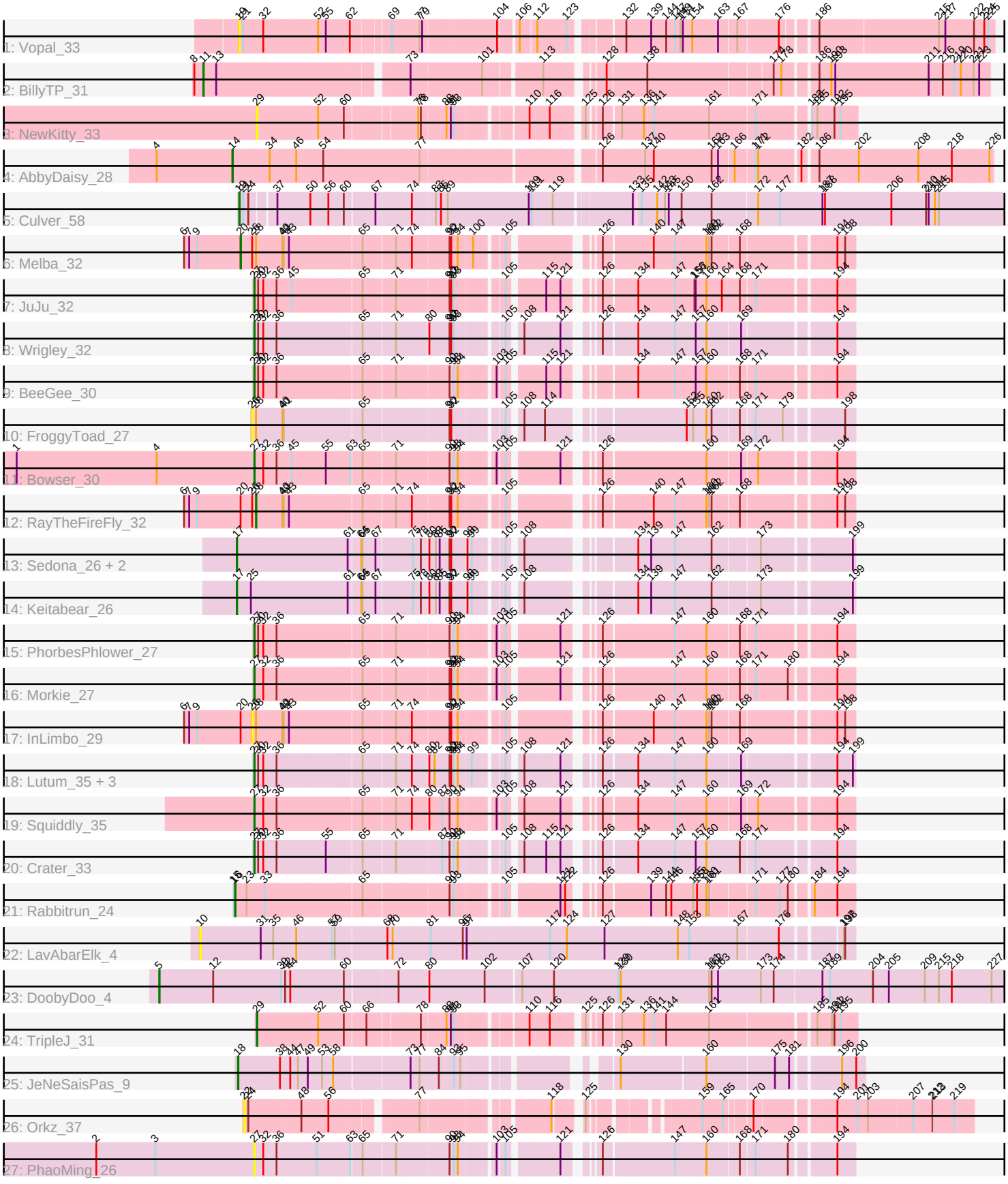
Pham 347883


1: Vopal_33
2: BillyTP_31
3: NewKitty_33
4: AbbyDaisy_28
5: Culver_58
6: Melba_32
7: JuJu_32
8: Wrigley_32
9: BeeGee_30
10: FroggyToad_27
11: Bowser_30
12: RayTheFireFly_32
13: Sedona_26 + 2
14: Keitabear_26
15: PhorbesPhlower_27
16: Morkie_27
17: InLimbo_29
18: Lutum_35 + 3
19: Squiddly_35
20: Crater_33
21: Rabbitrun_24
22: LavAbarElk_4
23: DoobyDoo_4
24: TripleJ_31
25: JeNeSaisPas_9
26: Orkz_37
27: PhaoMing_26

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 347883 Report

This analysis was run 11/14/26 on database version 672.

Pham number 347883 has 32 members, 7 are drafts.

Phages represented in each track:
- Track 1 : Vopal_33
- Track 2 : BillyTP_31
- Track 3 : NewKitty_33
- Track 4 : AbbyDaisy_28
- Track 5 : Culver_58
- Track 6 : Melba_32
- Track 7 : JuJu_32
- Track 8 : Wrigley_32
- Track 9 : BeeGee_30
- Track 10 : FroggyToad_27
- Track 11 : Bowser_30
- Track 12 : RayTheFireFly_32
- Track 13 : Sedona_26, Bibwit_25, Stultus_24
- Track 14 : Keitabear_26
- Track 15 : PhorbesPhlower_27
- Track 16 : Morkie_27
- Track 17 : InLimbo_29
- Track 18 : Lutum_35, Kenna_34, BearBQ_34, Apricot_34
- Track 19 : Squiddly_35
- Track 20 : Crater_33
- Track 21 : Rabbitrun_24
- Track 22 : LavAbarElk_4
- Track 23 : DoobyDoo_4
- Track 24 : TripleJ_31
- Track 25 : JeNeSaisPas_9
- Track 26 : Orkz_37
- Track 27 : PhaoMing_26

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

The start number called the most often in the published annotations is 27, it was called in 12 of the 25 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• Apricot_34, BearBQ_34, BeeGee_30, Bowser_30, Crater_33, JuJu_32, Kenna_34, Lutum_35, Morkie_27, PhaoMing_26, PhorbesPhlower_27, Squiddly_35, Wrigley_32,

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

Genes that do not have the "Most Annotated" start:
• AbbyDaisy_28, Bibwit_25, BillyTP_31, Culver_58, DoobyDoo_4, FroggyToad_27, InLimbo_29, JeNeSaisPas_9, Keitabear_26, LavAbarElk_4, Melba_32, NewKitty_33, Orkz_37, Rabbitrun_24, RayTheFireFly_32, Sedona_26, Stultus_24, TripleJ_31, Vopal_33,

Summary by start number:

Start 5:
• Found in 1 of 32 (3.1%) of genes in pham
• Manual Annotations of this start: 1 of 25
• Called 100.0% of time when present
• Phage (with cluster) where this start called: DoobyDoo_4 (DV),

Start 10:
• Found in 1 of 32 (3.1%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: LavAbarElk_4 (DV),

Start 11:
• Found in 1 of 32 (3.1%) of genes in pham
• Manual Annotations of this start: 1 of 25
• Called 100.0% of time when present
• Phage (with cluster) where this start called: BillyTP_31 (AY),

Start 14:
• Found in 1 of 32 (3.1%) of genes in pham
• Manual Annotations of this start: 1 of 25
• Called 100.0% of time when present
• Phage (with cluster) where this start called: AbbyDaisy_28 (AY),

Start 16:
• Found in 1 of 32 (3.1%) of genes in pham
• Manual Annotations of this start: 1 of 25
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Rabbitrun_24 (DU2),

Start 17:
• Found in 4 of 32 (12.5%) of genes in pham
• Manual Annotations of this start: 4 of 25
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Bibwit_25 (DE1), Keitabear_26 (DE1), Sedona_26 (DE1), Stultus_24 (DE1),

Start 18:
• Found in 1 of 32 (3.1%) of genes in pham

• Manual Annotations of this start: 1 of 25
• Called 100.0% of time when present
• Phage (with cluster) where this start called: JeNeSaisPas_9 (FK),

Start 19:
• Found in 2 of 32 (6.2%) of genes in pham
• Manual Annotations of this start: 1 of 25
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Culver_58 (CQ1), Vopal_33 (AY),

Start 20:
• Found in 3 of 32 (9.4%) of genes in pham
• Manual Annotations of this start: 1 of 25
• Called 33.3% of time when present
• Phage (with cluster) where this start called: Melba_32 (CV),

Start 22:
• Found in 1 of 32 (3.1%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Orkz_37 (FL),

Start 26:
• Found in 4 of 32 (12.5%) of genes in pham
• No Manual Annotations of this start.
• Called 50.0% of time when present
• Phage (with cluster) where this start called: FroggyToad_27 (CZ2), InLimbo_29 (DH),

Start 27:
• Found in 13 of 32 (40.6%) of genes in pham
• Manual Annotations of this start: 12 of 25
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Apricot_34 (DN3), BearBQ_34 (DN), BeeGee_30 (CY5), Bowser_30 (DB), Crater_33 (DN3), JuJu_32 (CV), Kenna_34 (DN1), Lutum_35 (DN1), Morkie_27 (DH), PhaoMing_26 (UNK), PhorbesPhlower_27 (DH), Squiddly_35 (DN2), Wrigley_32 (CY4),

Start 28:
• Found in 4 of 32 (12.5%) of genes in pham
• Manual Annotations of this start: 1 of 25
• Called 25.0% of time when present
• Phage (with cluster) where this start called: RayTheFireFly_32 (DB),

Start 29:
• Found in 2 of 32 (6.2%) of genes in pham
• Manual Annotations of this start: 1 of 25
• Called 100.0% of time when present
• Phage (with cluster) where this start called: NewKitty_33 (AY), TripleJ_31 (FJ),

Summary by clusters:

There are 19 clusters represented in this pham: DN, UNK, CY5, DH, CY4, CZ2, DE1, DU2, DB, DV, DN1, DN3, DN2, AY, FJ, CQ1, FK, FL, CV,

Info for manual annotations of cluster AY:
•Start number 11 was manually annotated 1 time for cluster AY.
•Start number 14 was manually annotated 1 time for cluster AY.

Info for manual annotations of cluster CQ1:
•Start number 19 was manually annotated 1 time for cluster CQ1.

Info for manual annotations of cluster CV:
•Start number 20 was manually annotated 1 time for cluster CV.
•Start number 27 was manually annotated 1 time for cluster CV.

Info for manual annotations of cluster CY4:
•Start number 27 was manually annotated 1 time for cluster CY4.

Info for manual annotations of cluster CY5:
•Start number 27 was manually annotated 1 time for cluster CY5.

Info for manual annotations of cluster DB:
•Start number 27 was manually annotated 1 time for cluster DB.
•Start number 28 was manually annotated 1 time for cluster DB.

Info for manual annotations of cluster DE1:
•Start number 17 was manually annotated 4 times for cluster DE1.

Info for manual annotations of cluster DH:
•Start number 27 was manually annotated 2 times for cluster DH.

Info for manual annotations of cluster DN:
•Start number 27 was manually annotated 1 time for cluster DN.

Info for manual annotations of cluster DN1:
•Start number 27 was manually annotated 2 times for cluster DN1.

Info for manual annotations of cluster DN2:
•Start number 27 was manually annotated 1 time for cluster DN2.

Info for manual annotations of cluster DN3:
•Start number 27 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DU2:
•Start number 16 was manually annotated 1 time for cluster DU2.

Info for manual annotations of cluster DV:
•Start number 5 was manually annotated 1 time for cluster DV.

Info for manual annotations of cluster FJ:
•Start number 29 was manually annotated 1 time for cluster FJ.

Info for manual annotations of cluster FK:

•Start number 18 was manually annotated 1 time for cluster FK.

Gene Information:

Gene: AbbyDaisy_28 Start: 20899, Stop: 22527, Start Num: 14
Candidate Starts for AbbyDaisy_28:
(4, 20722), (Start: 14 @20899 has 1 MA's), (34, 20977), (46, 21037), (54, 21097), (77, 21316), (126, 21685), (137, 21781), (140, 21799), (162, 21928), (163, 21943), (166, 21976), (171, 22018), (172, 22024), (182, 22111), (186, 22141), (202, 22225), (208, 22354), (218, 22432), (226, 22519),

Gene: Apricot_34 Start: 26509, Stop: 27699, Start Num: 27
Candidate Starts for Apricot_34:
(Start: 27 @26509 has 12 MA's), (30, 26518), (32, 26530), (36, 26557), (65, 26740), (71, 26806), (74, 26839), (80, 26875), (82, 26887), (90, 26920), (92, 26923), (93, 26929), (94, 26938), (99, 26965), (105, 27025), (108, 27049), (121, 27124), (126, 27175), (134, 27247), (147, 27331), (160, 27400), (169, 27475), (194, 27658), (199, 27694),

Gene: BearBQ_34 Start: 27736, Stop: 28926, Start Num: 27
Candidate Starts for BearBQ_34:
(Start: 27 @27736 has 12 MA's), (30, 27745), (32, 27757), (36, 27784), (65, 27967), (71, 28033), (74, 28066), (80, 28102), (82, 28114), (90, 28147), (92, 28150), (93, 28156), (94, 28165), (99, 28192), (105, 28252), (108, 28276), (121, 28351), (126, 28402), (134, 28474), (147, 28558), (160, 28627), (169, 28702), (194, 28885), (199, 28921),

Gene: BeeGee_30 Start: 25229, Stop: 26419, Start Num: 27
Candidate Starts for BeeGee_30:
(Start: 27 @25229 has 12 MA's), (30, 25238), (32, 25250), (36, 25277), (65, 25460), (71, 25526), (90, 25640), (93, 25649), (94, 25658), (103, 25730), (105, 25745), (115, 25814), (121, 25844), (134, 25967), (147, 26051), (157, 26096), (160, 26120), (168, 26192), (171, 26219), (194, 26378),

Gene: Bibwit_25 Start: 19805, Stop: 21040, Start Num: 17
Candidate Starts for Bibwit_25:
(Start: 17 @19805 has 4 MA's), (61, 20051), (64, 20075), (65, 20078), (67, 20108), (75, 20180), (78, 20198), (80, 20213), (83, 20228), (85, 20237), (90, 20258), (92, 20261), (98, 20294), (99, 20303), (105, 20363), (108, 20387), (134, 20588), (139, 20618), (147, 20672), (162, 20753), (173, 20852), (199, 21035),

Gene: BillyTP_31 Start: 21164, Stop: 22786, Start Num: 11
Candidate Starts for BillyTP_31:
(8, 21143), (Start: 11 @21164 has 1 MA's), (13, 21194), (73, 21596), (101, 21755), (113, 21869), (128, 21974), (138, 22061), (174, 22328), (178, 22346), (186, 22412), (190, 22433), (193, 22442), (211, 22649), (216, 22682), (219, 22706), (220, 22721), (221, 22751), (223, 22763),

Gene: Bowser_30 Start: 24790, Stop: 25980, Start Num: 27
Candidate Starts for Bowser_30:
(1, 24235), (4, 24562), (Start: 27 @24790 has 12 MA's), (32, 24811), (36, 24838), (45, 24868), (55, 24946), (63, 25000), (65, 25021), (71, 25087), (90, 25201), (93, 25210), (94, 25219), (103, 25291), (105, 25306), (121, 25405), (126, 25456), (160, 25681), (169, 25756), (172, 25786), (194, 25939),

Gene: Crater_33 Start: 26484, Stop: 27677, Start Num: 27
Candidate Starts for Crater_33:
(Start: 27 @26484 has 12 MA's), (30, 26493), (32, 26505), (36, 26532), (55, 26640), (65, 26715), (71, 26781), (87, 26880), (90, 26895), (93, 26904), (94, 26913), (105, 27000), (108, 27024), (115, 27069), (121, 27099), (126, 27150), (134, 27222), (147, 27306), (157, 27351), (160, 27375), (168, 27450), (171, 27477), (194, 27636),

Gene: Culver_58 Start: 35790, Stop: 37457, Start Num: 19
Candidate Starts for Culver_58:
(Start: 19 @35790 has 1 MA's), (21, 35799), (24, 35811), (37, 35859), (50, 35934), (56, 35976), (60, 36009), (67, 36075), (74, 36144), (83, 36195), (86, 36207), (89, 36222), (109, 36405), (111, 36411), (119, 36453), (133, 36609), (135, 36624), (142, 36660), (143, 36678), (145, 36687), (150, 36717), (162, 36786), (172, 36888), (177, 36939), (187, 37038), (188, 37044), (206, 37197), (210, 37272), (211, 37278), (214, 37293), (215, 37302),

Gene: DoobyDoo_4 Start: 3407, Stop: 5302, Start Num: 5
Candidate Starts for DoobyDoo_4:
(Start: 5 @3407 has 1 MA's), (12, 3533), (39, 3692), (42, 3701), (44, 3713), (60, 3833), (72, 3938), (80, 4004), (102, 4127), (107, 4202), (120, 4268), (129, 4415), (130, 4421), (161, 4622), (162, 4628), (163, 4643), (173, 4742), (174, 4772), (187, 4880), (189, 4898), (204, 4997), (205, 5033), (209, 5114), (215, 5147), (218, 5177), (227, 5270),

Gene: FroggyToad_27 Start: 22708, Stop: 23910, Start Num: 26
Candidate Starts for FroggyToad_27:
(26, 22708), (Start: 28 @22717 has 1 MA's), (40, 22774), (41, 22777), (65, 22948), (90, 23131), (92, 23134), (105, 23236), (108, 23260), (114, 23302), (152, 23566), (155, 23581), (160, 23611), (162, 23623), (168, 23683), (171, 23710), (179, 23773), (198, 23887),

Gene: InLimbo_29 Start: 23069, Stop: 24268, Start Num: 26
Candidate Starts for InLimbo_29:
(6, 22910), (7, 22922), (9, 22940), (Start: 20 @23042 has 1 MA's), (26, 23069), (Start: 28 @23078 has 1 MA's), (40, 23135), (41, 23138), (43, 23150), (65, 23309), (71, 23375), (74, 23408), (90, 23489), (92, 23492), (94, 23507), (105, 23594), (126, 23744), (140, 23852), (147, 23900), (160, 23969), (161, 23975), (162, 23981), (168, 24041), (194, 24227), (198, 24245),

Gene: JeNeSaisPas_9 Start: 4898, Stop: 6151, Start Num: 18
Candidate Starts for JeNeSaisPas_9:
(Start: 18 @4898 has 1 MA's), (38, 4991), (44, 5015), (47, 5033), (49, 5054), (53, 5087), (58, 5111), (73, 5267), (77, 5288), (84, 5333), (93, 5366), (95, 5381), (130, 5636), (160, 5819), (175, 5969), (181, 6002), (196, 6098), (200, 6131),

Gene: JuJu_32 Start: 26098, Stop: 27291, Start Num: 27
Candidate Starts for JuJu_32:
(Start: 27 @26098 has 12 MA's), (30, 26107), (32, 26119), (36, 26146), (45, 26176), (65, 26329), (71, 26395), (90, 26509), (92, 26512), (93, 26518), (105, 26614), (115, 26683), (121, 26713), (126, 26764), (134, 26836), (147, 26920), (156, 26962), (157, 26965), (160, 26989), (164, 27025), (168, 27064), (171, 27091), (194, 27250),

Gene: Keitabear_26 Start: 21513, Stop: 22748, Start Num: 17
Candidate Starts for Keitabear_26:
(Start: 17 @21513 has 4 MA's), (25, 21546), (61, 21759), (64, 21783), (65, 21786), (67, 21816), (75, 21888), (78, 21906), (80, 21921), (83, 21936), (85, 21945), (90, 21966), (92, 21969), (98, 22002), (99, 22011), (105, 22071), (108, 22095), (134, 22296), (139, 22326), (147, 22380), (162, 22461), (173,

22560), (199, 22743),

Gene: Kenna_34 Start: 27113, Stop: 28303, Start Num: 27
Candidate Starts for Kenna_34:
(Start: 27 @27113 has 12 MA's), (30, 27122), (32, 27134), (36, 27161), (65, 27344), (71, 27410), (74, 27443), (80, 27479), (82, 27491), (90, 27524), (92, 27527), (93, 27533), (94, 27542), (99, 27569), (105, 27629), (108, 27653), (121, 27728), (126, 27779), (134, 27851), (147, 27935), (160, 28004), (169, 28079), (194, 28262), (199, 28298),

Gene: LavAbarElk_4 Start: 3410, Stop: 4867, Start Num: 10
Candidate Starts for LavAbarElk_4:
(10, 3410), (31, 3551), (35, 3578), (46, 3632), (57, 3716), (59, 3722), (68, 3833), (70, 3845), (81, 3932), (96, 4007), (97, 4016), (117, 4205), (124, 4244), (127, 4331), (148, 4499), (153, 4526), (167, 4637), (176, 4727), (197, 4841), (198, 4844),

Gene: Lutum_35 Start: 27113, Stop: 28303, Start Num: 27
Candidate Starts for Lutum_35:
(Start: 27 @27113 has 12 MA's), (30, 27122), (32, 27134), (36, 27161), (65, 27344), (71, 27410), (74, 27443), (80, 27479), (82, 27491), (90, 27524), (92, 27527), (93, 27533), (94, 27542), (99, 27569), (105, 27629), (108, 27653), (121, 27728), (126, 27779), (134, 27851), (147, 27935), (160, 28004), (169, 28079), (194, 28262), (199, 28298),

Gene: Melba_32 Start: 26502, Stop: 27728, Start Num: 20
Candidate Starts for Melba_32:
(6, 26370), (7, 26382), (9, 26400), (Start: 20 @26502 has 1 MA's), (26, 26529), (Start: 28 @26538 has 1 MA's), (40, 26595), (41, 26598), (43, 26610), (65, 26769), (71, 26835), (74, 26868), (90, 26949), (92, 26952), (94, 26967), (100, 26997), (105, 27054), (126, 27204), (140, 27312), (147, 27360), (160, 27429), (161, 27435), (162, 27441), (168, 27501), (194, 27687), (198, 27705),

Gene: Morkie_27 Start: 22599, Stop: 23789, Start Num: 27
Candidate Starts for Morkie_27:
(Start: 27 @22599 has 12 MA's), (32, 22620), (36, 22647), (65, 22830), (71, 22896), (90, 23010), (92, 23013), (93, 23019), (94, 23028), (103, 23100), (105, 23115), (121, 23214), (126, 23265), (147, 23421), (160, 23490), (168, 23562), (171, 23589), (180, 23664), (194, 23748),

Gene: NewKitty_33 Start: 21973, Stop: 23184, Start Num: 29
Candidate Starts for NewKitty_33:
(Start: 29 @21973 has 1 MA's), (52, 22108), (60, 22165), (76, 22309), (78, 22315), (88, 22369), (91, 22378), (93, 22384), (110, 22528), (116, 22567), (125, 22627), (126, 22651), (131, 22687), (136, 22735), (141, 22753), (161, 22876), (171, 22978), (183, 23086), (185, 23098), (192, 23134), (195, 23149),

Gene: Orkz_37 Start: 25081, Stop: 26454, Start Num: 22
Candidate Starts for Orkz_37:
(22, 25081), (24, 25090), (48, 25198), (56, 25258), (77, 25426), (118, 25675), (125, 25720), (159, 25909), (165, 25951), (170, 25999), (194, 26158), (201, 26200), (203, 26224), (207, 26317), (212, 26362), (213, 26365), (219, 26410),

Gene: PhaoMing_26 Start: 23853, Stop: 25043, Start Num: 27
Candidate Starts for PhaoMing_26:
(2, 23484), (3, 23622), (Start: 27 @23853 has 12 MA's), (32, 23874), (36, 23901), (51, 23988), (63, 24063), (65, 24084), (71, 24150), (90, 24264), (93, 24273), (94, 24282), (103, 24354), (105, 24369), (121, 24468), (126, 24519), (147, 24675), (160, 24744), (168, 24816), (171, 24843), (180, 24918),

(194, 25002),

Gene: PhorbesPhlower_27 Start: 22599, Stop: 23789, Start Num: 27
Candidate Starts for PhorbesPhlower_27:
(Start: 27 @22599 has 12 MA's), (30, 22608), (32, 22620), (36, 22647), (65, 22830), (71, 22896), (90, 23010), (93, 23019), (94, 23028), (103, 23100), (105, 23115), (121, 23214), (126, 23265), (147, 23421), (160, 23490), (168, 23562), (171, 23589), (194, 23748),

Gene: Rabbitrun_24 Start: 13450, Stop: 14688, Start Num: 16
Candidate Starts for Rabbitrun_24:
(15, 13447), (Start: 16 @13450 has 1 MA's), (23, 13477), (33, 13519), (65, 13729), (90, 13909), (93, 13918), (105, 14014), (121, 14113), (122, 14122), (126, 14164), (139, 14266), (144, 14299), (146, 14311), (155, 14359), (158, 14368), (160, 14389), (161, 14395), (171, 14488), (177, 14545), (180, 14563), (184, 14602), (194, 14647),

Gene: RayTheFireFly_32 Start: 26526, Stop: 27716, Start Num: 28
Candidate Starts for RayTheFireFly_32:
(6, 26358), (7, 26370), (9, 26388), (Start: 20 @26490 has 1 MA's), (26, 26517), (Start: 28 @26526 has 1 MA's), (40, 26583), (41, 26586), (43, 26598), (65, 26757), (71, 26823), (74, 26856), (90, 26937), (92, 26940), (94, 26955), (105, 27042), (126, 27192), (140, 27300), (147, 27348), (160, 27417), (161, 27423), (162, 27429), (168, 27489), (194, 27675), (198, 27693),

Gene: Sedona_26 Start: 21245, Stop: 22480, Start Num: 17
Candidate Starts for Sedona_26:
(Start: 17 @21245 has 4 MA's), (61, 21491), (64, 21515), (65, 21518), (67, 21548), (75, 21620), (78, 21638), (80, 21653), (83, 21668), (85, 21677), (90, 21698), (92, 21701), (98, 21734), (99, 21743), (105, 21803), (108, 21827), (134, 22028), (139, 22058), (147, 22112), (162, 22193), (173, 22292), (199, 22475),

Gene: Squiddly_35 Start: 26868, Stop: 28058, Start Num: 27
Candidate Starts for Squiddly_35:
(Start: 27 @26868 has 12 MA's), (32, 26889), (36, 26916), (65, 27099), (71, 27165), (74, 27198), (80, 27234), (87, 27264), (90, 27279), (94, 27297), (103, 27369), (105, 27384), (108, 27408), (121, 27483), (126, 27534), (134, 27606), (147, 27690), (160, 27759), (169, 27834), (172, 27864), (194, 28017),

Gene: Stultus_24 Start: 19224, Stop: 20459, Start Num: 17
Candidate Starts for Stultus_24:
(Start: 17 @19224 has 4 MA's), (61, 19470), (64, 19494), (65, 19497), (67, 19527), (75, 19599), (78, 19617), (80, 19632), (83, 19647), (85, 19656), (90, 19677), (92, 19680), (98, 19713), (99, 19722), (105, 19782), (108, 19806), (134, 20007), (139, 20037), (147, 20091), (162, 20172), (173, 20271), (199, 20454),

Gene: TripleJ_31 Start: 23130, Stop: 24341, Start Num: 29
Candidate Starts for TripleJ_31:
(Start: 29 @23130 has 1 MA's), (52, 23265), (60, 23322), (66, 23364), (78, 23472), (88, 23526), (91, 23535), (93, 23541), (110, 23685), (116, 23724), (125, 23784), (126, 23808), (131, 23844), (136, 23892), (141, 23910), (144, 23937), (161, 24033), (185, 24255), (191, 24285), (192, 24291), (195, 24306),

Gene: Vopal_33 Start: 21652, Stop: 23193, Start Num: 19
Candidate Starts for Vopal_33:
(Start: 19 @21652 has 1 MA's), (21, 21661), (32, 21700), (52, 21814), (55, 21832), (62, 21886), (69, 21964), (77, 22021), (79, 22027), (104, 22186), (106, 22222), (112, 22255), (123, 22315), (132,

22411), (139, 22465), (144, 22498), (147, 22519), (149, 22531), (151, 22534), (154, 22555), (163, 22615), (167, 22654), (176, 22741), (186, 22807), (215, 23071), (217, 23086), (222, 23146), (224, 23170), (225, 23179),

Gene: Wrigley_32 Start: 26121, Stop: 27311, Start Num: 27
Candidate Starts for Wrigley_32:
(Start: 27 @26121 has 12 MA's), (30, 26130), (32, 26142), (36, 26169), (65, 26352), (71, 26418), (80, 26487), (90, 26532), (92, 26535), (93, 26541), (105, 26637), (108, 26661), (121, 26736), (126, 26787), (134, 26859), (147, 26943), (157, 26988), (160, 27012), (169, 27087), (194, 27270),