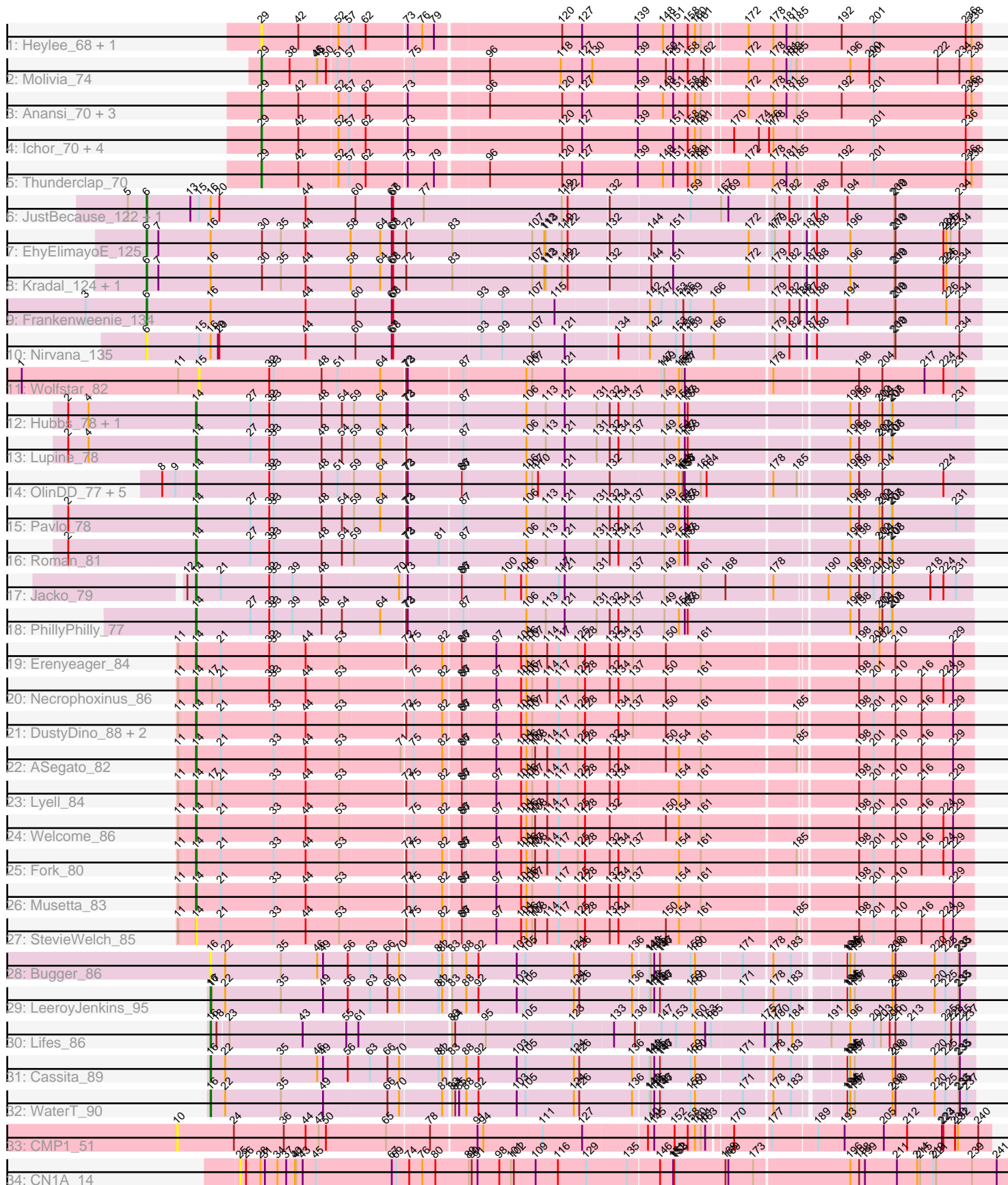


Pham 156418



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 156418 Report

This analysis was run 04/12/24 on database version 558.

WARNING: Pham size does not match number of genes in report. Either unphamerated genes have been added (by you) or starterator has removed genes due to invalid start codon.

Pham number 156418 has 52 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Heylee_68, Amavida_68
- Track 2 : Molivia_74
- Track 3 : Anansi_70, SorJuana_70, Rings_71, Gorgeous_70
- Track 4 : Ichor_70, Jaek_70, Yeezus_70, Amigo_71, Boersma_73
- Track 5 : Thunderclap_70
- Track 6 : JustBecause_122, Kela_123
- Track 7 : EhyElimayoE_125
- Track 8 : Kradal_124, Satis_124
- Track 9 : Frankenweenie_134
- Track 10 : Nirvana_135
- Track 11 : Wolfstar_82
- Track 12 : Hubbs_78, DejaVu_80
- Track 13 : Lupine_78
- Track 14 : OlinDD_77, Hortus1_77, Pioneer3_77, Tandem_77, Platte_76, Alleb_76
- Track 15 : Pavlo_78
- Track 16 : Roman_81
- Track 17 : Jacko_79
- Track 18 : PhillyPhilly_77
- Track 19 : Erenyeager_84
- Track 20 : Necrophoxinus_86
- Track 21 : DustyDino_88, Yuma_83, RunningBrook_87
- Track 22 : ASegato_82
- Track 23 : Lyell_84
- Track 24 : Welcome_86
- Track 25 : Fork_80
- Track 26 : Musetta_83
- Track 27 : StevieWelch_85
- Track 28 : Bugger_86
- Track 29 : LeeroyJenkins_95
- Track 30 : Lifes_86
- Track 31 : Cassita_89
- Track 32 : WaterT_90
- Track 33 : CMP1_51

- Track 34 : CN1A_14

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

The start number called the most often in the published annotations is 14, it was called in 22 of the 43 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ASegato_82, Alleb_76, DejaVu_80, DustyDino_88, Erenyeager_84, Fork_80, Hortus1_77, Hubbs_78, Jacko_79, Lupine_78, Lyell_84, Musetta_83, Necrophoxinus_86, OlinDD_77, Pavlo_78, PhillyPhilly_77, Pioneer3_77, Platte_76, Roman_81, RunningBrook_87, StevieWelch_85, Tandem_77, Welcome_86, Yuma_83,

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

-

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

- Amavida_68, Amigo_71, Anansi_70, Boersma_73, Bugger_86, CMP1_51, CN1A_14, Cassita_89, EhyElimayoE_125, Frankenweenie_134, Gorgeous_70, Heylee_68, Ichor_70, Jaek_70, JustBecause_122, Kela_123, Kradal_124, LeeroyJenkins_95, Lifes_86, Molivia_74, Nirvana_135, Rings_71, Satis_124, SorJuana_70, Thunderclap_70, WaterT_90, Wolfstar_82, Yeezus_70,

Summary by start number:

Start 6:

- Found in 7 of 52 (13.5%) of genes in pham
- Manual Annotations of this start: 6 of 43
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EhyElimayoE_125 (BM), Frankenweenie_134 (BM), JustBecause_122 (BM), Kela_123 (BM), Kradal_124 (BM), Nirvana_135 (BM), Satis_124 (BM),

Start 10:

- Found in 1 of 52 (1.9%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CMP1_51 (singleton),

Start 14:

- Found in 24 of 52 (46.2%) of genes in pham
- Manual Annotations of this start: 22 of 43
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ASegato_82 (ED2), Alleb_76 (ED1), DejaVu_80 (ED1), DustyDino_88 (ED2), Erenyeager_84 (ED2), Fork_80 (ED2), Hortus1_77 (ED1), Hubbs_78 (ED1), Jacko_79 (ED1), Lupine_78 (ED1), Lyell_84 (ED2), Musetta_83 (ED2), Necrophoxinus_86 (ED2), OlinDD_77 (ED1), Pavlo_78 (ED1), PhillyPhilly_77 (ED1), Pioneer3_77 (ED1), Platte_76 (ED1), Roman_81 (ED1), RunningBrook_87 (ED2), StevieWelch_85 (ED2), Tandem_77 (ED1), Welcome_86

(ED2), Yuma_83 (ED2),

Start 15:

- Found in 4 of 52 (7.7%) of genes in pham
- No Manual Annotations of this start.
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Wolfstar_82 (ED),

Start 16:

- Found in 12 of 52 (23.1%) of genes in pham
- Manual Annotations of this start: 4 of 43
- Called 41.7% of time when present
- Phage (with cluster) where this start called: Bugger_86 (GB), Cassita_89 (GB), LeeroyJenkins_95 (GB), Lifes_86 (GB), WaterT_90 (GB),

Start 25:

- Found in 1 of 52 (1.9%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CN1A_14 (singleton),

Start 29:

- Found in 13 of 52 (25.0%) of genes in pham
- Manual Annotations of this start: 11 of 43
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amavida_68 (AQ), Amigo_71 (AQ), Anansi_70 (AQ), Boersma_73 (AQ), Gorgeous_70 (AQ), Heylee_68 (AQ), Ichor_70 (AQ), Jaek_70 (AQ), Molivia_74 (AQ), Rings_71 (AQ), SorJuana_70 (AQ), Thunderclap_70 (AQ), Yeezus_70 (AQ),

Summary by clusters:

There are 7 clusters represented in this pham: AQ, singleton, BM, ED2, ED1, GB, ED,

Info for manual annotations of cluster AQ:

- Start number 29 was manually annotated 11 times for cluster AQ.

Info for manual annotations of cluster BM:

- Start number 6 was manually annotated 6 times for cluster BM.

Info for manual annotations of cluster ED1:

- Start number 14 was manually annotated 13 times for cluster ED1.

Info for manual annotations of cluster ED2:

- Start number 14 was manually annotated 9 times for cluster ED2.

Info for manual annotations of cluster GB:

- Start number 16 was manually annotated 4 times for cluster GB.

Gene Information:

Gene: ASegato_82 Start: 49650, Stop: 48130, Start Num: 14

Candidate Starts for ASegato_82:

(11, 49683), (Start: 14 @49650 has 22 MA's), (21, 49599), (33, 49491), (44, 49425), (53, 49359), (71, 49242), (75, 49221), (82, 49164), (86, 49131), (87, 49128), (97, 49065), (104, 49014), (106, 49005), (107, 48996), (108, 48990), (114, 48966), (117, 48942), (125, 48903), (128, 48888), (132, 48837), (134, 48819), (150, 48726), (154, 48699), (161, 48654), (185, 48468), (198, 48360), (201, 48330), (210, 48285), (216, 48234), (229, 48171),

Gene: Alleb_76 Start: 48902, Stop: 47379, Start Num: 14

Candidate Starts for Alleb_76:

(8, 48968), (9, 48941), (Start: 14 @48902 has 22 MA's), (32, 48752), (33, 48743), (48, 48647), (51, 48614), (59, 48587), (64, 48533), (72, 48488), (73, 48485), (86, 48380), (87, 48377), (106, 48254), (107, 48245), (110, 48233), (121, 48179), (132, 48086), (149, 47978), (154, 47948), (155, 47942), (156, 47939), (157, 47936), (161, 47903), (164, 47891), (178, 47765), (185, 47717), (196, 47627), (198, 47609), (204, 47561), (224, 47438),

Gene: Amavida_68 Start: 47198, Stop: 45804, Start Num: 29

Candidate Starts for Amavida_68:

(Start: 29 @47198 has 11 MA's), (42, 47129), (52, 47054), (57, 47036), (62, 47006), (73, 46925), (76, 46895), (79, 46871), (120, 46631), (127, 46592), (139, 46478), (148, 46427), (151, 46406), (158, 46376), (160, 46361), (161, 46349), (172, 46268), (178, 46220), (181, 46193), (185, 46172), (192, 46088), (201, 46022), (236, 45833), (238, 45821),

Gene: Amigo_71 Start: 47416, Stop: 46022, Start Num: 29

Candidate Starts for Amigo_71:

(Start: 29 @47416 has 11 MA's), (42, 47347), (52, 47272), (57, 47254), (62, 47224), (73, 47143), (120, 46849), (127, 46810), (139, 46696), (151, 46624), (158, 46594), (160, 46579), (161, 46567), (170, 46516), (174, 46465), (176, 46447), (178, 46438), (185, 46390), (201, 46240), (236, 46051),

Gene: Anansi_70 Start: 47020, Stop: 45626, Start Num: 29

Candidate Starts for Anansi_70:

(Start: 29 @47020 has 11 MA's), (42, 46951), (52, 46876), (57, 46858), (62, 46828), (73, 46747), (96, 46597), (120, 46453), (127, 46414), (139, 46300), (148, 46249), (151, 46228), (158, 46198), (160, 46183), (161, 46171), (172, 46090), (178, 46042), (181, 46015), (185, 45994), (192, 45910), (201, 45844), (236, 45655), (238, 45643),

Gene: Boersma_73 Start: 47416, Stop: 46022, Start Num: 29

Candidate Starts for Boersma_73:

(Start: 29 @47416 has 11 MA's), (42, 47347), (52, 47272), (57, 47254), (62, 47224), (73, 47143), (120, 46849), (127, 46810), (139, 46696), (151, 46624), (158, 46594), (160, 46579), (161, 46567), (170, 46516), (174, 46465), (176, 46447), (178, 46438), (185, 46390), (201, 46240), (236, 46051),

Gene: Bugger_86 Start: 49027, Stop: 47570, Start Num: 16

Candidate Starts for Bugger_86:

(Start: 16 @49027 has 4 MA's), (22, 48997), (35, 48883), (46, 48811), (49, 48799), (56, 48751), (63, 48709), (66, 48673), (70, 48649), (81, 48577), (82, 48571), (83, 48559), (88, 48532), (92, 48511), (103, 48436), (105, 48418), (124, 48322), (126, 48313), (136, 48208), (141, 48178), (143, 48175), (145, 48169), (146, 48157), (147, 48154), (159, 48094), (160, 48085), (171, 47995), (178, 47941), (183, 47905), (194, 47824), (195, 47821), (196, 47818), (197, 47809), (208, 47731), (210, 47725), (220, 47647), (225, 47626), (233, 47599), (235, 47596),

Gene: CMP1_51 Start: 48836, Stop: 47235, Start Num: 10

Candidate Starts for CMP1_51:

(10, 48836), (24, 48719), (36, 48617), (44, 48572), (47, 48548), (50, 48533), (65, 48410), (78, 48326), (91, 48242), (94, 48230), (111, 48110), (127, 48029), (140, 47909), (145, 47897), (152, 47855), (158, 47828), (160, 47813), (161, 47801), (163, 47792), (170, 47747), (177, 47681), (189, 47591), (193, 47537), (205, 47456), (212, 47408), (223, 47336), (224, 47333), (230, 47309), (232, 47303), (240, 47261),

Gene: CN1A_14 Start: 6751, Stop: 8316, Start Num: 25

Candidate Starts for CN1A_14:

(25, 6751), (26, 6763), (28, 6793), (31, 6802), (34, 6826), (37, 6844), (40, 6862), (41, 6865), (43, 6877), (45, 6904), (67, 7060), (69, 7069), (74, 7093), (76, 7120), (80, 7147), (89, 7216), (90, 7222), (91, 7234), (98, 7279), (101, 7303), (102, 7309), (109, 7354), (116, 7399), (129, 7456), (135, 7540), (146, 7600), (151, 7627), (152, 7630), (153, 7633), (168, 7735), (169, 7741), (173, 7792), (196, 7984), (198, 8002), (199, 8014), (211, 8080), (214, 8122), (215, 8128), (219, 8155), (221, 8161), (239, 8233), (241, 8284),

Gene: Cassita_89 Start: 50170, Stop: 48713, Start Num: 16

Candidate Starts for Cassita_89:

(Start: 16 @50170 has 4 MA's), (22, 50140), (35, 50026), (46, 49954), (49, 49942), (56, 49894), (63, 49852), (66, 49816), (70, 49792), (81, 49720), (82, 49714), (83, 49702), (88, 49675), (92, 49654), (103, 49579), (105, 49561), (124, 49465), (126, 49456), (136, 49351), (141, 49321), (143, 49318), (145, 49312), (146, 49300), (147, 49297), (159, 49237), (160, 49228), (171, 49138), (178, 49084), (183, 49048), (194, 48967), (195, 48964), (196, 48961), (197, 48952), (208, 48874), (210, 48868), (220, 48790), (225, 48769), (233, 48742), (235, 48739),

Gene: DejaVu_80 Start: 49301, Stop: 47778, Start Num: 14

Candidate Starts for DejaVu_80:

(2, 49562), (4, 49520), (Start: 14 @49301 has 22 MA's), (27, 49190), (32, 49151), (33, 49142), (48, 49046), (54, 49004), (59, 48986), (64, 48932), (72, 48887), (73, 48884), (87, 48782), (106, 48659), (113, 48623), (121, 48584), (131, 48518), (132, 48491), (134, 48473), (137, 48443), (149, 48383), (154, 48353), (157, 48341), (158, 48335), (196, 48026), (198, 48008), (202, 47966), (204, 47960), (207, 47942), (208, 47939), (231, 47813),

Gene: DustyDino_88 Start: 50790, Stop: 49270, Start Num: 14

Candidate Starts for DustyDino_88:

(11, 50823), (Start: 14 @50790 has 22 MA's), (21, 50739), (33, 50631), (44, 50565), (53, 50499), (72, 50376), (75, 50361), (82, 50304), (86, 50271), (87, 50268), (97, 50205), (104, 50154), (106, 50145), (107, 50136), (117, 50082), (125, 50043), (128, 50028), (134, 49959), (137, 49929), (150, 49866), (161, 49794), (185, 49608), (198, 49500), (201, 49470), (210, 49425), (216, 49374), (229, 49311),

Gene: EhyElimayoE_125 Start: 82183, Stop: 80540, Start Num: 6

Candidate Starts for EhyElimayoE_125:

(Start: 6 @82183 has 6 MA's), (7, 82159), (Start: 16 @82051 has 4 MA's), (30, 81946), (35, 81907), (44, 81856), (58, 81763), (64, 81703), (67, 81679), (68, 81676), (72, 81649), (83, 81556), (107, 81403), (112, 81379), (113, 81376), (119, 81343), (122, 81331), (132, 81259), (144, 81181), (151, 81136), (172, 80989), (177, 80950), (179, 80944), (182, 80914), (187, 80884), (188, 80872), (196, 80806), (209, 80716), (210, 80713), (224, 80617), (226, 80611), (227, 80602), (234, 80584),

Gene: Erenyeager_84 Start: 49578, Stop: 48058, Start Num: 14

Candidate Starts for Erenyeager_84:

(11, 49611), (Start: 14 @49578 has 22 MA's), (21, 49527), (32, 49428), (33, 49419), (44, 49353), (53, 49287), (72, 49164), (75, 49149), (82, 49092), (86, 49059), (87, 49056), (97, 48993), (104, 48942),

(106, 48933), (107, 48924), (114, 48894), (117, 48870), (125, 48831), (128, 48816), (132, 48765), (134, 48747), (137, 48717), (150, 48654), (161, 48582), (198, 48288), (201, 48258), (202, 48246), (210, 48213), (229, 48099),

Gene: Fork_80 Start: 49528, Stop: 48008, Start Num: 14

Candidate Starts for Fork_80:

(11, 49561), (Start: 14 @49528 has 22 MA's), (21, 49477), (33, 49369), (44, 49303), (53, 49237), (72, 49114), (75, 49099), (82, 49042), (86, 49009), (87, 49006), (97, 48943), (104, 48892), (106, 48883), (107, 48874), (108, 48868), (114, 48844), (117, 48820), (125, 48781), (128, 48766), (132, 48715), (134, 48697), (137, 48667), (154, 48577), (161, 48532), (185, 48346), (198, 48238), (201, 48208), (210, 48163), (216, 48112), (224, 48067), (229, 48049),

Gene: Frankenweenie_134 Start: 87252, Stop: 85606, Start Num: 6

Candidate Starts for Frankenweenie_134:

(3, 87378), (Start: 6 @87252 has 6 MA's), (Start: 16 @87120 has 4 MA's), (44, 86925), (60, 86823), (67, 86748), (68, 86745), (93, 86571), (99, 86529), (107, 86472), (115, 86427), (142, 86253), (147, 86229), (153, 86199), (156, 86187), (159, 86172), (166, 86124), (179, 86010), (182, 85980), (186, 85959), (187, 85950), (188, 85938), (194, 85878), (209, 85782), (210, 85779), (226, 85677), (234, 85650),

Gene: Gorgeous_70 Start: 47020, Stop: 45626, Start Num: 29

Candidate Starts for Gorgeous_70:

(Start: 29 @47020 has 11 MA's), (42, 46951), (52, 46876), (57, 46858), (62, 46828), (73, 46747), (96, 46597), (120, 46453), (127, 46414), (139, 46300), (148, 46249), (151, 46228), (158, 46198), (160, 46183), (161, 46171), (172, 46090), (178, 46042), (181, 46015), (185, 45994), (192, 45910), (201, 45844), (236, 45655), (238, 45643),

Gene: Heylee_68 Start: 47198, Stop: 45804, Start Num: 29

Candidate Starts for Heylee_68:

(Start: 29 @47198 has 11 MA's), (42, 47129), (52, 47054), (57, 47036), (62, 47006), (73, 46925), (76, 46895), (79, 46871), (120, 46631), (127, 46592), (139, 46478), (148, 46427), (151, 46406), (158, 46376), (160, 46361), (161, 46349), (172, 46268), (178, 46220), (181, 46193), (185, 46172), (192, 46088), (201, 46022), (236, 45833), (238, 45821),

Gene: Hortus1_77 Start: 49476, Stop: 47953, Start Num: 14

Candidate Starts for Hortus1_77:

(8, 49542), (9, 49515), (Start: 14 @49476 has 22 MA's), (32, 49326), (33, 49317), (48, 49221), (51, 49188), (59, 49161), (64, 49107), (72, 49062), (73, 49059), (86, 48954), (87, 48951), (106, 48828), (107, 48819), (110, 48807), (121, 48753), (132, 48660), (149, 48552), (154, 48522), (155, 48516), (156, 48513), (157, 48510), (161, 48477), (164, 48465), (178, 48339), (185, 48291), (196, 48201), (198, 48183), (204, 48135), (224, 48012),

Gene: Hubbs_78 Start: 49505, Stop: 47982, Start Num: 14

Candidate Starts for Hubbs_78:

(2, 49766), (4, 49724), (Start: 14 @49505 has 22 MA's), (27, 49394), (32, 49355), (33, 49346), (48, 49250), (54, 49208), (59, 49190), (64, 49136), (72, 49091), (73, 49088), (87, 48986), (106, 48863), (113, 48827), (121, 48788), (131, 48722), (132, 48695), (134, 48677), (137, 48647), (149, 48587), (154, 48557), (157, 48545), (158, 48539), (196, 48230), (198, 48212), (202, 48170), (204, 48164), (207, 48146), (208, 48143), (231, 48017),

Gene: Ichor_70 Start: 47416, Stop: 46022, Start Num: 29

Candidate Starts for Ichor_70:

(Start: 29 @47416 has 11 MA's), (42, 47347), (52, 47272), (57, 47254), (62, 47224), (73, 47143), (120, 46849), (127, 46810), (139, 46696), (151, 46624), (158, 46594), (160, 46579), (161, 46567), (170, 46516), (174, 46465), (176, 46447), (178, 46438), (185, 46390), (201, 46240), (236, 46051),

Gene: Jacko_79 Start: 48477, Stop: 46960, Start Num: 14

Candidate Starts for Jacko_79:

(12, 48495), (Start: 14 @48477 has 22 MA's), (21, 48426), (32, 48327), (33, 48318), (39, 48279), (48, 48222), (70, 48072), (73, 48060), (86, 47958), (87, 47955), (100, 47874), (104, 47841), (106, 47832), (117, 47769), (121, 47757), (131, 47691), (137, 47616), (149, 47556), (161, 47481), (168, 47430), (178, 47343), (190, 47250), (196, 47205), (198, 47187), (201, 47157), (204, 47139), (208, 47118), (218, 47043), (224, 47016), (231, 46992),

Gene: Jaek_70 Start: 47416, Stop: 46022, Start Num: 29

Candidate Starts for Jaek_70:

(Start: 29 @47416 has 11 MA's), (42, 47347), (52, 47272), (57, 47254), (62, 47224), (73, 47143), (120, 46849), (127, 46810), (139, 46696), (151, 46624), (158, 46594), (160, 46579), (161, 46567), (170, 46516), (174, 46465), (176, 46447), (178, 46438), (185, 46390), (201, 46240), (236, 46051),

Gene: JustBecause_122 Start: 81387, Stop: 79741, Start Num: 6

Candidate Starts for JustBecause_122:

(5, 81426), (Start: 6 @81387 has 6 MA's), (13, 81297), (15, 81279), (Start: 16 @81255 has 4 MA's), (20, 81237), (44, 81060), (60, 80958), (67, 80883), (68, 80880), (77, 80817), (119, 80547), (122, 80535), (132, 80463), (159, 80307), (167, 80247), (169, 80232), (179, 80145), (182, 80115), (188, 80073), (194, 80013), (209, 79917), (210, 79914), (234, 79785),

Gene: Kela_123 Start: 81267, Stop: 79621, Start Num: 6

Candidate Starts for Kela_123:

(5, 81306), (Start: 6 @81267 has 6 MA's), (13, 81177), (15, 81159), (Start: 16 @81135 has 4 MA's), (20, 81117), (44, 80940), (60, 80838), (67, 80763), (68, 80760), (77, 80697), (119, 80427), (122, 80415), (132, 80343), (159, 80187), (167, 80127), (169, 80112), (179, 80025), (182, 79995), (188, 79953), (194, 79893), (209, 79797), (210, 79794), (234, 79665),

Gene: Kradal_124 Start: 82180, Stop: 80537, Start Num: 6

Candidate Starts for Kradal_124:

(Start: 6 @82180 has 6 MA's), (7, 82156), (Start: 16 @82048 has 4 MA's), (30, 81943), (35, 81904), (44, 81853), (58, 81760), (64, 81700), (67, 81676), (68, 81673), (72, 81646), (83, 81553), (107, 81400), (112, 81376), (113, 81373), (119, 81340), (122, 81328), (132, 81256), (144, 81178), (151, 81133), (172, 80986), (179, 80941), (182, 80911), (187, 80881), (188, 80869), (196, 80803), (209, 80713), (210, 80710), (224, 80614), (226, 80608), (234, 80581),

Gene: LeeroyJenkins_95 Start: 51345, Stop: 49888, Start Num: 16

Candidate Starts for LeeroyJenkins_95:

(Start: 16 @51345 has 4 MA's), (17, 51342), (22, 51315), (35, 51201), (49, 51117), (56, 51069), (63, 51027), (66, 50991), (70, 50967), (81, 50895), (82, 50889), (83, 50877), (88, 50850), (92, 50829), (103, 50754), (105, 50736), (124, 50640), (126, 50631), (136, 50526), (141, 50496), (143, 50493), (145, 50487), (146, 50475), (147, 50472), (159, 50412), (160, 50403), (171, 50313), (178, 50259), (183, 50223), (194, 50142), (195, 50139), (196, 50136), (197, 50127), (208, 50049), (210, 50043), (220, 49965), (225, 49944), (233, 49917), (235, 49914),

Gene: Lifes_86 Start: 48144, Stop: 46666, Start Num: 16

Candidate Starts for Lifes_86:

(Start: 16 @48144 has 4 MA's), (18, 48135), (23, 48114), (43, 47964), (55, 47880), (61, 47859), (83, 47685), (84, 47679), (95, 47625), (105, 47547), (123, 47454), (133, 47379), (138, 47337), (147,

47289), (153, 47259), (160, 47220), (163, 47199), (165, 47187), (175, 47082), (177, 47067), (180, 47055), (184, 47025), (191, 46953), (196, 46917), (201, 46869), (203, 46854), (206, 46836), (210, 46824), (213, 46791), (225, 46725), (228, 46713), (235, 46695), (237, 46683),

Gene: Lupine_78 Start: 49414, Stop: 47891, Start Num: 14

Candidate Starts for Lupine_78:

(2, 49675), (4, 49633), (Start: 14 @49414 has 22 MA's), (27, 49303), (32, 49264), (33, 49255), (48, 49159), (54, 49117), (59, 49099), (64, 49045), (72, 49000), (87, 48895), (106, 48772), (113, 48736), (121, 48697), (131, 48631), (132, 48604), (134, 48586), (137, 48556), (149, 48496), (154, 48466), (157, 48454), (158, 48448), (196, 48139), (198, 48121), (202, 48079), (204, 48073), (207, 48055), (208, 48052),

Gene: Lyell_84 Start: 49739, Stop: 48219, Start Num: 14

Candidate Starts for Lyell_84:

(11, 49772), (Start: 14 @49739 has 22 MA's), (17, 49706), (21, 49688), (33, 49580), (44, 49514), (53, 49448), (72, 49325), (75, 49310), (82, 49253), (86, 49220), (87, 49217), (97, 49154), (104, 49103), (106, 49094), (107, 49085), (114, 49055), (117, 49031), (125, 48992), (128, 48977), (132, 48926), (134, 48908), (154, 48788), (161, 48743), (198, 48449), (201, 48419), (210, 48374), (216, 48323), (229, 48260),

Gene: Molivia_74 Start: 46115, Stop: 44718, Start Num: 29

Candidate Starts for Molivia_74:

(Start: 29 @46115 has 11 MA's), (38, 46064), (45, 46013), (46, 46010), (50, 45992), (51, 45974), (57, 45953), (75, 45830), (96, 45692), (118, 45551), (127, 45509), (130, 45488), (139, 45395), (150, 45338), (151, 45323), (158, 45293), (162, 45260), (172, 45185), (178, 45137), (181, 45110), (183, 45101), (185, 45089), (196, 44987), (200, 44948), (201, 44939), (222, 44807), (234, 44762), (238, 44738),

Gene: Musetta_83 Start: 50079, Stop: 48559, Start Num: 14

Candidate Starts for Musetta_83:

(11, 50112), (Start: 14 @50079 has 22 MA's), (21, 50028), (33, 49920), (44, 49854), (53, 49788), (72, 49665), (75, 49650), (82, 49593), (86, 49560), (87, 49557), (97, 49494), (104, 49443), (106, 49434), (107, 49425), (117, 49371), (125, 49332), (128, 49317), (132, 49266), (134, 49248), (137, 49218), (154, 49128), (161, 49083), (198, 48789), (201, 48759), (210, 48714), (229, 48600),

Gene: Necrophoxinus_86 Start: 50425, Stop: 48905, Start Num: 14

Candidate Starts for Necrophoxinus_86:

(11, 50458), (Start: 14 @50425 has 22 MA's), (17, 50392), (21, 50374), (32, 50275), (33, 50266), (44, 50200), (53, 50134), (75, 49996), (82, 49939), (86, 49906), (87, 49903), (97, 49840), (104, 49789), (106, 49780), (107, 49771), (114, 49741), (117, 49717), (125, 49678), (128, 49663), (132, 49612), (134, 49594), (137, 49564), (150, 49501), (161, 49429), (198, 49135), (201, 49105), (210, 49060), (216, 49009), (224, 48964), (229, 48946),

Gene: Nirvana_135 Start: 85649, Stop: 84003, Start Num: 6

Candidate Starts for Nirvana_135:

(Start: 6 @85649 has 6 MA's), (15, 85541), (Start: 16 @85517 has 4 MA's), (19, 85502), (20, 85499), (44, 85322), (60, 85220), (67, 85145), (68, 85142), (93, 84968), (99, 84926), (107, 84869), (121, 84803), (134, 84707), (142, 84650), (153, 84596), (156, 84584), (159, 84569), (166, 84521), (179, 84407), (182, 84377), (187, 84347), (188, 84335), (209, 84179), (210, 84176), (234, 84047),

Gene: OlinDD_77 Start: 49475, Stop: 47952, Start Num: 14

Candidate Starts for OlinDD_77:

(8, 49541), (9, 49514), (Start: 14 @49475 has 22 MA's), (32, 49325), (33, 49316), (48, 49220), (51, 49187), (59, 49160), (64, 49106), (72, 49061), (73, 49058), (86, 48953), (87, 48950), (106, 48827), (107, 48818), (110, 48806), (121, 48752), (132, 48659), (149, 48551), (154, 48521), (155, 48515), (156, 48512), (157, 48509), (161, 48476), (164, 48464), (178, 48338), (185, 48290), (196, 48200), (198, 48182), (204, 48134), (224, 48011),

Gene: Pavlo_78 Start: 49360, Stop: 47837, Start Num: 14

Candidate Starts for Pavlo_78:

(2, 49621), (Start: 14 @49360 has 22 MA's), (27, 49249), (32, 49210), (33, 49201), (48, 49105), (54, 49063), (59, 49045), (64, 48991), (72, 48946), (73, 48943), (87, 48841), (106, 48718), (113, 48682), (121, 48643), (131, 48577), (132, 48550), (134, 48532), (137, 48502), (149, 48442), (154, 48412), (157, 48400), (158, 48394), (196, 48085), (198, 48067), (202, 48025), (204, 48019), (207, 48001), (208, 47998), (231, 47872),

Gene: PhillyPhilly_77 Start: 48897, Stop: 47374, Start Num: 14

Candidate Starts for PhillyPhilly_77:

(Start: 14 @48897 has 22 MA's), (27, 48786), (32, 48747), (33, 48738), (39, 48699), (48, 48642), (54, 48600), (64, 48528), (72, 48483), (73, 48480), (87, 48378), (106, 48255), (113, 48219), (121, 48180), (131, 48114), (132, 48087), (134, 48069), (137, 48039), (149, 47979), (154, 47949), (157, 47937), (158, 47931), (196, 47622), (198, 47604), (202, 47562), (204, 47556), (207, 47538), (208, 47535),

Gene: Pioneer3_77 Start: 49273, Stop: 47750, Start Num: 14

Candidate Starts for Pioneer3_77:

(8, 49339), (9, 49312), (Start: 14 @49273 has 22 MA's), (32, 49123), (33, 49114), (48, 49018), (51, 48985), (59, 48958), (64, 48904), (72, 48859), (73, 48856), (86, 48751), (87, 48748), (106, 48625), (107, 48616), (110, 48604), (121, 48550), (132, 48457), (149, 48349), (154, 48319), (155, 48313), (156, 48310), (157, 48307), (161, 48274), (164, 48262), (178, 48136), (185, 48088), (196, 47998), (198, 47980), (204, 47932), (224, 47809),

Gene: Platte_76 Start: 49041, Stop: 47518, Start Num: 14

Candidate Starts for Platte_76:

(8, 49107), (9, 49080), (Start: 14 @49041 has 22 MA's), (32, 48891), (33, 48882), (48, 48786), (51, 48753), (59, 48726), (64, 48672), (72, 48627), (73, 48624), (86, 48519), (87, 48516), (106, 48393), (107, 48384), (110, 48372), (121, 48318), (132, 48225), (149, 48117), (154, 48087), (155, 48081), (156, 48078), (157, 48075), (161, 48042), (164, 48030), (178, 47904), (185, 47856), (196, 47766), (198, 47748), (204, 47700), (224, 47577),

Gene: Rings_71 Start: 47461, Stop: 46067, Start Num: 29

Candidate Starts for Rings_71:

(Start: 29 @47461 has 11 MA's), (42, 47392), (52, 47317), (57, 47299), (62, 47269), (73, 47188), (96, 47038), (120, 46894), (127, 46855), (139, 46741), (148, 46690), (151, 46669), (158, 46639), (160, 46624), (161, 46612), (172, 46531), (178, 46483), (181, 46456), (185, 46435), (192, 46351), (201, 46285), (236, 46096), (238, 46084),

Gene: Roman_81 Start: 50015, Stop: 48492, Start Num: 14

Candidate Starts for Roman_81:

(2, 50276), (Start: 14 @50015 has 22 MA's), (27, 49904), (32, 49865), (33, 49856), (48, 49760), (54, 49718), (59, 49700), (72, 49601), (73, 49598), (81, 49538), (87, 49496), (106, 49373), (113, 49337), (121, 49298), (131, 49232), (132, 49205), (134, 49187), (137, 49157), (149, 49097), (154, 49067), (157, 49055), (158, 49049), (196, 48740), (198, 48722), (202, 48680), (204, 48674), (207, 48656), (208, 48653),

Gene: RunningBrook_87 Start: 50790, Stop: 49270, Start Num: 14

Candidate Starts for RunningBrook_87:

(11, 50823), (Start: 14 @50790 has 22 MA's), (21, 50739), (33, 50631), (44, 50565), (53, 50499), (72, 50376), (75, 50361), (82, 50304), (86, 50271), (87, 50268), (97, 50205), (104, 50154), (106, 50145), (107, 50136), (117, 50082), (125, 50043), (128, 50028), (134, 49959), (137, 49929), (150, 49866), (161, 49794), (185, 49608), (198, 49500), (201, 49470), (210, 49425), (216, 49374), (229, 49311),

Gene: Satis_124 Start: 82176, Stop: 80533, Start Num: 6

Candidate Starts for Satis_124:

(Start: 6 @82176 has 6 MA's), (7, 82152), (Start: 16 @82044 has 4 MA's), (30, 81939), (35, 81900), (44, 81849), (58, 81756), (64, 81696), (67, 81672), (68, 81669), (72, 81642), (83, 81549), (107, 81396), (112, 81372), (113, 81369), (119, 81336), (122, 81324), (132, 81252), (144, 81174), (151, 81129), (172, 80982), (179, 80937), (182, 80907), (187, 80877), (188, 80865), (196, 80799), (209, 80709), (210, 80706), (224, 80610), (226, 80604), (234, 80577),

Gene: SorJuana_70 Start: 47020, Stop: 45626, Start Num: 29

Candidate Starts for SorJuana_70:

(Start: 29 @47020 has 11 MA's), (42, 46951), (52, 46876), (57, 46858), (62, 46828), (73, 46747), (96, 46597), (120, 46453), (127, 46414), (139, 46300), (148, 46249), (151, 46228), (158, 46198), (160, 46183), (161, 46171), (172, 46090), (178, 46042), (181, 46015), (185, 45994), (192, 45910), (201, 45844), (236, 45655), (238, 45643),

Gene: StevieWelch_85 Start: 49882, Stop: 48362, Start Num: 14

Candidate Starts for StevieWelch_85:

(11, 49915), (Start: 14 @49882 has 22 MA's), (21, 49831), (33, 49723), (44, 49657), (53, 49591), (72, 49468), (75, 49453), (82, 49396), (86, 49363), (87, 49360), (97, 49297), (104, 49246), (106, 49237), (107, 49228), (108, 49222), (114, 49198), (117, 49174), (125, 49135), (128, 49120), (132, 49069), (134, 49051), (150, 48958), (154, 48931), (161, 48886), (185, 48700), (198, 48592), (201, 48562), (210, 48517), (216, 48466), (224, 48421), (229, 48403),

Gene: Tandem_77 Start: 49353, Stop: 47830, Start Num: 14

Candidate Starts for Tandem_77:

(8, 49419), (9, 49392), (Start: 14 @49353 has 22 MA's), (32, 49203), (33, 49194), (48, 49098), (51, 49065), (59, 49038), (64, 48984), (72, 48939), (73, 48936), (86, 48831), (87, 48828), (106, 48705), (107, 48696), (110, 48684), (121, 48630), (132, 48537), (149, 48429), (154, 48399), (155, 48393), (156, 48390), (157, 48387), (161, 48354), (164, 48342), (178, 48216), (185, 48168), (196, 48078), (198, 48060), (204, 48012), (224, 47889),

Gene: Thunderclap_70 Start: 47442, Stop: 46048, Start Num: 29

Candidate Starts for Thunderclap_70:

(Start: 29 @47442 has 11 MA's), (42, 47373), (52, 47298), (57, 47280), (62, 47250), (73, 47169), (79, 47115), (96, 47019), (120, 46875), (127, 46836), (139, 46722), (148, 46671), (151, 46650), (158, 46620), (160, 46605), (161, 46593), (172, 46512), (178, 46464), (181, 46437), (185, 46416), (192, 46332), (201, 46266), (236, 46077), (238, 46065),

Gene: WaterT_90 Start: 50077, Stop: 48617, Start Num: 16

Candidate Starts for WaterT_90:

(Start: 16 @50077 has 4 MA's), (22, 50047), (35, 49933), (49, 49849), (66, 49723), (70, 49699), (82, 49621), (83, 49609), (84, 49603), (85, 49597), (88, 49582), (92, 49561), (103, 49486), (105, 49468), (124, 49372), (126, 49363), (136, 49258), (141, 49228), (143, 49225), (145, 49219), (146, 49207), (147, 49204), (159, 49144), (160, 49135), (171, 49045), (178, 48991), (183, 48955), (194, 48874), (195, 48871), (196, 48868), (197, 48859), (208, 48781), (210, 48775), (220, 48697), (225, 48676), (233, 48649), (235, 48646), (237, 48634),

Gene: Welcome_86 Start: 50242, Stop: 48722, Start Num: 14

Candidate Starts for Welcome_86:

(11, 50275), (Start: 14 @50242 has 22 MA's), (21, 50191), (33, 50083), (44, 50017), (53, 49951), (75, 49813), (82, 49756), (86, 49723), (87, 49720), (97, 49657), (104, 49606), (106, 49597), (107, 49588), (108, 49582), (114, 49558), (117, 49534), (125, 49495), (128, 49480), (132, 49429), (150, 49318), (154, 49291), (161, 49246), (198, 48952), (201, 48922), (210, 48877), (216, 48826), (224, 48781), (229, 48763),

Gene: Wolfstar_82 Start: 50847, Stop: 49330, Start Num: 15

Candidate Starts for Wolfstar_82:

(1, 51207), (11, 50889), (15, 50847), (32, 50703), (33, 50694), (48, 50598), (51, 50565), (64, 50484), (72, 50439), (73, 50436), (87, 50334), (106, 50211), (107, 50202), (121, 50136), (147, 49941), (149, 49935), (154, 49905), (155, 49899), (157, 49893), (178, 49722), (198, 49560), (204, 49512), (217, 49428), (224, 49389), (231, 49365),

Gene: Yeezus_70 Start: 47415, Stop: 46021, Start Num: 29

Candidate Starts for Yeezus_70:

(Start: 29 @47415 has 11 MA's), (42, 47346), (52, 47271), (57, 47253), (62, 47223), (73, 47142), (120, 46848), (127, 46809), (139, 46695), (151, 46623), (158, 46593), (160, 46578), (161, 46566), (170, 46515), (174, 46464), (176, 46446), (178, 46437), (185, 46389), (201, 46239), (236, 46050),

Gene: Yuma_83 Start: 49751, Stop: 48231, Start Num: 14

Candidate Starts for Yuma_83:

(11, 49784), (Start: 14 @49751 has 22 MA's), (21, 49700), (33, 49592), (44, 49526), (53, 49460), (72, 49337), (75, 49322), (82, 49265), (86, 49232), (87, 49229), (97, 49166), (104, 49115), (106, 49106), (107, 49097), (117, 49043), (125, 49004), (128, 48989), (134, 48920), (137, 48890), (150, 48827), (161, 48755), (185, 48569), (198, 48461), (201, 48431), (210, 48386), (216, 48335), (229, 48272),