

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 158015 Report

This analysis was run 04/13/24 on database version 558.

Pham number 158015 has 39 members, 18 are drafts.

Phages represented in each track:

- Track 1 : CookieBear_20, Sakai_19, Richie_19, Auxilium_19, Gorpy_19
- Track 2 : Sashimi_20
- Track 3 : RadFad_19, Hillester_19
- Track 4 : Hestia_19
- Track 5 : Tiff81_21
- Track 6 : Phrank15_19
- Track 7 : BillyTP_19
- Track 8 : EvePickles_19
- Track 9 : Anekin_19
- Track 10 : BenchScraper_19
- Track 11 : Seahorse_20
- Track 12 : Isolde_19
- Track 13 : Faja_19
- Track 14 : Globfish_19
- Track 15 : Aikyam_19
- Track 16 : Persistence_18
- Track 17 : YoungHarleezy_19
- Track 18 : MidnightRain_19
- Track 19 : Raphaella_20
- Track 20 : PeggyLeg03_18
- Track 21 : Eileen_18, Peas_18
- Track 22 : GlobiWarming_18
- Track 23 : Karkharias_18
- Track 24 : Constance_18
- Track 25 : Judy_19
- Track 26 : Pucara_18
- Track 27 : Bridgette_18
- Track 28 : ChuckDuck_18
- Track 29 : TripleJ_18
- Track 30 : Kukla_17
- Track 31 : Pitbull_17
- Track 32 : Hum25_17
- Track 33 : Footloose_17

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

The start number called the most often in the published annotations is 18, it was called in 17 of the 21 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aikyam_19, Auxilium_19, BenchScraper_19, BillyTP_19, Bridgette_18, ChuckDuck_18, Constance_18, CookieBear_20, Eileen_18, Globfish_19, GlobiWarming_18, Gorpy_19, Hestia_19, Hillester_19, Isolde_19, Judy_19, Karkharias_18, MidnightRain_19, Peas_18, PeggyLeg03_18, Persistence_18, Phrank15_19, Pucara_18, RadFad_19, Raphaella_20, Richie_19, Sakai_19, Seahorse_20, Tiff81_21, YoungHarleezy_19,

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

- Anekin_19,

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

- EvePickles_19, Faja_19, Footloose_17, Hum25_17, Kukla_17, Pitbull_17, Sashimi_20, TripleJ_18,

Summary by start number:

Start 6:

- Found in 1 of 39 (2.6%) of genes in pham
- Manual Annotations of this start: 1 of 21
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TripleJ_18 (FJ),

Start 14:

- Found in 6 of 39 (15.4%) of genes in pham
- Manual Annotations of this start: 2 of 21
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EvePickles_19 (AY), Faja_19 (AY), Hum25_17 (FQ), Kukla_17 (FJ), Pitbull_17 (FQ), Sashimi_20 (AY),

Start 17:

- Found in 1 of 39 (2.6%) of genes in pham
- Manual Annotations of this start: 1 of 21
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Footloose_17 (singleton),

Start 18:

- Found in 31 of 39 (79.5%) of genes in pham
- Manual Annotations of this start: 17 of 21
- Called 96.8% of time when present
- Phage (with cluster) where this start called: Aikyam_19 (AY), Auxilium_19 (AY), BenchScraper_19 (AY), BillyTP_19 (AY), Bridgette_18 (FA), ChuckDuck_18 (FA), Constance_18 (FA), CookieBear_20 (AY), Eileen_18 (FA), Globfish_19 (AY), GlobiWarming_18 (FA), Gorpy_19 (AY), Hestia_19 (AY), Hillester_19 (AY), Isolde_19 (AY), Judy_19 (FA), Karkharias_18 (FA), MidnightRain_19 (AY), Peas_18 (FA), PeggyLeg03_18 (FA), Persistence_18 (AY), Phrank15_19 (AY), Pucara_18 (FA), RadFad_19 (AY), Raphaella_20 (AY), Richie_19 (AY), Sakai_19 (AY), Seahorse_20 (AY), Tiff81_21 (AY), YoungHarleezy_19 (AY),

Start 29:

- Found in 31 of 39 (79.5%) of genes in pham
- No Manual Annotations of this start.
- Called 3.2% of time when present
- Phage (with cluster) where this start called: Anekin_19 (AY),

Summary by clusters:

There are 5 clusters represented in this pham: AY, FA, singleton, FJ, FQ,

Info for manual annotations of cluster AY:

- Start number 14 was manually annotated 2 times for cluster AY.
- Start number 18 was manually annotated 10 times for cluster AY.

Info for manual annotations of cluster FA:

- Start number 18 was manually annotated 7 times for cluster FA.

Info for manual annotations of cluster FJ:

- Start number 6 was manually annotated 1 time for cluster FJ.

Gene Information:

Gene: Aikyam_19 Start: 10844, Stop: 14785, Start Num: 18

Candidate Starts for Aikyam_19:

(Start: 18 @10844 has 17 MA's), (22, 10883), (27, 10946), (29, 10979), (31, 11003), (33, 11009), (34, 11021), (39, 11045), (40, 11057), (41, 11075), (43, 11117), (51, 11282), (70, 11549), (72, 11555), (77, 11594), (88, 11687), (101, 11855), (106, 11900), (118, 11996), (135, 12071), (140, 12101), (148, 12188), (150, 12200), (160, 12269), (162, 12305), (165, 12335), (171, 12371), (175, 12419), (176, 12431), (181, 12461), (190, 12518), (191, 12527), (193, 12572), (194, 12575), (199, 12629), (207, 12713), (208, 12722), (210, 12734), (212, 12755), (219, 12806), (231, 12905), (244, 13013), (246, 13052), (252, 13142), (256, 13157), (272, 13259), (276, 13289), (285, 13340), (286, 13361), (291, 13409), (292, 13412), (302, 13496), (303, 13499), (311, 13577), (321, 13652), (322, 13661), (325, 13676), (337, 13796), (340, 13835), (341, 13853), (346, 13952), (349, 14045), (354, 14159), (355, 14177), (359, 14216), (360, 14258), (364, 14321), (365, 14333), (368, 14369), (370, 14411), (373, 14432), (379, 14528), (384, 14582), (394, 14672), (401, 14735),

Gene: Anekin_19 Start: 11046, Stop: 14747, Start Num: 29

Candidate Starts for Anekin_19:

(Start: 18 @10911 has 17 MA's), (24, 10971), (29, 11046), (31, 11070), (33, 11076), (38, 11106), (39, 11112), (41, 11142), (43, 11184), (53, 11388), (57, 11439), (70, 11616), (71, 11619), (74, 11628), (77, 11661), (101, 11922), (113, 12012), (115, 12033), (116, 12042), (119, 12066), (127, 12108), (132, 12129), (137, 12150), (149, 12261), (152, 12279), (159, 12327), (162, 12372), (163, 12381), (170, 12429), (174, 12474), (190, 12582), (199, 12693), (202, 12741), (207, 12777), (210, 12798), (219, 12870), (244, 13017), (249, 13050), (256, 13116), (257, 13122), (258, 13125), (266, 13176), (277, 13260), (285, 13299), (286, 13320), (311, 13539), (313, 13560), (318, 13587), (320, 13605), (321, 13614), (351, 14040), (352, 14070), (354, 14121), (359, 14178), (360, 14220), (364, 14283), (365, 14295), (370, 14373), (373, 14394), (377, 14478), (383, 14532), (384, 14544), (392, 14628), (394, 14634),

Gene: Auxilium_19 Start: 10843, Stop: 14784, Start Num: 18

Candidate Starts for Auxilium_19:

(Start: 18 @10843 has 17 MA's), (22, 10882), (27, 10945), (29, 10978), (31, 11002), (33, 11008), (34, 11020), (39, 11044), (40, 11056), (41, 11074), (43, 11116), (51, 11281), (70, 11548), (72, 11554), (77, 11593), (88, 11686), (101, 11854), (106, 11899), (118, 11995), (135, 12070), (140, 12100), (148, 12187), (150, 12199), (160, 12268), (162, 12304), (165, 12334), (171, 12370), (175, 12418), (176, 12430), (181, 12460), (190, 12517), (191, 12526), (193, 12571), (194, 12574), (197, 12619), (199, 12628), (207, 12712), (208, 12721), (210, 12733), (212, 12754), (218, 12793), (219, 12805), (227, 12880), (231, 12904), (244, 13012), (246, 13051), (252, 13141), (256, 13156), (272, 13258), (276, 13288), (285, 13339), (286, 13360), (291, 13408), (292, 13411), (302, 13495), (303, 13498), (311, 13576), (321, 13651), (322, 13660), (325, 13675), (337, 13795), (340, 13834), (341, 13852), (346, 13951), (349, 14044), (354, 14158), (355, 14176), (359, 14215), (360, 14257), (364, 14320), (365, 14332), (368, 14368), (370, 14410), (373, 14431), (379, 14527), (384, 14581), (401, 14734),

Gene: BenchScraper_19 Start: 10858, Stop: 14799, Start Num: 18

Candidate Starts for BenchScraper_19:

(Start: 18 @10858 has 17 MA's), (22, 10897), (27, 10960), (29, 10993), (31, 11017), (33, 11023), (34, 11035), (39, 11059), (40, 11071), (41, 11089), (43, 11131), (51, 11296), (70, 11563), (72, 11569), (77, 11608), (88, 11701), (101, 11869), (106, 11914), (118, 12010), (135, 12085), (148, 12202), (150, 12214), (160, 12283), (162, 12319), (165, 12349), (171, 12385), (175, 12433), (176, 12445), (181, 12475), (190, 12532), (191, 12541), (193, 12586), (194, 12589), (199, 12643), (207, 12727), (208, 12736), (210, 12748), (212, 12769), (219, 12820), (231, 12919), (244, 13027), (246, 13066), (252, 13156), (256, 13171), (272, 13273), (276, 13303), (285, 13354), (286, 13375), (291, 13423), (292, 13426), (302, 13510), (303, 13513), (311, 13591), (321, 13666), (322, 13675), (325, 13690), (337, 13810), (340, 13849), (341, 13867), (346, 13966), (349, 14059), (354, 14173), (355, 14191), (359, 14230), (360, 14272), (364, 14335), (365, 14347), (368, 14383), (370, 14425), (373, 14446), (379, 14542), (384, 14596), (394, 14686), (401, 14749),

Gene: BillyTP_19 Start: 10765, Stop: 14568, Start Num: 18

Candidate Starts for BillyTP_19:

(Start: 18 @10765 has 17 MA's), (29, 10900), (31, 10924), (33, 10930), (39, 10966), (40, 10978), (41, 10996), (42, 11005), (43, 11038), (44, 11044), (47, 11122), (51, 11203), (53, 11242), (59, 11326), (60, 11335), (61, 11341), (63, 11365), (64, 11374), (71, 11473), (73, 11479), (81, 11566), (86, 11599), (91, 11635), (105, 11818), (111, 11854), (113, 11866), (118, 11917), (137, 12004), (144, 12091), (163, 12232), (172, 12301), (173, 12310), (176, 12358), (179, 12379), (180, 12382), (192, 12454), (195, 12517), (205, 12601), (207, 12616), (218, 12655), (223, 12712), (253, 12907), (263, 12952), (268, 13015), (285, 13117), (286, 13138), (311, 13360), (320, 13426), (321, 13435), (329, 13501), (338, 13597), (341, 13636), (343, 13702), (349, 13828), (354, 13942), (355, 13960), (358, 13990), (359, 13999), (360, 14041), (364, 14104), (365, 14116), (368, 14152), (370, 14194), (373, 14215), (374, 14227), (383, 14353), (384, 14365), (392, 14449), (394, 14455), (404, 14548),

Gene: Bridgette_18 Start: 10928, Stop: 14845, Start Num: 18

Candidate Starts for Bridgette_18:

(Start: 18 @10928 has 17 MA's), (29, 11063), (31, 11087), (33, 11093), (39, 11129), (40, 11141), (41, 11159), (42, 11168), (43, 11201), (44, 11207), (47, 11285), (51, 11366), (53, 11405), (59, 11489), (61, 11504), (63, 11528), (64, 11537), (73, 11642), (80, 11723), (81, 11729), (83, 11750), (89, 11792), (92, 11819), (97, 11909), (105, 12002), (113, 12050), (137, 12188), (144, 12275), (147, 12284), (172, 12485), (173, 12494), (176, 12542), (179, 12563), (180, 12566), (192, 12638), (195, 12701), (219, 12851), (236, 12977), (260, 13115), (265, 13166), (266, 13178), (268, 13199), (282, 13289), (298, 13424), (302, 13463), (306, 13499), (311, 13541), (313, 13562), (317, 13580), (321, 13616), (322, 13625), (325, 13640), (337, 13853), (345, 14003), (346, 14009), (349, 14102), (354, 14216), (355, 14234), (358, 14264), (359, 14273), (360, 14315), (364, 14378), (365, 14390), (370, 14468), (373, 14489), (374, 14501), (383, 14627), (384, 14639), (393, 14726), (396, 14744),

Gene: ChuckDuck_18 Start: 10884, Stop: 14687, Start Num: 18

Candidate Starts for ChuckDuck_18:

(Start: 18 @10884 has 17 MA's), (29, 11019), (31, 11043), (32, 11046), (33, 11049), (39, 11085), (40, 11097), (41, 11115), (42, 11124), (43, 11157), (44, 11163), (47, 11241), (51, 11322), (53, 11361), (59, 11445), (60, 11454), (61, 11460), (63, 11484), (64, 11493), (71, 11592), (73, 11598), (81, 11685), (86, 11718), (91, 11754), (105, 11937), (111, 11973), (113, 11985), (118, 12036), (137, 12123), (144, 12210), (147, 12219), (163, 12351), (172, 12420), (173, 12429), (176, 12477), (179, 12498), (180, 12501), (192, 12573), (195, 12636), (205, 12720), (207, 12735), (218, 12774), (223, 12831), (228, 12864), (253, 13026), (263, 13071), (268, 13134), (285, 13236), (286, 13257), (311, 13479), (321, 13554), (329, 13620), (338, 13716), (341, 13755), (343, 13821), (349, 13947), (354, 14061), (355, 14079), (358, 14109), (359, 14118), (360, 14160), (364, 14223), (365, 14235), (368, 14271), (370, 14313), (373, 14334), (381, 14451), (384, 14484), (386, 14493), (392, 14568), (394, 14574),

Gene: Constance_18 Start: 10931, Stop: 14827, Start Num: 18

Candidate Starts for Constance_18:

(Start: 18 @10931 has 17 MA's), (29, 11066), (31, 11090), (33, 11096), (39, 11132), (40, 11144), (41, 11162), (42, 11171), (43, 11204), (44, 11210), (47, 11288), (51, 11369), (53, 11408), (59, 11492), (63, 11531), (64, 11540), (73, 11645), (80, 11726), (81, 11732), (86, 11765), (91, 11801), (113, 12032), (137, 12170), (147, 12266), (172, 12467), (173, 12476), (176, 12524), (179, 12545), (180, 12548), (192, 12620), (207, 12782), (219, 12833), (236, 12959), (260, 13097), (266, 13160), (268, 13181), (282, 13271), (298, 13406), (302, 13445), (306, 13481), (311, 13523), (317, 13562), (319, 13586), (321, 13598), (322, 13607), (325, 13622), (336, 13826), (337, 13835), (343, 13958), (345, 13985), (346, 13991), (347, 14012), (349, 14084), (354, 14198), (358, 14246), (359, 14255), (360, 14297), (364, 14360), (365, 14372), (368, 14408), (370, 14450), (373, 14471), (374, 14483), (379, 14567), (384, 14621), (391, 14702), (393, 14708), (395, 14723), (396, 14726), (399, 14762),

Gene: CookieBear_20 Start: 10843, Stop: 14784, Start Num: 18

Candidate Starts for CookieBear_20:

(Start: 18 @10843 has 17 MA's), (22, 10882), (27, 10945), (29, 10978), (31, 11002), (33, 11008), (34, 11020), (39, 11044), (40, 11056), (41, 11074), (43, 11116), (51, 11281), (70, 11548), (72, 11554), (77, 11593), (88, 11686), (101, 11854), (106, 11899), (118, 11995), (135, 12070), (140, 12100), (148, 12187), (150, 12199), (160, 12268), (162, 12304), (165, 12334), (171, 12370), (175, 12418), (176, 12430), (181, 12460), (190, 12517), (191, 12526), (193, 12571), (194, 12574), (197, 12619), (199, 12628), (207, 12712), (208, 12721), (210, 12733), (212, 12754), (218, 12793), (219, 12805), (227, 12880), (231, 12904), (244, 13012), (246, 13051), (252, 13141), (256, 13156), (272, 13258), (276, 13288), (285, 13339), (286, 13360), (291, 13408), (292, 13411), (302, 13495), (303, 13498), (311, 13576), (321, 13651), (322, 13660), (325, 13675), (337, 13795), (340, 13834), (341, 13852), (346, 13951), (349, 14044), (354, 14158), (355, 14176), (359, 14215), (360, 14257), (364, 14320), (365, 14332), (368, 14368), (370, 14410), (373, 14431), (379, 14527), (384, 14581), (401, 14734),

Gene: Eileen_18 Start: 10892, Stop: 14788, Start Num: 18

Candidate Starts for Eileen_18:

(Start: 18 @10892 has 17 MA's), (29, 11027), (31, 11051), (33, 11057), (39, 11093), (40, 11105), (41, 11123), (42, 11132), (43, 11165), (44, 11171), (47, 11249), (51, 11330), (53, 11369), (59, 11453), (61, 11468), (64, 11501), (73, 11606), (81, 11693), (86, 11726), (91, 11762), (105, 11945), (113, 11993), (118, 12044), (119, 12047), (125, 12083), (126, 12086), (137, 12131), (144, 12218), (163, 12359), (172, 12428), (173, 12437), (176, 12485), (179, 12506), (180, 12509), (192, 12581), (195, 12644), (207, 12743), (219, 12794), (236, 12920), (260, 13058), (265, 13109), (266, 13121), (268, 13142), (282, 13232), (298, 13367), (302, 13406), (306, 13442), (311, 13484), (313, 13505), (317, 13523), (319, 13547), (321, 13559), (322, 13568), (325, 13583), (337, 13796), (345, 13946), (346, 13952), (349, 14045), (354, 14159), (355, 14177), (358, 14207), (359, 14216), (360, 14258), (364, 14321), (365, 14333), (368, 14369), (370, 14411), (373, 14432), (374, 14444), (383, 14570), (384, 14582), (393, 14669), (396, 14687),

Gene: EvePickles_19 Start: 11006, Stop: 15145, Start Num: 14

Candidate Starts for EvePickles_19:

(13, 10994), (Start: 14 @11006 has 2 MA's), (15, 11024), (19, 11066), (27, 11150), (41, 11279), (43, 11321), (48, 11420), (51, 11486), (54, 11555), (55, 11564), (60, 11618), (63, 11648), (68, 11693), (70, 11753), (71, 11756), (77, 11798), (86, 11882), (91, 11918), (115, 12170), (121, 12221), (124, 12233), (137, 12287), (147, 12383), (148, 12392), (158, 12458), (167, 12545), (175, 12617), (184, 12659), (191, 12710), (201, 12851), (207, 12896), (215, 12953), (231, 13088), (232, 13094), (235, 13136), (237, 13148), (242, 13187), (246, 13235), (252, 13325), (256, 13340), (262, 13373), (272, 13442), (276, 13472), (278, 13487), (285, 13523), (286, 13544), (289, 13568), (292, 13601), (296, 13637), (297, 13640), (304, 13694), (317, 13808), (318, 13817), (320, 13835), (327, 13898), (332, 14054), (333, 14060), (341, 14168), (348, 14330), (351, 14393), (353, 14435), (357, 14513), (360, 14573), (361, 14582), (362, 14594), (363, 14618), (366, 14663), (368, 14684), (370, 14726), (373, 14747), (375, 14810), (376, 14843), (383, 14900), (387, 14939), (388, 14969), (390, 15014), (403, 15113), (405, 15131),

Gene: Faja_19 Start: 10995, Stop: 15041, Start Num: 14

Candidate Starts for Faja_19:

(Start: 14 @10995 has 2 MA's), (19, 11055), (26, 11130), (28, 11142), (30, 11193), (34, 11214), (35, 11217), (37, 11226), (41, 11268), (43, 11310), (45, 11319), (48, 11409), (50, 11457), (51, 11475), (52, 11481), (53, 11514), (55, 11553), (60, 11607), (61, 11613), (67, 11670), (70, 11742), (77, 11787), (78, 11796), (84, 11865), (86, 11871), (88, 11880), (91, 11907), (95, 11949), (98, 12003), (112, 12135), (113, 12138), (115, 12159), (118, 12189), (121, 12210), (124, 12222), (137, 12276), (143, 12345), (152, 12405), (160, 12462), (163, 12507), (171, 12564), (173, 12585), (190, 12711), (192, 12723), (198, 12819), (199, 12822), (202, 12870), (210, 12927), (223, 13044), (231, 13098), (237, 13158), (244, 13206), (246, 13245), (248, 13257), (256, 13350), (264, 13389), (267, 13413), (268, 13431), (269, 13434), (272, 13452), (277, 13494), (285, 13533), (286, 13554), (290, 13578), (300, 13668), (313, 13794), (317, 13812), (323, 13860), (324, 13863), (330, 13920), (333, 13962), (341, 14070), (342, 14103), (351, 14295), (353, 14337), (357, 14415), (360, 14475), (362, 14496), (368, 14586), (370, 14628), (373, 14649), (375, 14712), (380, 14775), (385, 14820), (390, 14910), (403, 15009), (405, 15027),

Gene: Footloose_17 Start: 10035, Stop: 12830, Start Num: 17

Candidate Starts for Footloose_17:

(Start: 17 @10035 has 1 MA's), (19, 10056), (21, 10068), (25, 10116), (33, 10218), (43, 10326), (45, 10335), (46, 10371), (47, 10410), (54, 10560), (56, 10578), (57, 10581), (58, 10605), (59, 10614), (69, 10749), (70, 10758), (72, 10764), (74, 10770), (79, 10818), (83, 10875), (88, 10896), (91, 10923), (96, 10968), (97, 11013), (101, 11064), (102, 11067), (108, 11118), (113, 11154), (120, 11220), (122, 11232), (123, 11235), (132, 11271), (133, 11274), (139, 11304), (141, 11319), (142, 11352), (147, 11388), (148, 11397), (156, 11454), (164, 11529), (169, 11556), (186, 11664), (188, 11667), (189, 11685), (196, 11784), (199, 11805), (200, 11826), (206, 11886), (207, 11889), (213, 11934), (216, 11961), (219, 11982), (220, 11994), (221, 12003), (226, 12057), (228, 12066), (233, 12099), (238, 12132), (239, 12138), (250, 12225), (251, 12246), (253, 12261), (254, 12267), (261, 12297), (263, 12309), (270, 12375), (274, 12396), (279, 12432), (281, 12447), (283, 12456), (284, 12459), (288, 12504), (295, 12564), (299, 12606), (301, 12639), (307, 12696), (308, 12702), (310, 12723), (311, 12729), (312, 12732), (315, 12759), (316, 12762),

Gene: Globfish_19 Start: 10916, Stop: 14857, Start Num: 18

Candidate Starts for Globfish_19:

(Start: 18 @10916 has 17 MA's), (22, 10955), (27, 11018), (29, 11051), (31, 11075), (33, 11081), (39, 11117), (40, 11129), (41, 11147), (43, 11189), (51, 11354), (52, 11360), (68, 11561), (70, 11621), (77, 11666), (88, 11759), (101, 11927), (106, 11972), (130, 12128), (135, 12143), (148, 12260), (150, 12272), (159, 12332), (160, 12341), (165, 12407), (171, 12443), (175, 12491), (176, 12503), (181,

12533), (187, 12557), (190, 12590), (194, 12647), (199, 12701), (207, 12785), (208, 12794), (210, 12806), (216, 12857), (219, 12878), (231, 12977), (244, 13085), (246, 13124), (252, 13214), (256, 13229), (272, 13331), (276, 13361), (277, 13373), (285, 13412), (286, 13433), (291, 13481), (292, 13484), (302, 13568), (303, 13571), (311, 13649), (321, 13724), (322, 13733), (325, 13748), (341, 13925), (349, 14117), (354, 14231), (355, 14249), (359, 14288), (360, 14330), (364, 14393), (365, 14405), (368, 14441), (370, 14483), (373, 14504), (384, 14654), (389, 14720), (394, 14744), (399, 14792), (401, 14807),

Gene: GlobiWarming_18 Start: 10885, Stop: 14781, Start Num: 18

Candidate Starts for GlobiWarming_18:

(1, 10477), (2, 10486), (3, 10507), (5, 10558), (Start: 18 @10885 has 17 MA's), (29, 11020), (31, 11044), (33, 11050), (39, 11086), (40, 11098), (41, 11116), (42, 11125), (43, 11158), (44, 11164), (47, 11242), (51, 11323), (53, 11362), (59, 11446), (61, 11461), (64, 11494), (73, 11599), (81, 11686), (83, 11707), (86, 11719), (91, 11755), (105, 11938), (113, 11986), (118, 12037), (137, 12124), (144, 12211), (147, 12220), (172, 12421), (173, 12430), (176, 12478), (179, 12499), (180, 12502), (192, 12574), (195, 12637), (207, 12736), (219, 12787), (236, 12913), (260, 13051), (265, 13102), (266, 13114), (268, 13135), (282, 13225), (298, 13360), (302, 13399), (306, 13435), (311, 13477), (313, 13498), (317, 13516), (319, 13540), (321, 13552), (322, 13561), (325, 13576), (337, 13789), (345, 13939), (346, 13945), (349, 14038), (354, 14152), (355, 14170), (358, 14200), (359, 14209), (360, 14251), (364, 14314), (365, 14326), (368, 14362), (370, 14404), (373, 14425), (374, 14437), (383, 14563), (384, 14575), (393, 14662), (396, 14680),

Gene: Gorpy_19 Start: 10852, Stop: 14793, Start Num: 18

Candidate Starts for Gorpy_19:

(Start: 18 @10852 has 17 MA's), (22, 10891), (27, 10954), (29, 10987), (31, 11011), (33, 11017), (34, 11029), (39, 11053), (40, 11065), (41, 11083), (43, 11125), (51, 11290), (70, 11557), (72, 11563), (77, 11602), (88, 11695), (101, 11863), (106, 11908), (118, 12004), (135, 12079), (140, 12109), (148, 12196), (150, 12208), (160, 12277), (162, 12313), (165, 12343), (171, 12379), (175, 12427), (176, 12439), (181, 12469), (190, 12526), (191, 12535), (193, 12580), (194, 12583), (197, 12628), (199, 12637), (207, 12721), (208, 12730), (210, 12742), (212, 12763), (218, 12802), (219, 12814), (227, 12889), (231, 12913), (244, 13021), (246, 13060), (252, 13150), (256, 13165), (272, 13267), (276, 13297), (285, 13348), (286, 13369), (291, 13417), (292, 13420), (302, 13504), (303, 13507), (311, 13585), (321, 13660), (322, 13669), (325, 13684), (337, 13804), (340, 13843), (341, 13861), (346, 13960), (349, 14053), (354, 14167), (355, 14185), (359, 14224), (360, 14266), (364, 14329), (365, 14341), (368, 14377), (370, 14419), (373, 14440), (379, 14536), (384, 14590), (401, 14743),

Gene: Hestia_19 Start: 10985, Stop: 14962, Start Num: 18

Candidate Starts for Hestia_19:

(Start: 18 @10985 has 17 MA's), (29, 11120), (31, 11144), (33, 11150), (37, 11174), (41, 11216), (43, 11258), (49, 11372), (70, 11690), (76, 11732), (77, 11735), (113, 12086), (115, 12107), (119, 12140), (136, 12221), (137, 12224), (140, 12242), (144, 12311), (146, 12317), (151, 12350), (180, 12590), (190, 12653), (199, 12764), (202, 12812), (203, 12815), (207, 12848), (208, 12857), (210, 12869), (212, 12890), (219, 12941), (228, 13019), (245, 13127), (251, 13181), (260, 13226), (276, 13340), (285, 13391), (286, 13412), (302, 13553), (311, 13631), (319, 13694), (321, 13706), (325, 13730), (328, 13802), (334, 13934), (335, 13961), (336, 13964), (337, 13973), (338, 13991), (341, 14030), (346, 14129), (349, 14222), (354, 14336), (355, 14354), (359, 14393), (360, 14435), (364, 14498), (365, 14510), (367, 14543), (368, 14546), (370, 14588), (372, 14603), (373, 14609), (379, 14705), (384, 14759), (386, 14768), (394, 14849), (401, 14912),

Gene: Hillester_19 Start: 10843, Stop: 14784, Start Num: 18

Candidate Starts for Hillester_19:

(Start: 18 @10843 has 17 MA's), (22, 10882), (27, 10945), (29, 10978), (31, 11002), (33, 11008), (34, 11020), (39, 11044), (40, 11056), (41, 11074), (43, 11116), (51, 11281), (70, 11548), (72, 11554), (77,

11593), (88, 11686), (101, 11854), (106, 11899), (118, 11995), (135, 12070), (140, 12100), (148, 12187), (150, 12199), (160, 12268), (162, 12304), (165, 12334), (171, 12370), (175, 12418), (176, 12430), (181, 12460), (190, 12517), (191, 12526), (193, 12571), (194, 12574), (199, 12628), (207, 12712), (208, 12721), (210, 12733), (212, 12754), (219, 12805), (222, 12832), (231, 12904), (244, 13012), (246, 13051), (252, 13141), (256, 13156), (272, 13258), (276, 13288), (285, 13339), (286, 13360), (291, 13408), (292, 13411), (302, 13495), (303, 13498), (311, 13576), (321, 13651), (322, 13660), (325, 13675), (340, 13834), (341, 13852), (346, 13951), (349, 14044), (354, 14158), (355, 14176), (359, 14215), (360, 14257), (364, 14320), (365, 14332), (368, 14368), (370, 14410), (373, 14431), (379, 14527), (384, 14581), (394, 14671), (401, 14734),

Gene: Hum25_17 Start: 9592, Stop: 12558, Start Num: 14

Candidate Starts for Hum25_17:

(Start: 14 @9592 has 2 MA's), (20, 9652), (32, 9796), (35, 9814), (41, 9865), (42, 9874), (43, 9907), (47, 9991), (50, 10054), (51, 10072), (53, 10111), (57, 10162), (60, 10204), (63, 10234), (66, 10252), (70, 10339), (75, 10366), (77, 10384), (94, 10531), (95, 10546), (96, 10549), (100, 10633), (107, 10693), (112, 10732), (113, 10735), (117, 10774), (118, 10786), (128, 10834), (134, 10858), (145, 10963), (149, 10984), (154, 11020), (157, 11041), (161, 11062), (172, 11173), (177, 11233), (180, 11242), (182, 11251), (189, 11293), (191, 11314), (192, 11317), (200, 11437), (212, 11500), (219, 11551), (222, 11578), (223, 11596), (224, 11605), (225, 11608), (227, 11626), (228, 11629), (230, 11644), (231, 11650), (243, 11689), (260, 11815), (266, 11857), (277, 11941), (278, 11944), (280, 11962), (285, 11980), (286, 12001), (291, 12049), (292, 12052), (298, 12100), (314, 12238), (339, 12433), (344, 12535),

Gene: Isolde_19 Start: 10834, Stop: 14619, Start Num: 18

Candidate Starts for Isolde_19:

(Start: 18 @10834 has 17 MA's), (29, 10969), (31, 10993), (33, 10999), (39, 11035), (40, 11047), (41, 11065), (43, 11107), (54, 11341), (59, 11395), (60, 11404), (61, 11410), (62, 11416), (64, 11443), (70, 11539), (77, 11584), (85, 11668), (91, 11704), (93, 11710), (104, 11881), (107, 11896), (110, 11923), (123, 12019), (126, 12031), (129, 12040), (131, 12052), (138, 12085), (160, 12262), (173, 12382), (176, 12430), (178, 12448), (185, 12472), (192, 12526), (205, 12673), (207, 12688), (227, 12814), (232, 12844), (244, 12886), (252, 12970), (260, 13003), (266, 13066), (281, 13171), (293, 13270), (305, 13369), (313, 13444), (318, 13471), (325, 13522), (326, 13525), (341, 13687), (346, 13786), (349, 13879), (354, 13993), (355, 14011), (358, 14041), (359, 14050), (360, 14092), (364, 14155), (365, 14167), (368, 14203), (370, 14245), (373, 14266), (377, 14350), (379, 14362), (384, 14416), (392, 14500), (394, 14506),

Gene: Judy_19 Start: 11202, Stop: 15098, Start Num: 18

Candidate Starts for Judy_19:

(Start: 18 @11202 has 17 MA's), (29, 11337), (31, 11361), (33, 11367), (39, 11403), (40, 11415), (41, 11433), (42, 11442), (43, 11475), (44, 11481), (47, 11559), (51, 11640), (53, 11679), (59, 11763), (63, 11802), (64, 11811), (73, 11916), (80, 11997), (81, 12003), (86, 12036), (91, 12072), (113, 12303), (126, 12396), (137, 12441), (147, 12537), (172, 12738), (173, 12747), (176, 12795), (179, 12816), (180, 12819), (192, 12891), (207, 13053), (219, 13104), (236, 13230), (260, 13368), (266, 13431), (268, 13452), (282, 13542), (298, 13677), (302, 13716), (306, 13752), (311, 13794), (317, 13833), (319, 13857), (321, 13869), (322, 13878), (325, 13893), (336, 14097), (337, 14106), (343, 14229), (345, 14256), (346, 14262), (347, 14283), (349, 14355), (354, 14469), (358, 14517), (359, 14526), (360, 14568), (364, 14631), (365, 14643), (368, 14679), (370, 14721), (373, 14742), (374, 14754), (379, 14838), (384, 14892), (391, 14973), (393, 14979), (395, 14994), (396, 14997), (399, 15033),

Gene: Karkharias_18 Start: 10889, Stop: 14785, Start Num: 18

Candidate Starts for Karkharias_18:

(Start: 18 @10889 has 17 MA's), (29, 11024), (31, 11048), (33, 11054), (39, 11090), (40, 11102), (41, 11120), (42, 11129), (43, 11162), (44, 11168), (47, 11246), (51, 11327), (53, 11366), (59, 11450), (61,

11465), (64, 11498), (73, 11603), (81, 11690), (86, 11723), (91, 11759), (105, 11942), (113, 11990), (118, 12041), (119, 12044), (137, 12128), (144, 12215), (147, 12224), (172, 12425), (173, 12434), (176, 12482), (179, 12503), (180, 12506), (192, 12578), (195, 12641), (219, 12791), (236, 12917), (260, 13055), (265, 13106), (266, 13118), (268, 13139), (282, 13229), (298, 13364), (302, 13403), (306, 13439), (311, 13481), (313, 13502), (317, 13520), (321, 13556), (325, 13580), (337, 13793), (345, 13943), (346, 13949), (349, 14042), (354, 14156), (355, 14174), (358, 14204), (359, 14213), (360, 14255), (364, 14318), (365, 14330), (370, 14408), (373, 14429), (374, 14441), (383, 14567), (384, 14579), (393, 14666), (396, 14684),

Gene: Kukla_17 Start: 10473, Stop: 14528, Start Num: 14

Candidate Starts for Kukla_17:

(11, 10419), (13, 10461), (Start: 14 @10473 has 2 MA's), (15, 10491), (19, 10533), (23, 10563), (28, 10620), (34, 10692), (36, 10698), (37, 10704), (41, 10746), (43, 10788), (47, 10872), (51, 10953), (54, 11022), (55, 11031), (61, 11091), (65, 11127), (70, 11220), (74, 11232), (77, 11265), (82, 11325), (87, 11352), (91, 11385), (110, 11601), (114, 11634), (121, 11688), (124, 11700), (143, 11823), (158, 11925), (167, 12012), (191, 12177), (217, 12438), (227, 12531), (234, 12555), (260, 12762), (271, 12840), (273, 12852), (276, 12876), (281, 12909), (286, 12948), (309, 13173), (318, 13230), (324, 13272), (330, 13410), (332, 13446), (333, 13452), (341, 13560), (351, 13785), (353, 13827), (357, 13905), (360, 13965), (362, 13986), (368, 14076), (370, 14118), (373, 14139), (375, 14202), (380, 14265), (382, 14283), (383, 14292), (385, 14310), (390, 14400), (403, 14496), (405, 14514),

Gene: MidnightRain_19 Start: 10842, Stop: 14783, Start Num: 18

Candidate Starts for MidnightRain_19:

(Start: 18 @10842 has 17 MA's), (22, 10881), (27, 10944), (29, 10977), (31, 11001), (33, 11007), (34, 11019), (39, 11043), (40, 11055), (41, 11073), (43, 11115), (51, 11280), (70, 11547), (72, 11553), (77, 11592), (88, 11685), (101, 11853), (106, 11898), (118, 11994), (135, 12069), (140, 12099), (148, 12186), (150, 12198), (160, 12267), (162, 12303), (165, 12333), (171, 12369), (175, 12417), (176, 12429), (181, 12459), (190, 12516), (191, 12525), (193, 12570), (194, 12573), (197, 12618), (199, 12627), (207, 12711), (208, 12720), (210, 12732), (212, 12753), (218, 12792), (219, 12804), (227, 12879), (231, 12903), (244, 13011), (246, 13050), (252, 13140), (256, 13155), (272, 13257), (276, 13287), (285, 13338), (286, 13359), (291, 13407), (292, 13410), (302, 13494), (303, 13497), (311, 13575), (321, 13650), (322, 13659), (325, 13674), (340, 13833), (341, 13851), (346, 13950), (349, 14043), (354, 14157), (355, 14175), (359, 14214), (360, 14256), (364, 14319), (365, 14331), (368, 14367), (370, 14409), (373, 14430), (379, 14526), (384, 14580), (394, 14670), (401, 14733),

Gene: Peas_18 Start: 10892, Stop: 14788, Start Num: 18

Candidate Starts for Peas_18:

(Start: 18 @10892 has 17 MA's), (29, 11027), (31, 11051), (33, 11057), (39, 11093), (40, 11105), (41, 11123), (42, 11132), (43, 11165), (44, 11171), (47, 11249), (51, 11330), (53, 11369), (59, 11453), (61, 11468), (64, 11501), (73, 11606), (81, 11693), (86, 11726), (91, 11762), (105, 11945), (113, 11993), (118, 12044), (119, 12047), (125, 12083), (126, 12086), (137, 12131), (144, 12218), (163, 12359), (172, 12428), (173, 12437), (176, 12485), (179, 12506), (180, 12509), (192, 12581), (195, 12644), (207, 12743), (219, 12794), (236, 12920), (260, 13058), (265, 13109), (266, 13121), (268, 13142), (282, 13232), (298, 13367), (302, 13406), (306, 13442), (311, 13484), (313, 13505), (317, 13523), (319, 13547), (321, 13559), (322, 13568), (325, 13583), (337, 13796), (345, 13946), (346, 13952), (349, 14045), (354, 14159), (355, 14177), (358, 14207), (359, 14216), (360, 14258), (364, 14321), (365, 14333), (368, 14369), (370, 14411), (373, 14432), (374, 14444), (383, 14570), (384, 14582), (393, 14669), (396, 14687),

Gene: PeggyLeg03_18 Start: 10931, Stop: 14827, Start Num: 18

Candidate Starts for PeggyLeg03_18:

(Start: 18 @10931 has 17 MA's), (29, 11066), (31, 11090), (33, 11096), (39, 11132), (40, 11144), (41, 11162), (42, 11171), (43, 11204), (44, 11210), (47, 11288), (51, 11369), (53, 11408), (59, 11492), (63,

11531), (64, 11540), (73, 11645), (80, 11726), (81, 11732), (86, 11765), (91, 11801), (113, 12032), (137, 12170), (147, 12266), (172, 12467), (173, 12476), (176, 12524), (179, 12545), (180, 12548), (192, 12620), (204, 12761), (207, 12782), (219, 12833), (236, 12959), (260, 13097), (266, 13160), (268, 13181), (282, 13271), (298, 13406), (302, 13445), (306, 13481), (311, 13523), (317, 13562), (319, 13586), (320, 13589), (321, 13598), (322, 13607), (325, 13622), (336, 13826), (337, 13835), (343, 13958), (345, 13985), (346, 13991), (347, 14012), (349, 14084), (354, 14198), (358, 14246), (359, 14255), (360, 14297), (364, 14360), (365, 14372), (368, 14408), (370, 14450), (373, 14471), (374, 14483), (379, 14567), (384, 14621), (391, 14702), (393, 14708), (395, 14723), (396, 14726), (399, 14762),

Gene: Persistence_18 Start: 10866, Stop: 14705, Start Num: 18

Candidate Starts for Persistence_18:

(Start: 18 @10866 has 17 MA's), (29, 11001), (31, 11025), (33, 11031), (38, 11061), (39, 11067), (41, 11097), (43, 11139), (53, 11343), (55, 11382), (57, 11394), (61, 11442), (70, 11571), (74, 11583), (77, 11616), (91, 11736), (101, 11877), (106, 11922), (113, 11967), (115, 11988), (116, 11997), (119, 12021), (127, 12063), (135, 12093), (137, 12105), (143, 12174), (149, 12216), (162, 12327), (163, 12336), (170, 12384), (174, 12429), (180, 12474), (190, 12537), (199, 12648), (202, 12696), (210, 12753), (219, 12825), (227, 12900), (229, 12915), (244, 12972), (249, 13005), (257, 13077), (258, 13080), (277, 13215), (285, 13254), (286, 13275), (296, 13368), (302, 13422), (310, 13491), (311, 13497), (318, 13545), (321, 13572), (322, 13581), (349, 13965), (350, 13992), (351, 13998), (352, 14028), (354, 14079), (359, 14136), (360, 14178), (364, 14241), (365, 14253), (369, 14298), (370, 14331), (373, 14352), (379, 14448), (384, 14502), (398, 14634),

Gene: Phrank15_19 Start: 10912, Stop: 14718, Start Num: 18

Candidate Starts for Phrank15_19:

(12, 10822), (Start: 18 @10912 has 17 MA's), (22, 10951), (29, 11047), (31, 11071), (33, 11077), (34, 11089), (35, 11092), (37, 11101), (39, 11113), (40, 11125), (41, 11143), (42, 11152), (43, 11185), (44, 11191), (47, 11269), (51, 11350), (53, 11389), (60, 11482), (61, 11488), (64, 11521), (73, 11626), (81, 11713), (86, 11746), (91, 11782), (99, 11908), (101, 11923), (105, 11965), (125, 12103), (137, 12151), (155, 12307), (163, 12379), (172, 12448), (173, 12457), (176, 12505), (179, 12526), (180, 12529), (181, 12535), (192, 12601), (195, 12664), (207, 12763), (214, 12772), (219, 12814), (224, 12868), (236, 12940), (249, 12994), (260, 13078), (265, 13129), (266, 13141), (268, 13162), (281, 13246), (287, 13297), (302, 13423), (311, 13501), (317, 13540), (320, 13567), (321, 13576), (325, 13600), (326, 13603), (341, 13777), (349, 13969), (351, 14002), (354, 14083), (355, 14101), (359, 14140), (360, 14182), (364, 14245), (365, 14257), (368, 14293), (370, 14335), (373, 14356), (374, 14368), (379, 14452), (384, 14506), (391, 14581), (393, 14587), (395, 14602), (396, 14605),

Gene: Pitbull_17 Start: 9222, Stop: 12188, Start Num: 14

Candidate Starts for Pitbull_17:

(Start: 14 @9222 has 2 MA's), (20, 9282), (32, 9426), (35, 9444), (41, 9495), (42, 9504), (43, 9537), (47, 9621), (50, 9684), (51, 9702), (53, 9741), (57, 9792), (60, 9834), (63, 9864), (66, 9882), (70, 9969), (75, 9996), (77, 10014), (94, 10161), (95, 10176), (96, 10179), (100, 10263), (107, 10323), (112, 10362), (113, 10365), (117, 10404), (118, 10416), (128, 10464), (134, 10488), (145, 10593), (149, 10614), (154, 10650), (157, 10671), (161, 10692), (172, 10803), (177, 10863), (180, 10872), (182, 10881), (191, 10944), (192, 10947), (200, 11067), (212, 11130), (219, 11181), (222, 11208), (223, 11226), (224, 11235), (225, 11238), (227, 11256), (228, 11259), (229, 11271), (230, 11274), (231, 11280), (243, 11319), (260, 11445), (266, 11487), (278, 11574), (280, 11592), (285, 11610), (286, 11631), (291, 11679), (292, 11682), (298, 11730), (314, 11868), (339, 12063), (344, 12165),

Gene: Pucara_18 Start: 10892, Stop: 14788, Start Num: 18

Candidate Starts for Pucara_18:

(Start: 18 @10892 has 17 MA's), (24, 10952), (29, 11027), (31, 11051), (33, 11057), (39, 11093), (40, 11105), (41, 11123), (42, 11132), (43, 11165), (44, 11171), (47, 11249), (51, 11330), (53, 11369), (59,

11453), (61, 11468), (63, 11492), (64, 11501), (73, 11606), (81, 11693), (86, 11726), (91, 11762), (105, 11945), (113, 11993), (118, 12044), (119, 12047), (126, 12086), (137, 12131), (144, 12218), (147, 12227), (172, 12428), (173, 12437), (176, 12485), (179, 12506), (180, 12509), (192, 12581), (195, 12644), (219, 12794), (236, 12920), (260, 13058), (265, 13109), (266, 13121), (268, 13142), (282, 13232), (298, 13367), (302, 13406), (306, 13442), (311, 13484), (313, 13505), (317, 13523), (321, 13559), (325, 13583), (337, 13796), (345, 13946), (346, 13952), (349, 14045), (354, 14159), (355, 14177), (358, 14207), (359, 14216), (360, 14258), (364, 14321), (365, 14333), (370, 14411), (373, 14432), (374, 14444), (381, 14549), (383, 14570), (384, 14582), (393, 14669), (396, 14687),

Gene: RadFad_19 Start: 10843, Stop: 14784, Start Num: 18

Candidate Starts for RadFad_19:

(Start: 18 @10843 has 17 MA's), (22, 10882), (27, 10945), (29, 10978), (31, 11002), (33, 11008), (34, 11020), (39, 11044), (40, 11056), (41, 11074), (43, 11116), (51, 11281), (70, 11548), (72, 11554), (77, 11593), (88, 11686), (101, 11854), (106, 11899), (118, 11995), (135, 12070), (140, 12100), (148, 12187), (150, 12199), (160, 12268), (162, 12304), (165, 12334), (171, 12370), (175, 12418), (176, 12430), (181, 12460), (190, 12517), (191, 12526), (193, 12571), (194, 12574), (199, 12628), (207, 12712), (208, 12721), (210, 12733), (212, 12754), (219, 12805), (222, 12832), (231, 12904), (244, 13012), (246, 13051), (252, 13141), (256, 13156), (272, 13258), (276, 13288), (285, 13339), (286, 13360), (291, 13408), (292, 13411), (302, 13495), (303, 13498), (311, 13576), (321, 13651), (322, 13660), (325, 13675), (340, 13834), (341, 13852), (346, 13951), (349, 14044), (354, 14158), (355, 14176), (359, 14215), (360, 14257), (364, 14320), (365, 14332), (368, 14368), (370, 14410), (373, 14431), (379, 14527), (384, 14581), (394, 14671), (401, 14734),

Gene: Raphaella_20 Start: 10843, Stop: 14784, Start Num: 18

Candidate Starts for Raphaella_20:

(Start: 18 @10843 has 17 MA's), (22, 10882), (27, 10945), (29, 10978), (31, 11002), (33, 11008), (34, 11020), (39, 11044), (40, 11056), (41, 11074), (43, 11116), (51, 11281), (70, 11548), (72, 11554), (77, 11593), (88, 11686), (101, 11854), (106, 11899), (118, 11995), (135, 12070), (140, 12100), (148, 12187), (150, 12199), (160, 12268), (162, 12304), (165, 12334), (171, 12370), (175, 12418), (176, 12430), (181, 12460), (190, 12517), (191, 12526), (193, 12571), (194, 12574), (197, 12619), (199, 12628), (207, 12712), (208, 12721), (210, 12733), (212, 12754), (218, 12793), (219, 12805), (227, 12880), (231, 12904), (244, 13012), (246, 13051), (252, 13141), (256, 13156), (272, 13258), (276, 13288), (285, 13339), (286, 13360), (291, 13408), (292, 13411), (302, 13495), (303, 13498), (311, 13576), (321, 13651), (322, 13660), (325, 13675), (340, 13834), (341, 13852), (346, 13951), (349, 14044), (354, 14158), (355, 14176), (359, 14215), (360, 14257), (364, 14320), (365, 14332), (368, 14368), (370, 14410), (373, 14431), (379, 14527), (384, 14581), (401, 14734),

Gene: Richie_19 Start: 10858, Stop: 14799, Start Num: 18

Candidate Starts for Richie_19:

(Start: 18 @10858 has 17 MA's), (22, 10897), (27, 10960), (29, 10993), (31, 11017), (33, 11023), (34, 11035), (39, 11059), (40, 11071), (41, 11089), (43, 11131), (51, 11296), (70, 11563), (72, 11569), (77, 11608), (88, 11701), (101, 11869), (106, 11914), (118, 12010), (135, 12085), (140, 12115), (148, 12202), (150, 12214), (160, 12283), (162, 12319), (165, 12349), (171, 12385), (175, 12433), (176, 12445), (181, 12475), (190, 12532), (191, 12541), (193, 12586), (194, 12589), (197, 12634), (199, 12643), (207, 12727), (208, 12736), (210, 12748), (212, 12769), (218, 12808), (219, 12820), (227, 12895), (231, 12919), (244, 13027), (246, 13066), (252, 13156), (256, 13171), (272, 13273), (276, 13303), (285, 13354), (286, 13375), (291, 13423), (292, 13426), (302, 13510), (303, 13513), (311, 13591), (321, 13666), (322, 13675), (325, 13690), (337, 13810), (340, 13849), (341, 13867), (346, 13966), (349, 14059), (354, 14173), (355, 14191), (359, 14230), (360, 14272), (364, 14335), (365, 14347), (368, 14383), (370, 14425), (373, 14446), (379, 14542), (384, 14596), (401, 14749),

Gene: Sakai_19 Start: 10852, Stop: 14793, Start Num: 18

Candidate Starts for Sakai_19:

(Start: 18 @10852 has 17 MA's), (22, 10891), (27, 10954), (29, 10987), (31, 11011), (33, 11017), (34, 11029), (39, 11053), (40, 11065), (41, 11083), (43, 11125), (51, 11290), (70, 11557), (72, 11563), (77, 11602), (88, 11695), (101, 11863), (106, 11908), (118, 12004), (135, 12079), (140, 12109), (148, 12196), (150, 12208), (160, 12277), (162, 12313), (165, 12343), (171, 12379), (175, 12427), (176, 12439), (181, 12469), (190, 12526), (191, 12535), (193, 12580), (194, 12583), (197, 12628), (199, 12637), (207, 12721), (208, 12730), (210, 12742), (212, 12763), (218, 12802), (219, 12814), (227, 12889), (231, 12913), (244, 13021), (246, 13060), (252, 13150), (256, 13165), (272, 13267), (276, 13297), (285, 13348), (286, 13369), (291, 13417), (292, 13420), (302, 13504), (303, 13507), (311, 13585), (321, 13660), (322, 13669), (325, 13684), (337, 13804), (340, 13843), (341, 13861), (346, 13960), (349, 14053), (354, 14167), (355, 14185), (359, 14224), (360, 14266), (364, 14329), (365, 14341), (368, 14377), (370, 14419), (373, 14440), (379, 14536), (384, 14590), (401, 14743),

Gene: Sashimi_20 Start: 11112, Stop: 15146, Start Num: 14

Candidate Starts for Sashimi_20:

(Start: 14 @11112 has 2 MA's), (19, 11172), (26, 11247), (28, 11259), (30, 11310), (34, 11331), (35, 11334), (37, 11343), (41, 11385), (43, 11427), (48, 11526), (51, 11592), (52, 11598), (53, 11631), (55, 11670), (60, 11724), (61, 11730), (67, 11787), (70, 11859), (77, 11904), (78, 11913), (84, 11982), (86, 11988), (88, 11997), (91, 12024), (95, 12066), (98, 12120), (110, 12240), (113, 12255), (121, 12327), (129, 12357), (137, 12393), (152, 12522), (160, 12579), (163, 12624), (171, 12681), (173, 12702), (179, 12762), (190, 12828), (192, 12840), (193, 12882), (198, 12936), (199, 12939), (202, 12987), (210, 13044), (211, 13056), (223, 13161), (231, 13215), (237, 13275), (240, 13296), (244, 13323), (246, 13362), (256, 13467), (264, 13506), (267, 13530), (269, 13551), (272, 13569), (277, 13611), (285, 13650), (286, 13671), (290, 13695), (300, 13785), (313, 13911), (317, 13929), (318, 13938), (322, 13974), (337, 14118), (341, 14175), (351, 14400), (353, 14442), (360, 14580), (362, 14601), (368, 14691), (370, 14733), (373, 14754), (375, 14817), (380, 14880), (385, 14925), (390, 15015), (403, 15114), (405, 15132),

Gene: Seahorse_20 Start: 11096, Stop: 15148, Start Num: 18

Candidate Starts for Seahorse_20:

(Start: 18 @11096 has 17 MA's), (29, 11231), (41, 11327), (43, 11369), (47, 11453), (55, 11612), (57, 11624), (63, 11696), (70, 11801), (76, 11843), (77, 11846), (95, 12008), (103, 12119), (109, 12173), (115, 12218), (118, 12248), (128, 12296), (141, 12362), (149, 12446), (153, 12479), (166, 12596), (174, 12659), (183, 12716), (190, 12767), (194, 12824), (199, 12878), (207, 12962), (241, 13253), (254, 13424), (255, 13427), (259, 13445), (275, 13565), (278, 13589), (294, 13751), (303, 13853), (311, 13931), (320, 13997), (321, 14006), (322, 14015), (335, 14138), (341, 14207), (346, 14306), (348, 14369), (349, 14399), (352, 14462), (354, 14513), (355, 14531), (359, 14570), (360, 14612), (364, 14675), (365, 14687), (368, 14723), (370, 14765), (371, 14768), (373, 14786), (384, 14936), (397, 15050), (400, 15083),

Gene: Tiff81_21 Start: 10986, Stop: 14879, Start Num: 18

Candidate Starts for Tiff81_21:

(12, 10893), (Start: 18 @10986 has 17 MA's), (29, 11121), (31, 11145), (34, 11163), (39, 11187), (40, 11199), (41, 11217), (42, 11226), (43, 11259), (44, 11265), (47, 11343), (51, 11424), (53, 11463), (59, 11547), (61, 11562), (64, 11595), (73, 11700), (81, 11787), (86, 11820), (91, 11856), (105, 12039), (113, 12087), (118, 12138), (119, 12141), (137, 12225), (144, 12312), (147, 12321), (172, 12522), (173, 12531), (176, 12579), (179, 12600), (180, 12603), (192, 12675), (200, 12795), (207, 12837), (219, 12888), (236, 13014), (260, 13152), (266, 13215), (268, 13236), (282, 13326), (298, 13461), (302, 13500), (306, 13536), (311, 13578), (313, 13599), (317, 13617), (319, 13641), (321, 13653), (322, 13662), (325, 13677), (336, 13881), (337, 13890), (343, 14013), (345, 14040), (346, 14046), (349, 14139), (354, 14253), (358, 14301), (359, 14310), (360, 14352), (364, 14415), (365, 14427), (368, 14463), (370, 14505), (372, 14520), (373, 14526), (374, 14538), (379, 14622), (384, 14676), (386, 14685), (394, 14766), (402, 14829),

Gene: TripleJ_18 Start: 11061, Stop: 15446, Start Num: 6

Candidate Starts for TripleJ_18:

(4, 10983), (Start: 6 @11061 has 1 MA's), (7, 11121), (8, 11184), (9, 11196), (10, 11238), (16, 11331), (26, 11448), (41, 11586), (42, 11595), (43, 11628), (48, 11727), (51, 11793), (53, 11832), (55, 11871), (59, 11916), (60, 11925), (61, 11931), (63, 11955), (70, 12060), (77, 12105), (81, 12156), (90, 12216), (94, 12252), (95, 12267), (98, 12321), (115, 12477), (121, 12528), (137, 12594), (162, 12816), (163, 12825), (168, 12864), (171, 12882), (172, 12894), (173, 12903), (179, 12963), (189, 13017), (190, 13029), (191, 13038), (199, 13140), (205, 13209), (209, 13242), (210, 13245), (237, 13476), (246, 13563), (247, 13569), (248, 13575), (256, 13668), (262, 13701), (272, 13770), (278, 13815), (285, 13851), (286, 13872), (300, 13986), (309, 14082), (313, 14112), (317, 14130), (318, 14139), (324, 14181), (331, 14352), (333, 14361), (340, 14451), (341, 14469), (351, 14694), (353, 14736), (356, 14796), (360, 14874), (362, 14895), (366, 14964), (368, 14985), (370, 15027), (373, 15048), (375, 15111), (378, 15150), (383, 15201), (387, 15240), (390, 15315), (403, 15414), (405, 15432),

Gene: YoungHarleezy_19 Start: 10856, Stop: 14797, Start Num: 18

Candidate Starts for YoungHarleezy_19:

(Start: 18 @10856 has 17 MA's), (22, 10895), (24, 10916), (27, 10958), (29, 10991), (31, 11015), (33, 11021), (34, 11033), (40, 11069), (41, 11087), (43, 11129), (51, 11294), (70, 11561), (72, 11567), (77, 11606), (88, 11699), (101, 11867), (106, 11912), (118, 12008), (135, 12083), (140, 12113), (148, 12200), (150, 12212), (160, 12281), (162, 12317), (165, 12347), (171, 12383), (175, 12431), (176, 12443), (181, 12473), (190, 12530), (191, 12539), (193, 12584), (194, 12587), (197, 12632), (199, 12641), (207, 12725), (208, 12734), (210, 12746), (212, 12767), (218, 12806), (219, 12818), (227, 12893), (231, 12917), (244, 13025), (246, 13064), (252, 13154), (256, 13169), (272, 13271), (276, 13301), (285, 13352), (286, 13373), (291, 13421), (292, 13424), (302, 13508), (303, 13511), (311, 13589), (321, 13664), (322, 13673), (325, 13688), (337, 13808), (340, 13847), (341, 13865), (346, 13964), (349, 14057), (354, 14171), (355, 14189), (359, 14228), (360, 14270), (364, 14333), (365, 14345), (368, 14381), (370, 14423), (373, 14444), (379, 14540), (384, 14594), (401, 14747),