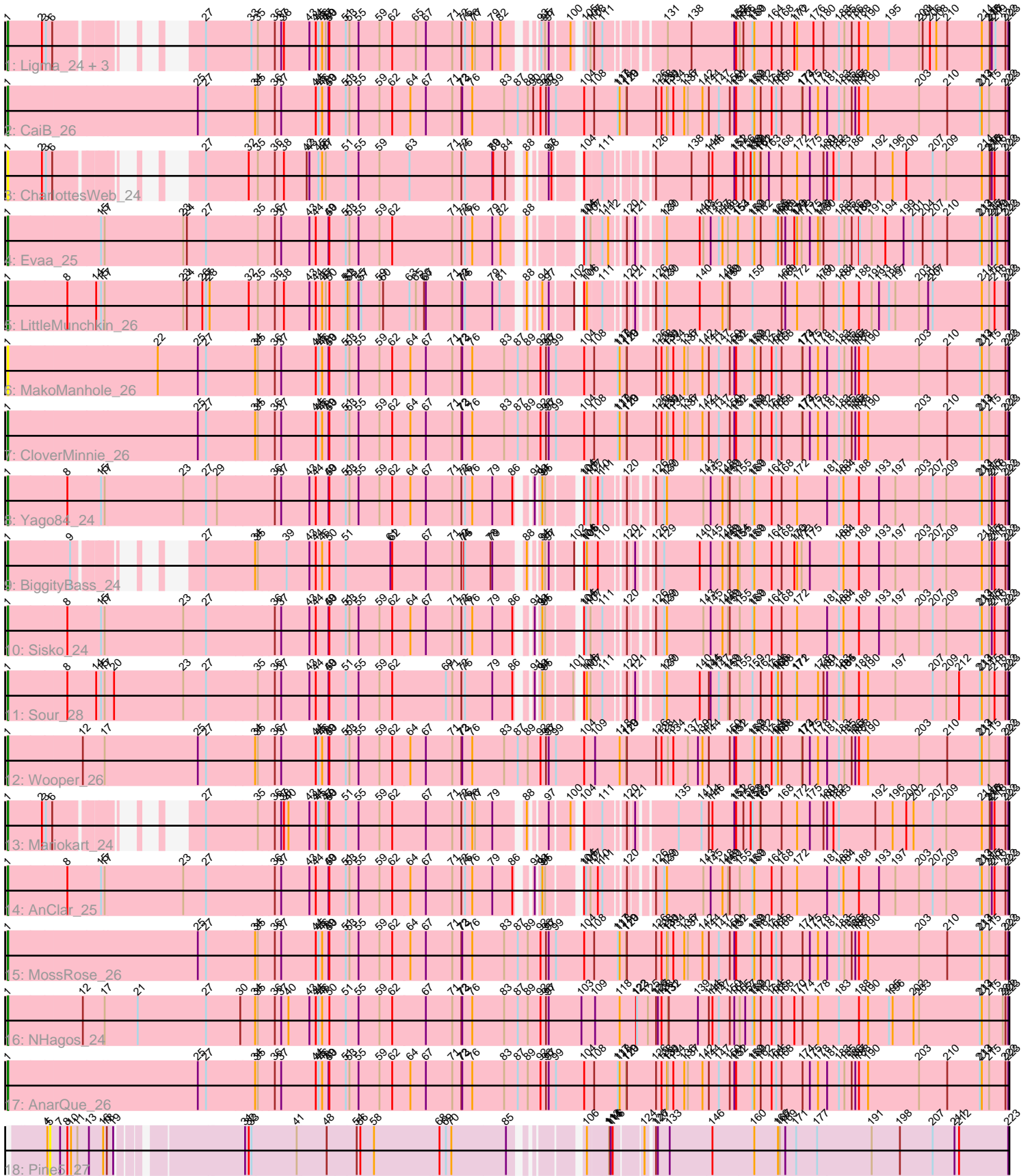


Zoomed Pham 155019



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 155019 Report

This analysis was run 04/12/24 on database version 558.

Pham number 155019 has 21 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Ligma_24, Axumite_24, Shatter_24, Fresco_24
- Track 2 : CaiB_26
- Track 3 : CharlottesWeb_24
- Track 4 : Evaa_25
- Track 5 : LittleMunchkin_26
- Track 6 : MakoManhole_26
- Track 7 : CloverMinnie_26
- Track 8 : Yago84_24
- Track 9 : BiggityBass_24
- Track 10 : Sisko_24
- Track 11 : Sour_28
- Track 12 : Wooper_26
- Track 13 : Mariokart_24
- Track 14 : AnClar_25
- Track 15 : MossRose_26
- Track 16 : NHagos_24
- Track 17 : AnarQue_26
- Track 18 : Pine5_27

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

The start number called the most often in the published annotations is 1, it was called in 16 of the 16 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AnClar_25, AnarQue_26, Axumite_24, BiggityBass_24, CaiB_26, CharlottesWeb_24, CloverMinnie_26, Evaa_25, Fresco_24, Ligma_24, LittleMunchkin_26, MakoManhole_26, Mariokart_24, MossRose_26, NHagos_24, Shatter_24, Sisko_24, Sour_28, Wooper_26, Yago84_24,

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

-

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

- Pine5_27,

Summary by start number:

Start 1:

- Found in 20 of 21 (95.2%) of genes in pham
- Manual Annotations of this start: 16 of 16
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AnClar_25 (DR), AnarQue_26 (DR), Axumite_24 (DR), BiggityBass_24 (DR), CaiB_26 (DR), CharlottesWeb_24 (DR), CloverMinnie_26 (DR), Evaa_25 (DR), Fresco_24 (DR), Ligma_24 (DR), LittleMunchkin_26 (DR), MakoManhole_26 (DR), Mariokart_24 (DR), MossRose_26 (DR), NHagos_24 (DR), Shatter_24 (DR), Sisko_24 (DR), Sour_28 (DR), Wooper_26 (DR), Yago84_24 (DR),

Start 5:

- Found in 1 of 21 (4.8%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Pine5_27 (singleton),

Summary by clusters:

There are 2 clusters represented in this pham: singleton, DR,

Info for manual annotations of cluster DR:

- Start number 1 was manually annotated 16 times for cluster DR.

Gene Information:

Gene: AnClar_25 Start: 20494, Stop: 25980, Start Num: 1

Candidate Starts for AnClar_25:

(Start: 1 @20494 has 16 MA's), (8, 20683), (15, 20791), (17, 20803), (23, 21061), (27, 21136), (36, 21358), (37, 21379), (43, 21472), (44, 21493), (49, 21535), (50, 21538), (51, 21592), (53, 21604), (55, 21634), (59, 21703), (62, 21742), (64, 21799), (67, 21850), (71, 21937), (72, 21967), (75, 21979), (76, 22003), (79, 22069), (86, 22135), (91, 22159), (93, 22168), (94, 22171), (95, 22180), (104, 22264), (105, 22270), (107, 22285), (110, 22303), (111, 22318), (120, 22366), (126, 22423), (129, 22450), (130, 22459), (143, 22576), (145, 22600), (148, 22639), (149, 22657), (150, 22663), (155, 22696), (159, 22738), (160, 22744), (164, 22801), (168, 22834), (172, 22885), (181, 22984), (183, 23023), (184, 23038), (188, 23089), (193, 23155), (197, 23209), (203, 23287), (207, 23332), (209, 23377), (213, 23482), (214, 23488), (215, 23512), (217, 23521), (218, 23530), (222, 23566), (223, 23575), (231, 23680), (237, 23746), (239, 23794), (242, 23902), (245, 23953), (262, 24319), (263, 24328), (265, 24352), (267, 24364), (271, 24433), (285, 24604), (293, 24676), (294, 24715), (297, 24733), (298, 24754), (305, 24853), (306, 24877), (307, 24889), (309, 24904), (310, 24916), (316, 25000), (320, 25057), (322, 25075), (323, 25084), (330, 25162), (339, 25252), (340, 25258), (342, 25279), (344, 25303), (345, 25312), (353, 25426), (357, 25465), (365, 25507), (366, 25540), (370, 25636), (372, 25669), (373, 25681), (384, 25777), (386, 25807), (391, 25918), (394, 25972),

Gene: AnarQue_26 Start: 19634, Stop: 25498, Start Num: 1

Candidate Starts for AnarQue_26:

(Start: 1 @19634 has 16 MA's), (25, 20249), (27, 20276), (34, 20435), (35, 20444), (36, 20498), (37, 20519), (44, 20633), (45, 20642), (46, 20654), (49, 20675), (50, 20678), (51, 20732), (53, 20744), (55, 20774), (59, 20843), (62, 20882), (64, 20939), (67, 20990), (71, 21077), (72, 21107), (73, 21110), (76, 21143), (83, 21248), (87, 21293), (89, 21326), (92, 21368), (96, 21386), (97, 21395), (99, 21419), (104, 21512), (108, 21545), (117, 21623), (118, 21629), (119, 21650), (120, 21653), (126, 21749), (128, 21767), (130, 21785), (131, 21788), (134, 21806), (136, 21842), (137, 21854), (142, 21902), (144, 21923), (147, 21956), (150, 21992), (151, 22007), (152, 22013), (159, 22067), (160, 22073), (162, 22094), (164, 22130), (165, 22145), (168, 22163), (174, 22232), (175, 22256), (178, 22283), (181, 22313), (183, 22352), (185, 22370), (186, 22394), (187, 22406), (188, 22418), (190, 22448), (203, 22616), (210, 22709), (213, 22811), (214, 22817), (215, 22841), (222, 22895), (223, 22904), (224, 22949), (226, 22967), (239, 23111), (242, 23213), (243, 23231), (246, 23279), (249, 23327), (251, 23357), (252, 23369), (258, 23525), (259, 23543), (261, 23636), (263, 23654), (267, 23690), (271, 23759), (282, 23909), (283, 23921), (285, 23939), (286, 23942), (291, 23978), (292, 24041), (295, 24146), (298, 24182), (303, 24269), (305, 24281), (306, 24305), (307, 24317), (310, 24344), (311, 24371), (312, 24392), (313, 24401), (316, 24428), (317, 24470), (324, 24605), (325, 24608), (326, 24623), (327, 24632), (331, 24674), (333, 24722), (335, 24758), (339, 24782), (340, 24788), (341, 24800), (343, 24821), (345, 24842), (353, 24956), (360, 25013), (361, 25016), (364, 25031), (365, 25037), (369, 25133), (375, 25211), (384, 25295), (386, 25325), (388, 25364), (389, 25376), (391, 25436), (394, 25490),

Gene: Axumite_24 Start: 18254, Stop: 23506, Start Num: 1

Candidate Starts for Axumite_24:

(Start: 1 @18254 has 16 MA's), (2, 18365), (3, 18377), (6, 18398), (27, 18653), (33, 18800), (35, 18821), (36, 18875), (37, 18896), (38, 18905), (43, 18989), (44, 19010), (45, 19019), (46, 19031), (47, 19043), (49, 19052), (50, 19055), (51, 19109), (53, 19121), (55, 19151), (59, 19220), (62, 19259), (65, 19334), (67, 19367), (71, 19454), (72, 19484), (75, 19496), (76, 19520), (77, 19529), (79, 19586), (82, 19613), (93, 19685), (95, 19697), (97, 19709), (100, 19766), (105, 19787), (107, 19802), (108, 19808), (111, 19835), (131, 19979), (138, 20054), (151, 20195), (152, 20201), (155, 20213), (156, 20225), (159, 20255), (160, 20261), (164, 20318), (168, 20351), (170, 20393), (172, 20402), (176, 20456), (180, 20489), (183, 20540), (185, 20558), (186, 20582), (188, 20606), (190, 20636), (195, 20705), (203, 20804), (204, 20816), (206, 20840), (208, 20861), (210, 20897), (214, 21005), (215, 21029), (216, 21032), (217, 21038), (219, 21050), (222, 21083), (223, 21092), (228, 21173), (236, 21242), (239, 21299), (242, 21401), (243, 21419), (246, 21467), (247, 21494), (248, 21497), (252, 21557), (253, 21617), (258, 21713), (266, 21875), (267, 21878), (272, 21959), (281, 22106), (282, 22109), (291, 22178), (295, 22253), (296, 22259), (298, 22289), (304, 22379), (306, 22412), (307, 22424), (309, 22439), (310, 22451), (311, 22478), (312, 22499), (316, 22535), (320, 22592), (323, 22619), (343, 22817), (345, 22838), (347, 22871), (353, 22952), (354, 22955), (357, 22991), (365, 23033), (366, 23066), (369, 23141), (372, 23195), (377, 23234), (384, 23303), (386, 23333), (388, 23372), (390, 23396), (391, 23444), (394, 23498),

Gene: BiggityBass_24 Start: 20531, Stop: 25771, Start Num: 1

Candidate Starts for BiggityBass_24:

(Start: 1 @20531 has 16 MA's), (9, 20729), (27, 20930), (34, 21089), (35, 21098), (39, 21191), (43, 21266), (44, 21287), (46, 21308), (50, 21332), (51, 21386), (61, 21530), (62, 21536), (67, 21644), (71, 21731), (72, 21761), (74, 21770), (75, 21773), (78, 21857), (79, 21863), (88, 21944), (94, 21965), (95, 21974), (97, 21986), (102, 22055), (104, 22058), (105, 22064), (106, 22067), (110, 22097), (120, 22160), (121, 22178), (126, 22217), (129, 22244), (140, 22358), (145, 22394), (148, 22433), (149, 22451), (150, 22457), (154, 22484), (155, 22490), (159, 22532), (160, 22538), (164, 22595), (168, 22628), (170, 22670), (172, 22679), (173, 22694), (175, 22721), (183, 22817), (184, 22832), (188, 22883), (193, 22949), (197, 23003), (203, 23081), (207, 23126), (209, 23171), (214, 23282), (215, 23306), (217, 23315), (218, 23324), (222, 23360), (223, 23369), (225, 23420), (237, 23540), (239, 23588), (242, 23696), (262, 24113), (263, 24122), (267, 24158), (285, 24398), (293, 24470), (294, 24509), (297, 24527), (298, 24548), (302, 24629), (305, 24647), (306, 24671), (307, 24683), (309,

24698), (310, 24710), (316, 24794), (320, 24851), (322, 24869), (323, 24878), (330, 24956), (340, 25049), (341, 25061), (342, 25070), (344, 25094), (345, 25103), (353, 25217), (357, 25256), (364, 25292), (365, 25298), (366, 25331), (370, 25427), (372, 25460), (384, 25568), (386, 25598), (391, 25709), (394, 25763),

Gene: CaiB_26 Start: 19620, Stop: 25484, Start Num: 1

Candidate Starts for CaiB_26:

(Start: 1 @19620 has 16 MA's), (25, 20235), (27, 20262), (34, 20421), (35, 20430), (36, 20484), (37, 20505), (44, 20619), (45, 20628), (46, 20640), (49, 20661), (50, 20664), (51, 20718), (53, 20730), (55, 20760), (59, 20829), (62, 20868), (64, 20925), (67, 20976), (71, 21063), (72, 21093), (73, 21096), (76, 21129), (83, 21234), (87, 21279), (89, 21312), (90, 21330), (92, 21354), (96, 21372), (97, 21381), (99, 21405), (104, 21498), (108, 21531), (117, 21609), (118, 21615), (119, 21636), (120, 21639), (126, 21735), (128, 21753), (130, 21771), (131, 21774), (134, 21792), (136, 21828), (137, 21840), (142, 21888), (144, 21909), (147, 21942), (150, 21978), (151, 21993), (152, 21999), (159, 22053), (160, 22059), (162, 22080), (164, 22116), (165, 22131), (168, 22149), (173, 22215), (174, 22218), (175, 22242), (178, 22269), (181, 22299), (183, 22338), (185, 22356), (186, 22380), (187, 22392), (188, 22404), (190, 22434), (203, 22602), (210, 22695), (213, 22797), (214, 22803), (215, 22827), (222, 22881), (223, 22890), (224, 22935), (226, 22953), (239, 23097), (242, 23199), (243, 23217), (246, 23265), (249, 23313), (251, 23343), (252, 23355), (258, 23511), (259, 23529), (261, 23622), (263, 23640), (267, 23676), (271, 23745), (282, 23895), (283, 23907), (285, 23925), (286, 23928), (291, 23964), (292, 24027), (295, 24132), (298, 24168), (303, 24255), (305, 24267), (306, 24291), (307, 24303), (310, 24330), (311, 24357), (312, 24378), (313, 24387), (316, 24414), (317, 24456), (324, 24591), (325, 24594), (326, 24609), (327, 24618), (331, 24660), (333, 24708), (339, 24768), (340, 24774), (341, 24786), (343, 24807), (345, 24828), (353, 24942), (360, 24999), (361, 25002), (364, 25017), (365, 25023), (369, 25119), (375, 25197), (379, 25233), (384, 25281), (386, 25311), (388, 25350), (389, 25362), (391, 25422), (394, 25476),

Gene: CharlottesWeb_24 Start: 18138, Stop: 23423, Start Num: 1

Candidate Starts for CharlottesWeb_24:

(Start: 1 @18138 has 16 MA's), (2, 18249), (3, 18261), (6, 18282), (27, 18537), (32, 18675), (35, 18705), (36, 18759), (38, 18789), (42, 18864), (43, 18873), (45, 18903), (46, 18915), (47, 18927), (51, 18993), (55, 19035), (59, 19104), (63, 19197), (71, 19338), (72, 19368), (75, 19380), (79, 19470), (80, 19473), (84, 19512), (88, 19551), (97, 19593), (98, 19602), (104, 19665), (111, 19719), (126, 19824), (138, 19938), (144, 19995), (146, 20007), (151, 20079), (152, 20085), (156, 20109), (158, 20133), (159, 20139), (160, 20145), (161, 20163), (162, 20166), (163, 20193), (168, 20235), (172, 20286), (175, 20328), (180, 20373), (181, 20385), (182, 20406), (183, 20424), (186, 20466), (192, 20544), (196, 20601), (200, 20646), (207, 20733), (209, 20778), (214, 20889), (215, 20913), (216, 20916), (217, 20922), (218, 20931), (222, 20967), (223, 20976), (230, 21066), (239, 21186), (242, 21288), (243, 21306), (246, 21354), (247, 21381), (252, 21444), (256, 21585), (258, 21600), (262, 21720), (266, 21762), (269, 21828), (270, 21831), (276, 21939), (277, 21951), (278, 21981), (283, 22032), (302, 22281), (307, 22335), (310, 22362), (311, 22389), (328, 22599), (330, 22611), (333, 22635), (341, 22713), (342, 22722), (344, 22746), (345, 22755), (348, 22815), (354, 22872), (355, 22884), (360, 22926), (361, 22929), (365, 22950), (368, 23034), (370, 23079), (372, 23112), (376, 23139), (381, 23199), (384, 23220), (386, 23250), (388, 23289), (390, 23313), (391, 23361), (394, 23415),

Gene: CloverMinnie_26 Start: 19560, Stop: 25424, Start Num: 1

Candidate Starts for CloverMinnie_26:

(Start: 1 @19560 has 16 MA's), (25, 20175), (27, 20202), (34, 20361), (35, 20370), (36, 20424), (37, 20445), (44, 20559), (45, 20568), (46, 20580), (49, 20601), (50, 20604), (51, 20658), (53, 20670), (55, 20700), (59, 20769), (62, 20808), (64, 20865), (67, 20916), (71, 21003), (72, 21033), (73, 21036), (76, 21069), (83, 21174), (87, 21219), (89, 21252), (92, 21294), (96, 21312), (97, 21321), (99, 21345), (104, 21438), (108, 21471), (117, 21549), (118, 21555), (119, 21576), (120, 21579), (126, 21675), (128, 21693), (130, 21711), (131, 21714), (134, 21732), (136, 21768), (137, 21780), (142, 21828),

(144, 21849), (147, 21882), (150, 21918), (151, 21933), (152, 21939), (159, 21993), (160, 21999), (162, 22020), (164, 22056), (165, 22071), (168, 22089), (173, 22155), (174, 22158), (175, 22182), (178, 22209), (181, 22239), (183, 22278), (185, 22296), (186, 22320), (187, 22332), (188, 22344), (190, 22374), (203, 22542), (210, 22635), (213, 22737), (214, 22743), (215, 22767), (222, 22821), (223, 22830), (224, 22875), (226, 22893), (239, 23037), (242, 23139), (243, 23157), (246, 23205), (249, 23253), (251, 23283), (252, 23295), (258, 23451), (259, 23469), (261, 23562), (263, 23580), (267, 23616), (271, 23685), (282, 23835), (283, 23847), (285, 23865), (286, 23868), (291, 23904), (292, 23967), (295, 24072), (298, 24108), (303, 24195), (305, 24207), (306, 24231), (307, 24243), (310, 24270), (311, 24297), (312, 24318), (313, 24327), (316, 24354), (317, 24396), (324, 24531), (325, 24534), (326, 24549), (327, 24558), (331, 24600), (333, 24648), (339, 24708), (340, 24714), (341, 24726), (343, 24747), (345, 24768), (353, 24882), (360, 24939), (361, 24942), (364, 24957), (365, 24963), (369, 25059), (375, 25137), (379, 25173), (384, 25221), (386, 25251), (388, 25290), (389, 25302), (391, 25362), (394, 25416),

Gene: Evaa_25 Start: 19484, Stop: 24991, Start Num: 1

Candidate Starts for Evaa_25:

(Start: 1 @19484 has 16 MA's), (15, 19778), (17, 19790), (23, 20048), (24, 20060), (27, 20123), (35, 20291), (36, 20345), (37, 20366), (43, 20459), (44, 20480), (49, 20522), (50, 20525), (51, 20579), (53, 20591), (55, 20621), (59, 20690), (62, 20729), (71, 20924), (72, 20954), (75, 20966), (76, 20990), (79, 21056), (82, 21083), (88, 21137), (104, 21251), (105, 21257), (107, 21272), (111, 21305), (112, 21320), (120, 21353), (121, 21371), (129, 21437), (130, 21446), (140, 21551), (143, 21563), (145, 21587), (147, 21614), (148, 21626), (149, 21644), (153, 21674), (154, 21677), (159, 21725), (160, 21731), (162, 21752), (165, 21803), (166, 21809), (168, 21821), (169, 21833), (170, 21863), (171, 21869), (172, 21872), (173, 21887), (175, 21914), (178, 21941), (179, 21947), (180, 21959), (183, 22010), (185, 22028), (186, 22052), (188, 22076), (189, 22079), (191, 22118), (194, 22163), (199, 22223), (201, 22253), (204, 22286), (207, 22319), (210, 22367), (213, 22469), (214, 22475), (215, 22499), (217, 22508), (219, 22520), (220, 22526), (222, 22553), (223, 22562), (235, 22712), (239, 22784), (241, 22841), (242, 22886), (243, 22904), (244, 22925), (247, 22979), (252, 23042), (253, 23102), (256, 23183), (258, 23198), (259, 23216), (260, 23306), (267, 23363), (268, 23393), (279, 23561), (284, 23597), (285, 23612), (287, 23624), (299, 23762), (300, 23768), (302, 23828), (305, 23846), (307, 23882), (310, 23909), (311, 23936), (316, 23993), (320, 24062), (323, 24089), (331, 24176), (336, 24257), (337, 24263), (342, 24296), (343, 24308), (345, 24329), (346, 24341), (352, 24440), (355, 24458), (358, 24488), (359, 24491), (361, 24503), (364, 24518), (365, 24524), (366, 24557), (368, 24608), (372, 24686), (374, 24701), (380, 24755), (381, 24773), (384, 24794), (386, 24824), (391, 24929), (394, 24983),

Gene: Fresco_24 Start: 18254, Stop: 23506, Start Num: 1

Candidate Starts for Fresco_24:

(Start: 1 @18254 has 16 MA's), (2, 18365), (3, 18377), (6, 18398), (27, 18653), (33, 18800), (35, 18821), (36, 18875), (37, 18896), (38, 18905), (43, 18989), (44, 19010), (45, 19019), (46, 19031), (47, 19043), (49, 19052), (50, 19055), (51, 19109), (53, 19121), (55, 19151), (59, 19220), (62, 19259), (65, 19334), (67, 19367), (71, 19454), (72, 19484), (75, 19496), (76, 19520), (77, 19529), (79, 19586), (82, 19613), (93, 19685), (95, 19697), (97, 19709), (100, 19766), (105, 19787), (107, 19802), (108, 19808), (111, 19835), (131, 19979), (138, 20054), (151, 20195), (152, 20201), (155, 20213), (156, 20225), (159, 20255), (160, 20261), (164, 20318), (168, 20351), (170, 20393), (172, 20402), (176, 20456), (180, 20489), (183, 20540), (185, 20558), (186, 20582), (188, 20606), (190, 20636), (195, 20705), (203, 20804), (204, 20816), (206, 20840), (208, 20861), (210, 20897), (214, 21005), (215, 21029), (216, 21032), (217, 21038), (219, 21050), (222, 21083), (223, 21092), (228, 21173), (236, 21242), (239, 21299), (242, 21401), (243, 21419), (246, 21467), (247, 21494), (248, 21497), (252, 21557), (253, 21617), (258, 21713), (266, 21875), (267, 21878), (272, 21959), (281, 22106), (282, 22109), (291, 22178), (295, 22253), (296, 22259), (298, 22289), (304, 22379), (306, 22412), (307, 22424), (309, 22439), (310, 22451), (311, 22478), (312, 22499), (316, 22535), (320, 22592), (323, 22619), (343, 22817), (345, 22838), (347, 22871), (353, 22952), (354, 22955), (357, 22991), (365, 23033),

(366, 23066), (369, 23141), (372, 23195), (377, 23234), (384, 23303), (386, 23333), (388, 23372), (390, 23396), (391, 23444), (394, 23498),

Gene: Ligma_24 Start: 18254, Stop: 23506, Start Num: 1

Candidate Starts for Ligma_24:

(Start: 1 @18254 has 16 MA's), (2, 18365), (3, 18377), (6, 18398), (27, 18653), (33, 18800), (35, 18821), (36, 18875), (37, 18896), (38, 18905), (43, 18989), (44, 19010), (45, 19019), (46, 19031), (47, 19043), (49, 19052), (50, 19055), (51, 19109), (53, 19121), (55, 19151), (59, 19220), (62, 19259), (65, 19334), (67, 19367), (71, 19454), (72, 19484), (75, 19496), (76, 19520), (77, 19529), (79, 19586), (82, 19613), (93, 19685), (95, 19697), (97, 19709), (100, 19766), (105, 19787), (107, 19802), (108, 19808), (111, 19835), (131, 19979), (138, 20054), (151, 20195), (152, 20201), (155, 20213), (156, 20225), (159, 20255), (160, 20261), (164, 20318), (168, 20351), (170, 20393), (172, 20402), (176, 20456), (180, 20489), (183, 20540), (185, 20558), (186, 20582), (188, 20606), (190, 20636), (195, 20705), (203, 20804), (204, 20816), (206, 20840), (208, 20861), (210, 20897), (214, 21005), (215, 21029), (216, 21032), (217, 21038), (219, 21050), (222, 21083), (223, 21092), (228, 21173), (236, 21242), (239, 21299), (242, 21401), (243, 21419), (246, 21467), (247, 21494), (248, 21497), (252, 21557), (253, 21617), (258, 21713), (266, 21875), (267, 21878), (272, 21959), (281, 22106), (282, 22109), (291, 22178), (295, 22253), (296, 22259), (298, 22289), (304, 22379), (306, 22412), (307, 22424), (309, 22439), (310, 22451), (311, 22478), (312, 22499), (316, 22535), (320, 22592), (323, 22619), (343, 22817), (345, 22838), (347, 22871), (353, 22952), (354, 22955), (357, 22991), (365, 23033), (366, 23066), (369, 23141), (372, 23195), (377, 23234), (384, 23303), (386, 23333), (388, 23372), (390, 23396), (391, 23444), (394, 23498),

Gene: LittleMunchkin_26 Start: 21076, Stop: 26559, Start Num: 1

Candidate Starts for LittleMunchkin_26:

(Start: 1 @21076 has 16 MA's), (8, 21265), (14, 21358), (15, 21373), (17, 21385), (23, 21643), (24, 21655), (26, 21706), (27, 21718), (28, 21730), (32, 21856), (35, 21886), (36, 21940), (38, 21970), (43, 22054), (44, 22075), (46, 22096), (47, 22108), (50, 22120), (51, 22174), (52, 22180), (53, 22186), (55, 22216), (57, 22225), (59, 22285), (60, 22294), (63, 22378), (65, 22399), (66, 22426), (67, 22432), (71, 22519), (72, 22549), (73, 22552), (75, 22561), (79, 22651), (81, 22675), (88, 22732), (94, 22753), (97, 22774), (102, 22843), (104, 22846), (106, 22855), (111, 22900), (120, 22948), (121, 22966), (126, 23005), (129, 23032), (130, 23041), (140, 23146), (148, 23221), (149, 23239), (150, 23245), (159, 23320), (168, 23416), (169, 23428), (172, 23467), (179, 23542), (180, 23554), (183, 23605), (184, 23620), (188, 23671), (191, 23713), (193, 23737), (195, 23770), (197, 23791), (203, 23869), (205, 23899), (207, 23914), (214, 24070), (215, 24094), (218, 24112), (222, 24148), (223, 24157), (225, 24208), (237, 24328), (239, 24376), (242, 24484), (250, 24598), (255, 24748), (262, 24901), (263, 24910), (266, 24943), (267, 24946), (269, 25009), (274, 25099), (282, 25156), (294, 25297), (295, 25300), (297, 25315), (298, 25336), (307, 25471), (309, 25486), (310, 25498), (316, 25582), (320, 25639), (323, 25666), (329, 25741), (330, 25744), (331, 25753), (333, 25771), (340, 25837), (341, 25849), (343, 25870), (344, 25882), (345, 25891), (353, 26005), (356, 26038), (357, 26044), (363, 26074), (365, 26086), (366, 26119), (370, 26215), (372, 26248), (381, 26335), (384, 26356), (386, 26386), (388, 26425), (391, 26497), (392, 26500), (394, 26551),

Gene: MakoManhole_26 Start: 19638, Stop: 25502, Start Num: 1

Candidate Starts for MakoManhole_26:

(Start: 1 @19638 has 16 MA's), (22, 20121), (25, 20253), (27, 20280), (34, 20439), (35, 20448), (36, 20502), (37, 20523), (44, 20637), (45, 20646), (46, 20658), (49, 20679), (50, 20682), (51, 20736), (53, 20748), (55, 20778), (59, 20847), (62, 20886), (64, 20943), (67, 20994), (71, 21081), (72, 21111), (73, 21114), (76, 21147), (83, 21252), (87, 21297), (89, 21330), (92, 21372), (96, 21390), (97, 21399), (99, 21423), (104, 21516), (108, 21549), (117, 21627), (118, 21633), (119, 21654), (120, 21657), (126, 21753), (128, 21771), (130, 21789), (131, 21792), (134, 21810), (136, 21846), (137, 21858), (142, 21906), (144, 21927), (147, 21960), (150, 21996), (151, 22011), (152, 22017), (159, 22071), (160, 22077), (162, 22098), (164, 22134), (165, 22149), (168, 22167), (173, 22233), (174, 22236), (175,

22260), (178, 22287), (181, 22317), (183, 22356), (185, 22374), (186, 22398), (187, 22410), (188, 22422), (190, 22452), (203, 22620), (210, 22713), (213, 22815), (214, 22821), (215, 22845), (222, 22899), (223, 22908), (224, 22953), (226, 22971), (239, 23115), (242, 23217), (243, 23235), (246, 23283), (249, 23331), (251, 23361), (252, 23373), (258, 23529), (259, 23547), (261, 23640), (263, 23658), (267, 23694), (271, 23763), (282, 23913), (283, 23925), (285, 23943), (286, 23946), (291, 23982), (292, 24045), (295, 24150), (298, 24186), (303, 24273), (305, 24285), (306, 24309), (307, 24321), (310, 24348), (311, 24375), (312, 24396), (313, 24405), (316, 24432), (317, 24474), (324, 24609), (325, 24612), (326, 24627), (327, 24636), (331, 24678), (333, 24726), (339, 24786), (340, 24792), (341, 24804), (343, 24825), (345, 24846), (353, 24960), (360, 25017), (361, 25020), (364, 25035), (365, 25041), (369, 25137), (371, 25182), (375, 25215), (379, 25251), (384, 25299), (386, 25329), (388, 25368), (389, 25380), (391, 25440), (394, 25494),

Gene: Mariokart_24 Start: 18137, Stop: 23422, Start Num: 1

Candidate Starts for Mariokart_24:

(Start: 1 @18137 has 16 MA's), (2, 18248), (3, 18260), (6, 18281), (27, 18536), (35, 18704), (36, 18758), (37, 18779), (38, 18788), (40, 18803), (43, 18872), (44, 18893), (45, 18902), (47, 18926), (49, 18935), (50, 18938), (51, 18992), (55, 19034), (59, 19103), (62, 19142), (67, 19250), (71, 19337), (72, 19367), (75, 19379), (76, 19403), (77, 19412), (79, 19469), (88, 19550), (97, 19592), (100, 19649), (104, 19664), (111, 19718), (120, 19766), (121, 19784), (135, 19895), (141, 19970), (144, 19994), (146, 20006), (151, 20078), (152, 20084), (156, 20108), (158, 20132), (159, 20138), (161, 20162), (162, 20165), (168, 20234), (172, 20285), (175, 20327), (180, 20372), (181, 20384), (182, 20405), (183, 20423), (192, 20543), (196, 20600), (200, 20645), (202, 20669), (207, 20732), (209, 20777), (214, 20888), (215, 20912), (216, 20915), (217, 20921), (218, 20930), (222, 20966), (223, 20975), (230, 21065), (239, 21185), (242, 21287), (243, 21305), (246, 21353), (247, 21380), (252, 21443), (256, 21584), (258, 21599), (262, 21719), (266, 21761), (269, 21827), (270, 21830), (276, 21938), (277, 21950), (278, 21980), (283, 22031), (302, 22280), (307, 22334), (310, 22361), (311, 22388), (328, 22598), (330, 22610), (333, 22634), (341, 22712), (342, 22721), (344, 22745), (345, 22754), (348, 22814), (354, 22871), (355, 22883), (360, 22925), (361, 22928), (365, 22949), (367, 22985), (368, 23033), (370, 23078), (372, 23111), (376, 23138), (381, 23198), (384, 23219), (386, 23249), (388, 23288), (390, 23312), (391, 23360), (394, 23414),

Gene: MossRose_26 Start: 19617, Stop: 25481, Start Num: 1

Candidate Starts for MossRose_26:

(Start: 1 @19617 has 16 MA's), (25, 20232), (27, 20259), (34, 20418), (35, 20427), (36, 20481), (37, 20502), (44, 20616), (45, 20625), (46, 20637), (49, 20658), (50, 20661), (51, 20715), (53, 20727), (55, 20757), (59, 20826), (62, 20865), (64, 20922), (67, 20973), (71, 21060), (72, 21090), (73, 21093), (76, 21126), (83, 21231), (87, 21276), (89, 21309), (92, 21351), (96, 21369), (97, 21378), (99, 21402), (104, 21495), (108, 21528), (117, 21606), (118, 21612), (119, 21633), (120, 21636), (126, 21732), (128, 21750), (130, 21768), (131, 21771), (134, 21789), (136, 21825), (137, 21837), (142, 21885), (144, 21906), (147, 21939), (150, 21975), (151, 21990), (152, 21996), (159, 22050), (160, 22056), (162, 22077), (164, 22113), (165, 22128), (168, 22146), (174, 22215), (175, 22239), (178, 22266), (181, 22296), (183, 22335), (185, 22353), (186, 22377), (187, 22389), (188, 22401), (190, 22431), (203, 22599), (210, 22692), (213, 22794), (214, 22800), (215, 22824), (222, 22878), (223, 22887), (224, 22932), (226, 22950), (239, 23094), (242, 23196), (243, 23214), (246, 23262), (249, 23310), (251, 23340), (252, 23352), (258, 23508), (259, 23526), (261, 23619), (263, 23637), (267, 23673), (271, 23742), (282, 23892), (283, 23904), (285, 23922), (286, 23925), (289, 23946), (291, 23961), (292, 24024), (295, 24129), (298, 24165), (303, 24252), (305, 24264), (306, 24288), (307, 24300), (310, 24327), (311, 24354), (312, 24375), (313, 24384), (316, 24411), (317, 24453), (324, 24588), (325, 24591), (326, 24606), (327, 24615), (331, 24657), (333, 24705), (339, 24765), (340, 24771), (341, 24783), (343, 24804), (345, 24825), (353, 24939), (360, 24996), (361, 24999), (364, 25014), (365, 25020), (369, 25116), (375, 25194), (379, 25230), (384, 25278), (386, 25308), (388, 25347), (389, 25359), (391, 25419), (394, 25473),

Gene: NHagos_24 Start: 18152, Stop: 24022, Start Num: 1

Candidate Starts for NHagos_24:

(Start: 1 @18152 has 16 MA's), (12, 18392), (17, 18461), (21, 18569), (27, 18794), (30, 18905), (34, 18953), (35, 18962), (36, 19016), (37, 19037), (40, 19061), (43, 19130), (44, 19151), (45, 19160), (46, 19172), (50, 19196), (51, 19250), (55, 19292), (59, 19361), (62, 19400), (67, 19508), (71, 19595), (72, 19625), (73, 19628), (76, 19661), (83, 19766), (87, 19811), (89, 19844), (92, 19886), (96, 19904), (97, 19913), (103, 20021), (109, 20066), (118, 20147), (122, 20201), (123, 20204), (125, 20240), (126, 20267), (127, 20273), (128, 20285), (131, 20306), (132, 20309), (139, 20405), (144, 20441), (146, 20453), (147, 20474), (150, 20510), (151, 20525), (155, 20543), (157, 20561), (159, 20585), (160, 20591), (162, 20612), (164, 20648), (165, 20663), (168, 20681), (170, 20723), (174, 20750), (178, 20801), (183, 20870), (188, 20936), (190, 20966), (195, 21035), (196, 21047), (202, 21116), (203, 21134), (213, 21329), (214, 21335), (215, 21359), (221, 21404), (222, 21413), (223, 21422), (224, 21467), (232, 21536), (234, 21557), (239, 21629), (240, 21668), (242, 21731), (243, 21749), (244, 21770), (246, 21797), (249, 21845), (250, 21851), (251, 21875), (252, 21887), (258, 22043), (271, 22277), (275, 22364), (280, 22430), (282, 22439), (283, 22451), (285, 22469), (292, 22571), (295, 22676), (298, 22712), (303, 22799), (306, 22835), (307, 22847), (310, 22874), (311, 22901), (312, 22922), (316, 22958), (317, 23000), (318, 23039), (324, 23135), (325, 23138), (326, 23153), (329, 23192), (331, 23204), (336, 23294), (339, 23306), (340, 23312), (341, 23324), (345, 23366), (346, 23378), (353, 23480), (359, 23528), (360, 23537), (363, 23549), (364, 23555), (365, 23561), (369, 23657), (375, 23735), (379, 23771), (381, 23798), (384, 23819), (385, 23831), (386, 23849), (387, 23864), (388, 23888), (391, 23960), (394, 24014),

Gene: Pine5_27 Start: 20638, Stop: 25836, Start Num: 5

Candidate Starts for Pine5_27:

(4, 20629), (5, 20638), (7, 20671), (8, 20695), (10, 20707), (11, 20728), (13, 20761), (16, 20806), (18, 20818), (19, 20839), (31, 21193), (32, 21205), (33, 21214), (41, 21361), (48, 21454), (54, 21544), (56, 21556), (58, 21601), (68, 21811), (69, 21832), (70, 21850), (85, 22027), (106, 22189), (113, 22249), (114, 22252), (115, 22255), (116, 22261), (124, 22336), (126, 22357), (127, 22363), (133, 22402), (146, 22540), (160, 22675), (166, 22753), (167, 22759), (169, 22777), (171, 22813), (177, 22882), (191, 23059), (198, 23152), (207, 23260), (211, 23332), (212, 23347), (223, 23509), (227, 23563), (235, 23638), (238, 23683), (239, 23710), (242, 23818), (252, 23956), (254, 24040), (257, 24100), (261, 24217), (273, 24382), (280, 24472), (282, 24481), (288, 24532), (289, 24535), (291, 24550), (298, 24652), (301, 24712), (310, 24820), (315, 24895), (321, 24988), (332, 25129), (338, 25198), (339, 25201), (341, 25219), (345, 25261), (349, 25327), (350, 25342), (351, 25348), (359, 25402), (362, 25411), (363, 25414), (378, 25603), (379, 25612), (382, 25642), (383, 25648), (384, 25651), (388, 25720),

Gene: Shatter_24 Start: 18254, Stop: 23506, Start Num: 1

Candidate Starts for Shatter_24:

(Start: 1 @18254 has 16 MA's), (2, 18365), (3, 18377), (6, 18398), (27, 18653), (33, 18800), (35, 18821), (36, 18875), (37, 18896), (38, 18905), (43, 18989), (44, 19010), (45, 19019), (46, 19031), (47, 19043), (49, 19052), (50, 19055), (51, 19109), (53, 19121), (55, 19151), (59, 19220), (62, 19259), (65, 19334), (67, 19367), (71, 19454), (72, 19484), (75, 19496), (76, 19520), (77, 19529), (79, 19586), (82, 19613), (93, 19685), (95, 19697), (97, 19709), (100, 19766), (105, 19787), (107, 19802), (108, 19808), (111, 19835), (131, 19979), (138, 20054), (151, 20195), (152, 20201), (155, 20213), (156, 20225), (159, 20255), (160, 20261), (164, 20318), (168, 20351), (170, 20393), (172, 20402), (176, 20456), (180, 20489), (183, 20540), (185, 20558), (186, 20582), (188, 20606), (190, 20636), (195, 20705), (203, 20804), (204, 20816), (206, 20840), (208, 20861), (210, 20897), (214, 21005), (215, 21029), (216, 21032), (217, 21038), (219, 21050), (222, 21083), (223, 21092), (228, 21173), (236, 21242), (239, 21299), (242, 21401), (243, 21419), (246, 21467), (247, 21494), (248, 21497), (252, 21557), (253, 21617), (258, 21713), (266, 21875), (267, 21878), (272, 21959), (281, 22106), (282, 22109), (291, 22178), (295, 22253), (296, 22259), (298, 22289), (304, 22379), (306, 22412), (307, 22424), (309, 22439), (310, 22451), (311, 22478), (312, 22499), (316, 22535), (320, 22592), (323, 22619),

(343, 22817), (345, 22838), (347, 22871), (353, 22952), (354, 22955), (357, 22991), (365, 23033), (366, 23066), (369, 23141), (372, 23195), (377, 23234), (384, 23303), (386, 23333), (388, 23372), (390, 23396), (391, 23444), (394, 23498),

Gene: Sisko_24 Start: 18501, Stop: 23987, Start Num: 1

Candidate Starts for Sisko_24:

(Start: 1 @18501 has 16 MA's), (8, 18690), (15, 18798), (17, 18810), (23, 19068), (27, 19143), (36, 19365), (37, 19386), (43, 19479), (44, 19500), (49, 19542), (50, 19545), (51, 19599), (53, 19611), (55, 19641), (59, 19710), (62, 19749), (64, 19806), (67, 19857), (71, 19944), (72, 19974), (75, 19986), (76, 20010), (79, 20076), (86, 20142), (91, 20166), (93, 20175), (94, 20178), (95, 20187), (104, 20271), (105, 20277), (107, 20292), (111, 20325), (120, 20373), (126, 20430), (129, 20457), (130, 20466), (143, 20583), (145, 20607), (148, 20646), (149, 20664), (150, 20670), (155, 20703), (159, 20745), (160, 20751), (164, 20808), (168, 20841), (172, 20892), (181, 20991), (183, 21030), (184, 21045), (188, 21096), (193, 21162), (197, 21216), (203, 21294), (207, 21339), (209, 21384), (213, 21489), (214, 21495), (215, 21519), (217, 21528), (218, 21537), (222, 21573), (223, 21582), (231, 21687), (237, 21753), (239, 21801), (242, 21909), (245, 21960), (262, 22326), (263, 22335), (265, 22359), (267, 22371), (271, 22440), (285, 22611), (293, 22683), (294, 22722), (297, 22740), (298, 22761), (305, 22860), (306, 22884), (307, 22896), (309, 22911), (310, 22923), (316, 23007), (320, 23064), (322, 23082), (323, 23091), (330, 23169), (339, 23259), (340, 23265), (342, 23286), (344, 23310), (345, 23319), (353, 23433), (357, 23472), (365, 23514), (366, 23547), (372, 23676), (373, 23688), (384, 23784), (386, 23814), (391, 23925), (394, 23979),

Gene: Sour_28 Start: 22231, Stop: 27735, Start Num: 1

Candidate Starts for Sour_28:

(Start: 1 @22231 has 16 MA's), (8, 22420), (14, 22513), (15, 22528), (17, 22540), (20, 22570), (23, 22798), (27, 22873), (35, 23041), (36, 23095), (37, 23116), (43, 23209), (44, 23230), (49, 23272), (50, 23275), (51, 23329), (55, 23371), (59, 23440), (62, 23479), (69, 23653), (71, 23674), (72, 23704), (75, 23716), (79, 23806), (86, 23872), (91, 23896), (93, 23905), (94, 23908), (95, 23917), (101, 23995), (104, 24001), (106, 24010), (107, 24022), (111, 24055), (120, 24103), (121, 24121), (129, 24187), (130, 24196), (140, 24301), (144, 24331), (145, 24337), (147, 24364), (149, 24394), (150, 24400), (155, 24433), (159, 24475), (162, 24502), (164, 24538), (165, 24553), (166, 24559), (168, 24571), (171, 24619), (172, 24622), (178, 24691), (180, 24709), (181, 24721), (183, 24760), (184, 24775), (185, 24778), (188, 24826), (190, 24856), (197, 24946), (207, 25069), (209, 25114), (212, 25156), (213, 25219), (214, 25225), (215, 25249), (218, 25267), (222, 25303), (223, 25312), (225, 25363), (229, 25396), (231, 25417), (233, 25441), (237, 25483), (239, 25531), (242, 25639), (245, 25690), (252, 25786), (255, 25903), (262, 26056), (263, 26065), (264, 26077), (267, 26101), (269, 26164), (271, 26170), (274, 26254), (282, 26311), (285, 26341), (290, 26374), (297, 26470), (298, 26491), (302, 26572), (307, 26626), (308, 26629), (310, 26653), (314, 26725), (319, 26812), (323, 26845), (328, 26911), (330, 26923), (333, 26947), (334, 26980), (339, 27007), (340, 27013), (341, 27025), (345, 27067), (353, 27181), (357, 27220), (363, 27250), (365, 27262), (366, 27295), (370, 27391), (372, 27424), (384, 27532), (386, 27562), (390, 27625), (391, 27673), (393, 27715), (394, 27727),

Gene: Wooper_26 Start: 19629, Stop: 25493, Start Num: 1

Candidate Starts for Wooper_26:

(Start: 1 @19629 has 16 MA's), (12, 19869), (17, 19938), (25, 20244), (27, 20271), (34, 20430), (35, 20439), (36, 20493), (37, 20514), (44, 20628), (45, 20637), (46, 20649), (49, 20670), (50, 20673), (51, 20727), (53, 20739), (55, 20769), (59, 20838), (62, 20877), (64, 20934), (67, 20985), (71, 21072), (72, 21102), (73, 21105), (76, 21138), (83, 21243), (87, 21288), (89, 21321), (92, 21363), (96, 21381), (97, 21390), (99, 21414), (104, 21507), (109, 21543), (118, 21624), (119, 21645), (120, 21648), (126, 21744), (128, 21762), (131, 21783), (134, 21801), (137, 21849), (139, 21882), (142, 21897), (144, 21918), (150, 21987), (151, 22002), (152, 22008), (159, 22062), (160, 22068), (162, 22089), (164, 22125), (165, 22140), (166, 22146), (168, 22158), (173, 22224), (174, 22227), (175, 22251), (178, 22278), (181, 22308), (183, 22347), (185, 22365), (186, 22389), (187, 22401), (188, 22413), (190,

22443), (203, 22611), (210, 22704), (213, 22806), (214, 22812), (215, 22836), (222, 22890), (223, 22899), (224, 22944), (226, 22962), (239, 23106), (242, 23208), (243, 23226), (246, 23274), (249, 23322), (251, 23352), (252, 23364), (258, 23520), (259, 23538), (261, 23631), (263, 23649), (267, 23685), (271, 23754), (282, 23904), (283, 23916), (285, 23934), (291, 23973), (292, 24036), (295, 24141), (298, 24177), (303, 24264), (305, 24276), (306, 24300), (307, 24312), (310, 24339), (311, 24366), (312, 24387), (313, 24396), (316, 24423), (317, 24465), (324, 24600), (325, 24603), (326, 24618), (331, 24669), (333, 24717), (339, 24777), (340, 24783), (343, 24816), (345, 24837), (353, 24951), (360, 25008), (361, 25011), (364, 25026), (365, 25032), (369, 25128), (375, 25206), (379, 25242), (384, 25290), (386, 25320), (388, 25359), (389, 25371), (391, 25431), (394, 25485),

Gene: Yago84_24 Start: 18575, Stop: 24061, Start Num: 1

Candidate Starts for Yago84_24:

(Start: 1 @18575 has 16 MA's), (8, 18764), (15, 18872), (17, 18884), (23, 19142), (27, 19217), (29, 19253), (36, 19439), (37, 19460), (43, 19553), (44, 19574), (49, 19616), (50, 19619), (51, 19673), (53, 19685), (55, 19715), (59, 19784), (62, 19823), (64, 19880), (67, 19931), (71, 20018), (72, 20048), (75, 20060), (76, 20084), (79, 20150), (86, 20216), (91, 20240), (93, 20249), (94, 20252), (95, 20261), (104, 20345), (105, 20351), (107, 20366), (110, 20384), (111, 20399), (120, 20447), (126, 20504), (129, 20531), (130, 20540), (143, 20657), (145, 20681), (148, 20720), (149, 20738), (150, 20744), (155, 20777), (159, 20819), (160, 20825), (164, 20882), (168, 20915), (172, 20966), (181, 21065), (183, 21104), (184, 21119), (188, 21170), (193, 21236), (197, 21290), (203, 21368), (207, 21413), (209, 21458), (213, 21563), (214, 21569), (215, 21593), (217, 21602), (218, 21611), (222, 21647), (223, 21656), (231, 21761), (237, 21827), (239, 21875), (242, 21983), (245, 22034), (262, 22400), (263, 22409), (265, 22433), (267, 22445), (271, 22514), (285, 22685), (293, 22757), (294, 22796), (297, 22814), (298, 22835), (305, 22934), (306, 22958), (307, 22970), (309, 22985), (310, 22997), (316, 23081), (320, 23138), (322, 23156), (323, 23165), (330, 23243), (339, 23333), (340, 23339), (342, 23360), (344, 23384), (345, 23393), (353, 23507), (357, 23546), (365, 23588), (366, 23621), (372, 23750), (373, 23762), (384, 23858), (386, 23888), (391, 23999), (394, 24053),