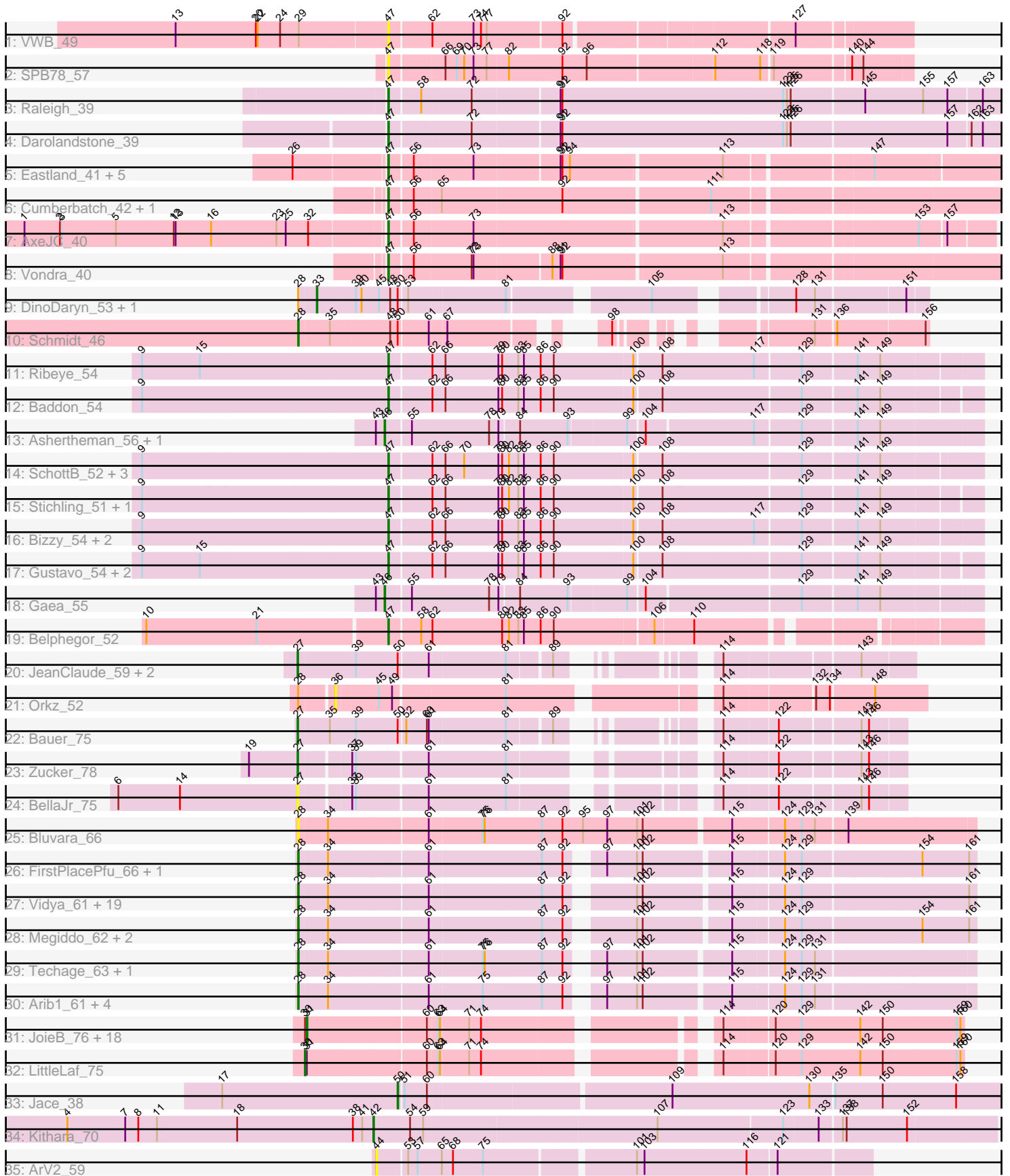


Pham 311429



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 311429 Report

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

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 311429 has 98 members, 13 are drafts.

Phages represented in each track:

- Track 1 : VWB_49
- Track 2 : SPB78_57
- Track 3 : Raleigh_39
- Track 4 : Darolandstone_39
- Track 5 : Eastland_41, Piccadilly_41, Ignacio_41, HFrancette_42, Schlegelian_42, FrumpyGal_42
- Track 6 : Cumberbatch_42, ArizonaGT_42
- Track 7 : AxeJC_40
- Track 8 : Vondra_40
- Track 9 : DinoDaryn_53, Huffy_53
- Track 10 : Schmidt_46
- Track 11 : Ribeye_54
- Track 12 : Baddon_54
- Track 13 : Ashertheman_56, Bibwit_55
- Track 14 : SchottB_52, Kwobi_56, YorkOnyx_55, Kroos_54
- Track 15 : Stichling_51, JKSyngboy_52
- Track 16 : Bizzy_54, Derg_49, Flatwoods_54
- Track 17 : Gustavo_54, Saronaya_54, Tangerine_53
- Track 18 : Gaea_55
- Track 19 : Belphegor_52
- Track 20 : JeanClaude_59, Shoya_60, BrayBeast_60
- Track 21 : Orkz_52
- Track 22 : Bauer_75
- Track 23 : Zucker_78
- Track 24 : BellaJr_75
- Track 25 : Bluvara_66
- Track 26 : FirstPlacePfu_66, GreaseLightnin_67
- Track 27 : Vidya_61, StevieRay_67, Jebeks_63, Bogie_65, HUHilltop_65, Juniormint_60, Zilizebeth_68, Thespis_64, Camster_63, Sonah_63, Malithi_62, Atcoo_64, Dynamo_62, Brusacoram_64, Polkaroo_64, Jung_63, Shipwreck_65, Necropolis_60, Pygmy_66, Phineas_63
- Track 28 : Megiddo_62, Bhagsy_68, PeanutPie_67
- Track 29 : Techage_63, Xula_58

- Track 30 : Arib1_61, GaloreK_63, Venti_60, QueenHazel_59, Bartholomew_58
- Track 31 : JoieB_76, Marvin_71, VasuNzinga_74, MosMoris_72, FeliMaine_77, Beelzebub_79, Corazon_72, Caprice_69, Blackbeetle_76, RedRaider77_75, Clarkson_76, GoongGoong_75, Huphlepuuff_77, Gattaca_73, Raela_76, Tesla_72, Poise_76, Lilbit_73, Pringar_73
- Track 32 : LittleLaf_75
- Track 33 : Jace_38
- Track 34 : Kithara_70
- Track 35 : ArV2_59

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

The start number called the most often in the published annotations is 28, it was called in 29 of the 85 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Arib1_61, Atcoo_64, Bartholomew_58, Bhagsy_68, Bluvara_66, Bogie_65, Brusacoram_64, Camster_63, Dynamo_62, FirstPlacePfu_66, GaloreK_63, GreaseLightnin_67, HUHilltop_65, Jebeks_63, Jung_63, Juniormint_60, Malithi_62, Megiddo_62, Necropolis_60, PeanutPie_67, Phineas_63, Polkaroo_64, Pygmy_66, QueenHazel_59, Schmidt_46, Shipwreck_65, Sonah_63, StevieRay_67, Techage_63, Thespis_64, Venti_60, Vidya_61, Xula_58, Zilizebeth_68,

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

- DinoDaryn_53, Huffy_53, Orkz_52,

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

- ArV2_59, ArizonaGT_42, Ashertheman_56, AxeJC_40, Baddon_54, Bauer_75, Beelzebub_79, BellaJr_75, Belphegor_52, Bibwit_55, Bizzy_54, Blackbeetle_76, BrayBeast_60, Caprice_69, Clarkson_76, Corazon_72, Cumberbatch_42, Darolandstone_39, Derg_49, Eastland_41, FeliMaine_77, Flatwoods_54, FrumpyGal_42, Gaea_55, Gattaca_73, GoongGoong_75, Gustavo_54, HFrancette_42, Huphlepuuff_77, Ignacio_41, JKSyngboy_52, Jace_38, JeanClaude_59, JoieB_76, Kithara_70, Kroos_54, Kwobi_56, Lilbit_73, LittleLaf_75, Marvin_71, MosMoris_72, Piccadilly_41, Poise_76, Pringar_73, Raela_76, Raleigh_39, RedRaider77_75, Ribeye_54, SPB78_57, Saronaya_54, Schlegelian_42, SchottB_52, Shoya_60, Stichling_51, Tangerine_53, Tesla_72, VWB_49, VasuNzinga_74, Vondra_40, YorkOnyx_55, Zucker_78,

Summary by start number:

Start 27:

- Found in 6 of 98 (6.1%) of genes in pham
- Manual Annotations of this start: 4 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bauer_75 (FN), BellaJr_75 (FN), BrayBeast_60 (FB), JeanClaude_59 (FB), Shoya_60 (FB), Zucker_78 (FN),

Start 28:

- Found in 37 of 98 (37.8%) of genes in pham

- Manual Annotations of this start: 29 of 85
- Called 91.9% of time when present
- Phage (with cluster) where this start called: Arib1_61 (P1), Atcoo_64 (P1), Bartholomew_58 (P1), Bhagsy_68 (P1), Bluvara_66 (I3), Bogie_65 (P1), Brusacoram_64 (P1), Camster_63 (P1), Dynamo_62 (P1), FirstPlacePfu_66 (P1), GaloreK_63 (P1), GreaseLightnin_67 (P1), HUHilltop_65 (P1), Jebeks_63 (P1), Jung_63 (P1), Juniormint_60 (P1), Malithi_62 (P1), Megiddo_62 (P1), Necropolis_60 (P1), PeanutPie_67 (P1), Phineas_63 (P1), Polkaroo_64 (P1), Pygmy_66 (P1), QueenHazel_59 (I1), Schmidt_46 (CU4), Shipwreck_65 (P1), Sonah_63 (P1), StevieRay_67 (P1), Techage_63 (P1), Thespis_64 (P1), Venti_60 (P1), Vidya_61 (P1), Xula_58 (I1), Zilizebeth_68 (P1),

Start 30:

- Found in 20 of 98 (20.4%) of genes in pham
- Manual Annotations of this start: 1 of 85
- Called 5.0% of time when present
- Phage (with cluster) where this start called: LittleLaf_75 (S),

Start 31:

- Found in 20 of 98 (20.4%) of genes in pham
- Manual Annotations of this start: 18 of 85
- Called 95.0% of time when present
- Phage (with cluster) where this start called: Beelzebub_79 (S), Blackbeetle_76 (S), Caprice_69 (S), Clarkson_76 (S), Corazon_72 (S), FeliMaine_77 (S), Gattaca_73 (S), GoongGoong_75 (S), Huphlepuuff_77 (S), JoieB_76 (S), Lilbit_73 (S), Marvin_71 (S), MosMoris_72 (S), Poise_76 (S), Pringar_73 (S), Raela_76 (S), RedRaider77_75 (S), Tesla_72 (S), VasuNzinga_74 (S),

Start 33:

- Found in 2 of 98 (2.0%) of genes in pham
- Manual Annotations of this start: 2 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DinoDaryn_53 (CU1), Huffy_53 (CU1),

Start 36:

- Found in 1 of 98 (1.0%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Orkz_52 (FL),

Start 42:

- Found in 1 of 98 (1.0%) of genes in pham
- Manual Annotations of this start: 1 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kithara_70 (singleton),

Start 44:

- Found in 1 of 98 (1.0%) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ArV2_59 (singleton),

Start 46:

- Found in 3 of 98 (3.1%) of genes in pham
- Manual Annotations of this start: 3 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ashertheman_56 (DE1), Bibwit_55 (DE1), Gaea_55 (DE1),

Start 47:

- Found in 29 of 98 (29.6%) of genes in pham
- Manual Annotations of this start: 26 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ArizonaGT_42 (BP), AxeJC_40 (BP), Baddon_54 (DE1), Belphegor_52 (DE2), Bizzy_54 (DE1), Cumberbatch_42 (BP), Darolandstone_39 (BC2), Derg_49 (DE1), Eastland_41 (BP), Flatwoods_54 (DE1), FrumpyGal_42 (BP), Gustavo_54 (DE1), HFrancette_42 (BP), Ignacio_41 (BP), JKSyngboy_52 (DE1), Kroos_54 (DE1), Kwobi_56 (DE1), Piccadilly_41 (BP), Raleigh_39 (BC2), Ribeye_54 (DE1), SPB78_57 (BA), Saronaya_54 (DE1), Schlegelian_42 (BP), SchottB_52 (DE1), Stichling_51 (DE1), Tangerine_53 (DE1), VWB_49 (BA), Vondra_40 (BP), YorkOnyx_55 (DE1),

Start 50:

- Found in 8 of 98 (8.2%) of genes in pham
- Manual Annotations of this start: 1 of 85
- Called 12.5% of time when present
- Phage (with cluster) where this start called: Jace_38 (singleton),

Summary by clusters:

There are 15 clusters represented in this pham: singleton, P1, BA, CU1, I1, DE1, I3, FB, S, CU4, BP, FN, FL, DE2, BC2,

Info for manual annotations of cluster BC2:

- Start number 47 was manually annotated 2 times for cluster BC2.

Info for manual annotations of cluster BP:

- Start number 47 was manually annotated 10 times for cluster BP.

Info for manual annotations of cluster CU1:

- Start number 33 was manually annotated 2 times for cluster CU1.

Info for manual annotations of cluster CU4:

- Start number 28 was manually annotated 1 time for cluster CU4.

Info for manual annotations of cluster DE1:

- Start number 46 was manually annotated 3 times for cluster DE1.
- Start number 47 was manually annotated 13 times for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 47 was manually annotated 1 time for cluster DE2.

Info for manual annotations of cluster FB:

- Start number 27 was manually annotated 2 times for cluster FB.

Info for manual annotations of cluster FN:

- Start number 27 was manually annotated 2 times for cluster FN.

Info for manual annotations of cluster I1:

- Start number 28 was manually annotated 2 times for cluster I1.

Info for manual annotations of cluster P1:

- Start number 28 was manually annotated 26 times for cluster P1.

Info for manual annotations of cluster S:

- Start number 30 was manually annotated 1 time for cluster S.
- Start number 31 was manually annotated 18 times for cluster S.

Gene Information:

Gene: ArV2_59 Start: 32108, Stop: 32857, Start Num: 44

Candidate Starts for ArV2_59:

(44, 32108), (53, 32150), (57, 32165), (65, 32204), (68, 32222), (75, 32270), (101, 32495), (103, 32507), (116, 32669), (121, 32714),

Gene: Arib1_61 Start: 39295, Stop: 40290, Start Num: 28

Candidate Starts for Arib1_61:

(Start: 28 @39295 has 29 MA's), (34, 39340), (61, 39490), (75, 39571), (87, 39661), (92, 39694), (97, 39733), (101, 39781), (102, 39790), (115, 39922), (124, 39997), (129, 40024), (131, 40045),

Gene: ArizonaGT_42 Start: 28364, Stop: 29290, Start Num: 47

Candidate Starts for ArizonaGT_42:

(Start: 47 @28364 has 26 MA's), (56, 28397), (65, 28439), (92, 28625), (111, 28853),

Gene: Ashertheman_56 Start: 44845, Stop: 45732, Start Num: 46

Candidate Starts for Ashertheman_56:

(43, 44833), (Start: 46 @44845 has 3 MA's), (55, 44881), (78, 45001), (79, 45016), (84, 45046), (93, 45118), (99, 45205), (104, 45229), (117, 45391), (129, 45460), (141, 45541), (149, 45577),

Gene: Atcoo_64 Start: 42672, Stop: 43670, Start Num: 28

Candidate Starts for Atcoo_64:

(Start: 28 @42672 has 29 MA's), (34, 42717), (61, 42867), (87, 43038), (92, 43071), (101, 43158), (102, 43167), (115, 43299), (124, 43374), (129, 43401), (161, 43659),

Gene: AxeJC_40 Start: 28086, Stop: 28979, Start Num: 47

Candidate Starts for AxeJC_40:

(1, 27522), (2, 27579), (3, 27582), (5, 27669), (12, 27762), (13, 27765), (16, 27822), (23, 27927), (25, 27942), (32, 27978), (Start: 47 @28086 has 26 MA's), (56, 28119), (73, 28212), (113, 28590), (153, 28869), (157, 28908),

Gene: Baddon_54 Start: 45452, Stop: 46342, Start Num: 47

Candidate Starts for Baddon_54:

(9, 45062), (Start: 47 @45452 has 26 MA's), (62, 45512), (66, 45533), (79, 45617), (80, 45623), (83, 45647), (85, 45656), (86, 45683), (90, 45704), (100, 45827), (108, 45866), (129, 46076), (141, 46157),

(149, 46193),

Gene: Bartholomew_58 Start: 38622, Stop: 39617, Start Num: 28

Candidate Starts for Bartholomew_58:

(Start: 28 @38622 has 29 MA's), (34, 38667), (61, 38817), (75, 38898), (87, 38988), (92, 39021), (97, 39060), (101, 39108), (102, 39117), (115, 39249), (124, 39324), (129, 39351), (131, 39372),

Gene: Bauer_75 Start: 42042, Stop: 42833, Start Num: 27

Candidate Starts for Bauer_75:

(Start: 27 @42042 has 4 MA's), (35, 42090), (39, 42129), (Start: 50 @42192 has 1 MA's), (52, 42201), (60, 42234), (61, 42237), (81, 42351), (89, 42414), (114, 42564), (122, 42645), (143, 42765), (146, 42777),

Gene: Beelzebub_79 Start: 42080, Stop: 43006, Start Num: 31

Candidate Starts for Beelzebub_79:

(Start: 30 @42077 has 1 MA's), (Start: 31 @42080 has 18 MA's), (60, 42260), (63, 42275), (64, 42278), (71, 42320), (74, 42338), (114, 42635), (120, 42710), (129, 42752), (142, 42845), (150, 42881), (159, 42995), (160, 43001),

Gene: BellaJr_75 Start: 44689, Stop: 45504, Start Num: 27

Candidate Starts for BellaJr_75:

(6, 44401), (14, 44500), (Start: 27 @44689 has 4 MA's), (37, 44758), (39, 44764), (61, 44872), (81, 44989), (114, 45235), (122, 45316), (143, 45436), (146, 45448),

Gene: Belphegor_52 Start: 45051, Stop: 45884, Start Num: 47

Candidate Starts for Belphegor_52:

(10, 44676), (21, 44853), (Start: 47 @45051 has 26 MA's), (58, 45096), (62, 45111), (80, 45222), (82, 45231), (83, 45246), (85, 45255), (86, 45282), (90, 45303), (106, 45450), (110, 45507),

Gene: Bhagsy_68 Start: 41777, Stop: 42787, Start Num: 28

Candidate Starts for Bhagsy_68:

(Start: 28 @41777 has 29 MA's), (34, 41822), (61, 41972), (87, 42143), (92, 42176), (101, 42263), (102, 42272), (115, 42416), (124, 42491), (129, 42518), (154, 42701), (161, 42776),

Gene: Bibwit_55 Start: 44359, Stop: 45243, Start Num: 46

Candidate Starts for Bibwit_55:

(43, 44347), (Start: 46 @44359 has 3 MA's), (55, 44395), (78, 44515), (79, 44530), (84, 44560), (93, 44632), (99, 44719), (104, 44743), (117, 44905), (129, 44974), (141, 45055), (149, 45091),

Gene: Bizzy_54 Start: 44167, Stop: 45060, Start Num: 47

Candidate Starts for Bizzy_54:

(9, 43777), (Start: 47 @44167 has 26 MA's), (62, 44227), (66, 44248), (79, 44332), (80, 44338), (83, 44362), (85, 44371), (86, 44398), (90, 44419), (100, 44542), (108, 44581), (117, 44722), (129, 44791), (141, 44872), (149, 44908),

Gene: Blackbeetle_76 Start: 41429, Stop: 42367, Start Num: 31

Candidate Starts for Blackbeetle_76:

(Start: 30 @41426 has 1 MA's), (Start: 31 @41429 has 18 MA's), (60, 41609), (63, 41624), (64, 41627), (71, 41669), (74, 41687), (114, 41996), (120, 42071), (129, 42113), (142, 42206), (150, 42242), (159, 42356), (160, 42362),

Gene: Bluvara_66 Start: 43290, Stop: 44321, Start Num: 28

Candidate Starts for Bluvara_66:

(Start: 28 @43290 has 29 MA's), (34, 43335), (61, 43485), (75, 43566), (76, 43569), (87, 43656), (92, 43689), (95, 43722), (97, 43761), (101, 43809), (102, 43818), (115, 43950), (124, 44028), (129, 44055), (131, 44076), (139, 44124),

Gene: Bogie_65 Start: 41654, Stop: 42652, Start Num: 28

Candidate Starts for Bogie_65:

(Start: 28 @41654 has 29 MA's), (34, 41699), (61, 41849), (87, 42020), (92, 42053), (101, 42140), (102, 42149), (115, 42281), (124, 42356), (129, 42383), (161, 42641),

Gene: BrayBeast_60 Start: 34355, Stop: 35161, Start Num: 27

Candidate Starts for BrayBeast_60:

(Start: 27 @34355 has 4 MA's), (39, 34442), (Start: 50 @34505 has 1 MA's), (61, 34550), (81, 34664), (89, 34727), (114, 34877), (143, 35078),

Gene: Brusacoram_64 Start: 41215, Stop: 42213, Start Num: 28

Candidate Starts for Brusacoram_64:

(Start: 28 @41215 has 29 MA's), (34, 41260), (61, 41410), (87, 41581), (92, 41614), (101, 41701), (102, 41710), (115, 41842), (124, 41917), (129, 41944), (161, 42202),

Gene: Camster_63 Start: 40115, Stop: 41113, Start Num: 28

Candidate Starts for Camster_63:

(Start: 28 @40115 has 29 MA's), (34, 40160), (61, 40310), (87, 40481), (92, 40514), (101, 40601), (102, 40610), (115, 40742), (124, 40817), (129, 40844), (161, 41102),

Gene: Caprice_69 Start: 41379, Stop: 42305, Start Num: 31

Candidate Starts for Caprice_69:

(Start: 30 @41376 has 1 MA's), (Start: 31 @41379 has 18 MA's), (60, 41559), (63, 41574), (64, 41577), (71, 41619), (74, 41637), (114, 41934), (120, 42009), (129, 42051), (142, 42144), (150, 42180), (159, 42294), (160, 42300),

Gene: Clarkson_76 Start: 41760, Stop: 42686, Start Num: 31

Candidate Starts for Clarkson_76:

(Start: 30 @41757 has 1 MA's), (Start: 31 @41760 has 18 MA's), (60, 41940), (63, 41955), (64, 41958), (71, 42000), (74, 42018), (114, 42315), (120, 42390), (129, 42432), (142, 42525), (150, 42561), (159, 42675), (160, 42681),

Gene: Corazon_72 Start: 41954, Stop: 42880, Start Num: 31

Candidate Starts for Corazon_72:

(Start: 30 @41951 has 1 MA's), (Start: 31 @41954 has 18 MA's), (60, 42134), (63, 42149), (64, 42152), (71, 42194), (74, 42212), (114, 42509), (120, 42584), (129, 42626), (142, 42719), (150, 42755), (159, 42869), (160, 42875),

Gene: Cumberbatch_42 Start: 28364, Stop: 29290, Start Num: 47

Candidate Starts for Cumberbatch_42:

(Start: 47 @28364 has 26 MA's), (56, 28397), (65, 28439), (92, 28625), (111, 28853),

Gene: Darolandstone_39 Start: 30667, Stop: 31617, Start Num: 47

Candidate Starts for Darolandstone_39:

(Start: 47 @30667 has 26 MA's), (72, 30790), (91, 30919), (92, 30922), (123, 31270), (125, 31276), (126, 31282), (157, 31525), (162, 31558), (163, 31576),

Gene: Derg_49 Start: 43759, Stop: 44652, Start Num: 47

Candidate Starts for Derg_49:

(9, 43369), (Start: 47 @43759 has 26 MA's), (62, 43819), (66, 43840), (79, 43924), (80, 43930), (83, 43954), (85, 43963), (86, 43990), (90, 44011), (100, 44134), (108, 44173), (117, 44314), (129, 44383), (141, 44464), (149, 44500),

Gene: DinoDaryn_53 Start: 33407, Stop: 34255, Start Num: 33

Candidate Starts for DinoDaryn_53:

(Start: 28 @33380 has 29 MA's), (Start: 33 @33407 has 2 MA's), (39, 33467), (40, 33476), (45, 33503), (48, 33518), (Start: 50 @33530 has 1 MA's), (53, 33542), (81, 33689), (105, 33881), (128, 34058), (131, 34088), (151, 34223),

Gene: Dynamo_62 Start: 39688, Stop: 40686, Start Num: 28

Candidate Starts for Dynamo_62:

(Start: 28 @39688 has 29 MA's), (34, 39733), (61, 39883), (87, 40054), (92, 40087), (101, 40174), (102, 40183), (115, 40315), (124, 40390), (129, 40417), (161, 40675),

Gene: Eastland_41 Start: 28339, Stop: 29250, Start Num: 47

Candidate Starts for Eastland_41:

(26, 28204), (Start: 47 @28339 has 26 MA's), (56, 28372), (73, 28465), (91, 28591), (92, 28594), (94, 28606), (113, 28837), (147, 29047),

Gene: FeliMaine_77 Start: 42002, Stop: 42928, Start Num: 31

Candidate Starts for FeliMaine_77:

(Start: 30 @41999 has 1 MA's), (Start: 31 @42002 has 18 MA's), (60, 42182), (63, 42197), (64, 42200), (71, 42242), (74, 42260), (114, 42557), (120, 42632), (129, 42674), (142, 42767), (150, 42803), (159, 42917), (160, 42923),

Gene: FirstPlacePfu_66 Start: 39281, Stop: 40279, Start Num: 28

Candidate Starts for FirstPlacePfu_66:

(Start: 28 @39281 has 29 MA's), (34, 39326), (61, 39476), (87, 39647), (92, 39680), (97, 39719), (101, 39767), (102, 39776), (115, 39908), (124, 39983), (129, 40010), (154, 40193), (161, 40268),

Gene: Flatwoods_54 Start: 44108, Stop: 44998, Start Num: 47

Candidate Starts for Flatwoods_54:

(9, 43718), (Start: 47 @44108 has 26 MA's), (62, 44168), (66, 44189), (79, 44273), (80, 44279), (83, 44303), (85, 44312), (86, 44339), (90, 44360), (100, 44483), (108, 44522), (117, 44663), (129, 44732), (141, 44813), (149, 44849),

Gene: FrumpyGal_42 Start: 28339, Stop: 29250, Start Num: 47

Candidate Starts for FrumpyGal_42:

(26, 28204), (Start: 47 @28339 has 26 MA's), (56, 28372), (73, 28465), (91, 28591), (92, 28594), (94, 28606), (113, 28837), (147, 29047),

Gene: Gaea_55 Start: 44145, Stop: 45029, Start Num: 46

Candidate Starts for Gaea_55:

(43, 44133), (Start: 46 @44145 has 3 MA's), (55, 44181), (78, 44301), (79, 44316), (84, 44346), (93, 44418), (99, 44505), (104, 44529), (129, 44760), (141, 44841), (149, 44877),

Gene: GaloreK_63 Start: 40740, Stop: 41744, Start Num: 28

Candidate Starts for GaloreK_63:

(Start: 28 @40740 has 29 MA's), (34, 40785), (61, 40935), (75, 41016), (87, 41106), (92, 41139), (97, 41178), (101, 41226), (102, 41235), (115, 41379), (124, 41454), (129, 41481), (131, 41502),

Gene: Gattaca_73 Start: 41533, Stop: 42465, Start Num: 31

Candidate Starts for Gattaca_73:

(Start: 30 @41530 has 1 MA's), (Start: 31 @41533 has 18 MA's), (60, 41713), (63, 41728), (64, 41731), (71, 41773), (74, 41791), (114, 42094), (120, 42169), (129, 42211), (142, 42304), (150, 42340), (159, 42454), (160, 42460),

Gene: GoongGoong_75 Start: 41332, Stop: 42270, Start Num: 31

Candidate Starts for GoongGoong_75:

(Start: 30 @41329 has 1 MA's), (Start: 31 @41332 has 18 MA's), (60, 41512), (63, 41527), (64, 41530), (71, 41572), (74, 41590), (114, 41899), (120, 41974), (129, 42016), (142, 42109), (150, 42145), (159, 42259), (160, 42265),

Gene: GreaseLightnin_67 Start: 42069, Stop: 43067, Start Num: 28

Candidate Starts for GreaseLightnin_67:

(Start: 28 @42069 has 29 MA's), (34, 42114), (61, 42264), (87, 42435), (92, 42468), (97, 42507), (101, 42555), (102, 42564), (115, 42696), (124, 42771), (129, 42798), (154, 42981), (161, 43056),

Gene: Gustavo_54 Start: 44390, Stop: 45280, Start Num: 47

Candidate Starts for Gustavo_54:

(9, 44000), (15, 44093), (Start: 47 @44390 has 26 MA's), (62, 44450), (66, 44471), (79, 44555), (80, 44561), (83, 44585), (85, 44594), (86, 44621), (90, 44642), (100, 44765), (108, 44804), (129, 45014), (141, 45095), (149, 45131),

Gene: HFrancette_42 Start: 29117, Stop: 30028, Start Num: 47

Candidate Starts for HFrancette_42:

(26, 28982), (Start: 47 @29117 has 26 MA's), (56, 29150), (73, 29243), (91, 29369), (92, 29372), (94, 29384), (113, 29615), (147, 29825),

Gene: HUHilltop_65 Start: 39911, Stop: 40909, Start Num: 28

Candidate Starts for HUHilltop_65:

(Start: 28 @39911 has 29 MA's), (34, 39956), (61, 40106), (87, 40277), (92, 40310), (101, 40397), (102, 40406), (115, 40538), (124, 40613), (129, 40640), (161, 40898),

Gene: Huffy_53 Start: 33407, Stop: 34255, Start Num: 33

Candidate Starts for Huffy_53:

(Start: 28 @33380 has 29 MA's), (Start: 33 @33407 has 2 MA's), (39, 33467), (40, 33476), (45, 33503), (48, 33518), (Start: 50 @33530 has 1 MA's), (53, 33542), (81, 33689), (105, 33881), (128, 34058), (131, 34088), (151, 34223),

Gene: Huphlebuff_77 Start: 41565, Stop: 42491, Start Num: 31

Candidate Starts for Huphlebuff_77:

(Start: 30 @41562 has 1 MA's), (Start: 31 @41565 has 18 MA's), (60, 41745), (63, 41760), (64, 41763), (71, 41805), (74, 41823), (114, 42120), (120, 42195), (129, 42237), (142, 42330), (150, 42366), (159, 42480), (160, 42486),

Gene: Ignacio_41 Start: 29020, Stop: 29931, Start Num: 47

Candidate Starts for Ignacio_41:

(26, 28885), (Start: 47 @29020 has 26 MA's), (56, 29053), (73, 29146), (91, 29272), (92, 29275), (94, 29287), (113, 29518), (147, 29728),

Gene: JKSyngboy_52 Start: 44983, Stop: 45873, Start Num: 47

Candidate Starts for JKSyngboy_52:

(9, 44593), (Start: 47 @44983 has 26 MA's), (62, 45043), (66, 45064), (79, 45148), (80, 45154), (82, 45163), (83, 45178), (85, 45187), (86, 45214), (90, 45235), (100, 45358), (108, 45397), (129, 45607),

(141, 45688), (149, 45724),

Gene: Jace_38 Start: 28473, Stop: 29453, Start Num: 50

Candidate Starts for Jace_38:

(17, 28194), (Start: 50 @28473 has 1 MA's), (51, 28479), (60, 28512), (109, 28881), (130, 29100), (135, 29136), (150, 29211), (158, 29328),

Gene: JeanClaude_59 Start: 32720, Stop: 33526, Start Num: 27

Candidate Starts for JeanClaude_59:

(Start: 27 @32720 has 4 MA's), (39, 32807), (Start: 50 @32870 has 1 MA's), (61, 32915), (81, 33029), (89, 33092), (114, 33242), (143, 33443),

Gene: Jebeks_63 Start: 39208, Stop: 40206, Start Num: 28

Candidate Starts for Jebeks_63:

(Start: 28 @39208 has 29 MA's), (34, 39253), (61, 39403), (87, 39574), (92, 39607), (101, 39694), (102, 39703), (115, 39835), (124, 39910), (129, 39937), (161, 40195),

Gene: JoieB_76 Start: 42016, Stop: 42954, Start Num: 31

Candidate Starts for JoieB_76:

(Start: 30 @42013 has 1 MA's), (Start: 31 @42016 has 18 MA's), (60, 42196), (63, 42211), (64, 42214), (71, 42256), (74, 42274), (114, 42583), (120, 42658), (129, 42700), (142, 42793), (150, 42829), (159, 42943), (160, 42949),

Gene: Jung_63 Start: 40211, Stop: 41209, Start Num: 28

Candidate Starts for Jung_63:

(Start: 28 @40211 has 29 MA's), (34, 40256), (61, 40406), (87, 40577), (92, 40610), (101, 40697), (102, 40706), (115, 40838), (124, 40913), (129, 40940), (161, 41198),

Gene: Juniormint_60 Start: 38664, Stop: 39662, Start Num: 28

Candidate Starts for Juniormint_60:

(Start: 28 @38664 has 29 MA's), (34, 38709), (61, 38859), (87, 39030), (92, 39063), (101, 39150), (102, 39159), (115, 39291), (124, 39366), (129, 39393), (161, 39651),

Gene: Kithara_70 Start: 51463, Stop: 50498, Start Num: 42

Candidate Starts for Kithara_70:

(4, 51955), (7, 51862), (8, 51841), (11, 51811), (18, 51682), (38, 51496), (41, 51481), (Start: 42 @51463 has 1 MA's), (54, 51406), (59, 51385), (107, 51022), (123, 50827), (133, 50773), (137, 50740), (138, 50734), (152, 50638),

Gene: Kroos_54 Start: 44667, Stop: 45560, Start Num: 47

Candidate Starts for Kroos_54:

(9, 44277), (Start: 47 @44667 has 26 MA's), (62, 44727), (66, 44748), (70, 44778), (79, 44832), (80, 44838), (82, 44847), (83, 44862), (85, 44871), (86, 44898), (90, 44919), (100, 45042), (108, 45081), (129, 45291), (141, 45372), (149, 45408),

Gene: Kwobi_56 Start: 45093, Stop: 45986, Start Num: 47

Candidate Starts for Kwobi_56:

(9, 44703), (Start: 47 @45093 has 26 MA's), (62, 45153), (66, 45174), (70, 45204), (79, 45258), (80, 45264), (82, 45273), (83, 45288), (85, 45297), (86, 45324), (90, 45345), (100, 45468), (108, 45507), (129, 45717), (141, 45798), (149, 45834),

Gene: Lilbit_73 Start: 42113, Stop: 43051, Start Num: 31

Candidate Starts for Lilbit_73:

(Start: 30 @42110 has 1 MA's), (Start: 31 @42113 has 18 MA's), (60, 42293), (63, 42308), (64, 42311), (71, 42353), (74, 42371), (114, 42680), (120, 42755), (129, 42797), (142, 42890), (150, 42926), (159, 43040), (160, 43046),

Gene: LittleLaf_75 Start: 41839, Stop: 42780, Start Num: 30

Candidate Starts for LittleLaf_75:

(Start: 30 @41839 has 1 MA's), (Start: 31 @41842 has 18 MA's), (60, 42022), (63, 42037), (64, 42040), (71, 42082), (74, 42100), (114, 42409), (120, 42484), (129, 42526), (142, 42619), (150, 42655), (159, 42769), (160, 42775),

Gene: Malithi_62 Start: 39826, Stop: 40836, Start Num: 28

Candidate Starts for Malithi_62:

(Start: 28 @39826 has 29 MA's), (34, 39871), (61, 40021), (87, 40192), (92, 40225), (101, 40312), (102, 40321), (115, 40465), (124, 40540), (129, 40567), (161, 40825),

Gene: Marvin_71 Start: 41650, Stop: 42576, Start Num: 31

Candidate Starts for Marvin_71:

(Start: 30 @41647 has 1 MA's), (Start: 31 @41650 has 18 MA's), (60, 41830), (63, 41845), (64, 41848), (71, 41890), (74, 41908), (114, 42205), (120, 42280), (129, 42322), (142, 42415), (150, 42451), (159, 42565), (160, 42571),

Gene: Megiddo_62 Start: 41848, Stop: 42846, Start Num: 28

Candidate Starts for Megiddo_62:

(Start: 28 @41848 has 29 MA's), (34, 41893), (61, 42043), (87, 42214), (92, 42247), (101, 42334), (102, 42343), (115, 42475), (124, 42550), (129, 42577), (154, 42760), (161, 42835),

Gene: MosMoris_72 Start: 41533, Stop: 42471, Start Num: 31

Candidate Starts for MosMoris_72:

(Start: 30 @41530 has 1 MA's), (Start: 31 @41533 has 18 MA's), (60, 41713), (63, 41728), (64, 41731), (71, 41773), (74, 41791), (114, 42100), (120, 42175), (129, 42217), (142, 42310), (150, 42346), (159, 42460), (160, 42466),

Gene: Necropolis_60 Start: 39277, Stop: 40275, Start Num: 28

Candidate Starts for Necropolis_60:

(Start: 28 @39277 has 29 MA's), (34, 39322), (61, 39472), (87, 39643), (92, 39676), (101, 39763), (102, 39772), (115, 39904), (124, 39979), (129, 40006), (161, 40264),

Gene: Orkz_52 Start: 33628, Stop: 34467, Start Num: 36

Candidate Starts for Orkz_52:

(Start: 28 @33580 has 29 MA's), (36, 33628), (45, 33691), (49, 33712), (81, 33880), (114, 34162), (132, 34297), (134, 34318), (148, 34384),

Gene: PeanutPie_67 Start: 41780, Stop: 42790, Start Num: 28

Candidate Starts for PeanutPie_67:

(Start: 28 @41780 has 29 MA's), (34, 41825), (61, 41975), (87, 42146), (92, 42179), (101, 42266), (102, 42275), (115, 42419), (124, 42494), (129, 42521), (154, 42704), (161, 42779),

Gene: Phineas_63 Start: 40246, Stop: 41244, Start Num: 28

Candidate Starts for Phineas_63:

(Start: 28 @40246 has 29 MA's), (34, 40291), (61, 40441), (87, 40612), (92, 40645), (101, 40732), (102, 40741), (115, 40873), (124, 40948), (129, 40975), (161, 41233),

Gene: Piccadilly_41 Start: 28338, Stop: 29249, Start Num: 47

Candidate Starts for Piccadilly_41:

(26, 28203), (Start: 47 @28338 has 26 MA's), (56, 28371), (73, 28464), (91, 28590), (92, 28593), (94, 28605), (113, 28836), (147, 29046),

Gene: Poise_76 Start: 41429, Stop: 42367, Start Num: 31

Candidate Starts for Poise_76:

(Start: 30 @41426 has 1 MA's), (Start: 31 @41429 has 18 MA's), (60, 41609), (63, 41624), (64, 41627), (71, 41669), (74, 41687), (114, 41996), (120, 42071), (129, 42113), (142, 42206), (150, 42242), (159, 42356), (160, 42362),

Gene: Polkaroo_64 Start: 41992, Stop: 42990, Start Num: 28

Candidate Starts for Polkaroo_64:

(Start: 28 @41992 has 29 MA's), (34, 42037), (61, 42187), (87, 42358), (92, 42391), (101, 42478), (102, 42487), (115, 42619), (124, 42694), (129, 42721), (161, 42979),

Gene: Pringar_73 Start: 41366, Stop: 42292, Start Num: 31

Candidate Starts for Pringar_73:

(Start: 30 @41363 has 1 MA's), (Start: 31 @41366 has 18 MA's), (60, 41546), (63, 41561), (64, 41564), (71, 41606), (74, 41624), (114, 41921), (120, 41996), (129, 42038), (142, 42131), (150, 42167), (159, 42281), (160, 42287),

Gene: Pygmy_66 Start: 41710, Stop: 42708, Start Num: 28

Candidate Starts for Pygmy_66:

(Start: 28 @41710 has 29 MA's), (34, 41755), (61, 41905), (87, 42076), (92, 42109), (101, 42196), (102, 42205), (115, 42337), (124, 42412), (129, 42439), (161, 42697),

Gene: QueenHazel_59 Start: 39831, Stop: 40829, Start Num: 28

Candidate Starts for QueenHazel_59:

(Start: 28 @39831 has 29 MA's), (34, 39876), (61, 40026), (75, 40107), (87, 40197), (92, 40230), (97, 40269), (101, 40317), (102, 40326), (115, 40458), (124, 40536), (129, 40563), (131, 40584),

Gene: Raela_76 Start: 41986, Stop: 42918, Start Num: 31

Candidate Starts for Raela_76:

(Start: 30 @41983 has 1 MA's), (Start: 31 @41986 has 18 MA's), (60, 42166), (63, 42181), (64, 42184), (71, 42226), (74, 42244), (114, 42547), (120, 42622), (129, 42664), (142, 42757), (150, 42793), (159, 42907), (160, 42913),

Gene: Raleigh_39 Start: 31035, Stop: 31985, Start Num: 47

Candidate Starts for Raleigh_39:

(Start: 47 @31035 has 26 MA's), (58, 31080), (72, 31158), (91, 31287), (92, 31290), (123, 31638), (125, 31644), (126, 31650), (145, 31764), (155, 31857), (157, 31893), (163, 31944),

Gene: RedRaider77_75 Start: 41374, Stop: 42312, Start Num: 31

Candidate Starts for RedRaider77_75:

(Start: 30 @41371 has 1 MA's), (Start: 31 @41374 has 18 MA's), (60, 41554), (63, 41569), (64, 41572), (71, 41614), (74, 41632), (114, 41941), (120, 42016), (129, 42058), (142, 42151), (150, 42187), (159, 42301), (160, 42307),

Gene: Ribeye_54 Start: 45091, Stop: 45984, Start Num: 47

Candidate Starts for Ribeye_54:

(9, 44701), (15, 44794), (Start: 47 @45091 has 26 MA's), (62, 45151), (66, 45172), (79, 45256), (80, 45262), (83, 45286), (85, 45295), (86, 45322), (90, 45343), (100, 45466), (108, 45505), (117, 45646), (129, 45715), (141, 45796), (149, 45832),

Gene: SPB78_57 Start: 38788, Stop: 39564, Start Num: 47

Candidate Starts for SPB78_57:

(Start: 47 @38788 has 26 MA's), (66, 38869), (69, 38887), (70, 38899), (73, 38914), (77, 38935), (82, 38965), (92, 39049), (96, 39088), (112, 39280), (118, 39349), (119, 39364), (140, 39475), (144, 39490),

Gene: Saronaya_54 Start: 44390, Stop: 45280, Start Num: 47

Candidate Starts for Saronaya_54:

(9, 44000), (15, 44093), (Start: 47 @44390 has 26 MA's), (62, 44450), (66, 44471), (79, 44555), (80, 44561), (83, 44585), (85, 44594), (86, 44621), (90, 44642), (100, 44765), (108, 44804), (129, 45014), (141, 45095), (149, 45131),

Gene: Schlegelian_42 Start: 28903, Stop: 29814, Start Num: 47

Candidate Starts for Schlegelian_42:

(26, 28768), (Start: 47 @28903 has 26 MA's), (56, 28936), (73, 29029), (91, 29155), (92, 29158), (94, 29170), (113, 29401), (147, 29611),

Gene: Schmidt_46 Start: 30686, Stop: 31453, Start Num: 28

Candidate Starts for Schmidt_46:

(Start: 28 @30686 has 29 MA's), (35, 30734), (48, 30824), (Start: 50 @30836 has 1 MA's), (61, 30881), (67, 30905), (98, 31073), (131, 31283), (136, 31313), (156, 31448),

Gene: SchottB_52 Start: 44927, Stop: 45820, Start Num: 47

Candidate Starts for SchottB_52:

(9, 44537), (Start: 47 @44927 has 26 MA's), (62, 44987), (66, 45008), (70, 45038), (79, 45092), (80, 45098), (82, 45107), (83, 45122), (85, 45131), (86, 45158), (90, 45179), (100, 45302), (108, 45341), (129, 45551), (141, 45632), (149, 45668),

Gene: Shipwreck_65 Start: 41685, Stop: 42683, Start Num: 28

Candidate Starts for Shipwreck_65:

(Start: 28 @41685 has 29 MA's), (34, 41730), (61, 41880), (87, 42051), (92, 42084), (101, 42171), (102, 42180), (115, 42312), (124, 42387), (129, 42414), (161, 42672),

Gene: Shoya_60 Start: 34184, Stop: 34990, Start Num: 27

Candidate Starts for Shoya_60:

(Start: 27 @34184 has 4 MA's), (39, 34271), (Start: 50 @34334 has 1 MA's), (61, 34379), (81, 34493), (89, 34556), (114, 34706), (143, 34907),

Gene: Sonah_63 Start: 39382, Stop: 40380, Start Num: 28

Candidate Starts for Sonah_63:

(Start: 28 @39382 has 29 MA's), (34, 39427), (61, 39577), (87, 39748), (92, 39781), (101, 39868), (102, 39877), (115, 40009), (124, 40084), (129, 40111), (161, 40369),

Gene: StevieRay_67 Start: 42449, Stop: 43447, Start Num: 28

Candidate Starts for StevieRay_67:

(Start: 28 @42449 has 29 MA's), (34, 42494), (61, 42644), (87, 42815), (92, 42848), (101, 42935), (102, 42944), (115, 43076), (124, 43151), (129, 43178), (161, 43436),

Gene: Stichling_51 Start: 43447, Stop: 44337, Start Num: 47

Candidate Starts for Stichling_51:

(9, 43057), (Start: 47 @43447 has 26 MA's), (62, 43507), (66, 43528), (79, 43612), (80, 43618), (82, 43627), (83, 43642), (85, 43651), (86, 43678), (90, 43699), (100, 43822), (108, 43861), (129, 44071),

(141, 44152), (149, 44188),

Gene: Tangerine_53 Start: 43802, Stop: 44692, Start Num: 47

Candidate Starts for Tangerine_53:

(9, 43412), (15, 43505), (Start: 47 @43802 has 26 MA's), (62, 43862), (66, 43883), (79, 43967), (80, 43973), (83, 43997), (85, 44006), (86, 44033), (90, 44054), (100, 44177), (108, 44216), (129, 44426), (141, 44507), (149, 44543),

Gene: Techage_63 Start: 40250, Stop: 41245, Start Num: 28

Candidate Starts for Techage_63:

(Start: 28 @40250 has 29 MA's), (34, 40295), (61, 40445), (75, 40526), (76, 40529), (87, 40616), (92, 40649), (97, 40688), (101, 40736), (102, 40745), (115, 40877), (124, 40952), (129, 40979), (131, 41000),

Gene: Tesla_72 Start: 41223, Stop: 42161, Start Num: 31

Candidate Starts for Tesla_72:

(Start: 30 @41220 has 1 MA's), (Start: 31 @41223 has 18 MA's), (60, 41403), (63, 41418), (64, 41421), (71, 41463), (74, 41481), (114, 41790), (120, 41865), (129, 41907), (142, 42000), (150, 42036), (159, 42150), (160, 42156),

Gene: Thespis_64 Start: 41215, Stop: 42213, Start Num: 28

Candidate Starts for Thespis_64:

(Start: 28 @41215 has 29 MA's), (34, 41260), (61, 41410), (87, 41581), (92, 41614), (101, 41701), (102, 41710), (115, 41842), (124, 41917), (129, 41944), (161, 42202),

Gene: VWB_49 Start: 36944, Stop: 37702, Start Num: 47

Candidate Starts for VWB_49:

(13, 36617), (20, 36746), (22, 36749), (24, 36785), (29, 36815), (Start: 47 @36944 has 26 MA's), (62, 37004), (73, 37070), (74, 37082), (77, 37091), (92, 37202), (127, 37529),

Gene: VasuNzinga_74 Start: 41324, Stop: 42250, Start Num: 31

Candidate Starts for VasuNzinga_74:

(Start: 30 @41321 has 1 MA's), (Start: 31 @41324 has 18 MA's), (60, 41504), (63, 41519), (64, 41522), (71, 41564), (74, 41582), (114, 41879), (120, 41954), (129, 41996), (142, 42089), (150, 42125), (159, 42239), (160, 42245),

Gene: Venti_60 Start: 38622, Stop: 39617, Start Num: 28

Candidate Starts for Venti_60:

(Start: 28 @38622 has 29 MA's), (34, 38667), (61, 38817), (75, 38898), (87, 38988), (92, 39021), (97, 39060), (101, 39108), (102, 39117), (115, 39249), (124, 39324), (129, 39351), (131, 39372),

Gene: Vidya_61 Start: 39503, Stop: 40501, Start Num: 28

Candidate Starts for Vidya_61:

(Start: 28 @39503 has 29 MA's), (34, 39548), (61, 39698), (87, 39869), (92, 39902), (101, 39989), (102, 39998), (115, 40130), (124, 40205), (129, 40232), (161, 40490),

Gene: Vondra_40 Start: 28184, Stop: 29101, Start Num: 47

Candidate Starts for Vondra_40:

(Start: 47 @28184 has 26 MA's), (56, 28217), (72, 28307), (73, 28310), (88, 28424), (91, 28436), (92, 28439), (113, 28682),

Gene: Xula_58 Start: 39452, Stop: 40450, Start Num: 28

Candidate Starts for Xula_58:

(Start: 28 @39452 has 29 MA's), (34, 39497), (61, 39647), (75, 39728), (76, 39731), (87, 39818), (92, 39851), (97, 39890), (101, 39938), (102, 39947), (115, 40079), (124, 40157), (129, 40184), (131, 40205),

Gene: YorkOnyx_55 Start: 44582, Stop: 45475, Start Num: 47

Candidate Starts for YorkOnyx_55:

(9, 44192), (Start: 47 @44582 has 26 MA's), (62, 44642), (66, 44663), (70, 44693), (79, 44747), (80, 44753), (82, 44762), (83, 44777), (85, 44786), (86, 44813), (90, 44834), (100, 44957), (108, 44996), (129, 45206), (141, 45287), (149, 45323),

Gene: Zilizebeth_68 Start: 41024, Stop: 42022, Start Num: 28

Candidate Starts for Zilizebeth_68:

(Start: 28 @41024 has 29 MA's), (34, 41069), (61, 41219), (87, 41390), (92, 41423), (101, 41510), (102, 41519), (115, 41651), (124, 41726), (129, 41753), (161, 42011),

Gene: Zucker_78 Start: 46620, Stop: 47435, Start Num: 27

Candidate Starts for Zucker_78:

(19, 46542), (Start: 27 @46620 has 4 MA's), (37, 46689), (39, 46695), (61, 46803), (81, 46920), (114, 47166), (122, 47247), (143, 47367), (146, 47379),