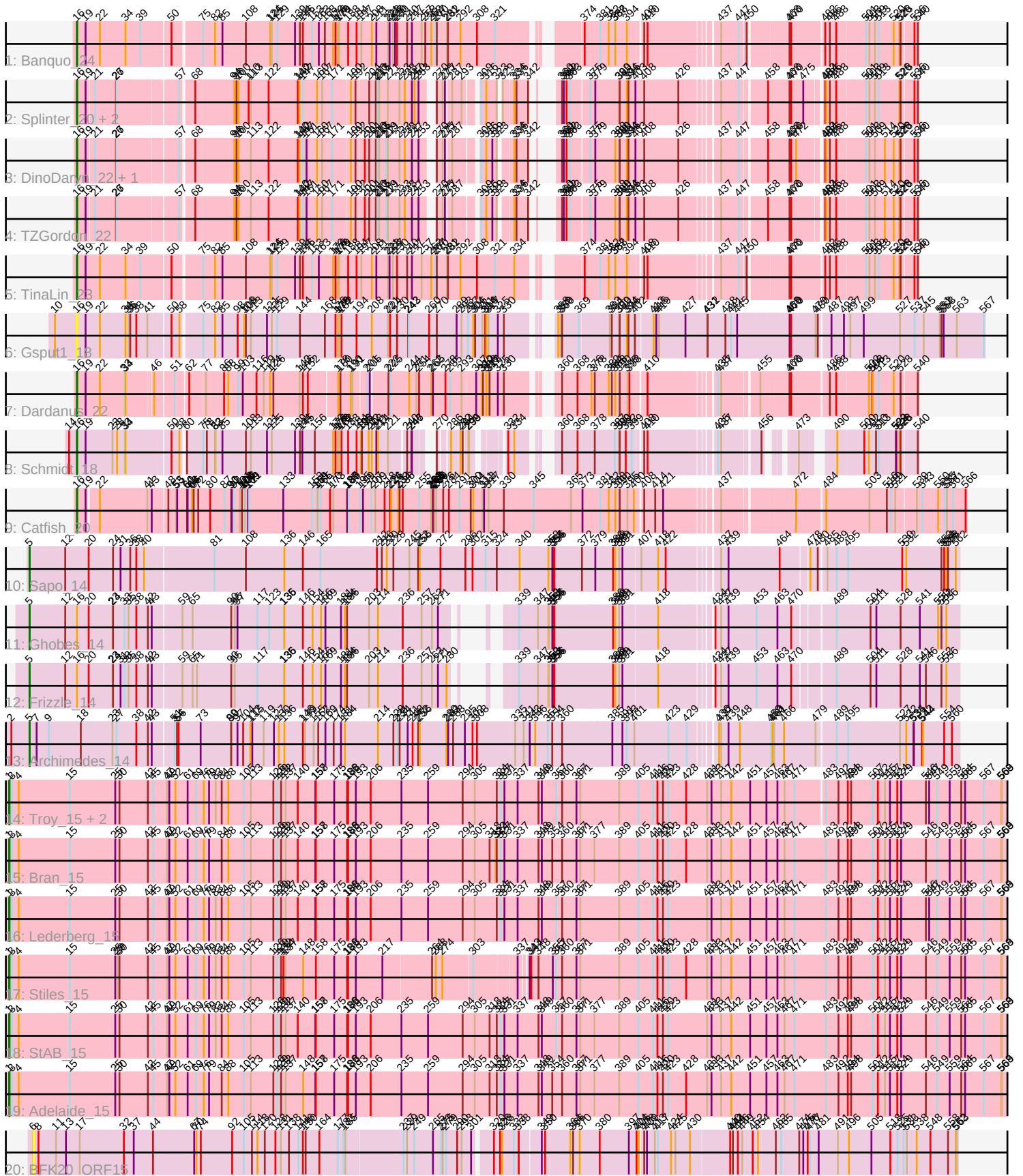


Pham 331180



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 331180 Report

This analysis was run 09/05/26 on database version 662.

Pham number 331180 has 25 members, 2 are drafts.

Phages represented in each track:

- Track 1 : Banquo_24
- Track 2 : Splinter_20, Goib_21, Vendetta_20
- Track 3 : DinoDaryn_22, Huff_22
- Track 4 : TZGordon_22
- Track 5 : TinaLin_23
- Track 6 : Gsput1_18
- Track 7 : Dardanus_22
- Track 8 : Schmidt_18
- Track 9 : Catfish_20
- Track 10 : Sapo_14
- Track 11 : Ghobes_14
- Track 12 : Frizzle_14
- Track 13 : Archimedes_14
- Track 14 : Troy_15, SamW_15, Dina_15
- Track 15 : Bran_15
- Track 16 : Lederberg_15
- Track 17 : Stiles_15
- Track 18 : StAB_15
- Track 19 : Adelaide_15
- Track 20 : BFK20_ORF15

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

The start number called the most often in the published annotations is 16, it was called in 11 of the 23 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Banquo_24, Catfish_20, Dardanus_22, DinoDaryn_22, Goib_21, Gsput1_18, Huff_22, Schmidt_18, Splinter_20, TZGordon_22, TinaLin_23, Vendetta_20,

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

- Frizzle_14, Ghobes_14,

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

- Adelaide_15, Archimedes_14, BFK20_ORF15, Bran_15, Dina_15, Lederberg_15, SamW_15, Sapo_14, StAB_15, Stiles_15, Troy_15,

Summary by start number:

Start 1:

- Found in 8 of 25 (32.0%) of genes in pham
- Manual Annotations of this start: 8 of 23
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adelaide_15 (EP), Bran_15 (EP), Dina_15 (EP), Lederberg_15 (EP), SamW_15 (EP), StAB_15 (EP), Stiles_15 (EP), Troy_15 (EP),

Start 5:

- Found in 4 of 25 (16.0%) of genes in pham
- Manual Annotations of this start: 4 of 23
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Archimedes_14 (DA), Frizzle_14 (DA), Ghobes_14 (DA), Sapo_14 (DA),

Start 6:

- Found in 1 of 25 (4.0%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BFK20_ORF15 (singleton),

Start 16:

- Found in 14 of 25 (56.0%) of genes in pham
- Manual Annotations of this start: 11 of 23
- Called 85.7% of time when present
- Phage (with cluster) where this start called: Banquo_24 (CU1), Catfish_20 (CU5), Dardanus_22 (CU3), DinoDaryn_22 (CU1), Goib_21 (CU1), Gsput1_18 (CU2), Huffy_22 (CU1), Schmidt_18 (CU4), Splinter_20 (CU1), TZGordon_22 (CU1), TinaLin_23 (CU1), Vendetta_20 (CU1),

Summary by clusters:

There are 8 clusters represented in this pham: CU5, CU4, CU3, CU2, CU1, singleton, DA, EP,

Info for manual annotations of cluster CU1:

- Start number 16 was manually annotated 8 times for cluster CU1.

Info for manual annotations of cluster CU3:

- Start number 16 was manually annotated 1 time for cluster CU3.

Info for manual annotations of cluster CU4:

- Start number 16 was manually annotated 1 time for cluster CU4.

Info for manual annotations of cluster CU5:

- Start number 16 was manually annotated 1 time for cluster CU5.

Info for manual annotations of cluster DA:

- Start number 5 was manually annotated 4 times for cluster DA.

Info for manual annotations of cluster EP:

- Start number 1 was manually annotated 8 times for cluster EP.

Gene Information:

Gene: Adelaide_15 Start: 9722, Stop: 15133, Start Num: 1

Candidate Starts for Adelaide_15:

(Start: 1 @9722 has 8 MA's), (3, 9737), (4, 9773), (15, 10052), (25, 10298), (30, 10319), (42, 10472), (45, 10502), (47, 10577), (49, 10589), (52, 10622), (61, 10682), (69, 10727), (76, 10769), (79, 10796), (84, 10865), (88, 10901), (105, 10976), (113, 11015), (126, 11138), (129, 11159), (132, 11180), (137, 11204), (148, 11300), (157, 11363), (158, 11366), (175, 11465), (186, 11534), (188, 11540), (193, 11579), (206, 11660), (235, 11825), (259, 11969), (294, 12158), (305, 12224), (318, 12305), (324, 12341), (327, 12362), (331, 12383), (337, 12455), (348, 12569), (349, 12587), (354, 12644), (360, 12698), (367, 12776), (371, 12797), (377, 12872), (389, 13001), (405, 13106), (411, 13184), (416, 13208), (420, 13238), (423, 13268), (428, 13364), (431, 13475), (433, 13499), (437, 13544), (442, 13586), (451, 13685), (457, 13772), (463, 13832), (467, 13871), (471, 13925), (483, 14093), (492, 14159), (494, 14207), (498, 14225), (507, 14333), (512, 14357), (515, 14396), (517, 14423), (524, 14462), (529, 14483), (546, 14618), (549, 14675), (559, 14744), (564, 14807), (565, 14828), (567, 14930), (568, 15026), (569, 15029),

Gene: Archimedes_14 Start: 9058, Stop: 13707, Start Num: 5

Candidate Starts for Archimedes_14:

(2, 8959), (Start: 5 @9058 has 4 MA's), (7, 9097), (9, 9163), (18, 9337), (23, 9505), (27, 9526), (38, 9631), (42, 9694), (43, 9715), (51, 9820), (54, 9832), (56, 9841), (73, 9952), (89, 10108), (90, 10111), (97, 10141), (104, 10171), (112, 10210), (115, 10219), (119, 10273), (127, 10327), (130, 10348), (136, 10378), (146, 10474), (149, 10486), (155, 10525), (162, 10549), (169, 10588), (174, 10633), (181, 10669), (184, 10690), (214, 10861), (228, 10945), (231, 10966), (234, 10978), (241, 11020), (248, 11041), (252, 11068), (256, 11077), (280, 11218), (283, 11227), (288, 11254), (295, 11317), (302, 11356), (308, 11380), (335, 11563), (341, 11608), (343, 11641), (346, 11671), (351, 11737), (354, 11761), (360, 11815), (385, 12073), (391, 12124), (393, 12145), (401, 12184), (423, 12358), (429, 12433), (436, 12529), (437, 12535), (439, 12562), (448, 12616), (459, 12763), (460, 12772), (461, 12781), (466, 12829), (479, 13000), (489, 13090), (495, 13144), (527, 13405), (532, 13435), (534, 13471), (535, 13474), (542, 13516), (544, 13522), (554, 13627), (560, 13669),

Gene: BFK20_ORF15 Start: 9713, Stop: 14527, Start Num: 6

Candidate Starts for BFK20_ORF15:

(6, 9713), (8, 9740), (11, 9836), (13, 9890), (17, 9965), (32, 10205), (37, 10259), (44, 10364), (67, 10583), (70, 10595), (74, 10616), (92, 10787), (105, 10841), (114, 10886), (118, 10916), (120, 10955), (128, 11006), (131, 11036), (138, 11078), (141, 11126), (146, 11150), (150, 11165), (164, 11240), (177, 11336), (183, 11366), (185, 11378), (237, 11684), (239, 11702), (249, 11741), (265, 11837), (273, 11879), (275, 11888), (279, 11906), (290, 11966), (293, 11990), (301, 12041), (320, 12131), (326, 12164), (328, 12176), (333, 12239), (338, 12266), (349, 12377), (350, 12395), (364, 12533), (366, 12548), (370, 12584), (380, 12692), (397, 12845), (404, 12881), (406, 12893), (408, 12905), (409, 12920), (413, 12962), (417, 12974), (424, 13034), (425, 13058), (430, 13130), (440, 13307), (443, 13319), (444, 13322), (446, 13349), (449, 13373), (452, 13430), (454, 13457), (462, 13544), (465, 13574), (474, 13670), (475, 13688), (476, 13712), (477, 13724), (481, 13772), (491, 13874), (496, 13934), (505, 14057), (518, 14159), (525, 14198), (531, 14231), (533, 14249), (538, 14303), (548, 14378), (558, 14474), (562, 14516), (563, 14522),

Gene: Banquo_24 Start: 13267, Stop: 16992, Start Num: 16

Candidate Starts for Banquo_24:

(Start: 16 @13267 has 11 MA's), (19, 13309), (22, 13375), (34, 13510), (39, 13588), (50, 13735), (75, 13852), (82, 13906), (85, 13939), (108, 14053), (124, 14170), (125, 14176), (129, 14200), (139, 14284), (144, 14311), (146, 14326), (153, 14365), (163, 14398), (168, 14431), (172, 14473), (176, 14482), (178, 14497), (179, 14503), (188, 14548), (194, 14593), (197, 14611), (208, 14665), (211, 14689), (221, 14749), (223, 14758), (227, 14776), (229, 14785), (230, 14794), (240, 14845), (247, 14869), (257, 14920), (258, 14938), (262, 14971), (267, 14992), (270, 14998), (281, 15049), (282, 15055), (292, 15118), (308, 15202), (321, 15292), (374, 15610), (381, 15685), (382, 15730), (387, 15757), (388, 15760), (394, 15814), (408, 15868), (410, 15886), (437, 16162), (447, 16237), (450, 16267), (468, 16438), (470, 16447), (482, 16591), (486, 16612), (488, 16636), (501, 16753), (503, 16765), (509, 16792), (513, 16810), (520, 16885), (526, 16912), (528, 16918), (536, 16972), (540, 16987),

Gene: Bran_15 Start: 9727, Stop: 15138, Start Num: 1

Candidate Starts for Bran_15:

(Start: 1 @9727 has 8 MA's), (3, 9742), (4, 9778), (15, 10057), (25, 10303), (30, 10324), (42, 10477), (45, 10507), (47, 10582), (49, 10594), (52, 10627), (61, 10687), (69, 10732), (76, 10774), (79, 10801), (84, 10870), (88, 10906), (105, 10981), (113, 11020), (126, 11143), (129, 11164), (132, 11185), (137, 11209), (140, 11275), (157, 11368), (158, 11371), (175, 11470), (186, 11539), (188, 11545), (193, 11584), (206, 11665), (235, 11830), (259, 11974), (294, 12163), (305, 12229), (318, 12310), (322, 12340), (324, 12346), (327, 12367), (331, 12388), (337, 12460), (348, 12574), (349, 12592), (354, 12649), (360, 12703), (367, 12781), (371, 12802), (377, 12877), (389, 13006), (405, 13111), (411, 13189), (416, 13213), (420, 13243), (423, 13273), (428, 13369), (431, 13480), (433, 13504), (437, 13549), (442, 13591), (451, 13690), (457, 13777), (463, 13837), (467, 13876), (471, 13930), (483, 14098), (492, 14164), (494, 14212), (498, 14230), (507, 14338), (512, 14362), (515, 14401), (517, 14428), (524, 14467), (529, 14488), (546, 14623), (549, 14680), (559, 14749), (564, 14812), (565, 14833), (567, 14935), (568, 15031), (569, 15034),

Gene: Catfish_20 Start: 13330, Stop: 17619, Start Num: 16

Candidate Starts for Catfish_20:

(Start: 16 @13330 has 11 MA's), (19, 13372), (22, 13426), (41, 13678), (43, 13702), (48, 13777), (53, 13819), (55, 13825), (60, 13879), (61, 13882), (63, 13903), (64, 13906), (66, 13915), (72, 13933), (80, 13996), (87, 14074), (90, 14110), (91, 14113), (93, 14125), (101, 14155), (102, 14167), (104, 14173), (105, 14176), (107, 14182), (109, 14200), (111, 14206), (133, 14386), (153, 14536), (159, 14560), (161, 14566), (165, 14581), (170, 14632), (173, 14650), (186, 14725), (187, 14728), (189, 14734), (195, 14794), (199, 14812), (207, 14857), (209, 14878), (218, 14929), (224, 14959), (226, 14965), (232, 15001), (234, 15007), (236, 15022), (255, 15106), (261, 15166), (262, 15169), (263, 15172), (265, 15178), (266, 15184), (267, 15190), (269, 15196), (276, 15232), (284, 15259), (291, 15316), (300, 15376), (304, 15388), (311, 15427), (313, 15436), (317, 15460), (330, 15541), (345, 15682), (365, 15886), (373, 15934), (381, 16024), (382, 16069), (388, 16099), (390, 16120), (395, 16156), (400, 16180), (408, 16207), (414, 16261), (421, 16300), (437, 16501), (472, 16819), (484, 16951), (503, 17146), (516, 17227), (519, 17248), (521, 17272), (539, 17362), (543, 17389), (550, 17464), (555, 17500), (557, 17512), (561, 17545), (566, 17614),

Gene: Dardanus_22 Start: 12248, Stop: 15838, Start Num: 16

Candidate Starts for Dardanus_22:

(Start: 16 @12248 has 11 MA's), (19, 12290), (22, 12356), (33, 12485), (34, 12491), (46, 12623), (51, 12707), (62, 12758), (77, 12812), (86, 12881), (88, 12902), (99, 12950), (103, 12971), (116, 13037), (119, 13070), (124, 13100), (126, 13115), (143, 13238), (146, 13256), (152, 13277), (178, 13403), (180, 13415), (190, 13469), (191, 13478), (201, 13541), (205, 13553), (222, 13619), (225, 13631), (244, 13727), (251, 13760), (254, 13775), (262, 13832), (265, 13841), (278, 13901), (285, 13919),

(293, 13979), (307, 14042), (310, 14066), (312, 14072), (316, 14090), (317, 14102), (318, 14108), (325, 14150), (330, 14183), (360, 14348), (368, 14426), (376, 14495), (378, 14513), (382, 14579), (384, 14594), (388, 14609), (390, 14630), (395, 14666), (398, 14675), (410, 14735), (435, 14999), (437, 15011), (455, 15158), (468, 15290), (470, 15299), (486, 15464), (488, 15488), (502, 15614), (506, 15632), (508, 15635), (513, 15662), (520, 15731), (528, 15764), (540, 15833),

Gene: Dina_15 Start: 9711, Stop: 15101, Start Num: 1

Candidate Starts for Dina_15:

(Start: 1 @9711 has 8 MA's), (3, 9726), (4, 9762), (15, 10041), (25, 10287), (30, 10308), (42, 10461), (45, 10491), (47, 10566), (49, 10578), (52, 10611), (61, 10671), (69, 10716), (76, 10758), (79, 10785), (83, 10821), (84, 10854), (88, 10890), (105, 10965), (113, 11004), (126, 11127), (129, 11148), (132, 11169), (137, 11193), (140, 11259), (157, 11352), (158, 11355), (175, 11454), (186, 11523), (188, 11529), (193, 11568), (206, 11649), (235, 11814), (259, 11958), (294, 12147), (305, 12213), (324, 12330), (327, 12351), (331, 12372), (337, 12444), (348, 12558), (349, 12576), (357, 12654), (360, 12687), (367, 12765), (371, 12786), (389, 12990), (405, 13095), (411, 13173), (416, 13197), (420, 13227), (423, 13257), (428, 13353), (431, 13464), (433, 13488), (437, 13533), (442, 13575), (451, 13674), (457, 13761), (463, 13821), (467, 13860), (471, 13914), (483, 14061), (492, 14127), (494, 14175), (498, 14193), (507, 14301), (512, 14325), (515, 14364), (517, 14391), (524, 14430), (529, 14451), (546, 14586), (547, 14604), (549, 14643), (559, 14712), (564, 14775), (565, 14796), (567, 14898), (568, 14994), (569, 14997),

Gene: DinoDaryn_22 Start: 12409, Stop: 15867, Start Num: 16

Candidate Starts for DinoDaryn_22:

(Start: 16 @12409 has 11 MA's), (19, 12451), (21, 12484), (26, 12589), (27, 12592), (57, 12877), (68, 12928), (94, 13084), (96, 13096), (100, 13105), (113, 13171), (122, 13252), (140, 13381), (142, 13390), (147, 13408), (151, 13420), (160, 13468), (167, 13483), (171, 13531), (190, 13618), (192, 13642), (200, 13681), (204, 13705), (210, 13741), (213, 13750), (215, 13759), (219, 13792), (221, 13801), (233, 13858), (238, 13885), (247, 13915), (253, 13948), (270, 13984), (275, 14008), (277, 14020), (287, 14044), (309, 14137), (316, 14164), (319, 14197), (323, 14218), (334, 14260), (336, 14272), (342, 14335), (360, 14368), (361, 14377), (362, 14392), (363, 14410), (375, 14488), (379, 14515), (388, 14614), (389, 14632), (390, 14635), (394, 14668), (396, 14677), (403, 14713), (408, 14761), (426, 14920), (437, 15055), (447, 15130), (458, 15229), (468, 15325), (470, 15334), (472, 15361), (482, 15466), (484, 15472), (486, 15487), (488, 15511), (501, 15628), (503, 15640), (509, 15667), (514, 15712), (520, 15760), (526, 15787), (528, 15793), (536, 15847), (540, 15862),

Gene: Frizzle_14 Start: 9174, Stop: 13496, Start Num: 5

Candidate Starts for Frizzle_14:

(Start: 5 @9174 has 4 MA's), (12, 9369), (Start: 16 @9432 has 11 MA's), (20, 9495), (23, 9621), (24, 9624), (31, 9663), (33, 9684), (35, 9705), (38, 9747), (42, 9810), (43, 9831), (59, 9978), (65, 10026), (71, 10050), (90, 10227), (95, 10242), (117, 10359), (135, 10491), (136, 10494), (146, 10590), (154, 10635), (166, 10680), (169, 10704), (181, 10785), (184, 10806), (186, 10818), (203, 10929), (214, 10977), (236, 11109), (257, 11202), (263, 11256), (271, 11289), (280, 11334), (339, 11439), (347, 11541), (352, 11595), (353, 11598), (354, 11616), (355, 11619), (356, 11628), (386, 11928), (388, 11937), (389, 11955), (391, 11973), (418, 12147), (434, 12351), (437, 12375), (439, 12402), (453, 12540), (463, 12630), (470, 12702), (489, 12885), (504, 13047), (511, 13077), (528, 13203), (541, 13296), (546, 13323), (552, 13401), (556, 13428),

Gene: Ghobes_14 Start: 9172, Stop: 13494, Start Num: 5

Candidate Starts for Ghobes_14:

(Start: 5 @9172 has 4 MA's), (12, 9367), (Start: 16 @9430 has 11 MA's), (20, 9493), (23, 9619), (24, 9622), (33, 9682), (35, 9703), (38, 9745), (42, 9808), (43, 9829), (59, 9976), (65, 10024), (90, 10225), (95, 10240), (97, 10255), (117, 10357), (123, 10417), (135, 10489), (136, 10492), (146, 10588), (154, 10633), (166, 10678), (169, 10702), (181, 10783), (184, 10804), (186, 10816), (203, 10927), (214,

10975), (236, 11107), (257, 11200), (263, 11254), (271, 11287), (339, 11437), (347, 11539), (352, 11593), (353, 11596), (354, 11614), (355, 11617), (356, 11626), (386, 11926), (388, 11935), (389, 11953), (391, 11971), (418, 12145), (434, 12349), (437, 12373), (439, 12400), (453, 12538), (463, 12628), (470, 12700), (489, 12883), (504, 13045), (511, 13075), (528, 13201), (541, 13294), (550, 13381), (552, 13399), (556, 13426),

Gene: Goib_21 Start: 12184, Stop: 15645, Start Num: 16

Candidate Starts for Goib_21:

(Start: 16 @12184 has 11 MA's), (19, 12226), (21, 12259), (26, 12364), (27, 12367), (57, 12652), (68, 12703), (94, 12859), (96, 12871), (100, 12880), (110, 12934), (113, 12946), (122, 13027), (140, 13156), (142, 13165), (147, 13183), (160, 13243), (167, 13258), (171, 13306), (190, 13393), (192, 13417), (204, 13480), (210, 13516), (213, 13525), (215, 13534), (221, 13576), (233, 13633), (238, 13660), (247, 13690), (250, 13705), (253, 13723), (270, 13759), (275, 13783), (277, 13795), (287, 13819), (293, 13858), (309, 13912), (316, 13939), (323, 13993), (329, 13996), (334, 14035), (336, 14047), (342, 14110), (360, 14143), (361, 14152), (362, 14167), (363, 14185), (375, 14263), (379, 14290), (389, 14407), (390, 14410), (394, 14443), (396, 14452), (403, 14488), (408, 14536), (426, 14695), (437, 14830), (447, 14905), (458, 15007), (468, 15103), (470, 15112), (475, 15169), (482, 15244), (484, 15250), (486, 15265), (488, 15289), (501, 15406), (503, 15418), (509, 15445), (513, 15463), (526, 15565), (528, 15571), (536, 15625), (540, 15640),

Gene: Gsput1_18 Start: 10609, Stop: 14904, Start Num: 16

Candidate Starts for Gsput1_18:

(10, 10492), (Start: 16 @10609 has 11 MA's), (19, 10651), (22, 10717), (34, 10852), (35, 10867), (36, 10876), (38, 10909), (41, 10969), (50, 11077), (58, 11110), (75, 11194), (82, 11248), (85, 11281), (98, 11356), (106, 11386), (108, 11395), (113, 11422), (121, 11494), (125, 11518), (129, 11542), (144, 11653), (168, 11773), (176, 11824), (178, 11839), (179, 11845), (182, 11857), (194, 11935), (208, 12007), (221, 12091), (224, 12103), (230, 12136), (242, 12193), (243, 12196), (260, 12301), (270, 12340), (289, 12442), (293, 12469), (297, 12493), (304, 12520), (306, 12526), (311, 12559), (314, 12574), (316, 12580), (317, 12592), (325, 12640), (330, 12673), (358, 12817), (359, 12829), (360, 12838), (369, 12922), (383, 13069), (384, 13078), (389, 13111), (390, 13114), (394, 13147), (396, 13156), (402, 13189), (412, 13270), (415, 13285), (419, 13300), (427, 13438), (431, 13540), (432, 13543), (438, 13639), (441, 13669), (445, 13702), (468, 13951), (469, 13954), (470, 13960), (479, 14080), (480, 14092), (487, 14143), (493, 14191), (497, 14215), (499, 14275), (527, 14461), (537, 14530), (545, 14575), (551, 14659), (552, 14668), (553, 14680), (563, 14752), (567, 14899),

Gene: Huffy_22 Start: 12409, Stop: 15867, Start Num: 16

Candidate Starts for Huffy_22:

(Start: 16 @12409 has 11 MA's), (19, 12451), (21, 12484), (26, 12589), (27, 12592), (57, 12877), (68, 12928), (94, 13084), (96, 13096), (100, 13105), (113, 13171), (122, 13252), (140, 13381), (142, 13390), (147, 13408), (151, 13420), (160, 13468), (167, 13483), (171, 13531), (190, 13618), (192, 13642), (200, 13681), (204, 13705), (210, 13741), (213, 13750), (215, 13759), (219, 13792), (221, 13801), (233, 13858), (238, 13885), (247, 13915), (253, 13948), (270, 13984), (275, 14008), (277, 14020), (287, 14044), (309, 14137), (316, 14164), (319, 14197), (323, 14218), (334, 14260), (336, 14272), (342, 14335), (360, 14368), (361, 14377), (362, 14392), (363, 14410), (375, 14488), (379, 14515), (388, 14614), (389, 14632), (390, 14635), (394, 14668), (396, 14677), (403, 14713), (408, 14761), (426, 14920), (437, 15055), (447, 15130), (458, 15229), (468, 15325), (470, 15334), (472, 15361), (482, 15466), (484, 15472), (486, 15487), (488, 15511), (501, 15628), (503, 15640), (509, 15667), (514, 15712), (520, 15760), (526, 15787), (528, 15793), (536, 15847), (540, 15862),

Gene: Lederberg_15 Start: 9709, Stop: 15120, Start Num: 1

Candidate Starts for Lederberg_15:

(Start: 1 @9709 has 8 MA's), (3, 9724), (4, 9760), (15, 10039), (25, 10285), (30, 10306), (42, 10459), (45, 10489), (47, 10564), (49, 10576), (52, 10609), (61, 10669), (69, 10714), (76, 10756), (79, 10783),

(83, 10819), (84, 10852), (88, 10888), (105, 10963), (113, 11002), (126, 11125), (129, 11146), (132, 11167), (137, 11191), (140, 11257), (157, 11350), (158, 11353), (175, 11452), (186, 11521), (188, 11527), (193, 11566), (206, 11647), (235, 11812), (259, 11956), (294, 12145), (305, 12211), (324, 12328), (327, 12349), (331, 12370), (337, 12442), (348, 12556), (349, 12574), (357, 12652), (360, 12685), (367, 12763), (371, 12784), (389, 12988), (405, 13093), (411, 13171), (416, 13195), (420, 13225), (423, 13255), (431, 13462), (433, 13486), (437, 13531), (442, 13573), (451, 13672), (457, 13759), (463, 13819), (467, 13858), (471, 13912), (483, 14080), (492, 14146), (494, 14194), (498, 14212), (507, 14320), (512, 14344), (515, 14383), (517, 14410), (524, 14449), (529, 14470), (546, 14605), (547, 14623), (549, 14662), (559, 14731), (564, 14794), (565, 14815), (567, 14917), (568, 15013), (569, 15016),

Gene: SamW_15 Start: 9709, Stop: 15099, Start Num: 1

Candidate Starts for SamW_15:

(Start: 1 @9709 has 8 MA's), (3, 9724), (4, 9760), (15, 10039), (25, 10285), (30, 10306), (42, 10459), (45, 10489), (47, 10564), (49, 10576), (52, 10609), (61, 10669), (69, 10714), (76, 10756), (79, 10783), (83, 10819), (84, 10852), (88, 10888), (105, 10963), (113, 11002), (126, 11125), (129, 11146), (132, 11167), (137, 11191), (140, 11257), (157, 11350), (158, 11353), (175, 11452), (186, 11521), (188, 11527), (193, 11566), (206, 11647), (235, 11812), (259, 11956), (294, 12145), (305, 12211), (324, 12328), (327, 12349), (331, 12370), (337, 12442), (348, 12556), (349, 12574), (357, 12652), (360, 12685), (367, 12763), (371, 12784), (389, 12988), (405, 13093), (411, 13171), (416, 13195), (420, 13225), (423, 13255), (428, 13351), (431, 13462), (433, 13486), (437, 13531), (442, 13573), (451, 13672), (457, 13759), (463, 13819), (467, 13858), (471, 13912), (483, 14059), (492, 14125), (494, 14173), (498, 14191), (507, 14299), (512, 14323), (515, 14362), (517, 14389), (524, 14428), (529, 14449), (546, 14584), (547, 14602), (549, 14641), (559, 14710), (564, 14773), (565, 14794), (567, 14896), (568, 14992), (569, 14995),

Gene: Sapo_14 Start: 9155, Stop: 13762, Start Num: 5

Candidate Starts for Sapo_14:

(Start: 5 @9155 has 4 MA's), (12, 9350), (20, 9476), (24, 9605), (31, 9644), (36, 9695), (38, 9728), (40, 9770), (81, 10118), (108, 10283), (136, 10475), (146, 10571), (165, 10658), (212, 10952), (216, 10979), (220, 11006), (228, 11042), (245, 11126), (252, 11165), (256, 11174), (272, 11282), (296, 11417), (302, 11453), (315, 11519), (324, 11579), (340, 11684), (352, 11837), (354, 11858), (355, 11861), (356, 11870), (372, 12005), (379, 12077), (386, 12170), (388, 12179), (389, 12197), (391, 12215), (407, 12302), (418, 12389), (422, 12425), (437, 12617), (439, 12644), (464, 12902), (478, 13037), (480, 13073), (485, 13103), (489, 13148), (495, 13202), (530, 13475), (532, 13493), (552, 13664), (554, 13679), (556, 13691), (558, 13700), (562, 13742),

Gene: Schmidt_18 Start: 10553, Stop: 13858, Start Num: 16

Candidate Starts for Schmidt_18:

(14, 10511), (Start: 16 @10553 has 11 MA's), (19, 10595), (23, 10739), (28, 10763), (33, 10802), (34, 10808), (50, 11033), (58, 11066), (60, 11081), (75, 11150), (78, 11168), (82, 11204), (83, 11207), (85, 11237), (108, 11351), (113, 11378), (121, 11450), (125, 11474), (139, 11582), (144, 11609), (145, 11621), (156, 11675), (172, 11771), (176, 11780), (178, 11795), (179, 11801), (182, 11813), (188, 11846), (194, 11891), (196, 11906), (198, 11912), (202, 11948), (208, 11963), (211, 11987), (214, 11996), (221, 12038), (240, 12095), (246, 12107), (247, 12110), (270, 12164), (286, 12200), (292, 12236), (294, 12248), (298, 12260), (299, 12263), (332, 12362), (334, 12377), (360, 12506), (368, 12584), (378, 12671), (387, 12773), (389, 12794), (390, 12797), (392, 12824), (399, 12854), (408, 12893), (410, 12911), (435, 13175), (437, 13187), (456, 13331), (473, 13424), (490, 13520), (500, 13613), (502, 13631), (510, 13667), (513, 13682), (522, 13763), (523, 13766), (526, 13778), (528, 13784), (540, 13853),

Gene: Splinter_20 Start: 12184, Stop: 15645, Start Num: 16

Candidate Starts for Splinter_20:

(Start: 16 @12184 has 11 MA's), (19, 12226), (21, 12259), (26, 12364), (27, 12367), (57, 12652), (68, 12703), (94, 12859), (96, 12871), (100, 12880), (110, 12934), (113, 12946), (122, 13027), (140, 13156), (142, 13165), (147, 13183), (160, 13243), (167, 13258), (171, 13306), (190, 13393), (192, 13417), (204, 13480), (210, 13516), (213, 13525), (215, 13534), (221, 13576), (233, 13633), (238, 13660), (247, 13690), (250, 13705), (253, 13723), (270, 13759), (275, 13783), (277, 13795), (287, 13819), (293, 13858), (309, 13912), (316, 13939), (323, 13993), (329, 13996), (334, 14035), (336, 14047), (342, 14110), (360, 14143), (361, 14152), (362, 14167), (363, 14185), (375, 14263), (379, 14290), (389, 14407), (390, 14410), (394, 14443), (396, 14452), (403, 14488), (408, 14536), (426, 14695), (437, 14830), (447, 14905), (458, 15007), (468, 15103), (470, 15112), (475, 15169), (482, 15244), (484, 15250), (486, 15265), (488, 15289), (501, 15406), (503, 15418), (509, 15445), (513, 15463), (526, 15565), (528, 15571), (536, 15625), (540, 15640),

Gene: StAB_15 Start: 9715, Stop: 15126, Start Num: 1

Candidate Starts for StAB_15:

(Start: 1 @9715 has 8 MA's), (3, 9730), (4, 9766), (15, 10045), (25, 10291), (30, 10312), (42, 10465), (45, 10495), (47, 10570), (49, 10582), (52, 10615), (61, 10675), (69, 10720), (76, 10762), (79, 10789), (83, 10825), (84, 10858), (88, 10894), (105, 10969), (113, 11008), (126, 11131), (129, 11152), (132, 11173), (137, 11197), (140, 11263), (157, 11356), (158, 11359), (175, 11458), (186, 11527), (188, 11533), (193, 11572), (206, 11653), (235, 11818), (259, 11962), (294, 12151), (305, 12217), (318, 12298), (324, 12334), (327, 12355), (331, 12376), (337, 12448), (348, 12562), (349, 12580), (357, 12658), (360, 12691), (367, 12769), (371, 12790), (377, 12865), (389, 12994), (405, 13099), (411, 13177), (416, 13201), (420, 13231), (423, 13261), (431, 13468), (433, 13492), (437, 13537), (442, 13579), (451, 13678), (457, 13765), (463, 13825), (467, 13864), (471, 13918), (483, 14086), (492, 14152), (494, 14200), (498, 14218), (507, 14326), (512, 14350), (515, 14389), (517, 14416), (524, 14455), (529, 14476), (546, 14611), (549, 14668), (559, 14737), (564, 14800), (565, 14821), (567, 14923), (568, 15019), (569, 15022),

Gene: Stiles_15 Start: 9709, Stop: 14904, Start Num: 1

Candidate Starts for Stiles_15:

(Start: 1 @9709 has 8 MA's), (3, 9724), (4, 9760), (15, 10039), (25, 10285), (29, 10297), (30, 10306), (42, 10459), (45, 10489), (47, 10564), (49, 10576), (52, 10609), (61, 10669), (69, 10714), (76, 10756), (79, 10783), (83, 10819), (84, 10852), (88, 10888), (105, 10963), (113, 11002), (126, 11125), (129, 11146), (132, 11167), (134, 11179), (137, 11191), (148, 11287), (158, 11353), (175, 11452), (186, 11521), (188, 11527), (193, 11566), (217, 11710), (264, 11929), (268, 11938), (274, 11971), (303, 12106), (337, 12283), (343, 12316), (344, 12325), (348, 12358), (355, 12418), (357, 12436), (360, 12469), (367, 12547), (371, 12568), (389, 12772), (405, 12877), (411, 12955), (416, 12979), (420, 13009), (423, 13039), (428, 13135), (431, 13246), (433, 13270), (437, 13315), (442, 13357), (451, 13456), (457, 13543), (463, 13603), (467, 13642), (471, 13696), (483, 13864), (492, 13930), (494, 13978), (498, 13996), (507, 14104), (512, 14128), (515, 14167), (517, 14194), (524, 14233), (529, 14254), (546, 14389), (549, 14446), (559, 14515), (564, 14578), (565, 14599), (567, 14701), (568, 14797), (569, 14800),

Gene: TZGordon_22 Start: 12326, Stop: 15784, Start Num: 16

Candidate Starts for TZGordon_22:

(Start: 16 @12326 has 11 MA's), (19, 12368), (21, 12401), (26, 12506), (27, 12509), (57, 12794), (68, 12845), (94, 13001), (96, 13013), (100, 13022), (113, 13088), (122, 13169), (140, 13298), (142, 13307), (147, 13325), (151, 13337), (160, 13385), (167, 13400), (171, 13448), (190, 13535), (192, 13559), (200, 13598), (204, 13622), (210, 13658), (213, 13667), (215, 13676), (219, 13709), (221, 13718), (233, 13775), (238, 13802), (247, 13832), (253, 13865), (270, 13901), (275, 13925), (277, 13937), (287, 13961), (309, 14054), (316, 14081), (319, 14114), (323, 14135), (334, 14177), (336, 14189), (342, 14252), (360, 14285), (361, 14294), (362, 14309), (363, 14327), (375, 14405), (379, 14432), (388, 14531), (389, 14549), (390, 14552), (394, 14585), (396, 14594), (403, 14630), (408, 14678), (426, 14837), (437, 14972), (447, 15047), (458, 15146), (468, 15242), (470, 15251), (482,

15383), (484, 15389), (486, 15404), (488, 15428), (501, 15545), (503, 15557), (509, 15584), (514, 15629), (520, 15677), (526, 15704), (528, 15710), (536, 15764), (540, 15779),

Gene: TinaLin_23 Start: 12891, Stop: 16616, Start Num: 16

Candidate Starts for TinaLin_23:

(Start: 16 @12891 has 11 MA's), (19, 12933), (22, 12999), (34, 13134), (39, 13212), (50, 13359), (75, 13476), (82, 13530), (85, 13563), (108, 13677), (124, 13794), (125, 13800), (129, 13824), (139, 13908), (144, 13935), (146, 13950), (153, 13989), (163, 14022), (172, 14097), (176, 14106), (178, 14121), (179, 14127), (188, 14172), (194, 14217), (197, 14235), (208, 14289), (211, 14313), (221, 14373), (223, 14382), (227, 14400), (230, 14418), (240, 14469), (247, 14493), (257, 14544), (262, 14595), (267, 14616), (270, 14622), (281, 14673), (282, 14679), (292, 14742), (308, 14826), (321, 14916), (334, 14994), (374, 15234), (381, 15309), (382, 15354), (387, 15381), (388, 15384), (394, 15438), (408, 15492), (410, 15510), (437, 15786), (447, 15861), (450, 15891), (468, 16062), (470, 16071), (482, 16215), (486, 16236), (488, 16260), (501, 16377), (503, 16389), (509, 16416), (513, 16434), (520, 16509), (526, 16536), (528, 16542), (536, 16596), (540, 16611),

Gene: Troy_15 Start: 9709, Stop: 15099, Start Num: 1

Candidate Starts for Troy_15:

(Start: 1 @9709 has 8 MA's), (3, 9724), (4, 9760), (15, 10039), (25, 10285), (30, 10306), (42, 10459), (45, 10489), (47, 10564), (49, 10576), (52, 10609), (61, 10669), (69, 10714), (76, 10756), (79, 10783), (83, 10819), (84, 10852), (88, 10888), (105, 10963), (113, 11002), (126, 11125), (129, 11146), (132, 11167), (137, 11191), (140, 11257), (157, 11350), (158, 11353), (175, 11452), (186, 11521), (188, 11527), (193, 11566), (206, 11647), (235, 11812), (259, 11956), (294, 12145), (305, 12211), (324, 12328), (327, 12349), (331, 12370), (337, 12442), (348, 12556), (349, 12574), (357, 12652), (360, 12685), (367, 12763), (371, 12784), (389, 12988), (405, 13093), (411, 13171), (416, 13195), (420, 13225), (423, 13255), (428, 13351), (431, 13462), (433, 13486), (437, 13531), (442, 13573), (451, 13672), (457, 13759), (463, 13819), (467, 13858), (471, 13912), (483, 14059), (492, 14125), (494, 14173), (498, 14191), (507, 14299), (512, 14323), (515, 14362), (517, 14389), (524, 14428), (529, 14449), (546, 14584), (547, 14602), (549, 14641), (559, 14710), (564, 14773), (565, 14794), (567, 14896), (568, 14992), (569, 14995),

Gene: Vendetta_20 Start: 12184, Stop: 15645, Start Num: 16

Candidate Starts for Vendetta_20:

(Start: 16 @12184 has 11 MA's), (19, 12226), (21, 12259), (26, 12364), (27, 12367), (57, 12652), (68, 12703), (94, 12859), (96, 12871), (100, 12880), (110, 12934), (113, 12946), (122, 13027), (140, 13156), (142, 13165), (147, 13183), (160, 13243), (167, 13258), (171, 13306), (190, 13393), (192, 13417), (204, 13480), (210, 13516), (213, 13525), (215, 13534), (221, 13576), (233, 13633), (238, 13660), (247, 13690), (250, 13705), (253, 13723), (270, 13759), (275, 13783), (277, 13795), (287, 13819), (293, 13858), (309, 13912), (316, 13939), (323, 13993), (329, 13996), (334, 14035), (336, 14047), (342, 14110), (360, 14143), (361, 14152), (362, 14167), (363, 14185), (375, 14263), (379, 14290), (389, 14407), (390, 14410), (394, 14443), (396, 14452), (403, 14488), (408, 14536), (426, 14695), (437, 14830), (447, 14905), (458, 15007), (468, 15103), (470, 15112), (475, 15169), (482, 15244), (484, 15250), (486, 15265), (488, 15289), (501, 15406), (503, 15418), (509, 15445), (513, 15463), (526, 15565), (528, 15571), (536, 15625), (540, 15640),