

Pham 283865

1: Phiel_21	8	14	17	20	24	40	48	57	62	73	85	96	102	106	114	123	129	136	140	148	165	187	196	204	214	218	222	232	238	245				
2: EagleEye_28	10	11	21	27	36	48	51	62	73	85	96	102	106	114	123	129	136	140	148	165	187	196	204	214	218	222	232	238	246					
3: Lucyed_27	10	11	21	27	36	48	51	62	73	85	96	102	106	114	123	129	136	140	148	165	187	196	204	214	218	222	232	238	246					
4: PainterBoy_27					36	48	57	62	73	85	96	102	106	114	123	129	136	140	148	165	187	196	204	214	218	222	232	238	246					
5: Superchunk_25					36	48	57	62	73	85	96	102	106	114	123	129	136	140	148	165	187	196	204	214	218	222	232	238	246					
6: Caraxes_25					36	48	57	62	73	85	96	102	106	114	123	129	136	140	148	165	187	196	204	214	218	222	232	238	246					
7: Odin_25	9	11	21	23	24	34	43	53	60	74	86	99	102	106	114	124	139	145	154	162	178	180	184	195	199	211	216	222	240	243	250			
8: FatCactus_24	9	11	21	23	24	34	43	53	60	74	86	99	102	106	114	124	139	145	154	162	178	180	184	195	199	211	216	222	240	243	250			
9: Anthony_25			24				51	57	69	73	84	96	102	106	114	122	126	137	144	151	166	173	178	191	196	200	204	212	216	226	236	244	250	
10: ForGetIt_22 + 10			24				51	57	69	73	84	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
11: Theia_20 + 2			24				51	57	69	73	84	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
12: Tarynearl_21 + 3			24				51	57	69	73	86	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
13: Midas2_22 + 2			24				51	57	69	73	84	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
14: Milcery_22			24				51	57	69	73	79	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
15: Florence4_23 + 1			24				51	57	69	73	84	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
16: Micasa_22			24				51	57	69	73	84	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
17: George_21			24				51	57	69	73	84	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
18: Tiger_22	6	12	15	24		36	51	57	69	73	84	96	102	106	114	122	126	137	144	151	166	173	178	191	196	200	204	212	216	226	236	244	250	
19: Ghoulboy_22 + 2			24				51	57	69	73	84	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
20: Prinasha11_23			24				51	57	69	73	84	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
21: HuhtaEnerson_5_22	13	15	22	24		36	51	55	61	69	73	86	96	102	106	114	122	139	145	155	164	173	178	182	186	200	204	212	216	226	231	240	250	
22: Naca_22			24				51	57	69	73	84	96	102	106	114	122	128	132	139	145	155	166	170	178	190	196	200	204	212	216	226	236	244	250
23: Swirley_22			26		36		51	61	76	86	96	102	106	114	123	123	124	144	160	164	174	182	182	186	196	204	218	222	226	234	242	245	250	
24: Astro_22_13			26		36		51	61	76	86	96	102	106	114	123	123	124	144	160	164	174	182	182	186	196	204	218	222	226	234	242	245	250	
25: Roary_22			26		36		51	61	76	86	96	102	106	114	123	123	124	144	160	164	174	182	182	186	196	204	218	222	226	234	241	245	250	
26: Dixon_22			26		36		51	61	76	86	96	102	106	114	123	123	124	144	160	164	174	182	182	186	196	204	218	222	226	234	241	245	250	
27: Danforth_21_12			26		36		51	61	76	81	84	96	102	109	123	123	137	144	160	164	174	182	182	186	196	204	218	222	226	234	241	245	250	
28: NearlyHeadless_21			26		36		51	61	76	86	96	102	109	123	123	124	144	160	164	174	182	182	186	196	204	218	222	226	234	241	245	250		
29: Saintus_22			26		36		51	61	76	84	96	102	109	123	123	124	144	160	164	174	182	182	186	196	204	218	222	226	234	241	245	250		
30: Phillis_22			26		36		51	61	76	84	96	102	109	123	123	124	144	160	164	174	182	182	186	196	204	218	222	226	234	241	245	250		

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 283865 Report

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

Pham number 283865 has 55 members, 8 are drafts.

Phages represented in each track:

- Track 1 : Phlei_21
- Track 2 : EagleEye_28
- Track 3 : Lucyedi_27
- Track 4 : PainterBoy_27
- Track 5 : Superchunk_25
- Track 6 : Caraxes_25
- Track 7 : Odin_25
- Track 8 : FatCactus_24
- Track 9 : Anthony_25
- Track 10 : ForGetIt_22, Bluefalcon_21, Aragog_22, AgentM_22, Archetta_22, Phlorence_22, Jovo_22, Conspiracy_22, PickleBack_22, Discoknowium_22, Lev2_22
- Track 11 : Theia_20, Dublin_21, MarysWell_21
- Track 12 : Tarynearal_21, Bonamassa_22, Twigg_22, LittleCherry_22
- Track 13 : Midas2_22, Cuco_22, Coog_22
- Track 14 : Milcery_22
- Track 15 : Florence4_23, Florence1_22
- Track 16 : Micasa_22
- Track 17 : George_21
- Track 18 : Tiger_22
- Track 19 : Ghoulboy_22, SydNat_22, Zolita_21
- Track 20 : Prinashe11_23
- Track 21 : HuhtaEnerson15_22
- Track 22 : Naca_22
- Track 23 : Swirley_22
- Track 24 : Astro_22, Smeadley_22, Expelliarmus_21, Caitlin_21
- Track 25 : Roary_22
- Track 26 : Dixon_22
- Track 27 : Danforth_21, Stephig9_22, Groundhog_21
- Track 28 : NearlyHeadless_22
- Track 29 : Saintus_22
- Track 30 : Phillis_22

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 30 of the 47 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AgentM_22, Aragog_22, Archetta_22, Bluefalcon_21, Bonamassa_22, Conspiracy_22, Coog_22, Cuco_22, Discoknowium_22, Dublin_21, Florence1_22, Florence4_23, ForGetIt_22, George_21, Ghoulboy_22, HuhtaEnerson15_22, Jovo_22, Lev2_22, LittleCherry_22, MarysWell_21, Micasa_22, Midas2_22, Milcery_22, Naca_22, Phlorence_22, PickleBack_22, Prinashe11_23, Swirley_22, SydNat_22, Tarynearal_21, Theia_20, Tiger_22, Twigg_22, Zolita_21,

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

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

- Anthony_25, Astro_22, Caitlin_21, Caraxes_25, Danforth_21, Dixon_22, EagleEye_28, Expelliarmus_21, FatCactus_24, Groundhog_21, Lucyedi_27, NearlyHeadless_22, Odin_25, PainterBoy_27, Phillis_22, Phlei_21, Roary_22, Saintus_22, Smeadley_22, Stephig9_22, Superchunk_25,

Summary by start number:

Start 1:

- Found in 34 of 55 (61.8%) of genes in pham
- Manual Annotations of this start: 30 of 47
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AgentM_22 (A5), Aragog_22 (A5), Archetta_22 (A5), Bluefalcon_21 (A5), Bonamassa_22 (A5), Conspiracy_22 (A5), Coog_22 (A5), Cuco_22 (A5), Discoknowium_22 (A5), Dublin_21 (A5), Florence1_22 (A5), Florence4_23 (A5), ForGetIt_22 (A5), George_21 (A5), Ghoulboy_22 (A5), HuhtaEnerson15_22 (A5), Jovo_22 (A5), Lev2_22 (A5), LittleCherry_22 (A5), MarysWell_21 (A5), Micasa_22 (A5), Midas2_22 (A5), Milcery_22 (A5), Naca_22 (A5), Phlorence_22 (A5), PickleBack_22 (A5), Prinashe11_23 (A5), Swirley_22 (A5), SydNat_22 (A5), Tarynearal_21 (A5), Theia_20 (A5), Tiger_22 (A5), Twigg_22 (A5), Zolita_21 (A5),

Start 2:

- Found in 3 of 55 (5.5%) of genes in pham
- Manual Annotations of this start: 3 of 47
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EagleEye_28 (A16), Lucyedi_27 (A16), PainterBoy_27 (A16),

Start 3:

- Found in 1 of 55 (1.8%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Phlei_21 (A13),

Start 4:

- Found in 12 of 55 (21.8%) of genes in pham
- Manual Annotations of this start: 11 of 47
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Astro_22 (A8), Caitlin_21 (A8), Danforth_21 (A8), Dixon_22 (A8), Expelliarmus_21 (A8), Groundhog_21 (A8), NearlyHeadless_22 (A8), Phillis_22 (A8), Roary_22 (A8), Saintus_22 (A8), Smeadley_22 (A8), Stepbig9_22 (A8),

Start 9:

- Found in 2 of 55 (3.6%) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: FatCactus_24 (A20),

Start 11:

- Found in 2 of 55 (3.6%) of genes in pham
- Manual Annotations of this start: 1 of 47
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Anthony_25 (A20),

Start 46:

- Found in 1 of 55 (1.8%) of genes in pham
- Manual Annotations of this start: 1 of 47
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Odin_25 (A2),

Start 47:

- Found in 2 of 55 (3.6%) of genes in pham
- Manual Annotations of this start: 1 of 47
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Superchunk_25 (A2),

Start 50:

- Found in 3 of 55 (5.5%) of genes in pham
- No Manual Annotations of this start.
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Caraxes_25 (A2),

Summary by clusters:

There are 6 clusters represented in this pham: A20, A16, A13, A2, A5, A8,

Info for manual annotations of cluster A16:

- Start number 2 was manually annotated 3 times for cluster A16.

Info for manual annotations of cluster A2:

- Start number 46 was manually annotated 1 time for cluster A2.
- Start number 47 was manually annotated 1 time for cluster A2.

Info for manual annotations of cluster A20:

- Start number 11 was manually annotated 1 time for cluster A20.

Info for manual annotations of cluster A5:

- Start number 1 was manually annotated 30 times for cluster A5.

Info for manual annotations of cluster A8:

- Start number 4 was manually annotated 11 times for cluster A8.

Gene Information:

Gene: AgentM_22 Start: 15319, Stop: 18660, Start Num: 1

Candidate Starts for AgentM_22:

(Start: 1 @15319 has 30 MA's), (24, 15757), (51, 16069), (56, 16147), (57, 16177), (59, 16234), (73, 16381), (75, 16387), (76, 16393), (85, 16519), (87, 16531), (102, 16681), (105, 16717), (109, 16747), (112, 16762), (114, 16792), (115, 16804), (119, 16828), (122, 16897), (126, 16963), (137, 17119), (144, 17188), (145, 17191), (147, 17218), (151, 17242), (163, 17380), (166, 17401), (173, 17446), (178, 17488), (191, 17680), (194, 17710), (196, 17734), (197, 17746), (198, 17767), (200, 17809), (204, 17896), (207, 17932), (209, 17953), (212, 17974), (217, 18052), (218, 18073), (220, 18094), (221, 18115), (222, 18136), (223, 18160), (226, 18223), (231, 18316), (233, 18334), (237, 18415), (239, 18427), (240, 18439), (242, 18448), (244, 18502), (249, 18586), (250, 18595),

Gene: Anthony_25 Start: 14775, Stop: 17657, Start Num: 11

Candidate Starts for Anthony_25:

(9, 14736), (Start: 11 @14775 has 1 MA's), (21, 14934), (22, 14946), (23, 14979), (28, 15024), (30, 15045), (32, 15063), (33, 15072), (34, 15117), (42, 15165), (53, 15288), (60, 15381), (67, 15438), (70, 15468), (79, 15525), (87, 15603), (88, 15612), (90, 15630), (92, 15654), (96, 15684), (102, 15753), (109, 15819), (110, 15822), (113, 15843), (124, 15993), (139, 16209), (145, 16257), (156, 16338), (157, 16341), (171, 16503), (173, 16515), (180, 16596), (184, 16638), (190, 16728), (195, 16776), (197, 16809), (211, 16998), (213, 17010), (214, 17019), (216, 17082), (219, 17121), (220, 17127), (222, 17169), (227, 17247), (238, 17436), (240, 17454), (241, 17457), (243, 17502), (250, 17586), (253, 17634),

Gene: Aragog_22 Start: 15349, Stop: 18690, Start Num: 1

Candidate Starts for Aragog_22:

(Start: 1 @15349 has 30 MA's), (24, 15787), (51, 16099), (56, 16177), (57, 16207), (59, 16264), (73, 16411), (75, 16417), (76, 16423), (85, 16549), (87, 16561), (102, 16711), (105, 16747), (109, 16777), (112, 16792), (114, 16822), (115, 16834), (119, 16858), (122, 16927), (126, 16993), (137, 17149), (144, 17218), (145, 17221), (147, 17248), (151, 17272), (163, 17410), (166, 17431), (173, 17476), (178, 17518), (191, 17710), (194, 17740), (196, 17764), (197, 17776), (198, 17797), (200, 17839), (204, 17926), (207, 17962), (209, 17983), (212, 18004), (217, 18082), (218, 18103), (220, 18124), (221, 18145), (222, 18166), (223, 18190), (226, 18253), (231, 18346), (233, 18364), (237, 18445), (239, 18457), (240, 18469), (242, 18478), (244, 18532), (249, 18616), (250, 18625),

Gene: Archetta_22 Start: 15062, Stop: 18403, Start Num: 1

Candidate Starts for Archetta_22:

(Start: 1 @15062 has 30 MA's), (24, 15500), (51, 15812), (56, 15890), (57, 15920), (59, 15977), (73, 16124), (75, 16130), (76, 16136), (85, 16262), (87, 16274), (102, 16424), (105, 16460), (109, 16490), (112, 16505), (114, 16535), (115, 16547), (119, 16571), (122, 16640), (126, 16706), (137, 16862), (144, 16931), (145, 16934), (147, 16961), (151, 16985), (163, 17123), (166, 17144), (173, 17189), (178, 17231), (191, 17423), (194, 17453), (196, 17477), (197, 17489), (198, 17510), (200, 17552), (204, 17639), (207, 17675), (209, 17696), (212, 17717), (217, 17795), (218, 17816), (220, 17837), (221, 17858), (222, 17879), (223, 17903), (226, 17966), (231, 18059), (233, 18077), (237, 18158), (239, 18170), (240, 18182), (242, 18191), (244, 18245), (249, 18329), (250, 18338),

Gene: Astro_22 Start: 14549, Stop: 17626, Start Num: 4

Candidate Starts for Astro_22:

(Start: 4 @14549 has 11 MA's), (7, 14633), (16, 14801), (17, 14825), (18, 14873), (26, 14993), (36, 15065), (49, 15215), (51, 15218), (52, 15224), (76, 15410), (84, 15470), (85, 15476), (93, 15542), (96, 15569), (98, 15584), (101, 15635), (102, 15638), (104, 15671), (109, 15704), (123, 15872), (134, 16055), (137, 16079), (141, 16127), (144, 16148), (145, 16151), (160, 16295), (164, 16352), (169, 16382), (174, 16421), (180, 16493), (182, 16523), (189, 16622), (192, 16652), (196, 16697), (207, 16895), (209, 16916), (211, 16928), (218, 17036), (222, 17099), (223, 17123), (225, 17153), (226, 17186), (229, 17219), (231, 17279), (234, 17306), (241, 17405), (242, 17411), (245, 17501), (247, 17522), (251, 17561), (253, 17609),

Gene: Bluefalcon_21 Start: 15319, Stop: 18660, Start Num: 1

Candidate Starts for Bluefalcon_21:

(Start: 1 @15319 has 30 MA's), (24, 15757), (51, 16069), (56, 16147), (57, 16177), (59, 16234), (73, 16381), (75, 16387), (76, 16393), (85, 16519), (87, 16531), (102, 16681), (105, 16717), (109, 16747), (112, 16762), (114, 16792), (115, 16804), (119, 16828), (122, 16897), (126, 16963), (137, 17119), (144, 17188), (145, 17191), (147, 17218), (151, 17242), (163, 17380), (166, 17401), (173, 17446), (178, 17488), (191, 17680), (194, 17710), (196, 17734), (197, 17746), (198, 17767), (200, 17809), (204, 17896), (207, 17932), (209, 17953), (212, 17974), (217, 18052), (218, 18073), (220, 18094), (221, 18115), (222, 18136), (223, 18160), (226, 18223), (231, 18316), (233, 18334), (237, 18415), (239, 18427), (240, 18439), (242, 18448), (244, 18502), (249, 18586), (250, 18595),

Gene: Bonamassa_22 Start: 15244, Stop: 18582, Start Num: 1

Candidate Starts for Bonamassa_22:

(Start: 1 @15244 has 30 MA's), (24, 15682), (51, 15994), (56, 16072), (57, 16102), (59, 16159), (69, 16243), (73, 16306), (75, 16312), (84, 16432), (94, 16522), (95, 16525), (102, 16600), (106, 16645), (109, 16663), (114, 16708), (117, 16729), (128, 16921), (139, 17059), (145, 17107), (155, 17185), (164, 17311), (166, 17323), (170, 17347), (178, 17410), (191, 17602), (194, 17632), (196, 17656), (197, 17668), (200, 17731), (207, 17854), (209, 17875), (212, 17896), (217, 17974), (218, 17995), (221, 18037), (222, 18058), (226, 18145), (228, 18175), (231, 18238), (233, 18256), (237, 18337), (239, 18349), (240, 18361), (242, 18370), (244, 18424), (249, 18508), (252, 18547),

Gene: Caitlin_21 Start: 14546, Stop: 17623, Start Num: 4

Candidate Starts for Caitlin_21:

(Start: 4 @14546 has 11 MA's), (7, 14630), (16, 14798), (17, 14822), (18, 14870), (26, 14990), (36, 15062), (49, 15212), (51, 15215), (52, 15221), (76, 15407), (84, 15467), (85, 15473), (93, 15539), (96, 15566), (98, 15581), (101, 15632), (102, 15635), (104, 15668), (109, 15701), (123, 15869), (134, 16052), (137, 16076), (141, 16124), (144, 16145), (145, 16148), (160, 16292), (164, 16349), (169, 16379), (174, 16418), (180, 16490), (182, 16520), (189, 16619), (192, 16649), (196, 16694), (207, 16892), (209, 16913), (211, 16925), (218, 17033), (222, 17096), (223, 17120), (225, 17150), (226, 17183), (229, 17216), (231, 17276), (234, 17303), (241, 17402), (242, 17408), (245, 17498), (247, 17519), (251, 17558), (253, 17606),

Gene: Caraxes_25 Start: 15288, Stop: 17795, Start Num: 50

Candidate Starts for Caraxes_25:

(Start: 47 @15270 has 1 MA's), (50, 15288), (58, 15393), (64, 15459), (65, 15462), (66, 15465), (77, 15585), (83, 15666), (89, 15711), (97, 15786), (99, 15828), (104, 15882), (107, 15903), (113, 15936), (114, 15957), (117, 15978), (118, 15981), (127, 16167), (130, 16194), (131, 16209), (135, 16263), (137, 16284), (143, 16350), (168, 16575), (172, 16590), (175, 16617), (176, 16620), (181, 16695), (183, 16719), (184, 16722), (186, 16740), (188, 16803), (189, 16806), (193, 16845), (195, 16857), (199, 16944), (200, 16956), (202, 17016), (203, 17019), (205, 17043), (206, 17073), (210, 17106), (220, 17247), (223, 17313), (226, 17376), (238, 17574), (241, 17595), (245, 17670), (248, 17706), (254, 17781),

Gene: Conspiracy_22 Start: 15069, Stop: 18410, Start Num: 1

Candidate Starts for Conspiracy_22:

(Start: 1 @15069 has 30 MA's), (24, 15507), (51, 15819), (56, 15897), (57, 15927), (59, 15984), (73, 16131), (75, 16137), (76, 16143), (85, 16269), (87, 16281), (102, 16431), (105, 16467), (109, 16497), (112, 16512), (114, 16542), (115, 16554), (119, 16578), (122, 16647), (126, 16713), (137, 16869), (144, 16938), (145, 16941), (147, 16968), (151, 16992), (163, 17130), (166, 17151), (173, 17196), (178, 17238), (191, 17430), (194, 17460), (196, 17484), (197, 17496), (198, 17517), (200, 17559), (204, 17646), (207, 17682), (209, 17703), (212, 17724), (217, 17802), (218, 17823), (220, 17844), (221, 17865), (222, 17886), (223, 17910), (226, 17973), (231, 18066), (233, 18084), (237, 18165), (239, 18177), (240, 18189), (242, 18198), (244, 18252), (249, 18336), (250, 18345),

Gene: Coog_22 Start: 15213, Stop: 18551, Start Num: 1

Candidate Starts for Coog_22:

(Start: 1 @15213 has 30 MA's), (24, 15651), (51, 15963), (56, 16041), (57, 16071), (59, 16128), (73, 16275), (75, 16281), (84, 16401), (86, 16410), (94, 16491), (95, 16494), (102, 16569), (106, 16614), (109, 16632), (114, 16677), (117, 16698), (128, 16890), (139, 17028), (145, 17076), (155, 17154), (164, 17280), (166, 17292), (170, 17316), (178, 17379), (191, 17571), (194, 17601), (196, 17625), (197, 17637), (200, 17700), (207, 17823), (209, 17844), (212, 17865), (217, 17943), (218, 17964), (221, 18006), (222, 18027), (226, 18114), (228, 18144), (231, 18207), (233, 18225), (237, 18306), (239, 18318), (240, 18330), (242, 18339), (244, 18393), (249, 18477), (252, 18516),

Gene: Cuco_22 Start: 15243, Stop: 18581, Start Num: 1

Candidate Starts for Cuco_22:

(Start: 1 @15243 has 30 MA's), (24, 15681), (51, 15993), (56, 16071), (57, 16101), (59, 16158), (73, 16305), (75, 16311), (84, 16431), (86, 16440), (94, 16521), (95, 16524), (102, 16599), (106, 16644), (109, 16662), (114, 16707), (117, 16728), (128, 16920), (139, 17058), (145, 17106), (155, 17184), (164, 17310), (166, 17322), (170, 17346), (178, 17409), (191, 17601), (194, 17631), (196, 17655), (197, 17667), (200, 17730), (207, 17853), (209, 17874), (212, 17895), (217, 17973), (218, 17994), (221, 18036), (222, 18057), (226, 18144), (228, 18174), (231, 18237), (233, 18255), (237, 18336), (239, 18348), (240, 18360), (242, 18369), (244, 18423), (249, 18507), (252, 18546),

Gene: Danforth_21 Start: 14528, Stop: 17605, Start Num: 4

Candidate Starts for Danforth_21:

(Start: 4 @14528 has 11 MA's), (7, 14612), (16, 14780), (17, 14804), (18, 14852), (26, 14972), (36, 15044), (49, 15194), (51, 15197), (52, 15203), (76, 15389), (84, 15449), (85, 15455), (93, 15521), (96, 15548), (98, 15563), (101, 15614), (102, 15617), (104, 15650), (109, 15683), (123, 15851), (134, 16034), (137, 16058), (141, 16106), (144, 16127), (145, 16130), (160, 16274), (164, 16331), (169, 16361), (174, 16400), (180, 16472), (182, 16502), (189, 16601), (192, 16631), (196, 16676), (198, 16709), (207, 16874), (209, 16895), (211, 16907), (215, 16988), (218, 17015), (222, 17078), (223, 17102), (225, 17132), (226, 17165), (229, 17198), (231, 17258), (234, 17285), (241, 17384), (242, 17390), (245, 17480), (247, 17501), (251, 17540), (253, 17588),

Gene: Discoknowium_22 Start: 15358, Stop: 18699, Start Num: 1

Candidate Starts for Discoknowium_22:

(Start: 1 @15358 has 30 MA's), (24, 15796), (51, 16108), (56, 16186), (57, 16216), (59, 16273), (73, 16420), (75, 16426), (76, 16432), (85, 16558), (87, 16570), (102, 16720), (105, 16756), (109, 16786), (112, 16801), (114, 16831), (115, 16843), (119, 16867), (122, 16936), (126, 17002), (137, 17158), (144, 17227), (145, 17230), (147, 17257), (151, 17281), (163, 17419), (166, 17440), (173, 17485), (178, 17527), (191, 17719), (194, 17749), (196, 17773), (197, 17785), (198, 17806), (200, 17848), (204, 17935), (207, 17971), (209, 17992), (212, 18013), (217, 18091), (218, 18112), (220, 18133), (221, 18154), (222, 18175), (223, 18199), (226, 18262), (231, 18355), (233, 18373), (237, 18454), (239, 18466), (240, 18478), (242, 18487), (244, 18541), (249, 18625), (250, 18634),

Gene: Dixon_22 Start: 14547, Stop: 17624, Start Num: 4

Candidate Starts for Dixon_22:

(Start: 4 @14547 has 11 MA's), (7, 14631), (16, 14799), (17, 14823), (18, 14871), (26, 14991), (36, 15063), (49, 15213), (51, 15216), (52, 15222), (76, 15408), (84, 15468), (85, 15474), (93, 15540), (96, 15567), (98, 15582), (101, 15633), (102, 15636), (104, 15669), (109, 15702), (123, 15870), (134, 16053), (137, 16077), (141, 16125), (144, 16146), (145, 16149), (160, 16293), (164, 16350), (169, 16380), (174, 16419), (180, 16491), (182, 16521), (189, 16620), (192, 16650), (196, 16695), (198, 16728), (207, 16893), (209, 16914), (211, 16926), (215, 17007), (218, 17034), (221, 17076), (222, 17097), (223, 17121), (225, 17151), (226, 17184), (229, 17217), (231, 17277), (234, 17304), (241, 17403), (245, 17499), (247, 17520), (251, 17559), (253, 17607),

Gene: Dublin_21 Start: 15212, Stop: 18550, Start Num: 1

Candidate Starts for Dublin_21:

(Start: 1 @15212 has 30 MA's), (24, 15650), (51, 15962), (54, 16004), (56, 16040), (57, 16070), (59, 16127), (69, 16211), (73, 16274), (75, 16280), (82, 16382), (84, 16400), (95, 16493), (102, 16568), (106, 16613), (109, 16631), (114, 16676), (117, 16697), (128, 16889), (132, 16949), (139, 17027), (145, 17075), (155, 17153), (164, 17279), (166, 17291), (170, 17315), (178, 17378), (191, 17570), (194, 17600), (196, 17624), (197, 17636), (200, 17699), (207, 17822), (209, 17843), (212, 17864), (217, 17942), (218, 17963), (221, 18005), (222, 18026), (224, 18062), (226, 18113), (228, 18143), (231, 18206), (233, 18224), (237, 18305), (239, 18317), (240, 18329), (242, 18338), (244, 18392), (249, 18476), (252, 18515),

Gene: EagleEye_28 Start: 16836, Stop: 19898, Start Num: 2

Candidate Starts for EagleEye_28:

(Start: 2 @16836 has 3 MA's), (10, 17010), (17, 17127), (27, 17304), (44, 17460), (45, 17466), (57, 17568), (62, 17664), (73, 17772), (75, 17778), (85, 17892), (93, 17958), (96, 17985), (102, 18054), (104, 18087), (105, 18090), (115, 18177), (116, 18180), (121, 18258), (125, 18318), (128, 18378), (150, 18612), (155, 18642), (156, 18645), (158, 18669), (167, 18798), (184, 18975), (185, 18987), (207, 19182), (209, 19203), (215, 19296), (218, 19323), (220, 19344), (221, 19365), (235, 19605), (236, 19623), (238, 19680), (246, 19791),

Gene: Expelliarmus_21 Start: 14514, Stop: 17591, Start Num: 4

Candidate Starts for Expelliarmus_21:

(Start: 4 @14514 has 11 MA's), (7, 14598), (16, 14766), (17, 14790), (18, 14838), (26, 14958), (36, 15030), (49, 15180), (51, 15183), (52, 15189), (76, 15375), (84, 15435), (85, 15441), (93, 15507), (96, 15534), (98, 15549), (101, 15600), (102, 15603), (104, 15636), (109, 15669), (123, 15837), (134, 16020), (137, 16044), (141, 16092), (144, 16113), (145, 16116), (160, 16260), (164, 16317), (169, 16347), (174, 16386), (180, 16458), (182, 16488), (189, 16587), (192, 16617), (196, 16662), (207, 16860), (209, 16881), (211, 16893), (218, 17001), (222, 17064), (223, 17088), (225, 17118), (226, 17151), (229, 17184), (231, 17244), (234, 17271), (241, 17370), (242, 17376), (245, 17466), (247, 17487), (251, 17526), (253, 17574),

Gene: FatCactus_24 Start: 14668, Stop: 17589, Start Num: 9

Candidate Starts for FatCactus_24:

(9, 14668), (Start: 11 @14707 has 1 MA's), (21, 14866), (23, 14911), (28, 14956), (30, 14977), (33, 15004), (34, 15049), (41, 15088), (42, 15097), (43, 15118), (53, 15220), (60, 15313), (63, 15346), (70, 15400), (74, 15445), (87, 15535), (90, 15562), (95, 15610), (96, 15616), (102, 15685), (105, 15721), (109, 15751), (113, 15775), (120, 15874), (122, 15895), (124, 15925), (138, 16138), (139, 16141), (145, 16189), (154, 16258), (162, 16381), (171, 16435), (173, 16447), (180, 16528), (184, 16570), (195, 16708), (199, 16762), (211, 16930), (216, 17014), (218, 17038), (219, 17053), (220, 17059), (222, 17101), (240, 17386), (241, 17389), (243, 17434), (246, 17479), (250, 17518), (253, 17566),

Gene: Florence1_22 Start: 15032, Stop: 18370, Start Num: 1

Candidate Starts for Florence1_22:

(Start: 1 @15032 has 30 MA's), (24, 15470), (51, 15782), (56, 15860), (57, 15890), (59, 15947), (69, 16031), (73, 16094), (75, 16100), (79, 16160), (94, 16310), (95, 16313), (102, 16388), (106, 16433), (109, 16451), (114, 16496), (117, 16517), (139, 16847), (145, 16895), (155, 16973), (164, 17099), (166, 17111), (170, 17135), (178, 17198), (191, 17390), (194, 17420), (196, 17444), (197, 17456), (200, 17519), (207, 17642), (209, 17663), (212, 17684), (217, 17762), (218, 17783), (221, 17825), (222, 17846), (226, 17933), (228, 17963), (231, 18026), (233, 18044), (237, 18125), (239, 18137), (240, 18149), (242, 18158), (244, 18212), (249, 18296), (252, 18335),

Gene: Florence4_23 Start: 15032, Stop: 18370, Start Num: 1

Candidate Starts for Florence4_23:

(Start: 1 @15032 has 30 MA's), (24, 15470), (51, 15782), (56, 15860), (57, 15890), (59, 15947), (69, 16031), (73, 16094), (75, 16100), (79, 16160), (94, 16310), (95, 16313), (102, 16388), (106, 16433), (109, 16451), (114, 16496), (117, 16517), (139, 16847), (145, 16895), (155, 16973), (164, 17099), (166, 17111), (170, 17135), (178, 17198), (191, 17390), (194, 17420), (196, 17444), (197, 17456), (200, 17519), (207, 17642), (209, 17663), (212, 17684), (217, 17762), (218, 17783), (221, 17825), (222, 17846), (226, 17933), (228, 17963), (231, 18026), (233, 18044), (237, 18125), (239, 18137), (240, 18149), (242, 18158), (244, 18212), (249, 18296), (252, 18335),

Gene: ForGetIt_22 Start: 15094, Stop: 18435, Start Num: 1

Candidate Starts for ForGetIt_22:

(Start: 1 @15094 has 30 MA's), (24, 15532), (51, 15844), (56, 15922), (57, 15952), (59, 16009), (73, 16156), (75, 16162), (76, 16168), (85, 16294), (87, 16306), (102, 16456), (105, 16492), (109, 16522), (112, 16537), (114, 16567), (115, 16579), (119, 16603), (122, 16672), (126, 16738), (137, 16894), (144, 16963), (145, 16966), (147, 16993), (151, 17017), (163, 17155), (166, 17176), (173, 17221), (178, 17263), (191, 17455), (194, 17485), (196, 17509), (197, 17521), (198, 17542), (200, 17584), (204, 17671), (207, 17707), (209, 17728), (212, 17749), (217, 17827), (218, 17848), (220, 17869), (221, 17890), (222, 17911), (223, 17935), (226, 17998), (231, 18091), (233, 18109), (237, 18190), (239, 18202), (240, 18214), (242, 18223), (244, 18277), (249, 18361), (250, 18370),

Gene: George_21 Start: 15244, Stop: 18582, Start Num: 1

Candidate Starts for George_21:

(Start: 1 @15244 has 30 MA's), (24, 15682), (51, 15994), (56, 16072), (57, 16102), (59, 16159), (69, 16243), (73, 16306), (75, 16312), (84, 16432), (94, 16522), (95, 16525), (102, 16600), (106, 16645), (109, 16663), (114, 16708), (117, 16729), (128, 16921), (139, 17059), (145, 17107), (155, 17185), (164, 17311), (166, 17323), (170, 17347), (178, 17410), (191, 17602), (194, 17632), (196, 17656), (197, 17668), (200, 17731), (207, 17854), (209, 17875), (212, 17896), (217, 17974), (218, 17995), (221, 18037), (222, 18058), (226, 18145), (228, 18175), (231, 18238), (233, 18256), (237, 18337), (239, 18349), (240, 18361), (242, 18370), (244, 18424), (252, 18547),

Gene: Ghoulboy_22 Start: 15349, Stop: 18750, Start Num: 1

Candidate Starts for Ghoulboy_22:

(Start: 1 @15349 has 30 MA's), (6, 15409), (12, 15562), (15, 15601), (24, 15787), (35, 16015), (37, 16027), (39, 16039), (51, 16171), (56, 16249), (57, 16279), (59, 16336), (73, 16483), (75, 16489), (76, 16495), (85, 16621), (87, 16633), (102, 16783), (105, 16819), (109, 16849), (112, 16864), (114, 16894), (115, 16906), (119, 16930), (122, 16999), (126, 17065), (137, 17221), (144, 17290), (145, 17293), (147, 17320), (151, 17344), (163, 17482), (166, 17503), (173, 17536), (178, 17578), (191, 17770), (194, 17800), (196, 17824), (197, 17836), (198, 17857), (200, 17899), (204, 17986), (207, 18022), (209, 18043), (212, 18064), (217, 18142), (218, 18163), (220, 18184), (221, 18205), (222, 18226), (223, 18250), (226, 18313), (231, 18406), (233, 18424), (237, 18505), (239, 18517), (240, 18529), (242, 18538), (244, 18592), (249, 18676), (250, 18685),

Gene: Groundhog_21 Start: 14515, Stop: 17592, Start Num: 4

Candidate Starts for Groundhog_21:

(Start: 4 @14515 has 11 MA's), (7, 14599), (16, 14767), (17, 14791), (18, 14839), (26, 14959), (36, 15031), (49, 15181), (51, 15184), (52, 15190), (76, 15376), (84, 15436), (85, 15442), (93, 15508), (96, 15535), (98, 15550), (101, 15601), (102, 15604), (104, 15637), (109, 15670), (123, 15838), (134, 16021), (137, 16045), (141, 16093), (144, 16114), (145, 16117), (160, 16261), (164, 16318), (169, 16348), (174, 16387), (180, 16459), (182, 16489), (189, 16588), (192, 16618), (196, 16663), (198, 16696), (207, 16861), (209, 16882), (211, 16894), (215, 16975), (218, 17002), (222, 17065), (223, 17089), (225, 17119), (226, 17152), (229, 17185), (231, 17245), (234, 17272), (241, 17371), (242, 17377), (245, 17467), (247, 17488), (251, 17527), (253, 17575),

Gene: HuhtaEnerson15_22 Start: 15244, Stop: 18582, Start Num: 1

Candidate Starts for HuhtaEnerson15_22:

(Start: 1 @15244 has 30 MA's), (24, 15682), (51, 15994), (56, 16072), (57, 16102), (59, 16159), (69, 16243), (73, 16306), (75, 16312), (84, 16432), (94, 16522), (95, 16525), (102, 16600), (106, 16645), (109, 16663), (111, 16675), (114, 16708), (117, 16729), (128, 16921), (139, 17059), (145, 17107), (164, 17311), (166, 17323), (170, 17347), (178, 17410), (191, 17602), (194, 17632), (196, 17656), (197, 17668), (200, 17731), (207, 17854), (209, 17875), (212, 17896), (217, 17974), (218, 17995), (221, 18037), (222, 18058), (226, 18145), (228, 18175), (231, 18238), (233, 18256), (237, 18337), (239, 18349), (240, 18361), (242, 18370), (244, 18424), (249, 18508), (250, 18517), (252, 18547),

Gene: Jovo_22 Start: 15350, Stop: 18691, Start Num: 1

Candidate Starts for Jovo_22:

(Start: 1 @15350 has 30 MA's), (24, 15788), (51, 16100), (56, 16178), (57, 16208), (59, 16265), (73, 16412), (75, 16418), (76, 16424), (85, 16550), (87, 16562), (102, 16712), (105, 16748), (109, 16778), (112, 16793), (114, 16823), (115, 16835), (119, 16859), (122, 16928), (126, 16994), (137, 17150), (144, 17219), (145, 17222), (147, 17249), (151, 17273), (163, 17411), (166, 17432), (173, 17477), (178, 17519), (191, 17711), (194, 17741), (196, 17765), (197, 17777), (198, 17798), (200, 17840), (204, 17927), (207, 17963), (209, 17984), (212, 18005), (217, 18083), (218, 18104), (220, 18125), (221, 18146), (222, 18167), (223, 18191), (226, 18254), (231, 18347), (233, 18365), (237, 18446), (239, 18458), (240, 18470), (242, 18479), (244, 18533), (249, 18617), (250, 18626),

Gene: Lev2_22 Start: 15062, Stop: 18403, Start Num: 1

Candidate Starts for Lev2_22:

(Start: 1 @15062 has 30 MA's), (24, 15500), (51, 15812), (56, 15890), (57, 15920), (59, 15977), (73, 16124), (75, 16130), (76, 16136), (85, 16262), (87, 16274), (102, 16424), (105, 16460), (109, 16490), (112, 16505), (114, 16535), (115, 16547), (119, 16571), (122, 16640), (126, 16706), (137, 16862), (144, 16931), (145, 16934), (147, 16961), (151, 16985), (163, 17123), (166, 17144), (173, 17189), (178, 17231), (191, 17423), (194, 17453), (196, 17477), (197, 17489), (198, 17510), (200, 17552), (204, 17639), (207, 17675), (209, 17696), (212, 17717), (217, 17795), (218, 17816), (220, 17837), (221, 17858), (222, 17879), (223, 17903), (226, 17966), (231, 18059), (233, 18077), (237, 18158), (239, 18170), (240, 18182), (242, 18191), (244, 18245), (249, 18329), (250, 18338),

Gene: LittleCherry_22 Start: 15245, Stop: 18583, Start Num: 1

Candidate Starts for LittleCherry_22:

(Start: 1 @15245 has 30 MA's), (24, 15683), (51, 15995), (56, 16073), (57, 16103), (59, 16160), (69, 16244), (73, 16307), (75, 16313), (84, 16433), (94, 16523), (95, 16526), (102, 16601), (106, 16646), (109, 16664), (114, 16709), (117, 16730), (128, 16922), (139, 17060), (145, 17108), (155, 17186), (164, 17312), (166, 17324), (170, 17348), (178, 17411), (191, 17603), (194, 17633), (196, 17657), (197, 17669), (200, 17732), (207, 17855), (209, 17876), (212, 17897), (217, 17975), (218, 17996), (221, 18038), (222, 18059), (226, 18146), (228, 18176), (231, 18239), (233, 18257), (237, 18338), (239, 18350), (240, 18362), (242, 18371), (244, 18425), (249, 18509), (252, 18548),

Gene: Lucyedi_27 Start: 16773, Stop: 19835, Start Num: 2

Candidate Starts for Lucyedi_27:

(Start: 2 @16773 has 3 MA's), (10, 16947), (17, 17064), (27, 17241), (44, 17397), (45, 17403), (57, 17505), (62, 17601), (73, 17709), (75, 17715), (85, 17829), (93, 17895), (96, 17922), (102, 17991), (104, 18024), (105, 18027), (115, 18114), (116, 18117), (121, 18195), (125, 18255), (150, 18549), (155, 18579), (156, 18582), (167, 18735), (184, 18912), (185, 18924), (207, 19119), (209, 19140), (215, 19233), (218, 19260), (220, 19281), (221, 19302), (236, 19560), (238, 19617), (246, 19728),

Gene: MarysWell_21 Start: 15213, Stop: 18551, Start Num: 1

Candidate Starts for MarysWell_21:

(Start: 1 @15213 has 30 MA's), (24, 15651), (51, 15963), (54, 16005), (56, 16041), (57, 16071), (59, 16128), (69, 16212), (73, 16275), (75, 16281), (82, 16383), (84, 16401), (95, 16494), (102, 16569), (106, 16614), (109, 16632), (114, 16677), (117, 16698), (128, 16890), (132, 16950), (139, 17028), (145, 17076), (155, 17154), (164, 17280), (166, 17292), (170, 17316), (178, 17379), (191, 17571), (194, 17601), (196, 17625), (197, 17637), (200, 17700), (207, 17823), (209, 17844), (212, 17865), (217, 17943), (218, 17964), (221, 18006), (222, 18027), (224, 18063), (226, 18114), (228, 18144), (231, 18207), (233, 18225), (237, 18306), (239, 18318), (240, 18330), (242, 18339), (244, 18393), (249, 18477), (252, 18516),

Gene: Micasa_22 Start: 15213, Stop: 18557, Start Num: 1

Candidate Starts for Micasa_22:

(Start: 1 @15213 has 30 MA's), (24, 15651), (51, 15963), (56, 16041), (57, 16071), (59, 16128), (69, 16212), (73, 16275), (75, 16281), (84, 16401), (95, 16494), (102, 16569), (106, 16614), (109, 16632), (114, 16677), (117, 16698), (128, 16890), (139, 17028), (145, 17076), (155, 17154), (156, 17157), (161, 17253), (164, 17280), (170, 17316), (171, 17328), (178, 17385), (191, 17577), (194, 17607), (196, 17631), (197, 17643), (200, 17706), (207, 17829), (209, 17850), (212, 17871), (217, 17949), (218, 17970), (221, 18012), (222, 18033), (226, 18120), (228, 18150), (231, 18213), (233, 18231), (237, 18312), (239, 18324), (240, 18336), (242, 18345), (244, 18399), (249, 18483), (252, 18522),

Gene: Midas2_22 Start: 15213, Stop: 18551, Start Num: 1

Candidate Starts for Midas2_22:

(Start: 1 @15213 has 30 MA's), (24, 15651), (51, 15963), (56, 16041), (57, 16071), (59, 16128), (73, 16275), (75, 16281), (84, 16401), (86, 16410), (94, 16491), (95, 16494), (102, 16569), (106, 16614), (109, 16632), (114, 16677), (117, 16698), (128, 16890), (139, 17028), (145, 17076), (155, 17154), (164, 17280), (166, 17292), (170, 17316), (178, 17379), (191, 17571), (194, 17601), (196, 17625), (197, 17637), (200, 17700), (207, 17823), (209, 17844), (212, 17865), (217, 17943), (218, 17964), (221, 18006), (222, 18027), (226, 18114), (228, 18144), (231, 18207), (233, 18225), (237, 18306), (239, 18318), (240, 18330), (242, 18339), (244, 18393), (249, 18477), (252, 18516),

Gene: Milcery_22 Start: 15249, Stop: 18587, Start Num: 1

Candidate Starts for Milcery_22:

(Start: 1 @15249 has 30 MA's), (24, 15687), (51, 15999), (56, 16077), (57, 16107), (59, 16164), (69, 16248), (73, 16311), (75, 16317), (84, 16437), (94, 16527), (95, 16530), (102, 16605), (106, 16650), (109, 16668), (114, 16713), (117, 16734), (128, 16926), (139, 17064), (145, 17112), (155, 17190), (164, 17316), (166, 17328), (170, 17352), (178, 17415), (191, 17607), (194, 17637), (196, 17661), (197, 17673), (200, 17736), (207, 17859), (209, 17880), (212, 17901), (217, 17979), (218, 18000), (221, 18042), (222, 18063), (226, 18150), (228, 18180), (231, 18243), (233, 18261), (237, 18342), (239, 18354), (240, 18366), (242, 18375), (244, 18429), (249, 18513), (250, 18522), (252, 18552),

Gene: Naca_22 Start: 15172, Stop: 18438, Start Num: 1

Candidate Starts for Naca_22:

(Start: 1 @15172 has 30 MA's), (13, 15409), (18, 15511), (19, 15520), (25, 15613), (27, 15640), (38, 15715), (51, 15850), (55, 15904), (57, 15958), (69, 16099), (71, 16123), (73, 16162), (78, 16225), (79, 16228), (84, 16288), (88, 16315), (95, 16381), (103, 16480), (109, 16519), (114, 16564), (118, 16588), (122, 16669), (137, 16891), (139, 16915), (145, 16963), (152, 17020), (153, 17026), (159, 17098),

(164, 17167), (173, 17224), (177, 17242), (178, 17266), (182, 17338), (196, 17512), (197, 17524), (200, 17587), (204, 17674), (207, 17710), (209, 17731), (212, 17752), (218, 17851), (221, 17893), (222, 17914), (226, 18001), (228, 18031), (229, 18034), (231, 18094), (237, 18193), (239, 18205), (240, 18217), (242, 18226), (250, 18373),

Gene: NearlyHeadless_22 Start: 14564, Stop: 17641, Start Num: 4

Candidate Starts for NearlyHeadless_22:

(Start: 4 @14564 has 11 MA's), (7, 14648), (16, 14816), (17, 14840), (18, 14888), (26, 15008), (36, 15080), (49, 15230), (51, 15233), (52, 15239), (76, 15425), (81, 15446), (84, 15485), (93, 15557), (96, 15584), (98, 15599), (101, 15650), (102, 15653), (109, 15719), (123, 15887), (137, 16094), (141, 16142), (144, 16163), (145, 16166), (160, 16310), (164, 16367), (169, 16397), (174, 16436), (180, 16508), (182, 16538), (189, 16637), (192, 16667), (196, 16712), (207, 16910), (209, 16931), (211, 16943), (215, 17024), (218, 17051), (221, 17093), (222, 17114), (223, 17138), (225, 17168), (226, 17201), (229, 17234), (231, 17294), (234, 17321), (241, 17420), (245, 17516), (247, 17537), (251, 17576), (253, 17624),

Gene: Odin_25 Start: 15403, Stop: 17928, Start Num: 46

Candidate Starts for Odin_25:

(Start: 46 @15403 has 1 MA's), (50, 15421), (58, 15526), (64, 15592), (65, 15595), (66, 15598), (83, 15802), (89, 15847), (97, 15922), (99, 15964), (100, 15973), (104, 16018), (107, 16039), (113, 16072), (114, 16093), (117, 16114), (118, 16117), (127, 16303), (130, 16330), (131, 16345), (135, 16399), (137, 16420), (143, 16486), (172, 16726), (175, 16753), (179, 16810), (181, 16831), (184, 16858), (186, 16876), (188, 16939), (189, 16942), (193, 16981), (199, 17080), (202, 17152), (205, 17179), (206, 17209), (210, 17242), (220, 17383), (223, 17449), (226, 17512), (238, 17710), (241, 17731), (245, 17806), (248, 17842),

Gene: PainterBoy_27 Start: 16773, Stop: 19835, Start Num: 2

Candidate Starts for PainterBoy_27:

(Start: 2 @16773 has 3 MA's), (10, 16947), (17, 17064), (27, 17241), (44, 17397), (45, 17403), (57, 17505), (62, 17601), (73, 17709), (75, 17715), (85, 17829), (93, 17895), (96, 17922), (102, 17991), (104, 18024), (105, 18027), (115, 18114), (116, 18117), (121, 18195), (125, 18255), (128, 18315), (150, 18549), (155, 18579), (156, 18582), (167, 18735), (184, 18912), (185, 18924), (207, 19119), (209, 19140), (215, 19233), (218, 19260), (220, 19281), (221, 19302), (235, 19542), (236, 19560), (238, 19617), (246, 19728),

Gene: Phillis_22 Start: 14522, Stop: 17599, Start Num: 4

Candidate Starts for Phillis_22:

(Start: 4 @14522 has 11 MA's), (7, 14606), (16, 14774), (17, 14798), (18, 14846), (26, 14966), (29, 14993), (36, 15038), (49, 15188), (51, 15191), (52, 15197), (76, 15383), (84, 15443), (96, 15542), (98, 15557), (101, 15608), (102, 15611), (104, 15644), (109, 15677), (123, 15845), (134, 16028), (137, 16052), (141, 16100), (144, 16121), (145, 16124), (160, 16268), (164, 16325), (169, 16355), (174, 16394), (180, 16466), (182, 16496), (189, 16595), (192, 16625), (196, 16670), (198, 16703), (207, 16868), (209, 16889), (211, 16901), (215, 16982), (218, 17009), (222, 17072), (223, 17096), (225, 17126), (226, 17159), (229, 17192), (231, 17252), (234, 17279), (241, 17378), (242, 17384), (245, 17474), (247, 17495), (251, 17534), (253, 17582),

Gene: Phlei_21 Start: 17431, Stop: 20733, Start Num: 3

Candidate Starts for Phlei_21:

(3, 17431), (5, 17455), (8, 17557), (14, 17701), (17, 17746), (20, 17836), (31, 17962), (32, 17968), (40, 18067), (48, 18178), (61, 18352), (62, 18364), (68, 18403), (72, 18439), (80, 18547), (84, 18607), (88, 18634), (90, 18652), (91, 18667), (102, 18775), (106, 18820), (108, 18832), (112, 18853), (114, 18883), (123, 19009), (129, 19102), (136, 19198), (140, 19252), (141, 19255), (142, 19258), (146, 19285), (148, 19309), (149, 19321), (165, 19468), (187, 19711), (195, 19786), (196, 19810), (201,

19927), (204, 19957), (207, 19993), (208, 20005), (209, 20014), (210, 20023), (215, 20107), (218, 20134), (221, 20176), (222, 20197), (230, 20386), (232, 20413), (238, 20512), (240, 20530), (241, 20533), (245, 20608),

Gene: Phlorence_22 Start: 15349, Stop: 18690, Start Num: 1

Candidate Starts for Phlorence_22:

(Start: 1 @15349 has 30 MA's), (24, 15787), (51, 16099), (56, 16177), (57, 16207), (59, 16264), (73, 16411), (75, 16417), (76, 16423), (85, 16549), (87, 16561), (102, 16711), (105, 16747), (109, 16777), (112, 16792), (114, 16822), (115, 16834), (119, 16858), (122, 16927), (126, 16993), (137, 17149), (144, 17218), (145, 17221), (147, 17248), (151, 17272), (163, 17410), (166, 17431), (173, 17476), (178, 17518), (191, 17710), (194, 17740), (196, 17764), (197, 17776), (198, 17797), (200, 17839), (204, 17926), (207, 17962), (209, 17983), (212, 18004), (217, 18082), (218, 18103), (220, 18124), (221, 18145), (222, 18166), (223, 18190), (226, 18253), (231, 18346), (233, 18364), (237, 18445), (239, 18457), (240, 18469), (242, 18478), (244, 18532), (249, 18616), (250, 18625),

Gene: PickleBack_22 Start: 15063, Stop: 18404, Start Num: 1

Candidate Starts for PickleBack_22:

(Start: 1 @15063 has 30 MA's), (24, 15501), (51, 15813), (56, 15891), (57, 15921), (59, 15978), (73, 16125), (75, 16131), (76, 16137), (85, 16263), (87, 16275), (102, 16425), (105, 16461), (109, 16491), (112, 16506), (114, 16536), (115, 16548), (119, 16572), (122, 16641), (126, 16707), (137, 16863), (144, 16932), (145, 16935), (147, 16962), (151, 16986), (163, 17124), (166, 17145), (173, 17190), (178, 17232), (191, 17424), (194, 17454), (196, 17478), (197, 17490), (198, 17511), (200, 17553), (204, 17640), (207, 17676), (209, 17697), (212, 17718), (217, 17796), (218, 17817), (220, 17838), (221, 17859), (222, 17880), (223, 17904), (226, 17967), (231, 18060), (233, 18078), (237, 18159), (239, 18171), (240, 18183), (242, 18192), (244, 18246), (249, 18330), (250, 18339),

Gene: Prin Ashe11_23 Start: 15212, Stop: 18550, Start Num: 1

Candidate Starts for Prin Ashe11_23:

(Start: 1 @15212 has 30 MA's), (24, 15650), (51, 15962), (56, 16040), (57, 16070), (59, 16127), (69, 16211), (73, 16274), (75, 16280), (84, 16400), (94, 16490), (95, 16493), (102, 16568), (106, 16613), (109, 16631), (114, 16676), (117, 16697), (139, 17027), (145, 17075), (155, 17153), (164, 17279), (166, 17291), (170, 17315), (178, 17378), (191, 17570), (194, 17600), (196, 17624), (197, 17636), (200, 17699), (207, 17822), (209, 17843), (212, 17864), (217, 17942), (218, 17963), (221, 18005), (222, 18026), (226, 18113), (228, 18143), (231, 18206), (233, 18224), (237, 18305), (239, 18317), (240, 18329), (242, 18338), (244, 18392), (249, 18476), (252, 18515),

Gene: Roary_22 Start: 14513, Stop: 17590, Start Num: 4

Candidate Starts for Roary_22:

(Start: 4 @14513 has 11 MA's), (7, 14597), (16, 14765), (17, 14789), (18, 14837), (26, 14957), (36, 15029), (49, 15179), (51, 15182), (52, 15188), (76, 15374), (84, 15434), (85, 15440), (93, 15506), (96, 15533), (98, 15548), (101, 15599), (102, 15602), (104, 15635), (109, 15668), (123, 15836), (134, 16019), (137, 16043), (141, 16091), (144, 16112), (145, 16115), (160, 16259), (164, 16316), (169, 16346), (174, 16385), (180, 16457), (182, 16487), (189, 16586), (192, 16616), (196, 16661), (207, 16859), (209, 16880), (211, 16892), (215, 16973), (218, 17000), (222, 17063), (223, 17087), (225, 17117), (226, 17150), (229, 17183), (231, 17243), (234, 17270), (241, 17369), (242, 17375), (245, 17465), (247, 17486), (251, 17525), (253, 17573),

Gene: Saintus_22 Start: 14528, Stop: 17605, Start Num: 4

Candidate Starts for Saintus_22:

(Start: 4 @14528 has 11 MA's), (7, 14612), (16, 14780), (17, 14804), (18, 14852), (26, 14972), (36, 15044), (49, 15194), (51, 15197), (52, 15203), (76, 15389), (84, 15449), (85, 15455), (93, 15521), (96, 15548), (98, 15563), (101, 15614), (102, 15617), (109, 15683), (123, 15851), (133, 16010), (134, 16034), (137, 16058), (141, 16106), (144, 16127), (145, 16130), (160, 16274), (164, 16331), (169,

16361), (174, 16400), (180, 16472), (182, 16502), (189, 16601), (192, 16631), (196, 16676), (207, 16874), (209, 16895), (211, 16907), (215, 16988), (218, 17015), (221, 17057), (222, 17078), (223, 17102), (225, 17132), (226, 17165), (229, 17198), (231, 17258), (234, 17285), (241, 17384), (245, 17480), (247, 17501), (251, 17540), (253, 17588),

Gene: Smeadley_22 Start: 14546, Stop: 17623, Start Num: 4

Candidate Starts for Smeadley_22:

(Start: 4 @14546 has 11 MA's), (7, 14630), (16, 14798), (17, 14822), (18, 14870), (26, 14990), (36, 15062), (49, 15212), (51, 15215), (52, 15221), (76, 15407), (84, 15467), (85, 15473), (93, 15539), (96, 15566), (98, 15581), (101, 15632), (102, 15635), (104, 15668), (109, 15701), (123, 15869), (134, 16052), (137, 16076), (141, 16124), (144, 16145), (145, 16148), (160, 16292), (164, 16349), (169, 16379), (174, 16418), (180, 16490), (182, 16520), (189, 16619), (192, 16649), (196, 16694), (207, 16892), (209, 16913), (211, 16925), (218, 17033), (222, 17096), (223, 17120), (225, 17150), (226, 17183), (229, 17216), (231, 17276), (234, 17303), (241, 17402), (242, 17408), (245, 17498), (247, 17519), (251, 17558), (253, 17606),

Gene: Stephig9_22 Start: 14527, Stop: 17604, Start Num: 4

Candidate Starts for Stephig9_22:

(Start: 4 @14527 has 11 MA's), (7, 14611), (16, 14779), (17, 14803), (18, 14851), (26, 14971), (36, 15043), (49, 15193), (51, 15196), (52, 15202), (76, 15388), (84, 15448), (85, 15454), (93, 15520), (96, 15547), (98, 15562), (101, 15613), (102, 15616), (104, 15649), (109, 15682), (123, 15850), (134, 16033), (137, 16057), (141, 16105), (144, 16126), (145, 16129), (160, 16273), (164, 16330), (169, 16360), (174, 16399), (180, 16471), (182, 16501), (189, 16600), (192, 16630), (196, 16675), (198, 16708), (207, 16873), (209, 16894), (211, 16906), (215, 16987), (218, 17014), (222, 17077), (223, 17101), (225, 17131), (226, 17164), (229, 17197), (231, 17257), (234, 17284), (241, 17383), (242, 17389), (245, 17479), (247, 17500), (251, 17539), (253, 17587),

Gene: Superchunk_25 Start: 15270, Stop: 17795, Start Num: 47

Candidate Starts for Superchunk_25:

(Start: 47 @15270 has 1 MA's), (50, 15288), (58, 15393), (64, 15459), (65, 15462), (66, 15465), (77, 15585), (83, 15666), (89, 15711), (97, 15786), (99, 15828), (104, 15882), (107, 15903), (113, 15936), (114, 15957), (117, 15978), (118, 15981), (127, 16167), (130, 16194), (131, 16209), (135, 16263), (137, 16284), (143, 16350), (168, 16575), (172, 16590), (175, 16617), (176, 16620), (181, 16695), (183, 16719), (184, 16722), (186, 16740), (188, 16803), (189, 16806), (193, 16845), (195, 16857), (199, 16944), (200, 16956), (202, 17016), (203, 17019), (205, 17043), (206, 17073), (210, 17106), (220, 17247), (223, 17313), (226, 17376), (238, 17574), (241, 17595), (245, 17670), (248, 17706), (254, 17781),

Gene: Swirley_22 Start: 15214, Stop: 18558, Start Num: 1

Candidate Starts for Swirley_22:

(Start: 1 @15214 has 30 MA's), (24, 15652), (51, 15964), (56, 16042), (57, 16072), (59, 16129), (69, 16213), (73, 16276), (75, 16282), (84, 16402), (94, 16492), (95, 16495), (102, 16570), (106, 16615), (109, 16633), (111, 16645), (114, 16678), (117, 16699), (128, 16891), (139, 17029), (145, 17077), (155, 17155), (156, 17158), (161, 17254), (164, 17281), (170, 17317), (171, 17329), (178, 17386), (191, 17578), (194, 17608), (196, 17632), (197, 17644), (200, 17707), (207, 17830), (209, 17851), (212, 17872), (217, 17950), (218, 17971), (221, 18013), (222, 18034), (226, 18121), (228, 18151), (231, 18214), (233, 18232), (237, 18313), (239, 18325), (240, 18337), (242, 18346), (244, 18400), (249, 18484), (252, 18523),

Gene: SydNat_22 Start: 15349, Stop: 18762, Start Num: 1

Candidate Starts for SydNat_22:

(Start: 1 @15349 has 30 MA's), (6, 15409), (12, 15562), (15, 15601), (24, 15787), (35, 16015), (37, 16027), (39, 16039), (51, 16171), (56, 16249), (57, 16279), (59, 16336), (73, 16483), (75, 16489), (76,

16495), (85, 16621), (87, 16633), (102, 16783), (105, 16819), (109, 16849), (112, 16864), (114, 16894), (115, 16906), (119, 16930), (122, 16999), (126, 17065), (137, 17221), (144, 17290), (145, 17293), (147, 17320), (151, 17344), (163, 17482), (166, 17503), (173, 17548), (178, 17590), (191, 17782), (194, 17812), (196, 17836), (197, 17848), (198, 17869), (200, 17911), (204, 17998), (207, 18034), (209, 18055), (212, 18076), (217, 18154), (218, 18175), (220, 18196), (221, 18217), (222, 18238), (223, 18262), (226, 18325), (231, 18418), (233, 18436), (237, 18517), (239, 18529), (240, 18541), (242, 18550), (244, 18604), (249, 18688), (250, 18697),

Gene: Tarynearal_21 Start: 15242, Stop: 18580, Start Num: 1

Candidate Starts for Tarynearal_21:

(Start: 1 @15242 has 30 MA's), (24, 15680), (51, 15992), (56, 16070), (57, 16100), (59, 16157), (69, 16241), (73, 16304), (75, 16310), (84, 16430), (94, 16520), (95, 16523), (102, 16598), (106, 16643), (109, 16661), (114, 16706), (117, 16727), (128, 16919), (139, 17057), (145, 17105), (155, 17183), (164, 17309), (166, 17321), (170, 17345), (178, 17408), (191, 17600), (194, 17630), (196, 17654), (197, 17666), (200, 17729), (207, 17852), (209, 17873), (212, 17894), (217, 17972), (218, 17993), (221, 18035), (222, 18056), (226, 18143), (228, 18173), (231, 18236), (233, 18254), (237, 18335), (239, 18347), (240, 18359), (242, 18368), (244, 18422), (249, 18506), (252, 18545),

Gene: Theia_20 Start: 15180, Stop: 18518, Start Num: 1

Candidate Starts for Theia_20:

(Start: 1 @15180 has 30 MA's), (24, 15618), (51, 15930), (54, 15972), (56, 16008), (57, 16038), (59, 16095), (69, 16179), (73, 16242), (75, 16248), (82, 16350), (84, 16368), (95, 16461), (102, 16536), (106, 16581), (109, 16599), (114, 16644), (117, 16665), (128, 16857), (132, 16917), (139, 16995), (145, 17043), (155, 17121), (164, 17247), (166, 17259), (170, 17283), (178, 17346), (191, 17538), (194, 17568), (196, 17592), (197, 17604), (200, 17667), (207, 17790), (209, 17811), (212, 17832), (217, 17910), (218, 17931), (221, 17973), (222, 17994), (224, 18030), (226, 18081), (228, 18111), (231, 18174), (233, 18192), (237, 18273), (239, 18285), (240, 18297), (242, 18306), (244, 18360), (249, 18444), (252, 18483),

Gene: Tiger_22 Start: 15067, Stop: 18402, Start Num: 1

Candidate Starts for Tiger_22:

(Start: 1 @15067 has 30 MA's), (24, 15505), (51, 15817), (56, 15895), (57, 15925), (59, 15982), (69, 16066), (73, 16129), (75, 16135), (84, 16255), (94, 16345), (95, 16348), (102, 16423), (109, 16486), (114, 16531), (117, 16552), (128, 16744), (136, 16849), (139, 16882), (145, 16930), (155, 17008), (156, 17011), (161, 17107), (164, 17134), (170, 17170), (178, 17230), (191, 17422), (194, 17452), (196, 17476), (197, 17488), (200, 17551), (207, 17674), (209, 17695), (212, 17716), (217, 17794), (218, 17815), (221, 17857), (222, 17878), (226, 17965), (228, 17995), (231, 18058), (233, 18076), (237, 18157), (239, 18169), (240, 18181), (242, 18190), (244, 18244), (249, 18328), (250, 18337), (252, 18367),

Gene: Twigg_22 Start: 15215, Stop: 18553, Start Num: 1

Candidate Starts for Twigg_22:

(Start: 1 @15215 has 30 MA's), (24, 15653), (51, 15965), (56, 16043), (57, 16073), (59, 16130), (69, 16214), (73, 16277), (75, 16283), (84, 16403), (94, 16493), (95, 16496), (102, 16571), (106, 16616), (109, 16634), (114, 16679), (117, 16700), (128, 16892), (139, 17030), (145, 17078), (155, 17156), (164, 17282), (166, 17294), (170, 17318), (178, 17381), (191, 17573), (194, 17603), (196, 17627), (197, 17639), (200, 17702), (207, 17825), (209, 17846), (212, 17867), (217, 17945), (218, 17966), (221, 18008), (222, 18029), (226, 18116), (228, 18146), (231, 18209), (233, 18227), (237, 18308), (239, 18320), (240, 18332), (242, 18341), (244, 18395), (249, 18479), (252, 18518),

Gene: Zolita_21 Start: 15350, Stop: 18763, Start Num: 1

Candidate Starts for Zolita_21:

(Start: 1 @15350 has 30 MA's), (6, 15410), (12, 15563), (15, 15602), (24, 15788), (35, 16016), (37, 16028), (39, 16040), (51, 16172), (56, 16250), (57, 16280), (59, 16337), (73, 16484), (75, 16490), (76, 16496), (85, 16622), (87, 16634), (102, 16784), (105, 16820), (109, 16850), (112, 16865), (114, 16895), (115, 16907), (119, 16931), (122, 17000), (126, 17066), (137, 17222), (144, 17291), (145, 17294), (147, 17321), (151, 17345), (163, 17483), (166, 17504), (173, 17549), (178, 17591), (191, 17783), (194, 17813), (196, 17837), (197, 17849), (198, 17870), (200, 17912), (204, 17999), (207, 18035), (209, 18056), (212, 18077), (217, 18155), (218, 18176), (220, 18197), (221, 18218), (222, 18239), (223, 18263), (226, 18326), (231, 18419), (233, 18437), (237, 18518), (239, 18530), (240, 18542), (242, 18551), (244, 18605), (249, 18689), (250, 18698),