ) of genes in pham
- Manual Annotations of this start: 3 of 35
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Filuzino\_74 (F1), OwlsT2W\_66 (F1), Pollywog\_67 (F1),

### **Summary by clusters:**

There are 4 clusters represented in this pham: F1, J, P1, E,

Info for manual annotations of cluster E:

- Start number 53 was manually annotated 1 time for cluster E.

Info for manual annotations of cluster F1:

- Start number 7 was manually annotated 2 times for cluster F1.
- Start number 17 was manually annotated 1 time for cluster F1.
- Start number 24 was manually annotated 2 times for cluster F1.
- Start number 26 was manually annotated 3 times for cluster F1.
- Start number 27 was manually annotated 7 times for cluster F1.
- Start number 37 was manually annotated 1 time for cluster F1.
- Start number 50 was manually annotated 1 time for cluster F1.
- Start number 56 was manually annotated 3 times for cluster F1.
- Start number 73 was manually annotated 1 time for cluster F1.
- Start number 86 was manually annotated 3 times for cluster F1.

Info for manual annotations of cluster J:

- Start number 40 was manually annotated 1 time for cluster J.

Info for manual annotations of cluster P1:

- Start number 26 was manually annotated 1 time for cluster P1.
- Start number 27 was manually annotated 8 times for cluster P1.

### **Gene Information:**

Gene: Akhila\_67 Start: 42333, Stop: 45014, Start Num: 7

Candidate Starts for Akhila\_67:

(2, 42243), (3, 42252), (Start: 7 @42333 has 2 MA's), (15, 42393), (20, 42429), (23, 42462), (39, 42663), (44, 42696), (61, 42873), (66, 42897), (74, 42960), (80, 42984), (81, 42987), (82, 43005), (83, 43008), (89, 43107), (91, 43128), (101, 43260), (105, 43341), (114, 43422), (125, 43536), (128, 43593), (134, 43665), (139, 43749), (140, 43767), (141, 43788), (144, 43857), (145, 43875), (149, 43908), (156, 44022), (157, 44028), (158, 44046), (160, 44067), (164, 44109), (169, 44151), (189, 44196), (191, 44208), (207, 44313), (210, 44334), (211, 44343), (212, 44355), (213, 44379), (217, 44421), (236, 44520), (246, 44706), (256, 44808), (259, 44820), (261, 44847),

Gene: Atcoo\_55 Start: 37344, Stop: 39803, Start Num: 26

Candidate Starts for Atcoo\_55:

(12, 37242), (16, 37251), (19, 37278), (Start: 26 @37344 has 4 MA's), (30, 37404), (34, 37443), (39, 37473), (59, 37563), (66, 37590), (78, 37653), (80, 37659), (81, 37662), (82, 37680), (90, 37800), (96, 37842), (98, 37899), (123, 38169), (125, 38208), (137, 38373), (139, 38436), (146, 38568), (147, 38589), (150, 38625), (151, 38631), (154, 38670), (155, 38706), (158, 38739), (160, 38760), (166, 38865), (173, 38940), (178, 39012), (207, 39258), (209, 39276), (212, 39300), (227, 39435), (233, 39465), (236, 39501), (244, 39603), (246, 39660), (251, 39720), (254, 39753), (257, 39762), (258, 39765),

Gene: Awesomesauce\_76 Start: 46078, Stop: 48528, Start Num: 26

Candidate Starts for Awesomesauce\_76:

(Start: 26 @46078 has 4 MA's), (28, 46108), (30, 46138), (33, 46174), (39, 46207), (71, 46438), (80, 46489), (81, 46492), (90, 46630), (96, 46672), (98, 46729), (123, 46999), (125, 47038), (137, 47203), (139, 47266), (146, 47398), (147, 47419), (150, 47455), (151, 47461), (154, 47500), (155, 47536), (158, 47569), (160, 47590), (190, 47725), (207, 47827), (208, 47830), (212, 47869), (219, 47950), (235, 48061), (236, 48064), (244, 48166), (246, 48223), (256, 48325), (259, 48337), (260, 48346), (262, 48367),

Gene: Bipolar\_76 Start: 46390, Stop: 48396, Start Num: 73

Candidate Starts for Bipolar\_76:

(Start: 73 @46390 has 1 MA's), (Start: 86 @46483 has 3 MA's), (87, 46513), (90, 46543), (95, 46579), (97, 46612), (99, 46657), (102, 46699), (104, 46702), (106, 46735), (108, 46741), (115, 46822), (125, 46864), (127, 46879), (136, 46972), (142, 47062), (143, 47074), (152, 47206), (161, 47326), (180, 47449), (200, 47536), (207, 47671), (210, 47692), (211, 47701), (212, 47713), (213, 47737), (235, 47905), (236, 47908), (246, 48088), (248, 48118), (256, 48190), (259, 48202), (260, 48211), (261, 48229), (268, 48346),

Gene: BlueCrab\_67 Start: 43881, Stop: 46157, Start Num: 27

Candidate Starts for BlueCrab\_67:

(6, 43704), (8, 43710), (9, 43719), (10, 43728), (14, 43767), (21, 43824), (Start: 27 @43881 has 15 MA's), (30, 43938), (39, 44007), (71, 44238), (82, 44310), (90, 44430), (96, 44472), (98, 44529), (123, 44799), (125, 44838), (137, 45003), (139, 45066), (146, 45198), (147, 45219), (150, 45255), (151, 45261), (154, 45300), (155, 45336), (158, 45369), (160, 45390), (199, 45555), (201, 45558), (207, 45642), (212, 45684), (244, 45957), (246, 46014), (251, 46074), (254, 46107), (257, 46116), (258, 46119),

Gene: Bobi\_73 Start: 44682, Stop: 46739, Start Num: 50

Candidate Starts for Bobi\_73:

(Start: 50 @44682 has 1 MA's), (54, 44721), (58, 44751), (65, 44787), (69, 44820), (76, 44865), (89, 45009), (91, 45030), (101, 45162), (105, 45243), (114, 45324), (125, 45438), (128, 45495), (134, 45567), (139, 45651), (141, 45690), (144, 45759), (149, 45810), (151, 45843), (156, 45924), (157, 45930), (158, 45948), (160, 45969), (169, 46053), (189, 46095), (207, 46218), (210, 46239), (211, 46248), (212, 46260), (213, 46284), (214, 46305), (220, 46338), (231, 46383), (232, 46395), (235, 46434), (236, 46437), (243, 46539), (246, 46596), (251, 46656), (254, 46689), (257, 46698), (258, 46701),

Gene: CactusJack\_53 Start: 36390, Stop: 38582, Start Num: 27

Candidate Starts for CactusJack\_53:

(1, 35955), (22, 36327), (Start: 27 @36390 has 15 MA's), (28, 36417), (29, 36423), (30, 36447), (33, 36483), (39, 36516), (59, 36606), (66, 36633), (78, 36696), (80, 36702), (81, 36705), (82, 36723), (90, 36843), (96, 36885), (98, 36942), (123, 37212), (125, 37251), (137, 37416), (139, 37479), (146, 37611), (147, 37632), (150, 37668), (151, 37674), (154, 37713), (155, 37749), (158, 37782), (160, 37803), (169, 37887), (184, 37923), (207, 38046), (209, 38064), (212, 38088), (215, 38145), (216, 38151), (223, 38181), (225, 38187), (236, 38253), (246, 38439), (251, 38499), (254, 38532), (257, 38541), (258, 38544),

Gene: Corium\_67 Start: 44493, Stop: 46790, Start Num: 17

Candidate Starts for Corium\_67:

(4, 44409), (5, 44421), (Start: 17 @44493 has 1 MA's), (25, 44592), (28, 44622), (30, 44652), (33, 44688), (39, 44721), (59, 44811), (66, 44838), (78, 44901), (80, 44907), (82, 44928), (90, 45048), (96, 45090), (98, 45147), (123, 45417), (137, 45621), (139, 45684), (146, 45816), (147, 45837), (150, 45873), (151, 45879), (154, 45918), (155, 45954), (158, 45987), (160, 46008), (164, 46050), (169, 46092), (184, 46128), (207, 46251), (209, 46269), (212, 46293), (239, 46530), (245, 46593), (246, 46647), (251, 46707), (254, 46740), (257, 46749), (258, 46752),

Gene: DRBy19\_70 Start: 44260, Stop: 46806, Start Num: 27

Candidate Starts for DRBy19\_70:

(6, 44083), (8, 44089), (9, 44098), (10, 44107), (21, 44203), (Start: 27 @44260 has 15 MA's), (30, 44317), (33, 44353), (36, 44377), (39, 44386), (71, 44617), (80, 44668), (81, 44671), (90, 44809), (96, 44851), (98, 44908), (123, 45178), (125, 45217), (137, 45382), (139, 45445), (146, 45577), (147, 45598), (150, 45634), (151, 45640), (154, 45679), (155, 45715), (158, 45748), (160, 45769), (174, 45961), (177, 46009), (182, 46045), (195, 46135), (197, 46153), (207, 46276), (209, 46294), (211,

46306), (212, 46318), (214, 46363), (222, 46411), (244, 46606), (246, 46663), (251, 46723), (254, 46756), (257, 46765), (258, 46768),

Gene: Dorothy\_75 Start: 45729, Stop: 48410, Start Num: 24

Candidate Starts for Dorothy\_75:

(Start: 24 @45729 has 2 MA's), (28, 45768), (30, 45798), (33, 45834), (39, 45867), (71, 46098), (78, 46143), (80, 46149), (81, 46152), (82, 46170), (83, 46173), (89, 46272), (91, 46293), (101, 46425), (105, 46506), (114, 46587), (125, 46701), (128, 46758), (134, 46830), (139, 46914), (141, 46953), (144, 47022), (149, 47073), (156, 47187), (157, 47193), (158, 47211), (160, 47232), (179, 47379), (183, 47415), (187, 47484), (192, 47532), (196, 47565), (200, 47592), (207, 47685), (210, 47706), (211, 47715), (213, 47751), (228, 47853), (235, 47916), (236, 47919), (241, 47997), (246, 48105), (256, 48207), (259, 48219), (260, 48228), (261, 48246), (268, 48363),

Gene: Filuzino\_74 Start: 46234, Stop: 48309, Start Num: 86

Candidate Starts for Filuzino\_74:

(62, 46084), (65, 46099), (72, 46135), (Start: 86 @46234 has 3 MA's), (87, 46264), (90, 46294), (95, 46330), (97, 46363), (99, 46408), (102, 46450), (104, 46453), (113, 46555), (118, 46603), (124, 46657), (126, 46696), (131, 46771), (132, 46783), (136, 46828), (138, 46873), (142, 46978), (143, 46990), (152, 47122), (180, 47365), (200, 47452), (207, 47587), (210, 47608), (211, 47617), (213, 47653), (229, 47755), (235, 47818), (236, 47821), (239, 47884), (246, 48001), (256, 48103), (259, 48115), (261, 48142), (268, 48259),

Gene: FreddyB\_67 Start: 41676, Stop: 43952, Start Num: 27

Candidate Starts for FreddyB\_67:

(6, 41499), (8, 41505), (9, 41514), (10, 41523), (14, 41562), (21, 41619), (Start: 27 @41676 has 15 MA's), (30, 41733), (39, 41802), (71, 42033), (82, 42105), (90, 42225), (96, 42267), (98, 42324), (123, 42594), (125, 42633), (137, 42798), (139, 42861), (146, 42993), (147, 43014), (150, 43050), (151, 43056), (154, 43095), (155, 43131), (158, 43164), (160, 43185), (199, 43350), (201, 43353), (207, 43437), (212, 43479), (244, 43752), (246, 43809), (251, 43869), (254, 43902), (257, 43911), (258, 43914),

Gene: Gavriela\_53 Start: 36390, Stop: 38582, Start Num: 27

Candidate Starts for Gavriela\_53:

(1, 35955), (22, 36327), (Start: 27 @36390 has 15 MA's), (28, 36417), (29, 36423), (30, 36447), (33, 36483), (39, 36516), (59, 36606), (66, 36633), (78, 36696), (80, 36702), (81, 36705), (82, 36723), (90, 36843), (96, 36885), (98, 36942), (123, 37212), (125, 37251), (137, 37416), (139, 37479), (146, 37611), (147, 37632), (150, 37668), (151, 37674), (154, 37713), (155, 37749), (158, 37782), (160, 37803), (169, 37887), (184, 37923), (207, 38046), (209, 38064), (212, 38088), (215, 38145), (216, 38151), (223, 38181), (225, 38187), (236, 38253), (246, 38439), (251, 38499), (254, 38532), (257, 38541), (258, 38544),

Gene: Glaske\_53 Start: 36390, Stop: 38582, Start Num: 27

Candidate Starts for Glaske\_53:

(1, 35955), (22, 36327), (Start: 27 @36390 has 15 MA's), (28, 36417), (29, 36423), (30, 36447), (33, 36483), (39, 36516), (59, 36606), (66, 36633), (78, 36696), (80, 36702), (81, 36705), (82, 36723), (90, 36843), (96, 36885), (98, 36942), (123, 37212), (125, 37251), (137, 37416), (139, 37479), (146, 37611), (147, 37632), (150, 37668), (151, 37674), (154, 37713), (155, 37749), (158, 37782), (160, 37803), (169, 37887), (184, 37923), (207, 38046), (209, 38064), (212, 38088), (215, 38145), (216, 38151), (223, 38181), (225, 38187), (236, 38253), (246, 38439), (251, 38499), (254, 38532), (257, 38541), (258, 38544),

Gene: Hannaconda\_142 Start: 76662, Stop: 78896, Start Num: 40

Candidate Starts for Hannaconda\_142:

(Start: 40 @76662 has 1 MA's), (63, 76770), (75, 76815), (84, 76893), (85, 76899), (90, 76977), (96, 77019), (98, 77076), (123, 77346), (137, 77550), (139, 77613), (146, 77745), (147, 77766), (150, 77802), (151, 77808), (154, 77847), (155, 77883), (158, 77916), (160, 77937), (169, 78021), (170, 78030), (207, 78231), (211, 78261), (213, 78297), (235, 78438), (236, 78441), (244, 78558), (252, 78690), (253, 78702), (254, 78711), (256, 78720), (260, 78741), (261, 78759), (263, 78795),

Gene: Kersh\_68 Start: 45094, Stop: 47070, Start Num: 56

Candidate Starts for Kersh\_68:

(45, 44980), (Start: 56 @45094 has 3 MA's), (67, 45151), (68, 45163), (77, 45220), (88, 45361), (92, 45391), (94, 45406), (97, 45454), (99, 45505), (103, 45568), (107, 45616), (109, 45631), (110, 45640), (111, 45655), (112, 45679), (117, 45736), (119, 45742), (120, 45745), (121, 45763), (122, 45766), (148, 46036), (153, 46084), (159, 46120), (172, 46210), (181, 46228), (207, 46351), (209, 46369), (211, 46381), (212, 46393), (229, 46519), (235, 46582), (236, 46585), (246, 46765), (248, 46795), (256, 46867), (259, 46879), (262, 46909),

Gene: KilKor\_53 Start: 36390, Stop: 38570, Start Num: 27

Candidate Starts for KilKor\_53:

(1, 35955), (22, 36327), (Start: 27 @36390 has 15 MA's), (28, 36417), (29, 36423), (30, 36447), (33, 36483), (39, 36516), (59, 36606), (66, 36633), (78, 36696), (80, 36702), (82, 36723), (90, 36843), (96, 36885), (98, 36942), (123, 37212), (137, 37416), (139, 37479), (146, 37611), (147, 37632), (150, 37668), (151, 37674), (154, 37713), (155, 37749), (158, 37782), (160, 37803), (164, 37845), (207, 38052), (211, 38082), (212, 38094), (236, 38268), (244, 38370), (246, 38427), (249, 38472), (251, 38487), (254, 38520), (257, 38529), (258, 38532),

Gene: KingJulian\_72 Start: 44493, Stop: 46790, Start Num: 17

Candidate Starts for KingJulian\_72:

(4, 44409), (5, 44421), (Start: 17 @44493 has 1 MA's), (25, 44592), (28, 44622), (30, 44652), (33, 44688), (39, 44721), (59, 44811), (66, 44838), (78, 44901), (80, 44907), (82, 44928), (90, 45048), (96, 45090), (98, 45147), (123, 45417), (137, 45621), (139, 45684), (146, 45816), (147, 45837), (150, 45873), (151, 45879), (154, 45918), (155, 45954), (158, 45987), (160, 46008), (164, 46050), (169, 46092), (184, 46128), (207, 46251), (209, 46269), (212, 46293), (239, 46530), (245, 46593), (246, 46647), (251, 46707), (254, 46740), (257, 46749), (258, 46752),

Gene: Lilac\_101 Start: 58401, Stop: 60605, Start Num: 53

Candidate Starts for Lilac\_101:

(35, 58254), (42, 58284), (46, 58332), (47, 58347), (49, 58359), (Start: 53 @58401 has 1 MA's), (55, 58419), (69, 58515), (76, 58560), (85, 58644), (89, 58704), (91, 58725), (101, 58857), (105, 58938), (114, 59019), (125, 59133), (128, 59190), (134, 59262), (139, 59346), (141, 59385), (144, 59454), (149, 59505), (151, 59538), (156, 59619), (157, 59625), (158, 59643), (160, 59664), (169, 59748), (189, 59793), (191, 59805), (207, 59910), (208, 59913), (212, 59952), (221, 60039), (235, 60141), (236, 60144), (238, 60207), (256, 60426), (262, 60468), (263, 60501), (265, 60516),

Gene: Mantra\_64 Start: 42536, Stop: 44860, Start Num: 56

Candidate Starts for Mantra\_64:

(52, 42488), (Start: 56 @42536 has 3 MA's), (67, 42593), (77, 42662), (95, 42863), (97, 42896), (109, 43073), (111, 43097), (116, 43160), (117, 43178), (119, 43184), (121, 43205), (129, 43328), (142, 43532), (163, 43826), (180, 43922), (198, 44003), (200, 44009), (203, 44042), (207, 44141), (210, 44162), (211, 44171), (213, 44207), (229, 44309), (235, 44372), (236, 44375), (246, 44555), (255, 44654), (256, 44657), (259, 44669), (260, 44678), (262, 44699), (269, 44852),

Gene: Martik\_66 Start: 42749, Stop: 45055, Start Num: 27

Candidate Starts for Martik\_66:

(Start: 27 @42749 has 15 MA's), (30, 42806), (31, 42818), (34, 42845), (39, 42875), (71, 43106), (80, 43157), (81, 43160), (85, 43220), (90, 43298), (96, 43340), (98, 43397), (123, 43667), (137, 43871), (139, 43934), (146, 44066), (147, 44087), (150, 44123), (151, 44129), (154, 44168), (155, 44204), (158, 44237), (160, 44258), (199, 44423), (201, 44426), (207, 44510), (212, 44552), (227, 44687), (233, 44717), (236, 44753), (244, 44855), (246, 44912), (251, 44972), (254, 45005), (257, 45014), (258, 45017),

Gene: Megiddo\_53 Start: 36390, Stop: 38585, Start Num: 27

Candidate Starts for Megiddo\_53:

(1, 35955), (22, 36327), (Start: 27 @36390 has 15 MA's), (28, 36417), (29, 36423), (30, 36447), (33, 36483), (39, 36516), (59, 36606), (66, 36633), (78, 36696), (80, 36702), (82, 36723), (90, 36843), (96, 36885), (98, 36942), (123, 37212), (137, 37416), (139, 37479), (146, 37611), (147, 37632), (150, 37668), (151, 37674), (154, 37713), (155, 37749), (158, 37782), (160, 37803), (164, 37845), (169, 37887), (184, 37923), (207, 38046), (209, 38064), (212, 38088), (239, 38325), (245, 38388), (246, 38442), (251, 38502), (254, 38535), (257, 38544), (258, 38547),

Gene: MilanaBonita\_66 Start: 42333, Stop: 45014, Start Num: 7

Candidate Starts for MilanaBonita\_66:

(2, 42243), (3, 42252), (Start: 7 @42333 has 2 MA's), (15, 42393), (20, 42429), (23, 42462), (39, 42663), (44, 42696), (61, 42873), (66, 42897), (74, 42960), (80, 42984), (81, 42987), (82, 43005), (83, 43008), (89, 43107), (91, 43128), (101, 43260), (105, 43341), (114, 43422), (125, 43536), (128, 43593), (134, 43665), (139, 43749), (140, 43767), (141, 43788), (144, 43857), (145, 43875), (149, 43908), (156, 44022), (157, 44028), (158, 44046), (160, 44067), (164, 44109), (169, 44151), (189, 44196), (191, 44208), (207, 44313), (210, 44334), (211, 44343), (212, 44355), (213, 44379), (217, 44421), (236, 44520), (246, 44706), (256, 44808), (259, 44820), (261, 44847),

Gene: Misha28\_75 Start: 46524, Stop: 48974, Start Num: 26

Candidate Starts for Misha28\_75:

(11, 46422), (13, 46431), (18, 46458), (Start: 26 @46524 has 4 MA's), (29, 46560), (30, 46584), (33, 46620), (39, 46653), (71, 46884), (80, 46935), (81, 46938), (90, 47076), (96, 47118), (98, 47175), (123, 47445), (125, 47484), (137, 47649), (139, 47712), (146, 47844), (147, 47865), (150, 47901), (151, 47907), (154, 47946), (155, 47982), (158, 48015), (160, 48036), (190, 48171), (207, 48273), (208, 48276), (212, 48315), (219, 48396), (235, 48507), (236, 48510), (244, 48612), (246, 48669), (256, 48771), (259, 48783), (260, 48792), (262, 48813),

Gene: OwlsT2W\_66 Start: 42373, Stop: 44289, Start Num: 86

Candidate Starts for OwlsT2W\_66:

(58, 42196), (60, 42202), (61, 42211), (63, 42220), (70, 42259), (79, 42316), (Start: 86 @42373 has 3 MA's), (90, 42430), (93, 42442), (97, 42499), (100, 42553), (119, 42766), (120, 42769), (122, 42790), (129, 42910), (133, 42952), (135, 42988), (142, 43132), (143, 43144), (152, 43276), (161, 43396), (180, 43519), (200, 43606), (207, 43741), (211, 43771), (213, 43807), (229, 43909), (237, 43990), (246, 44146), (251, 44206), (254, 44239), (257, 44248), (258, 44251),

Gene: PatoPoderoso\_67 Start: 44592, Stop: 46790, Start Num: 25

Candidate Starts for PatoPoderoso\_67:

(4, 44409), (5, 44421), (Start: 17 @44493 has 1 MA's), (25, 44592), (28, 44622), (30, 44652), (33, 44688), (39, 44721), (59, 44811), (66, 44838), (78, 44901), (80, 44907), (82, 44928), (90, 45048), (96, 45090), (98, 45147), (123, 45417), (137, 45621), (139, 45684), (146, 45816), (147, 45837), (150, 45873), (151, 45879), (154, 45918), (155, 45954), (158, 45987), (160, 46008), (164, 46050), (169, 46092), (184, 46128), (207, 46251), (209, 46269), (212, 46293), (239, 46530), (245, 46593), (246, 46647), (251, 46707), (254, 46740), (257, 46749), (258, 46752),

Gene: Phalm\_53 Start: 36390, Stop: 38582, Start Num: 27

Candidate Starts for Phalm\_53:

(1, 35955), (22, 36327), (Start: 27 @36390 has 15 MA's), (28, 36417), (29, 36423), (30, 36447), (33, 36483), (39, 36516), (59, 36606), (66, 36633), (78, 36696), (80, 36702), (81, 36705), (82, 36723), (90, 36843), (96, 36885), (98, 36942), (123, 37212), (125, 37251), (137, 37416), (139, 37479), (146, 37611), (147, 37632), (150, 37668), (151, 37674), (154, 37713), (155, 37749), (158, 37782), (160, 37803), (169, 37887), (184, 37923), (207, 38046), (209, 38064), (212, 38088), (215, 38145), (216, 38151), (223, 38181), (225, 38187), (236, 38253), (246, 38439), (251, 38499), (254, 38532), (257, 38541), (258, 38544),

Gene: Philus\_70 Start: 44236, Stop: 46782, Start Num: 27

Candidate Starts for Philus\_70:

(6, 44059), (8, 44065), (9, 44074), (10, 44083), (21, 44179), (Start: 27 @44236 has 15 MA's), (30, 44293), (33, 44329), (36, 44353), (39, 44362), (71, 44593), (80, 44644), (81, 44647), (90, 44785), (96, 44827), (98, 44884), (123, 45154), (125, 45193), (137, 45358), (139, 45421), (146, 45553), (147, 45574), (150, 45610), (151, 45616), (154, 45655), (155, 45691), (158, 45724), (160, 45745), (174, 45937), (177, 45985), (182, 46021), (195, 46111), (197, 46129), (207, 46252), (209, 46270), (211, 46282), (212, 46294), (214, 46339), (222, 46387), (244, 46582), (246, 46639), (251, 46699), (254, 46732), (257, 46741), (258, 46744),

Gene: Pollywog\_67 Start: 43356, Stop: 45239, Start Num: 86

Candidate Starts for Pollywog\_67:

(70, 43242), (Start: 86 @43356 has 3 MA's), (90, 43413), (95, 43449), (97, 43482), (99, 43527), (102, 43569), (104, 43572), (108, 43611), (130, 43734), (142, 43899), (143, 43911), (152, 44043), (161, 44163), (180, 44286), (200, 44373), (207, 44508), (211, 44538), (213, 44574), (224, 44652), (226, 44679), (230, 44685), (235, 44745), (236, 44748), (242, 44826), (246, 44934), (253, 45018), (256, 45036), (259, 45048), (261, 45075),

Gene: RedBird\_75 Start: 45596, Stop: 48277, Start Num: 24

Candidate Starts for RedBird\_75:

(Start: 24 @45596 has 2 MA's), (28, 45635), (30, 45665), (33, 45701), (39, 45734), (71, 45965), (78, 46010), (80, 46016), (81, 46019), (82, 46037), (83, 46040), (89, 46139), (91, 46160), (101, 46292), (105, 46373), (114, 46454), (125, 46568), (128, 46625), (134, 46697), (139, 46781), (141, 46820), (144, 46889), (149, 46940), (156, 47054), (157, 47060), (158, 47078), (160, 47099), (179, 47246), (183, 47282), (187, 47351), (192, 47399), (196, 47432), (200, 47459), (207, 47552), (210, 47573), (211, 47582), (213, 47618), (228, 47720), (235, 47783), (236, 47786), (241, 47864), (246, 47972), (256, 48074), (259, 48086), (260, 48095), (261, 48113), (268, 48230),

Gene: ShiLan\_65 Start: 42785, Stop: 45667, Start Num: 27

Candidate Starts for ShiLan\_65:

(Start: 27 @42785 has 15 MA's), (30, 42842), (31, 42854), (34, 42881), (39, 42911), (71, 43142), (78, 43187), (80, 43193), (81, 43196), (82, 43214), (83, 43217), (89, 43316), (91, 43337), (101, 43469), (105, 43550), (114, 43631), (125, 43745), (128, 43802), (134, 43874), (139, 43958), (141, 43997), (144, 44066), (149, 44117), (156, 44231), (157, 44237), (158, 44255), (160, 44276), (162, 44312), (169, 44360), (185, 44411), (193, 44513), (194, 44525), (207, 44657), (218, 44777), (234, 44900), (240, 44987), (247, 45122), (250, 45164), (264, 45299), (266, 45329), (267, 45365), (270, 45467), (271, 45524), (272, 45584), (273, 45617), (274, 45626), (275, 45629),

Gene: StAnnes\_70 Start: 44611, Stop: 46869, Start Num: 37

Candidate Starts for StAnnes\_70:

(32, 44581), (35, 44605), (Start: 37 @44611 has 1 MA's), (48, 44665), (57, 44701), (64, 44734), (75, 44779), (90, 44941), (96, 44983), (98, 45040), (123, 45310), (137, 45514), (139, 45577), (146, 45709), (147, 45730), (150, 45766), (151, 45772), (154, 45811), (155, 45847), (158, 45880), (160, 45901), (169, 45985), (171, 45997), (188, 46042), (207, 46162), (211, 46192), (213, 46228), (235, 46387),

(236, 46390), (241, 46468), (246, 46576), (256, 46663), (259, 46675), (260, 46684), (262, 46705),

Gene: Starcevich\_66 Start: 42297, Stop: 45341, Start Num: 27

Candidate Starts for Starcevich\_66:

(14, 42183), (Start: 27 @42297 has 15 MA's), (30, 42354), (31, 42366), (34, 42393), (39, 42423), (71, 42654), (78, 42699), (80, 42705), (81, 42708), (82, 42726), (83, 42729), (90, 42846), (96, 42888), (98, 42945), (123, 43215), (125, 43254), (137, 43419), (139, 43482), (146, 43614), (147, 43635), (150, 43671), (151, 43677), (154, 43716), (155, 43752), (158, 43785), (160, 43806), (165, 43890), (167, 43935), (168, 43947), (175, 44049), (176, 44061), (186, 44193), (192, 44313), (202, 44436), (204, 44517), (205, 44523), (206, 44556), (207, 44655), (211, 44685), (213, 44721), (235, 44862), (236, 44865), (246, 45051), (256, 45138), (259, 45150),

Gene: StressBall\_53 Start: 36390, Stop: 38582, Start Num: 27

Candidate Starts for StressBall\_53:

(1, 35955), (22, 36327), (Start: 27 @36390 has 15 MA's), (28, 36417), (29, 36423), (30, 36447), (33, 36483), (39, 36516), (59, 36606), (66, 36633), (78, 36696), (80, 36702), (81, 36705), (82, 36723), (90, 36843), (96, 36885), (98, 36942), (123, 37212), (125, 37251), (137, 37416), (139, 37479), (146, 37611), (147, 37632), (150, 37668), (151, 37674), (154, 37713), (155, 37749), (158, 37782), (160, 37803), (169, 37887), (184, 37923), (207, 38046), (209, 38064), (212, 38088), (215, 38145), (216, 38151), (223, 38181), (225, 38187), (236, 38253), (246, 38439), (251, 38499), (254, 38532), (257, 38541), (258, 38544),

Gene: TootsiePop\_75 Start: 46524, Stop: 48974, Start Num: 26

Candidate Starts for TootsiePop\_75:

(11, 46422), (13, 46431), (18, 46458), (Start: 26 @46524 has 4 MA's), (29, 46560), (30, 46584), (33, 46620), (39, 46653), (71, 46884), (80, 46935), (81, 46938), (90, 47076), (96, 47118), (98, 47175), (123, 47445), (125, 47484), (137, 47649), (139, 47712), (146, 47844), (147, 47865), (150, 47901), (151, 47907), (154, 47946), (155, 47982), (158, 48015), (160, 48036), (190, 48171), (207, 48273), (208, 48276), (212, 48315), (219, 48396), (235, 48507), (236, 48510), (244, 48612), (246, 48669), (256, 48771), (259, 48783), (260, 48792), (262, 48813),

Gene: Totinger\_66 Start: 41872, Stop: 44196, Start Num: 56

Candidate Starts for Totinger\_66:

(38, 41695), (41, 41710), (43, 41719), (51, 41815), (Start: 56 @41872 has 3 MA's), (67, 41929), (77, 41998), (95, 42199), (97, 42232), (109, 42409), (111, 42433), (116, 42496), (117, 42514), (119, 42520), (121, 42541), (129, 42664), (142, 42868), (163, 43162), (180, 43258), (198, 43339), (200, 43345), (203, 43378), (207, 43477), (209, 43495), (212, 43519), (229, 43645), (235, 43708), (236, 43711), (246, 43891), (255, 43990), (256, 43993), (259, 44005), (260, 44014), (262, 44035), (269, 44188),

Gene: Willsammy\_52 Start: 35873, Stop: 38053, Start Num: 27

Candidate Starts for Willsammy\_52:

(1, 35438), (22, 35810), (Start: 27 @35873 has 15 MA's), (28, 35900), (29, 35906), (30, 35930), (33, 35966), (39, 35999), (59, 36089), (66, 36116), (78, 36179), (80, 36185), (82, 36206), (90, 36326), (96, 36368), (98, 36425), (123, 36695), (137, 36899), (139, 36962), (146, 37094), (147, 37115), (150, 37151), (151, 37157), (154, 37196), (155, 37232), (158, 37265), (160, 37286), (164, 37328), (207, 37535), (211, 37565), (212, 37577), (236, 37751), (244, 37853), (246, 37910), (249, 37955), (251, 37970), (254, 38003), (257, 38012), (258, 38015),