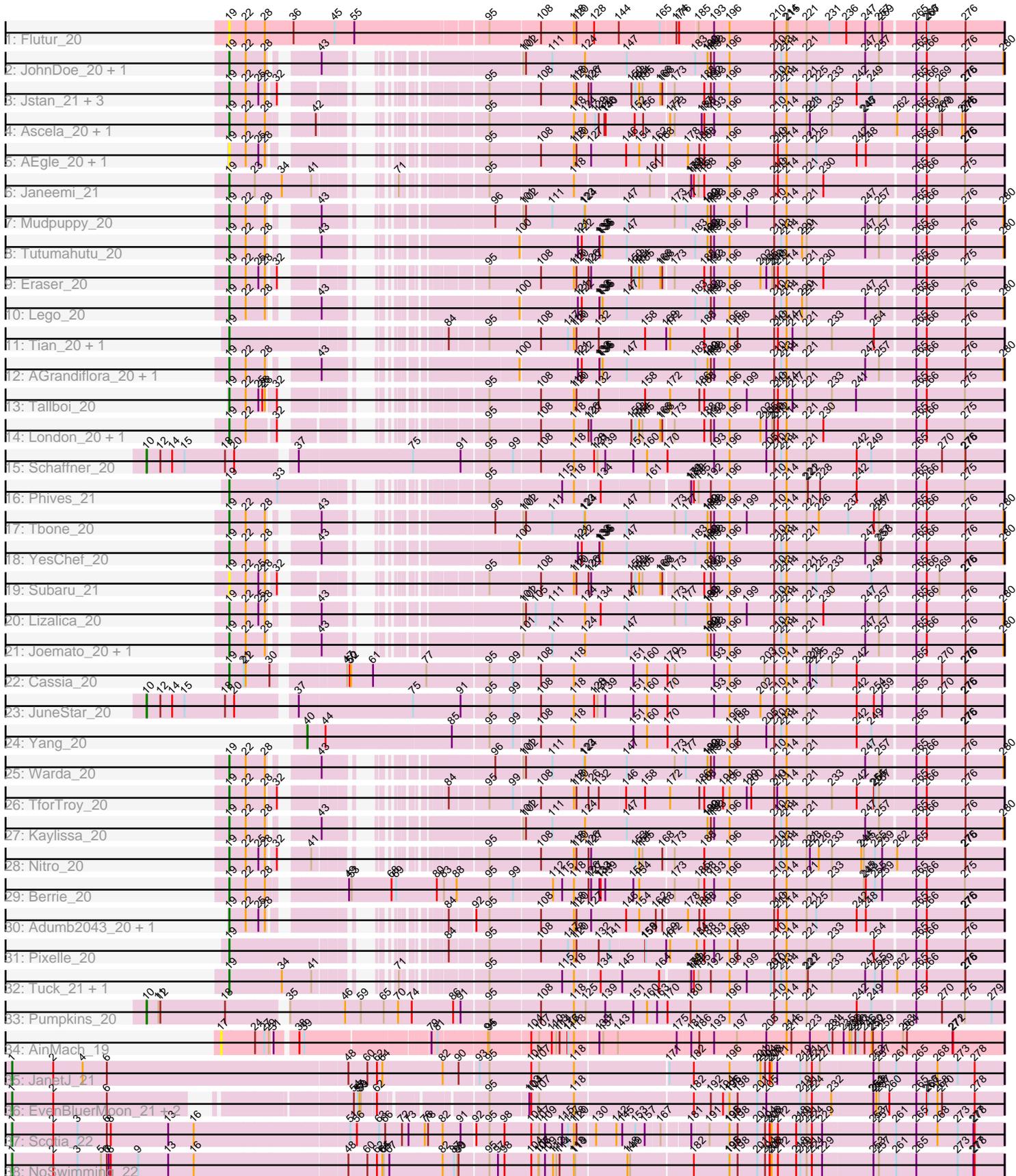


Pham 291241



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 291241 Report

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

Pham number 291241 has 52 members, 12 are drafts.

Phages represented in each track:

- Track 1 : Flutur_20
- Track 2 : JohnDoe_20, Cyan_20
- Track 3 : Jstan_21, Skelbel_21, Asa16_20, Niobe_20
- Track 4 : Ascela_20, Iter_20
- Track 5 : AEgle_20, Amploria_20
- Track 6 : Janeemi_21
- Track 7 : Mudpuppy_20
- Track 8 : Tutumahutu_20
- Track 9 : Eraser_20
- Track 10 : Lego_20
- Track 11 : Tian_20, Amyev_20
- Track 12 : AGrandiflora_20, Powerpuff_20
- Track 13 : Tallboi_20
- Track 14 : London_20, Elezi_20
- Track 15 : Schaffner_20
- Track 16 : Phives_21
- Track 17 : Tbone_20
- Track 18 : YesChef_20
- Track 19 : Subaru_21
- Track 20 : Lizalica_20
- Track 21 : Joemato_20, Simpson_22
- Track 22 : Cassia_20
- Track 23 : JuneStar_20
- Track 24 : Yang_20
- Track 25 : Warda_20
- Track 26 : TforTroy_20
- Track 27 : Kaylissa_20
- Track 28 : Nitro_20
- Track 29 : Berrie_20
- Track 30 : Adumb2043_20, Turab_20
- Track 31 : Pixelle_20
- Track 32 : Tuck_21, Community_20
- Track 33 : Pumpkins_20
- Track 34 : AinMach_19
- Track 35 : JanetJ_21
- Track 36 : EvenBluerMoon_21, Aoka_21, PrairieDogTown_21
- Track 37 : Scotia_22

- Track 38 : NoSwimming_22

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

The start number called the most often in the published annotations is 19, it was called in 30 of the 40 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AEgle_20, AGrandiflora_20, Adumb2043_20, Amploria_20, Amyev_20, Asa16_20, Ascela_20, Berrie_20, Cassia_20, Community_20, Cyan_20, Elezi_20, Eraser_20, Flutur_20, Iter_20, Janeemi_21, Joemato_20, JohnDoe_20, Jstan_21, Kaylissa_20, Lego_20, Lizalica_20, London_20, Mudpuppy_20, Niobe_20, Nitro_20, Phives_21, Pixelle_20, Powerpuff_20, Simpson_22, Skelbel_21, Subaru_21, Tallboi_20, Tbone_20, TforTroy_20, Tian_20, Tuck_21, Turab_20, Tutumahutu_20, Warda_20, YesChef_20,

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

-

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

- AinMach_19, Aoka_21, EvenBluerMoon_21, JanetJ_21, JuneStar_20, NoSwimming_22, PrairieDogTown_21, Pumpkins_20, Schaffner_20, Scotia_22, Yang_20,

Summary by start number:

Start 1:

- Found in 6 of 52 (11.5%) of genes in pham
- Manual Annotations of this start: 6 of 40
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aoka_21 (FO), EvenBluerMoon_21 (FO), JanetJ_21 (FO), NoSwimming_22 (FO), PrairieDogTown_21 (FO), Scotia_22 (FO),

Start 10:

- Found in 3 of 52 (5.8%) of genes in pham
- Manual Annotations of this start: 3 of 40
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JuneStar_20 (AZ1), Pumpkins_20 (AZ1), Schaffner_20 (AZ1),

Start 17:

- Found in 1 of 52 (1.9%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AinMach_19 (AZ7),

Start 19:

- Found in 41 of 52 (78.8%) of genes in pham
- Manual Annotations of this start: 30 of 40

- Called 100.0% of time when present
- Phage (with cluster) where this start called: AEgle_20 (AZ1), AGrandiflora_20 (AZ1), Adumb2043_20 (AZ1), Amploria_20 (AZ1), Amyev_20 (AZ1), Asa16_20 (AZ1), Ascela_20 (AZ1), Berrie_20 (AZ1), Cassia_20 (AZ1), Community_20 (AZ1), Cyan_20 (AZ1), Elezi_20 (AZ1), Eraser_20 (AZ1), Flutur_20 (AZ), Iter_20 (AZ1), Janeemi_21 (AZ1), Joemato_20 (AZ1), JohnDoe_20 (AZ1), Jstan_21 (AZ1), Kaylissa_20 (AZ1), Lego_20 (AZ1), Lizalica_20 (AZ1), London_20 (AZ1), Mudpuppy_20 (AZ1), Niobe_20 (AZ1), Nitro_20 (AZ1), Phives_21 (AZ1), Pixelle_20 (AZ1), Powerpuff_20 (AZ1), Simpson_22 (AZ1), Skelbel_21 (AZ1), Subaru_21 (AZ1), Tallboi_20 (AZ1), Tbone_20 (AZ1), TforTroy_20 (AZ1), Tian_20 (AZ1), Tuck_21 (AZ1), Turab_20 (AZ1), Tutumahutu_20 (AZ1), Warda_20 (AZ1), YesChef_20 (AZ1),

Start 40:

- Found in 1 of 52 (1.9%) of genes in pham
- Manual Annotations of this start: 1 of 40
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Yang_20 (AZ1),

Summary by clusters:

There are 4 clusters represented in this pham: AZ1, AZ7, AZ, FO,

Info for manual annotations of cluster AZ1:

- Start number 10 was manually annotated 3 times for cluster AZ1.
- Start number 19 was manually annotated 30 times for cluster AZ1.
- Start number 40 was manually annotated 1 time for cluster AZ1.

Info for manual annotations of cluster FO:

- Start number 1 was manually annotated 6 times for cluster FO.

Gene Information:

Gene: AEgle_20 Start: 16059, Stop: 18917, Start Num: 19

Candidate Starts for AEgle_20:

(Start: 19 @16059 has 30 MA's), (22, 16122), (25, 16176), (28, 16206), (95, 16749), (108, 16968), (118, 17115), (120, 17124), (127, 17184), (146, 17334), (154, 17388), (162, 17457), (168, 17487), (178, 17577), (186, 17619), (188, 17637), (196, 17742), (210, 17943), (212, 17958), (214, 17994), (221, 18078), (225, 18120), (242, 18294), (248, 18333), (265, 18528), (266, 18573), (275, 18741), (276, 18744),

Gene: AGrandiflora_20 Start: 16043, Stop: 19015, Start Num: 19

Candidate Starts for AGrandiflora_20:

(Start: 19 @16043 has 30 MA's), (22, 16106), (28, 16190), (43, 16334), (100, 16928), (121, 17159), (122, 17177), (133, 17255), (134, 17261), (135, 17264), (136, 17270), (147, 17381), (183, 17693), (189, 17747), (190, 17750), (192, 17765), (193, 17780), (196, 17840), (210, 18041), (213, 18071), (214, 18092), (221, 18173), (247, 18425), (257, 18485), (265, 18626), (266, 18671), (276, 18842), (280, 19010),

Gene: Adumb2043_20 Start: 16058, Stop: 18916, Start Num: 19

Candidate Starts for Adumb2043_20:

(Start: 19 @16058 has 30 MA's), (22, 16121), (25, 16175), (28, 16205), (84, 16610), (92, 16691), (95, 16748), (108, 16967), (118, 17114), (120, 17123), (127, 17183), (146, 17333), (154, 17387), (162, 17456), (168, 17486), (178, 17576), (186, 17618), (188, 17636), (196, 17741), (210, 17942), (212, 17957), (214, 17993), (221, 18077), (225, 18119), (242, 18293), (248, 18332), (265, 18527), (266, 18572), (275, 18740), (276, 18743),

Gene: AinMach_19 Start: 15227, Stop: 18562, Start Num: 17

Candidate Starts for AinMach_19:

(17, 15227), (24, 15374), (27, 15416), (29, 15437), (31, 15446), (38, 15533), (39, 15554), (79, 16064), (81, 16091), (94, 16292), (95, 16298), (104, 16472), (107, 16508), (110, 16562), (113, 16583), (114, 16598), (116, 16634), (117, 16637), (118, 16664), (133, 16757), (137, 16775), (143, 16841), (175, 17096), (181, 17153), (186, 17183), (193, 17243), (197, 17348), (205, 17480), (214, 17573), (216, 17594), (223, 17678), (231, 17765), (234, 17780), (235, 17831), (238, 17858), (239, 17867), (240, 17885), (243, 17897), (246, 17927), (250, 17960), (252, 17966), (259, 18008), (263, 18104), (264, 18122), (271, 18326), (272, 18329),

Gene: Amploria_20 Start: 16058, Stop: 18916, Start Num: 19

Candidate Starts for Amploria_20:

(Start: 19 @16058 has 30 MA's), (22, 16121), (25, 16175), (28, 16205), (95, 16748), (108, 16967), (118, 17114), (120, 17123), (127, 17183), (146, 17333), (154, 17387), (162, 17456), (168, 17486), (178, 17576), (186, 17618), (188, 17636), (196, 17741), (210, 17942), (212, 17957), (214, 17993), (221, 18077), (225, 18119), (242, 18293), (248, 18332), (265, 18527), (266, 18572), (275, 18740), (276, 18743),

Gene: Amyev_20 Start: 16398, Stop: 19307, Start Num: 19

Candidate Starts for Amyev_20:

(Start: 19 @16398 has 30 MA's), (84, 17013), (95, 17151), (108, 17370), (117, 17490), (118, 17517), (120, 17526), (132, 17607), (158, 17787), (169, 17877), (172, 17895), (188, 18027), (196, 18132), (198, 18168), (210, 18333), (212, 18348), (214, 18384), (217, 18408), (221, 18468), (233, 18579), (254, 18759), (265, 18918), (266, 18963), (276, 19134),

Gene: Aoka_21 Start: 17080, Stop: 21027, Start Num: 1

Candidate Starts for Aoka_21:

(Start: 1 @17080 has 6 MA's), (2, 17269), (6, 17515), (54, 18409), (57, 18427), (58, 18433), (59, 18439), (62, 18490), (95, 18856), (103, 19021), (104, 19030), (107, 19066), (118, 19222), (182, 19714), (192, 19777), (194, 19828), (195, 19849), (196, 19852), (198, 19888), (201, 19978), (205, 20017), (219, 20149), (221, 20170), (224, 20194), (232, 20275), (251, 20449), (253, 20452), (256, 20461), (257, 20473), (260, 20521), (265, 20632), (266, 20680), (267, 20686), (268, 20725), (270, 20746), (278, 20896),

Gene: Asa16_20 Start: 16027, Stop: 18864, Start Num: 19

Candidate Starts for Asa16_20:

(Start: 19 @16027 has 30 MA's), (22, 16090), (25, 16144), (28, 16174), (32, 16198), (95, 16696), (108, 16915), (118, 17062), (120, 17071), (126, 17122), (127, 17131), (150, 17302), (153, 17320), (154, 17335), (155, 17347), (166, 17425), (168, 17434), (173, 17476), (188, 17584), (192, 17614), (193, 17629), (196, 17689), (210, 17890), (213, 17920), (214, 17941), (221, 18022), (225, 18064), (233, 18133), (242, 18238), (249, 18301), (265, 18475), (266, 18520), (269, 18574), (275, 18688), (276, 18691),

Gene: Ascela_20 Start: 16055, Stop: 18919, Start Num: 19

Candidate Starts for Ascela_20:

(Start: 19 @16055 has 30 MA's), (22, 16118), (28, 16202), (42, 16346), (95, 16748), (118, 17114), (124, 17159), (129, 17198), (132, 17213), (138, 17237), (140, 17243), (152, 17354), (156, 17387), (172, 17480), (173, 17501), (187, 17600), (188, 17612), (193, 17657), (196, 17717), (210, 17918), (214, 17969), (221, 18053), (223, 18068), (233, 18164), (245, 18299), (247, 18305), (262, 18443), (265, 18527), (266, 18572), (269, 18626), (270, 18638), (274, 18731), (275, 18743), (276, 18746),

Gene: Berrie_20 Start: 16192, Stop: 19419, Start Num: 19

Candidate Starts for Berrie_20:

(Start: 19 @16192 has 30 MA's), (22, 16255), (28, 16339), (49, 16615), (53, 16627), (68, 16810), (69, 16831), (80, 16996), (83, 17029), (88, 17080), (95, 17227), (99, 17329), (112, 17497), (115, 17539), (118, 17593), (126, 17653), (127, 17662), (133, 17695), (134, 17701), (139, 17722), (151, 17842), (154, 17866), (173, 18007), (185, 18094), (188, 18115), (193, 18160), (196, 18220), (210, 18421), (214, 18472), (221, 18556), (233, 18667), (245, 18802), (248, 18811), (255, 18850), (259, 18883), (265, 19030), (266, 19075), (275, 19243),

Gene: Cassia_20 Start: 16153, Stop: 19350, Start Num: 19

Candidate Starts for Cassia_20:

(Start: 19 @16153 has 30 MA's), (21, 16207), (22, 16216), (30, 16321), (47, 16573), (50, 16585), (52, 16591), (61, 16690), (77, 16894), (95, 17137), (99, 17239), (108, 17356), (118, 17503), (151, 17767), (160, 17830), (170, 17920), (173, 17953), (193, 18115), (196, 18175), (203, 18331), (210, 18376), (214, 18427), (221, 18508), (223, 18523), (225, 18550), (233, 18619), (242, 18724), (265, 18961), (270, 19072), (275, 19174), (276, 19177),

Gene: Community_20 Start: 17595, Stop: 20501, Start Num: 19

Candidate Starts for Community_20:

(Start: 19 @17595 has 30 MA's), (34, 17808), (41, 17931), (71, 18093), (95, 18348), (115, 18660), (118, 18714), (134, 18810), (145, 18891), (164, 19035), (179, 19149), (181, 19152), (182, 19164), (185, 19176), (192, 19227), (196, 19302), (199, 19380), (207, 19488), (210, 19503), (213, 19533), (214, 19554), (221, 19638), (222, 19644), (233, 19749), (247, 19890), (255, 19932), (259, 19965), (262, 20028), (265, 20112), (266, 20157), (275, 20325), (276, 20328),

Gene: Cyan_20 Start: 16046, Stop: 19063, Start Num: 19

Candidate Starts for Cyan_20:

(Start: 19 @16046 has 30 MA's), (22, 16109), (28, 16193), (43, 16337), (101, 16955), (102, 16967), (111, 17087), (124, 17237), (147, 17429), (183, 17741), (189, 17795), (190, 17798), (192, 17813), (193, 17828), (196, 17888), (210, 18089), (213, 18119), (214, 18140), (221, 18221), (247, 18473), (257, 18533), (265, 18674), (266, 18719), (276, 18890), (280, 19058),

Gene: Elezi_20 Start: 16028, Stop: 18865, Start Num: 19

Candidate Starts for Elezi_20:

(Start: 19 @16028 has 30 MA's), (22, 16091), (32, 16199), (95, 16697), (108, 16916), (118, 17063), (126, 17123), (127, 17132), (150, 17303), (153, 17321), (154, 17336), (155, 17348), (166, 17426), (168, 17435), (173, 17477), (188, 17585), (192, 17615), (193, 17630), (196, 17690), (202, 17831), (205, 17855), (209, 17882), (210, 17891), (212, 17906), (214, 17942), (221, 18026), (230, 18098), (265, 18476), (266, 18521), (275, 18689),

Gene: Eraser_20 Start: 16028, Stop: 18865, Start Num: 19

Candidate Starts for Eraser_20:

(Start: 19 @16028 has 30 MA's), (22, 16091), (25, 16145), (28, 16175), (32, 16199), (95, 16697), (108, 16916), (118, 17063), (120, 17072), (126, 17123), (127, 17132), (150, 17303), (153, 17321), (154, 17336), (155, 17348), (166, 17426), (168, 17435), (173, 17477), (188, 17585), (192, 17615), (193, 17630), (196, 17690), (202, 17831), (205, 17855), (209, 17882), (210, 17891), (212, 17906), (214, 17942), (221, 18026), (230, 18098), (265, 18476), (266, 18521), (275, 18689),

Gene: EvenBluerMoon_21 Start: 17115, Stop: 21062, Start Num: 1

Candidate Starts for EvenBluerMoon_21:

(Start: 1 @17115 has 6 MA's), (2, 17304), (6, 17550), (54, 18444), (57, 18462), (58, 18468), (59, 18474), (62, 18525), (95, 18891), (103, 19056), (104, 19065), (107, 19101), (118, 19257), (182, 19749), (192, 19812), (194, 19863), (195, 19884), (196, 19887), (198, 19923), (201, 20013), (205, 20052), (219, 20184), (221, 20205), (224, 20229), (232, 20310), (251, 20484), (253, 20487), (256, 20496), (257, 20508), (260, 20556), (265, 20667), (266, 20715), (267, 20721), (268, 20760), (270, 20781), (278, 20931),

Gene: Flutur_20 Start: 16046, Stop: 19297, Start Num: 19

Candidate Starts for Flutur_20:

(Start: 19 @16046 has 30 MA's), (22, 16109), (28, 16193), (36, 16325), (45, 16508), (55, 16598), (95, 17117), (108, 17336), (118, 17483), (120, 17492), (128, 17567), (144, 17678), (165, 17852), (174, 17918), (176, 17930), (185, 17996), (193, 18062), (196, 18122), (210, 18323), (214, 18374), (215, 18380), (221, 18458), (231, 18557), (236, 18626), (247, 18710), (257, 18770), (259, 18785), (265, 18908), (266, 18953), (267, 18959), (276, 19124),

Gene: lter_20 Start: 16055, Stop: 18919, Start Num: 19

Candidate Starts for lter_20:

(Start: 19 @16055 has 30 MA's), (22, 16118), (28, 16202), (42, 16346), (95, 16748), (118, 17114), (124, 17159), (129, 17198), (132, 17213), (138, 17237), (140, 17243), (152, 17354), (156, 17387), (172, 17480), (173, 17501), (187, 17600), (188, 17612), (193, 17657), (196, 17717), (210, 17918), (214, 17969), (221, 18053), (223, 18068), (233, 18164), (245, 18299), (247, 18305), (262, 18443), (265, 18527), (266, 18572), (269, 18626), (270, 18638), (274, 18731), (275, 18743), (276, 18746),

Gene: Janeemi_21 Start: 17623, Stop: 20508, Start Num: 19

Candidate Starts for Janeemi_21:

(Start: 19 @17623 has 30 MA's), (23, 17725), (34, 17836), (41, 17959), (71, 18121), (95, 18376), (118, 18742), (161, 19030), (179, 19180), (181, 19183), (182, 19195), (185, 19207), (188, 19228), (196, 19333), (210, 19534), (212, 19549), (214, 19585), (221, 19669), (230, 19741), (265, 20119), (266, 20164), (275, 20332),

Gene: JanetJ_21 Start: 16898, Stop: 21157, Start Num: 1

Candidate Starts for JanetJ_21:

(Start: 1 @16898 has 6 MA's), (2, 17087), (4, 17222), (6, 17333), (48, 18398), (60, 18482), (62, 18521), (64, 18545), (82, 18797), (90, 18854), (93, 18932), (95, 18974), (104, 19160), (107, 19196), (118, 19352), (171, 19739), (182, 19844), (196, 19982), (201, 20108), (202, 20123), (204, 20141), (206, 20162), (208, 20171), (211, 20195), (219, 20279), (221, 20300), (224, 20324), (227, 20357), (253, 20582), (257, 20603), (261, 20675), (265, 20762), (268, 20858), (273, 20948), (278, 21026),

Gene: Joemato_20 Start: 16046, Stop: 19063, Start Num: 19

Candidate Starts for Joemato_20:

(Start: 19 @16046 has 30 MA's), (22, 16109), (28, 16193), (43, 16337), (101, 16955), (111, 17087), (124, 17237), (147, 17429), (189, 17795), (190, 17798), (192, 17813), (193, 17828), (196, 17888), (210, 18089), (213, 18119), (214, 18140), (221, 18221), (247, 18473), (257, 18533), (265, 18674), (266, 18719), (276, 18890), (280, 19058),

Gene: JohnDoe_20 Start: 16041, Stop: 19058, Start Num: 19

Candidate Starts for JohnDoe_20:

(Start: 19 @16041 has 30 MA's), (22, 16104), (28, 16188), (43, 16332), (101, 16950), (102, 16962), (111, 17082), (124, 17232), (147, 17424), (183, 17736), (189, 17790), (190, 17793), (192, 17808), (193, 17823), (196, 17883), (210, 18084), (213, 18114), (214, 18135), (221, 18216), (247, 18468),

(257, 18528), (265, 18669), (266, 18714), (276, 18885), (280, 19053),

Gene: Jstan_21 Start: 16028, Stop: 18865, Start Num: 19

Candidate Starts for Jstan_21:

(Start: 19 @16028 has 30 MA's), (22, 16091), (25, 16145), (28, 16175), (32, 16199), (95, 16697), (108, 16916), (118, 17063), (120, 17072), (126, 17123), (127, 17132), (150, 17303), (153, 17321), (154, 17336), (155, 17348), (166, 17426), (168, 17435), (173, 17477), (188, 17585), (192, 17615), (193, 17630), (196, 17690), (210, 17891), (213, 17921), (214, 17942), (221, 18023), (225, 18065), (233, 18134), (242, 18239), (249, 18302), (265, 18476), (266, 18521), (269, 18575), (275, 18689), (276, 18692),

Gene: JuneStar_20 Start: 16151, Stop: 19756, Start Num: 10

Candidate Starts for JuneStar_20:

(Start: 10 @16151 has 3 MA's), (12, 16214), (14, 16268), (15, 16313), (18, 16496), (20, 16532), (37, 16763), (75, 17255), (91, 17435), (95, 17546), (99, 17648), (108, 17765), (118, 17912), (128, 17996), (131, 18011), (139, 18047), (151, 18173), (160, 18236), (170, 18326), (193, 18521), (196, 18581), (202, 18722), (210, 18782), (214, 18833), (221, 18917), (242, 19133), (254, 19208), (259, 19244), (265, 19367), (270, 19478), (275, 19580), (276, 19583),

Gene: Kaylissa_20 Start: 16047, Stop: 19064, Start Num: 19

Candidate Starts for Kaylissa_20:

(Start: 19 @16047 has 30 MA's), (22, 16110), (28, 16194), (43, 16338), (101, 16956), (102, 16968), (111, 17088), (124, 17238), (147, 17430), (189, 17796), (190, 17799), (192, 17814), (193, 17829), (196, 17889), (210, 18090), (213, 18120), (214, 18141), (221, 18222), (247, 18474), (257, 18534), (265, 18675), (266, 18720), (276, 18891), (280, 19059),

Gene: Lego_20 Start: 16046, Stop: 19018, Start Num: 19

Candidate Starts for Lego_20:

(Start: 19 @16046 has 30 MA's), (22, 16109), (28, 16193), (43, 16337), (100, 16931), (121, 17162), (122, 17180), (133, 17258), (134, 17264), (135, 17267), (136, 17273), (147, 17384), (183, 17696), (189, 17750), (192, 17768), (193, 17783), (196, 17843), (210, 18044), (213, 18074), (214, 18095), (220, 18158), (221, 18176), (247, 18428), (257, 18488), (265, 18629), (266, 18674), (276, 18845), (280, 19013),

Gene: Lizalica_20 Start: 16031, Stop: 19048, Start Num: 19

Candidate Starts for Lizalica_20:

(Start: 19 @16031 has 30 MA's), (22, 16094), (25, 16148), (28, 16178), (43, 16322), (101, 16940), (102, 16952), (105, 16997), (111, 17072), (124, 17222), (134, 17294), (147, 17414), (173, 17633), (177, 17684), (189, 17780), (190, 17783), (192, 17798), (196, 17873), (199, 17951), (210, 18074), (213, 18104), (214, 18125), (221, 18206), (230, 18278), (247, 18458), (257, 18518), (265, 18659), (266, 18704), (276, 18875), (280, 19043),

Gene: London_20 Start: 16028, Stop: 18865, Start Num: 19

Candidate Starts for London_20:

(Start: 19 @16028 has 30 MA's), (22, 16091), (32, 16199), (95, 16697), (108, 16916), (118, 17063), (126, 17123), (127, 17132), (150, 17303), (153, 17321), (154, 17336), (155, 17348), (166, 17426), (168, 17435), (173, 17477), (188, 17585), (192, 17615), (193, 17630), (196, 17690), (202, 17831), (205, 17855), (209, 17882), (210, 17891), (212, 17906), (214, 17942), (221, 18026), (230, 18098), (265, 18476), (266, 18521), (275, 18689),

Gene: Mudpuppy_20 Start: 16045, Stop: 19062, Start Num: 19

Candidate Starts for Mudpuppy_20:

(Start: 19 @16045 has 30 MA's), (22, 16108), (28, 16192), (43, 16336), (96, 16837), (101, 16954), (102, 16966), (111, 17086), (123, 17230), (124, 17236), (147, 17428), (173, 17647), (177, 17698), (189, 17794), (190, 17797), (192, 17812), (193, 17827), (196, 17887), (199, 17965), (210, 18088), (214, 18139), (221, 18220), (247, 18472), (257, 18532), (265, 18673), (266, 18718), (276, 18889), (280, 19057),

Gene: Niobe_20 Start: 16028, Stop: 18865, Start Num: 19

Candidate Starts for Niobe_20:

(Start: 19 @16028 has 30 MA's), (22, 16091), (25, 16145), (28, 16175), (32, 16199), (95, 16697), (108, 16916), (118, 17063), (120, 17072), (126, 17123), (127, 17132), (150, 17303), (153, 17321), (154, 17336), (155, 17348), (166, 17426), (168, 17435), (173, 17477), (188, 17585), (192, 17615), (193, 17630), (196, 17690), (210, 17891), (213, 17921), (214, 17942), (221, 18023), (225, 18065), (233, 18134), (242, 18239), (249, 18302), (265, 18476), (266, 18521), (269, 18575), (275, 18689), (276, 18692),

Gene: Nitro_20 Start: 16056, Stop: 18917, Start Num: 19

Candidate Starts for Nitro_20:

(Start: 19 @16056 has 30 MA's), (22, 16119), (25, 16173), (28, 16203), (32, 16227), (41, 16308), (95, 16725), (108, 16944), (118, 17091), (120, 17100), (126, 17151), (127, 17160), (153, 17349), (154, 17364), (155, 17376), (168, 17463), (173, 17505), (188, 17613), (196, 17718), (210, 17919), (213, 17949), (214, 17970), (221, 18054), (223, 18069), (226, 18108), (233, 18165), (244, 18288), (245, 18300), (255, 18348), (259, 18381), (262, 18444), (265, 18528), (275, 18741), (276, 18744),

Gene: NoSwimming_22 Start: 18041, Stop: 22300, Start Num: 1

Candidate Starts for NoSwimming_22:

(Start: 1 @18041 has 6 MA's), (2, 18230), (3, 18341), (5, 18449), (6, 18476), (7, 18485), (8, 18494), (9, 18620), (13, 18758), (16, 18875), (48, 19541), (60, 19625), (62, 19664), (64, 19688), (65, 19694), (67, 19718), (82, 19940), (87, 19976), (89, 19991), (90, 19997), (95, 20117), (97, 20156), (98, 20180), (104, 20303), (106, 20336), (107, 20339), (109, 20366), (112, 20399), (113, 20414), (114, 20429), (118, 20495), (119, 20498), (148, 20714), (149, 20726), (182, 20987), (195, 21122), (196, 21125), (198, 21161), (201, 21251), (204, 21284), (206, 21305), (208, 21314), (212, 21341), (218, 21404), (219, 21422), (221, 21443), (224, 21467), (229, 21506), (253, 21725), (257, 21746), (261, 21818), (265, 21905), (273, 22091), (277, 22163), (278, 22169),

Gene: Phives_21 Start: 17458, Stop: 20337, Start Num: 19

Candidate Starts for Phives_21:

(Start: 19 @17458 has 30 MA's), (33, 17650), (95, 18211), (115, 18523), (118, 18577), (134, 18673), (161, 18862), (179, 19012), (181, 19015), (182, 19027), (185, 19039), (192, 19090), (196, 19165), (210, 19366), (214, 19417), (221, 19498), (222, 19504), (228, 19558), (242, 19714), (265, 19948), (266, 19993), (275, 20161),

Gene: Pixelle_20 Start: 16401, Stop: 19310, Start Num: 19

Candidate Starts for Pixelle_20:

(Start: 19 @16401 has 30 MA's), (84, 17016), (95, 17154), (108, 17373), (117, 17493), (118, 17520), (120, 17529), (132, 17610), (141, 17658), (158, 17790), (159, 17793), (169, 17880), (172, 17898), (184, 18000), (188, 18030), (193, 18075), (196, 18135), (198, 18171), (210, 18336), (214, 18387), (221, 18471), (233, 18582), (254, 18762), (265, 18921), (266, 18966), (276, 19137),

Gene: Powerpuff_20 Start: 16097, Stop: 19069, Start Num: 19

Candidate Starts for Powerpuff_20:

(Start: 19 @16097 has 30 MA's), (22, 16160), (28, 16244), (43, 16388), (100, 16982), (121, 17213), (122, 17231), (133, 17309), (134, 17315), (135, 17318), (136, 17324), (147, 17435), (183, 17747), (189, 17801), (190, 17804), (192, 17819), (193, 17834), (196, 17894), (210, 18095), (213, 18125),

(214, 18146), (221, 18227), (247, 18479), (257, 18539), (265, 18680), (266, 18725), (276, 18896), (280, 19064),

Gene: PrairieDogTown_21 Start: 17117, Stop: 21064, Start Num: 1

Candidate Starts for PrairieDogTown_21:

(Start: 1 @17117 has 6 MA's), (2, 17306), (6, 17552), (54, 18446), (57, 18464), (58, 18470), (59, 18476), (62, 18527), (95, 18893), (103, 19058), (104, 19067), (107, 19103), (118, 19259), (182, 19751), (192, 19814), (194, 19865), (195, 19886), (196, 19889), (198, 19925), (201, 20015), (205, 20054), (219, 20186), (221, 20207), (224, 20231), (232, 20312), (251, 20486), (253, 20489), (256, 20498), (257, 20510), (260, 20558), (265, 20669), (266, 20717), (267, 20723), (268, 20762), (270, 20783), (278, 20933),

Gene: Pumpkins_20 Start: 16163, Stop: 19783, Start Num: 10

Candidate Starts for Pumpkins_20:

(Start: 10 @16163 has 3 MA's), (11, 16217), (12, 16226), (18, 16520), (35, 16748), (46, 16976), (59, 17048), (65, 17153), (70, 17216), (74, 17273), (86, 17432), (91, 17459), (95, 17570), (108, 17789), (118, 17936), (125, 17987), (139, 18074), (151, 18200), (160, 18263), (163, 18308), (170, 18353), (180, 18452), (196, 18608), (210, 18809), (214, 18860), (221, 18941), (242, 19157), (249, 19220), (265, 19394), (270, 19505), (275, 19607), (279, 19730),

Gene: Schaffner_20 Start: 16150, Stop: 19755, Start Num: 10

Candidate Starts for Schaffner_20:

(Start: 10 @16150 has 3 MA's), (12, 16213), (14, 16267), (15, 16312), (18, 16495), (20, 16531), (37, 16762), (75, 17254), (91, 17434), (95, 17545), (99, 17647), (108, 17764), (118, 17911), (128, 17995), (131, 18010), (139, 18046), (151, 18172), (160, 18235), (170, 18325), (193, 18520), (196, 18580), (205, 18745), (210, 18781), (213, 18811), (214, 18832), (221, 18913), (242, 19129), (249, 19192), (265, 19366), (270, 19477), (275, 19579), (276, 19582),

Gene: Scotia_22 Start: 18041, Stop: 22303, Start Num: 1

Candidate Starts for Scotia_22:

(Start: 1 @18041 has 6 MA's), (2, 18230), (3, 18341), (6, 18476), (8, 18494), (13, 18758), (16, 18875), (51, 19550), (56, 19580), (63, 19682), (66, 19709), (72, 19781), (73, 19811), (76, 19886), (78, 19901), (82, 19961), (91, 20042), (92, 20096), (95, 20153), (98, 20216), (104, 20339), (107, 20375), (109, 20402), (115, 20477), (117, 20504), (118, 20531), (120, 20540), (130, 20609), (142, 20699), (145, 20723), (153, 20771), (157, 20813), (167, 20873), (181, 20978), (191, 21047), (195, 21125), (196, 21128), (198, 21164), (201, 21254), (204, 21287), (206, 21308), (208, 21317), (212, 21344), (218, 21407), (219, 21425), (221, 21446), (224, 21470), (229, 21509), (253, 21728), (257, 21749), (261, 21821), (265, 21908), (268, 22004), (273, 22094), (277, 22166), (278, 22172),

Gene: Simpson_22 Start: 16046, Stop: 19063, Start Num: 19

Candidate Starts for Simpson_22:

(Start: 19 @16046 has 30 MA's), (22, 16109), (28, 16193), (43, 16337), (101, 16955), (111, 17087), (124, 17237), (147, 17429), (189, 17795), (190, 17798), (192, 17813), (193, 17828), (196, 17888), (210, 18089), (213, 18119), (214, 18140), (221, 18221), (247, 18473), (257, 18533), (265, 18674), (266, 18719), (276, 18890), (280, 19058),

Gene: Skelbel_21 Start: 16028, Stop: 18865, Start Num: 19

Candidate Starts for Skelbel_21:

(Start: 19 @16028 has 30 MA's), (22, 16091), (25, 16145), (28, 16175), (32, 16199), (95, 16697), (108, 16916), (118, 17063), (120, 17072), (126, 17123), (127, 17132), (150, 17303), (153, 17321), (154, 17336), (155, 17348), (166, 17426), (168, 17435), (173, 17477), (188, 17585), (192, 17615), (193, 17630), (196, 17690), (210, 17891), (213, 17921), (214, 17942), (221, 18023), (225, 18065), (233, 18134), (242, 18239), (249, 18302), (265, 18476), (266, 18521), (269, 18575), (275, 18689), (276,

18692),

Gene: Subaru_21 Start: 16028, Stop: 18865, Start Num: 19

Candidate Starts for Subaru_21:

(Start: 19 @16028 has 30 MA's), (22, 16091), (25, 16145), (28, 16175), (32, 16199), (95, 16697), (108, 16916), (118, 17063), (120, 17072), (126, 17123), (127, 17132), (150, 17303), (153, 17321), (154, 17336), (155, 17348), (166, 17426), (168, 17435), (173, 17477), (188, 17585), (192, 17615), (193, 17630), (196, 17690), (210, 17891), (213, 17921), (214, 17942), (221, 18023), (225, 18065), (233, 18134), (249, 18302), (265, 18476), (266, 18521), (269, 18575), (275, 18689), (276, 18692),

Gene: Tallboi_20 Start: 16061, Stop: 18886, Start Num: 19

Candidate Starts for Tallboi_20:

(Start: 19 @16061 has 30 MA's), (22, 16124), (25, 16178), (26, 16196), (28, 16208), (32, 16232), (95, 16730), (108, 16949), (118, 17096), (120, 17105), (132, 17186), (158, 17366), (172, 17474), (186, 17588), (188, 17606), (196, 17711), (199, 17789), (210, 17912), (212, 17927), (214, 17963), (217, 17987), (221, 18047), (233, 18158), (241, 18260), (265, 18497), (266, 18542), (275, 18710),

Gene: Tbone_20 Start: 16050, Stop: 19067, Start Num: 19

Candidate Starts for Tbone_20:

(Start: 19 @16050 has 30 MA's), (22, 16113), (28, 16197), (43, 16341), (96, 16842), (101, 16959), (102, 16971), (111, 17091), (123, 17235), (124, 17241), (147, 17433), (173, 17652), (177, 17703), (189, 17799), (190, 17802), (192, 17817), (193, 17832), (196, 17892), (199, 17970), (210, 18093), (214, 18144), (221, 18225), (226, 18279), (237, 18402), (254, 18516), (257, 18537), (265, 18678), (266, 18723), (276, 18894), (280, 19062),

Gene: TforTroy_20 Start: 16181, Stop: 19015, Start Num: 19

Candidate Starts for TforTroy_20:

(Start: 19 @16181 has 30 MA's), (22, 16244), (28, 16328), (32, 16352), (84, 16712), (95, 16850), (99, 16952), (108, 17069), (118, 17216), (120, 17225), (126, 17270), (132, 17306), (146, 17408), (158, 17486), (172, 17594), (186, 17708), (188, 17726), (194, 17807), (196, 17831), (199, 17909), (200, 17930), (210, 18032), (211, 18044), (214, 18083), (221, 18164), (233, 18275), (242, 18377), (254, 18449), (255, 18452), (257, 18470), (265, 18626), (266, 18671), (276, 18842),

Gene: Tian_20 Start: 16398, Stop: 19307, Start Num: 19

Candidate Starts for Tian_20:

(Start: 19 @16398 has 30 MA's), (84, 17013), (95, 17151), (108, 17370), (117, 17490), (118, 17517), (120, 17526), (132, 17607), (158, 17787), (169, 17877), (172, 17895), (188, 18027), (196, 18132), (198, 18168), (210, 18333), (212, 18348), (214, 18384), (217, 18408), (221, 18468), (233, 18579), (254, 18759), (265, 18918), (266, 18963), (276, 19134),

Gene: Tuck_21 Start: 17575, Stop: 20481, Start Num: 19

Candidate Starts for Tuck_21:

(Start: 19 @17575 has 30 MA's), (34, 17788), (41, 17911), (71, 18073), (95, 18328), (115, 18640), (118, 18694), (134, 18790), (145, 18871), (164, 19015), (179, 19129), (181, 19132), (182, 19144), (185, 19156), (192, 19207), (196, 19282), (199, 19360), (207, 19468), (210, 19483), (213, 19513), (214, 19534), (221, 19618), (222, 19624), (233, 19729), (247, 19870), (255, 19912), (259, 19945), (262, 20008), (265, 20092), (266, 20137), (275, 20305), (276, 20308),

Gene: Turab_20 Start: 16058, Stop: 18916, Start Num: 19

Candidate Starts for Turab_20:

(Start: 19 @16058 has 30 MA's), (22, 16121), (25, 16175), (28, 16205), (84, 16610), (92, 16691), (95, 16748), (108, 16967), (118, 17114), (120, 17123), (127, 17183), (146, 17333), (154, 17387), (162, 17456), (168, 17486), (178, 17576), (186, 17618), (188, 17636), (196, 17741), (210, 17942), (212,

17957), (214, 17993), (221, 18077), (225, 18119), (242, 18293), (248, 18332), (265, 18527), (266, 18572), (275, 18740), (276, 18743),

Gene: Tutumahutu_20 Start: 16097, Stop: 19069, Start Num: 19

Candidate Starts for Tutumahutu_20:

(Start: 19 @16097 has 30 MA's), (22, 16160), (28, 16244), (43, 16388), (100, 16982), (121, 17213), (122, 17231), (133, 17309), (134, 17315), (135, 17318), (136, 17324), (147, 17435), (183, 17747), (189, 17801), (190, 17804), (192, 17819), (193, 17834), (196, 17894), (210, 18095), (213, 18125), (214, 18146), (220, 18209), (221, 18227), (247, 18479), (257, 18539), (265, 18680), (266, 18725), (276, 18896), (280, 19064),

Gene: Warda_20 Start: 16042, Stop: 19059, Start Num: 19

Candidate Starts for Warda_20:

(Start: 19 @16042 has 30 MA's), (22, 16105), (28, 16189), (43, 16333), (96, 16834), (101, 16951), (102, 16963), (111, 17083), (123, 17227), (124, 17233), (147, 17425), (173, 17644), (177, 17695), (189, 17791), (190, 17794), (192, 17809), (193, 17824), (196, 17884), (210, 18085), (214, 18136), (221, 18217), (247, 18469), (257, 18529), (265, 18670), (266, 18715), (276, 18886), (280, 19054),

Gene: Yang_20 Start: 16153, Stop: 19056, Start Num: 40

Candidate Starts for Yang_20:

(Start: 40 @16153 has 1 MA's), (44, 16216), (85, 16705), (95, 16843), (99, 16945), (108, 17062), (118, 17209), (151, 17473), (160, 17536), (170, 17626), (196, 17881), (198, 17917), (205, 18046), (210, 18082), (213, 18112), (214, 18133), (221, 18214), (242, 18430), (249, 18493), (265, 18667), (275, 18880), (276, 18883),

Gene: YesChef_20 Start: 16097, Stop: 19069, Start Num: 19

Candidate Starts for YesChef_20:

(Start: 19 @16097 has 30 MA's), (22, 16160), (28, 16244), (43, 16388), (100, 16982), (121, 17213), (122, 17231), (133, 17309), (134, 17315), (135, 17318), (136, 17324), (147, 17435), (183, 17747), (189, 17801), (190, 17804), (192, 17819), (193, 17834), (196, 17894), (210, 18095), (213, 18125), (214, 18146), (221, 18227), (247, 18479), (257, 18539), (258, 18548), (265, 18680), (266, 18725), (276, 18896), (280, 19064),