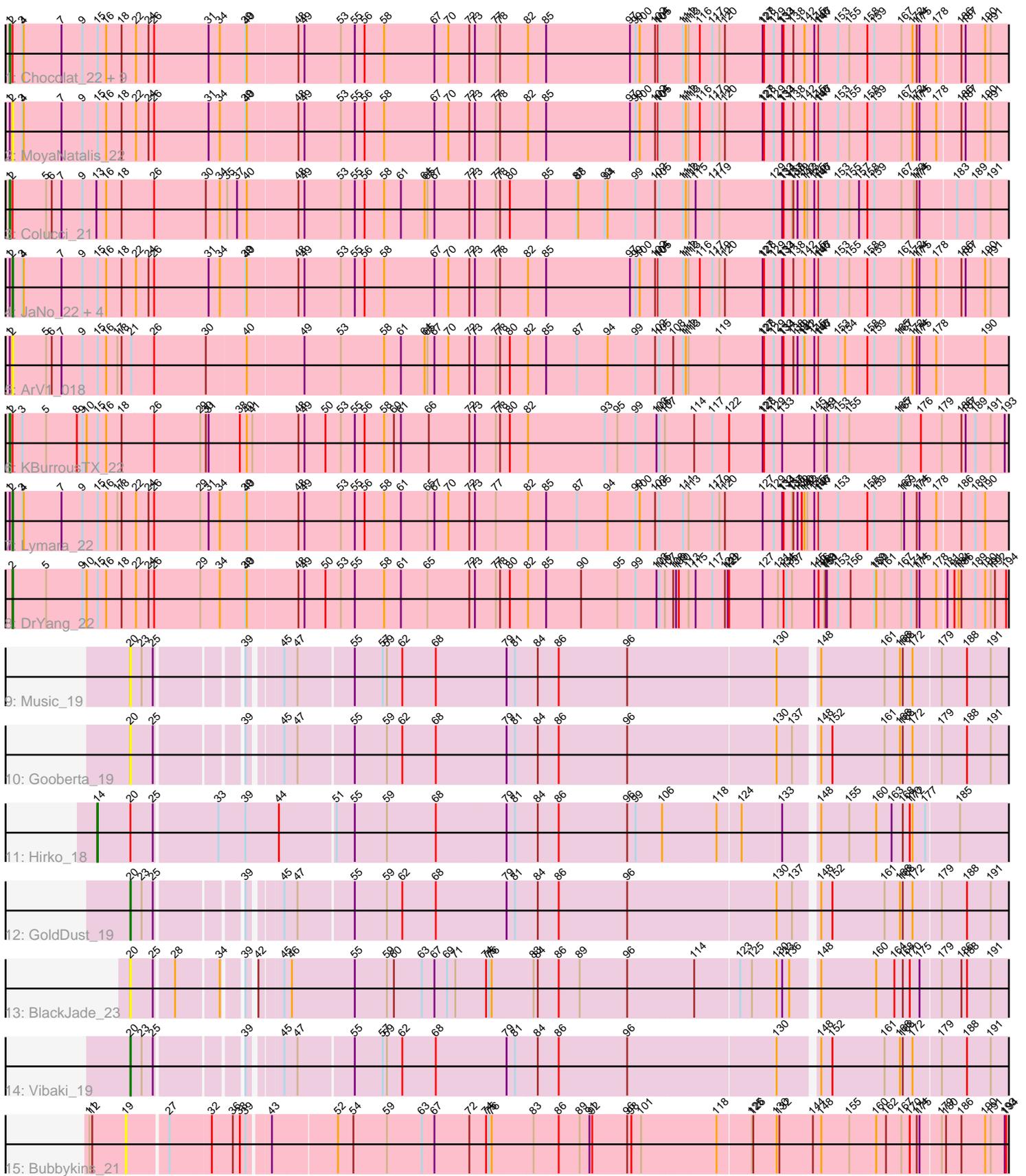


# Zoomed Pham 289662



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 289662 Report

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

Pham number 289662 has 28 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Chocolat\_22, Kabreeze\_22, Scavito\_22, Conboy\_22, PrincessTrina\_22, Chipper1996\_220, Chubster\_22, RosiePosie\_22, EdgarPoe\_22, HumptyDumpty\_22
- Track 2 : MoyaNatalis\_22
- Track 3 : Colucci\_21
- Track 4 : JaNo\_22, Linus\_22, Mordred\_22, Tophat\_22, JayCookie\_22
- Track 5 : ArV1\_018
- Track 6 : KBurrousTX\_22
- Track 7 : Lymara\_22
- Track 8 : DrYang\_22
- Track 9 : Music\_19
- Track 10 : Gooberta\_19
- Track 11 : Hirko\_18
- Track 12 : GoldDust\_19
- Track 13 : BlackJade\_23
- Track 14 : Vibaki\_19
- Track 15 : Bubbykins\_21

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

The start number called the most often in the published annotations is 1, it was called in 12 of the 22 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Chipper1996\_220, Chocolat\_22, Chubster\_22, Colucci\_21, Conboy\_22, EdgarPoe\_22, HumptyDumpty\_22, KBurrousTX\_22, Kabreeze\_22, PrincessTrina\_22, RosiePosie\_22, Scavito\_22,

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

- ArV1\_018, JaNo\_22, JayCookie\_22, Linus\_22, Lymara\_22, Mordred\_22, MoyaNatalis\_22, Tophat\_22,

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

- BlackJade\_23, Bubbykins\_21, DrYang\_22, GoldDust\_19, Gooberta\_19, Hirko\_18, Music\_19, Vibaki\_19,

## Summary by start number:

### Start 1:

- Found in 20 of 28 ( 71.4% ) of genes in pham
- Manual Annotations of this start: 12 of 22
- Called 60.0% of time when present
- Phage (with cluster) where this start called: Chipper1996\_220 (AR), Chocolat\_22 (AR), Chubster\_22 (AR), Colucci\_21 (AR), Conboy\_22 (AR), EdgarPoe\_22 (AR), HumptyDumpty\_22 (AR), KBurrousTX\_22 (AR), Kabreeze\_22 (AR), PrincessTrina\_22 (AR), RosiePosie\_22 (AR), Scavito\_22 (AR),

### Start 2:

- Found in 21 of 28 ( 75.0% ) of genes in pham
- Manual Annotations of this start: 7 of 22
- Called 42.9% of time when present
- Phage (with cluster) where this start called: ArV1\_018 (AR), DrYang\_22 (AR), JaNo\_22 (AR), JayCookie\_22 (AR), Linus\_22 (AR), Lymara\_22 (AR), Mordred\_22 (AR), MoyaNatalis\_22 (AR), Tophat\_22 (AR),

### Start 14:

- Found in 1 of 28 ( 3.6% ) of genes in pham
- Manual Annotations of this start: 1 of 22
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hirko\_18 (FL),

### Start 19:

- Found in 1 of 28 ( 3.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bubbykins\_21 (UNK),

### Start 20:

- Found in 6 of 28 ( 21.4% ) of genes in pham
- Manual Annotations of this start: 2 of 22
- Called 83.3% of time when present
- Phage (with cluster) where this start called: BlackJade\_23 (FL), GoldDust\_19 (FL), Gooberta\_19 (FL), Music\_19 (FL), Vibaki\_19 (FL),

## Summary by clusters:

There are 3 clusters represented in this pham: UNK, AR, FL,

### Info for manual annotations of cluster AR:

- Start number 1 was manually annotated 12 times for cluster AR.
- Start number 2 was manually annotated 7 times for cluster AR.

### Info for manual annotations of cluster FL:

- Start number 14 was manually annotated 1 time for cluster FL.
- Start number 20 was manually annotated 2 times for cluster FL.

### **Gene Information:**

Gene: ArV1\_018 Start: 14054, Stop: 17587, Start Num: 2

Candidate Starts for ArV1\_018:

(Start: 1 @14048 has 12 MA's), (Start: 2 @14054 has 7 MA's), (5, 14126), (6, 14138), (7, 14159), (9, 14204), (15, 14237), (16, 14255), (17, 14279), (18, 14288), (21, 14309), (26, 14357), (30, 14468), (40, 14552), (49, 14669), (53, 14744), (58, 14837), (61, 14873), (64, 14924), (65, 14930), (67, 14945), (70, 14975), (72, 15020), (73, 15032), (77, 15077), (78, 15086), (80, 15107), (82, 15146), (85, 15185), (87, 15251), (94, 15317), (99, 15377), (102, 15419), (105, 15428), (108, 15458), (111, 15479), (112, 15485), (113, 15491), (119, 15557), (127, 15650), (128, 15653), (129, 15674), (133, 15692), (134, 15695), (138, 15716), (139, 15725), (141, 15737), (142, 15740), (145, 15761), (146, 15770), (147, 15773), (153, 15812), (154, 15827), (158, 15875), (159, 15890), (165, 15941), (167, 15947), (172, 15971), (174, 15980), (175, 15986), (178, 16022), (190, 16121), (195, 16190), (197, 16208), (200, 16241), (214, 16253), (220, 16325), (221, 16352), (224, 16373), (229, 16442), (230, 16448), (231, 16463), (234, 16484), (235, 16505), (244, 16562), (256, 16595), (257, 16598), (259, 16622), (261, 16691), (264, 16727), (265, 16730), (266, 16733), (270, 16775), (272, 16796), (277, 16835), (282, 16898), (285, 16955), (293, 17096), (294, 17108), (300, 17177), (304, 17219), (306, 17249), (308, 17288), (309, 17309), (313, 17354), (316, 17417), (317, 17426), (323, 17489), (329, 17546),

Gene: BlackJade\_23 Start: 15395, Stop: 18553, Start Num: 20

Candidate Starts for BlackJade\_23:

(Start: 20 @15395 has 2 MA's), (25, 15443), (28, 15479), (34, 15563), (39, 15593), (42, 15605), (45, 15647), (46, 15659), (55, 15794), (59, 15860), (60, 15875), (63, 15935), (67, 15962), (69, 15989), (71, 16007), (74, 16070), (75, 16076), (76, 16082), (83, 16169), (84, 16178), (86, 16220), (89, 16265), (96, 16367), (114, 16508), (123, 16601), (125, 16625), (130, 16673), (133, 16685), (136, 16700), (148, 16748), (160, 16865), (164, 16904), (168, 16922), (170, 16937), (175, 16958), (179, 17000), (186, 17042), (188, 17054), (191, 17105), (205, 17171), (216, 17234), (219, 17276), (225, 17354), (226, 17366), (250, 17633), (252, 17672), (263, 17705), (270, 17747), (272, 17768), (277, 17807), (281, 17864), (283, 17882), (284, 17903), (285, 17927), (290, 18035), (297, 18110), (300, 18149), (305, 18212), (306, 18215), (309, 18275), (310, 18278), (311, 18281), (312, 18290), (313, 18320), (315, 18377), (321, 18443),

Gene: Bubbykins\_21 Start: 15316, Stop: 18789, Start Num: 19

Candidate Starts for Bubbykins\_21:

(11, 15238), (12, 15244), (19, 15316), (27, 15394), (32, 15478), (36, 15523), (38, 15535), (39, 15547), (43, 15589), (52, 15721), (54, 15754), (59, 15823), (63, 15898), (67, 15925), (72, 16000), (74, 16033), (75, 16039), (76, 16045), (83, 16132), (86, 16183), (89, 16228), (91, 16249), (92, 16255), (96, 16330), (98, 16339), (101, 16360), (118, 16519), (125, 16588), (126, 16591), (130, 16636), (132, 16642), (144, 16714), (148, 16732), (155, 16792), (160, 16849), (162, 16870), (167, 16903), (170, 16921), (174, 16936), (175, 16942), (179, 16984), (180, 16993), (186, 17026), (190, 17077), (191, 17089), (193, 17119), (194, 17122), (195, 17146), (199, 17185), (204, 17230), (209, 17266), (212, 17281), (213, 17287), (220, 17389), (224, 17437), (225, 17446), (226, 17458), (227, 17494), (228, 17503), (236, 17584), (240, 17626), (241, 17629), (242, 17641), (248, 17704), (253, 17773), (254, 17776), (260, 17860), (268, 17950), (270, 17974), (272, 17995), (277, 18034), (281, 18091), (286, 18175), (295, 18319), (298, 18340), (300, 18376), (302, 18397), (303, 18400), (307, 18472), (309, 18511), (313, 18556), (317, 18628), (318, 18655), (319, 18661), (321, 18676), (324, 18712), (327, 18727),

Gene: Chipper1996\_220 Start: 15723, Stop: 19265, Start Num: 1

Candidate Starts for Chipper1996\_220:

(Start: 1 @15723 has 12 MA's), (Start: 2 @15729 has 7 MA's), (3, 15750), (4, 15753), (7, 15834), (9, 15879), (15, 15912), (16, 15930), (18, 15963), (22, 15993), (24, 16020), (26, 16032), (31, 16149), (34, 16173), (39, 16224), (40, 16227), (48, 16332), (49, 16344), (53, 16419), (55, 16449), (56, 16470), (58, 16512), (67, 16620), (70, 16650), (72, 16695), (73, 16707), (77, 16752), (78, 16761), (82, 16821), (85,

16860), (97, 17040), (99, 17052), (100, 17061), (102, 17094), (104, 17100), (105, 17103), (111, 17154), (112, 17160), (113, 17166), (116, 17190), (117, 17217), (119, 17232), (120, 17244), (127, 17325), (128, 17328), (129, 17349), (133, 17367), (134, 17370), (138, 17391), (142, 17415), (145, 17436), (146, 17445), (147, 17448), (153, 17487), (155, 17511), (158, 17550), (159, 17565), (167, 17622), (172, 17646), (174, 17655), (175, 17661), (178, 17697), (186, 17745), (187, 17754), (190, 17796), (191, 17808), (195, 17865), (197, 17883), (198, 17898), (199, 17904), (220, 18000), (221, 18027), (224, 18048), (229, 18117), (231, 18138), (234, 18159), (244, 18237), (256, 18270), (257, 18273), (259, 18297), (261, 18366), (264, 18402), (265, 18405), (266, 18408), (267, 18423), (272, 18471), (276, 18507), (277, 18510), (282, 18573), (289, 18705), (293, 18771), (297, 18813), (300, 18852), (304, 18897), (308, 18966), (309, 18987), (313, 19032), (316, 19095), (319, 19134), (321, 19149), (326, 19200), (328, 19212),

Gene: Chocolat\_22 Start: 15724, Stop: 19266, Start Num: 1

Candidate Starts for Chocolat\_22:

(Start: 1 @15724 has 12 MA's), (Start: 2 @15730 has 7 MA's), (3, 15751), (4, 15754), (7, 15835), (9, 15880), (15, 15913), (16, 15931), (18, 15964), (22, 15994), (24, 16021), (26, 16033), (31, 16150), (34, 16174), (39, 16225), (40, 16228), (48, 16333), (49, 16345), (53, 16420), (55, 16450), (56, 16471), (58, 16513), (67, 16621), (70, 16651), (72, 16696), (73, 16708), (77, 16753), (78, 16762), (82, 16822), (85, 16861), (97, 17041), (99, 17053), (100, 17062), (102, 17095), (104, 17101), (105, 17104), (111, 17155), (112, 17161), (113, 17167), (116, 17191), (117, 17218), (119, 17233), (120, 17245), (127, 17326), (128, 17329), (129, 17350), (133, 17368), (134, 17371), (138, 17392), (142, 17416), (145, 17437), (146, 17446), (147, 17449), (153, 17488), (155, 17512), (158, 17551), (159, 17566), (167, 17623), (172, 17647), (174, 17656), (175, 17662), (178, 17698), (186, 17746), (187, 17755), (190, 17797), (191, 17809), (195, 17866), (197, 17884), (198, 17899), (199, 17905), (220, 18001), (221, 18028), (224, 18049), (229, 18118), (231, 18139), (234, 18160), (244, 18238), (256, 18271), (257, 18274), (259, 18298), (261, 18367), (264, 18403), (265, 18406), (266, 18409), (267, 18424), (272, 18472), (276, 18508), (277, 18511), (282, 18574), (289, 18706), (293, 18772), (297, 18814), (300, 18853), (304, 18898), (308, 18967), (309, 18988), (313, 19033), (316, 19096), (319, 19135), (321, 19150), (326, 19201), (328, 19213),

Gene: Chubster\_22 Start: 15494, Stop: 19036, Start Num: 1

Candidate Starts for Chubster\_22:

(Start: 1 @15494 has 12 MA's), (Start: 2 @15500 has 7 MA's), (3, 15521), (4, 15524), (7, 15605), (9, 15650), (15, 15683), (16, 15701), (18, 15734), (22, 15764), (24, 15791), (26, 15803), (31, 15920), (34, 15944), (39, 15995), (40, 15998), (48, 16103), (49, 16115), (53, 16190), (55, 16220), (56, 16241), (58, 16283), (67, 16391), (70, 16421), (72, 16466), (73, 16478), (77, 16523), (78, 16532), (82, 16592), (85, 16631), (97, 16811), (99, 16823), (100, 16832), (102, 16865), (104, 16871), (105, 16874), (111, 16925), (112, 16931), (113, 16937), (116, 16961), (117, 16988), (119, 17003), (120, 17015), (127, 17096), (128, 17099), (129, 17120), (133, 17138), (134, 17141), (138, 17162), (142, 17186), (145, 17207), (146, 17216), (147, 17219), (153, 17258), (155, 17282), (158, 17321), (159, 17336), (167, 17393), (172, 17417), (174, 17426), (175, 17432), (178, 17468), (186, 17516), (187, 17525), (190, 17567), (191, 17579), (195, 17636), (197, 17654), (198, 17669), (199, 17675), (220, 17771), (221, 17798), (224, 17819), (229, 17888), (231, 17909), (234, 17930), (244, 18008), (256, 18041), (257, 18044), (259, 18068), (261, 18137), (264, 18173), (265, 18176), (266, 18179), (267, 18194), (272, 18242), (276, 18278), (277, 18281), (282, 18344), (289, 18476), (293, 18542), (297, 18584), (300, 18623), (304, 18668), (308, 18737), (309, 18758), (313, 18803), (316, 18866), (319, 18905), (321, 18920), (326, 18971), (328, 18983),

Gene: Colucci\_21 Start: 15200, Stop: 18736, Start Num: 1

Candidate Starts for Colucci\_21:

(Start: 1 @15200 has 12 MA's), (Start: 2 @15206 has 7 MA's), (5, 15278), (6, 15290), (7, 15311), (9, 15356), (13, 15386), (16, 15407), (18, 15440), (26, 15509), (30, 15620), (34, 15650), (35, 15662), (37, 15683), (40, 15704), (48, 15809), (49, 15821), (53, 15896), (55, 15926), (56, 15947), (58, 15989), (61,

16025), (64, 16076), (65, 16082), (67, 16097), (72, 16172), (73, 16184), (77, 16229), (78, 16238), (80, 16259), (85, 16337), (87, 16403), (88, 16406), (93, 16463), (94, 16469), (99, 16529), (102, 16571), (105, 16580), (111, 16631), (112, 16637), (113, 16643), (115, 16658), (117, 16694), (119, 16709), (129, 16826), (133, 16844), (134, 16847), (137, 16865), (138, 16868), (139, 16877), (142, 16892), (143, 16898), (145, 16913), (146, 16922), (147, 16925), (153, 16964), (155, 16988), (157, 17009), (158, 17027), (159, 17042), (167, 17099), (173, 17126), (174, 17132), (175, 17138), (183, 17213), (189, 17252), (191, 17285), (195, 17342), (197, 17360), (198, 17375), (199, 17381), (220, 17477), (221, 17504), (229, 17594), (231, 17615), (232, 17630), (234, 17636), (244, 17714), (245, 17717), (255, 17744), (256, 17747), (257, 17750), (258, 17765), (264, 17879), (267, 17900), (270, 17927), (272, 17948), (274, 17969), (275, 17975), (278, 17996), (282, 18050), (293, 18248), (294, 18260), (300, 18329), (303, 18353), (304, 18371), (308, 18437), (309, 18458), (313, 18503), (318, 18599), (319, 18605), (330, 18716),

Gene: Conboy\_22 Start: 15722, Stop: 19264, Start Num: 1

Candidate Starts for Conboy\_22:

(Start: 1 @15722 has 12 MA's), (Start: 2 @15728 has 7 MA's), (3, 15749), (4, 15752), (7, 15833), (9, 15878), (15, 15911), (16, 15929), (18, 15962), (22, 15992), (24, 16019), (26, 16031), (31, 16148), (34, 16172), (39, 16223), (40, 16226), (48, 16331), (49, 16343), (53, 16418), (55, 16448), (56, 16469), (58, 16511), (67, 16619), (70, 16649), (72, 16694), (73, 16706), (77, 16751), (78, 16760), (82, 16820), (85, 16859), (97, 17039), (99, 17051), (100, 17060), (102, 17093), (104, 17099), (105, 17102), (111, 17153), (112, 17159), (113, 17165), (116, 17189), (117, 17216), (119, 17231), (120, 17243), (127, 17324), (128, 17327), (129, 17348), (133, 17366), (134, 17369), (138, 17390), (142, 17414), (145, 17435), (146, 17444), (147, 17447), (153, 17486), (155, 17510), (158, 17549), (159, 17564), (167, 17621), (172, 17645), (174, 17654), (175, 17660), (178, 17696), (186, 17744), (187, 17753), (190, 17795), (191, 17807), (195, 17864), (197, 17882), (198, 17897), (199, 17903), (220, 17999), (221, 18026), (224, 18047), (229, 18116), (231, 18137), (234, 18158), (244, 18236), (256, 18269), (257, 18272), (259, 18296), (261, 18365), (264, 18401), (265, 18404), (266, 18407), (267, 18422), (272, 18470), (276, 18506), (277, 18509), (282, 18572), (289, 18704), (293, 18770), (297, 18812), (300, 18851), (304, 18896), (308, 18965), (309, 18986), (313, 19031), (316, 19094), (319, 19133), (321, 19148), (326, 19199), (328, 19211),

Gene: DrYang\_22 Start: 15693, Stop: 19463, Start Num: 2

Candidate Starts for DrYang\_22:

(Start: 2 @15693 has 7 MA's), (5, 15765), (9, 15843), (10, 15852), (15, 15876), (16, 15894), (18, 15927), (22, 15957), (24, 15984), (26, 15996), (29, 16095), (34, 16137), (39, 16188), (40, 16191), (48, 16296), (49, 16308), (50, 16350), (53, 16383), (55, 16413), (58, 16476), (61, 16512), (65, 16569), (72, 16659), (73, 16671), (77, 16716), (78, 16725), (80, 16746), (82, 16785), (85, 16824), (90, 16899), (95, 16977), (99, 17016), (103, 17061), (105, 17067), (107, 17079), (108, 17097), (109, 17103), (110, 17109), (113, 17130), (115, 17145), (117, 17181), (120, 17208), (121, 17214), (122, 17217), (127, 17289), (131, 17322), (134, 17334), (135, 17340), (137, 17352), (145, 17400), (146, 17409), (149, 17421), (150, 17424), (151, 17427), (153, 17451), (156, 17478), (159, 17529), (160, 17532), (161, 17550), (167, 17586), (171, 17607), (174, 17619), (175, 17625), (178, 17661), (181, 17679), (182, 17694), (184, 17703), (186, 17709), (189, 17739), (190, 17760), (191, 17772), (192, 17781), (194, 17805), (195, 17829), (199, 17868), (202, 17904), (203, 17907), (207, 17937), (208, 17940), (212, 17964), (216, 18003), (220, 18066), (221, 18093), (229, 18183), (231, 18204), (235, 18246), (243, 18333), (245, 18339), (247, 18360), (252, 18441), (254, 18453), (255, 18468), (260, 18537), (263, 18588), (264, 18603), (266, 18609), (269, 18633), (270, 18651), (272, 18672), (276, 18708), (279, 18723), (282, 18774), (289, 18906), (293, 18972), (300, 19053), (308, 19164), (309, 19185), (313, 19230), (316, 19293), (317, 19302), (319, 19332), (325, 19386), (329, 19422),

Gene: EdgarPoe\_22 Start: 15722, Stop: 19264, Start Num: 1

Candidate Starts for EdgarPoe\_22:

(Start: 1 @15722 has 12 MA's), (Start: 2 @15728 has 7 MA's), (3, 15749), (4, 15752), (7, 15833), (9, 15878), (15, 15911), (16, 15929), (18, 15962), (22, 15992), (24, 16019), (26, 16031), (31, 16148), (34, 16172), (39, 16223), (40, 16226), (48, 16331), (49, 16343), (53, 16418), (55, 16448), (56, 16469), (58, 16511), (67, 16619), (70, 16649), (72, 16694), (73, 16706), (77, 16751), (78, 16760), (82, 16820), (85, 16859), (97, 17039), (99, 17051), (100, 17060), (102, 17093), (104, 17099), (105, 17102), (111, 17153), (112, 17159), (113, 17165), (116, 17189), (117, 17216), (119, 17231), (120, 17243), (127, 17324), (128, 17327), (129, 17348), (133, 17366), (134, 17369), (138, 17390), (142, 17414), (145, 17435), (146, 17444), (147, 17447), (153, 17486), (155, 17510), (158, 17549), (159, 17564), (167, 17621), (172, 17645), (174, 17654), (175, 17660), (178, 17696), (186, 17744), (187, 17753), (190, 17795), (191, 17807), (195, 17864), (197, 17882), (198, 17897), (199, 17903), (220, 17999), (221, 18026), (224, 18047), (229, 18116), (231, 18137), (234, 18158), (244, 18236), (256, 18269), (257, 18272), (259, 18296), (261, 18365), (264, 18401), (265, 18404), (266, 18407), (267, 18422), (272, 18470), (276, 18506), (277, 18509), (282, 18572), (289, 18704), (293, 18770), (297, 18812), (300, 18851), (304, 18896), (308, 18965), (309, 18986), (313, 19031), (316, 19094), (319, 19133), (321, 19148), (326, 19199), (328, 19211),

Gene: GoldDust\_19 Start: 15321, Stop: 18470, Start Num: 20

Candidate Starts for GoldDust\_19:

(Start: 20 @15321 has 2 MA's), (23, 15342), (25, 15366), (39, 15516), (45, 15570), (47, 15594), (55, 15705), (59, 15771), (62, 15804), (68, 15876), (79, 16023), (81, 16041), (84, 16089), (86, 16131), (96, 16278), (130, 16584), (137, 16617), (148, 16659), (152, 16683), (161, 16794), (166, 16827), (168, 16833), (172, 16854), (179, 16911), (188, 16965), (191, 17016), (204, 17079), (211, 17106), (220, 17208), (222, 17238), (226, 17277), (233, 17364), (236, 17403), (246, 17499), (249, 17538), (252, 17583), (263, 17616), (268, 17634), (271, 17673), (275, 17706), (280, 17745), (287, 17880), (288, 17883), (292, 17967), (294, 17991), (300, 18060), (305, 18132), (311, 18201), (313, 18240), (314, 18294), (320, 18357), (322, 18369), (328, 18417),

Gene: Gooberta\_19 Start: 15320, Stop: 18469, Start Num: 20

Candidate Starts for Gooberta\_19:

(Start: 20 @15320 has 2 MA's), (25, 15365), (39, 15515), (45, 15569), (47, 15593), (55, 15704), (59, 15770), (62, 15803), (68, 15875), (79, 16022), (81, 16040), (84, 16088), (86, 16130), (96, 16277), (130, 16583), (137, 16616), (148, 16658), (152, 16682), (161, 16793), (166, 16826), (168, 16832), (172, 16853), (179, 16910), (188, 16964), (191, 17015), (204, 17078), (211, 17105), (220, 17207), (222, 17237), (226, 17276), (233, 17363), (236, 17402), (246, 17498), (249, 17537), (252, 17582), (263, 17615), (268, 17633), (271, 17672), (275, 17705), (280, 17744), (287, 17879), (288, 17882), (292, 17966), (294, 17990), (300, 18059), (305, 18131), (311, 18200), (313, 18239), (314, 18293), (320, 18356), (322, 18368), (328, 18416),

Gene: Hirko\_18 Start: 14681, Stop: 17965, Start Num: 14

Candidate Starts for Hirko\_18:

(Start: 14 @14681 has 1 MA's), (Start: 20 @14750 has 2 MA's), (25, 14795), (33, 14921), (39, 14978), (44, 15050), (51, 15164), (55, 15200), (59, 15266), (68, 15371), (79, 15518), (81, 15536), (84, 15584), (86, 15626), (96, 15773), (99, 15791), (106, 15848), (118, 15962), (124, 16010), (133, 16091), (148, 16154), (155, 16214), (160, 16271), (163, 16304), (168, 16328), (170, 16343), (172, 16349), (177, 16376), (185, 16445), (216, 16640), (218, 16655), (219, 16682), (220, 16703), (223, 16742), (233, 16859), (236, 16898), (237, 16907), (249, 17033), (251, 17042), (268, 17129), (271, 17168), (273, 17177), (275, 17201), (280, 17240), (287, 17375), (288, 17378), (296, 17507), (300, 17555), (305, 17627), (313, 17735), (314, 17789), (320, 17852), (322, 17864), (328, 17912),

Gene: HumptyDumpty\_22 Start: 15721, Stop: 19263, Start Num: 1

Candidate Starts for HumptyDumpty\_22:

(Start: 1 @15721 has 12 MA's), (Start: 2 @15727 has 7 MA's), (3, 15748), (4, 15751), (7, 15832), (9, 15877), (15, 15910), (16, 15928), (18, 15961), (22, 15991), (24, 16018), (26, 16030), (31, 16147), (34,

16171), (39, 16222), (40, 16225), (48, 16330), (49, 16342), (53, 16417), (55, 16447), (56, 16468), (58, 16510), (67, 16618), (70, 16648), (72, 16693), (73, 16705), (77, 16750), (78, 16759), (82, 16819), (85, 16858), (97, 17038), (99, 17050), (100, 17059), (102, 17092), (104, 17098), (105, 17101), (111, 17152), (112, 17158), (113, 17164), (116, 17188), (117, 17215), (119, 17230), (120, 17242), (127, 17323), (128, 17326), (129, 17347), (133, 17365), (134, 17368), (138, 17389), (142, 17413), (145, 17434), (146, 17443), (147, 17446), (153, 17485), (155, 17509), (158, 17548), (159, 17563), (167, 17620), (172, 17644), (174, 17653), (175, 17659), (178, 17695), (186, 17743), (187, 17752), (190, 17794), (191, 17806), (195, 17863), (197, 17881), (198, 17896), (199, 17902), (220, 17998), (221, 18025), (224, 18046), (229, 18115), (231, 18136), (234, 18157), (244, 18235), (256, 18268), (257, 18271), (259, 18295), (261, 18364), (264, 18400), (265, 18403), (266, 18406), (267, 18421), (272, 18469), (276, 18505), (277, 18508), (282, 18571), (289, 18703), (293, 18769), (297, 18811), (300, 18850), (304, 18895), (308, 18964), (309, 18985), (313, 19030), (316, 19093), (319, 19132), (321, 19147), (326, 19198), (328, 19210),

Gene: JaNo\_22 Start: 15727, Stop: 19263, Start Num: 2

Candidate Starts for JaNo\_22:

(Start: 1 @15721 has 12 MA's), (Start: 2 @15727 has 7 MA's), (3, 15748), (4, 15751), (7, 15832), (9, 15877), (15, 15910), (16, 15928), (18, 15961), (22, 15991), (24, 16018), (26, 16030), (31, 16147), (34, 16171), (39, 16222), (40, 16225), (48, 16330), (49, 16342), (53, 16417), (55, 16447), (56, 16468), (58, 16510), (67, 16618), (70, 16648), (72, 16693), (73, 16705), (77, 16750), (78, 16759), (82, 16819), (85, 16858), (97, 17038), (99, 17050), (100, 17059), (102, 17092), (104, 17098), (105, 17101), (111, 17152), (112, 17158), (113, 17164), (116, 17188), (117, 17215), (119, 17230), (120, 17242), (127, 17323), (128, 17326), (129, 17347), (133, 17365), (134, 17368), (138, 17389), (142, 17413), (145, 17434), (146, 17443), (147, 17446), (153, 17485), (155, 17509), (158, 17548), (159, 17563), (167, 17620), (172, 17644), (174, 17653), (175, 17659), (178, 17695), (186, 17743), (187, 17752), (190, 17794), (191, 17806), (195, 17863), (197, 17881), (198, 17896), (199, 17902), (220, 17998), (221, 18025), (224, 18046), (229, 18115), (231, 18136), (234, 18157), (244, 18235), (256, 18268), (257, 18271), (259, 18295), (261, 18364), (264, 18400), (265, 18403), (266, 18406), (267, 18421), (272, 18469), (276, 18505), (277, 18508), (282, 18571), (289, 18703), (293, 18769), (297, 18811), (300, 18850), (304, 18895), (308, 18964), (309, 18985), (313, 19030), (316, 19093), (319, 19132), (321, 19147), (326, 19198), (328, 19210),

Gene: JayCookie\_22 Start: 15730, Stop: 19266, Start Num: 2

Candidate Starts for JayCookie\_22:

(Start: 1 @15724 has 12 MA's), (Start: 2 @15730 has 7 MA's), (3, 15751), (4, 15754), (7, 15835), (9, 15880), (15, 15913), (16, 15931), (18, 15964), (22, 15994), (24, 16021), (26, 16033), (31, 16150), (34, 16174), (39, 16225), (40, 16228), (48, 16333), (49, 16345), (53, 16420), (55, 16450), (56, 16471), (58, 16513), (67, 16621), (70, 16651), (72, 16696), (73, 16708), (77, 16753), (78, 16762), (82, 16822), (85, 16861), (97, 17041), (99, 17053), (100, 17062), (102, 17095), (104, 17101), (105, 17104), (111, 17155), (112, 17161), (113, 17167), (116, 17191), (117, 17218), (119, 17233), (120, 17245), (127, 17326), (128, 17329), (129, 17350), (133, 17368), (134, 17371), (138, 17392), (142, 17416), (145, 17437), (146, 17446), (147, 17449), (153, 17488), (155, 17512), (158, 17551), (159, 17566), (167, 17623), (172, 17647), (174, 17656), (175, 17662), (178, 17698), (186, 17746), (187, 17755), (190, 17797), (191, 17809), (195, 17866), (197, 17884), (198, 17899), (199, 17905), (220, 18001), (221, 18028), (224, 18049), (229, 18118), (231, 18139), (234, 18160), (244, 18238), (256, 18271), (257, 18274), (259, 18298), (261, 18367), (264, 18403), (265, 18406), (266, 18409), (267, 18424), (272, 18472), (276, 18508), (277, 18511), (282, 18574), (289, 18706), (293, 18772), (297, 18814), (300, 18853), (304, 18898), (308, 18967), (309, 18988), (313, 19033), (316, 19096), (319, 19135), (321, 19150), (326, 19201), (328, 19213),

Gene: KBurrousTX\_22 Start: 15522, Stop: 19298, Start Num: 1

Candidate Starts for KBurrousTX\_22:

(Start: 1 @15522 has 12 MA's), (Start: 2 @15528 has 7 MA's), (3, 15549), (5, 15600), (8, 15666), (9, 15678), (10, 15687), (15, 15711), (16, 15729), (18, 15762), (26, 15831), (29, 15930), (30, 15942), (31, 15948), (38, 16011), (40, 16026), (41, 16038), (48, 16131), (49, 16143), (50, 16185), (53, 16218), (55, 16248), (56, 16269), (58, 16311), (60, 16332), (61, 16347), (66, 16407), (72, 16494), (73, 16506), (77, 16551), (78, 16560), (80, 16581), (82, 16620), (93, 16785), (95, 16812), (99, 16851), (103, 16896), (105, 16902), (107, 16914), (114, 16977), (117, 17016), (122, 17052), (127, 17124), (128, 17127), (129, 17148), (133, 17166), (145, 17235), (149, 17256), (151, 17262), (153, 17286), (155, 17310), (165, 17415), (167, 17421), (176, 17463), (179, 17508), (186, 17550), (187, 17559), (189, 17580), (191, 17613), (193, 17643), (195, 17670), (196, 17679), (200, 17721), (201, 17733), (203, 17745), (204, 17751), (206, 17757), (210, 17796), (212, 17802), (215, 17820), (216, 17841), (217, 17853), (220, 17904), (229, 18021), (231, 18042), (235, 18084), (238, 18129), (243, 18171), (244, 18174), (245, 18177), (248, 18219), (254, 18291), (255, 18306), (257, 18312), (262, 18414), (265, 18444), (266, 18447), (272, 18510), (276, 18546), (277, 18549), (281, 18606), (285, 18669), (289, 18744), (291, 18789), (300, 18891), (304, 18933), (308, 19002), (309, 19023), (313, 19068), (317, 19140), (323, 19200), (328, 19245),

Gene: Kabreeze\_22 Start: 15721, Stop: 19263, Start Num: 1

Candidate Starts for Kabreeze\_22:

(Start: 1 @15721 has 12 MA's), (Start: 2 @15727 has 7 MA's), (3, 15748), (4, 15751), (7, 15832), (9, 15877), (15, 15910), (16, 15928), (18, 15961), (22, 15991), (24, 16018), (26, 16030), (31, 16147), (34, 16171), (39, 16222), (40, 16225), (48, 16330), (49, 16342), (53, 16417), (55, 16447), (56, 16468), (58, 16510), (67, 16618), (70, 16648), (72, 16693), (73, 16705), (77, 16750), (78, 16759), (82, 16819), (85, 16858), (97, 17038), (99, 17050), (100, 17059), (102, 17092), (104, 17098), (105, 17101), (111, 17152), (112, 17158), (113, 17164), (116, 17188), (117, 17215), (119, 17230), (120, 17242), (127, 17323), (128, 17326), (129, 17347), (133, 17365), (134, 17368), (138, 17389), (142, 17413), (145, 17434), (146, 17443), (147, 17446), (153, 17485), (155, 17509), (158, 17548), (159, 17563), (167, 17620), (172, 17644), (174, 17653), (175, 17659), (178, 17695), (186, 17743), (187, 17752), (190, 17794), (191, 17806), (195, 17863), (197, 17881), (198, 17896), (199, 17902), (220, 17998), (221, 18025), (224, 18046), (229, 18115), (231, 18136), (234, 18157), (244, 18235), (256, 18268), (257, 18271), (259, 18295), (261, 18364), (264, 18400), (265, 18403), (266, 18406), (267, 18421), (272, 18469), (276, 18505), (277, 18508), (282, 18571), (289, 18703), (293, 18769), (297, 18811), (300, 18850), (304, 18895), (308, 18964), (309, 18985), (313, 19030), (316, 19093), (319, 19132), (321, 19147), (326, 19198), (328, 19210),

Gene: Linus\_22 Start: 15727, Stop: 19263, Start Num: 2

Candidate Starts for Linus\_22:

(Start: 1 @15721 has 12 MA's), (Start: 2 @15727 has 7 MA's), (3, 15748), (4, 15751), (7, 15832), (9, 15877), (15, 15910), (16, 15928), (18, 15961), (22, 15991), (24, 16018), (26, 16030), (31, 16147), (34, 16171), (39, 16222), (40, 16225), (48, 16330), (49, 16342), (53, 16417), (55, 16447), (56, 16468), (58, 16510), (67, 16618), (70, 16648), (72, 16693), (73, 16705), (77, 16750), (78, 16759), (82, 16819), (85, 16858), (97, 17038), (99, 17050), (100, 17059), (102, 17092), (104, 17098), (105, 17101), (111, 17152), (112, 17158), (113, 17164), (116, 17188), (117, 17215), (119, 17230), (120, 17242), (127, 17323), (128, 17326), (129, 17347), (133, 17365), (134, 17368), (138, 17389), (142, 17413), (145, 17434), (146, 17443), (147, 17446), (153, 17485), (155, 17509), (158, 17548), (159, 17563), (167, 17620), (172, 17644), (174, 17653), (175, 17659), (178, 17695), (186, 17743), (187, 17752), (190, 17794), (191, 17806), (195, 17863), (197, 17881), (198, 17896), (199, 17902), (220, 17998), (221, 18025), (224, 18046), (229, 18115), (231, 18136), (234, 18157), (244, 18235), (256, 18268), (257, 18271), (259, 18295), (261, 18364), (264, 18400), (265, 18403), (266, 18406), (267, 18421), (272, 18469), (276, 18505), (277, 18508), (282, 18571), (289, 18703), (293, 18769), (297, 18811), (300, 18850), (304, 18895), (308, 18964), (309, 18985), (313, 19030), (316, 19093), (319, 19132), (321, 19147), (326, 19198), (328, 19210),

Gene: Lymara\_22 Start: 15725, Stop: 19261, Start Num: 2

Candidate Starts for Lymara\_22:

(Start: 1 @15719 has 12 MA's), (Start: 2 @15725 has 7 MA's), (3, 15746), (4, 15749), (7, 15830), (9, 15875), (15, 15908), (16, 15926), (17, 15950), (18, 15959), (22, 15989), (24, 16016), (26, 16028), (29, 16127), (31, 16145), (34, 16169), (39, 16220), (40, 16223), (48, 16328), (49, 16340), (53, 16415), (55, 16445), (56, 16466), (58, 16508), (61, 16544), (65, 16601), (67, 16616), (70, 16646), (72, 16691), (73, 16703), (77, 16748), (82, 16817), (85, 16856), (87, 16922), (94, 16988), (99, 17048), (100, 17057), (102, 17090), (105, 17099), (111, 17150), (113, 17162), (117, 17213), (119, 17228), (120, 17240), (127, 17321), (129, 17345), (133, 17363), (134, 17366), (137, 17384), (138, 17387), (139, 17396), (140, 17405), (142, 17411), (143, 17417), (145, 17432), (146, 17441), (147, 17444), (153, 17483), (158, 17546), (159, 17561), (167, 17618), (169, 17624), (174, 17651), (175, 17657), (178, 17693), (186, 17741), (189, 17771), (190, 17792), (195, 17861), (197, 17879), (198, 17894), (217, 17945), (220, 17996), (221, 18023), (229, 18113), (230, 18119), (231, 18134), (235, 18176), (244, 18233), (256, 18266), (257, 18269), (259, 18293), (264, 18398), (265, 18401), (266, 18404), (272, 18467), (276, 18503), (282, 18569), (293, 18767), (294, 18779), (299, 18845), (300, 18848), (301, 18854), (304, 18893), (306, 18923), (308, 18962), (309, 18983), (313, 19028), (316, 19091), (321, 19145), (326, 19196), (328, 19208),

Gene: Mordred\_22 Start: 15727, Stop: 19263, Start Num: 2

Candidate Starts for Mordred\_22:

(Start: 1 @15721 has 12 MA's), (Start: 2 @15727 has 7 MA's), (3, 15748), (4, 15751), (7, 15832), (9, 15877), (15, 15910), (16, 15928), (18, 15961), (22, 15991), (24, 16018), (26, 16030), (31, 16147), (34, 16171), (39, 16222), (40, 16225), (48, 16330), (49, 16342), (53, 16417), (55, 16447), (56, 16468), (58, 16510), (67, 16618), (70, 16648), (72, 16693), (73, 16705), (77, 16750), (78, 16759), (82, 16819), (85, 16858), (97, 17038), (99, 17050), (100, 17059), (102, 17092), (104, 17098), (105, 17101), (111, 17152), (112, 17158), (113, 17164), (116, 17188), (117, 17215), (119, 17230), (120, 17242), (127, 17323), (128, 17326), (129, 17347), (133, 17365), (134, 17368), (138, 17389), (142, 17413), (145, 17434), (146, 17443), (147, 17446), (153, 17485), (155, 17509), (158, 17548), (159, 17563), (167, 17620), (172, 17644), (174, 17653), (175, 17659), (178, 17695), (186, 17743), (187, 17752), (190, 17794), (191, 17806), (195, 17863), (197, 17881), (198, 17896), (199, 17902), (220, 17998), (221, 18025), (224, 18046), (229, 18115), (231, 18136), (234, 18157), (244, 18235), (256, 18268), (257, 18271), (259, 18295), (261, 18364), (264, 18400), (265, 18403), (266, 18406), (267, 18421), (272, 18469), (276, 18505), (277, 18508), (282, 18571), (289, 18703), (293, 18769), (297, 18811), (300, 18850), (304, 18895), (308, 18964), (309, 18985), (313, 19030), (316, 19093), (319, 19132), (321, 19147), (326, 19198), (328, 19210),

Gene: MoyaNatalis\_22 Start: 15730, Stop: 19266, Start Num: 2

Candidate Starts for MoyaNatalis\_22:

(Start: 1 @15724 has 12 MA's), (Start: 2 @15730 has 7 MA's), (3, 15751), (4, 15754), (7, 15835), (9, 15880), (15, 15913), (16, 15931), (18, 15964), (22, 15994), (24, 16021), (26, 16033), (31, 16150), (34, 16174), (39, 16225), (40, 16228), (48, 16333), (49, 16345), (53, 16420), (55, 16450), (56, 16471), (58, 16513), (67, 16621), (70, 16651), (72, 16696), (73, 16708), (77, 16753), (78, 16762), (82, 16822), (85, 16861), (97, 17041), (99, 17053), (100, 17062), (102, 17095), (104, 17101), (105, 17104), (111, 17155), (112, 17161), (113, 17167), (116, 17191), (117, 17218), (119, 17233), (120, 17245), (127, 17326), (128, 17329), (129, 17350), (133, 17368), (134, 17371), (138, 17392), (142, 17416), (145, 17437), (146, 17446), (147, 17449), (153, 17488), (155, 17512), (158, 17551), (159, 17566), (167, 17623), (172, 17647), (174, 17656), (175, 17662), (178, 17698), (186, 17746), (187, 17755), (190, 17797), (191, 17809), (195, 17866), (197, 17884), (198, 17899), (199, 17905), (220, 18001), (221, 18028), (224, 18049), (229, 18118), (231, 18139), (234, 18160), (244, 18238), (256, 18271), (257, 18274), (259, 18298), (261, 18367), (264, 18403), (265, 18406), (266, 18409), (267, 18424), (272, 18472), (276, 18508), (277, 18511), (282, 18574), (289, 18706), (293, 18772), (294, 18784), (300, 18853), (304, 18898), (308, 18967), (309, 18988), (313, 19033), (316, 19096), (319, 19135), (321, 19150), (326, 19201), (328, 19213),

Gene: Music\_19 Start: 15190, Stop: 18339, Start Num: 20

Candidate Starts for Music\_19:

(Start: 20 @15190 has 2 MA's), (23, 15211), (25, 15235), (39, 15385), (45, 15439), (47, 15463), (55, 15574), (57, 15631), (59, 15640), (62, 15673), (68, 15745), (79, 15892), (81, 15910), (84, 15958), (86, 16000), (96, 16147), (130, 16453), (148, 16528), (161, 16663), (166, 16696), (168, 16702), (172, 16723), (179, 16780), (188, 16834), (191, 16885), (211, 16975), (220, 17077), (226, 17146), (233, 17233), (236, 17272), (246, 17368), (249, 17407), (252, 17452), (263, 17485), (268, 17503), (271, 17542), (275, 17575), (280, 17614), (287, 17749), (288, 17752), (292, 17836), (294, 17860), (300, 17929), (305, 18001), (311, 18070), (313, 18109), (314, 18163), (322, 18238), (328, 18286),

Gene: PrincessTrina\_22 Start: 15724, Stop: 19266, Start Num: 1

Candidate Starts for PrincessTrina\_22:

(Start: 1 @15724 has 12 MA's), (Start: 2 @15730 has 7 MA's), (3, 15751), (4, 15754), (7, 15835), (9, 15880), (15, 15913), (16, 15931), (18, 15964), (22, 15994), (24, 16021), (26, 16033), (31, 16150), (34, 16174), (39, 16225), (40, 16228), (48, 16333), (49, 16345), (53, 16420), (55, 16450), (56, 16471), (58, 16513), (67, 16621), (70, 16651), (72, 16696), (73, 16708), (77, 16753), (78, 16762), (82, 16822), (85, 16861), (97, 17041), (99, 17053), (100, 17062), (102, 17095), (104, 17101), (105, 17104), (111, 17155), (112, 17161), (113, 17167), (116, 17191), (117, 17218), (119, 17233), (120, 17245), (127, 17326), (128, 17329), (129, 17350), (133, 17368), (134, 17371), (138, 17392), (142, 17416), (145, 17437), (146, 17446), (147, 17449), (153, 17488), (155, 17512), (158, 17551), (159, 17566), (167, 17623), (172, 17647), (174, 17656), (175, 17662), (178, 17698), (186, 17746), (187, 17755), (190, 17797), (191, 17809), (195, 17866), (197, 17884), (198, 17899), (199, 17905), (220, 18001), (221, 18028), (224, 18049), (229, 18118), (231, 18139), (234, 18160), (244, 18238), (256, 18271), (257, 18274), (259, 18298), (261, 18367), (264, 18403), (265, 18406), (266, 18409), (267, 18424), (272, 18472), (276, 18508), (277, 18511), (282, 18574), (289, 18706), (293, 18772), (297, 18814), (300, 18853), (304, 18898), (308, 18967), (309, 18988), (313, 19033), (316, 19096), (319, 19135), (321, 19150), (326, 19201), (328, 19213),

Gene: RosiePosie\_22 Start: 15724, Stop: 19266, Start Num: 1

Candidate Starts for RosiePosie\_22:

(Start: 1 @15724 has 12 MA's), (Start: 2 @15730 has 7 MA's), (3, 15751), (4, 15754), (7, 15835), (9, 15880), (15, 15913), (16, 15931), (18, 15964), (22, 15994), (24, 16021), (26, 16033), (31, 16150), (34, 16174), (39, 16225), (40, 16228), (48, 16333), (49, 16345), (53, 16420), (55, 16450), (56, 16471), (58, 16513), (67, 16621), (70, 16651), (72, 16696), (73, 16708), (77, 16753), (78, 16762), (82, 16822), (85, 16861), (97, 17041), (99, 17053), (100, 17062), (102, 17095), (104, 17101), (105, 17104), (111, 17155), (112, 17161), (113, 17167), (116, 17191), (117, 17218), (119, 17233), (120, 17245), (127, 17326), (128, 17329), (129, 17350), (133, 17368), (134, 17371), (138, 17392), (142, 17416), (145, 17437), (146, 17446), (147, 17449), (153, 17488), (155, 17512), (158, 17551), (159, 17566), (167, 17623), (172, 17647), (174, 17656), (175, 17662), (178, 17698), (186, 17746), (187, 17755), (190, 17797), (191, 17809), (195, 17866), (197, 17884), (198, 17899), (199, 17905), (220, 18001), (221, 18028), (224, 18049), (229, 18118), (231, 18139), (234, 18160), (244, 18238), (256, 18271), (257, 18274), (259, 18298), (261, 18367), (264, 18403), (265, 18406), (266, 18409), (267, 18424), (272, 18472), (276, 18508), (277, 18511), (282, 18574), (289, 18706), (293, 18772), (297, 18814), (300, 18853), (304, 18898), (308, 18967), (309, 18988), (313, 19033), (316, 19096), (319, 19135), (321, 19150), (326, 19201), (328, 19213),

Gene: Scavito\_22 Start: 15721, Stop: 19263, Start Num: 1

Candidate Starts for Scavito\_22:

(Start: 1 @15721 has 12 MA's), (Start: 2 @15727 has 7 MA's), (3, 15748), (4, 15751), (7, 15832), (9, 15877), (15, 15910), (16, 15928), (18, 15961), (22, 15991), (24, 16018), (26, 16030), (31, 16147), (34, 16171), (39, 16222), (40, 16225), (48, 16330), (49, 16342), (53, 16417), (55, 16447), (56, 16468), (58, 16510), (67, 16618), (70, 16648), (72, 16693), (73, 16705), (77, 16750), (78, 16759), (82, 16819), (85, 16858), (97, 17038), (99, 17050), (100, 17059), (102, 17092), (104, 17098), (105, 17101), (111,

17152), (112, 17158), (113, 17164), (116, 17188), (117, 17215), (119, 17230), (120, 17242), (127, 17323), (128, 17326), (129, 17347), (133, 17365), (134, 17368), (138, 17389), (142, 17413), (145, 17434), (146, 17443), (147, 17446), (153, 17485), (155, 17509), (158, 17548), (159, 17563), (167, 17620), (172, 17644), (174, 17653), (175, 17659), (178, 17695), (186, 17743), (187, 17752), (190, 17794), (191, 17806), (195, 17863), (197, 17881), (198, 17896), (199, 17902), (220, 17998), (221, 18025), (224, 18046), (229, 18115), (231, 18136), (234, 18157), (244, 18235), (256, 18268), (257, 18271), (259, 18295), (261, 18364), (264, 18400), (265, 18403), (266, 18406), (267, 18421), (272, 18469), (276, 18505), (277, 18508), (282, 18571), (289, 18703), (293, 18769), (297, 18811), (300, 18850), (304, 18895), (308, 18964), (309, 18985), (313, 19030), (316, 19093), (319, 19132), (321, 19147), (326, 19198), (328, 19210),

Gene: Tophat\_22 Start: 15729, Stop: 19265, Start Num: 2

Candidate Starts for Tophat\_22:

(Start: 1 @15723 has 12 MA's), (Start: 2 @15729 has 7 MA's), (3, 15750), (4, 15753), (7, 15834), (9, 15879), (15, 15912), (16, 15930), (18, 15963), (22, 15993), (24, 16020), (26, 16032), (31, 16149), (34, 16173), (39, 16224), (40, 16227), (48, 16332), (49, 16344), (53, 16419), (55, 16449), (56, 16470), (58, 16512), (67, 16620), (70, 16650), (72, 16695), (73, 16707), (77, 16752), (78, 16761), (82, 16821), (85, 16860), (97, 17040), (99, 17052), (100, 17061), (102, 17094), (104, 17100), (105, 17103), (111, 17154), (112, 17160), (113, 17166), (116, 17190), (117, 17217), (119, 17232), (120, 17244), (127, 17325), (128, 17328), (129, 17349), (133, 17367), (134, 17370), (138, 17391), (142, 17415), (145, 17436), (146, 17445), (147, 17448), (153, 17487), (155, 17511), (158, 17550), (159, 17565), (167, 17622), (172, 17646), (174, 17655), (175, 17661), (178, 17697), (186, 17745), (187, 17754), (190, 17796), (191, 17808), (195, 17865), (197, 17883), (198, 17898), (199, 17904), (220, 18000), (221, 18027), (224, 18048), (229, 18117), (231, 18138), (234, 18159), (244, 18237), (256, 18270), (257, 18273), (259, 18297), (261, 18366), (264, 18402), (265, 18405), (266, 18408), (267, 18423), (272, 18471), (276, 18507), (277, 18510), (282, 18573), (289, 18705), (293, 18771), (297, 18813), (300, 18852), (304, 18897), (308, 18966), (309, 18987), (313, 19032), (316, 19095), (319, 19134), (321, 19149), (326, 19200), (328, 19212),

Gene: Vibaki\_19 Start: 15202, Stop: 18351, Start Num: 20

Candidate Starts for Vibaki\_19:

(Start: 20 @15202 has 2 MA's), (23, 15223), (25, 15247), (39, 15397), (45, 15451), (47, 15475), (55, 15586), (57, 15643), (59, 15652), (62, 15685), (68, 15757), (79, 15904), (81, 15922), (84, 15970), (86, 16012), (96, 16159), (130, 16465), (148, 16540), (152, 16564), (161, 16675), (166, 16708), (168, 16714), (172, 16735), (179, 16792), (188, 16846), (191, 16897), (204, 16960), (211, 16987), (220, 17089), (222, 17119), (226, 17158), (233, 17245), (236, 17284), (239, 17317), (246, 17380), (249, 17419), (252, 17464), (263, 17497), (268, 17515), (271, 17554), (275, 17587), (278, 17608), (280, 17626), (287, 17761), (288, 17764), (292, 17848), (294, 17872), (300, 17941), (305, 18013), (311, 18082), (312, 18091), (313, 18121), (314, 18175), (320, 18238), (322, 18250), (328, 18298),