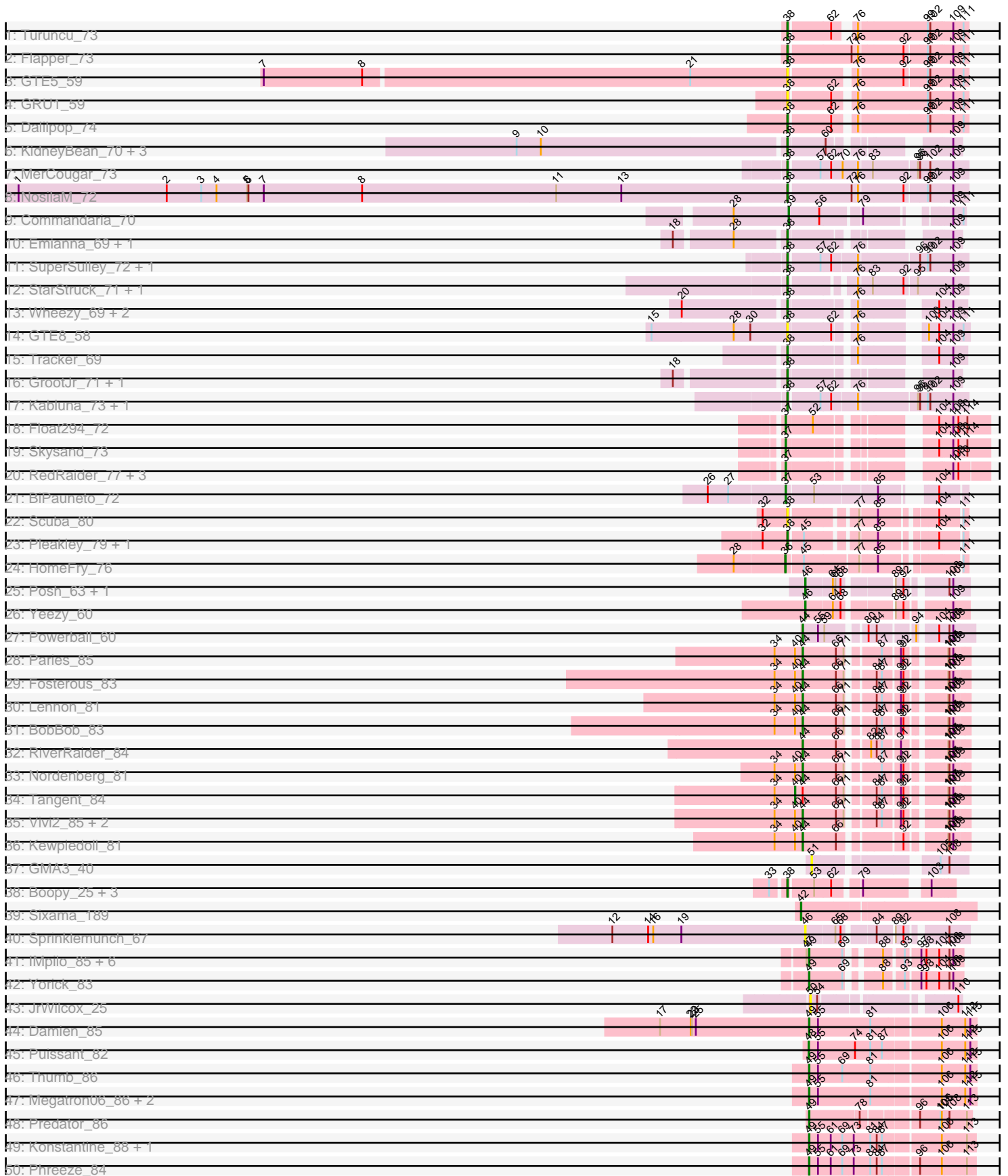
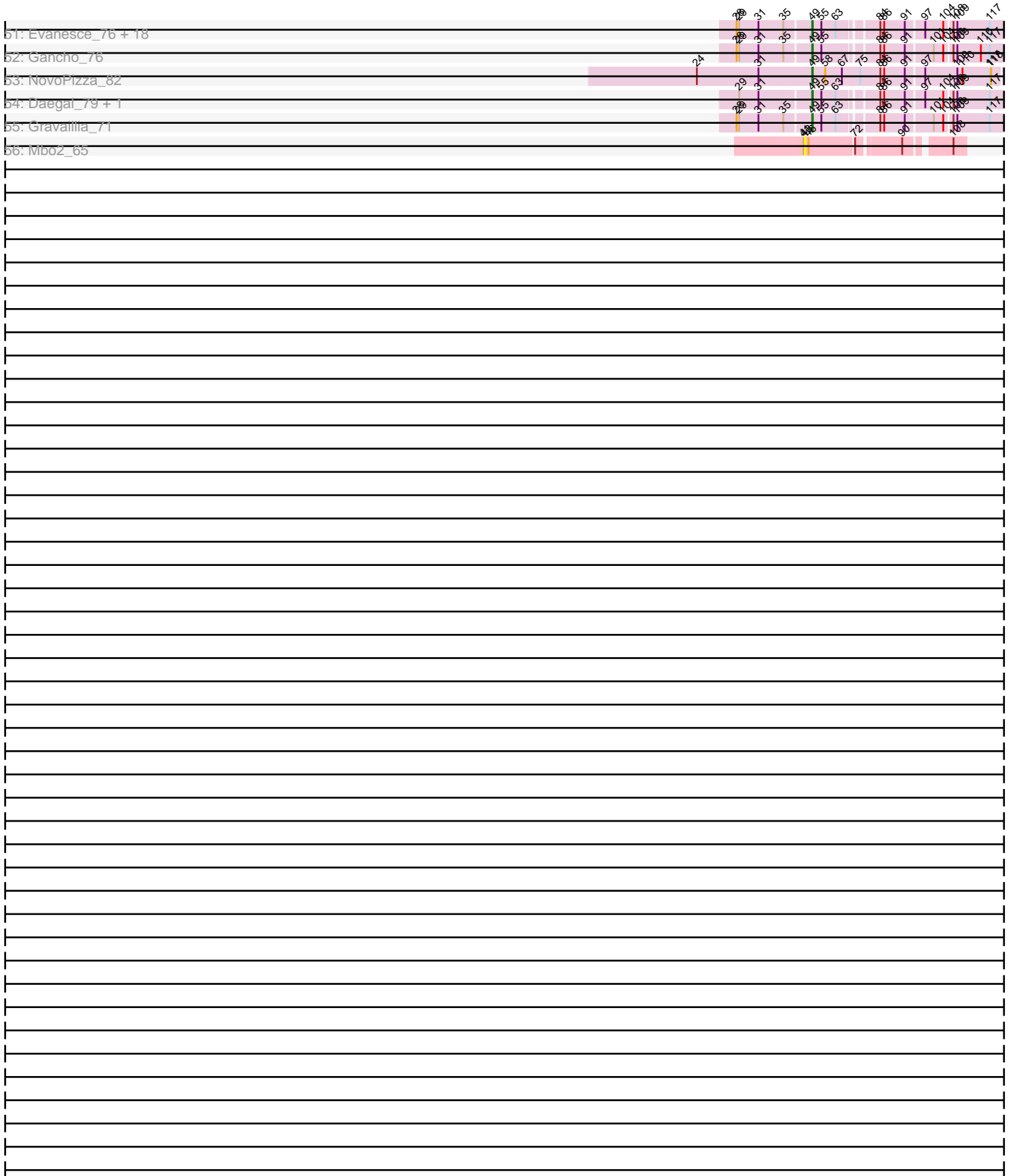


Pham 303244





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 303244 Report

This analysis was run 06/08/26 on database version 649.

Pham number 303244 has 104 members, 11 are drafts.

Phages represented in each track:

- Track 1 : Turuncu_73
- Track 2 : Flapper_73
- Track 3 : GTE5_59
- Track 4 : GRU1_59
- Track 5 : Dalilpop_74
- Track 6 : KidneyBean_70, Phomeo_69, Foxboro_70, Jifall16_69
- Track 7 : MerCougar_73
- Track 8 : NosilaM_72
- Track 9 : Commandaria_70
- Track 10 : Emianna_69, Kurt_69
- Track 11 : SuperSulley_72, Buggaboo_72
- Track 12 : StarStruck_71, Outis_71
- Track 13 : Wheezy_69, Arti_68, NatB6_69
- Track 14 : GTE8_58
- Track 15 : Tracker_69
- Track 16 : GrootJr_71, NovumRegina_69
- Track 17 : Kabluna_73, Bonum_74
- Track 18 : Float294_72
- Track 19 : Skysand_73
- Track 20 : RedRaider_77, Lollipop1437_74, Patio_72, Ennea_77
- Track 21 : BiPauneto_72
- Track 22 : Scuba_80
- Track 23 : Pleakley_79, Fury_79
- Track 24 : HomeFry_76
- Track 25 : Posh_63, Wrigley_65
- Track 26 : Yeezy_60
- Track 27 : Powerball_60
- Track 28 : Paries_85
- Track 29 : Fosterous_83
- Track 30 : Lennon_81
- Track 31 : BobBob_83
- Track 32 : RiverRaider_84
- Track 33 : Nordenberg_81
- Track 34 : Tangent_84
- Track 35 : Vivi2_85, Rofo_81, Charming_84
- Track 36 : Kewpiedoll_81
- Track 37 : GMA3_40

- Track 38 : Boopy_25, Mareelih_23, BlueNGold_23, Forza_25
- Track 39 : Sixama_189
- Track 40 : Sprinklemunch_67
- Track 41 : IMpilo_85, PatoPoderoso_87, Phalconet_89, DaWorst_90, JalFarm20_98, KingJulian_93, Spikelee_90
- Track 42 : Yorick_83
- Track 43 : JrWilcox_25
- Track 44 : Damien_85
- Track 45 : Puissant_82
- Track 46 : Thumb_86
- Track 47 : Megatron06_86, Beckerton_84, Oaker_85
- Track 48 : Predator_86
- Track 49 : Konstantine_88, BobtimousPrime_88
- Track 50 : Phreeze_84
- Track 51 : Evanesce_76, Amymech_77, Ein37_77, Hadrien_74, Kinbote_75, Luna22_70, BloominB_77, Webster2_77, OBUpride_76, Luke_74, LilHazelNut_77, Giles_70, Forge_70, Dewey_70, Ubuntu_77, Hail_70, DeepSoil15_77, HH92_76, Wishmaker_70
- Track 52 : Gancho_76
- Track 53 : NovoPizza_82
- Track 54 : Daegal_79, Amochick_78
- Track 55 : Gravaillia_71
- Track 56 : Mbo2_65

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

The start number called the most often in the published annotations is 49, it was called in 38 of the 93 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Amochick_78, Amymech_77, Beckerton_84, BloominB_77, BobtimousPrime_88, DaWorst_90, Daegal_79, Damien_85, DeepSoil15_77, Dewey_70, Ein37_77, Evanesce_76, Forge_70, Gancho_76, Giles_70, Gravaillia_71, HH92_76, Hadrien_74, Hail_70, IMpilo_85, JalFarm20_98, Kinbote_75, KingJulian_93, Konstantine_88, LilHazelNut_77, Luke_74, Luna22_70, Megatron06_86, NovoPizza_82, OBUpride_76, Oaker_85, PatoPoderoso_87, Phalconet_89, Phreeze_84, Predator_86, Spikelee_90, Thumb_86, Ubuntu_77, Webster2_77, Wishmaker_70, Yorick_83,

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

-

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

- Arti_68, BiPauneto_72, BlueNGold_23, BobBob_83, Bonum_74, Boopy_25, Buggaboo_72, Charming_84, Commandaria_70, Dalilpop_74, Emianna_69, Ennea_77, Flapper_73, Float294_72, Forza_25, Fosterous_83, Foxboro_70, Fury_79, GMA3_40, GRU1_59, GTE5_59, GTE8_58, GrootJr_71, HomeFry_76, Jifall16_69, JrWilcox_25, Kabluna_73, Kewpiedoll_81, KidneyBean_70, Kurt_69, Lennon_81, Lollipop1437_74, Mareelih_23, Mbo2_65, MerCougar_73, NatB6_69, Nordenberg_81, NosilaM_72, NovumRegina_69, Outis_71, Paries_85, Patio_72,

Phomeo_69, Pleakley_79, Posh_63, Powerball_60, Puissant_82, RedRaider_77, RiverRaider_84, Rofo_81, Scuba_80, Sixama_189, Skysand_73, Sprinklemunch_67, StarStruck_71, SuperSulley_72, Tangent_84, Tracker_69, Turuncu_73, Vivi2_85, Wheezy_69, Wrigley_65, Yeezy_60,

Summary by start number:

Start 36:

- Found in 1 of 104 (1.0%) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: HomeFry_76 (CR5),

Start 37:

- Found in 7 of 104 (6.7%) of genes in pham
- Manual Annotations of this start: 7 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BiPauneto_72 (CR4), Ennea_77 (CR3), Float294_72 (CR3), Lollipop1437_74 (CR3), Patio_72 (CR3), RedRaider_77 (CR3), Skysand_73 (CR3),

Start 38:

- Found in 33 of 104 (31.7%) of genes in pham
- Manual Annotations of this start: 29 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arti_68 (CR2), BlueNGold_23 (DS), Bonum_74 (CR2), Boopy_25 (DS), Buggaboo_72 (CR2), Dalilpop_74 (CR1), Emianna_69 (CR2), Flapper_73 (CR1), Forza_25 (DS), Foxboro_70 (CR2), Fury_79 (CR5), GRU1_59 (CR1), GTE5_59 (CR1), GTE8_58 (CR2), GrootJr_71 (CR2), Jifall16_69 (CR2), Kabluna_73 (CR2), KidneyBean_70 (CR2), Kurt_69 (CR2), Mareelih_23 (DS), MerCougar_73 (CR2), NatB6_69 (CR2), NosilaM_72 (CR2), NovumRegina_69 (CR2), Outis_71 (CR2), Phomeo_69 (CR2), Pleakley_79 (CR5), Scuba_80 (CR5), StarStruck_71 (CR2), SuperSulley_72 (CR2), Tracker_69 (CR2), Turuncu_73 (CR1), Wheezy_69 (CR2),

Start 39:

- Found in 1 of 104 (1.0%) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Commandaria_70 (CR2),

Start 40:

- Found in 10 of 104 (9.6%) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 10.0% of time when present
- Phage (with cluster) where this start called: Tangent_84 (DE1),

Start 42:

- Found in 1 of 104 (1.0%) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sixama_189 (DS),

Start 43:

- Found in 1 of 104 (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: Mbo2_65 (singleton),

Start 44:

- Found in 12 of 104 (11.5%) of genes in pham
- Manual Annotations of this start: 11 of 93
- Called 91.7% of time when present
- Phage (with cluster) where this start called: BobBob_83 (DE1), Charming_84 (DE1), Fosterous_83 (DE1), Kewpiedoll_81 (DE1), Lennon_81 (DE1), Nordenberg_81 (DE1), Paries_85 (DE1), Powerball_60 (CZ4), RiverRaider_84 (DE1), Rofo_81 (DE1), Vivi2_85 (DE1),

Start 46:

- Found in 5 of 104 (4.8%) of genes in pham
- Manual Annotations of this start: 3 of 93
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Posh_63 (CY4), Sprinklemunch_67 (DW), Wrigley_65 (CY4), Yeezy_60 (CZ3),

Start 48:

- Found in 1 of 104 (1.0%) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Puissant_82 (H1),

Start 49:

- Found in 41 of 104 (39.4%) of genes in pham
- Manual Annotations of this start: 38 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amochick_78 (Q), Amymech_77 (Q), Beckerton_84 (H1), BloominB_77 (Q), BobtimousPrime_88 (H1), DaWorst_90 (F1), Daegal_79 (Q), Damien_85 (H1), DeepSoil15_77 (Q), Dewey_70 (Q), Ein37_77 (Q), Evanesce_76 (Q), Forge_70 (Q), Gancho_76 (Q), Giles_70 (Q), Gravaillia_71 (Q), HH92_76 (Q), Hadrien_74 (Q), Hail_70 (Q), IMpilo_85 (F1), JalFarm20_98 (F1), Kinbote_75 (Q), KingJulian_93 (F1), Konstantine_88 (H1), LilHazelNut_77 (Q), Luke_74 (Q), Luna22_70 (Q), Megatron06_86 (H1), NovoPizza_82 (Q), OBUpride_76 (Q), Oaker_85 (H1), PatoPoderoso_87 (F1), Phalconet_89 (F1), Phreeze_84 (H1), Predator_86 (H1), Spikelee_90 (F1), Thumb_86 (H1), Ubuntu_77 (Q), Webster2_77 (Q), Wishmaker_70 (Q), Yorick_83 (F1),

Start 50:

- Found in 1 of 104 (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: JrWilcox_25 (GL),

Start 51:

- Found in 1 of 104 (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: GMA3_40 (DF2),

Summary by clusters:

There are 17 clusters represented in this pham: CR2, F1, singleton, CR1, CR4, CR5, CY4, DE1, H1, CZ4, DF2, Q, CZ3, DW, GL, DS, CR3,

Info for manual annotations of cluster CR1:

- Start number 38 was manually annotated 3 times for cluster CR1.

Info for manual annotations of cluster CR2:

- Start number 38 was manually annotated 20 times for cluster CR2.
- Start number 39 was manually annotated 1 time for cluster CR2.

Info for manual annotations of cluster CR3:

- Start number 37 was manually annotated 6 times for cluster CR3.

Info for manual annotations of cluster CR4:

- Start number 37 was manually annotated 1 time for cluster CR4.

Info for manual annotations of cluster CR5:

- Start number 36 was manually annotated 1 time for cluster CR5.
- Start number 38 was manually annotated 2 times for cluster CR5.

Info for manual annotations of cluster CY4:

- Start number 46 was manually annotated 2 times for cluster CY4.

Info for manual annotations of cluster CZ3:

- Start number 46 was manually annotated 1 time for cluster CZ3.

Info for manual annotations of cluster CZ4:

- Start number 44 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster DE1:

- Start number 40 was manually annotated 1 time for cluster DE1.
- Start number 44 was manually annotated 10 times for cluster DE1.

Info for manual annotations of cluster DS:

- Start number 38 was manually annotated 4 times for cluster DS.
- Start number 42 was manually annotated 1 time for cluster DS.

Info for manual annotations of cluster F1:

- Start number 49 was manually annotated 6 times for cluster F1.

Info for manual annotations of cluster H1:

- Start number 48 was manually annotated 1 time for cluster H1.
- Start number 49 was manually annotated 9 times for cluster H1.

Info for manual annotations of cluster Q:

- Start number 49 was manually annotated 23 times for cluster Q.

Gene Information:

Gene: Amochick_78 Start: 50070, Stop: 50483, Start Num: 49

Candidate Starts for Amochick_78:

(29, 49917), (31, 49959), (Start: 49 @50070 has 38 MA's), (55, 50091), (63, 50124), (84, 50199), (86, 50208), (91, 50256), (97, 50295), (104, 50334), (108, 50349), (109, 50358), (117, 50433),

Gene: Amymech_77 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Amymech_77:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Arti_68 Start: 52883, Stop: 52554, Start Num: 38

Candidate Starts for Arti_68:

(20, 53114), (Start: 38 @52883 has 29 MA's), (76, 52751), (104, 52613), (109, 52586),

Gene: Beckerton_84 Start: 62501, Stop: 62869, Start Num: 49

Candidate Starts for Beckerton_84:

(Start: 49 @62501 has 38 MA's), (55, 62522), (81, 62639), (106, 62792), (112, 62843), (115, 62855),

Gene: BiPauneto_72 Start: 52489, Stop: 52160, Start Num: 37

Candidate Starts for BiPauneto_72:

(26, 52663), (27, 52615), (Start: 37 @52489 has 7 MA's), (53, 52429), (85, 52297), (104, 52213),

Gene: BloominB_77 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for BloominB_77:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: BlueNGold_23 Start: 8738, Stop: 8418, Start Num: 38

Candidate Starts for BlueNGold_23:

(33, 8768), (Start: 38 @8738 has 29 MA's), (53, 8684), (62, 8645), (79, 8594), (103, 8468),

Gene: BobBob_83 Start: 56507, Stop: 56824, Start Num: 44

Candidate Starts for BobBob_83:

(34, 56441), (Start: 40 @56489 has 1 MA's), (Start: 44 @56507 has 11 MA's), (66, 56585), (71, 56603), (84, 56648), (87, 56660), (91, 56696), (92, 56702), (107, 56777), (108, 56780), (109, 56789),

Gene: BobtimousPrime_88 Start: 62752, Stop: 63114, Start Num: 49

Candidate Starts for BobtimousPrime_88:

(Start: 49 @62752 has 38 MA's), (55, 62773), (61, 62803), (69, 62830), (73, 62854), (81, 62890), (84, 62905), (87, 62917), (106, 63043), (113, 63094),

Gene: Bonum_74 Start: 54210, Stop: 53830, Start Num: 38

Candidate Starts for Bonum_74:

(Start: 38 @54210 has 29 MA's), (57, 54141), (62, 54117), (76, 54060), (95, 53937), (96, 53934), (99, 53916), (102, 53910), (109, 53862),

Gene: Boopy_25 Start: 8750, Stop: 8430, Start Num: 38

Candidate Starts for Boopy_25:

(33, 8780), (Start: 38 @8750 has 29 MA's), (53, 8696), (62, 8657), (79, 8606), (103, 8480),

Gene: Buggaboo_72 Start: 54776, Stop: 54396, Start Num: 38

Candidate Starts for Buggaboo_72:

(Start: 38 @54776 has 29 MA's), (57, 54707), (62, 54683), (76, 54626), (96, 54500), (99, 54482), (102, 54476), (109, 54428),

Gene: Charming_84 Start: 55966, Stop: 56283, Start Num: 44

Candidate Starts for Charming_84:

(34, 55900), (Start: 40 @55948 has 1 MA's), (Start: 44 @55966 has 11 MA's), (66, 56044), (71, 56062), (84, 56107), (87, 56119), (91, 56155), (92, 56161), (107, 56236), (108, 56239), (109, 56248),

Gene: Commandaria_70 Start: 54164, Stop: 53838, Start Num: 39

Candidate Starts for Commandaria_70:

(28, 54290), (Start: 39 @54164 has 1 MA's), (56, 54092), (79, 54008), (109, 53867), (111, 53843),

Gene: DaWorst_90 Start: 50692, Stop: 50985, Start Num: 49

Candidate Starts for DaWorst_90:

(47, 50686), (Start: 49 @50692 has 38 MA's), (69, 50767), (88, 50821), (93, 50860), (97, 50890), (98, 50902), (104, 50932), (108, 50953), (109, 50962),

Gene: Daegal_79 Start: 50629, Stop: 51042, Start Num: 49

Candidate Starts for Daegal_79:

(29, 50476), (31, 50518), (Start: 49 @50629 has 38 MA's), (55, 50650), (63, 50683), (84, 50758), (86, 50767), (91, 50815), (97, 50854), (104, 50893), (108, 50908), (109, 50917), (117, 50992),

Gene: Dalilpop_74 Start: 55412, Stop: 55041, Start Num: 38

Candidate Starts for Dalilpop_74:

(Start: 38 @55412 has 29 MA's), (62, 55319), (76, 55280), (99, 55130), (102, 55124), (109, 55076), (111, 55052),

Gene: Damien_85 Start: 61997, Stop: 62365, Start Num: 49

Candidate Starts for Damien_85:

(17, 61649), (22, 61721), (23, 61724), (25, 61733), (Start: 49 @61997 has 38 MA's), (55, 62018), (81, 62135), (106, 62288), (112, 62339), (115, 62351),

Gene: DeepSoil15_77 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for DeepSoil15_77:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Dewey_70 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Dewey_70:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Ein37_77 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Ein37_77:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Emianna_69 Start: 54094, Stop: 53786, Start Num: 38

Candidate Starts for Emianna_69:

(18, 54325), (28, 54205), (Start: 38 @54094 has 29 MA's), (109, 53806),

Gene: Ennea_77 Start: 55526, Stop: 55152, Start Num: 37

Candidate Starts for Ennea_77:

(Start: 37 @55526 has 7 MA's), (109, 55232), (110, 55220),

Gene: Evanesce_76 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Evanesce_76:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Flapper_73 Start: 54630, Stop: 54241, Start Num: 38

Candidate Starts for Flapper_73:

(Start: 38 @54630 has 29 MA's), (72, 54489), (76, 54474), (92, 54378), (99, 54330), (102, 54324), (109, 54276), (111, 54252),

Gene: Float294_72 Start: 55429, Stop: 55049, Start Num: 37

Candidate Starts for Float294_72:

(Start: 37 @55429 has 7 MA's), (52, 55369), (104, 55162), (109, 55135), (110, 55123), (114, 55102),

Gene: Forge_70 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Forge_70:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Forza_25 Start: 8790, Stop: 8470, Start Num: 38

Candidate Starts for Forza_25:

(33, 8820), (Start: 38 @8790 has 29 MA's), (53, 8736), (62, 8697), (79, 8646), (103, 8520),

Gene: Fosterous_83 Start: 56959, Stop: 57276, Start Num: 44

Candidate Starts for Fosterous_83:

(34, 56893), (Start: 40 @56941 has 1 MA's), (Start: 44 @56959 has 11 MA's), (66, 57037), (71, 57055), (84, 57100), (87, 57112), (91, 57148), (92, 57154), (107, 57229), (108, 57232), (109, 57241),

Gene: Foxboro_70 Start: 54622, Stop: 54311, Start Num: 38

Candidate Starts for Foxboro_70:

(9, 55240), (10, 55183), (Start: 38 @54622 has 29 MA's), (60, 54538), (109, 54331),

Gene: Fury_79 Start: 53744, Stop: 53415, Start Num: 38

Candidate Starts for Fury_79:

(32, 53798), (Start: 38 @53744 has 29 MA's), (45, 53714), (77, 53612), (85, 53579), (104, 53468), (111, 53426),

Gene: GMA3_40 Start: 41542, Stop: 41240, Start Num: 51

Candidate Starts for GMA3_40:

(51, 41542), (105, 41305), (108, 41284),

Gene: GRU1_59 Start: 46466, Stop: 46095, Start Num: 38

Candidate Starts for GRU1_59:

(Start: 38 @46466 has 29 MA's), (62, 46373), (76, 46334), (99, 46184), (102, 46178), (109, 46130), (111, 46106),

Gene: GTE5_59 Start: 47643, Stop: 47281, Start Num: 38

Candidate Starts for GTE5_59:

(7, 48852), (8, 48621), (21, 47865), (Start: 38 @47643 has 29 MA's), (76, 47514), (92, 47418), (99, 47370), (102, 47364), (109, 47316), (111, 47292),

Gene: GTE8_58 Start: 47388, Stop: 47053, Start Num: 38

Candidate Starts for GTE8_58:

(15, 47703), (28, 47514), (30, 47475), (Start: 38 @47388 has 29 MA's), (62, 47292), (76, 47256), (100, 47142), (104, 47118), (109, 47091), (111, 47067),

Gene: Gancho_76 Start: 49298, Stop: 49711, Start Num: 49

Candidate Starts for Gancho_76:

(28, 49139), (29, 49145), (31, 49187), (35, 49244), (Start: 49 @49298 has 38 MA's), (55, 49319), (84, 49427), (86, 49436), (91, 49484), (101, 49541), (104, 49562), (108, 49577), (109, 49586), (116, 49640), (117, 49661),

Gene: Giles_70 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Giles_70:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Gravaillia_71 Start: 49579, Stop: 49992, Start Num: 49

Candidate Starts for Gravaillia_71:

(28, 49420), (29, 49426), (31, 49468), (35, 49525), (Start: 49 @49579 has 38 MA's), (55, 49600), (63, 49633), (84, 49708), (86, 49717), (91, 49765), (101, 49822), (104, 49843), (108, 49858), (109, 49867), (117, 49942),

Gene: GrootJr_71 Start: 53488, Stop: 53180, Start Num: 38

Candidate Starts for GrootJr_71:

(18, 53719), (Start: 38 @53488 has 29 MA's), (109, 53200),

Gene: HH92_76 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for HH92_76:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Hadrien_74 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Hadrien_74:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Hail_70 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Hail_70:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: HomeFry_76 Start: 52561, Stop: 52211, Start Num: 36

Candidate Starts for HomeFry_76:

(28, 52672), (Start: 36 @52561 has 1 MA's), (45, 52525), (77, 52408), (85, 52375), (111, 52222),

Gene: IMPilo_85 Start: 49064, Stop: 49357, Start Num: 49

Candidate Starts for IMPilo_85:

(47, 49058), (Start: 49 @49064 has 38 MA's), (69, 49139), (88, 49193), (93, 49232), (97, 49262), (98, 49274), (104, 49304), (108, 49325), (109, 49334),

Gene: JalFarm20_98 Start: 52287, Stop: 52580, Start Num: 49

Candidate Starts for JalFarm20_98:

(47, 52281), (Start: 49 @52287 has 38 MA's), (69, 52362), (88, 52416), (93, 52455), (97, 52485), (98, 52497), (104, 52527), (108, 52548), (109, 52557),

Gene: Jifall16_69 Start: 54115, Stop: 53807, Start Num: 38

Candidate Starts for Jifall16_69:

(9, 54733), (10, 54676), (Start: 38 @54115 has 29 MA's), (60, 54031), (109, 53827),

Gene: JrWilcox_25 Start: 16214, Stop: 16498, Start Num: 50

Candidate Starts for JrWilcox_25:

(50, 16214), (54, 16229), (110, 16490),

Gene: Kabluna_73 Start: 53539, Stop: 53159, Start Num: 38

Candidate Starts for Kabluna_73:

(Start: 38 @53539 has 29 MA's), (57, 53470), (62, 53446), (76, 53389), (95, 53266), (96, 53263), (99, 53245), (102, 53239), (109, 53191),

Gene: Kewpiedoll_81 Start: 57152, Stop: 57469, Start Num: 44

Candidate Starts for Kewpiedoll_81:

(34, 57086), (Start: 40 @57134 has 1 MA's), (Start: 44 @57152 has 11 MA's), (66, 57230), (92, 57347), (107, 57422), (108, 57425), (109, 57434),

Gene: KidneyBean_70 Start: 54239, Stop: 53931, Start Num: 38

Candidate Starts for KidneyBean_70:

(9, 54857), (10, 54800), (Start: 38 @54239 has 29 MA's), (60, 54155), (109, 53951),

Gene: Kinbote_75 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Kinbote_75:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: KingJulian_93 Start: 52334, Stop: 52627, Start Num: 49

Candidate Starts for KingJulian_93:

(47, 52328), (Start: 49 @52334 has 38 MA's), (69, 52409), (88, 52463), (93, 52502), (97, 52532), (98, 52544), (104, 52574), (108, 52595), (109, 52604),

Gene: Konstantine_88 Start: 62501, Stop: 62863, Start Num: 49

Candidate Starts for Konstantine_88:

(Start: 49 @62501 has 38 MA's), (55, 62522), (61, 62552), (69, 62579), (73, 62603), (81, 62639), (84, 62654), (87, 62666), (106, 62792), (113, 62843),

Gene: Kurt_69 Start: 54109, Stop: 53801, Start Num: 38

Candidate Starts for Kurt_69:

(18, 54340), (28, 54220), (Start: 38 @54109 has 29 MA's), (109, 53821),

Gene: Lennon_81 Start: 58019, Stop: 58336, Start Num: 44

Candidate Starts for Lennon_81:

(34, 57953), (Start: 40 @58001 has 1 MA's), (Start: 44 @58019 has 11 MA's), (66, 58097), (71, 58115), (84, 58160), (87, 58172), (91, 58208), (92, 58214), (107, 58289), (108, 58292), (109, 58301),

Gene: LilHazelnut_77 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for LilHazelnut_77:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Lollipop1437_74 Start: 55206, Stop: 54832, Start Num: 37

Candidate Starts for Lollipop1437_74:

(Start: 37 @55206 has 7 MA's), (109, 54912), (110, 54900),

Gene: Luke_74 Start: 49478, Stop: 49891, Start Num: 49

Candidate Starts for Luke_74:

(28, 49319), (29, 49325), (31, 49367), (35, 49424), (Start: 49 @49478 has 38 MA's), (55, 49499), (63, 49532), (84, 49607), (86, 49616), (91, 49664), (97, 49703), (104, 49742), (108, 49757), (109, 49766), (117, 49841),

Gene: Luna22_70 Start: 49507, Stop: 49920, Start Num: 49

Candidate Starts for Luna22_70:

(28, 49348), (29, 49354), (31, 49396), (35, 49453), (Start: 49 @49507 has 38 MA's), (55, 49528), (63, 49561), (84, 49636), (86, 49645), (91, 49693), (97, 49732), (104, 49771), (108, 49786), (109, 49795), (117, 49870),

Gene: Mareelih_23 Start: 8195, Stop: 7875, Start Num: 38

Candidate Starts for Mareelih_23:

(33, 8225), (Start: 38 @8195 has 29 MA's), (53, 8141), (62, 8102), (79, 8051), (103, 7925),

Gene: Mbo2_65 Start: 49843, Stop: 49532, Start Num: 43

Candidate Starts for Mbo2_65:

(41, 49846), (43, 49843), (Start: 46 @49834 has 3 MA's), (72, 49735), (90, 49642), (108, 49558),

Gene: Megatron06_86 Start: 62582, Stop: 62950, Start Num: 49

Candidate Starts for Megatron06_86:

(Start: 49 @62582 has 38 MA's), (55, 62603), (81, 62720), (106, 62873), (112, 62924), (115, 62936),

Gene: MerCougar_73 Start: 55255, Stop: 54872, Start Num: 38

Candidate Starts for MerCougar_73:

(Start: 38 @55255 has 29 MA's), (57, 55186), (62, 55162), (70, 55138), (76, 55102), (83, 55075), (95, 54979), (96, 54976), (102, 54952), (109, 54904),

Gene: NatB6_69 Start: 53199, Stop: 52870, Start Num: 38

Candidate Starts for NatB6_69:

(20, 53430), (Start: 38 @53199 has 29 MA's), (76, 53067), (104, 52929), (109, 52902),

Gene: Nordenberg_81 Start: 55813, Stop: 56130, Start Num: 44

Candidate Starts for Nordenberg_81:

(34, 55747), (Start: 40 @55795 has 1 MA's), (Start: 44 @55813 has 11 MA's), (66, 55891), (71, 55909), (87, 55966), (91, 56002), (92, 56008), (107, 56083), (108, 56086), (109, 56095),

Gene: NosilaM_72 Start: 54191, Stop: 53805, Start Num: 38

Candidate Starts for NosilaM_72:

(1, 55988), (2, 55640), (3, 55559), (4, 55523), (5, 55451), (6, 55448), (7, 55412), (8, 55181), (11, 54728), (13, 54575), (Start: 38 @54191 has 29 MA's), (72, 54050), (76, 54035), (92, 53939), (99, 53891), (102, 53885), (109, 53837),

Gene: NovoPizza_82 Start: 51793, Stop: 52224, Start Num: 49

Candidate Starts for NovoPizza_82:

(24, 51529), (31, 51673), (Start: 49 @51793 has 38 MA's), (58, 51823), (67, 51862), (75, 51904), (84, 51946), (86, 51955), (91, 52003), (97, 52042), (109, 52111), (110, 52123), (117, 52186), (118, 52189),

Gene: NovumRegina_69 Start: 53487, Stop: 53179, Start Num: 38

Candidate Starts for NovumRegina_69:

(18, 53718), (Start: 38 @53487 has 29 MA's), (109, 53199),

Gene: OBUpride_76 Start: 49567, Stop: 49980, Start Num: 49

Candidate Starts for OBUpride_76:

(28, 49408), (29, 49414), (31, 49456), (35, 49513), (Start: 49 @49567 has 38 MA's), (55, 49588), (63, 49621), (84, 49696), (86, 49705), (91, 49753), (97, 49792), (104, 49831), (108, 49846), (109, 49855), (117, 49930),

Gene: Oaker_85 Start: 62599, Stop: 62967, Start Num: 49

Candidate Starts for Oaker_85:

(Start: 49 @62599 has 38 MA's), (55, 62620), (81, 62737), (106, 62890), (112, 62941), (115, 62953),

Gene: Outis_71 Start: 54347, Stop: 53991, Start Num: 38

Candidate Starts for Outis_71:

(Start: 38 @54347 has 29 MA's), (76, 54221), (83, 54194), (92, 54125), (95, 54098), (109, 54023),

Gene: Paries_85 Start: 58101, Stop: 58418, Start Num: 44

Candidate Starts for Paries_85:

(34, 58035), (Start: 40 @58083 has 1 MA's), (Start: 44 @58101 has 11 MA's), (66, 58179), (71, 58197), (87, 58254), (91, 58290), (92, 58296), (107, 58371), (108, 58374), (109, 58383),

Gene: Patio_72 Start: 54263, Stop: 53889, Start Num: 37

Candidate Starts for Patio_72:

(Start: 37 @54263 has 7 MA's), (109, 53969), (110, 53957),

Gene: PatoPoderoso_87 Start: 52334, Stop: 52627, Start Num: 49

Candidate Starts for PatoPoderoso_87:

(47, 52328), (Start: 49 @52334 has 38 MA's), (69, 52409), (88, 52463), (93, 52502), (97, 52532), (98, 52544), (104, 52574), (108, 52595), (109, 52604),

Gene: Phalconet_89 Start: 50694, Stop: 50987, Start Num: 49

Candidate Starts for Phalconet_89:

(47, 50688), (Start: 49 @50694 has 38 MA's), (69, 50769), (88, 50823), (93, 50862), (97, 50892), (98, 50904), (104, 50934), (108, 50955), (109, 50964),

Gene: Phomeo_69 Start: 54111, Stop: 53803, Start Num: 38

Candidate Starts for Phomeo_69:

(9, 54729), (10, 54672), (Start: 38 @54111 has 29 MA's), (60, 54027), (109, 53823),

Gene: Phreeze_84 Start: 61531, Stop: 61893, Start Num: 49

Candidate Starts for Phreeze_84:

(Start: 49 @61531 has 38 MA's), (55, 61552), (61, 61582), (69, 61609), (73, 61633), (81, 61669), (84, 61684), (87, 61696), (96, 61771), (106, 61822), (113, 61873),

Gene: Pleakley_79 Start: 53745, Stop: 53416, Start Num: 38

Candidate Starts for Pleakley_79:

(32, 53799), (Start: 38 @53745 has 29 MA's), (45, 53715), (77, 53613), (85, 53580), (104, 53469), (111, 53427),

Gene: Posh_63 Start: 44207, Stop: 44524, Start Num: 46

Candidate Starts for Posh_63:

(Start: 46 @44207 has 3 MA's), (64, 44267), (65, 44273), (68, 44285), (89, 44384), (92, 44402), (108, 44477), (109, 44486),

Gene: Powerball_60 Start: 40758, Stop: 41087, Start Num: 44

Candidate Starts for Powerball_60:

(Start: 44 @40758 has 11 MA's), (55, 40794), (59, 40809), (80, 40881), (84, 40899), (94, 40971), (104, 41007), (108, 41028), (109, 41037),

Gene: Predator_86 Start: 63141, Stop: 63479, Start Num: 49

Candidate Starts for Predator_86:

(Start: 49 @63141 has 38 MA's), (78, 63252), (96, 63366), (105, 63414), (106, 63417), (108, 63432), (113, 63468),

Gene: Puissant_82 Start: 62176, Stop: 62547, Start Num: 48

Candidate Starts for Puissant_82:

(Start: 48 @62176 has 1 MA's), (55, 62197), (74, 62281), (81, 62317), (87, 62344), (106, 62470), (112, 62521), (115, 62533),

Gene: RedRaider_77 Start: 56564, Stop: 56193, Start Num: 37

Candidate Starts for RedRaider_77:

(Start: 37 @56564 has 7 MA's), (109, 56273), (110, 56261),

Gene: RiverRaider_84 Start: 55160, Stop: 55474, Start Num: 44

Candidate Starts for RiverRaider_84:

(Start: 44 @55160 has 11 MA's), (66, 55235), (82, 55286), (84, 55298), (87, 55310), (91, 55346), (107, 55427), (108, 55430), (109, 55439),

Gene: Rofo_81 Start: 56542, Stop: 56859, Start Num: 44

Candidate Starts for Rofo_81:

(34, 56476), (Start: 40 @56524 has 1 MA's), (Start: 44 @56542 has 11 MA's), (66, 56620), (71, 56638), (84, 56683), (87, 56695), (91, 56731), (92, 56737), (107, 56812), (108, 56815), (109, 56824),

Gene: Scuba_80 Start: 53800, Stop: 53471, Start Num: 38

Candidate Starts for Scuba_80:

(32, 53854), (Start: 38 @53800 has 29 MA's), (77, 53668), (85, 53635), (104, 53524), (111, 53482),

Gene: Sixama_189 Start: 108945, Stop: 108553, Start Num: 42

Candidate Starts for Sixama_189:

(Start: 42 @108945 has 1 MA's),

Gene: Skysand_73 Start: 54926, Stop: 54546, Start Num: 37

Candidate Starts for Skysand_73:

(Start: 37 @54926 has 7 MA's), (104, 54659), (109, 54632), (110, 54620), (114, 54599),

Gene: Spikelee_90 Start: 52392, Stop: 52685, Start Num: 49

Candidate Starts for Spikelee_90:

(47, 52386), (Start: 49 @52392 has 38 MA's), (69, 52467), (88, 52521), (93, 52560), (97, 52590), (98, 52602), (104, 52632), (108, 52653), (109, 52662),

Gene: Sprinklemunch_67 Start: 45346, Stop: 45660, Start Num: 46

Candidate Starts for Sprinklemunch_67:

(12, 44893), (14, 44977), (16, 44989), (19, 45055), (Start: 46 @45346 has 3 MA's), (65, 45409), (68, 45421), (84, 45484), (89, 45520), (92, 45538), (108, 45613),

Gene: StarStruck_71 Start: 54347, Stop: 53991, Start Num: 38

Candidate Starts for StarStruck_71:

(Start: 38 @54347 has 29 MA's), (76, 54221), (83, 54194), (92, 54125), (95, 54098), (109, 54023),

Gene: SuperSulley_72 Start: 54776, Stop: 54396, Start Num: 38

Candidate Starts for SuperSulley_72:

(Start: 38 @54776 has 29 MA's), (57, 54707), (62, 54683), (76, 54626), (96, 54500), (99, 54482), (102, 54476), (109, 54428),

Gene: Tangent_84 Start: 56229, Stop: 56564, Start Num: 40

Candidate Starts for Tangent_84:

(34, 56181), (Start: 40 @56229 has 1 MA's), (Start: 44 @56247 has 11 MA's), (66, 56325), (71, 56343), (84, 56388), (87, 56400), (91, 56436), (92, 56442), (107, 56517), (108, 56520), (109, 56529),

Gene: Thumb_86 Start: 61951, Stop: 62319, Start Num: 49

Candidate Starts for Thumb_86:

(Start: 49 @61951 has 38 MA's), (55, 61972), (69, 62029), (81, 62089), (106, 62242), (112, 62293), (115, 62305),

Gene: Tracker_69 Start: 52943, Stop: 52614, Start Num: 38

Candidate Starts for Tracker_69:

(Start: 38 @52943 has 29 MA's), (76, 52811), (104, 52673), (109, 52646),

Gene: Turuncu_73 Start: 54452, Stop: 54084, Start Num: 38

Candidate Starts for Turuncu_73:

(Start: 38 @54452 has 29 MA's), (62, 54359), (76, 54326), (99, 54173), (102, 54167), (109, 54119), (111, 54095),

Gene: Ubuntu_77 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Ubuntu_77:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Vivi2_85 Start: 57303, Stop: 57620, Start Num: 44

Candidate Starts for Vivi2_85:

(34, 57237), (Start: 40 @57285 has 1 MA's), (Start: 44 @57303 has 11 MA's), (66, 57381), (71, 57399), (84, 57444), (87, 57456), (91, 57492), (92, 57498), (107, 57573), (108, 57576), (109, 57585),

Gene: Webster2_77 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Webster2_77:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Wheezy_69 Start: 53157, Stop: 52828, Start Num: 38

Candidate Starts for Wheezy_69:

(20, 53388), (Start: 38 @53157 has 29 MA's), (76, 53025), (104, 52887), (109, 52860),

Gene: Wishmaker_70 Start: 49523, Stop: 49936, Start Num: 49

Candidate Starts for Wishmaker_70:

(28, 49364), (29, 49370), (31, 49412), (35, 49469), (Start: 49 @49523 has 38 MA's), (55, 49544), (63, 49577), (84, 49652), (86, 49661), (91, 49709), (97, 49748), (104, 49787), (108, 49802), (109, 49811), (117, 49886),

Gene: Wrigley_65 Start: 43790, Stop: 44107, Start Num: 46

Candidate Starts for Wrigley_65:

(Start: 46 @43790 has 3 MA's), (64, 43850), (65, 43856), (68, 43868), (89, 43967), (92, 43985), (108, 44060), (109, 44069),

Gene: Yeezy_60 Start: 40768, Stop: 41082, Start Num: 46

Candidate Starts for Yeezy_60:

(Start: 46 @40768 has 3 MA's), (64, 40825), (68, 40843), (89, 40942), (92, 40960), (109, 41044),

Gene: Yorick_83 Start: 51376, Stop: 51669, Start Num: 49

Candidate Starts for Yorick_83:

(Start: 49 @51376 has 38 MA's), (69, 51451), (88, 51505), (93, 51544), (97, 51574), (98, 51586), (104, 51616), (108, 51637), (109, 51646),