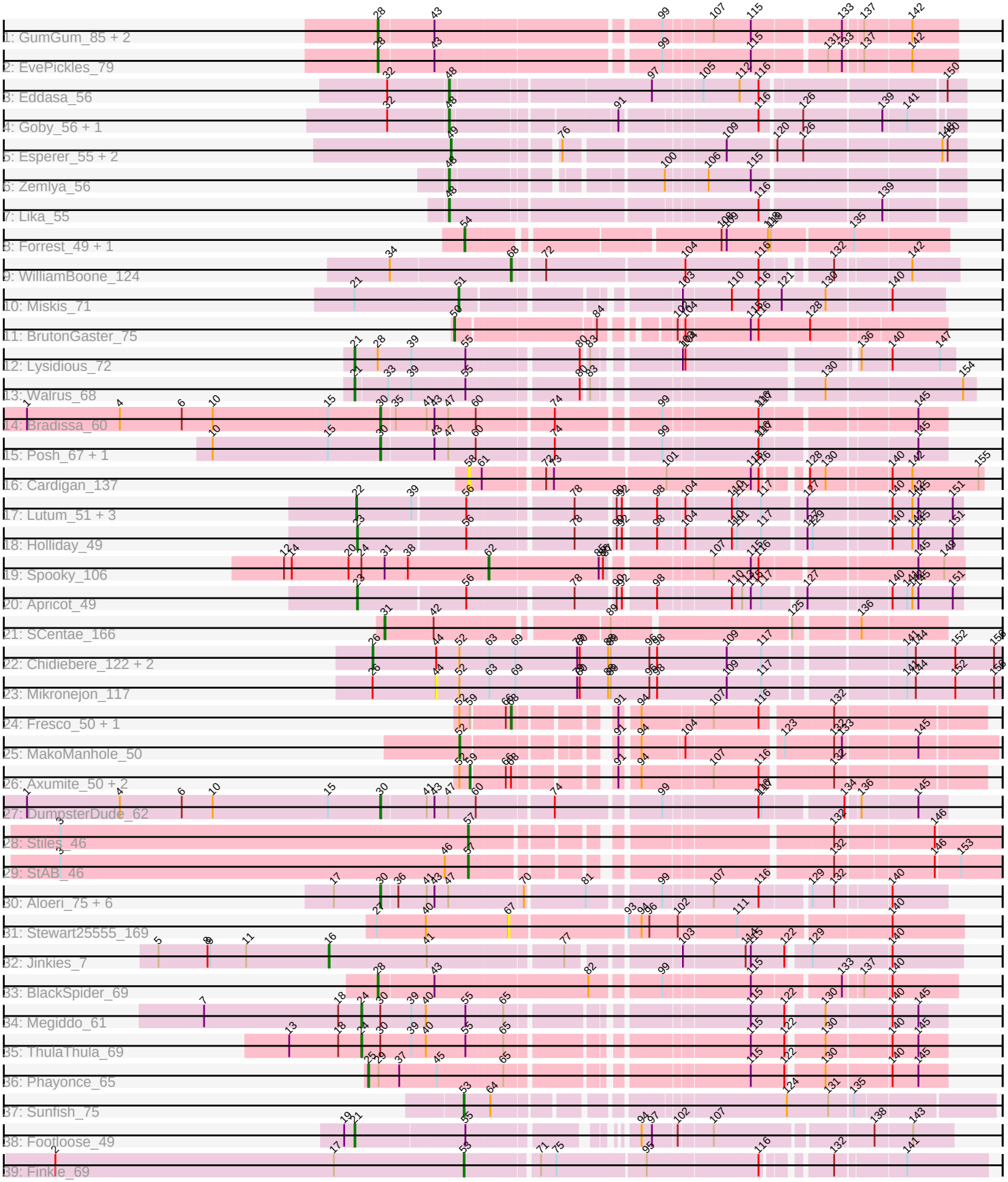
Pham 311622


1: GumGum_85 + 2
2: EvePickles_79
3: Eddasa_56
4: Goby_56 + 1
5: Esperer_55 + 2
6: Zemlya_56
7: Lika_55
8: Forrest_49 + 1
9: WilliamBoone_124
10: Miskis_71
11: BrutonGaster_75
12: Lysidious_72
13: Walrus_68
14: Bradissa_60
15: Posh_67 + 1
16: Cardigan_137
17: Lutum_51 + 3
18: Holliday_49
19: Spooky_106
20: Apricot_49
21: SCentae_166
22: Chidiebere_122 + 2
23: Mikronejon_117
24: Fresco_50 + 1
25: MakoManhole_50
26: Axumite_50 + 2
27: DumpsterDude_62
28: Stiles_46
29: StAB_46
30: Aloeri_75 + 6
31: Stewart25555_169
32: Jinkies_7
33: BlackSpider_69
34: Megiddo_61
35: ThulaThula_69
36: Phayonce_65
37: Sunfish_75
38: Footloose_49
39: Finkle_69

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 311622 Report

This analysis was run 06/27/26 on database version 652.

Pham number 311622 has 60 members, 6 are drafts.

Phages represented in each track:
- Track 1 : GumGum_85, Lasker_80, CosmicBrownie_77
- Track 2 : EvePickles_79
- Track 3 : Eddasa_56
- Track 4 : Goby_56, Toma_56
- Track 5 : Esperer_55, Leviticus_55, Hydra_56
- Track 6 : Zemlya_56
- Track 7 : Lika_55
- Track 8 : Forrest_49, Jada_47
- Track 9 : WilliamBoone_124
- Track 10 : Miskis_71
- Track 11 : BrutonGaster_75
- Track 12 : Lysidious_72
- Track 13 : Walrus_68
- Track 14 : Bradissa_60
- Track 15 : Posh_67, Wrigley_69
- Track 16 : Cardigan_137
- Track 17 : Lutum_51, Kenna_50, Getalong_54, BENtherdunthat_51
- Track 18 : Holliday_49
- Track 19 : Spooky_106
- Track 20 : Apricot_49
- Track 21 : SCentae_166
- Track 22 : Chidiebere_122, Schomber_120, Kabocha_123
- Track 23 : Mikronejon_117
- Track 24 : Fresco_50, Ligma_50
- Track 25 : MakoManhole_50
- Track 26 : Axumite_50, Shatter_50, CharlottesWeb_49
- Track 27 : DumpsterDude_62
- Track 28 : Stiles_46
- Track 29 : StAB_46
- Track 30 : Aloeri_75, DocMcStuffins_74, ChickenDinner_74, SkinnyPete_53, Misha28_72, Awesomesauce_74, TootsiePop_72
- Track 31 : Stewart25555_169
- Track 32 : Jinkies_7
- Track 33 : BlackSpider_69
- Track 34 : Megiddo_61
- Track 35 : ThulaThula_69
- Track 36 : Phayonce_65

• Track 37 : Sunfish_75
• Track 38 : Footloose_49
• Track 39 : Finkle_69

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

The start number called the most often in the published annotations is 30, it was called in 11 of the 54 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Aloeri_75, Awesomesauce_74, Bradissa_60, ChickenDinner_74, DocMcStuffins_74, DumpsterDude_62, Misha28_72, Posh_67, SkinnyPete_53, TootsiePop_72, Wrigley_69,

Genes that have the "Most Annotated" start but do not call it:
• Megiddo_61, ThulaThula_69,

Genes that do not have the "Most Annotated" start:
• Apricot_49, Axumite_50, BENtherdunthat_51, BlackSpider_69, BrutonGaster_75, Cardigan_137, CharlottesWeb_49, Chidiebere_122, CosmicBrownie_77, Eddasa_56, Esperer_55, EvePickles_79, Finkle_69, Footloose_49, Forrest_49, Fresco_50, Getalong_54, Goby_56, GumGum_85, Holliday_49, Hydra_56, Jada_47, Jinkies_7, Kabocha_123, Kenna_50, Lasker_80, Leviticus_55, Ligma_50, Lika_55, Lutum_51, Lysidious_72, MakoManhole_50, Mikronejon_117, Miskis_71, Phayonce_65, SCentae_166, Schomber_120, Shatter_50, Spooky_106, StAB_46, Stewart25555_169, Stiles_46, Sunfish_75, Toma_56, Walrus_68, WilliamBoone_124, Zemlya_56,

Summary by start number:

Start 16:
• Found in 1 of 60 (1.7%) of genes in pham
• Manual Annotations of this start: 1 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Jinkies_7 (FL),

Start 21:
• Found in 4 of 60 (6.7%) of genes in pham
• Manual Annotations of this start: 3 of 54
• Called 75.0% of time when present
• Phage (with cluster) where this start called: Footloose_49 (singleton), Lysidious_72 (CV), Walrus_68 (CV),

Start 22:
• Found in 4 of 60 (6.7%) of genes in pham
• Manual Annotations of this start: 4 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: BENtherdunthat_51 (DN1), Getalong_54 (DN1), Kenna_50 (DN1), Lutum_51 (DN1),

Start 23:
• Found in 2 of 60 (3.3%) of genes in pham
• Manual Annotations of this start: 2 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Apricot_49 (DN3), Holliday_49 (DN1),

Start 24:
• Found in 3 of 60 (5.0%) of genes in pham
• Manual Annotations of this start: 2 of 54
• Called 66.7% of time when present
• Phage (with cluster) where this start called: Megiddo_61 (P1), ThulaThula_69 (P5),

Start 25:
• Found in 1 of 60 (1.7%) of genes in pham
• Manual Annotations of this start: 1 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Phayonce_65 (P5),

Start 26:
• Found in 4 of 60 (6.7%) of genes in pham
• Manual Annotations of this start: 3 of 54
• Called 75.0% of time when present
• Phage (with cluster) where this start called: Chidiebere_122 (DQ), Kabocha_123 (DQ), Schomber_120 (DQ),

Start 28:
• Found in 6 of 60 (10.0%) of genes in pham
• Manual Annotations of this start: 3 of 54
• Called 83.3% of time when present
• Phage (with cluster) where this start called: BlackSpider_69 (FN), CosmicBrownie_77 (AY), EvePickles_79 (AY), GumGum_85 (AY), Lasker_80 (AY),

Start 30:
• Found in 13 of 60 (21.7%) of genes in pham
• Manual Annotations of this start: 11 of 54
• Called 84.6% of time when present
• Phage (with cluster) where this start called: Aloeri_75 (F1), Awesomesauce_74 (F1), Bradissa_60 (CY1), ChickenDinner_74 (F1), DocMcStuffins_74 (F1), DumpsterDude_62 (DW), Misha28_72 (F1), Posh_67 (CY4), SkinnyPete_53 (N), TootsiePop_72 (F1), Wrigley_69 (CY4),

Start 31:
• Found in 2 of 60 (3.3%) of genes in pham
• Manual Annotations of this start: 1 of 54
• Called 50.0% of time when present
• Phage (with cluster) where this start called: SCentae_166 (DO),

Start 44:
• Found in 4 of 60 (6.7%) of genes in pham
• No Manual Annotations of this start.
• Called 25.0% of time when present
• Phage (with cluster) where this start called: Mikronejon_117 (DQ),

Start 48:
• Found in 5 of 60 (8.3%) of genes in pham
• Manual Annotations of this start: 5 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Eddasa_56 (BD1), Goby_56 (BD1), Lika_55 (BD1), Toma_56 (BD1), Zemlya_56 (BD1),

Start 49:
• Found in 3 of 60 (5.0%) of genes in pham
• Manual Annotations of this start: 3 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Esperer_55 (BD1), Hydra_56 (BD1), Leviticus_55 (BD1),

Start 50:
• Found in 1 of 60 (1.7%) of genes in pham
• Manual Annotations of this start: 1 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: BrutonGaster_75 (CQ2),

Start 51:
• Found in 1 of 60 (1.7%) of genes in pham
• Manual Annotations of this start: 1 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Miskis_71 (CQ1),

Start 52:
• Found in 10 of 60 (16.7%) of genes in pham
• Manual Annotations of this start: 1 of 54
• Called 10.0% of time when present
• Phage (with cluster) where this start called: MakoManhole_50 (DR),

Start 53:
• Found in 2 of 60 (3.3%) of genes in pham
• Manual Annotations of this start: 2 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Finkle_69 (singleton), Sunfish_75 (singleton),

Start 54:
• Found in 2 of 60 (3.3%) of genes in pham
• Manual Annotations of this start: 2 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Forrest_49 (BK1), Jada_47 (BK1),

Start 57:
• Found in 2 of 60 (3.3%) of genes in pham
• Manual Annotations of this start: 2 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: StAB_46 (EP), Stiles_46 (EP),

Start 58:
• Found in 1 of 60 (1.7%) of genes in pham

• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Cardigan_137 (DD),

Start 59:
• Found in 5 of 60 (8.3%) of genes in pham
• Manual Annotations of this start: 2 of 54
• Called 60.0% of time when present
• Phage (with cluster) where this start called: Axumite_50 (DR), CharlottesWeb_49 (DR), Shatter_50 (DR),

Start 62:
• Found in 1 of 60 (1.7%) of genes in pham
• Manual Annotations of this start: 1 of 54
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Spooky_106 (DN2),

Start 67:
• Found in 1 of 60 (1.7%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Stewart25555_169 (FC),

Start 68:
• Found in 6 of 60 (10.0%) of genes in pham
• Manual Annotations of this start: 3 of 54
• Called 50.0% of time when present
• Phage (with cluster) where this start called: Fresco_50 (DR), Ligma_50 (DR), WilliamBoone_124 (CQ1),

Summary by clusters:

There are 25 clusters represented in this pham: DO, singleton, DD, FC, DW, FL, FN, DQ, DR, CY4, EP, BD1, DN3, DN2, CQ2, CQ1, CY1, P1, P5, N, BK1, DN1, AY, CV, F1,

Info for manual annotations of cluster AY:
•Start number 28 was manually annotated 2 times for cluster AY.

Info for manual annotations of cluster BD1:
•Start number 48 was manually annotated 5 times for cluster BD1.
•Start number 49 was manually annotated 3 times for cluster BD1.

Info for manual annotations of cluster BK1:
•Start number 54 was manually annotated 2 times for cluster BK1.

Info for manual annotations of cluster CQ1:
•Start number 51 was manually annotated 1 time for cluster CQ1.
•Start number 68 was manually annotated 1 time for cluster CQ1.

Info for manual annotations of cluster CQ2:
•Start number 50 was manually annotated 1 time for cluster CQ2.

Info for manual annotations of cluster CV:
•Start number 21 was manually annotated 2 times for cluster CV.

Info for manual annotations of cluster CY1:
•Start number 30 was manually annotated 1 time for cluster CY1.

Info for manual annotations of cluster CY4:
•Start number 30 was manually annotated 2 times for cluster CY4.

Info for manual annotations of cluster DN1:
•Start number 22 was manually annotated 4 times for cluster DN1.
•Start number 23 was manually annotated 1 time for cluster DN1.

Info for manual annotations of cluster DN2:
•Start number 62 was manually annotated 1 time for cluster DN2.

Info for manual annotations of cluster DN3:
•Start number 23 was manually annotated 1 time for cluster DN3.

Info for manual annotations of cluster DO:
•Start number 31 was manually annotated 1 time for cluster DO.

Info for manual annotations of cluster DQ:
•Start number 26 was manually annotated 3 times for cluster DQ.

Info for manual annotations of cluster DR:
•Start number 52 was manually annotated 1 time for cluster DR.
•Start number 59 was manually annotated 2 times for cluster DR.
•Start number 68 was manually annotated 2 times for cluster DR.

Info for manual annotations of cluster DW:
•Start number 30 was manually annotated 1 time for cluster DW.

Info for manual annotations of cluster EP:
•Start number 57 was manually annotated 2 times for cluster EP.

Info for manual annotations of cluster F1:
•Start number 30 was manually annotated 6 times for cluster F1.

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

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

Info for manual annotations of cluster N:
•Start number 30 was manually annotated 1 time for cluster N.

Info for manual annotations of cluster P1:
•Start number 24 was manually annotated 1 time for cluster P1.

Info for manual annotations of cluster P5:
•Start number 24 was manually annotated 1 time for cluster P5.
•Start number 25 was manually annotated 1 time for cluster P5.

Gene Information:

Gene: Aloeri_75 Start: 46126, Stop: 46713, Start Num: 30
Candidate Starts for Aloeri_75:
(17, 46072), (Start: 30 @46126 has 11 MA's), (36, 46144), (41, 46177), (43, 46186), (47, 46201), (70, 46282), (81, 46348), (99, 46420), (107, 46471), (116, 46522), (129, 46573), (132, 46597), (140, 46654),

Gene: Apricot_49 Start: 33085, Stop: 32453, Start Num: 23
Candidate Starts for Apricot_49:
(Start: 23 @33085 has 2 MA's), (56, 32965), (78, 32854), (90, 32812), (92, 32806), (98, 32773), (110, 32695), (113, 32683), (115, 32674), (117, 32662), (127, 32617), (140, 32530), (141, 32515), (142, 32509), (145, 32503), (151, 32464),

Gene: Awesomesauce_74 Start: 45209, Stop: 45796, Start Num: 30
Candidate Starts for Awesomesauce_74:
(17, 45155), (Start: 30 @45209 has 11 MA's), (36, 45227), (41, 45260), (43, 45269), (47, 45284), (70, 45365), (81, 45431), (99, 45503), (107, 45554), (116, 45605), (129, 45656), (132, 45680), (140, 45737),

Gene: Axumite_50 Start: 44137, Stop: 43628, Start Num: 59
Candidate Starts for Axumite_50:
(Start: 52 @44149 has 1 MA's), (Start: 59 @44137 has 2 MA's), (66, 44101), (Start: 68 @44095 has 3 MA's), (91, 44008), (94, 43990), (107, 43912), (116, 43861), (132, 43786),

Gene: BENtherdunthat_51 Start: 33462, Stop: 32830, Start Num: 22
Candidate Starts for BENtherdunthat_51:
(Start: 22 @33462 has 4 MA's), (39, 33399), (56, 33342), (78, 33231), (90, 33189), (92, 33183), (98, 33150), (104, 33123), (110, 33072), (111, 33066), (117, 33039), (127, 32994), (140, 32907), (142, 32886), (145, 32880), (151, 32841),

Gene: BlackSpider_69 Start: 42752, Stop: 43360, Start Num: 28
Candidate Starts for BlackSpider_69:
(Start: 28 @42752 has 3 MA's), (43, 42815), (82, 42986), (99, 43055), (115, 43148), (133, 43241), (137, 43259), (140, 43289),

Gene: Bradissa_60 Start: 44116, Stop: 44703, Start Num: 30
Candidate Starts for Bradissa_60:
(1, 43708), (4, 43816), (6, 43888), (10, 43924), (15, 44056), (Start: 30 @44116 has 11 MA's), (35, 44131), (41, 44167), (43, 44176), (47, 44191), (60, 44221), (74, 44302), (99, 44410), (116, 44512), (117, 44515), (145, 44671),

Gene: BrutonGaster_75 Start: 52573, Stop: 53064, Start Num: 50
Candidate Starts for BrutonGaster_75:
(Start: 50 @52573 has 1 MA's), (84, 52717), (102, 52774), (104, 52780), (115, 52852), (116, 52861), (128, 52921),

Gene: Cardigan_137 Start: 77101, Stop: 77631, Start Num: 58
Candidate Starts for Cardigan_137:
(58, 77101), (61, 77116), (72, 77179), (73, 77188), (101, 77311), (115, 77404), (116, 77413), (128, 77446), (130, 77464), (140, 77530), (142, 77551), (155, 77626),

Gene: CharlottesWeb_49 Start: 43503, Stop: 42994, Start Num: 59
Candidate Starts for CharlottesWeb_49:
(Start: 52 @43515 has 1 MA's), (Start: 59 @43503 has 2 MA's), (66, 43467), (Start: 68 @43461 has 3 MA's), (91, 43374), (94, 43356), (107, 43278), (116, 43227), (132, 43152),

Gene: ChickenDinner_74 Start: 46126, Stop: 46713, Start Num: 30
Candidate Starts for ChickenDinner_74:
(17, 46072), (Start: 30 @46126 has 11 MA's), (36, 46144), (41, 46177), (43, 46186), (47, 46201), (70, 46282), (81, 46348), (99, 46420), (107, 46471), (116, 46522), (129, 46573), (132, 46597), (140, 46654),

Gene: Chidiebere_122 Start: 85918, Stop: 86616, Start Num: 26
Candidate Starts for Chidiebere_122:
(Start: 26 @85918 has 3 MA's), (44, 85990), (Start: 52 @86017 has 1 MA's), (63, 86050), (69, 86080), (79, 86152), (80, 86155), (88, 86188), (89, 86191), (96, 86236), (98, 86245), (109, 86326), (117, 86365), (141, 86509), (144, 86518), (152, 86563), (156, 86608),

Gene: CosmicBrownie_77 Start: 44062, Stop: 44670, Start Num: 28
Candidate Starts for CosmicBrownie_77:
(Start: 28 @44062 has 3 MA's), (43, 44125), (99, 44365), (107, 44416), (115, 44458), (133, 44551), (137, 44569), (142, 44620),

Gene: DocMcStuffins_74 Start: 46126, Stop: 46713, Start Num: 30
Candidate Starts for DocMcStuffins_74:
(17, 46072), (Start: 30 @46126 has 11 MA's), (36, 46144), (41, 46177), (43, 46186), (47, 46201), (70, 46282), (81, 46348), (99, 46420), (107, 46471), (116, 46522), (129, 46573), (132, 46597), (140, 46654),

Gene: DumpsterDude_62 Start: 46219, Stop: 46806, Start Num: 30
Candidate Starts for DumpsterDude_62:
(1, 45811), (4, 45919), (6, 45991), (10, 46027), (15, 46159), (Start: 30 @46219 has 11 MA's), (41, 46270), (43, 46279), (47, 46294), (60, 46324), (74, 46405), (99, 46513), (116, 46615), (117, 46618), (134, 46702), (136, 46714), (145, 46774),

Gene: Eddasa_56 Start: 41265, Stop: 40723, Start Num: 48
Candidate Starts for Eddasa_56:
(32, 41334), (Start: 48 @41265 has 5 MA's), (97, 41046), (105, 40995), (112, 40953), (116, 40932), (150, 40743),

Gene: Esperer_55 Start: 40815, Stop: 40285, Start Num: 49
Candidate Starts for Esperer_55:
(Start: 49 @40815 has 3 MA's), (76, 40707), (109, 40539), (120, 40488), (126, 40458), (148, 40311), (150, 40305),

Gene: EvePickles_79 Start: 46090, Stop: 46698, Start Num: 28
Candidate Starts for EvePickles_79:
(Start: 28 @46090 has 3 MA's), (43, 46153), (99, 46393), (115, 46486), (131, 46564), (133, 46579), (137, 46597), (142, 46648),

Gene: Finkle_69 Start: 42637, Stop: 43176, Start Num: 53
Candidate Starts for Finkle_69:
(2, 42163), (17, 42487), (Start: 53 @42637 has 2 MA's), (71, 42715), (75, 42733), (95, 42832), (116, 42955), (132, 43015), (141, 43087),

Gene: Footloose_49 Start: 28880, Stop: 29479, Start Num: 21
Candidate Starts for Footloose_49:
(19, 28868), (Start: 21 @28880 has 3 MA's), (55, 29000), (94, 29150), (97, 29162), (102, 29189), (107, 29225), (138, 29393), (143, 29435),

Gene: Forrest_49 Start: 41931, Stop: 42446, Start Num: 54
Candidate Starts for Forrest_49:
(Start: 54 @41931 has 2 MA's), (108, 42195), (109, 42201), (118, 42249), (119, 42252), (135, 42342),

Gene: Fresco_50 Start: 44095, Stop: 43628, Start Num: 68
Candidate Starts for Fresco_50:
(Start: 52 @44149 has 1 MA's), (Start: 59 @44137 has 2 MA's), (66, 44101), (Start: 68 @44095 has 3 MA's), (91, 44008), (94, 43990), (107, 43912), (116, 43861), (132, 43786),

Gene: Getalong_54 Start: 36463, Stop: 35831, Start Num: 22
Candidate Starts for Getalong_54:
(Start: 22 @36463 has 4 MA's), (39, 36400), (56, 36343), (78, 36232), (90, 36190), (92, 36184), (98, 36151), (104, 36124), (110, 36073), (111, 36067), (117, 36040), (127, 35995), (140, 35908), (142, 35887), (145, 35881), (151, 35842),

Gene: Goby_56 Start: 42305, Stop: 41778, Start Num: 48
Candidate Starts for Goby_56:
(32, 42374), (Start: 48 @42305 has 5 MA's), (91, 42131), (116, 41987), (126, 41942), (139, 41858), (141, 41834),

Gene: GumGum_85 Start: 45863, Stop: 46471, Start Num: 28
Candidate Starts for GumGum_85:
(Start: 28 @45863 has 3 MA's), (43, 45926), (99, 46166), (107, 46217), (115, 46259), (133, 46352), (137, 46370), (142, 46421),

Gene: Holliday_49 Start: 33694, Stop: 33062, Start Num: 23
Candidate Starts for Holliday_49:
(Start: 23 @33694 has 2 MA's), (56, 33574), (78, 33463), (90, 33421), (92, 33415), (98, 33382), (104, 33355), (110, 33304), (111, 33298), (117, 33271), (127, 33226), (129, 33220), (140, 33139), (142, 33118), (145, 33112), (151, 33073),

Gene: Hydra_56 Start: 41651, Stop: 41121, Start Num: 49
Candidate Starts for Hydra_56:
(Start: 49 @41651 has 3 MA's), (76, 41543), (109, 41375), (120, 41324), (126, 41294), (148, 41147), (150, 41141),

Gene: Jada_47 Start: 41113, Stop: 41628, Start Num: 54
Candidate Starts for Jada_47:
(Start: 54 @41113 has 2 MA's), (108, 41377), (109, 41383), (118, 41431), (119, 41434), (135, 41524),

Gene: Jinkies_7 Start: 5796, Stop: 6461, Start Num: 16
Candidate Starts for Jinkies_7:

(5, 5598), (8, 5655), (9, 5658), (11, 5700), (Start: 16 @5796 has 1 MA's), (41, 5910), (77, 6057), (103, 6165), (114, 6234), (115, 6240), (122, 6279), (129, 6300), (140, 6384),

Gene: Kabocha_123 Start: 86731, Stop: 87429, Start Num: 26
Candidate Starts for Kabocha_123:
(Start: 26 @86731 has 3 MA's), (44, 86803), (Start: 52 @86830 has 1 MA's), (63, 86863), (69, 86893), (79, 86965), (80, 86968), (88, 87001), (89, 87004), (96, 87049), (98, 87058), (109, 87139), (117, 87178), (141, 87322), (144, 87331), (152, 87376), (156, 87421),

Gene: Kenna_50 Start: 34206, Stop: 33574, Start Num: 22
Candidate Starts for Kenna_50:
(Start: 22 @34206 has 4 MA's), (39, 34143), (56, 34086), (78, 33975), (90, 33933), (92, 33927), (98, 33894), (104, 33867), (110, 33816), (111, 33810), (117, 33783), (127, 33738), (140, 33651), (142, 33630), (145, 33624), (151, 33585),

Gene: Lasker_80 Start: 46302, Stop: 46910, Start Num: 28
Candidate Starts for Lasker_80:
(Start: 28 @46302 has 3 MA's), (43, 46365), (99, 46605), (107, 46656), (115, 46698), (133, 46791), (137, 46809), (142, 46860),

Gene: Leviticus_55 Start: 41002, Stop: 40472, Start Num: 49
Candidate Starts for Leviticus_55:
(Start: 49 @41002 has 3 MA's), (76, 40894), (109, 40726), (120, 40675), (126, 40645), (148, 40498), (150, 40492),

Gene: Ligma_50 Start: 44095, Stop: 43628, Start Num: 68
Candidate Starts for Ligma_50:
(Start: 52 @44149 has 1 MA's), (Start: 59 @44137 has 2 MA's), (66, 44101), (Start: 68 @44095 has 3 MA's), (91, 44008), (94, 43990), (107, 43912), (116, 43861), (132, 43786),

Gene: Lika_55 Start: 42316, Stop: 41774, Start Num: 48
Candidate Starts for Lika_55:
(Start: 48 @42316 has 5 MA's), (116, 41986), (139, 41857),

Gene: Lutum_51 Start: 34206, Stop: 33574, Start Num: 22
Candidate Starts for Lutum_51:
(Start: 22 @34206 has 4 MA's), (39, 34143), (56, 34086), (78, 33975), (90, 33933), (92, 33927), (98, 33894), (104, 33867), (110, 33816), (111, 33810), (117, 33783), (127, 33738), (140, 33651), (142, 33630), (145, 33624), (151, 33585),

Gene: Lysidious_72 Start: 45013, Stop: 45621, Start Num: 21
Candidate Starts for Lysidious_72:
(Start: 21 @45013 has 3 MA's), (Start: 28 @45040 has 3 MA's), (39, 45079), (55, 45139), (80, 45256), (83, 45262), (103, 45343), (104, 45346), (136, 45520), (140, 45553), (147, 45604),

Gene: MakoManhole_50 Start: 45251, Stop: 44724, Start Num: 52
Candidate Starts for MakoManhole_50:
(Start: 52 @45251 has 1 MA's), (91, 45113), (94, 45095), (104, 45050), (123, 44948), (132, 44894), (133, 44885), (145, 44807),

Gene: Megiddo_61 Start: 41199, Stop: 41795, Start Num: 24
Candidate Starts for Megiddo_61:

(7, 41016), (18, 41172), (Start: 24 @41199 has 2 MA's), (Start: 30 @41220 has 11 MA's), (39, 41256), (40, 41271), (55, 41316), (65, 41355), (115, 41595), (122, 41634), (130, 41670), (140, 41736), (145, 41763),

Gene: Mikronejon_117 Start: 85340, Stop: 85966, Start Num: 44
Candidate Starts for Mikronejon_117:
(Start: 26 @85268 has 3 MA's), (44, 85340), (Start: 52 @85367 has 1 MA's), (63, 85400), (69, 85430), (79, 85502), (80, 85505), (88, 85538), (89, 85541), (96, 85586), (98, 85595), (109, 85676), (117, 85715), (141, 85859), (144, 85868), (152, 85913), (156, 85958),

Gene: Misha28_72 Start: 45214, Stop: 45801, Start Num: 30
Candidate Starts for Misha28_72:
(17, 45160), (Start: 30 @45214 has 11 MA's), (36, 45232), (41, 45265), (43, 45274), (47, 45289), (70, 45370), (81, 45436), (99, 45508), (107, 45559), (116, 45610), (129, 45661), (132, 45685), (140, 45742),

Gene: Miskis_71 Start: 47774, Stop: 48271, Start Num: 51
Candidate Starts for Miskis_71:
(Start: 21 @47657 has 3 MA's), (Start: 51 @47774 has 1 MA's), (103, 47984), (110, 48038), (116, 48068), (121, 48095), (130, 48146), (140, 48215),

Gene: Phayonce_65 Start: 43286, Stop: 43876, Start Num: 25
Candidate Starts for Phayonce_65:
(Start: 25 @43286 has 1 MA's), (29, 43298), (37, 43322), (45, 43364), (65, 43436), (115, 43676), (122, 43715), (130, 43751), (140, 43817), (145, 43844),

Gene: Posh_67 Start: 45892, Stop: 46479, Start Num: 30
Candidate Starts for Posh_67:
(10, 45700), (15, 45832), (Start: 30 @45892 has 11 MA's), (43, 45952), (47, 45967), (60, 45997), (74, 46078), (99, 46186), (116, 46288), (117, 46291), (145, 46447),

Gene: SCentae_166 Start: 121636, Stop: 122217, Start Num: 31
Candidate Starts for SCentae_166:
(Start: 31 @121636 has 1 MA's), (42, 121693), (89, 121873), (125, 122059), (136, 122125),

Gene: Schomber_120 Start: 85119, Stop: 85817, Start Num: 26
Candidate Starts for Schomber_120:
(Start: 26 @85119 has 3 MA's), (44, 85191), (Start: 52 @85218 has 1 MA's), (63, 85251), (69, 85281), (79, 85353), (80, 85356), (88, 85389), (89, 85392), (96, 85437), (98, 85446), (109, 85527), (117, 85566), (141, 85710), (144, 85719), (152, 85764), (156, 85809),

Gene: Shatter_50 Start: 44137, Stop: 43628, Start Num: 59
Candidate Starts for Shatter_50:
(Start: 52 @44149 has 1 MA's), (Start: 59 @44137 has 2 MA's), (66, 44101), (Start: 68 @44095 has 3 MA's), (91, 44008), (94, 43990), (107, 43912), (116, 43861), (132, 43786),

Gene: SkinnyPete_53 Start: 35995, Stop: 36582, Start Num: 30
Candidate Starts for SkinnyPete_53:
(17, 35941), (Start: 30 @35995 has 11 MA's), (36, 36013), (41, 36046), (43, 36055), (47, 36070), (70, 36151), (81, 36217), (99, 36289), (107, 36340), (116, 36391), (129, 36442), (132, 36466), (140, 36523),

Gene: Spooky_106 Start: 55742, Stop: 56233, Start Num: 62

Candidate Starts for Spooky_106:
(12, 55508), (14, 55517), (20, 55583), (Start: 24 @55598 has 2 MA's), (Start: 31 @55625 has 1 MA's), (38, 55652), (Start: 62 @55742 has 1 MA's), (85, 55859), (86, 55862), (87, 55865), (107, 55967), (115, 56009), (116, 56018), (145, 56180), (149, 56210),

Gene: StAB_46 Start: 35820, Stop: 36344, Start Num: 57
Candidate Starts for StAB_46:
(3, 35346), (46, 35793), (Start: 57 @35820 has 2 MA's), (132, 36168), (146, 36270), (153, 36297),

Gene: Stewart25555_169 Start: 117773, Stop: 118273, Start Num: 67
Candidate Starts for Stewart25555_169:
(27, 117620), (40, 117677), (67, 117773), (93, 117902), (94, 117917), (96, 117926), (102, 117959), (111, 118022), (140, 118193),

Gene: Stiles_46 Start: 35275, Stop: 35799, Start Num: 57
Candidate Starts for Stiles_46:
(3, 34801), (Start: 57 @35275 has 2 MA's), (132, 35623), (146, 35725),

Gene: Sunfish_75 Start: 46858, Stop: 46316, Start Num: 53
Candidate Starts for Sunfish_75:
(Start: 53 @46858 has 2 MA's), (64, 46828), (124, 46537), (131, 46489), (135, 46465),

Gene: ThulaThula_69 Start: 44706, Stop: 45302, Start Num: 24
Candidate Starts for ThulaThula_69:
(13, 44622), (18, 44679), (Start: 24 @44706 has 2 MA's), (Start: 30 @44727 has 11 MA's), (39, 44763), (40, 44778), (55, 44823), (65, 44862), (115, 45102), (122, 45141), (130, 45177), (140, 45243), (145, 45270),

Gene: Toma_56 Start: 42308, Stop: 41778, Start Num: 48
Candidate Starts for Toma_56:
(32, 42377), (Start: 48 @42308 has 5 MA's), (91, 42131), (116, 41987), (126, 41942), (139, 41858), (141, 41834),

Gene: TootsiePop_72 Start: 45214, Stop: 45801, Start Num: 30
Candidate Starts for TootsiePop_72:
(17, 45160), (Start: 30 @45214 has 11 MA's), (36, 45232), (41, 45265), (43, 45274), (47, 45289), (70, 45370), (81, 45436), (99, 45508), (107, 45559), (116, 45610), (129, 45661), (132, 45685), (140, 45742),

Gene: Walrus_68 Start: 43422, Stop: 44057, Start Num: 21
Candidate Starts for Walrus_68:
(Start: 21 @43422 has 3 MA's), (33, 43458), (39, 43485), (55, 43545), (80, 43662), (83, 43668), (130, 43899), (154, 44043),

Gene: WilliamBoone_124 Start: 68689, Stop: 69156, Start Num: 68
Candidate Starts for WilliamBoone_124:
(34, 68554), (Start: 68 @68689 has 3 MA's), (72, 68722), (104, 68878), (116, 68962), (132, 69028), (142, 69106),

Gene: Wrigley_69 Start: 45475, Stop: 46062, Start Num: 30
Candidate Starts for Wrigley_69:
(10, 45283), (15, 45415), (Start: 30 @45475 has 11 MA's), (43, 45535), (47, 45550), (60, 45580), (74, 45661), (99, 45769), (116, 45871), (117, 45874), (145, 46030),

Gene: Zemlya_56 Start: 42043, Stop: 41525, Start Num: 48
Candidate Starts for Zemlya_56:
(Start: 48 @42043 has 5 MA's), (100, 41836), (106, 41794), (115, 41746),