



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 294889 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294889 has 40 members, 1 are drafts.

Phages represented in each track:

- Track 1 : Angelique\_18
- Track 2 : EnalisNailo\_18, Lilas\_18
- Track 3 : Confidence\_18
- Track 4 : Bradissa\_18
- Track 5 : BritBrat\_18, Floral\_18, EMSquaredA\_18, Marteena\_18, Pollux\_18
- Track 6 : Pytheas\_18
- Track 7 : Jablanski\_18
- Track 8 : Posh\_18
- Track 9 : Wrigley\_18
- Track 10 : BeeGee\_18
- Track 11 : Cashline\_18
- Track 12 : LonelyBoi\_18
- Track 13 : Coriander\_17
- Track 14 : Moonflower\_17
- Track 15 : Dmitri\_17
- Track 16 : RayTheFireFly\_17
- Track 17 : Doggs\_16
- Track 18 : Lucky10\_16
- Track 19 : Morkie\_16, PhorbesPhlower\_16
- Track 20 : Birdsong\_17, MortyNRick\_17
- Track 21 : BearBQ\_17
- Track 22 : Ecliptus\_22
- Track 23 : ODay\_22
- Track 24 : Crater\_16, Apricot\_17
- Track 25 : Kuwabara\_17
- Track 26 : Keelan\_49
- Track 27 : Volt\_53, Ronaldo\_54, Ziko\_54
- Track 28 : Guey18\_56
- Track 29 : Fryberger\_51
- Track 30 : Juicebox\_17

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

The start number called the most often in the published annotations is 11, it was called in 17 of the 39 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Angelique\_18, BeeGee\_18, Bradissa\_18, BritBrat\_18, Cashline\_18, Confidence\_18, EMSquaredA\_18, EnalisNailo\_18, Floral\_18, Jablanski\_18, Lilas\_18, LonelyBoi\_18, Marteena\_18, Pollux\_18, Posh\_18, Pytheas\_18, Wrigley\_18,

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

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

- Apricot\_17, BearBQ\_17, Birdsong\_17, Coriander\_17, Crater\_16, Dmitri\_17, Doggs\_16, Ecliptus\_22, Fryberger\_51, Guey18\_56, Juicebox\_17, Keelan\_49, Kuwabara\_17, Lucky10\_16, Moonflower\_17, Morkie\_16, MortyNRick\_17, ODay\_22, PhorbesPhlower\_16, RayTheFireFly\_17, Ronaldo\_54, Volt\_53, Ziko\_54,

### Summary by start number:

Start 1:

- Found in 5 of 40 ( 12.5% ) of genes in pham
- Manual Annotations of this start: 4 of 39
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Coriander\_17 (DB), Dmitri\_17 (DB), Doggs\_16 (DB), RayTheFireFly\_17 (DB),

Start 3:

- Found in 3 of 40 ( 7.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Moonflower\_17 (DB),

Start 11:

- Found in 17 of 40 ( 42.5% ) of genes in pham
- Manual Annotations of this start: 17 of 39
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Angelique\_18 (CY1), BeeGee\_18 (CY5), Bradissa\_18 (CY1), BritBrat\_18 (CY2), Cashline\_18 (CY6), Confidence\_18 (CY1), EMSquaredA\_18 (CY1), EnalisNailo\_18 (CY1), Floral\_18 (CY1), Jablanski\_18 (CY3), Lilas\_18 (CY1), LonelyBoi\_18 (CY7), Marteena\_18 (CY1), Pollux\_18 (CY1), Posh\_18 (CY4), Pytheas\_18 (CY3), Wrigley\_18 (CY4),

Start 18:

- Found in 3 of 40 ( 7.5% ) of genes in pham
- Manual Annotations of this start: 3 of 39
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BearBQ\_17 (DN), Birdsong\_17 (DN), MortyNRick\_17 (DN),

Start 19:

- Found in 2 of 40 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 2 of 39
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Ecliptus\_22 (DN), ODay\_22 (DN),

Start 21:

- Found in 28 of 40 ( 70.0% ) of genes in pham
- Manual Annotations of this start: 1 of 39
- Called 3.6% of time when present
- Phage (with cluster) where this start called: Lucky10\_16 (DH),

Start 22:

- Found in 15 of 40 ( 37.5% ) of genes in pham
- Manual Annotations of this start: 12 of 39
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Apricot\_17 (DN3), Crater\_16 (DN3), Fryberger\_51 (DP), Guey18\_56 (DP), Juicebox\_17 (singleton), Keelan\_49 (DP), Kuwabara\_17 (DN4), Morkie\_16 (DH), PhorbesPhlower\_16 (DH), Ronaldo\_54 (DP), Volt\_53 (DP), Ziko\_54 (DP),

### **Summary by clusters:**

There are 14 clusters represented in this pham: DN, CY3, CY1, CY7, DH, CY5, CY4, DB, singleton, DN4, DN3, CY2, DP, CY6,

Info for manual annotations of cluster CY1:

- Start number 11 was manually annotated 9 times for cluster CY1.

Info for manual annotations of cluster CY2:

- Start number 11 was manually annotated 1 time for cluster CY2.

Info for manual annotations of cluster CY3:

- Start number 11 was manually annotated 2 times for cluster CY3.

Info for manual annotations of cluster CY4:

- Start number 11 was manually annotated 2 times for cluster CY4.

Info for manual annotations of cluster CY5:

- Start number 11 was manually annotated 1 time for cluster CY5.

Info for manual annotations of cluster CY6:

- Start number 11 was manually annotated 1 time for cluster CY6.

Info for manual annotations of cluster CY7:

- Start number 11 was manually annotated 1 time for cluster CY7.

Info for manual annotations of cluster DB:

- Start number 1 was manually annotated 4 times for cluster DB.

Info for manual annotations of cluster DH:

- Start number 21 was manually annotated 1 time for cluster DH.
- Start number 22 was manually annotated 2 times for cluster DH.

Info for manual annotations of cluster DN:

- Start number 18 was manually annotated 3 times for cluster DN.
- Start number 19 was manually annotated 2 times for cluster DN.

Info for manual annotations of cluster DN3:

- Start number 22 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DN4:

- Start number 22 was manually annotated 1 time for cluster DN4.

Info for manual annotations of cluster DP:

- Start number 22 was manually annotated 6 times for cluster DP.

**Gene Information:**

Gene: Angelique\_18 Start: 11177, Stop: 16801, Start Num: 11

Candidate Starts for Angelique\_18:

(Start: 11 @11177 has 17 MA's), (13, 11210), (16, 11390), (17, 11402), (20, 11441), (Start: 21 @11450 has 1 MA's), (23, 11474), (29, 11558), (31, 11600), (54, 11831), (55, 11858), (64, 11954), (65, 11957), (69, 11978), (77, 12050), (81, 12104), (85, 12155), (87, 12167), (89, 12194), (90, 12209), (100, 12314), (101, 12326), (109, 12398), (110, 12419), (115, 12473), (119, 12512), (121, 12533), (123, 12548), (128, 12581), (131, 12593), (135, 12623), (139, 12656), (147, 12698), (157, 12791), (162, 12824), (163, 12827), (164, 12833), (167, 12842), (168, 12845), (172, 12908), (175, 12941), (181, 12980), (188, 13010), (200, 13094), (208, 13151), (220, 13259), (222, 13298), (223, 13310), (246, 13472), (248, 13490), (249, 13505), (253, 13532), (259, 13583), (260, 13598), (262, 13625), (263, 13631), (273, 13709), (276, 13763), (277, 13772), (278, 13802), (297, 13976), (299, 14006), (323, 14237), (325, 14249), (337, 14339), (343, 14387), (348, 14423), (351, 14447), (356, 14498), (358, 14504), (363, 14549), (367, 14570), (379, 14681), (392, 14873), (407, 15008), (444, 15248), (449, 15314), (454, 15335), (455, 15344), (457, 15371), (463, 15449), (464, 15473), (471, 15614), (480, 15749), (484, 15776), (489, 15842), (490, 15896), (495, 15998), (501, 16097), (511, 16232), (537, 16421), (549, 16547), (552, 16577), (561, 16613), (562, 16616), (570, 16691),

Gene: Apricot\_17 Start: 9635, Stop: 15046, Start Num: 22

Candidate Starts for Apricot\_17:

(Start: 21 @9629 has 1 MA's), (Start: 22 @9635 has 12 MA's), (28, 9713), (30, 9755), (31, 9767), (43, 9908), (44, 9914), (50, 9950), (55, 10010), (58, 10028), (59, 10046), (63, 10067), (66, 10118), (67, 10121), (68, 10124), (71, 10148), (72, 10151), (79, 10217), (81, 10247), (88, 10325), (93, 10370), (95, 10394), (99, 10448), (102, 10469), (113, 10607), (118, 10643), (120, 10670), (123, 10691), (127, 10706), (133, 10745), (134, 10757), (136, 10769), (144, 10829), (147, 10841), (159, 10892), (179, 10967), (182, 10988), (191, 11036), (194, 11054), (209, 11123), (214, 11147), (218, 11204), (221, 11234), (222, 11267), (236, 11384), (246, 11441), (248, 11459), (249, 11474), (259, 11552), (270, 11657), (271, 11669), (272, 11675), (279, 11789), (280, 11792), (286, 11876), (289, 11906), (291, 11918), (297, 11969), (300, 12002), (304, 12071), (307, 12086), (312, 12128), (318, 12182), (320, 12197), (324, 12236), (325, 12242), (327, 12266), (336, 12326), (337, 12332), (338, 12335), (345, 12404), (356, 12491), (358, 12497), (359, 12506), (363, 12542), (368, 12566), (383, 12677), (385, 12689), (400, 12896), (405, 12959), (406, 12968), (409, 13001), (415, 13058), (417, 13085), (422, 13151), (423, 13169), (425, 13181), (444, 13208), (446, 13238), (449, 13274), (454, 13295), (456, 13307), (457, 13331), (463, 13409), (464, 13433), (465, 13448), (469, 13538), (476, 13658), (477, 13673), (479, 13694), (480, 13703), (488, 13790), (499, 14033), (505, 14123), (516, 14273), (521, 14297), (523, 14306), (525, 14333), (530, 14381), (532, 14399), (533, 14417), (536, 14441), (543, 14501), (557, 14624), (564, 14675), (568, 14702), (577, 14801), (579, 14813), (590, 14909), (593, 14927), (594, 14939), (597, 15029),

Gene: BearBQ\_17 Start: 9908, Stop: 16477, Start Num: 18

Candidate Starts for BearBQ\_17:

(Start: 18 @9908 has 3 MA's), (23, 9965), (25, 9983), (30, 10067), (31, 10079), (33, 10091), (36, 10115), (38, 10145), (42, 10190), (43, 10220), (44, 10226), (54, 10295), (55, 10322), (58, 10340), (59, 10358), (62, 10370), (63, 10379), (66, 10430), (67, 10433), (68, 10436), (71, 10460), (72, 10463), (80, 10550), (81, 10559), (88, 10637), (93, 10682), (95, 10706), (96, 10739), (97, 10742), (106, 10829), (108, 10850), (118, 10955), (120, 10982), (125, 11009), (128, 11036), (129, 11039), (136, 11081), (137, 11099), (138, 11102), (151, 11174), (158, 11216), (165, 11237), (170, 11264), (173, 11273), (178, 11288), (180, 11306), (188, 11339), (191, 11372), (198, 11405), (199, 11414), (200, 11423), (202, 11444), (206, 11468), (209, 11483), (213, 11504), (214, 11507), (218, 11564), (221, 11594), (222, 11627), (241, 11765), (246, 11801), (249, 11834), (253, 11861), (255, 11888), (258, 11906), (264, 11966), (268, 12008), (271, 12029), (275, 12080), (277, 12101), (279, 12149), (280, 12152), (294, 12290), (297, 12329), (301, 12371), (304, 12431), (309, 12458), (311, 12479), (317, 12536), (320, 12557), (327, 12629), (331, 12671), (332, 12674), (339, 12707), (342, 12731), (343, 12743), (351, 12803), (356, 12854), (358, 12860), (359, 12869), (364, 12911), (368, 12929), (370, 12959), (397, 13157), (404, 13238), (406, 13256), (409, 13289), (410, 13301), (414, 13337), (417, 13373), (419, 13397), (420, 13400), (421, 13421), (423, 13457), (425, 13469), (426, 13508), (427, 13535), (428, 13562), (429, 13634), (430, 13664), (431, 13700), (432, 13868), (433, 13946), (434, 13997), (435, 14150), (436, 14285), (437, 14294), (438, 14315), (439, 14318), (440, 14327), (441, 14345), (442, 14375), (443, 14408), (444, 14612), (445, 14630), (446, 14642), (449, 14678), (454, 14699), (461, 14789), (463, 14813), (464, 14837), (469, 14945), (475, 15068), (477, 15092), (479, 15113), (480, 15122), (481, 15125), (485, 15152), (488, 15212), (499, 15455), (503, 15536), (504, 15539), (505, 15545), (516, 15704), (521, 15728), (523, 15737), (528, 15782), (529, 15794), (532, 15827), (533, 15845), (543, 15938), (554, 16043), (559, 16064), (567, 16118), (570, 16157), (576, 16229), (583, 16259), (587, 16298), (588, 16331), (593, 16370), (595, 16418), (596, 16451), (598, 16463),

Gene: BeeGee\_18 Start: 10997, Stop: 16621, Start Num: 11

Candidate Starts for BeeGee\_18:

(10, 10982), (Start: 11 @10997 has 17 MA's), (13, 11030), (16, 11210), (17, 11222), (20, 11261), (Start: 21 @11270 has 1 MA's), (23, 11294), (24, 11303), (29, 11378), (31, 11420), (48, 11609), (52, 11627), (54, 11651), (56, 11681), (64, 11774), (65, 11777), (73, 11828), (77, 11870), (81, 11924), (85, 11975), (87, 11987), (90, 12029), (100, 12134), (104, 12161), (109, 12218), (115, 12293), (119, 12332), (121, 12353), (123, 12368), (135, 12443), (146, 12515), (147, 12518), (148, 12527), (152, 12560), (157, 12611), (162, 12644), (163, 12647), (164, 12653), (167, 12662), (168, 12665), (171, 12710), (172, 12728), (174, 12737), (183, 12812), (184, 12818), (185, 12821), (188, 12830), (195, 12884), (199, 12905), (202, 12935), (208, 12971), (218, 13055), (222, 13118), (239, 13250), (246, 13292), (249, 13325), (253, 13352), (259, 13403), (261, 13436), (262, 13445), (265, 13460), (273, 13529), (276, 13583), (277, 13592), (278, 13622), (288, 13742), (290, 13754), (297, 13796), (320, 14024), (322, 14048), (323, 14057), (325, 14069), (336, 14153), (337, 14159), (339, 14171), (343, 14207), (351, 14267), (356, 14318), (358, 14324), (363, 14369), (392, 14693), (407, 14828), (444, 15068), (449, 15134), (454, 15155), (455, 15164), (457, 15191), (463, 15269), (464, 15293), (468, 15386), (469, 15410), (471, 15434), (477, 15539), (480, 15569), (489, 15662), (490, 15716), (495, 15818), (501, 15917), (537, 16241), (549, 16367), (552, 16397), (561, 16433), (562, 16436), (570, 16511), (581, 16607),

Gene: Birdsong\_17 Start: 9908, Stop: 15370, Start Num: 18

Candidate Starts for Birdsong\_17:

(Start: 18 @9908 has 3 MA's), (23, 9965), (25, 9983), (30, 10067), (31, 10079), (33, 10091), (36, 10115), (38, 10145), (42, 10190), (43, 10220), (44, 10226), (54, 10295), (55, 10322), (58, 10340), (59, 10358), (62, 10370), (63, 10379), (66, 10430), (67, 10433), (68, 10436), (71, 10460), (72, 10463), (80, 10550), (81, 10559), (88, 10637), (93, 10682), (95, 10706), (96, 10739), (97, 10742), (106, 10829), (108, 10850), (118, 10955), (120, 10982), (125, 11009), (128, 11036), (129, 11039), (136, 11081), (137, 11099), (138, 11102), (151, 11174), (158, 11216), (165, 11237), (170, 11264), (173, 11273), (178, 11288), (180, 11306), (188, 11339), (191, 11372), (198, 11405), (199, 11414), (200, 11423),

(202, 11444), (206, 11468), (209, 11483), (213, 11504), (214, 11507), (218, 11564), (221, 11594), (222, 11627), (246, 11801), (249, 11834), (253, 11861), (255, 11888), (258, 11906), (264, 11966), (268, 12008), (271, 12029), (275, 12080), (277, 12101), (279, 12149), (280, 12152), (294, 12290), (297, 12329), (301, 12371), (304, 12431), (309, 12458), (311, 12479), (317, 12536), (320, 12557), (327, 12629), (331, 12671), (332, 12674), (339, 12707), (343, 12743), (351, 12803), (356, 12854), (358, 12860), (359, 12869), (360, 12878), (364, 12911), (368, 12929), (370, 12959), (396, 13154), (397, 13157), (404, 13238), (406, 13256), (409, 13289), (410, 13301), (414, 13337), (417, 13373), (419, 13397), (420, 13400), (421, 13421), (423, 13457), (425, 13469), (444, 13496), (445, 13514), (446, 13526), (449, 13562), (454, 13583), (461, 13673), (463, 13697), (464, 13721), (469, 13829), (475, 13952), (477, 13976), (480, 14006), (481, 14009), (485, 14036), (499, 14339), (503, 14420), (504, 14423), (505, 14429), (517, 14594), (521, 14612), (523, 14621), (528, 14666), (529, 14678), (532, 14714), (533, 14732), (543, 14831), (554, 14936), (559, 14957), (567, 15011), (570, 15050), (576, 15122), (583, 15152), (587, 15191), (588, 15224), (593, 15263), (595, 15311), (596, 15344), (598, 15356),

Gene: Bradissa\_18 Start: 11180, Stop: 16804, Start Num: 11

Candidate Starts for Bradissa\_18:

(Start: 11 @11180 has 17 MA's), (13, 11213), (16, 11393), (17, 11405), (20, 11444), (Start: 21 @11453 has 1 MA's), (23, 11477), (29, 11561), (30, 11591), (31, 11603), (54, 11834), (55, 11861), (64, 11957), (65, 11960), (69, 11981), (72, 12005), (77, 12053), (81, 12107), (85, 12158), (87, 12170), (89, 12197), (90, 12212), (100, 12317), (109, 12401), (110, 12422), (115, 12476), (121, 12536), (128, 12584), (131, 12596), (135, 12626), (139, 12659), (147, 12701), (152, 12743), (155, 12764), (157, 12794), (162, 12827), (163, 12830), (164, 12836), (167, 12845), (168, 12848), (172, 12911), (175, 12944), (181, 12983), (188, 13013), (200, 13097), (208, 13154), (220, 13262), (222, 13301), (223, 13313), (246, 13475), (248, 13493), (249, 13508), (253, 13535), (259, 13586), (260, 13601), (262, 13628), (273, 13712), (276, 13766), (277, 13775), (278, 13805), (297, 13979), (299, 14009), (307, 14096), (323, 14240), (325, 14252), (337, 14342), (343, 14390), (351, 14450), (356, 14501), (358, 14507), (363, 14552), (379, 14684), (407, 15011), (417, 15116), (444, 15251), (446, 15281), (449, 15317), (454, 15338), (455, 15347), (457, 15374), (463, 15452), (464, 15476), (471, 15617), (477, 15722), (480, 15752), (481, 15755), (489, 15845), (490, 15899), (495, 16001), (511, 16235), (534, 16403), (537, 16424), (549, 16550), (552, 16580), (561, 16616), (562, 16619),

Gene: BritBrat\_18 Start: 11003, Stop: 16657, Start Num: 11

Candidate Starts for BritBrat\_18:

(Start: 11 @11003 has 17 MA's), (13, 11036), (16, 11216), (17, 11228), (20, 11267), (Start: 21 @11276 has 1 MA's), (23, 11300), (24, 11309), (29, 11384), (31, 11426), (48, 11615), (52, 11633), (54, 11657), (56, 11687), (64, 11780), (65, 11783), (72, 11828), (73, 11834), (77, 11876), (81, 11930), (85, 11981), (87, 11993), (90, 12035), (100, 12140), (104, 12167), (109, 12224), (115, 12299), (119, 12338), (121, 12359), (123, 12374), (128, 12407), (135, 12449), (146, 12521), (147, 12524), (148, 12533), (157, 12617), (162, 12650), (163, 12653), (164, 12659), (167, 12668), (168, 12671), (171, 12716), (172, 12734), (174, 12743), (184, 12824), (185, 12827), (188, 12836), (195, 12890), (199, 12911), (208, 12977), (218, 13061), (222, 13124), (223, 13136), (243, 13274), (246, 13298), (248, 13316), (249, 13331), (253, 13358), (259, 13409), (261, 13442), (262, 13451), (265, 13466), (272, 13532), (273, 13535), (276, 13589), (277, 13598), (278, 13628), (297, 13802), (298, 13811), (302, 13850), (315, 13991), (323, 14063), (325, 14075), (332, 14144), (336, 14159), (337, 14165), (343, 14213), (346, 14240), (348, 14249), (356, 14324), (358, 14330), (360, 14348), (363, 14375), (392, 14699), (401, 14792), (404, 14834), (406, 14852), (444, 15104), (449, 15170), (454, 15191), (455, 15200), (457, 15227), (463, 15305), (464, 15329), (468, 15422), (469, 15446), (471, 15470), (477, 15575), (480, 15605), (489, 15698), (490, 15752), (495, 15854), (501, 15953), (534, 16256), (549, 16403), (552, 16433), (561, 16469), (562, 16472), (570, 16547), (581, 16643),

Gene: Cashline\_18 Start: 10857, Stop: 16481, Start Num: 11

Candidate Starts for Cashline\_18:

(Start: 11 @10857 has 17 MA's), (13, 10890), (16, 11070), (17, 11082), (20, 11121), (Start: 21 @11130 has 1 MA's), (23, 11154), (24, 11163), (29, 11238), (31, 11280), (48, 11469), (52, 11487), (54, 11511), (56, 11541), (64, 11634), (65, 11637), (73, 11688), (77, 11730), (81, 11784), (85, 11835), (87, 11847), (90, 11889), (100, 11994), (104, 12021), (109, 12078), (115, 12153), (119, 12192), (121, 12213), (123, 12228), (128, 12261), (135, 12303), (146, 12375), (147, 12378), (148, 12387), (157, 12471), (162, 12504), (163, 12507), (164, 12513), (167, 12522), (168, 12525), (171, 12570), (174, 12597), (183, 12672), (184, 12678), (185, 12681), (188, 12690), (195, 12744), (199, 12765), (202, 12795), (208, 12831), (218, 12915), (222, 12978), (223, 12990), (243, 13128), (246, 13152), (248, 13170), (249, 13185), (253, 13212), (259, 13263), (261, 13296), (262, 13305), (265, 13320), (272, 13386), (273, 13389), (276, 13443), (277, 13452), (278, 13482), (297, 13656), (298, 13665), (302, 13704), (315, 13845), (323, 13917), (325, 13929), (332, 13998), (336, 14013), (337, 14019), (343, 14067), (358, 14184), (360, 14202), (363, 14229), (392, 14553), (407, 14688), (444, 14928), (449, 14994), (454, 15015), (455, 15024), (457, 15051), (463, 15129), (464, 15153), (468, 15246), (469, 15270), (471, 15294), (477, 15399), (480, 15429), (489, 15522), (490, 15576), (495, 15678), (501, 15777), (537, 16101), (549, 16227), (552, 16257), (561, 16293), (562, 16296), (570, 16371), (581, 16467),

Gene: Confidence\_18 Start: 10997, Stop: 16651, Start Num: 11

Candidate Starts for Confidence\_18:

(Start: 11 @10997 has 17 MA's), (13, 11030), (16, 11210), (17, 11222), (20, 11261), (Start: 21 @11270 has 1 MA's), (23, 11294), (24, 11303), (29, 11378), (31, 11420), (48, 11609), (54, 11651), (56, 11681), (61, 11723), (64, 11774), (65, 11777), (73, 11828), (77, 11870), (81, 11924), (85, 11975), (87, 11987), (90, 12029), (100, 12134), (104, 12161), (109, 12218), (115, 12293), (119, 12332), (121, 12353), (123, 12368), (128, 12401), (135, 12443), (146, 12515), (147, 12518), (148, 12527), (157, 12611), (162, 12644), (163, 12647), (164, 12653), (167, 12662), (168, 12665), (171, 12710), (172, 12728), (174, 12737), (183, 12812), (184, 12818), (185, 12821), (188, 12830), (195, 12884), (199, 12905), (202, 12935), (208, 12971), (218, 13055), (222, 13118), (223, 13130), (243, 13268), (246, 13292), (248, 13310), (249, 13325), (253, 13352), (259, 13403), (261, 13436), (262, 13445), (265, 13460), (272, 13526), (273, 13529), (276, 13583), (277, 13592), (278, 13622), (297, 13796), (298, 13805), (302, 13844), (315, 13985), (323, 14057), (325, 14069), (332, 14138), (336, 14153), (337, 14159), (343, 14207), (358, 14324), (360, 14342), (363, 14369), (392, 14693), (401, 14786), (404, 14828), (406, 14846), (444, 15098), (449, 15164), (454, 15185), (455, 15194), (457, 15221), (463, 15299), (464, 15323), (468, 15416), (471, 15464), (477, 15569), (480, 15599), (489, 15692), (490, 15746), (495, 15848), (501, 15947), (534, 16250), (537, 16271), (549, 16397), (552, 16427), (561, 16463), (562, 16466), (570, 16541), (581, 16637),

Gene: Coriander\_17 Start: 10886, Stop: 16564, Start Num: 1

Candidate Starts for Coriander\_17:

(Start: 1 @10886 has 4 MA's), (2, 10916), (3, 10928), (6, 11021), (8, 11141), (9, 11177), (16, 11414), (17, 11426), (20, 11465), (23, 11498), (29, 11582), (31, 11624), (37, 11690), (40, 11708), (52, 11831), (54, 11855), (55, 11882), (65, 11981), (77, 12074), (81, 12128), (85, 12179), (87, 12191), (90, 12233), (116, 12506), (127, 12587), (136, 12650), (137, 12668), (138, 12671), (147, 12722), (151, 12743), (158, 12785), (169, 12833), (172, 12848), (181, 12878), (184, 12896), (188, 12908), (214, 13076), (215, 13079), (227, 13229), (234, 13298), (246, 13358), (249, 13391), (253, 13418), (262, 13511), (267, 13553), (268, 13565), (273, 13595), (274, 13610), (276, 13649), (278, 13688), (281, 13718), (285, 13778), (297, 13862), (299, 13892), (323, 14123), (328, 14168), (339, 14231), (342, 14255), (346, 14288), (349, 14300), (353, 14339), (357, 14366), (362, 14399), (366, 14429), (380, 14534), (382, 14543), (388, 14564), (391, 14663), (408, 14843), (409, 14846), (410, 14858), (412, 14879), (416, 14906), (447, 15101), (450, 15122), (452, 15125), (455, 15143), (466, 15278), (476, 15446), (480, 15491), (485, 15521), (490, 15629), (495, 15731), (501, 15830), (510, 15926), (512, 15986), (522, 16040), (546, 16298), (548, 16304), (552, 16337), (553, 16340), (559, 16361), (564, 16403), (565, 16406), (569, 16442), (575, 16517), (576, 16523), (577, 16526), (584, 16553),

Gene: Crater\_16 Start: 9635, Stop: 15046, Start Num: 22

Candidate Starts for Crater\_16:

(Start: 21 @9629 has 1 MA's), (Start: 22 @9635 has 12 MA's), (28, 9713), (30, 9755), (31, 9767), (43, 9908), (44, 9914), (50, 9950), (55, 10010), (58, 10028), (59, 10046), (63, 10067), (66, 10118), (67, 10121), (68, 10124), (71, 10148), (72, 10151), (79, 10217), (81, 10247), (88, 10325), (93, 10370), (95, 10394), (99, 10448), (102, 10469), (113, 10607), (118, 10643), (120, 10670), (123, 10691), (127, 10706), (133, 10745), (134, 10757), (136, 10769), (144, 10829), (147, 10841), (159, 10892), (179, 10967), (182, 10988), (191, 11036), (194, 11054), (209, 11123), (214, 11147), (218, 11204), (221, 11234), (222, 11267), (236, 11384), (246, 11441), (248, 11459), (249, 11474), (259, 11552), (270, 11657), (271, 11669), (272, 11675), (279, 11789), (280, 11792), (286, 11876), (289, 11906), (291, 11918), (297, 11969), (300, 12002), (304, 12071), (307, 12086), (312, 12128), (318, 12182), (320, 12197), (324, 12236), (325, 12242), (327, 12266), (336, 12326), (337, 12332), (338, 12335), (345, 12404), (356, 12491), (358, 12497), (359, 12506), (363, 12542), (368, 12566), (383, 12677), (385, 12689), (400, 12896), (405, 12959), (406, 12968), (409, 13001), (415, 13058), (417, 13085), (422, 13151), (423, 13169), (425, 13181), (444, 13208), (446, 13238), (449, 13274), (454, 13295), (456, 13307), (457, 13331), (463, 13409), (464, 13433), (465, 13448), (469, 13538), (476, 13658), (477, 13673), (479, 13694), (480, 13703), (488, 13790), (499, 14033), (505, 14123), (516, 14273), (521, 14297), (523, 14306), (525, 14333), (530, 14381), (532, 14399), (533, 14417), (536, 14441), (543, 14501), (557, 14624), (564, 14675), (568, 14702), (577, 14801), (579, 14813), (590, 14909), (593, 14927), (594, 14939), (597, 15029),

Gene: Dmitri\_17 Start: 10871, Stop: 16561, Start Num: 1

Candidate Starts for Dmitri\_17:

(Start: 1 @10871 has 4 MA's), (2, 10901), (4, 10955), (6, 11006), (9, 11162), (12, 11204), (16, 11399), (17, 11411), (20, 11450), (Start: 21 @11459 has 1 MA's), (23, 11483), (29, 11567), (31, 11609), (54, 11840), (60, 11909), (65, 11966), (77, 12059), (81, 12113), (85, 12164), (87, 12176), (90, 12218), (103, 12347), (104, 12350), (116, 12491), (117, 12494), (130, 12599), (136, 12635), (137, 12653), (138, 12656), (147, 12707), (151, 12728), (158, 12770), (167, 12800), (168, 12803), (169, 12818), (172, 12833), (188, 12893), (204, 13007), (207, 13028), (213, 13058), (216, 13076), (225, 13199), (228, 13220), (254, 13424), (261, 13484), (262, 13493), (265, 13508), (267, 13535), (268, 13547), (273, 13577), (276, 13631), (278, 13670), (281, 13700), (285, 13760), (287, 13781), (297, 13844), (299, 13874), (313, 14012), (323, 14105), (328, 14150), (339, 14213), (342, 14237), (346, 14270), (347, 14273), (349, 14282), (357, 14348), (382, 14525), (384, 14534), (388, 14546), (391, 14645), (393, 14678), (408, 14825), (409, 14828), (410, 14840), (412, 14861), (416, 14888), (424, 15005), (447, 15083), (450, 15104), (455, 15125), (466, 15260), (480, 15476), (482, 15485), (485, 15506), (495, 15728), (497, 15746), (510, 15923), (512, 15983), (513, 15992), (522, 16037), (548, 16301), (552, 16334), (553, 16337), (559, 16358), (564, 16400), (565, 16403), (569, 16439), (575, 16514), (576, 16520), (577, 16523), (584, 16550), (585, 16553),

Gene: Doggs\_16 Start: 10586, Stop: 16264, Start Num: 1

Candidate Starts for Doggs\_16:

(Start: 1 @10586 has 4 MA's), (2, 10616), (3, 10628), (6, 10721), (8, 10841), (9, 10877), (16, 11114), (17, 11126), (20, 11165), (23, 11198), (29, 11282), (31, 11324), (37, 11390), (40, 11408), (52, 11531), (54, 11555), (55, 11582), (65, 11681), (77, 11774), (81, 11828), (85, 11879), (87, 11891), (90, 11933), (116, 12206), (124, 12275), (125, 12278), (127, 12287), (136, 12350), (137, 12368), (138, 12371), (147, 12422), (151, 12443), (158, 12485), (169, 12533), (172, 12548), (181, 12578), (184, 12596), (188, 12608), (214, 12776), (215, 12779), (227, 12929), (234, 12998), (246, 13058), (249, 13091), (253, 13118), (262, 13211), (267, 13253), (268, 13265), (273, 13295), (274, 13310), (276, 13349), (278, 13388), (281, 13418), (285, 13478), (297, 13562), (299, 13592), (323, 13823), (328, 13868), (339, 13931), (342, 13955), (346, 13988), (349, 14000), (353, 14039), (357, 14066), (362, 14099), (366, 14129), (380, 14234), (382, 14243), (388, 14264), (391, 14363), (393, 14396), (409, 14546), (410, 14558), (412, 14579), (416, 14606), (447, 14801), (450, 14822), (452, 14825), (455, 14843), (466, 14978), (476, 15146), (480, 15191), (485, 15221), (490, 15329), (493, 15401), (495, 15431), (501, 15530), (510, 15629), (512, 15689), (526, 15782), (539, 15890), (542, 15902), (546, 15998),

(548, 16004), (552, 16037), (553, 16040), (564, 16103), (565, 16106), (575, 16217), (576, 16223), (577, 16226), (584, 16253), (585, 16256),

Gene: EMSquaredA\_18 Start: 11003, Stop: 16657, Start Num: 11

Candidate Starts for EMSquaredA\_18:

(Start: 11 @11003 has 17 MA's), (13, 11036), (16, 11216), (17, 11228), (20, 11267), (Start: 21 @11276 has 1 MA's), (23, 11300), (24, 11309), (29, 11384), (31, 11426), (48, 11615), (52, 11633), (54, 11657), (56, 11687), (64, 11780), (65, 11783), (72, 11828), (73, 11834), (77, 11876), (81, 11930), (85, 11981), (87, 11993), (90, 12035), (100, 12140), (104, 12167), (109, 12224), (115, 12299), (119, 12338), (121, 12359), (123, 12374), (128, 12407), (135, 12449), (146, 12521), (147, 12524), (148, 12533), (157, 12617), (162, 12650), (163, 12653), (164, 12659), (167, 12668), (168, 12671), (171, 12716), (172, 12734), (174, 12743), (184, 12824), (185, 12827), (188, 12836), (195, 12890), (199, 12911), (208, 12977), (218, 13061), (222, 13124), (223, 13136), (243, 13274), (246, 13298), (248, 13316), (249, 13331), (253, 13358), (259, 13409), (261, 13442), (262, 13451), (265, 13466), (272, 13532), (273, 13535), (276, 13589), (277, 13598), (278, 13628), (297, 13802), (298, 13811), (302, 13850), (315, 13991), (323, 14063), (325, 14075), (332, 14144), (336, 14159), (337, 14165), (343, 14213), (346, 14240), (348, 14249), (356, 14324), (358, 14330), (360, 14348), (363, 14375), (392, 14699), (401, 14792), (404, 14834), (406, 14852), (444, 15104), (449, 15170), (454, 15191), (455, 15200), (457, 15227), (463, 15305), (464, 15329), (468, 15422), (469, 15446), (471, 15470), (477, 15575), (480, 15605), (489, 15698), (490, 15752), (495, 15854), (501, 15953), (534, 16256), (549, 16403), (552, 16433), (561, 16469), (562, 16472), (570, 16547), (581, 16643),

Gene: Ecliptus\_22 Start: 11993, Stop: 17506, Start Num: 19

Candidate Starts for Ecliptus\_22:

(Start: 19 @11993 has 2 MA's), (Start: 21 @12026 has 1 MA's), (Start: 22 @12032 has 12 MA's), (30, 12152), (31, 12164), (38, 12230), (43, 12305), (55, 12407), (59, 12443), (63, 12464), (67, 12518), (68, 12521), (72, 12548), (78, 12599), (80, 12635), (81, 12644), (88, 12722), (93, 12767), (95, 12791), (96, 12824), (97, 12827), (108, 12935), (118, 13040), (120, 13067), (125, 13094), (127, 13103), (128, 13121), (129, 13124), (136, 13166), (137, 13184), (138, 13187), (151, 13259), (158, 13301), (165, 13322), (168, 13328), (170, 13349), (173, 13358), (178, 13373), (180, 13391), (188, 13424), (191, 13457), (198, 13490), (199, 13499), (200, 13508), (202, 13529), (206, 13553), (208, 13565), (209, 13568), (213, 13589), (214, 13592), (218, 13649), (221, 13679), (237, 13838), (238, 13841), (243, 13862), (246, 13886), (249, 13919), (255, 13973), (257, 13988), (268, 14093), (271, 14114), (273, 14123), (279, 14234), (280, 14237), (297, 14414), (301, 14456), (304, 14516), (306, 14525), (311, 14564), (315, 14603), (317, 14621), (320, 14642), (323, 14675), (327, 14714), (332, 14759), (339, 14792), (343, 14828), (351, 14888), (358, 14945), (365, 14999), (387, 15152), (395, 15305), (402, 15359), (405, 15404), (406, 15413), (409, 15446), (420, 15551), (423, 15608), (444, 15647), (449, 15713), (454, 15734), (462, 15842), (463, 15848), (464, 15872), (469, 15986), (471, 16010), (473, 16085), (477, 16121), (479, 16142), (480, 16151), (481, 16154), (485, 16181), (499, 16484), (503, 16565), (504, 16568), (505, 16574), (517, 16739), (521, 16757), (523, 16766), (528, 16811), (529, 16823), (532, 16856), (533, 16874), (543, 16967), (554, 17072), (559, 17093), (567, 17147), (570, 17186), (576, 17258), (583, 17288), (587, 17327), (588, 17360), (593, 17399), (595, 17447), (596, 17480), (598, 17492),

Gene: EnalisNailo\_18 Start: 11182, Stop: 16806, Start Num: 11

Candidate Starts for EnalisNailo\_18:

(Start: 11 @11182 has 17 MA's), (13, 11215), (16, 11395), (17, 11407), (20, 11446), (Start: 21 @11455 has 1 MA's), (23, 11479), (29, 11563), (30, 11593), (31, 11605), (54, 11836), (55, 11863), (64, 11959), (65, 11962), (69, 11983), (72, 12007), (77, 12055), (81, 12109), (85, 12160), (87, 12172), (89, 12199), (90, 12214), (100, 12319), (109, 12403), (110, 12424), (115, 12478), (119, 12517), (121, 12538), (128, 12586), (131, 12598), (135, 12628), (139, 12661), (147, 12703), (152, 12745), (155, 12766), (157, 12796), (162, 12829), (163, 12832), (164, 12838), (167, 12847), (168, 12850), (172, 12913), (175, 12946), (181, 12985), (188, 13015), (200, 13099), (208, 13156), (220, 13264), (222, 13303), (223,

13315), (246, 13477), (248, 13495), (249, 13510), (253, 13537), (259, 13588), (260, 13603), (262, 13630), (273, 13714), (276, 13768), (277, 13777), (278, 13807), (297, 13981), (299, 14011), (307, 14098), (323, 14242), (325, 14254), (337, 14344), (343, 14392), (351, 14452), (356, 14503), (358, 14509), (363, 14554), (379, 14686), (407, 15013), (417, 15118), (444, 15253), (446, 15283), (449, 15319), (454, 15340), (455, 15349), (457, 15376), (463, 15454), (464, 15478), (471, 15619), (477, 15724), (480, 15754), (481, 15757), (489, 15847), (490, 15901), (495, 16003), (511, 16237), (534, 16405), (537, 16426), (549, 16552), (552, 16582), (561, 16618), (562, 16621),

Gene: Floral\_18 Start: 11003, Stop: 16657, Start Num: 11

Candidate Starts for Floral\_18:

(Start: 11 @11003 has 17 MA's), (13, 11036), (16, 11216), (17, 11228), (20, 11267), (Start: 21 @11276 has 1 MA's), (23, 11300), (24, 11309), (29, 11384), (31, 11426), (48, 11615), (52, 11633), (54, 11657), (56, 11687), (64, 11780), (65, 11783), (72, 11828), (73, 11834), (77, 11876), (81, 11930), (85, 11981), (87, 11993), (90, 12035), (100, 12140), (104, 12167), (109, 12224), (115, 12299), (119, 12338), (121, 12359), (123, 12374), (128, 12407), (135, 12449), (146, 12521), (147, 12524), (148, 12533), (157, 12617), (162, 12650), (163, 12653), (164, 12659), (167, 12668), (168, 12671), (171, 12716), (172, 12734), (174, 12743), (184, 12824), (185, 12827), (188, 12836), (195, 12890), (199, 12911), (208, 12977), (218, 13061), (222, 13124), (223, 13136), (243, 13274), (246, 13298), (248, 13316), (249, 13331), (253, 13358), (259, 13409), (261, 13442), (262, 13451), (265, 13466), (272, 13532), (273, 13535), (276, 13589), (277, 13598), (278, 13628), (297, 13802), (298, 13811), (302, 13850), (315, 13991), (323, 14063), (325, 14075), (332, 14144), (336, 14159), (337, 14165), (343, 14213), (346, 14240), (348, 14249), (356, 14324), (358, 14330), (360, 14348), (363, 14375), (392, 14699), (401, 14792), (404, 14834), (406, 14852), (444, 15104), (449, 15170), (454, 15191), (455, 15200), (457, 15227), (463, 15305), (464, 15329), (468, 15422), (469, 15446), (471, 15470), (477, 15575), (480, 15605), (489, 15698), (490, 15752), (495, 15854), (501, 15953), (534, 16256), (549, 16403), (552, 16433), (561, 16469), (562, 16472), (570, 16547), (581, 16643),

Gene: Fryberger\_51 Start: 21435, Stop: 26990, Start Num: 22

Candidate Starts for Fryberger\_51:

(Start: 22 @21435 has 12 MA's), (27, 21501), (28, 21513), (32, 21585), (41, 21654), (43, 21714), (45, 21729), (47, 21747), (49, 21759), (53, 21789), (57, 21822), (66, 21924), (67, 21927), (75, 21969), (76, 21993), (80, 22044), (91, 22164), (92, 22167), (94, 22185), (95, 22200), (103, 22284), (105, 22290), (110, 22371), (112, 22395), (115, 22431), (117, 22443), (119, 22470), (122, 22497), (138, 22605), (145, 22650), (154, 22719), (156, 22731), (202, 23070), (208, 23100), (212, 23121), (214, 23127), (219, 23193), (223, 23259), (242, 23412), (245, 23442), (247, 23481), (248, 23484), (251, 23514), (256, 23556), (261, 23610), (267, 23661), (269, 23676), (270, 23682), (273, 23703), (276, 23757), (278, 23796), (281, 23826), (283, 23856), (284, 23880), (296, 23970), (297, 23979), (299, 24009), (301, 24021), (308, 24102), (315, 24168), (316, 24180), (333, 24333), (334, 24336), (341, 24381), (354, 24498), (368, 24588), (370, 24618), (373, 24657), (376, 24666), (378, 24681), (390, 24756), (417, 25035), (418, 25041), (444, 25173), (456, 25272), (463, 25368), (467, 25446), (477, 25653), (487, 25764), (494, 25929), (496, 25953), (498, 26010), (505, 26097), (514, 26235), (515, 26253), (520, 26274), (531, 26376), (536, 26421), (540, 26445), (555, 26595), (563, 26655), (568, 26685), (571, 26712), (572, 26727), (577, 26781), (582, 26796), (589, 26877), (590, 26892), (595, 26967),

Gene: Guey18\_56 Start: 22628, Stop: 28183, Start Num: 22

Candidate Starts for Guey18\_56:

(Start: 22 @22628 has 12 MA's), (27, 22694), (28, 22706), (32, 22778), (43, 22907), (45, 22922), (47, 22940), (49, 22952), (53, 22982), (57, 23015), (66, 23117), (67, 23120), (75, 23162), (76, 23186), (80, 23237), (91, 23357), (92, 23360), (94, 23378), (95, 23393), (103, 23477), (105, 23483), (110, 23564), (112, 23588), (115, 23624), (117, 23636), (119, 23663), (122, 23690), (138, 23798), (145, 23843), (154, 23912), (156, 23924), (202, 24263), (208, 24293), (212, 24314), (214, 24320), (219, 24386), (223, 24452), (242, 24605), (244, 24617), (245, 24635), (247, 24674), (248, 24677), (251, 24707), (256, 24749), (261, 24803), (267, 24854), (269, 24869), (270, 24875), (273, 24896), (276, 24950),

(278, 24989), (281, 25019), (283, 25049), (296, 25163), (297, 25172), (299, 25202), (301, 25214), (308, 25295), (315, 25361), (316, 25373), (333, 25526), (334, 25529), (341, 25574), (354, 25691), (368, 25781), (370, 25811), (373, 25850), (376, 25859), (378, 25874), (390, 25949), (417, 26228), (418, 26234), (444, 26366), (456, 26465), (463, 26561), (467, 26639), (474, 26819), (477, 26846), (487, 26957), (494, 27122), (496, 27146), (498, 27203), (505, 27290), (514, 27428), (515, 27446), (520, 27467), (531, 27569), (540, 27638), (568, 27878), (571, 27905), (572, 27920), (577, 27974), (589, 28070), (590, 28085), (595, 28160),

Gene: Jablanski\_18 Start: 11132, Stop: 16768, Start Num: 11

Candidate Starts for Jablanski\_18:

(Start: 11 @11132 has 17 MA's), (13, 11165), (16, 11345), (17, 11357), (20, 11396), (Start: 21 @11405 has 1 MA's), (23, 11429), (24, 11438), (29, 11513), (31, 11555), (48, 11744), (52, 11762), (54, 11786), (56, 11816), (61, 11858), (64, 11909), (65, 11912), (73, 11963), (77, 12005), (81, 12059), (85, 12110), (87, 12122), (90, 12164), (100, 12269), (104, 12296), (109, 12353), (115, 12428), (119, 12467), (121, 12488), (123, 12503), (128, 12536), (135, 12578), (146, 12650), (147, 12653), (148, 12662), (157, 12746), (162, 12779), (163, 12782), (164, 12788), (167, 12797), (168, 12800), (171, 12845), (172, 12863), (174, 12872), (185, 12956), (188, 12965), (195, 13019), (199, 13040), (202, 13070), (208, 13106), (218, 13190), (222, 13253), (223, 13265), (243, 13403), (246, 13427), (248, 13445), (249, 13460), (252, 13478), (253, 13487), (259, 13538), (261, 13571), (262, 13580), (265, 13595), (272, 13661), (273, 13664), (276, 13718), (277, 13727), (278, 13757), (285, 13847), (297, 13931), (299, 13961), (315, 14120), (318, 14144), (322, 14183), (323, 14192), (325, 14204), (337, 14294), (343, 14342), (348, 14378), (351, 14402), (356, 14453), (358, 14459), (363, 14504), (371, 14567), (392, 14828), (407, 14963), (444, 15203), (449, 15269), (454, 15290), (455, 15299), (457, 15326), (463, 15404), (464, 15428), (468, 15521), (471, 15569), (477, 15674), (478, 15686), (480, 15704), (489, 15797), (490, 15851), (492, 15875), (495, 15953), (501, 16052), (511, 16199), (537, 16388), (549, 16514), (552, 16544), (561, 16580), (562, 16583), (581, 16754),

Gene: Juicebox\_17 Start: 11025, Stop: 16616, Start Num: 22

Candidate Starts for Juicebox\_17:

(Start: 22 @11025 has 12 MA's), (26, 11091), (28, 11103), (35, 11196), (37, 11223), (41, 11238), (46, 11319), (47, 11331), (49, 11343), (51, 11352), (58, 11418), (59, 11436), (63, 11457), (64, 11499), (74, 11550), (79, 11607), (86, 11694), (90, 11739), (95, 11784), (107, 11925), (111, 11967), (114, 12012), (126, 12105), (132, 12144), (135, 12171), (142, 12216), (150, 12264), (160, 12348), (161, 12369), (176, 12492), (187, 12558), (192, 12615), (200, 12669), (203, 12693), (205, 12702), (207, 12720), (208, 12726), (214, 12753), (217, 12798), (224, 12888), (235, 12993), (236, 13002), (250, 13098), (262, 13212), (266, 13236), (270, 13275), (282, 13440), (291, 13542), (295, 13563), (303, 13689), (305, 13695), (310, 13728), (314, 13773), (318, 13809), (321, 13836), (325, 13872), (329, 13926), (340, 13989), (352, 14091), (355, 14118), (366, 14190), (369, 14214), (372, 14256), (375, 14280), (386, 14352), (392, 14499), (394, 14508), (399, 14553), (448, 15048), (451, 15066), (453, 15069), (457, 15120), (459, 15141), (460, 15168), (470, 15378), (477, 15501), (480, 15531), (483, 15552), (486, 15564), (491, 15708), (492, 15711), (500, 15879), (509, 15999), (512, 16062), (513, 16071), (518, 16101), (519, 16104), (524, 16137), (534, 16227), (535, 16242), (538, 16263), (544, 16362), (545, 16365), (547, 16383), (551, 16410), (552, 16419), (556, 16428), (558, 16443), (560, 16452), (573, 16563), (574, 16584), (578, 16611),

Gene: Keelan\_49 Start: 21419, Stop: 26977, Start Num: 22

Candidate Starts for Keelan\_49:

(15, 21353), (Start: 22 @21419 has 12 MA's), (28, 21497), (32, 21569), (34, 21584), (43, 21698), (47, 21731), (49, 21743), (53, 21773), (57, 21806), (66, 21908), (67, 21911), (70, 21920), (75, 21953), (79, 22007), (80, 22028), (91, 22148), (94, 22169), (95, 22184), (110, 22355), (127, 22505), (140, 22601), (147, 22640), (153, 22691), (154, 22703), (156, 22715), (186, 22937), (189, 22946), (214, 23099), (229, 23264), (230, 23276), (240, 23372), (242, 23384), (245, 23414), (248, 23456), (251, 23486), (256, 23528), (257, 23540), (261, 23582), (267, 23633), (270, 23654), (272, 23672), (273, 23675),

(275, 23717), (276, 23729), (278, 23768), (283, 23828), (290, 23903), (297, 23951), (301, 23993), (308, 24074), (309, 24080), (314, 24128), (315, 24140), (330, 24296), (344, 24377), (350, 24425), (352, 24452), (354, 24470), (361, 24518), (364, 24542), (368, 24560), (381, 24671), (390, 24740), (398, 24815), (418, 25025), (444, 25157), (456, 25256), (463, 25352), (464, 25376), (467, 25430), (472, 25541), (477, 25643), (487, 25754), (494, 25919), (496, 25943), (502, 26075), (515, 26240), (520, 26261), (527, 26318), (531, 26363), (536, 26408), (540, 26432), (555, 26582), (566, 26654), (568, 26672), (570, 26693), (571, 26699), (577, 26768), (580, 26777), (586, 26801), (591, 26891), (595, 26954),

Gene: Kuwabara\_17 Start: 9635, Stop: 15067, Start Num: 22

Candidate Starts for Kuwabara\_17:

(Start: 21 @9629 has 1 MA's), (Start: 22 @9635 has 12 MA's), (28, 9713), (30, 9755), (31, 9767), (43, 9908), (44, 9914), (50, 9950), (55, 10010), (58, 10028), (59, 10046), (63, 10067), (66, 10118), (67, 10121), (68, 10124), (71, 10148), (72, 10151), (79, 10217), (81, 10247), (88, 10325), (93, 10370), (95, 10394), (99, 10448), (102, 10469), (113, 10607), (118, 10643), (120, 10670), (123, 10691), (127, 10706), (133, 10745), (134, 10757), (136, 10769), (144, 10829), (147, 10841), (159, 10892), (179, 10967), (182, 10988), (191, 11036), (194, 11054), (209, 11123), (214, 11147), (218, 11204), (221, 11234), (222, 11267), (236, 11384), (246, 11441), (248, 11459), (249, 11474), (259, 11552), (270, 11657), (271, 11669), (272, 11675), (279, 11789), (280, 11792), (286, 11876), (289, 11906), (291, 11918), (297, 11969), (300, 12002), (304, 12071), (307, 12086), (312, 12128), (318, 12182), (319, 12185), (320, 12197), (324, 12236), (325, 12242), (327, 12266), (336, 12326), (337, 12332), (338, 12335), (345, 12404), (356, 12491), (358, 12497), (359, 12506), (363, 12542), (368, 12566), (383, 12677), (385, 12689), (400, 12896), (403, 12941), (406, 12968), (409, 13001), (417, 13079), (419, 13103), (420, 13106), (423, 13163), (425, 13175), (444, 13202), (445, 13220), (449, 13268), (454, 13289), (461, 13379), (463, 13403), (464, 13427), (469, 13535), (475, 13658), (477, 13682), (479, 13703), (480, 13712), (481, 13715), (485, 13742), (488, 13802), (499, 14045), (503, 14126), (504, 14129), (505, 14135), (517, 14300), (521, 14318), (523, 14327), (528, 14372), (529, 14384), (532, 14417), (533, 14435), (543, 14528), (554, 14633), (559, 14654), (567, 14708), (570, 14747), (576, 14819), (583, 14849), (587, 14888), (588, 14921), (593, 14960), (595, 15008), (596, 15041), (598, 15053),

Gene: Lilas\_18 Start: 11182, Stop: 16806, Start Num: 11

Candidate Starts for Lilas\_18:

(Start: 11 @11182 has 17 MA's), (13, 11215), (16, 11395), (17, 11407), (20, 11446), (Start: 21 @11455 has 1 MA's), (23, 11479), (29, 11563), (30, 11593), (31, 11605), (54, 11836), (55, 11863), (64, 11959), (65, 11962), (69, 11983), (72, 12007), (77, 12055), (81, 12109), (85, 12160), (87, 12172), (89, 12199), (90, 12214), (100, 12319), (109, 12403), (110, 12424), (115, 12478), (119, 12517), (121, 12538), (128, 12586), (131, 12598), (135, 12628), (139, 12661), (147, 12703), (152, 12745), (155, 12766), (157, 12796), (162, 12829), (163, 12832), (164, 12838), (167, 12847), (168, 12850), (172, 12913), (175, 12946), (181, 12985), (188, 13015), (200, 13099), (208, 13156), (220, 13264), (222, 13303), (223, 13315), (246, 13477), (248, 13495), (249, 13510), (253, 13537), (259, 13588), (260, 13603), (262, 13630), (273, 13714), (276, 13768), (277, 13777), (278, 13807), (297, 13981), (299, 14011), (307, 14098), (323, 14242), (325, 14254), (337, 14344), (343, 14392), (351, 14452), (356, 14503), (358, 14509), (363, 14554), (379, 14686), (407, 15013), (417, 15118), (444, 15253), (446, 15283), (449, 15319), (454, 15340), (455, 15349), (457, 15376), (463, 15454), (464, 15478), (471, 15619), (477, 15724), (480, 15754), (481, 15757), (489, 15847), (490, 15901), (495, 16003), (511, 16237), (534, 16405), (537, 16426), (549, 16552), (552, 16582), (561, 16618), (562, 16621),

Gene: LonelyBoi\_18 Start: 11131, Stop: 16809, Start Num: 11

Candidate Starts for LonelyBoi\_18:

(Start: 11 @11131 has 17 MA's), (13, 11164), (16, 11344), (17, 11356), (20, 11395), (Start: 21 @11404 has 1 MA's), (23, 11428), (24, 11437), (29, 11512), (31, 11554), (48, 11743), (52, 11761), (54, 11785), (56, 11815), (61, 11857), (64, 11908), (65, 11911), (73, 11962), (77, 12004), (81, 12058), (85, 12109),

(87, 12121), (90, 12163), (100, 12268), (104, 12295), (109, 12352), (115, 12427), (119, 12466), (121, 12487), (123, 12502), (128, 12535), (135, 12577), (147, 12652), (152, 12694), (157, 12745), (162, 12778), (163, 12781), (167, 12796), (172, 12862), (177, 12904), (181, 12934), (183, 12946), (188, 12964), (190, 13000), (193, 13018), (196, 13045), (197, 13048), (204, 13099), (208, 13126), (211, 13138), (218, 13210), (222, 13273), (223, 13285), (231, 13330), (246, 13447), (249, 13480), (253, 13507), (255, 13534), (262, 13600), (268, 13654), (271, 13675), (279, 13795), (280, 13798), (286, 13882), (291, 13924), (292, 13927), (293, 13933), (294, 13936), (297, 13975), (304, 14077), (309, 14104), (322, 14233), (327, 14281), (336, 14341), (337, 14347), (339, 14359), (342, 14383), (343, 14395), (351, 14455), (356, 14506), (358, 14512), (363, 14557), (379, 14689), (407, 15016), (444, 15256), (449, 15322), (454, 15343), (455, 15352), (457, 15379), (463, 15457), (464, 15481), (468, 15574), (469, 15598), (471, 15622), (477, 15727), (480, 15757), (489, 15850), (490, 15904), (495, 16006), (501, 16105), (534, 16408), (537, 16429), (549, 16555), (552, 16585), (561, 16621), (562, 16624), (570, 16699), (581, 16795),

Gene: Lucky10\_16 Start: 8884, Stop: 14280, Start Num: 21

Candidate Starts for Lucky10\_16:

(Start: 21 @8884 has 1 MA's), (Start: 22 @8890 has 12 MA's), (30, 9010), (31, 9022), (38, 9088), (43, 9163), (44, 9169), (59, 9301), (66, 9373), (67, 9376), (68, 9379), (72, 9406), (76, 9442), (80, 9493), (81, 9502), (84, 9538), (88, 9580), (93, 9625), (95, 9649), (99, 9703), (102, 9724), (118, 9898), (121, 9931), (127, 9961), (133, 10000), (134, 10012), (136, 10024), (143, 10069), (144, 10084), (147, 10096), (159, 10147), (179, 10222), (189, 10270), (191, 10291), (194, 10309), (201, 10339), (209, 10378), (214, 10402), (218, 10459), (221, 10489), (222, 10522), (233, 10618), (246, 10696), (248, 10714), (249, 10729), (259, 10807), (271, 10924), (272, 10930), (279, 11044), (280, 11047), (286, 11131), (291, 11173), (297, 11224), (300, 11257), (304, 11326), (312, 11383), (318, 11437), (319, 11440), (320, 11452), (324, 11491), (326, 11509), (327, 11521), (332, 11566), (336, 11581), (351, 11695), (356, 11746), (358, 11752), (360, 11770), (364, 11803), (368, 11821), (374, 11896), (383, 11932), (385, 11944), (389, 11965), (392, 12070), (393, 12076), (409, 12226), (410, 12238), (411, 12247), (416, 12286), (419, 12328), (423, 12388), (425, 12400), (444, 12427), (446, 12457), (449, 12493), (454, 12514), (463, 12628), (464, 12652), (477, 12895), (478, 12907), (480, 12925), (488, 13015), (499, 13258), (507, 13378), (523, 13540), (532, 13630), (533, 13648), (550, 13816), (559, 13867), (567, 13921), (568, 13936), (576, 14032), (583, 14062), (587, 14101), (588, 14134), (590, 14155), (591, 14167), (592, 14170), (595, 14221), (596, 14254), (598, 14266),

Gene: Marteena\_18 Start: 11003, Stop: 16657, Start Num: 11

Candidate Starts for Marteena\_18:

(Start: 11 @11003 has 17 MA's), (13, 11036), (16, 11216), (17, 11228), (20, 11267), (Start: 21 @11276 has 1 MA's), (23, 11300), (24, 11309), (29, 11384), (31, 11426), (48, 11615), (52, 11633), (54, 11657), (56, 11687), (64, 11780), (65, 11783), (72, 11828), (73, 11834), (77, 11876), (81, 11930), (85, 11981), (87, 11993), (90, 12035), (100, 12140), (104, 12167), (109, 12224), (115, 12299), (119, 12338), (121, 12359), (123, 12374), (128, 12407), (135, 12449), (146, 12521), (147, 12524), (148, 12533), (157, 12617), (162, 12650), (163, 12653), (164, 12659), (167, 12668), (168, 12671), (171, 12716), (172, 12734), (174, 12743), (184, 12824), (185, 12827), (188, 12836), (195, 12890), (199, 12911), (208, 12977), (218, 13061), (222, 13124), (223, 13136), (243, 13274), (246, 13298), (248, 13316), (249, 13331), (253, 13358), (259, 13409), (261, 13442), (262, 13451), (265, 13466), (272, 13532), (273, 13535), (276, 13589), (277, 13598), (278, 13628), (297, 13802), (298, 13811), (302, 13850), (315, 13991), (323, 14063), (325, 14075), (332, 14144), (336, 14159), (337, 14165), (343, 14213), (346, 14240), (348, 14249), (356, 14324), (358, 14330), (360, 14348), (363, 14375), (392, 14699), (401, 14792), (404, 14834), (406, 14852), (444, 15104), (449, 15170), (454, 15191), (455, 15200), (457, 15227), (463, 15305), (464, 15329), (468, 15422), (469, 15446), (471, 15470), (477, 15575), (480, 15605), (489, 15698), (490, 15752), (495, 15854), (501, 15953), (534, 16256), (549, 16403), (552, 16433), (561, 16469), (562, 16472), (570, 16547), (581, 16643),

Gene: Moonflower\_17 Start: 10660, Stop: 16308, Start Num: 3

Candidate Starts for Moonflower\_17:

(Start: 1 @10618 has 4 MA's), (2, 10648), (3, 10660), (5, 10735), (6, 10753), (8, 10873), (9, 10909), (14, 11128), (16, 11146), (17, 11158), (20, 11197), (Start: 21 @11206 has 1 MA's), (23, 11230), (29, 11314), (31, 11356), (54, 11587), (60, 11656), (65, 11713), (77, 11806), (81, 11860), (82, 11866), (83, 11875), (85, 11911), (87, 11923), (90, 11965), (98, 12052), (104, 12097), (116, 12238), (123, 12304), (125, 12310), (130, 12346), (135, 12379), (136, 12382), (144, 12442), (147, 12454), (149, 12466), (151, 12475), (158, 12517), (167, 12547), (169, 12565), (172, 12580), (188, 12640), (200, 12724), (204, 12754), (207, 12775), (210, 12790), (216, 12823), (225, 12946), (226, 12955), (228, 12967), (249, 13120), (259, 13198), (262, 13240), (267, 13282), (268, 13294), (273, 13324), (274, 13339), (276, 13378), (278, 13417), (281, 13447), (285, 13507), (297, 13591), (299, 13621), (308, 13714), (313, 13759), (323, 13852), (328, 13897), (339, 13960), (346, 14017), (349, 14029), (357, 14095), (362, 14128), (382, 14272), (388, 14293), (391, 14392), (393, 14425), (408, 14572), (409, 14575), (410, 14587), (412, 14608), (416, 14635), (424, 14752), (447, 14830), (450, 14851), (452, 14854), (455, 14872), (466, 15007), (476, 15178), (480, 15223), (495, 15475), (497, 15493), (508, 15664), (512, 15733), (526, 15826), (539, 15934), (542, 15946), (546, 16042), (548, 16048), (552, 16081), (553, 16084), (559, 16105), (564, 16147), (565, 16150), (569, 16186), (575, 16261), (576, 16267), (577, 16270), (584, 16297), (585, 16300),

Gene: Morkie\_16 Start: 8855, Stop: 14248, Start Num: 22

Candidate Starts for Morkie\_16:

(Start: 21 @8849 has 1 MA's), (Start: 22 @8855 has 12 MA's), (30, 8975), (31, 8987), (38, 9053), (39, 9056), (43, 9128), (44, 9134), (55, 9230), (58, 9248), (59, 9266), (66, 9338), (67, 9341), (68, 9344), (72, 9371), (76, 9407), (80, 9458), (81, 9467), (84, 9503), (88, 9545), (93, 9590), (95, 9614), (99, 9668), (102, 9689), (118, 9863), (121, 9896), (127, 9926), (128, 9944), (133, 9965), (134, 9977), (136, 9989), (141, 10028), (143, 10034), (144, 10049), (147, 10061), (159, 10112), (166, 10133), (179, 10187), (189, 10235), (191, 10256), (194, 10274), (201, 10304), (209, 10343), (214, 10367), (218, 10424), (221, 10454), (222, 10487), (246, 10661), (248, 10679), (249, 10694), (253, 10721), (259, 10772), (268, 10868), (270, 10877), (271, 10889), (279, 11009), (280, 11012), (286, 11096), (297, 11189), (300, 11222), (304, 11291), (318, 11402), (319, 11405), (320, 11417), (324, 11456), (325, 11462), (326, 11474), (327, 11486), (332, 11531), (336, 11546), (338, 11555), (351, 11660), (356, 11711), (358, 11717), (364, 11768), (368, 11786), (374, 11861), (383, 11897), (385, 11909), (389, 11930), (392, 12035), (393, 12041), (409, 12191), (410, 12203), (411, 12212), (413, 12236), (423, 12353), (425, 12365), (444, 12392), (446, 12422), (449, 12458), (454, 12479), (463, 12593), (464, 12617), (469, 12725), (477, 12863), (480, 12893), (485, 12923), (488, 12983), (499, 13226), (505, 13316), (523, 13508), (532, 13598), (533, 13616), (550, 13784), (559, 13835), (567, 13889), (568, 13904), (576, 14000), (583, 14030), (587, 14069), (588, 14102), (590, 14123), (591, 14135), (592, 14138), (596, 14222), (598, 14234),

Gene: MortyNRick\_17 Start: 9908, Stop: 15370, Start Num: 18

Candidate Starts for MortyNRick\_17:

(Start: 18 @9908 has 3 MA's), (23, 9965), (25, 9983), (30, 10067), (31, 10079), (33, 10091), (36, 10115), (38, 10145), (42, 10190), (43, 10220), (44, 10226), (54, 10295), (55, 10322), (58, 10340), (59, 10358), (62, 10370), (63, 10379), (66, 10430), (67, 10433), (68, 10436), (71, 10460), (72, 10463), (80, 10550), (81, 10559), (88, 10637), (93, 10682), (95, 10706), (96, 10739), (97, 10742), (106, 10829), (108, 10850), (118, 10955), (120, 10982), (125, 11009), (128, 11036), (129, 11039), (136, 11081), (137, 11099), (138, 11102), (151, 11174), (158, 11216), (165, 11237), (170, 11264), (173, 11273), (178, 11288), (180, 11306), (188, 11339), (191, 11372), (198, 11405), (199, 11414), (200, 11423), (202, 11444), (206, 11468), (209, 11483), (213, 11504), (214, 11507), (218, 11564), (221, 11594), (222, 11627), (246, 11801), (249, 11834), (253, 11861), (255, 11888), (258, 11906), (264, 11966), (268, 12008), (271, 12029), (275, 12080), (277, 12101), (279, 12149), (280, 12152), (294, 12290), (297, 12329), (301, 12371), (304, 12431), (309, 12458), (311, 12479), (317, 12536), (320, 12557), (327, 12629), (331, 12671), (332, 12674), (339, 12707), (343, 12743), (351, 12803), (356, 12854), (358, 12860), (359, 12869), (360, 12878), (364, 12911), (368, 12929), (370, 12959), (396, 13154),

(397, 13157), (404, 13238), (406, 13256), (409, 13289), (410, 13301), (414, 13337), (417, 13373), (419, 13397), (420, 13400), (421, 13421), (423, 13457), (425, 13469), (444, 13496), (445, 13514), (446, 13526), (449, 13562), (454, 13583), (461, 13673), (463, 13697), (464, 13721), (469, 13829), (475, 13952), (477, 13976), (480, 14006), (481, 14009), (485, 14036), (499, 14339), (503, 14420), (504, 14423), (505, 14429), (517, 14594), (521, 14612), (523, 14621), (528, 14666), (529, 14678), (532, 14714), (533, 14732), (543, 14831), (554, 14936), (559, 14957), (567, 15011), (570, 15050), (576, 15122), (583, 15152), (587, 15191), (588, 15224), (593, 15263), (595, 15311), (596, 15344), (598, 15356),

Gene: ODay\_22 Start: 12098, Stop: 17611, Start Num: 19

Candidate Starts for ODay\_22:

(Start: 19 @12098 has 2 MA's), (Start: 21 @12131 has 1 MA's), (Start: 22 @12137 has 12 MA's), (30, 12257), (31, 12269), (38, 12335), (43, 12410), (54, 12485), (55, 12512), (58, 12530), (59, 12548), (62, 12560), (63, 12569), (67, 12623), (68, 12626), (71, 12650), (72, 12653), (80, 12740), (81, 12749), (88, 12827), (93, 12872), (95, 12896), (97, 12932), (106, 13019), (108, 13040), (113, 13109), (118, 13145), (120, 13172), (125, 13199), (128, 13226), (129, 13229), (136, 13271), (137, 13289), (138, 13292), (158, 13406), (165, 13427), (170, 13454), (173, 13463), (178, 13478), (188, 13529), (191, 13562), (198, 13595), (199, 13604), (200, 13613), (206, 13658), (208, 13670), (209, 13673), (213, 13694), (214, 13697), (218, 13754), (221, 13784), (237, 13943), (238, 13946), (243, 13967), (246, 13991), (249, 14024), (255, 14078), (257, 14093), (268, 14198), (271, 14219), (273, 14228), (279, 14339), (280, 14342), (297, 14519), (301, 14561), (304, 14621), (306, 14630), (311, 14669), (315, 14708), (317, 14726), (320, 14747), (323, 14780), (327, 14819), (339, 14897), (343, 14933), (351, 14993), (356, 15044), (358, 15050), (365, 15104), (381, 15230), (387, 15257), (402, 15464), (406, 15518), (411, 15572), (420, 15656), (423, 15713), (444, 15752), (449, 15818), (454, 15839), (457, 15875), (458, 15890), (463, 15953), (464, 15977), (468, 16067), (469, 16091), (471, 16115), (473, 16190), (475, 16202), (477, 16226), (479, 16247), (480, 16256), (485, 16286), (488, 16346), (499, 16589), (503, 16670), (504, 16673), (505, 16679), (517, 16844), (521, 16862), (523, 16871), (528, 16916), (529, 16928), (532, 16961), (533, 16979), (543, 17072), (554, 17177), (559, 17198), (567, 17252), (570, 17291), (576, 17363), (583, 17393), (587, 17432), (588, 17465), (593, 17504), (595, 17552), (596, 17585), (598, 17597),

Gene: PhorbesPhlower\_16 Start: 8855, Stop: 14248, Start Num: 22

Candidate Starts for PhorbesPhlower\_16:

(Start: 21 @8849 has 1 MA's), (Start: 22 @8855 has 12 MA's), (30, 8975), (31, 8987), (38, 9053), (39, 9056), (43, 9128), (44, 9134), (55, 9230), (58, 9248), (59, 9266), (66, 9338), (67, 9341), (68, 9344), (72, 9371), (76, 9407), (80, 9458), (81, 9467), (84, 9503), (88, 9545), (93, 9590), (95, 9614), (99, 9668), (102, 9689), (118, 9863), (121, 9896), (127, 9926), (128, 9944), (133, 9965), (134, 9977), (136, 9989), (141, 10028), (143, 10034), (144, 10049), (147, 10061), (159, 10112), (166, 10133), (179, 10187), (189, 10235), (191, 10256), (194, 10274), (201, 10304), (209, 10343), (214, 10367), (218, 10424), (221, 10454), (222, 10487), (246, 10661), (248, 10679), (249, 10694), (253, 10721), (259, 10772), (268, 10868), (270, 10877), (271, 10889), (279, 11009), (280, 11012), (286, 11096), (297, 11189), (300, 11222), (304, 11291), (318, 11402), (319, 11405), (320, 11417), (324, 11456), (325, 11462), (326, 11474), (327, 11486), (332, 11531), (336, 11546), (338, 11555), (351, 11660), (356, 11711), (358, 11717), (364, 11768), (368, 11786), (374, 11861), (383, 11897), (385, 11909), (389, 11930), (392, 12035), (393, 12041), (409, 12191), (410, 12203), (411, 12212), (413, 12236), (423, 12353), (425, 12365), (444, 12392), (446, 12422), (449, 12458), (454, 12479), (463, 12593), (464, 12617), (469, 12725), (477, 12863), (480, 12893), (485, 12923), (488, 12983), (499, 13226), (505, 13316), (523, 13508), (532, 13598), (533, 13616), (550, 13784), (559, 13835), (567, 13889), (568, 13904), (576, 14000), (583, 14030), (587, 14069), (588, 14102), (590, 14123), (591, 14135), (592, 14138), (596, 14222), (598, 14234),

Gene: Pollux\_18 Start: 11003, Stop: 16657, Start Num: 11

Candidate Starts for Pollux\_18:

(Start: 11 @11003 has 17 MA's), (13, 11036), (16, 11216), (17, 11228), (20, 11267), (Start: 21 @11276 has 1 MA's), (23, 11300), (24, 11309), (29, 11384), (31, 11426), (48, 11615), (52, 11633), (54, 11657), (56, 11687), (64, 11780), (65, 11783), (72, 11828), (73, 11834), (77, 11876), (81, 11930), (85, 11981), (87, 11993), (90, 12035), (100, 12140), (104, 12167), (109, 12224), (115, 12299), (119, 12338), (121, 12359), (123, 12374), (128, 12407), (135, 12449), (146, 12521), (147, 12524), (148, 12533), (157, 12617), (162, 12650), (163, 12653), (164, 12659), (167, 12668), (168, 12671), (171, 12716), (172, 12734), (174, 12743), (184, 12824), (185, 12827), (188, 12836), (195, 12890), (199, 12911), (208, 12977), (218, 13061), (222, 13124), (223, 13136), (243, 13274), (246, 13298), (248, 13316), (249, 13331), (253, 13358), (259, 13409), (261, 13442), (262, 13451), (265, 13466), (272, 13532), (273, 13535), (276, 13589), (277, 13598), (278, 13628), (297, 13802), (298, 13811), (302, 13850), (315, 13991), (323, 14063), (325, 14075), (332, 14144), (336, 14159), (337, 14165), (343, 14213), (346, 14240), (348, 14249), (356, 14324), (358, 14330), (360, 14348), (363, 14375), (392, 14699), (401, 14792), (404, 14834), (406, 14852), (444, 15104), (449, 15170), (454, 15191), (455, 15200), (457, 15227), (463, 15305), (464, 15329), (468, 15422), (469, 15446), (471, 15470), (477, 15575), (480, 15605), (489, 15698), (490, 15752), (495, 15854), (501, 15953), (534, 16256), (549, 16403), (552, 16433), (561, 16469), (562, 16472), (570, 16547), (581, 16643),

Gene: Posh\_18 Start: 11000, Stop: 16621, Start Num: 11

Candidate Starts for Posh\_18:

(7, 10904), (Start: 11 @11000 has 17 MA's), (13, 11033), (16, 11213), (17, 11225), (20, 11264), (Start: 21 @11273 has 1 MA's), (23, 11297), (24, 11306), (29, 11381), (31, 11423), (48, 11612), (52, 11630), (54, 11654), (56, 11684), (65, 11780), (73, 11831), (77, 11873), (81, 11927), (85, 11978), (87, 11990), (90, 12032), (100, 12137), (104, 12164), (109, 12221), (115, 12296), (119, 12335), (121, 12356), (123, 12371), (128, 12404), (135, 12446), (146, 12518), (147, 12521), (148, 12530), (152, 12563), (157, 12614), (162, 12647), (163, 12650), (164, 12656), (167, 12665), (168, 12668), (171, 12713), (172, 12731), (174, 12740), (184, 12821), (185, 12824), (188, 12833), (195, 12887), (199, 12908), (208, 12974), (218, 13058), (222, 13121), (223, 13133), (239, 13253), (246, 13295), (249, 13328), (253, 13355), (259, 13406), (261, 13439), (262, 13448), (265, 13463), (273, 13532), (276, 13586), (277, 13595), (278, 13625), (285, 13715), (297, 13799), (315, 13988), (318, 14012), (322, 14051), (323, 14060), (325, 14072), (337, 14162), (343, 14210), (351, 14270), (356, 14321), (358, 14327), (363, 14372), (371, 14435), (377, 14495), (379, 14501), (392, 14693), (407, 14828), (444, 15068), (449, 15134), (454, 15155), (455, 15164), (457, 15191), (463, 15269), (464, 15293), (468, 15386), (471, 15434), (477, 15539), (478, 15551), (480, 15569), (481, 15572), (489, 15662), (490, 15716), (492, 15740), (495, 15818), (501, 15917), (534, 16220), (537, 16241), (549, 16367), (552, 16397), (561, 16433), (562, 16436), (570, 16511), (581, 16607),

Gene: Pytheas\_18 Start: 11131, Stop: 16767, Start Num: 11

Candidate Starts for Pytheas\_18:

(Start: 11 @11131 has 17 MA's), (13, 11164), (16, 11344), (17, 11356), (20, 11395), (Start: 21 @11404 has 1 MA's), (23, 11428), (24, 11437), (29, 11512), (31, 11554), (48, 11743), (52, 11761), (54, 11785), (56, 11815), (61, 11857), (64, 11908), (65, 11911), (73, 11962), (77, 12004), (81, 12058), (85, 12109), (87, 12121), (90, 12163), (100, 12268), (104, 12295), (109, 12352), (115, 12427), (119, 12466), (121, 12487), (123, 12502), (128, 12535), (135, 12577), (146, 12649), (147, 12652), (148, 12661), (157, 12745), (162, 12778), (163, 12781), (164, 12787), (167, 12796), (168, 12799), (171, 12844), (172, 12862), (174, 12871), (185, 12955), (188, 12964), (195, 13018), (199, 13039), (202, 13069), (208, 13105), (218, 13189), (222, 13252), (223, 13264), (243, 13402), (246, 13426), (248, 13444), (249, 13459), (252, 13477), (253, 13486), (259, 13537), (261, 13570), (262, 13579), (265, 13594), (272, 13660), (273, 13663), (276, 13717), (277, 13726), (278, 13756), (285, 13846), (297, 13930), (299, 13960), (315, 14119), (318, 14143), (322, 14182), (323, 14191), (325, 14203), (337, 14293), (343, 14341), (348, 14377), (351, 14401), (356, 14452), (358, 14458), (363, 14503), (371, 14566), (392, 14827), (407, 14962), (444, 15202), (449, 15268), (454, 15289), (455, 15298), (457, 15325), (463, 15403), (464, 15427), (468, 15520), (471, 15568), (477, 15673), (478, 15685), (480, 15703), (489, 15796), (490, 15850), (492, 15874), (495, 15952), (501, 16051), (511, 16198), (537, 16387), (549,

16513), (552, 16543), (561, 16579), (562, 16582), (581, 16753),

Gene: RayTheFireFly\_17 Start: 10898, Stop: 16588, Start Num: 1

Candidate Starts for RayTheFireFly\_17:

(Start: 1 @10898 has 4 MA's), (2, 10928), (6, 11033), (8, 11153), (9, 11189), (16, 11426), (17, 11438), (20, 11477), (Start: 21 @11486 has 1 MA's), (23, 11510), (29, 11594), (31, 11636), (54, 11867), (60, 11936), (65, 11993), (77, 12086), (81, 12140), (85, 12191), (87, 12203), (90, 12245), (104, 12377), (116, 12518), (123, 12584), (125, 12590), (130, 12626), (135, 12659), (136, 12662), (144, 12722), (147, 12734), (149, 12746), (151, 12755), (158, 12797), (167, 12827), (169, 12845), (172, 12860), (188, 12920), (200, 13004), (204, 13034), (207, 13055), (210, 13070), (216, 13103), (225, 13226), (226, 13235), (228, 13247), (249, 13400), (259, 13478), (262, 13520), (267, 13562), (268, 13574), (273, 13604), (274, 13619), (276, 13658), (278, 13697), (281, 13727), (285, 13787), (297, 13871), (299, 13901), (308, 13994), (313, 14039), (323, 14132), (328, 14177), (335, 14219), (339, 14240), (342, 14264), (346, 14297), (349, 14309), (357, 14375), (362, 14408), (382, 14552), (388, 14573), (391, 14672), (393, 14705), (408, 14852), (409, 14855), (410, 14867), (412, 14888), (416, 14915), (424, 15032), (447, 15110), (450, 15131), (452, 15134), (476, 15458), (480, 15503), (495, 15755), (497, 15773), (506, 15920), (512, 16013), (526, 16106), (539, 16214), (541, 16220), (546, 16322), (548, 16328), (552, 16361), (553, 16364), (559, 16385), (564, 16427), (565, 16430), (569, 16466), (575, 16541), (576, 16547), (577, 16550), (584, 16577), (585, 16580),

Gene: Ronaldo\_54 Start: 22393, Stop: 27948, Start Num: 22

Candidate Starts for Ronaldo\_54:

(Start: 22 @22393 has 12 MA's), (27, 22459), (28, 22471), (32, 22543), (41, 22612), (43, 22672), (45, 22687), (47, 22705), (49, 22717), (53, 22747), (57, 22780), (66, 22882), (67, 22885), (75, 22927), (76, 22951), (80, 23002), (91, 23122), (92, 23125), (94, 23143), (95, 23158), (103, 23242), (105, 23248), (110, 23329), (112, 23353), (117, 23401), (119, 23428), (122, 23455), (138, 23563), (145, 23608), (154, 23677), (156, 23689), (202, 24028), (208, 24058), (212, 24079), (214, 24085), (223, 24217), (232, 24298), (242, 24370), (245, 24400), (247, 24439), (248, 24442), (251, 24472), (256, 24514), (261, 24568), (267, 24619), (269, 24634), (270, 24640), (273, 24661), (276, 24715), (278, 24754), (281, 24784), (283, 24814), (284, 24838), (296, 24928), (297, 24937), (299, 24967), (301, 24979), (308, 25060), (315, 25126), (316, 25138), (333, 25291), (334, 25294), (341, 25339), (354, 25456), (368, 25546), (370, 25576), (373, 25615), (376, 25624), (378, 25639), (390, 25714), (417, 25993), (418, 25999), (444, 26131), (456, 26230), (463, 26326), (467, 26404), (477, 26611), (487, 26722), (494, 26887), (496, 26911), (498, 26968), (505, 27055), (514, 27193), (515, 27211), (520, 27232), (531, 27334), (536, 27379), (540, 27403), (555, 27553), (563, 27613), (568, 27643), (571, 27670), (572, 27685), (577, 27739), (582, 27754), (589, 27835), (590, 27850), (595, 27925),

Gene: Volt\_53 Start: 22393, Stop: 27948, Start Num: 22

Candidate Starts for Volt\_53:

(Start: 22 @22393 has 12 MA's), (27, 22459), (28, 22471), (32, 22543), (41, 22612), (43, 22672), (45, 22687), (47, 22705), (49, 22717), (53, 22747), (57, 22780), (66, 22882), (67, 22885), (75, 22927), (76, 22951), (80, 23002), (91, 23122), (92, 23125), (94, 23143), (95, 23158), (103, 23242), (105, 23248), (110, 23329), (112, 23353), (117, 23401), (119, 23428), (122, 23455), (138, 23563), (145, 23608), (154, 23677), (156, 23689), (202, 24028), (208, 24058), (212, 24079), (214, 24085), (223, 24217), (232, 24298), (242, 24370), (245, 24400), (247, 24439), (248, 24442), (251, 24472), (256, 24514), (261, 24568), (267, 24619), (269, 24634), (270, 24640), (273, 24661), (276, 24715), (278, 24754), (281, 24784), (283, 24814), (284, 24838), (296, 24928), (297, 24937), (299, 24967), (301, 24979), (308, 25060), (315, 25126), (316, 25138), (333, 25291), (334, 25294), (341, 25339), (354, 25456), (368, 25546), (370, 25576), (373, 25615), (376, 25624), (378, 25639), (390, 25714), (417, 25993), (418, 25999), (444, 26131), (456, 26230), (463, 26326), (467, 26404), (477, 26611), (487, 26722), (494, 26887), (496, 26911), (498, 26968), (505, 27055), (514, 27193), (515, 27211), (520, 27232), (531, 27334), (536, 27379), (540, 27403), (555, 27553), (563, 27613), (568, 27643), (571, 27670), (572, 27685), (577, 27739), (582, 27754), (589, 27835), (590, 27850), (595, 27925),

Gene: Wrigley\_18 Start: 10897, Stop: 16518, Start Num: 11

Candidate Starts for Wrigley\_18:

(Start: 11 @10897 has 17 MA's), (13, 10930), (16, 11110), (17, 11122), (20, 11161), (Start: 21 @11170 has 1 MA's), (23, 11194), (24, 11203), (29, 11278), (31, 11320), (48, 11509), (52, 11527), (54, 11551), (56, 11581), (61, 11623), (65, 11677), (73, 11728), (77, 11770), (81, 11824), (85, 11875), (87, 11887), (90, 11929), (100, 12034), (104, 12061), (109, 12118), (115, 12193), (119, 12232), (121, 12253), (123, 12268), (128, 12301), (135, 12343), (146, 12415), (147, 12418), (148, 12427), (152, 12460), (157, 12511), (162, 12544), (163, 12547), (164, 12553), (167, 12562), (168, 12565), (171, 12610), (172, 12628), (174, 12637), (184, 12718), (185, 12721), (188, 12730), (195, 12784), (199, 12805), (208, 12871), (218, 12955), (222, 13018), (223, 13030), (239, 13150), (246, 13192), (249, 13225), (253, 13252), (259, 13303), (261, 13336), (262, 13345), (265, 13360), (273, 13429), (276, 13483), (277, 13492), (278, 13522), (285, 13612), (297, 13696), (315, 13885), (318, 13909), (322, 13948), (323, 13957), (325, 13969), (337, 14059), (343, 14107), (351, 14167), (356, 14218), (358, 14224), (363, 14269), (371, 14332), (377, 14392), (379, 14398), (392, 14590), (407, 14725), (444, 14965), (449, 15031), (454, 15052), (455, 15061), (457, 15088), (463, 15166), (464, 15190), (468, 15283), (471, 15331), (477, 15436), (478, 15448), (480, 15466), (489, 15559), (490, 15613), (492, 15637), (495, 15715), (501, 15814), (549, 16264), (552, 16294), (561, 16330), (562, 16333), (570, 16408), (581, 16504),

Gene: Ziko\_54 Start: 22333, Stop: 27888, Start Num: 22

Candidate Starts for Ziko\_54:

(Start: 22 @22333 has 12 MA's), (27, 22399), (28, 22411), (32, 22483), (41, 22552), (43, 22612), (45, 22627), (47, 22645), (49, 22657), (53, 22687), (57, 22720), (66, 22822), (67, 22825), (75, 22867), (76, 22891), (80, 22942), (91, 23062), (92, 23065), (94, 23083), (95, 23098), (103, 23182), (105, 23188), (110, 23269), (112, 23293), (117, 23341), (119, 23368), (122, 23395), (138, 23503), (145, 23548), (154, 23617), (156, 23629), (202, 23968), (208, 23998), (212, 24019), (214, 24025), (223, 24157), (232, 24238), (242, 24310), (245, 24340), (247, 24379), (248, 24382), (251, 24412), (256, 24454), (261, 24508), (267, 24559), (269, 24574), (270, 24580), (273, 24601), (276, 24655), (278, 24694), (281, 24724), (283, 24754), (284, 24778), (296, 24868), (297, 24877), (299, 24907), (301, 24919), (308, 25000), (315, 25066), (316, 25078), (333, 25231), (334, 25234), (341, 25279), (354, 25396), (368, 25486), (370, 25516), (373, 25555), (376, 25564), (378, 25579), (390, 25654), (417, 25933), (418, 25939), (444, 26071), (456, 26170), (463, 26266), (467, 26344), (477, 26551), (487, 26662), (494, 26827), (496, 26851), (498, 26908), (505, 26995), (514, 27133), (515, 27151), (520, 27172), (531, 27274), (536, 27319), (540, 27343), (555, 27493), (563, 27553), (568, 27583), (571, 27610), (572, 27625), (577, 27679), (582, 27694), (589, 27775), (590, 27790), (595, 27865),