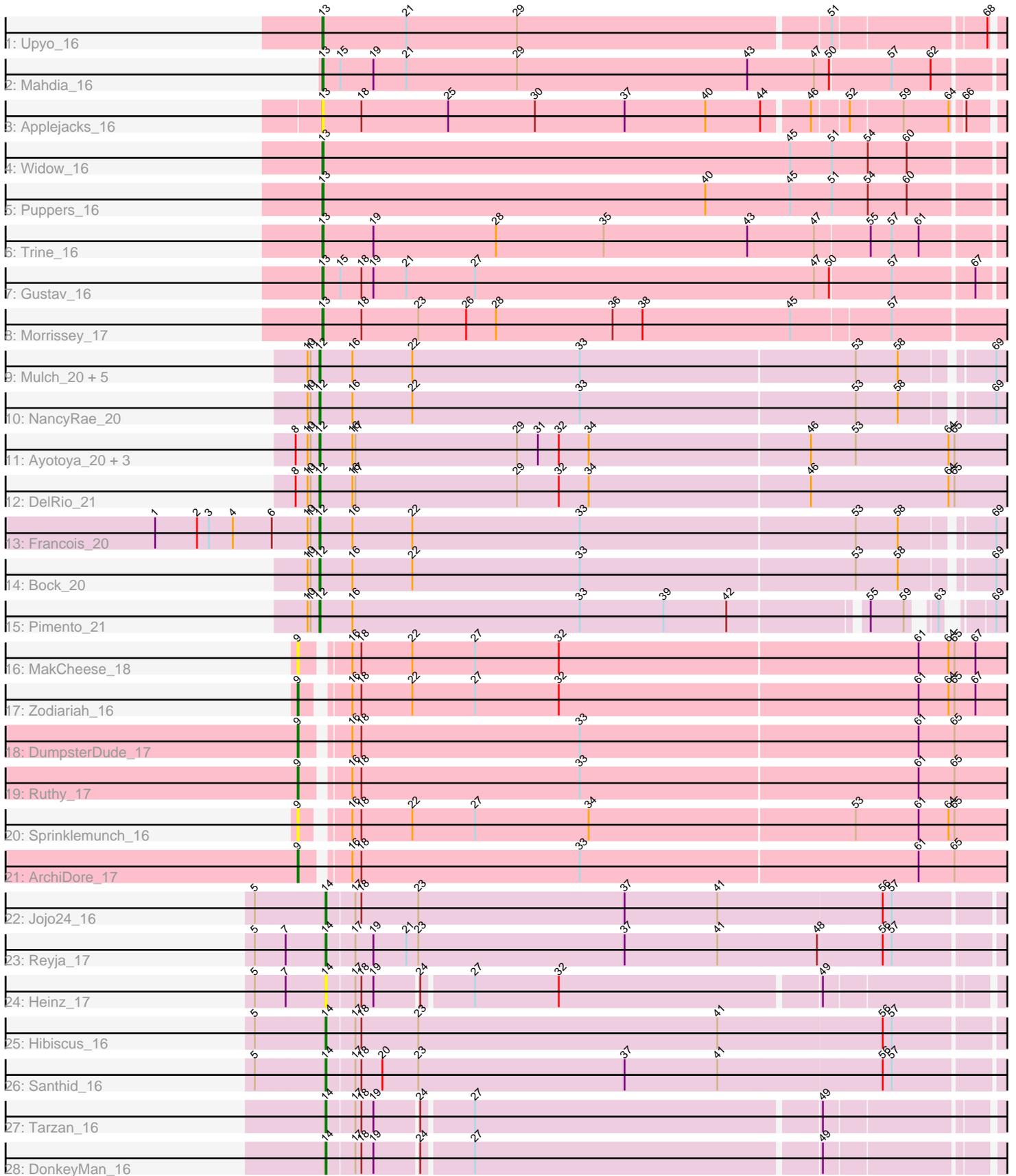# Zoomed Pham 284008

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 284008 Report

This analysis was run 02/23/26 on database version 636.

Pham number 284008 has 36 members, 4 are drafts.

Phages represented in each track:
• Track 1 : Upyo_16
• Track 2 : Mahdia_16
• Track 3 : Applejacks_16
• Track 4 : Widow_16
• Track 5 : Puppers_16
• Track 6 : Trine_16
• Track 7 : Gustav_16
• Track 8 : Morrissey_17
• Track 9 : Mulch_20, Brylie_20, Nadeem_20, WheatThin_20, BetterKatz_20, Parada_20
• Track 10 : NancyRae_20
• Track 11 : Ayotoya_20, GrandSlam_20, Chop_20, Hamood_20
• Track 12 : DelRio_21
• Track 13 : Francois_20
• Track 14 : Bock_20
• Track 15 : Pimento_21
• Track 16 : MakCheese_18
• Track 17 : Zodiariah_16
• Track 18 : DumpsterDude_17
• Track 19 : Ruthy_17
• Track 20 : Sprinklemunch_16
• Track 21 : ArchiDore_17
• Track 22 : Jojo24_16
• Track 23 : Reyja_17
• Track 24 : Heinz_17
• Track 25 : Hibiscus_16
• Track 26 : Santhid_16
• Track 27 : Tarzan_16
• Track 28 : DonkeyMan_16

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

The start number called the most often in the published annotations is 12, it was called in 15 of the 32 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Ayotoya_20, BetterKatz_20, Bock_20, Brylie_20, Chop_20, DelRio_21, Francois_20, GrandSlam_20, Hamood_20, Mulch_20, Nadeem_20, NancyRae_20, Parada_20, Pimento_21, WheatThin_20,

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

Genes that do not have the "Most Annotated" start:
• Applejacks_16, ArchiDore_17, DonkeyMan_16, DumpsterDude_17, Gustav_16, Heinz_17, Hibiscus_16, Jojo24_16, Mahdia_16, MakCheese_18, Morrissey_17, Puppers_16, Reyja_17, Ruthy_17, Santhid_16, Sprinklemunch_16, Tarzan_16, Trine_16, Upyo_16, Widow_16, Zodiariah_16,

Summary by start number:

Start 9:
• Found in 6 of 36 (16.7%) of genes in pham
• Manual Annotations of this start: 4 of 32
• Called 100.0% of time when present
• Phage (with cluster) where this start called: ArchiDore_17 (DW), DumpsterDude_17 (DW), MakCheese_18 (DW), Ruthy_17 (DW), Sprinklemunch_16 (DW), Zodiariah_16 (DW),

Start 12:
• Found in 15 of 36 (41.7%) of genes in pham
• Manual Annotations of this start: 15 of 32
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Ayotoya_20 (DI), BetterKatz_20 (DI), Bock_20 (DI), Brylie_20 (DI), Chop_20 (DI), DelRio_21 (DI), Francois_20 (DI), GrandSlam_20 (DI), Hamood_20 (DI), Mulch_20 (DI), Nadeem_20 (DI), NancyRae_20 (DI), Parada_20 (DI), Pimento_21 (DI), WheatThin_20 (DI),

Start 13:
• Found in 8 of 36 (22.2%) of genes in pham
• Manual Annotations of this start: 7 of 32
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Applejacks_16 (CD), Gustav_16 (CD), Mahdia_16 (CD), Morrissey_17 (CD), Puppers_16 (CD), Trine_16 (CD), Upyo_16 (CD), Widow_16 (CD),

Start 14:
• Found in 7 of 36 (19.4%) of genes in pham
• Manual Annotations of this start: 6 of 32
• Called 100.0% of time when present
• Phage (with cluster) where this start called: DonkeyMan_16 (DY), Heinz_17 (DY), Hibiscus_16 (DY), Jojo24_16 (DY), Reyja_17 (DY), Santhid_16 (DY), Tarzan_16 (DY),

Summary by clusters:

There are 4 clusters represented in this pham: DW, CD, DI, DY,

Info for manual annotations of cluster CD:
•Start number 13 was manually annotated 7 times for cluster CD.

Info for manual annotations of cluster DI:
•Start number 12 was manually annotated 15 times for cluster DI.

Info for manual annotations of cluster DW:
•Start number 9 was manually annotated 4 times for cluster DW.

Info for manual annotations of cluster DY:
•Start number 14 was manually annotated 6 times for cluster DY.

Gene Information:
Gene: Applejacks_16 Start: 9709, Stop: 14226, Start Num: 13
Candidate Starts for Applejacks_16:
(Start: 13 @9709 has 7 MA's), (18, 9748), (25, 9835), (30, 9922), (37, 10012), (40, 10093), (44, 10147), (46, 10189), (52, 10222), (59, 10273), (64, 10318), (66, 10327), (73, 10393), (84, 10474), (96, 10528), (119, 10660), (125, 10690), (127, 10720), (128, 10723), (136, 10798), (137, 10801), (144, 10846), (145, 10852), (152, 10894), (153, 10903), (159, 10924), (161, 10936), (172, 11014), (175, 11035), (176, 11041), (181, 11062), (184, 11086), (193, 11140), (212, 11254), (220, 11293), (222, 11311), (239, 11425), (241, 11446), (256, 11518), (258, 11524), (262, 11566), (272, 11665), (276, 11686), (280, 11707), (285, 11734), (288, 11755), (289, 11758), (291, 11770), (292, 11773), (293, 11782), (297, 11794), (312, 11899), (314, 11908), (318, 11929), (320, 11941), (322, 11947), (323, 11965), (324, 11968), (336, 12052), (340, 12073), (342, 12079), (344, 12097), (345, 12100), (349, 12130), (352, 12166), (355, 12181), (358, 12214), (366, 12298), (368, 12322), (376, 12388), (377, 12394), (379, 12415), (381, 12439), (385, 12460), (399, 12598), (406, 12628), (408, 12649), (426, 12832), (431, 12973), (447, 13207), (455, 13297), (459, 13339), (461, 13384), (464, 13432), (481, 13552), (487, 13618), (488, 13639), (491, 13660), (493, 13666), (505, 13792), (507, 13813), (508, 13816), (511, 13858), (517, 13924), (518, 13942), (519, 13945), (522, 13978), (532, 14056), (535, 14077), (540, 14128),

Gene: ArchiDore_17 Start: 10209, Stop: 15176, Start Num: 9
Candidate Starts for ArchiDore_17:
(Start: 9 @10209 has 4 MA's), (16, 10248), (18, 10257), (33, 10476), (61, 10812), (65, 10848), (75, 10968), (85, 11052), (86, 11055), (95, 11109), (99, 11139), (105, 11187), (108, 11211), (113, 11244), (114, 11250), (117, 11274), (121, 11301), (126, 11340), (141, 11514), (151, 11592), (154, 11610), (155, 11613), (160, 11649), (164, 11670), (180, 11805), (186, 11847), (187, 11850), (200, 11937), (203, 11946), (211, 11994), (224, 12066), (235, 12141), (251, 12222), (252, 12225), (261, 12297), (262, 12306), (267, 12348), (269, 12381), (272, 12411), (294, 12543), (301, 12576), (317, 12675), (320, 12696), (326, 12732), (331, 12786), (337, 12810), (343, 12840), (347, 12864), (351, 12900), (359, 12960), (363, 12996), (369, 13062), (380, 13158), (388, 13221), (405, 13389), (409, 13425), (419, 13506), (424, 13566), (425, 13611), (434, 13812), (441, 13965), (445, 14007), (449, 14076), (451, 14103), (472, 14397), (506, 14742), (515, 14835), (516, 14841), (520, 14886), (523, 14931), (525, 14952), (531, 14991), (533, 15012), (544, 15126), (546, 15165),

Gene: Ayotoya_20 Start: 11819, Stop: 17074, Start Num: 12
Candidate Starts for Ayotoya_20:
(8, 11795), (10, 11807), (11, 11810), (Start: 12 @11819 has 15 MA's), (16, 11852), (17, 11855), (29, 12017), (31, 12038), (32, 12059), (34, 12089), (46, 12308), (53, 12353), (64, 12446), (65, 12452), (72,

12539), (75, 12572), (85, 12656), (93, 12701), (95, 12713), (96, 12728), (99, 12743), (107, 12797), (116, 12875), (124, 12920), (126, 12944), (135, 13052), (139, 13094), (143, 13133), (151, 13196), (154, 13214), (164, 13274), (180, 13409), (195, 13517), (197, 13529), (203, 13550), (218, 13631), (225, 13673), (227, 13691), (231, 13721), (235, 13745), (242, 13793), (248, 13811), (251, 13826), (252, 13829), (262, 13910), (269, 13985), (274, 14021), (294, 14147), (300, 14168), (302, 14192), (305, 14204), (317, 14279), (320, 14300), (343, 14444), (349, 14477), (351, 14504), (352, 14510), (359, 14564), (363, 14600), (367, 14657), (372, 14687), (377, 14738), (383, 14795), (393, 14885), (397, 14912), (398, 14915), (405, 14993), (406, 15002), (427, 15281), (434, 15410), (448, 15620), (454, 15713), (463, 15845), (465, 15866), (470, 15974), (474, 16073), (479, 16157), (513, 16703), (516, 16736), (520, 16781), (525, 16847), (538, 16937), (543, 17012), (545, 17057),

Gene: BetterKatz_20 Start: 11757, Stop: 16547, Start Num: 12
Candidate Starts for BetterKatz_20:
(10, 11745), (11, 11748), (Start: 12 @11757 has 15 MA's), (16, 11790), (22, 11850), (33, 12018), (53, 12291), (58, 12333), (69, 12414), (80, 12480), (104, 12606), (110, 12639), (115, 12684), (126, 12744), (129, 12777), (146, 12918), (147, 12927), (166, 13059), (170, 13104), (191, 13215), (197, 13266), (214, 13323), (222, 13365), (223, 13371), (245, 13485), (246, 13488), (262, 13593), (269, 13668), (270, 13680), (274, 13704), (305, 13887), (317, 13962), (320, 13983), (326, 14019), (343, 14127), (349, 14160), (351, 14187), (352, 14193), (354, 14205), (359, 14247), (363, 14283), (367, 14340), (372, 14370), (380, 14445), (383, 14478), (393, 14568), (398, 14598), (405, 14676), (406, 14685), (419, 14793), (427, 14964), (434, 15093), (441, 15231), (463, 15540), (465, 15561), (470, 15669), (473, 15765), (502, 16077), (504, 16080), (516, 16209), (520, 16254), (525, 16320), (531, 16359), (538, 16410), (543, 16485), (545, 16530),

Gene: Bock_20 Start: 11507, Stop: 16297, Start Num: 12
Candidate Starts for Bock_20:
(10, 11495), (11, 11498), (Start: 12 @11507 has 15 MA's), (16, 11540), (22, 11600), (33, 11768), (53, 12041), (58, 12083), (69, 12164), (80, 12230), (104, 12356), (110, 12389), (115, 12434), (126, 12494), (129, 12527), (146, 12668), (147, 12677), (166, 12809), (170, 12854), (191, 12965), (197, 13016), (214, 13073), (222, 13115), (223, 13121), (245, 13235), (246, 13238), (262, 13343), (269, 13418), (270, 13430), (274, 13454), (294, 13580), (300, 13601), (305, 13637), (317, 13712), (320, 13733), (326, 13769), (343, 13877), (349, 13910), (351, 13937), (352, 13943), (354, 13955), (359, 13997), (363, 14033), (367, 14090), (372, 14120), (380, 14195), (383, 14228), (393, 14318), (398, 14348), (405, 14426), (406, 14435), (419, 14543), (427, 14714), (434, 14843), (441, 14981), (463, 15290), (465, 15311), (470, 15419), (473, 15515), (502, 15827), (504, 15830), (516, 15959), (520, 16004), (525, 16070), (531, 16109), (538, 16160), (543, 16235), (545, 16280),

Gene: Brylie_20 Start: 11504, Stop: 16288, Start Num: 12
Candidate Starts for Brylie_20:
(10, 11492), (11, 11495), (Start: 12 @11504 has 15 MA's), (16, 11537), (22, 11597), (33, 11765), (53, 12038), (58, 12080), (69, 12161), (80, 12227), (104, 12353), (110, 12386), (115, 12431), (126, 12491), (129, 12524), (146, 12665), (147, 12674), (166, 12806), (170, 12851), (191, 12962), (197, 13013), (214, 13070), (222, 13112), (223, 13118), (245, 13232), (246, 13235), (262, 13340), (269, 13415), (270, 13427), (274, 13451), (305, 13634), (317, 13709), (320, 13730), (326, 13766), (343, 13874), (349, 13907), (351, 13934), (352, 13940), (354, 13952), (359, 13994), (363, 14030), (367, 14087), (372, 14117), (380, 14192), (383, 14225), (393, 14315), (398, 14345), (405, 14423), (406, 14432), (419, 14540), (427, 14711), (434, 14840), (441, 14978), (463, 15287), (465, 15308), (470, 15416), (473, 15506), (502, 15818), (504, 15821), (516, 15950), (520, 15995), (525, 16061), (531, 16100), (538, 16151), (543, 16226), (545, 16271),

Gene: Chop_20 Start: 11567, Stop: 16822, Start Num: 12
Candidate Starts for Chop_20:

(8, 11543), (10, 11555), (11, 11558), (Start: 12 @11567 has 15 MA's), (16, 11600), (17, 11603), (29, 11765), (31, 11786), (32, 11807), (34, 11837), (46, 12056), (53, 12101), (64, 12194), (65, 12200), (72, 12287), (75, 12320), (85, 12404), (93, 12449), (95, 12461), (96, 12476), (99, 12491), (107, 12545), (116, 12623), (124, 12668), (126, 12692), (135, 12800), (139, 12842), (143, 12881), (151, 12944), (154, 12962), (164, 13022), (180, 13157), (195, 13265), (197, 13277), (203, 13298), (218, 13379), (225, 13421), (227, 13439), (231, 13469), (235, 13493), (242, 13541), (248, 13559), (251, 13574), (252, 13577), (262, 13658), (269, 13733), (274, 13769), (294, 13895), (300, 13916), (302, 13940), (305, 13952), (317, 14027), (320, 14048), (343, 14192), (349, 14225), (351, 14252), (352, 14258), (359, 14312), (363, 14348), (367, 14405), (372, 14435), (377, 14486), (383, 14543), (393, 14633), (397, 14660), (398, 14663), (405, 14741), (406, 14750), (427, 15029), (434, 15158), (448, 15368), (454, 15461), (463, 15593), (465, 15614), (470, 15722), (474, 15821), (479, 15905), (513, 16451), (516, 16484), (520, 16529), (525, 16595), (538, 16685), (543, 16760), (545, 16805),

Gene: DelRio_21 Start: 12041, Stop: 17296, Start Num: 12
Candidate Starts for DelRio_21:
(8, 12017), (10, 12029), (11, 12032), (Start: 12 @12041 has 15 MA's), (16, 12074), (17, 12077), (29, 12239), (32, 12281), (34, 12311), (46, 12530), (64, 12668), (65, 12674), (72, 12761), (75, 12794), (79, 12824), (85, 12878), (93, 12923), (95, 12935), (96, 12950), (99, 12965), (107, 13019), (116, 13097), (124, 13142), (126, 13166), (135, 13274), (139, 13316), (143, 13355), (151, 13418), (154, 13436), (158, 13460), (160, 13475), (164, 13496), (180, 13631), (195, 13739), (197, 13751), (203, 13772), (218, 13853), (225, 13895), (227, 13913), (231, 13943), (235, 13967), (242, 14015), (251, 14048), (252, 14051), (262, 14132), (269, 14207), (274, 14243), (294, 14369), (300, 14390), (302, 14414), (305, 14426), (317, 14501), (320, 14522), (343, 14666), (349, 14699), (351, 14726), (352, 14732), (359, 14786), (363, 14822), (367, 14879), (372, 14909), (377, 14960), (383, 15017), (393, 15107), (397, 15134), (398, 15137), (405, 15215), (406, 15224), (427, 15503), (434, 15632), (448, 15842), (454, 15935), (463, 16067), (465, 16088), (470, 16196), (474, 16295), (513, 16925), (516, 16958), (520, 17003), (525, 17069), (538, 17159), (543, 17234), (545, 17279),

Gene: DonkeyMan_16 Start: 9948, Stop: 14102, Start Num: 14
Candidate Starts for DonkeyMan_16:
(Start: 14 @9948 has 6 MA's), (17, 9975), (18, 9981), (19, 9993), (24, 10035), (27, 10083), (49, 10419), (78, 10641), (100, 10773), (102, 10794), (106, 10812), (127, 10941), (128, 10944), (145, 11073), (174, 11253), (181, 11283), (184, 11307), (207, 11436), (211, 11472), (216, 11493), (222, 11532), (230, 11592), (233, 11613), (234, 11619), (266, 11700), (268, 11709), (279, 11802), (285, 11835), (299, 11898), (323, 11988), (354, 12012), (358, 12048), (359, 12054), (361, 12069), (365, 12111), (370, 12162), (374, 12198), (379, 12249), (389, 12348), (401, 12450), (403, 12459), (411, 12510), (412, 12534), (415, 12561), (418, 12579), (420, 12588), (423, 12627), (426, 12696), (431, 12837), (439, 13005), (442, 13029), (444, 13053), (446, 13071), (460, 13254), (461, 13257), (462, 13275), (493, 13548), (505, 13668), (511, 13734), (514, 13761), (517, 13800), (531, 13929),

Gene: DumpsterDude_17 Start: 10190, Stop: 15148, Start Num: 9
Candidate Starts for DumpsterDude_17:
(Start: 9 @10190 has 4 MA's), (16, 10229), (18, 10238), (33, 10457), (61, 10793), (65, 10829), (72, 10916), (75, 10949), (85, 11033), (86, 11036), (95, 11090), (99, 11120), (101, 11141), (102, 11150), (105, 11168), (108, 11192), (113, 11225), (114, 11231), (117, 11255), (121, 11282), (126, 11321), (141, 11495), (148, 11546), (151, 11573), (154, 11591), (155, 11594), (160, 11630), (164, 11651), (180, 11786), (187, 11831), (200, 11918), (203, 11927), (204, 11930), (211, 11975), (224, 12047), (233, 12107), (235, 12122), (239, 12146), (251, 12203), (252, 12206), (257, 12242), (261, 12278), (262, 12287), (267, 12329), (269, 12362), (294, 12524), (317, 12656), (320, 12677), (326, 12713), (331, 12767), (343, 12821), (347, 12845), (351, 12881), (359, 12941), (369, 13043), (379, 13136), (380, 13139), (382, 13169), (386, 13184), (390, 13238), (393, 13262), (395, 13268), (397, 13289), (400, 13346), (405, 13370), (424, 13547), (428, 13694), (434, 13790), (438, 13880), (441, 13937), (451, 14075), (472, 14369), (482, 14477), (506, 14714), (515, 14807), (516, 14813), (520, 14858),

(523, 14903), (525, 14924), (531, 14963), (533, 14984), (544, 15098), (545, 15131), (546, 15137),

Gene: Francois_20 Start: 11521, Stop: 16311, Start Num: 12
Candidate Starts for Francois_20:
(1, 11356), (2, 11398), (3, 11410), (4, 11434), (6, 11473), (10, 11509), (11, 11512), (Start: 12 @11521 has 15 MA's), (16, 11554), (22, 11614), (33, 11782), (53, 12055), (58, 12097), (69, 12178), (80, 12244), (104, 12370), (110, 12403), (115, 12448), (126, 12508), (129, 12541), (146, 12682), (147, 12691), (166, 12823), (170, 12868), (191, 12979), (197, 13030), (214, 13087), (222, 13129), (223, 13135), (240, 13234), (245, 13249), (246, 13252), (262, 13357), (269, 13432), (270, 13444), (274, 13468), (294, 13594), (300, 13615), (302, 13639), (305, 13651), (317, 13726), (320, 13747), (326, 13783), (343, 13891), (349, 13924), (351, 13951), (352, 13957), (354, 13969), (359, 14011), (363, 14047), (367, 14104), (380, 14209), (383, 14242), (393, 14332), (397, 14359), (398, 14362), (405, 14440), (406, 14449), (419, 14557), (427, 14728), (434, 14857), (441, 14995), (463, 15304), (465, 15325), (470, 15433), (475, 15544), (502, 15841), (504, 15844), (516, 15973), (520, 16018), (525, 16084), (531, 16123), (538, 16174), (543, 16249), (545, 16294),

Gene: GrandSlam_20 Start: 11567, Stop: 16822, Start Num: 12
Candidate Starts for GrandSlam_20:
(8, 11543), (10, 11555), (11, 11558), (Start: 12 @11567 has 15 MA's), (16, 11600), (17, 11603), (29, 11765), (31, 11786), (32, 11807), (34, 11837), (46, 12056), (53, 12101), (64, 12194), (65, 12200), (72, 12287), (75, 12320), (85, 12404), (93, 12449), (95, 12461), (96, 12476), (99, 12491), (107, 12545), (116, 12623), (124, 12668), (126, 12692), (135, 12800), (139, 12842), (143, 12881), (151, 12944), (154, 12962), (164, 13022), (180, 13157), (195, 13265), (197, 13277), (203, 13298), (218, 13379), (225, 13421), (227, 13439), (231, 13469), (235, 13493), (242, 13541), (248, 13559), (251, 13574), (252, 13577), (262, 13658), (269, 13733), (274, 13769), (294, 13895), (300, 13916), (302, 13940), (305, 13952), (317, 14027), (320, 14048), (343, 14192), (349, 14225), (351, 14252), (352, 14258), (359, 14312), (363, 14348), (367, 14405), (372, 14435), (377, 14486), (383, 14543), (393, 14633), (397, 14660), (398, 14663), (405, 14741), (406, 14750), (427, 15029), (434, 15158), (448, 15368), (454, 15461), (463, 15593), (465, 15614), (470, 15722), (474, 15821), (479, 15905), (513, 16451), (516, 16484), (520, 16529), (525, 16595), (538, 16685), (543, 16760), (545, 16805),

Gene: Gustav_16 Start: 9814, Stop: 14301, Start Num: 13
Candidate Starts for Gustav_16:
(Start: 13 @9814 has 7 MA's), (15, 9832), (18, 9853), (19, 9865), (21, 9898), (27, 9967), (47, 10306), (50, 10321), (57, 10381), (67, 10459), (71, 10498), (89, 10627), (95, 10660), (101, 10705), (107, 10738), (122, 10822), (123, 10828), (132, 10909), (138, 10963), (140, 10975), (167, 11158), (173, 11188), (179, 11224), (190, 11293), (194, 11326), (197, 11332), (208, 11362), (226, 11443), (229, 11464), (232, 11482), (237, 11497), (270, 11650), (276, 11689), (286, 11737), (292, 11770), (296, 11788), (308, 11836), (313, 11878), (327, 11905), (330, 11929), (332, 11941), (333, 11944), (335, 11953), (338, 11965), (345, 12004), (348, 12031), (358, 12118), (361, 12139), (365, 12181), (371, 12235), (374, 12268), (375, 12289), (376, 12292), (377, 12298), (380, 12322), (394, 12448), (397, 12472), (399, 12517), (402, 12532), (406, 12547), (407, 12565), (411, 12583), (422, 12688), (430, 12892), (431, 12901), (476, 13576), (483, 13642), (490, 13705), (494, 13750), (498, 13798), (500, 13807), (503, 13846), (506, 13882), (508, 13891), (509, 13903), (521, 14029), (529, 14107), (530, 14119), (531, 14122), (534, 14143), (535, 14146), (539, 14200),

Gene: Hamood_20 Start: 11567, Stop: 16822, Start Num: 12
Candidate Starts for Hamood_20:
(8, 11543), (10, 11555), (11, 11558), (Start: 12 @11567 has 15 MA's), (16, 11600), (17, 11603), (29, 11765), (31, 11786), (32, 11807), (34, 11837), (46, 12056), (53, 12101), (64, 12194), (65, 12200), (72, 12287), (75, 12320), (85, 12404), (93, 12449), (95, 12461), (96, 12476), (99, 12491), (107, 12545), (116, 12623), (124, 12668), (126, 12692), (135, 12800), (139, 12842), (143, 12881), (151, 12944), (154, 12962), (164, 13022), (180, 13157), (195, 13265), (197, 13277), (203, 13298), (218, 13379),

(225, 13421), (227, 13439), (231, 13469), (235, 13493), (242, 13541), (248, 13559), (251, 13574), (252, 13577), (262, 13658), (269, 13733), (274, 13769), (294, 13895), (300, 13916), (302, 13940), (305, 13952), (317, 14027), (320, 14048), (343, 14192), (349, 14225), (351, 14252), (352, 14258), (359, 14312), (363, 14348), (367, 14405), (372, 14435), (377, 14486), (383, 14543), (393, 14633), (397, 14660), (398, 14663), (405, 14741), (406, 14750), (427, 15029), (434, 15158), (448, 15368), (454, 15461), (463, 15593), (465, 15614), (470, 15722), (474, 15821), (479, 15905), (513, 16451), (516, 16484), (520, 16529), (525, 16595), (538, 16685), (543, 16760), (545, 16805),

Gene: Heinz_17 Start: 9889, Stop: 14187, Start Num: 14
Candidate Starts for Heinz_17:
(5, 9820), (7, 9850), (Start: 14 @9889 has 6 MA's), (17, 9916), (18, 9922), (19, 9934), (24, 9976), (27, 10024), (32, 10108), (49, 10360), (100, 10714), (102, 10735), (127, 10882), (128, 10885), (153, 11065), (161, 11098), (181, 11224), (184, 11248), (206, 11374), (207, 11377), (216, 11434), (222, 11473), (234, 11560), (256, 11680), (266, 11761), (273, 11830), (278, 11860), (279, 11863), (285, 11896), (297, 11956), (299, 11959), (323, 12049), (358, 12109), (359, 12115), (361, 12130), (362, 12133), (365, 12172), (370, 12223), (374, 12259), (379, 12310), (389, 12409), (403, 12520), (411, 12571), (412, 12595), (415, 12622), (418, 12640), (420, 12649), (423, 12688), (426, 12757), (431, 12898), (433, 12928), (444, 13114), (460, 13324), (461, 13327), (493, 13627), (501, 13705), (505, 13753), (511, 13819), (514, 13846), (517, 13885), (527, 13990), (528, 13993), (531, 14014), (536, 14047), (537, 14050),

Gene: Hibiscus_16 Start: 9906, Stop: 14141, Start Num: 14
Candidate Starts for Hibiscus_16:
(5, 9837), (Start: 14 @9906 has 6 MA's), (17, 9933), (18, 9939), (23, 9996), (41, 10296), (56, 10458), (57, 10467), (92, 10725), (101, 10791), (104, 10812), (107, 10824), (111, 10848), (123, 10914), (132, 10995), (138, 11049), (146, 11094), (167, 11244), (173, 11274), (182, 11331), (188, 11364), (207, 11472), (222, 11568), (230, 11628), (233, 11649), (234, 11655), (266, 11736), (268, 11745), (279, 11838), (285, 11871), (303, 11970), (354, 12048), (358, 12084), (359, 12090), (360, 12102), (361, 12105), (365, 12147), (370, 12198), (374, 12234), (379, 12285), (389, 12384), (391, 12399), (403, 12495), (407, 12528), (411, 12546), (412, 12570), (415, 12597), (418, 12615), (420, 12624), (423, 12663), (426, 12732), (431, 12873), (433, 12903), (439, 13038), (450, 13146), (460, 13290), (461, 13293), (493, 13581), (505, 13707), (511, 13773), (514, 13800), (517, 13839), (524, 13926), (531, 13968),

Gene: Jojo24_16 Start: 9900, Stop: 14138, Start Num: 14
Candidate Starts for Jojo24_16:
(5, 9831), (Start: 14 @9900 has 6 MA's), (17, 9927), (18, 9933), (23, 9990), (37, 10197), (41, 10290), (56, 10452), (57, 10461), (92, 10719), (101, 10785), (104, 10806), (107, 10818), (111, 10842), (132, 10989), (138, 11043), (146, 11088), (167, 11238), (173, 11268), (182, 11325), (188, 11358), (206, 11463), (207, 11466), (221, 11556), (222, 11562), (230, 11622), (233, 11643), (234, 11649), (266, 11730), (268, 11739), (279, 11832), (285, 11865), (297, 11925), (299, 11928), (303, 11964), (358, 12078), (359, 12084), (360, 12096), (361, 12099), (365, 12141), (370, 12192), (374, 12228), (379, 12279), (380, 12282), (389, 12378), (391, 12393), (403, 12489), (411, 12540), (412, 12564), (415, 12591), (418, 12609), (420, 12618), (423, 12657), (426, 12726), (431, 12867), (433, 12897), (439, 13032), (446, 13098), (450, 13140), (460, 13281), (461, 13284), (493, 13578), (505, 13704), (511, 13770), (517, 13836), (524, 13923), (531, 13965),

Gene: Mahdia_16 Start: 9733, Stop: 13983, Start Num: 13
Candidate Starts for Mahdia_16:
(Start: 13 @9733 has 7 MA's), (15, 9751), (19, 9784), (21, 9817), (29, 9928), (43, 10159), (47, 10225), (50, 10240), (57, 10300), (62, 10339), (71, 10417), (74, 10447), (83, 10501), (89, 10546), (95, 10579), (101, 10624), (107, 10657), (123, 10747), (132, 10828), (138, 10882), (140, 10894), (148, 10951), (162, 11026), (167, 11077), (173, 11107), (194, 11245), (198, 11257), (220, 11317), (224, 11338),

(225, 11341), (238, 11392), (243, 11419), (244, 11422), (253, 11440), (263, 11488), (270, 11533), (284, 11557), (287, 11572), (293, 11599), (295, 11605), (315, 11704), (330, 11731), (331, 11737), (345, 11758), (356, 11866), (358, 11872), (361, 11893), (374, 12022), (375, 12043), (376, 12046), (377, 12052), (380, 12076), (384, 12112), (385, 12118), (399, 12259), (411, 12325), (413, 12349), (416, 12376), (421, 12412), (422, 12427), (431, 12649), (459, 13030), (489, 13396), (493, 13420), (497, 13471), (499, 13492), (505, 13546), (508, 13570), (511, 13612), (517, 13678), (518, 13696), (527, 13783), (532, 13810), (534, 13828), (535, 13831),

Gene: MakCheese_18 Start: 9949, Stop: 14994, Start Num: 9
Candidate Starts for MakCheese_18:
(Start: 9 @9949 has 4 MA's), (16, 9988), (18, 9997), (22, 10048), (27, 10111), (32, 10195), (61, 10552), (64, 10582), (65, 10588), (67, 10609), (72, 10675), (75, 10708), (85, 10792), (86, 10795), (91, 10822), (95, 10849), (99, 10879), (101, 10900), (105, 10927), (113, 10984), (114, 10990), (117, 11014), (121, 11041), (124, 11056), (126, 11080), (131, 11143), (141, 11254), (151, 11332), (154, 11350), (155, 11353), (160, 11389), (164, 11410), (168, 11476), (180, 11545), (185, 11581), (186, 11587), (187, 11590), (192, 11620), (200, 11677), (203, 11686), (204, 11689), (224, 11806), (225, 11809), (233, 11866), (235, 11881), (251, 11962), (252, 11965), (262, 12046), (267, 12088), (275, 12169), (294, 12283), (301, 12316), (302, 12328), (304, 12334), (317, 12415), (324, 12463), (326, 12472), (337, 12550), (343, 12580), (347, 12604), (351, 12640), (353, 12649), (359, 12700), (363, 12736), (369, 12802), (372, 12823), (379, 12895), (380, 12898), (382, 12928), (383, 12931), (390, 12997), (393, 13021), (396, 13039), (404, 13123), (405, 13129), (406, 13138), (424, 13306), (434, 13540), (436, 13600), (437, 13627), (443, 13705), (458, 13876), (468, 14047), (496, 14470), (506, 14560), (515, 14653), (516, 14659), (520, 14704), (523, 14749), (525, 14770), (531, 14809), (542, 14923), (543, 14932), (544, 14944), (546, 14983),

Gene: Morrissey_17 Start: 10161, Stop: 15197, Start Num: 13
Candidate Starts for Morrissey_17:
(Start: 13 @10161 has 7 MA's), (18, 10200), (23, 10257), (26, 10305), (28, 10335), (36, 10452), (38, 10482), (45, 10629), (57, 10725), (71, 10848), (77, 10893), (95, 11016), (99, 11046), (101, 11067), (102, 11076), (105, 11094), (107, 11100), (109, 11121), (115, 11175), (118, 11184), (121, 11208), (133, 11349), (142, 11427), (163, 11574), (169, 11652), (184, 11751), (188, 11772), (189, 11778), (190, 11793), (197, 11847), (201, 11862), (202, 11865), (209, 11898), (210, 11907), (216, 11937), (220, 11958), (222, 11976), (224, 11991), (241, 12111), (250, 12144), (256, 12183), (265, 12258), (266, 12264), (285, 12399), (290, 12432), (291, 12435), (292, 12438), (293, 12447), (297, 12459), (302, 12495), (308, 12525), (312, 12564), (320, 12606), (321, 12609), (322, 12612), (324, 12633), (329, 12663), (340, 12738), (342, 12744), (349, 12795), (350, 12819), (361, 12900), (371, 12996), (373, 13017), (374, 13029), (375, 13050), (376, 13053), (380, 13083), (384, 13119), (394, 13209), (397, 13233), (399, 13278), (406, 13308), (407, 13326), (411, 13344), (412, 13365), (413, 13368), (430, 13623), (431, 13632), (446, 13866), (456, 13998), (457, 14004), (459, 14022), (460, 14064), (467, 14181), (477, 14433), (478, 14460), (485, 14565), (489, 14607), (491, 14625), (493, 14631), (505, 14757), (508, 14781), (510, 14805), (511, 14823), (512, 14829), (517, 14889), (531, 15018), (532, 15021), (534, 15039), (535, 15042), (540, 15099),

Gene: Mulch_20 Start: 11504, Stop: 16288, Start Num: 12
Candidate Starts for Mulch_20:
(10, 11492), (11, 11495), (Start: 12 @11504 has 15 MA's), (16, 11537), (22, 11597), (33, 11765), (53, 12038), (58, 12080), (69, 12161), (80, 12227), (104, 12353), (110, 12386), (115, 12431), (126, 12491), (129, 12524), (146, 12665), (147, 12674), (166, 12806), (170, 12851), (191, 12962), (197, 13013), (214, 13070), (222, 13112), (223, 13118), (245, 13232), (246, 13235), (262, 13340), (269, 13415), (270, 13427), (274, 13451), (305, 13634), (317, 13709), (320, 13730), (326, 13766), (343, 13874), (349, 13907), (351, 13934), (352, 13940), (354, 13952), (359, 13994), (363, 14030), (367, 14087), (372, 14117), (380, 14192), (383, 14225), (393, 14315), (398, 14345), (405, 14423), (406, 14432), (419, 14540), (427, 14711), (434, 14840), (441, 14978), (463, 15287), (465, 15308), (470, 15416),

(473, 15506), (502, 15818), (504, 15821), (516, 15950), (520, 15995), (525, 16061), (531, 16100), (538, 16151), (543, 16226), (545, 16271),

Gene: Nadeem_20 Start: 11504, Stop: 16288, Start Num: 12
Candidate Starts for Nadeem_20:
(10, 11492), (11, 11495), (Start: 12 @11504 has 15 MA's), (16, 11537), (22, 11597), (33, 11765), (53, 12038), (58, 12080), (69, 12161), (80, 12227), (104, 12353), (110, 12386), (115, 12431), (126, 12491), (129, 12524), (146, 12665), (147, 12674), (166, 12806), (170, 12851), (191, 12962), (197, 13013), (214, 13070), (222, 13112), (223, 13118), (245, 13232), (246, 13235), (262, 13340), (269, 13415), (270, 13427), (274, 13451), (305, 13634), (317, 13709), (320, 13730), (326, 13766), (343, 13874), (349, 13907), (351, 13934), (352, 13940), (354, 13952), (359, 13994), (363, 14030), (367, 14087), (372, 14117), (380, 14192), (383, 14225), (393, 14315), (398, 14345), (405, 14423), (406, 14432), (419, 14540), (427, 14711), (434, 14840), (441, 14978), (463, 15287), (465, 15308), (470, 15416), (473, 15506), (502, 15818), (504, 15821), (516, 15950), (520, 15995), (525, 16061), (531, 16100), (538, 16151), (543, 16226), (545, 16271),

Gene: NancyRae_20 Start: 11504, Stop: 16294, Start Num: 12
Candidate Starts for NancyRae_20:
(10, 11492), (11, 11495), (Start: 12 @11504 has 15 MA's), (16, 11537), (22, 11597), (33, 11765), (53, 12038), (58, 12080), (69, 12161), (80, 12227), (104, 12353), (110, 12386), (115, 12431), (126, 12491), (129, 12524), (146, 12665), (147, 12674), (166, 12806), (170, 12851), (191, 12962), (197, 13013), (214, 13070), (222, 13112), (223, 13118), (245, 13232), (246, 13235), (262, 13340), (269, 13415), (270, 13427), (274, 13451), (294, 13577), (305, 13634), (317, 13709), (320, 13730), (326, 13766), (343, 13874), (349, 13907), (351, 13934), (352, 13940), (359, 13994), (363, 14030), (367, 14087), (372, 14117), (380, 14192), (383, 14225), (393, 14315), (398, 14345), (405, 14423), (406, 14432), (419, 14540), (427, 14711), (434, 14840), (441, 14978), (463, 15287), (465, 15308), (470, 15416), (473, 15512), (502, 15824), (504, 15827), (516, 15956), (520, 16001), (525, 16067), (531, 16106), (538, 16157), (543, 16232), (545, 16277),

Gene: Parada_20 Start: 11504, Stop: 16288, Start Num: 12
Candidate Starts for Parada_20:
(10, 11492), (11, 11495), (Start: 12 @11504 has 15 MA's), (16, 11537), (22, 11597), (33, 11765), (53, 12038), (58, 12080), (69, 12161), (80, 12227), (104, 12353), (110, 12386), (115, 12431), (126, 12491), (129, 12524), (146, 12665), (147, 12674), (166, 12806), (170, 12851), (191, 12962), (197, 13013), (214, 13070), (222, 13112), (223, 13118), (245, 13232), (246, 13235), (262, 13340), (269, 13415), (270, 13427), (274, 13451), (305, 13634), (317, 13709), (320, 13730), (326, 13766), (343, 13874), (349, 13907), (351, 13934), (352, 13940), (354, 13952), (359, 13994), (363, 14030), (367, 14087), (372, 14117), (380, 14192), (383, 14225), (393, 14315), (398, 14345), (405, 14423), (406, 14432), (419, 14540), (427, 14711), (434, 14840), (441, 14978), (463, 15287), (465, 15308), (470, 15416), (473, 15506), (502, 15818), (504, 15821), (516, 15950), (520, 15995), (525, 16061), (531, 16100), (538, 16151), (543, 16226), (545, 16271),

Gene: Pimento_21 Start: 11708, Stop: 15985, Start Num: 12
Candidate Starts for Pimento_21:
(10, 11696), (11, 11699), (Start: 12 @11708 has 15 MA's), (16, 11741), (33, 11969), (39, 12053), (42, 12116), (55, 12242), (59, 12275), (63, 12290), (69, 12323), (90, 12413), (112, 12488), (115, 12512), (120, 12527), (134, 12611), (146, 12632), (147, 12641), (149, 12653), (150, 12665), (157, 12692), (164, 12713), (165, 12731), (170, 12743), (171, 12749), (205, 12878), (219, 12923), (254, 13073), (259, 13103), (281, 13268), (282, 13271), (283, 13274), (305, 13361), (306, 13364), (307, 13370), (328, 13481), (349, 13604), (359, 13691), (373, 13820), (380, 13889), (383, 13922), (398, 14042), (405, 14120), (406, 14129), (419, 14237), (427, 14408), (434, 14537), (441, 14675), (463, 14984), (465, 15005), (470, 15113), (473, 15203), (502, 15515), (504, 15518), (516, 15647), (520, 15692), (525, 15758), (531, 15797), (538, 15848), (543, 15923), (545, 15968),

Gene: Puppers_16 Start: 9686, Stop: 14305, Start Num: 13
Candidate Starts for Puppers_16:
(Start: 13 @9686 has 7 MA's), (40, 10070), (45, 10154), (51, 10196), (54, 10232), (60, 10271), (70, 10361), (71, 10373), (73, 10394), (74, 10403), (83, 10457), (92, 10514), (95, 10535), (97, 10547), (98, 10550), (101, 10580), (104, 10601), (107, 10613), (132, 10784), (138, 10838), (156, 10952), (162, 10982), (167, 11033), (173, 11063), (179, 11099), (202, 11231), (205, 11240), (208, 11252), (216, 11303), (226, 11369), (236, 11429), (238, 11441), (255, 11528), (260, 11564), (264, 11606), (265, 11612), (272, 11675), (273, 11678), (280, 11717), (284, 11741), (287, 11756), (295, 11789), (304, 11813), (309, 11840), (314, 11882), (316, 11891), (322, 11921), (325, 11945), (331, 12005), (339, 12038), (341, 12050), (345, 12074), (346, 12077), (352, 12137), (357, 12182), (361, 12206), (365, 12248), (373, 12323), (374, 12335), (375, 12356), (376, 12359), (378, 12374), (391, 12500), (392, 12503), (406, 12632), (408, 12653), (410, 12662), (416, 12716), (417, 12722), (431, 12980), (440, 13151), (442, 13169), (453, 13316), (456, 13358), (493, 13739), (497, 13790), (501, 13817), (505, 13865), (508, 13889), (510, 13913), (511, 13931), (517, 13997), (527, 14102), (531, 14126), (532, 14129), (534, 14147), (535, 14150), (541, 14237),

Gene: Reyja_17 Start: 10078, Stop: 14313, Start Num: 14
Candidate Starts for Reyja_17:
(5, 10009), (7, 10039), (Start: 14 @10078 has 6 MA's), (17, 10105), (19, 10123), (21, 10156), (23, 10168), (37, 10375), (41, 10468), (48, 10567), (56, 10630), (57, 10639), (81, 10825), (89, 10885), (92, 10897), (93, 10906), (101, 10963), (104, 10984), (107, 10996), (132, 11167), (138, 11221), (167, 11416), (173, 11446), (183, 11506), (189, 11542), (207, 11644), (222, 11740), (230, 11800), (233, 11821), (234, 11827), (266, 11908), (268, 11917), (278, 12007), (279, 12010), (285, 12043), (297, 12103), (299, 12106), (323, 12196), (354, 12220), (358, 12256), (359, 12262), (361, 12277), (365, 12319), (370, 12370), (374, 12406), (379, 12457), (389, 12556), (401, 12658), (403, 12667), (411, 12718), (412, 12742), (415, 12769), (418, 12787), (420, 12796), (423, 12835), (426, 12904), (431, 13045), (439, 13213), (442, 13237), (444, 13261), (446, 13279), (460, 13468), (461, 13471), (462, 13489), (493, 13759), (505, 13879), (511, 13945), (517, 14011), (531, 14140),

Gene: Ruthy_17 Start: 10300, Stop: 15261, Start Num: 9
Candidate Starts for Ruthy_17:
(Start: 9 @10300 has 4 MA's), (16, 10339), (18, 10348), (33, 10567), (61, 10903), (65, 10939), (75, 11059), (85, 11143), (86, 11146), (95, 11200), (99, 11230), (102, 11260), (105, 11278), (108, 11302), (113, 11335), (114, 11341), (117, 11365), (121, 11392), (126, 11431), (141, 11605), (148, 11656), (151, 11683), (154, 11701), (155, 11704), (160, 11740), (164, 11761), (180, 11896), (187, 11941), (200, 12028), (203, 12037), (204, 12040), (211, 12085), (224, 12157), (226, 12175), (228, 12184), (240, 12274), (252, 12316), (257, 12352), (258, 12355), (261, 12388), (262, 12397), (267, 12439), (269, 12472), (294, 12634), (301, 12667), (317, 12766), (320, 12787), (326, 12823), (331, 12877), (337, 12901), (343, 12931), (347, 12955), (351, 12991), (359, 13051), (363, 13087), (369, 13153), (379, 13246), (380, 13249), (382, 13279), (386, 13294), (390, 13348), (393, 13372), (395, 13378), (397, 13399), (400, 13456), (405, 13480), (409, 13516), (419, 13597), (424, 13657), (425, 13702), (427, 13768), (429, 13837), (434, 13903), (438, 13993), (441, 14050), (451, 14188), (472, 14482), (482, 14590), (506, 14827), (515, 14920), (516, 14926), (520, 14971), (523, 15016), (525, 15037), (531, 15076), (544, 15211), (545, 15244), (546, 15250),

Gene: Santhid_16 Start: 9908, Stop: 14146, Start Num: 14
Candidate Starts for Santhid_16:
(5, 9839), (Start: 14 @9908 has 6 MA's), (17, 9935), (18, 9941), (20, 9962), (23, 9998), (37, 10205), (41, 10298), (56, 10460), (57, 10469), (92, 10727), (101, 10793), (104, 10814), (107, 10826), (111, 10850), (132, 10997), (138, 11051), (146, 11096), (167, 11246), (173, 11276), (182, 11333), (188, 11366), (207, 11474), (222, 11570), (230, 11630), (233, 11651), (234, 11657), (266, 11738), (268, 11747), (279, 11840), (285, 11873), (297, 11933), (299, 11936), (303, 11972), (358, 12086), (359,

12092), (361, 12107), (365, 12149), (370, 12200), (374, 12236), (379, 12287), (389, 12386), (391, 12401), (403, 12497), (411, 12548), (412, 12572), (415, 12599), (418, 12617), (420, 12626), (423, 12665), (426, 12734), (431, 12875), (432, 12899), (433, 12905), (439, 13040), (450, 13148), (460, 13292), (461, 13295), (493, 13586), (495, 13616), (505, 13712), (508, 13736), (511, 13778), (514, 13805), (517, 13844), (524, 13931), (531, 13973), (532, 13976),

Gene: Sprinklemunch_16 Start: 9983, Stop: 15025, Start Num: 9
Candidate Starts for Sprinklemunch_16:
(Start: 9 @9983 has 4 MA's), (16, 10019), (18, 10028), (22, 10079), (27, 10142), (34, 10256), (53, 10520), (61, 10583), (64, 10613), (65, 10619), (72, 10706), (75, 10739), (82, 10787), (85, 10823), (86, 10826), (95, 10880), (99, 10910), (105, 10958), (113, 11015), (114, 11021), (117, 11045), (121, 11072), (124, 11087), (126, 11111), (131, 11174), (141, 11285), (151, 11363), (154, 11381), (155, 11384), (160, 11420), (164, 11441), (168, 11507), (180, 11576), (185, 11612), (186, 11618), (187, 11621), (192, 11651), (196, 11687), (203, 11717), (204, 11720), (210, 11756), (215, 11780), (224, 11837), (235, 11912), (239, 11936), (251, 11993), (262, 12077), (267, 12119), (275, 12200), (294, 12314), (301, 12347), (302, 12359), (304, 12365), (305, 12371), (331, 12557), (347, 12635), (359, 12731), (369, 12833), (372, 12854), (379, 12926), (380, 12929), (382, 12959), (383, 12962), (390, 13028), (393, 13052), (396, 13070), (404, 13154), (405, 13160), (406, 13169), (424, 13337), (434, 13571), (435, 13577), (436, 13631), (437, 13658), (506, 14591), (515, 14684), (516, 14690), (520, 14735), (523, 14780), (525, 14801), (531, 14840), (542, 14954), (544, 14975), (546, 15014),

Gene: Tarzan_16 Start: 9953, Stop: 14116, Start Num: 14
Candidate Starts for Tarzan_16:
(Start: 14 @9953 has 6 MA's), (17, 9980), (18, 9986), (19, 9998), (24, 10040), (27, 10088), (49, 10424), (78, 10646), (100, 10778), (102, 10799), (106, 10817), (127, 10946), (128, 10949), (145, 11078), (181, 11288), (184, 11312), (207, 11441), (211, 11477), (216, 11498), (222, 11537), (230, 11597), (233, 11618), (234, 11624), (266, 11705), (268, 11714), (279, 11807), (285, 11840), (297, 11900), (299, 11903), (323, 11993), (354, 12017), (358, 12053), (359, 12059), (361, 12074), (365, 12116), (370, 12167), (374, 12203), (379, 12254), (401, 12455), (403, 12464), (411, 12515), (412, 12539), (415, 12566), (418, 12584), (420, 12593), (423, 12632), (426, 12701), (431, 12842), (439, 13010), (442, 13034), (444, 13058), (452, 13151), (460, 13265), (461, 13268), (462, 13286), (493, 13562), (505, 13682), (511, 13748), (517, 13814), (531, 13943),

Gene: Trine_16 Start: 9668, Stop: 13906, Start Num: 13
Candidate Starts for Trine_16:
(Start: 13 @9668 has 7 MA's), (19, 9719), (28, 9842), (35, 9950), (43, 10094), (47, 10160), (55, 10214), (57, 10235), (61, 10262), (74, 10382), (83, 10436), (87, 10466), (104, 10580), (107, 10592), (123, 10682), (132, 10763), (162, 10961), (163, 10976), (167, 11012), (173, 11042), (177, 11072), (217, 11237), (238, 11327), (240, 11348), (245, 11360), (249, 11363), (250, 11366), (252, 11372), (255, 11390), (264, 11426), (270, 11468), (286, 11501), (293, 11534), (298, 11546), (310, 11600), (311, 11621), (312, 11624), (330, 11666), (334, 11678), (356, 11801), (357, 11804), (361, 11828), (365, 11870), (373, 11945), (374, 11957), (375, 11978), (381, 12032), (384, 12047), (387, 12068), (391, 12122), (402, 12209), (406, 12224), (411, 12260), (412, 12281), (431, 12527), (443, 12740), (455, 12884), (461, 12971), (462, 12989), (464, 13019), (480, 13223), (487, 13289), (491, 13331), (493, 13337), (497, 13388), (501, 13415), (505, 13463), (511, 13529), (517, 13595), (519, 13616), (527, 13700), (531, 13724), (532, 13727), (534, 13745), (539, 13805),

Gene: Upyo_16 Start: 9799, Stop: 14112, Start Num: 13
Candidate Starts for Upyo_16:
(Start: 13 @9799 has 7 MA's), (21, 9883), (29, 9994), (51, 10297), (68, 10438), (76, 10504), (80, 10522), (82, 10534), (88, 10582), (94, 10603), (102, 10663), (103, 10669), (119, 10750), (127, 10810), (128, 10813), (130, 10840), (174, 11122), (181, 11152), (184, 11176), (195, 11260), (199, 11281), (208, 11311), (216, 11362), (221, 11395), (222, 11401), (234, 11488), (247, 11554), (249, 11563),

(265, 11683), (266, 11689), (271, 11743), (272, 11755), (277, 11779), (279, 11791), (285, 11824),
(292, 11863), (297, 11884), (299, 11887), (303, 11923), (358, 12037), (359, 12043), (361, 12058),
(364, 12097), (365, 12100), (373, 12175), (374, 12187), (376, 12211), (383, 12274), (394, 12373),
(399, 12442), (407, 12490), (411, 12508), (414, 12532), (431, 12796), (458, 13165), (459, 13177),
(461, 13222), (466, 13321), (484, 13486), (485, 13492), (489, 13534), (493, 13558), (505, 13678),
(510, 13726), (511, 13744), (512, 13750), (517, 13810), (526, 13912), (531, 13939), (532, 13942),
(535, 13963), (540, 14014),

Gene: WheatThin_20 Start: 11504, Stop: 16288, Start Num: 12
Candidate Starts for WheatThin_20:
(10, 11492), (11, 11495), (Start: 12 @11504 has 15 MA's), (16, 11537), (22, 11597), (33, 11765), (53,
12038), (58, 12080), (69, 12161), (80, 12227), (104, 12353), (110, 12386), (115, 12431), (126, 12491),
(129, 12524), (146, 12665), (147, 12674), (166, 12806), (170, 12851), (191, 12962), (197, 13013),
(214, 13070), (222, 13112), (223, 13118), (245, 13232), (246, 13235), (262, 13340), (269, 13415),
(270, 13427), (274, 13451), (305, 13634), (317, 13709), (320, 13730), (326, 13766), (343, 13874),
(349, 13907), (351, 13934), (352, 13940), (354, 13952), (359, 13994), (363, 14030), (367, 14087),
(372, 14117), (380, 14192), (383, 14225), (393, 14315), (398, 14345), (405, 14423), (406, 14432),
(419, 14540), (427, 14711), (434, 14840), (441, 14978), (463, 15287), (465, 15308), (470, 15416),
(473, 15506), (502, 15818), (504, 15821), (516, 15950), (520, 15995), (525, 16061), (531, 16100),
(538, 16151), (543, 16226), (545, 16271),

Gene: Widow_16 Start: 9677, Stop: 14296, Start Num: 13
Candidate Starts for Widow_16:
(Start: 13 @9677 has 7 MA's), (45, 10145), (51, 10187), (54, 10223), (60, 10262), (70, 10352), (71,
10364), (73, 10385), (74, 10394), (83, 10448), (92, 10505), (95, 10526), (97, 10538), (98, 10541), (101,
10571), (104, 10592), (107, 10604), (132, 10775), (138, 10829), (156, 10943), (162, 10973), (167,
11024), (173, 11054), (179, 11090), (202, 11222), (205, 11231), (208, 11243), (216, 11294), (226,
11360), (236, 11420), (238, 11432), (255, 11519), (260, 11555), (264, 11597), (265, 11603), (272,
11666), (273, 11669), (280, 11708), (284, 11732), (287, 11747), (295, 11780), (304, 11804), (309,
11831), (314, 11873), (316, 11882), (319, 11897), (322, 11912), (325, 11936), (331, 11996), (339,
12029), (341, 12041), (345, 12065), (346, 12068), (352, 12128), (357, 12173), (361, 12197), (365,
12239), (373, 12314), (374, 12326), (375, 12347), (376, 12350), (391, 12491), (392, 12494), (406,
12623), (408, 12644), (410, 12653), (416, 12707), (417, 12713), (431, 12971), (440, 13142), (442,
13160), (453, 13307), (456, 13349), (485, 13664), (493, 13730), (497, 13781), (501, 13808), (505,
13856), (508, 13880), (510, 13904), (511, 13922), (517, 13988), (527, 14093), (531, 14117), (532,
14120), (534, 14138), (535, 14141), (541, 14228),

Gene: Zodiariah_16 Start: 9944, Stop: 15100, Start Num: 9
Candidate Starts for Zodiariah_16:
(Start: 9 @9944 has 4 MA's), (16, 9980), (18, 9989), (22, 10040), (27, 10103), (32, 10187), (61, 10544),
(64, 10574), (65, 10580), (67, 10601), (72, 10667), (75, 10700), (85, 10784), (86, 10787), (95, 10841),
(99, 10871), (105, 10919), (113, 10976), (114, 10982), (117, 11006), (121, 11033), (126, 11072), (131,
11135), (141, 11246), (151, 11324), (154, 11342), (155, 11345), (160, 11381), (164, 11402), (168,
11468), (178, 11531), (180, 11537), (185, 11573), (186, 11579), (187, 11582), (192, 11612), (203,
11678), (213, 11735), (224, 11798), (235, 11873), (251, 11954), (259, 12002), (262, 12038), (267,
12080), (269, 12113), (270, 12125), (294, 12275), (301, 12308), (302, 12320), (304, 12326), (305,
12332), (331, 12518), (347, 12596), (359, 12692), (363, 12728), (369, 12794), (372, 12815), (379,
12887), (380, 12890), (382, 12920), (383, 12923), (390, 12989), (393, 13013), (396, 13031), (404,
13115), (405, 13121), (406, 13130), (424, 13298), (434, 13532), (436, 13592), (437, 13619), (469,
14123), (471, 14252), (486, 14501), (492, 14552), (515, 14759), (516, 14765), (520, 14810), (523,
14855), (525, 14876), (531, 14915), (543, 15038), (544, 15050), (546, 15089),