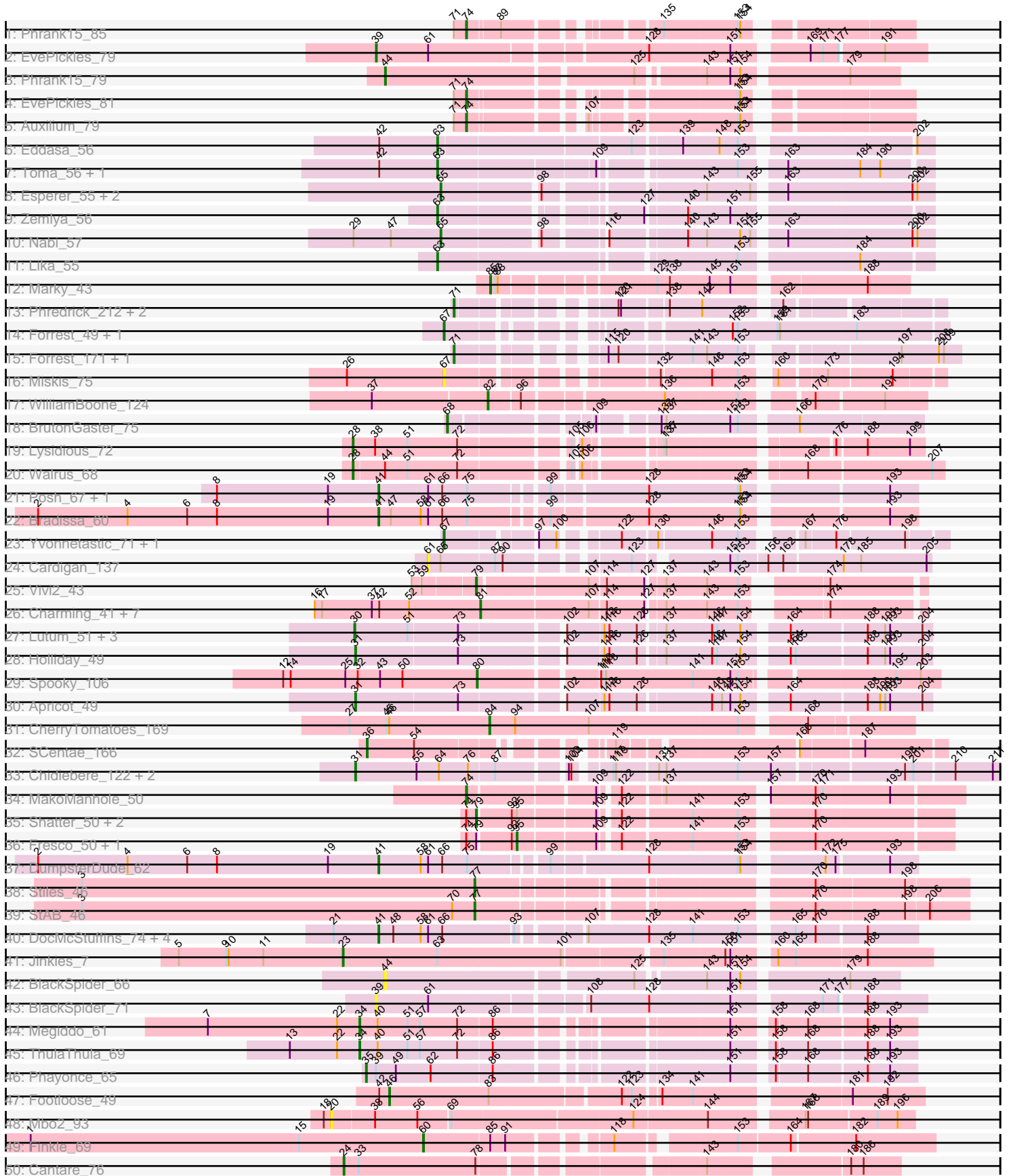


Pham 196481



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 196481 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196481 has 78 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Phrank15_85
- Track 2 : EvePickles_79
- Track 3 : Phrank15_79
- Track 4 : EvePickles_81
- Track 5 : Auxilium_79
- Track 6 : Eddasa_56
- Track 7 : Toma_56, Goby_56
- Track 8 : Esperer_55, Hydra_56, Leviticus_55
- Track 9 : Zemlya_56
- Track 10 : Nabi_57
- Track 11 : Lika_55
- Track 12 : Marky_43
- Track 13 : Phredrick_212, Forrest_210, Emma1919_210
- Track 14 : Forrest_49, Jada_47
- Track 15 : Forrest_171, Jada_168
- Track 16 : Miskis_75
- Track 17 : WilliamBoone_124
- Track 18 : BrutonGaster_75
- Track 19 : Lysidious_72
- Track 20 : Walrus_68
- Track 21 : Posh_67, Wrigley_69
- Track 22 : Bradissa_60
- Track 23 : Yvonnetastic_71, JonJames_73
- Track 24 : Cardigan_137
- Track 25 : Vivi2_43
- Track 26 : Charming_41, Paries_43, Tangent_41, Love_44, Nordenberg_35, Brandonk123_42, BobBob_38, Rofo_41
- Track 27 : Lutum_51, Kenna_50, Getalong_54, BENtherdunthat_51
- Track 28 : Holliday_49
- Track 29 : Spooky_106
- Track 30 : Apricot_49
- Track 31 : CherryTomatoes_169
- Track 32 : SCentae_166
- Track 33 : Chidiebere_122, Schomber_120, Kabocha_123
- Track 34 : MakoManhole_50
- Track 35 : Shatter_50, Axumite_50, CharlottesWeb_49
- Track 36 : Fresco_50, Ligma_50

- Track 37 : DumpsterDude_62
- Track 38 : Stiles_46
- Track 39 : StAB_46
- Track 40 : DocMcStuffins_74, Misha28_72, TootsiePop_72, SkinnyPete_53, Awesomesauce_74
- Track 41 : Jinkies_7
- Track 42 : BlackSpider_66
- Track 43 : BlackSpider_71
- Track 44 : Megiddo_61
- Track 45 : ThulaThula_69
- Track 46 : Phayonce_65
- Track 47 : Footloose_49
- Track 48 : Mbo2_93
- Track 49 : Finkle_69
- Track 50 : Cantare_76

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

The start number called the most often in the published annotations is 41, it was called in 9 of the 72 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Awesomesauce_74, Bradissa_60, 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:

-

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

- Apricot_49, Auxilium_79, Axumite_50, BENtherdunthat_51, BlackSpider_66, BlackSpider_71, BobBob_38, Brandonk123_42, BrutonGaster_75, Cantare_76, Cardigan_137, CharlottesWeb_49, Charming_41, CherryTomatoes_169, Chidiebere_122, Eddasa_56, Emma1919_210, Esperer_55, EvePickles_79, EvePickles_81, Finkle_69, Footloose_49, Forrest_171, Forrest_210, Forrest_49, Fresco_50, Getalong_54, Goby_56, Holliday_49, Hydra_56, Jada_168, Jada_47, Jinkies_7, JonJames_73, Kabocha_123, Kenna_50, Leviticus_55, Ligma_50, Lika_55, Love_44, Lutum_51, Lysidious_72, MakoManhole_50, Marky_43, Mbo2_93, Megiddo_61, Miskis_75, Nabi_57, Nordenberg_35, Paries_43, Phayonce_65, Phrank15_79, Phrank15_85, Phredrick_212, Rofo_41, SCentae_166, Schomber_120, Shatter_50, Spooky_106, StAB_46, Stiles_46, Tangent_41, ThulaThula_69, Toma_56, Vivi2_43, Walrus_68, WilliamBoone_124, Yvonnestic_71, Zemlya_56,

Summary by start number:

Start 20:

- Found in 1 of 78 (1.3%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mbo2_93 (singleton),

Start 23:

- Found in 1 of 78 (1.3%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jinkies_7 (FL),

Start 24:

- Found in 1 of 78 (1.3%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cantare_76 (singleton),

Start 28:

- Found in 2 of 78 (2.6%) of genes in pham
- Manual Annotations of this start: 2 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lysidious_72 (CV), Walrus_68 (CV),

Start 30:

- Found in 4 of 78 (5.1%) of genes in pham
- Manual Annotations of this start: 4 of 72
- 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 31:

- Found in 5 of 78 (6.4%) of genes in pham
- Manual Annotations of this start: 5 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Apricot_49 (DN3), Chidiebere_122 (DQ), Holliday_49 (DN1), Kabocha_123 (DQ), Schomber_120 (DQ),

Start 34:

- Found in 2 of 78 (2.6%) of genes in pham
- Manual Annotations of this start: 2 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Megiddo_61 (P1), ThulaThula_69 (P5),

Start 35:

- Found in 1 of 78 (1.3%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Phayonce_65 (P5),

Start 36:

- Found in 1 of 78 (1.3%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SCentae_166 (DO),

Start 39:

- Found in 3 of 78 (3.8%) of genes in pham

- Manual Annotations of this start: 1 of 72
- Called 66.7% of time when present
- Phage (with cluster) where this start called: BlackSpider_71 (FN), EvePickles_79 (AY),

Start 41:

- Found in 9 of 78 (11.5%) of genes in pham
- Manual Annotations of this start: 9 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Awesomesauce_74 (F1), Bradissa_60 (CY1), DocMcStuffins_74 (F1), DumpsterDude_62 (DW), Misha28_72 (F1), Posh_67 (CY), SkinnyPete_53 (N), TootsiePop_72 (F1), Wrigley_69 (CY),

Start 44:

- Found in 3 of 78 (3.8%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 66.7% of time when present
- Phage (with cluster) where this start called: BlackSpider_66 (FN), Phrank15_79 (AY),

Start 46:

- Found in 2 of 78 (2.6%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Footloose_49 (singleton),

Start 60:

- Found in 1 of 78 (1.3%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Finkle_69 (singleton),

Start 61:

- Found in 12 of 78 (15.4%) of genes in pham
- No Manual Annotations of this start.
- Called 8.3% of time when present
- Phage (with cluster) where this start called: Cardigan_137 (DD),

Start 63:

- Found in 6 of 78 (7.7%) of genes in pham
- Manual Annotations of this start: 5 of 72
- Called 83.3% 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 65:

- Found in 5 of 78 (6.4%) of genes in pham
- Manual Annotations of this start: 4 of 72
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Esperer_55 (BD1), Hydra_56 (BD1), Leviticus_55 (BD1), Nabi_57 (BD1),

Start 67:

- Found in 5 of 78 (6.4%) of genes in pham
- Manual Annotations of this start: 4 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Forrest_49 (BK1), Jada_47 (BK1), JonJames_73 (DD), Miskis_75 (CQ1), Yvonnetastic_71 (DD),

Start 68:

- Found in 1 of 78 (1.3%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BrutonGaster_75 (CQ2),

Start 71:

- Found in 8 of 78 (10.3%) of genes in pham
- Manual Annotations of this start: 5 of 72
- Called 62.5% of time when present
- Phage (with cluster) where this start called: Emma1919_210 (BK1), Forrest_171 (BK1), Forrest_210 (BK1), Jada_168 (BK1), Phredrick_212 (BK1),

Start 74:

- Found in 9 of 78 (11.5%) of genes in pham
- Manual Annotations of this start: 4 of 72
- Called 44.4% of time when present
- Phage (with cluster) where this start called: Auxilium_79 (AY), EvePickles_81 (AY), MakoManhole_50 (DR), Phrank15_85 (AY),

Start 77:

- Found in 2 of 78 (2.6%) of genes in pham
- Manual Annotations of this start: 2 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: StAB_46 (EP), Stiles_46 (EP),

Start 79:

- Found in 6 of 78 (7.7%) of genes in pham
- Manual Annotations of this start: 3 of 72
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Axumite_50 (DR), CharlottesWeb_49 (DR), Shatter_50 (DR), Vivi2_43 (DE1),

Start 80:

- Found in 1 of 78 (1.3%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Spooky_106 (DN2),

Start 81:

- Found in 8 of 78 (10.3%) of genes in pham
- Manual Annotations of this start: 8 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BobBob_38 (DE1), Brandonk123_42 (DE1), Charming_41 (DE1), Love_44 (DE1), Nordenberg_35 (DE1), Paries_43 (DE1), Rofo_41 (DE1), Tangent_41 (DE1),

Start 82:

- Found in 1 of 78 (1.3%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: WilliamBoone_124 (CQ1),

Start 84:

- Found in 1 of 78 (1.3%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CherryTomatoes_169 (DO),

Start 85:

- Found in 2 of 78 (2.6%) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Marky_43 (BH),

Start 95:

- Found in 5 of 78 (6.4%) of genes in pham
- Manual Annotations of this start: 2 of 72
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Fresco_50 (DR), Ligma_50 (DR),

Summary by clusters:

There are 26 clusters represented in this pham: DO, singleton, DD, BH, DW, FL, FN, DQ, DR, EP, BD1, DN3, DN2, CQ2, CQ1, CY1, P1, P5, N, CY, BK1, DN1, AY, CV, F1, DE1,

Info for manual annotations of cluster AY:

- Start number 39 was manually annotated 1 time for cluster AY.
- Start number 44 was manually annotated 1 time for cluster AY.
- Start number 74 was manually annotated 3 times for cluster AY.

Info for manual annotations of cluster BD1:

- Start number 63 was manually annotated 5 times for cluster BD1.
- Start number 65 was manually annotated 4 times for cluster BD1.

Info for manual annotations of cluster BH:

- Start number 85 was manually annotated 1 time for cluster BH.

Info for manual annotations of cluster BK1:

- Start number 67 was manually annotated 2 times for cluster BK1.
- Start number 71 was manually annotated 5 times for cluster BK1.

Info for manual annotations of cluster CQ1:

- Start number 82 was manually annotated 1 time for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 68 was manually annotated 1 time for cluster CQ2.

Info for manual annotations of cluster CV:

- Start number 28 was manually annotated 2 times for cluster CV.

Info for manual annotations of cluster CY:

- Start number 41 was manually annotated 2 times for cluster CY.

Info for manual annotations of cluster CY1:

- Start number 41 was manually annotated 1 time for cluster CY1.

Info for manual annotations of cluster DD:

- Start number 67 was manually annotated 2 times for cluster DD.

Info for manual annotations of cluster DE1:

- Start number 79 was manually annotated 1 time for cluster DE1.
- Start number 81 was manually annotated 8 times for cluster DE1.

Info for manual annotations of cluster DN1:

- Start number 30 was manually annotated 4 times for cluster DN1.
- Start number 31 was manually annotated 1 time for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 80 was manually annotated 1 time for cluster DN2.

Info for manual annotations of cluster DN3:

- Start number 31 was manually annotated 1 time for cluster DN3.

Info for manual annotations of cluster DO:

- Start number 36 was manually annotated 1 time for cluster DO.
- Start number 84 was manually annotated 1 time for cluster DO.

Info for manual annotations of cluster DQ:

- Start number 31 was manually annotated 3 times for cluster DQ.

Info for manual annotations of cluster DR:

- Start number 74 was manually annotated 1 time for cluster DR.
- Start number 79 was manually annotated 2 times for cluster DR.
- Start number 95 was manually annotated 2 times for cluster DR.

Info for manual annotations of cluster DW:

- Start number 41 was manually annotated 1 time for cluster DW.

Info for manual annotations of cluster EP:

- Start number 77 was manually annotated 2 times for cluster EP.

Info for manual annotations of cluster F1:

- Start number 41 was manually annotated 4 times for cluster F1.

Info for manual annotations of cluster FL:

- Start number 23 was manually annotated 1 time for cluster FL.

Info for manual annotations of cluster N:

- Start number 41 was manually annotated 1 time for cluster N.

Info for manual annotations of cluster P1:

- Start number 34 was manually annotated 1 time for cluster P1.

Info for manual annotations of cluster P5:

- Start number 34 was manually annotated 1 time for cluster P5.
- Start number 35 was manually annotated 1 time for cluster P5.

Gene Information:

Gene: Apricot_49 Start: 33085, Stop: 32453, Start Num: 31

Candidate Starts for Apricot_49:

(Start: 31 @33085 has 5 MA's), (73, 32965), (102, 32854), (112, 32812), (116, 32806), (126, 32773), (146, 32695), (149, 32683), (151, 32674), (154, 32662), (164, 32617), (188, 32530), (190, 32515), (191, 32509), (193, 32503), (204, 32464),

Gene: Auxilium_79 Start: 44205, Stop: 44636, Start Num: 74

Candidate Starts for Auxilium_79:

(Start: 71 @44190 has 5 MA's), (Start: 74 @44205 has 4 MA's), (107, 44313), (153, 44466), (154, 44469),

Gene: Awesomesauce_74 Start: 45209, Stop: 45796, Start Num: 41

Candidate Starts for Awesomesauce_74:

(21, 45155), (Start: 41 @45209 has 9 MA's), (48, 45227), (58, 45260), (61, 45269), (66, 45284), (93, 45365), (107, 45431), (128, 45503), (141, 45554), (153, 45605), (165, 45656), (170, 45680), (188, 45737),

Gene: Axumite_50 Start: 44137, Stop: 43628, Start Num: 79

Candidate Starts for Axumite_50:

(Start: 74 @44149 has 4 MA's), (Start: 79 @44137 has 3 MA's), (92, 44101), (Start: 95 @44095 has 2 MA's), (109, 44008), (122, 43990), (141, 43912), (153, 43861), (170, 43786),

Gene: BENtherdunthat_51 Start: 33462, Stop: 32830, Start Num: 30

Candidate Starts for BENtherdunthat_51:

(Start: 30 @33462 has 4 MA's), (51, 33399), (73, 33342), (102, 33231), (112, 33189), (116, 33183), (126, 33150), (137, 33123), (146, 33072), (147, 33066), (154, 33039), (164, 32994), (188, 32907), (191, 32886), (193, 32880), (204, 32841),

Gene: BlackSpider_66 Start: 38978, Stop: 39544, Start Num: 44

Candidate Starts for BlackSpider_66:

(Start: 44 @38978 has 1 MA's), (125, 39260), (143, 39329), (151, 39356), (154, 39368), (179, 39485),

Gene: BlackSpider_71 Start: 42752, Stop: 43360, Start Num: 39

Candidate Starts for BlackSpider_71:

(Start: 39 @42752 has 1 MA's), (61, 42815), (108, 42986), (128, 43055), (151, 43148), (171, 43241), (177, 43259), (188, 43289),

Gene: BobBob_38 Start: 35578, Stop: 35108, Start Num: 81

Candidate Starts for BobBob_38:

(16, 35776), (17, 35767), (37, 35707), (42, 35698), (52, 35662), (Start: 81 @35578 has 8 MA's), (107, 35452), (114, 35434), (127, 35389), (137, 35371), (143, 35326), (153, 35290), (174, 35212),

Gene: Bradissa_60 Start: 44116, Stop: 44703, Start Num: 41

Candidate Starts for Bradissa_60:

(2, 43708), (4, 43816), (6, 43888), (8, 43924), (19, 44056), (Start: 41 @44116 has 9 MA's), (47, 44131), (58, 44167), (61, 44176), (66, 44191), (75, 44221), (99, 44302), (128, 44410), (153, 44512), (154, 44515), (193, 44671),

Gene: Brandonk123_42 Start: 36713, Stop: 36243, Start Num: 81

Candidate Starts for Brandonk123_42:

(16, 36911), (17, 36902), (37, 36842), (42, 36833), (52, 36797), (Start: 81 @36713 has 8 MA's), (107, 36587), (114, 36569), (127, 36524), (137, 36506), (143, 36461), (153, 36425), (174, 36347),

Gene: BrutonGaster_75 Start: 52573, Stop: 53064, Start Num: 68

Candidate Starts for BrutonGaster_75:

(Start: 68 @52573 has 1 MA's), (109, 52717), (133, 52774), (137, 52780), (151, 52852), (153, 52861), (166, 52921),

Gene: Cantare_76 Start: 62423, Stop: 63022, Start Num: 24

Candidate Starts for Cantare_76:

(Start: 24 @62423 has 1 MA's), (33, 62441), (78, 62582), (143, 62819), (180, 62963), (186, 62978),

Gene: Cardigan_137 Start: 77101, Stop: 77631, Start Num: 61

Candidate Starts for Cardigan_137:

(61, 77101), (Start: 65 @77116 has 4 MA's), (87, 77179), (90, 77188), (123, 77311), (151, 77404), (153, 77413), (156, 77446), (162, 77464), (178, 77530), (185, 77551), (205, 77626),

Gene: CharlottesWeb_49 Start: 43503, Stop: 42994, Start Num: 79

Candidate Starts for CharlottesWeb_49:

(Start: 74 @43515 has 4 MA's), (Start: 79 @43503 has 3 MA's), (92, 43467), (Start: 95 @43461 has 2 MA's), (109, 43374), (122, 43356), (141, 43278), (153, 43227), (170, 43152),

Gene: Charming_41 Start: 36214, Stop: 35744, Start Num: 81

Candidate Starts for Charming_41:

(16, 36412), (17, 36403), (37, 36343), (42, 36334), (52, 36298), (Start: 81 @36214 has 8 MA's), (107, 36088), (114, 36070), (127, 36025), (137, 36007), (143, 35962), (153, 35926), (174, 35848),

Gene: CherryTomatoes_169 Start: 123046, Stop: 122573, Start Num: 84

Candidate Starts for CherryTomatoes_169:

(27, 123214), (45, 123169), (Start: 46 @123166 has 1 MA's), (Start: 84 @123046 has 1 MA's), (94, 123016), (107, 122929), (153, 122755), (168, 122689),

Gene: Chidiebere_122 Start: 85918, Stop: 86616, Start Num: 31

Candidate Starts for Chidiebere_122:

(Start: 31 @85918 has 5 MA's), (55, 85990), (64, 86017), (76, 86050), (87, 86080), (103, 86152), (104, 86155), (117, 86188), (119, 86191), (131, 86236), (137, 86245), (153, 86326), (157, 86365), (198, 86509), (201, 86518), (210, 86563), (211, 86608),

Gene: DocMcStuffins_74 Start: 46126, Stop: 46713, Start Num: 41

Candidate Starts for DocMcStuffins_74:

(21, 46072), (Start: 41 @46126 has 9 MA's), (48, 46144), (58, 46177), (61, 46186), (66, 46201), (93, 46282), (107, 46348), (128, 46420), (141, 46471), (153, 46522), (165, 46573), (170, 46597), (188, 46654),

Gene: DumpsterDude_62 Start: 46219, Stop: 46806, Start Num: 41

Candidate Starts for DumpsterDude_62:

(2, 45811), (4, 45919), (6, 45991), (8, 46027), (19, 46159), (Start: 41 @46219 has 9 MA's), (58, 46270), (61, 46279), (66, 46294), (75, 46324), (99, 46405), (128, 46513), (153, 46615), (154, 46618), (172, 46702), (175, 46714), (193, 46774),

Gene: Eddasa_56 Start: 41265, Stop: 40723, Start Num: 63

Candidate Starts for Eddasa_56:

(42, 41334), (Start: 63 @41265 has 5 MA's), (123, 41046), (139, 40995), (148, 40953), (153, 40932), (202, 40743),

Gene: Emma1919_210 Start: 103175, Stop: 103651, Start Num: 71

Candidate Starts for Emma1919_210:

(Start: 71 @103175 has 5 MA's), (120, 103319), (121, 103322), (138, 103370), (142, 103406), (162, 103484),

Gene: Esperer_55 Start: 40815, Stop: 40285, Start Num: 65

Candidate Starts for Esperer_55:

(Start: 65 @40815 has 4 MA's), (98, 40707), (143, 40539), (155, 40488), (163, 40458), (200, 40311), (202, 40305),

Gene: EvePickles_79 Start: 46090, Stop: 46698, Start Num: 39

Candidate Starts for EvePickles_79:

(Start: 39 @46090 has 1 MA's), (61, 46153), (128, 46393), (151, 46486), (169, 46564), (171, 46579), (177, 46597), (191, 46648),

Gene: EvePickles_81 Start: 47374, Stop: 47805, Start Num: 74

Candidate Starts for EvePickles_81:

(Start: 71 @47359 has 5 MA's), (Start: 74 @47374 has 4 MA's), (153, 47635), (154, 47638),

Gene: Finkle_69 Start: 42637, Stop: 43176, Start Num: 60

Candidate Starts for Finkle_69:

(1, 42163), (15, 42487), (Start: 60 @42637 has 1 MA's), (Start: 85 @42715 has 1 MA's), (91, 42733), (118, 42832), (153, 42955), (164, 43015), (182, 43087),

Gene: Footloose_49 Start: 28880, Stop: 29479, Start Num: 46

Candidate Starts for Footloose_49:

(42, 28868), (Start: 46 @28880 has 1 MA's), (83, 29000), (122, 29150), (123, 29162), (134, 29189), (141, 29225), (181, 29393), (192, 29435),

Gene: Forrest_49 Start: 41931, Stop: 42446, Start Num: 67

Candidate Starts for Forrest_49:

(Start: 67 @41931 has 4 MA's), (152, 42195), (153, 42201), (159, 42249), (161, 42252), (183, 42342),

Gene: Forrest_210 Start: 104141, Stop: 104617, Start Num: 71

Candidate Starts for Forrest_210:

(Start: 71 @104141 has 5 MA's), (120, 104285), (121, 104288), (138, 104336), (142, 104372), (162, 104450),

Gene: Forrest_171 Start: 88900, Stop: 89394, Start Num: 71

Candidate Starts for Forrest_171:

(Start: 71 @88900 has 5 MA's), (115, 89029), (120, 89041), (141, 89119), (143, 89134), (153, 89170), (197, 89323), (208, 89368), (209, 89374),

Gene: Fresco_50 Start: 44095, Stop: 43628, Start Num: 95

Candidate Starts for Fresco_50:

(Start: 74 @44149 has 4 MA's), (Start: 79 @44137 has 3 MA's), (92, 44101), (Start: 95 @44095 has 2 MA's), (109, 44008), (122, 43990), (141, 43912), (153, 43861), (170, 43786),

Gene: Getalong_54 Start: 36463, Stop: 35831, Start Num: 30

Candidate Starts for Getalong_54:

(Start: 30 @36463 has 4 MA's), (51, 36400), (73, 36343), (102, 36232), (112, 36190), (116, 36184), (126, 36151), (137, 36124), (146, 36073), (147, 36067), (154, 36040), (164, 35995), (188, 35908), (191, 35887), (193, 35881), (204, 35842),

Gene: Goby_56 Start: 42305, Stop: 41778, Start Num: 63

Candidate Starts for Goby_56:

(42, 42374), (Start: 63 @42305 has 5 MA's), (109, 42131), (153, 41987), (163, 41942), (184, 41858), (190, 41834),

Gene: Holliday_49 Start: 33694, Stop: 33062, Start Num: 31

Candidate Starts for Holliday_49:

(Start: 31 @33694 has 5 MA's), (73, 33574), (102, 33463), (112, 33421), (116, 33415), (126, 33382), (137, 33355), (146, 33304), (147, 33298), (154, 33271), (164, 33226), (165, 33220), (188, 33139), (191, 33118), (193, 33112), (204, 33073),

Gene: Hydra_56 Start: 41651, Stop: 41121, Start Num: 65

Candidate Starts for Hydra_56:

(Start: 65 @41651 has 4 MA's), (98, 41543), (143, 41375), (155, 41324), (163, 41294), (200, 41147), (202, 41141),

Gene: Jada_47 Start: 41113, Stop: 41628, Start Num: 67

Candidate Starts for Jada_47:

(Start: 67 @41113 has 4 MA's), (152, 41377), (153, 41383), (159, 41431), (161, 41434), (183, 41524),

Gene: Jada_168 Start: 87596, Stop: 88090, Start Num: 71

Candidate Starts for Jada_168:

(Start: 71 @87596 has 5 MA's), (115, 87725), (120, 87737), (141, 87815), (143, 87830), (153, 87866), (197, 88019), (208, 88064), (209, 88070),

Gene: Jinkies_7 Start: 5796, Stop: 6461, Start Num: 23

Candidate Starts for Jinkies_7:

(5, 5598), (9, 5655), (10, 5658), (11, 5700), (Start: 23 @5796 has 1 MA's), (Start: 63 @5910 has 5 MA's), (101, 6057), (135, 6165), (150, 6234), (151, 6240), (160, 6279), (165, 6300), (188, 6384),

Gene: JonJames_73 Start: 49905, Stop: 50405, Start Num: 67

Candidate Starts for JonJames_73:

(Start: 67 @49905 has 4 MA's), (97, 49998), (100, 50019), (122, 50073), (130, 50112), (146, 50169), (153, 50199), (167, 50253), (176, 50286), (198, 50361),

Gene: Kabocha_123 Start: 86731, Stop: 87429, Start Num: 31

Candidate Starts for Kabocha_123:

(Start: 31 @86731 has 5 MA's), (55, 86803), (64, 86830), (76, 86863), (87, 86893), (103, 86965), (104, 86968), (117, 87001), (119, 87004), (131, 87049), (137, 87058), (153, 87139), (157, 87178), (198, 87322), (201, 87331), (210, 87376), (211, 87421),

Gene: Kenna_50 Start: 34206, Stop: 33574, Start Num: 30

Candidate Starts for Kenna_50:

(Start: 30 @34206 has 4 MA's), (51, 34143), (73, 34086), (102, 33975), (112, 33933), (116, 33927), (126, 33894), (137, 33867), (146, 33816), (147, 33810), (154, 33783), (164, 33738), (188, 33651), (191, 33630), (193, 33624), (204, 33585),

Gene: Leviticus_55 Start: 41002, Stop: 40472, Start Num: 65

Candidate Starts for Leviticus_55:

(Start: 65 @41002 has 4 MA's), (98, 40894), (143, 40726), (155, 40675), (163, 40645), (200, 40498), (202, 40492),

Gene: Ligma_50 Start: 44095, Stop: 43628, Start Num: 95

Candidate Starts for Ligma_50:

(Start: 74 @44149 has 4 MA's), (Start: 79 @44137 has 3 MA's), (92, 44101), (Start: 95 @44095 has 2 MA's), (109, 44008), (122, 43990), (141, 43912), (153, 43861), (170, 43786),

Gene: Lika_55 Start: 42316, Stop: 41774, Start Num: 63

Candidate Starts for Lika_55:

(Start: 63 @42316 has 5 MA's), (153, 41986), (184, 41857),

Gene: Love_44 Start: 37647, Stop: 37177, Start Num: 81

Candidate Starts for Love_44:

(16, 37845), (17, 37836), (37, 37776), (42, 37767), (52, 37731), (Start: 81 @37647 has 8 MA's), (107, 37521), (114, 37503), (127, 37458), (137, 37440), (143, 37395), (153, 37359), (174, 37281),

Gene: Lutum_51 Start: 34206, Stop: 33574, Start Num: 30

Candidate Starts for Lutum_51:

(Start: 30 @34206 has 4 MA's), (51, 34143), (73, 34086), (102, 33975), (112, 33933), (116, 33927), (126, 33894), (137, 33867), (146, 33816), (147, 33810), (154, 33783), (164, 33738), (188, 33651), (191, 33630), (193, 33624), (204, 33585),

Gene: Lysidious_72 Start: 45013, Stop: 45621, Start Num: 28

Candidate Starts for Lysidious_72:

(Start: 28 @45013 has 2 MA's), (38, 45040), (51, 45079), (72, 45139), (105, 45256), (106, 45262), (135, 45343), (137, 45346), (176, 45520), (188, 45553), (199, 45604),

Gene: MakoManhole_50 Start: 45251, Stop: 44724, Start Num: 74

Candidate Starts for MakoManhole_50:

(Start: 74 @45251 has 4 MA's), (109, 45113), (122, 45095), (137, 45050), (157, 44948), (170, 44894), (171, 44885), (193, 44807),

Gene: Marky_43 Start: 31173, Stop: 31622, Start Num: 85

Candidate Starts for Marky_43:

(Start: 85 @31173 has 1 MA's), (87, 31179), (88, 31182), (129, 31344), (138, 31359), (145, 31404), (151, 31428), (188, 31572),

Gene: Mbo2_93 Start: 66190, Stop: 65546, Start Num: 20

Candidate Starts for Mbo2_93:

(18, 66199), (20, 66190), (38, 66142), (56, 66094), (69, 66058), (124, 65854), (144, 65770), (167, 65671), (168, 65668), (189, 65590), (196, 65566),

Gene: Megiddo_61 Start: 41199, Stop: 41795, Start Num: 34

Candidate Starts for Megiddo_61:

(7, 41016), (22, 41172), (Start: 34 @41199 has 2 MA's), (40, 41220), (51, 41256), (57, 41271), (72, 41316), (86, 41355), (151, 41595), (158, 41634), (168, 41670), (188, 41736), (193, 41763),

Gene: Misha28_72 Start: 45214, Stop: 45801, Start Num: 41

Candidate Starts for Misha28_72:

(21, 45160), (Start: 41 @45214 has 9 MA's), (48, 45232), (58, 45265), (61, 45274), (66, 45289), (93, 45370), (107, 45436), (128, 45508), (141, 45559), (153, 45610), (165, 45661), (170, 45685), (188, 45742),

Gene: Miskis_75 Start: 47774, Stop: 48271, Start Num: 67

Candidate Starts for Miskis_75:

(26, 47657), (Start: 67 @47774 has 4 MA's), (132, 47984), (146, 48038), (153, 48068), (160, 48095), (173, 48146), (194, 48215),

Gene: Nabi_57 Start: 42255, Stop: 41725, Start Num: 65

Candidate Starts for Nabi_57:

(29, 42360), (47, 42315), (Start: 65 @42255 has 4 MA's), (98, 42147), (116, 42084), (140, 42000), (143, 41979), (154, 41940), (155, 41928), (163, 41898), (200, 41751), (202, 41745),

Gene: Nordenberg_35 Start: 35840, Stop: 35370, Start Num: 81

Candidate Starts for Nordenberg_35:

(16, 36038), (17, 36029), (37, 35969), (42, 35960), (52, 35924), (Start: 81 @35840 has 8 MA's), (107, 35714), (114, 35696), (127, 35651), (137, 35633), (143, 35588), (153, 35552), (174, 35474),

Gene: Paries_43 Start: 37309, Stop: 36839, Start Num: 81

Candidate Starts for Paries_43:

(16, 37507), (17, 37498), (37, 37438), (42, 37429), (52, 37393), (Start: 81 @37309 has 8 MA's), (107, 37183), (114, 37165), (127, 37120), (137, 37102), (143, 37057), (153, 37021), (174, 36943),

Gene: Phayonce_65 Start: 43286, Stop: 43876, Start Num: 35

Candidate Starts for Phayonce_65:

(Start: 35 @43286 has 1 MA's), (Start: 39 @43298 has 1 MA's), (49, 43322), (62, 43364), (86, 43436), (151, 43676), (158, 43715), (168, 43751), (188, 43817), (193, 43844),

Gene: Phrank15_85 Start: 46952, Stop: 47386, Start Num: 74

Candidate Starts for Phrank15_85:

(Start: 71 @46937 has 5 MA's), (Start: 74 @46952 has 4 MA's), (89, 46988), (135, 47129), (153, 47213), (154, 47216),

Gene: Phrank15_79 Start: 42147, Stop: 42713, Start Num: 44

Candidate Starts for Phrank15_79:

(Start: 44 @42147 has 1 MA's), (125, 42429), (143, 42498), (151, 42525), (154, 42537), (179, 42654),

Gene: Phredrick_212 Start: 102971, Stop: 103447, Start Num: 71

Candidate Starts for Phredrick_212:

(Start: 71 @102971 has 5 MA's), (120, 103115), (121, 103118), (138, 103166), (142, 103202), (162, 103280),

Gene: Posh_67 Start: 45892, Stop: 46479, Start Num: 41

Candidate Starts for Posh_67:

(8, 45700), (19, 45832), (Start: 41 @45892 has 9 MA's), (61, 45952), (66, 45967), (75, 45997), (99, 46078), (128, 46186), (153, 46288), (154, 46291), (193, 46447),

Gene: Rofo_41 Start: 36635, Stop: 36165, Start Num: 81

Candidate Starts for Rofo_41:

(16, 36833), (17, 36824), (37, 36764), (42, 36755), (52, 36719), (Start: 81 @36635 has 8 MA's), (107, 36509), (114, 36491), (127, 36446), (137, 36428), (143, 36383), (153, 36347), (174, 36269),

Gene: SCentae_166 Start: 121636, Stop: 122217, Start Num: 36

Candidate Starts for SCentae_166:

(Start: 36 @121636 has 1 MA's), (54, 121693), (119, 121873), (166, 122059), (187, 122125),

Gene: Schomber_120 Start: 85119, Stop: 85817, Start Num: 31

Candidate Starts for Schomber_120:

(Start: 31 @85119 has 5 MA's), (55, 85191), (64, 85218), (76, 85251), (87, 85281), (103, 85353), (104, 85356), (117, 85389), (119, 85392), (131, 85437), (137, 85446), (153, 85527), (157, 85566), (198, 85710), (201, 85719), (210, 85764), (211, 85809),

Gene: Shatter_50 Start: 44137, Stop: 43628, Start Num: 79

Candidate Starts for Shatter_50:

(Start: 74 @44149 has 4 MA's), (Start: 79 @44137 has 3 MA's), (92, 44101), (Start: 95 @44095 has 2 MA's), (109, 44008), (122, 43990), (141, 43912), (153, 43861), (170, 43786),

Gene: SkinnyPete_53 Start: 35995, Stop: 36582, Start Num: 41

Candidate Starts for SkinnyPete_53:

(21, 35941), (Start: 41 @35995 has 9 MA's), (48, 36013), (58, 36046), (61, 36055), (66, 36070), (93, 36151), (107, 36217), (128, 36289), (141, 36340), (153, 36391), (165, 36442), (170, 36466), (188, 36523),

Gene: Spooky_106 Start: 55742, Stop: 56233, Start Num: 80

Candidate Starts for Spooky_106:

(12, 55508), (14, 55517), (25, 55583), (32, 55598), (43, 55625), (50, 55652), (Start: 80 @55742 has 1 MA's), (110, 55859), (111, 55862), (113, 55865), (141, 55967), (151, 56009), (153, 56018), (195, 56180), (203, 56210),

Gene: StAB_46 Start: 35820, Stop: 36344, Start Num: 77

Candidate Starts for StAB_46:

(3, 35346), (70, 35793), (Start: 77 @35820 has 2 MA's), (170, 36168), (198, 36270), (206, 36297),

Gene: Stiles_46 Start: 35275, Stop: 35799, Start Num: 77

Candidate Starts for Stiles_46:

(3, 34801), (Start: 77 @35275 has 2 MA's), (170, 35623), (198, 35725),

Gene: Tangent_41 Start: 36226, Stop: 35756, Start Num: 81

Candidate Starts for Tangent_41:

(16, 36424), (17, 36415), (37, 36355), (42, 36346), (52, 36310), (Start: 81 @36226 has 8 MA's), (107, 36100), (114, 36082), (127, 36037), (137, 36019), (143, 35974), (153, 35938), (174, 35860),

Gene: ThulaThula_69 Start: 44706, Stop: 45302, Start Num: 34

Candidate Starts for ThulaThula_69:

(13, 44622), (22, 44679), (Start: 34 @44706 has 2 MA's), (40, 44727), (51, 44763), (57, 44778), (72, 44823), (86, 44862), (151, 45102), (158, 45141), (168, 45177), (188, 45243), (193, 45270),

Gene: Toma_56 Start: 42308, Stop: 41778, Start Num: 63

Candidate Starts for Toma_56:

(42, 42377), (Start: 63 @42308 has 5 MA's), (109, 42131), (153, 41987), (163, 41942), (184, 41858), (190, 41834),

Gene: TootsiePop_72 Start: 45214, Stop: 45801, Start Num: 41

Candidate Starts for TootsiePop_72:

(21, 45160), (Start: 41 @45214 has 9 MA's), (48, 45232), (58, 45265), (61, 45274), (66, 45289), (93, 45370), (107, 45436), (128, 45508), (141, 45559), (153, 45610), (165, 45661), (170, 45685), (188, 45742),

Gene: Vivi2_43 Start: 37381, Stop: 36914, Start Num: 79

Candidate Starts for Vivi2_43:

(53, 37450), (59, 37441), (Start: 79 @37381 has 3 MA's), (107, 37258), (114, 37240), (127, 37195), (137, 37177), (143, 37132), (153, 37096), (174, 37018),

Gene: Walrus_68 Start: 43422, Stop: 44057, Start Num: 28

Candidate Starts for Walrus_68:

(Start: 28 @43422 has 2 MA's), (Start: 44 @43458 has 1 MA's), (51, 43485), (72, 43545), (105, 43662), (106, 43668), (168, 43899), (207, 44043),

Gene: WilliamBoone_124 Start: 68689, Stop: 69156, Start Num: 82

Candidate Starts for WilliamBoone_124:

(37, 68554), (Start: 82 @68689 has 1 MA's), (96, 68722), (136, 68878), (153, 68962), (170, 69028), (191, 69106),

Gene: Wrigley_69 Start: 45475, Stop: 46062, Start Num: 41

Candidate Starts for Wrigley_69:

(8, 45283), (19, 45415), (Start: 41 @45475 has 9 MA's), (61, 45535), (66, 45550), (75, 45580), (99, 45661), (128, 45769), (153, 45871), (154, 45874), (193, 46030),

Gene: Yvonnetastic_71 Start: 47446, Stop: 47946, Start Num: 67

Candidate Starts for Yvonnetastic_71:

(Start: 67 @47446 has 4 MA's), (97, 47539), (100, 47560), (122, 47614), (130, 47653), (146, 47710), (153, 47740), (167, 47794), (176, 47827), (198, 47902),

Gene: Zemlya_56 Start: 42043, Stop: 41525, Start Num: 63

Candidate Starts for Zemlya_56:

(Start: 63 @42043 has 5 MA's), (127, 41836), (140, 41794), (151, 41746),