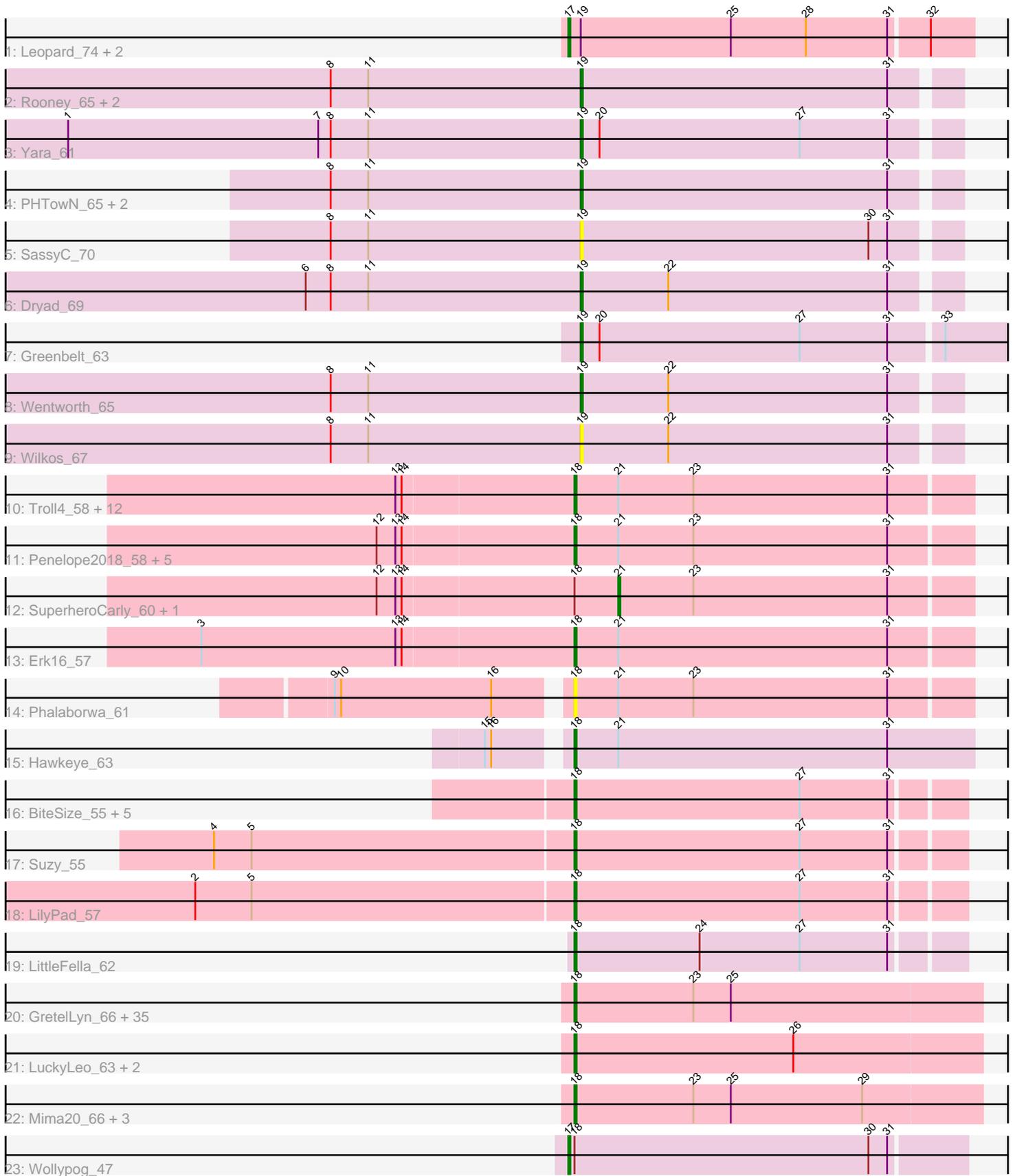Pham 291039

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 291039 Report

This analysis was run 03/28/26 on database version 641.

Pham number 291039 has 92 members, 11 are drafts.

Phages represented in each track:
• Track 1 : Leopard_74, Aikoy_75, Onyinye_75
• Track 2 : Rooney_65, Gibson_65, Virizion_70
• Track 3 : Yara_61
• Track 4 : PHTowN_65, Lizz_65, ShakeNBake_65
• Track 5 : SassyC_70
• Track 6 : Dryad_69
• Track 7 : Greenbelt_63
• Track 8 : Wentworth_65
• Track 9 : Wilkos_67
• Track 10 : Troll4_58, BigMama_56, Helpful_61, Prager_58, Giuseppe_59, Butterscotch_57, PBI1_55, Visconti_59, WaldoWhy_60, Chill_60, Thoth_58, Adjutor_57, Delton_59
• Track 11 : Penelope2018_58, SirHarley_60, KandZ_57, Mopey_59, PLot_58, Nova_57
• Track 12 : SuperheroCarly_60, Gumball_58
• Track 13 : Erk16_57
• Track 14 : Phalaborwa_61
• Track 15 : Hawkeye_63
• Track 16 : BiteSize_55, Terapin_56, Beyoncage_55, Sienna_55, Djokovic_55, Madi_55
• Track 17 : Suzy_55
• Track 18 : LilyPad_57
• Track 19 : LittleFella_62
• Track 20 : GretelLyn_66, Charminar_66, Gibbin_68, Patos_70, Genamy16_69, RazorC_66, BirthdayBoy_68, GOATification_66, DoobyDoo_65, Ranch_66, Erutan_66, Rukungu_68, Stormer_66, Wojtek_62, Astralis_66, Jamemuya19_65, NovaSharks_68, Rota_63, Rumi_67, Jalebi_65, LavAbarElk_66, NorManre_70, Riduram_66, Sadboi_67, DaviePasture_66, Yikes_68, Fulcrum_66, Lambo_64, Alephilan_67, OtterstedtS21_66, Alyssamiracle_69, Lila22_67, Avian_64, Sampudon_66, ParvusTarda_65, Zany_64
• Track 21 : LuckyLeo_63, Apeppi_61, Tillicus_61
• Track 22 : Mima20_66, DumpTruck_65, Xenia2_65, MoiGyank_69
• Track 23 : Wollypog_47

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

The start number called the most often in the published annotations is 18, it was called in 67 of the 81 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Adjutor_57, Alephilan_67, Alyssamiracle_69, Apeppi_61, Astralis_66, Avian_64, Beyoncage_55, BigMama_56, BirthdayBoy_68, BiteSize_55, Butterscotch_57, Charminar_66, Chill_60, DaviePasture_66, Delton_59, Djokovic_55, DoobyDoo_65, DumpTruck_65, Erk16_57, Erutan_66, Fulcrum_66, GOATification_66, Genamy16_69, Gibbin_68, Giuseppe_59, GretelLyn_66, Hawkeye_63, Helpful_61, Jalebi_65, Jamemuya19_65, KandZ_57, Lambo_64, LavAbarElk_66, Lila22_67, LilyPad_57, LittleFella_62, LuckyLeo_63, Madi_55, Mima20_66, MoiGyank_69, Mopey_59, NorManre_70, NovaSharks_68, Nova_57, OtterstedtS21_66, PBI1_55, PLot_58, ParvusTarda_65, Patos_70, Penelope2018_58, Phalaborwa_61, Prager_58, Ranch_66, RazorC_66, Riduram_66, Rota_63, Rukungu_68, Rumi_67, Sadboi_67, Sampudon_66, Sienna_55, SirHarley_60, Stormer_66, Suzy_55, Terapin_56, Thoth_58, Tillicus_61, Troll4_58, Visconti_59, WaldoWhy_60, Wojtek_62, Xenia2_65, Yikes_68, Zany_64,

Genes that have the "Most Annotated" start but do not call it:
• Gumball_58, SuperheroCarly_60, Wollypog_47,

Genes that do not have the "Most Annotated" start:
• Aikoy_75, Dryad_69, Gibson_65, Greenbelt_63, Leopard_74, Lizz_65, Onyinye_75, PHTowN_65, Rooney_65, SassyC_70, ShakeNBake_65, Virizion_70, Wentworth_65, Wilkos_67, Yara_61,

Summary by start number:

Start 17:
• Found in 4 of 92 (4.3%) of genes in pham
• Manual Annotations of this start: 4 of 81
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Aikoy_75 (AE), Leopard_74 (AE), Onyinye_75 (AE), Wollypog_47 (singleton),

Start 18:
• Found in 77 of 92 (83.7%) of genes in pham
• Manual Annotations of this start: 67 of 81
• Called 96.1% of time when present
• Phage (with cluster) where this start called: Adjutor_57 (D1), Alephilan_67 (DV), Alyssamiracle_69 (DV), Apeppi_61 (DV), Astralis_66 (DV), Avian_64 (DV), Beyoncage_55 (DG1), BigMama_56 (D1), BirthdayBoy_68 (DV), BiteSize_55 (DG1), Butterscotch_57 (D1), Charminar_66 (DV), Chill_60 (D1), DaviePasture_66 (DV), Delton_59 (D1), Djokovic_55 (DG1), DoobyDoo_65 (DV), DumpTruck_65 (DV), Erk16_57 (D1), Erutan_66 (DV), Fulcrum_66 (DV), GOATification_66 (DV), Genamy16_69 (DV), Gibbin_68 (DV), Giuseppe_59 (D1), GretelLyn_66 (DV), Hawkeye_63 (D2), Helpful_61 (D1), Jalebi_65 (DV), Jamemuya19_65 (DV), KandZ_57 (D1), Lambo_64 (DV), LavAbarElk_66 (DV), Lila22_67 (DV), LilyPad_57 (DG1), LittleFella_62 (DG2), LuckyLeo_63 (DV), Madi_55 (DG1), Mima20_66 (DV), MoiGyank_69 (DV), Mopey_59 (D1), NorManre_70 (DV), NovaSharks_68 (DV), Nova_57 (D1), OtterstedtS21_66 (DV), PBI1_55 (D1), PLot_58 (D1), ParvusTarda_65 (DV), Patos_70 (DV), Penelope2018_58 (D1), Phalaborwa_61 (D1), Prager_58 (D1),

Ranch_66 (DV), RazorC_66 (DV), Riduram_66 (DV), Rota_63 (DV), Rukungu_68 (DV), Rumi_67 (DV), Sadboi_67 (DV), Sampudon_66 (DV), Sienna_55 (DG1), SirHarley_60 (D1), Stormer_66 (DV), Suzy_55 (DG1), Terapin_56 (DG1), Thoth_58 (D1), Tillicus_61 (DV), Troll4_58 (D1), Visconti_59 (D1), WaldoWhy_60 (D1), Wojtek_62 (DV), Xenia2_65 (DV), Yikes_68 (DV), Zany_64 (DV),

Start 19:
• Found in 15 of 92 (16.3%) of genes in pham
• Manual Annotations of this start: 9 of 81
• Called 80.0% of time when present
• Phage (with cluster) where this start called: Dryad_69 (BN), Gibson_65 (BN), Greenbelt_63 (BN), Lizz_65 (BN), PHTowN_65 (BN), Rooney_65 (BN), SassyC_70 (BN), ShakeNBake_65 (BN), Virizion_70 (BN), Wentworth_65 (BN), Wilkos_67 (BN), Yara_61 (BN),

Start 21:
• Found in 24 of 92 (26.1%) of genes in pham
• Manual Annotations of this start: 1 of 81
• Called 8.3% of time when present
• Phage (with cluster) where this start called: Gumball_58 (D1), SuperheroCarly_60 (D1),

Summary by clusters:

There are 8 clusters represented in this pham: singleton, AE, BN, DG2, DG1, DV, D2, D1,

Info for manual annotations of cluster AE:
•Start number 17 was manually annotated 3 times for cluster AE.

Info for manual annotations of cluster BN:
•Start number 19 was manually annotated 9 times for cluster BN.

Info for manual annotations of cluster D1:
•Start number 18 was manually annotated 20 times for cluster D1.
•Start number 21 was manually annotated 1 time for cluster D1.

Info for manual annotations of cluster D2:
•Start number 18 was manually annotated 1 time for cluster D2.

Info for manual annotations of cluster DG1:
•Start number 18 was manually annotated 8 times for cluster DG1.

Info for manual annotations of cluster DG2:
•Start number 18 was manually annotated 1 time for cluster DG2.

Info for manual annotations of cluster DV:
•Start number 18 was manually annotated 37 times for cluster DV.

Gene Information:

Gene: Adjutor_57 Start: 44227, Stop: 44415, Start Num: 18
Candidate Starts for Adjutor_57:
(13, 44143), (14, 44146), (Start: 18 @44227 has 67 MA's), (Start: 21 @44248 has 1 MA's), (23, 44284),
(31, 44377),

Gene: Aikoy_75 Start: 51802, Stop: 51993, Start Num: 17
Candidate Starts for Aikoy_75:
(Start: 17 @51802 has 4 MA's), (Start: 19 @51808 has 9 MA's), (25, 51880), (28, 51916), (31, 51955),
(32, 51973),

Gene: Alephilan_67 Start: 45298, Stop: 45492, Start Num: 18
Candidate Starts for Alephilan_67:
(Start: 18 @45298 has 67 MA's), (23, 45355), (25, 45373),

Gene: Alyssamiracle_69 Start: 44300, Stop: 44494, Start Num: 18
Candidate Starts for Alyssamiracle_69:
(Start: 18 @44300 has 67 MA's), (23, 44357), (25, 44375),

Gene: Apeppi_61 Start: 44459, Stop: 44653, Start Num: 18
Candidate Starts for Apeppi_61:
(Start: 18 @44459 has 67 MA's), (26, 44564),

Gene: Astralis_66 Start: 43879, Stop: 44073, Start Num: 18
Candidate Starts for Astralis_66:
(Start: 18 @43879 has 67 MA's), (23, 43936), (25, 43954),

Gene: Avian_64 Start: 44028, Stop: 44222, Start Num: 18
Candidate Starts for Avian_64:
(Start: 18 @44028 has 67 MA's), (23, 44085), (25, 44103),

Gene: Beyoncage_55 Start: 41632, Stop: 41814, Start Num: 18
Candidate Starts for Beyoncage_55:
(Start: 18 @41632 has 67 MA's), (27, 41740), (31, 41782),

Gene: BigMama_56 Start: 44303, Stop: 44491, Start Num: 18
Candidate Starts for BigMama_56:
(13, 44219), (14, 44222), (Start: 18 @44303 has 67 MA's), (Start: 21 @44324 has 1 MA's), (23, 44360),
(31, 44453),

Gene: BirthdayBoy_68 Start: 45604, Stop: 45798, Start Num: 18
Candidate Starts for BirthdayBoy_68:
(Start: 18 @45604 has 67 MA's), (23, 45661), (25, 45679),

Gene: BiteSize_55 Start: 41718, Stop: 41900, Start Num: 18
Candidate Starts for BiteSize_55:
(Start: 18 @41718 has 67 MA's), (27, 41826), (31, 41868),

Gene: Butterscotch_57 Start: 44287, Stop: 44475, Start Num: 18
Candidate Starts for Butterscotch_57:
(13, 44203), (14, 44206), (Start: 18 @44287 has 67 MA's), (Start: 21 @44308 has 1 MA's), (23, 44344),
(31, 44437),

Gene: Charminar_66 Start: 43638, Stop: 43832, Start Num: 18

Candidate Starts for Charminar_66:
(Start: 18 @43638 has 67 MA's), (23, 43695), (25, 43713),

Gene: Chill_60 Start: 44350, Stop: 44538, Start Num: 18
Candidate Starts for Chill_60:
(13, 44266), (14, 44269), (Start: 18 @44350 has 67 MA's), (Start: 21 @44371 has 1 MA's), (23, 44407),
(31, 44500),

Gene: DaviePasture_66 Start: 45212, Stop: 45406, Start Num: 18
Candidate Starts for DaviePasture_66:
(Start: 18 @45212 has 67 MA's), (23, 45269), (25, 45287),

Gene: Delton_59 Start: 44685, Stop: 44873, Start Num: 18
Candidate Starts for Delton_59:
(13, 44601), (14, 44604), (Start: 18 @44685 has 67 MA's), (Start: 21 @44706 has 1 MA's), (23, 44742),
(31, 44835),

Gene: Djokovic_55 Start: 41631, Stop: 41813, Start Num: 18
Candidate Starts for Djokovic_55:
(Start: 18 @41631 has 67 MA's), (27, 41739), (31, 41781),

Gene: DoobyDoo_65 Start: 44188, Stop: 44382, Start Num: 18
Candidate Starts for DoobyDoo_65:
(Start: 18 @44188 has 67 MA's), (23, 44245), (25, 44263),

Gene: Dryad_69 Start: 47074, Stop: 46898, Start Num: 19
Candidate Starts for Dryad_69:
(6, 47206), (8, 47194), (11, 47176), (Start: 19 @47074 has 9 MA's), (22, 47032), (31, 46927),

Gene: DumpTruck_65 Start: 44000, Stop: 44194, Start Num: 18
Candidate Starts for DumpTruck_65:
(Start: 18 @44000 has 67 MA's), (23, 44057), (25, 44075), (29, 44138),

Gene: Erk16_57 Start: 44389, Stop: 44577, Start Num: 18
Candidate Starts for Erk16_57:
(3, 44212), (13, 44305), (14, 44308), (Start: 18 @44389 has 67 MA's), (Start: 21 @44410 has 1 MA's),
(31, 44539),

Gene: Erutan_66 Start: 44830, Stop: 45024, Start Num: 18
Candidate Starts for Erutan_66:
(Start: 18 @44830 has 67 MA's), (23, 44887), (25, 44905),

Gene: Fulcrum_66 Start: 44912, Stop: 45106, Start Num: 18
Candidate Starts for Fulcrum_66:
(Start: 18 @44912 has 67 MA's), (23, 44969), (25, 44987),

Gene: GOATification_66 Start: 44912, Stop: 45106, Start Num: 18
Candidate Starts for GOATification_66:
(Start: 18 @44912 has 67 MA's), (23, 44969), (25, 44987),

Gene: Genamy16_69 Start: 44286, Stop: 44480, Start Num: 18
Candidate Starts for Genamy16_69:
(Start: 18 @44286 has 67 MA's), (23, 44343), (25, 44361),

Gene: Gibbin_68 Start: 45717, Stop: 45911, Start Num: 18
Candidate Starts for Gibbin_68:
(Start: 18 @45717 has 67 MA's), (23, 45774), (25, 45792),

Gene: Gibson_65 Start: 46343, Stop: 46167, Start Num: 19
Candidate Starts for Gibson_65:
(8, 46463), (11, 46445), (Start: 19 @46343 has 9 MA's), (31, 46196),

Gene: Giuseppe_59 Start: 44255, Stop: 44443, Start Num: 18
Candidate Starts for Giuseppe_59:
(13, 44171), (14, 44174), (Start: 18 @44255 has 67 MA's), (Start: 21 @44276 has 1 MA's), (23, 44312),
(31, 44405),

Gene: Greenbelt_63 Start: 42458, Stop: 42255, Start Num: 19
Candidate Starts for Greenbelt_63:
(Start: 19 @42458 has 9 MA's), (20, 42449), (27, 42353), (31, 42311), (33, 42287),

Gene: GretelLyn_66 Start: 45702, Stop: 45896, Start Num: 18
Candidate Starts for GretelLyn_66:
(Start: 18 @45702 has 67 MA's), (23, 45759), (25, 45777),

Gene: Gumball_58 Start: 44768, Stop: 44935, Start Num: 21
Candidate Starts for Gumball_58:
(12, 44654), (13, 44663), (14, 44666), (Start: 18 @44747 has 67 MA's), (Start: 21 @44768 has 1 MA's),
(23, 44804), (31, 44897),

Gene: Hawkeye_63 Start: 44249, Stop: 44440, Start Num: 18
Candidate Starts for Hawkeye_63:
(15, 44216), (16, 44219), (Start: 18 @44249 has 67 MA's), (Start: 21 @44270 has 1 MA's), (31, 44399),

Gene: Helpful_61 Start: 44616, Stop: 44804, Start Num: 18
Candidate Starts for Helpful_61:
(13, 44532), (14, 44535), (Start: 18 @44616 has 67 MA's), (Start: 21 @44637 has 1 MA's), (23, 44673),
(31, 44766),

Gene: Jalebi_65 Start: 46055, Stop: 46249, Start Num: 18
Candidate Starts for Jalebi_65:
(Start: 18 @46055 has 67 MA's), (23, 46112), (25, 46130),

Gene: Jamemuya19_65 Start: 43891, Stop: 44085, Start Num: 18
Candidate Starts for Jamemuya19_65:
(Start: 18 @43891 has 67 MA's), (23, 43948), (25, 43966),

Gene: KandZ_57 Start: 44413, Stop: 44601, Start Num: 18
Candidate Starts for KandZ_57:
(12, 44320), (13, 44329), (14, 44332), (Start: 18 @44413 has 67 MA's), (Start: 21 @44434 has 1 MA's),
(23, 44470), (31, 44563),

Gene: Lambo_64 Start: 44709, Stop: 44903, Start Num: 18
Candidate Starts for Lambo_64:
(Start: 18 @44709 has 67 MA's), (23, 44766), (25, 44784),

Gene: LavAbarElk_66 Start: 44449, Stop: 44643, Start Num: 18
Candidate Starts for LavAbarElk_66:
(Start: 18 @44449 has 67 MA's), (23, 44506), (25, 44524),

Gene: Leopard_74 Start: 52108, Stop: 52299, Start Num: 17
Candidate Starts for Leopard_74:
(Start: 17 @52108 has 4 MA's), (Start: 19 @52114 has 9 MA's), (25, 52186), (28, 52222), (31, 52261),
(32, 52279),

Gene: Lila22_67 Start: 45661, Stop: 45855, Start Num: 18
Candidate Starts for Lila22_67:
(Start: 18 @45661 has 67 MA's), (23, 45718), (25, 45736),

Gene: LilyPad_57 Start: 42828, Stop: 43010, Start Num: 18
Candidate Starts for LilyPad_57:
(2, 42648), (5, 42675), (Start: 18 @42828 has 67 MA's), (27, 42936), (31, 42978),

Gene: LittleFella_62 Start: 44348, Stop: 44530, Start Num: 18
Candidate Starts for LittleFella_62:
(Start: 18 @44348 has 67 MA's), (24, 44408), (27, 44456), (31, 44498),

Gene: Lizz_65 Start: 46166, Stop: 45990, Start Num: 19
Candidate Starts for Lizz_65:
(8, 46286), (11, 46268), (Start: 19 @46166 has 9 MA's), (31, 46019),

Gene: LuckyLeo_63 Start: 44459, Stop: 44653, Start Num: 18
Candidate Starts for LuckyLeo_63:
(Start: 18 @44459 has 67 MA's), (26, 44564),

Gene: Madi_55 Start: 41709, Stop: 41891, Start Num: 18
Candidate Starts for Madi_55:
(Start: 18 @41709 has 67 MA's), (27, 41817), (31, 41859),

Gene: Mima20_66 Start: 45218, Stop: 45412, Start Num: 18
Candidate Starts for Mima20_66:
(Start: 18 @45218 has 67 MA's), (23, 45275), (25, 45293), (29, 45356),

Gene: MoiGyank_69 Start: 45983, Stop: 46177, Start Num: 18
Candidate Starts for MoiGyank_69:
(Start: 18 @45983 has 67 MA's), (23, 46040), (25, 46058), (29, 46121),

Gene: Mopey_59 Start: 44291, Stop: 44479, Start Num: 18
Candidate Starts for Mopey_59:
(12, 44198), (13, 44207), (14, 44210), (Start: 18 @44291 has 67 MA's), (Start: 21 @44312 has 1 MA's),
(23, 44348), (31, 44441),

Gene: NorManre_70 Start: 46109, Stop: 46303, Start Num: 18
Candidate Starts for NorManre_70:
(Start: 18 @46109 has 67 MA's), (23, 46166), (25, 46184),

Gene: Nova_57 Start: 44743, Stop: 44931, Start Num: 18
Candidate Starts for Nova_57:

(12, 44650), (13, 44659), (14, 44662), (Start: 18 @44743 has 67 MA's), (Start: 21 @44764 has 1 MA's), (23, 44800), (31, 44893),

Gene: NovaSharks_68 Start: 43877, Stop: 44071, Start Num: 18
Candidate Starts for NovaSharks_68:
(Start: 18 @43877 has 67 MA's), (23, 43934), (25, 43952),

Gene: Onyinye_75 Start: 51975, Stop: 52166, Start Num: 17
Candidate Starts for Onyinye_75:
(Start: 17 @51975 has 4 MA's), (Start: 19 @51981 has 9 MA's), (25, 52053), (28, 52089), (31, 52128), (32, 52146),

Gene: OtterstedtS21_66 Start: 45043, Stop: 45237, Start Num: 18
Candidate Starts for OtterstedtS21_66:
(Start: 18 @45043 has 67 MA's), (23, 45100), (25, 45118),

Gene: PBI1_55 Start: 44218, Stop: 44406, Start Num: 18
Candidate Starts for PBI1_55:
(13, 44134), (14, 44137), (Start: 18 @44218 has 67 MA's), (Start: 21 @44239 has 1 MA's), (23, 44275), (31, 44368),

Gene: PHTowN_65 Start: 46164, Stop: 45988, Start Num: 19
Candidate Starts for PHTowN_65:
(8, 46284), (11, 46266), (Start: 19 @46164 has 9 MA's), (31, 46017),

Gene: PLot_58 Start: 44270, Stop: 44458, Start Num: 18
Candidate Starts for PLot_58:
(12, 44177), (13, 44186), (14, 44189), (Start: 18 @44270 has 67 MA's), (Start: 21 @44291 has 1 MA's), (23, 44327), (31, 44420),

Gene: ParvusTarda_65 Start: 44415, Stop: 44609, Start Num: 18
Candidate Starts for ParvusTarda_65:
(Start: 18 @44415 has 67 MA's), (23, 44472), (25, 44490),

Gene: Patos_70 Start: 46108, Stop: 46302, Start Num: 18
Candidate Starts for Patos_70:
(Start: 18 @46108 has 67 MA's), (23, 46165), (25, 46183),

Gene: Penelope2018_58 Start: 44288, Stop: 44476, Start Num: 18
Candidate Starts for Penelope2018_58:
(12, 44195), (13, 44204), (14, 44207), (Start: 18 @44288 has 67 MA's), (Start: 21 @44309 has 1 MA's), (23, 44345), (31, 44438),

Gene: Phalaborwa_61 Start: 44729, Stop: 44917, Start Num: 18
Candidate Starts for Phalaborwa_61:
(9, 44624), (10, 44627), (16, 44699), (Start: 18 @44729 has 67 MA's), (Start: 21 @44750 has 1 MA's), (23, 44786), (31, 44879),

Gene: Prager_58 Start: 44307, Stop: 44495, Start Num: 18
Candidate Starts for Prager_58:
(13, 44223), (14, 44226), (Start: 18 @44307 has 67 MA's), (Start: 21 @44328 has 1 MA's), (23, 44364), (31, 44457),

Gene: Ranch_66 Start: 43887, Stop: 44081, Start Num: 18
Candidate Starts for Ranch_66:
(Start: 18 @43887 has 67 MA's), (23, 43944), (25, 43962),

Gene: RazorC_66 Start: 44031, Stop: 44225, Start Num: 18
Candidate Starts for RazorC_66:
(Start: 18 @44031 has 67 MA's), (23, 44088), (25, 44106),

Gene: Riduram_66 Start: 43606, Stop: 43800, Start Num: 18
Candidate Starts for Riduram_66:
(Start: 18 @43606 has 67 MA's), (23, 43663), (25, 43681),

Gene: Rooney_65 Start: 46319, Stop: 46143, Start Num: 19
Candidate Starts for Rooney_65:
(8, 46439), (11, 46421), (Start: 19 @46319 has 9 MA's), (31, 46172),

Gene: Rota_63 Start: 44901, Stop: 45095, Start Num: 18
Candidate Starts for Rota_63:
(Start: 18 @44901 has 67 MA's), (23, 44958), (25, 44976),

Gene: Rukungu_68 Start: 45906, Stop: 46100, Start Num: 18
Candidate Starts for Rukungu_68:
(Start: 18 @45906 has 67 MA's), (23, 45963), (25, 45981),

Gene: Rumi_67 Start: 43574, Stop: 43768, Start Num: 18
Candidate Starts for Rumi_67:
(Start: 18 @43574 has 67 MA's), (23, 43631), (25, 43649),

Gene: Sadboi_67 Start: 45703, Stop: 45897, Start Num: 18
Candidate Starts for Sadboi_67:
(Start: 18 @45703 has 67 MA's), (23, 45760), (25, 45778),

Gene: Sampudon_66 Start: 46055, Stop: 46249, Start Num: 18
Candidate Starts for Sampudon_66:
(Start: 18 @46055 has 67 MA's), (23, 46112), (25, 46130),

Gene: SassyC_70 Start: 47243, Stop: 47067, Start Num: 19
Candidate Starts for SassyC_70:
(8, 47363), (11, 47345), (Start: 19 @47243 has 9 MA's), (30, 47105), (31, 47096),

Gene: ShakeNBake_65 Start: 46191, Stop: 46015, Start Num: 19
Candidate Starts for ShakeNBake_65:
(8, 46311), (11, 46293), (Start: 19 @46191 has 9 MA's), (31, 46044),

Gene: Sienna_55 Start: 41709, Stop: 41891, Start Num: 18
Candidate Starts for Sienna_55:
(Start: 18 @41709 has 67 MA's), (27, 41817), (31, 41859),

Gene: SirHarley_60 Start: 44730, Stop: 44918, Start Num: 18
Candidate Starts for SirHarley_60:
(12, 44637), (13, 44646), (14, 44649), (Start: 18 @44730 has 67 MA's), (Start: 21 @44751 has 1 MA's),
(23, 44787), (31, 44880),

Gene: Stormer_66 Start: 43578, Stop: 43772, Start Num: 18
Candidate Starts for Stormer_66:
(Start: 18 @43578 has 67 MA's), (23, 43635), (25, 43653),

Gene: SuperheroCarly_60 Start: 44425, Stop: 44592, Start Num: 21
Candidate Starts for SuperheroCarly_60:
(12, 44311), (13, 44320), (14, 44323), (Start: 18 @44404 has 67 MA's), (Start: 21 @44425 has 1 MA's),
(23, 44461), (31, 44554),

Gene: Suzy_55 Start: 42902, Stop: 43084, Start Num: 18
Candidate Starts for Suzy_55:
(4, 42731), (5, 42749), (Start: 18 @42902 has 67 MA's), (27, 43010), (31, 43052),

Gene: Terapin_56 Start: 41633, Stop: 41815, Start Num: 18
Candidate Starts for Terapin_56:
(Start: 18 @41633 has 67 MA's), (27, 41741), (31, 41783),

Gene: Thoth_58 Start: 44286, Stop: 44474, Start Num: 18
Candidate Starts for Thoth_58:
(13, 44202), (14, 44205), (Start: 18 @44286 has 67 MA's), (Start: 21 @44307 has 1 MA's), (23, 44343),
(31, 44436),

Gene: Tillicus_61 Start: 44400, Stop: 44594, Start Num: 18
Candidate Starts for Tillicus_61:
(Start: 18 @44400 has 67 MA's), (26, 44505),

Gene: Troll4_58 Start: 44417, Stop: 44605, Start Num: 18
Candidate Starts for Troll4_58:
(13, 44333), (14, 44336), (Start: 18 @44417 has 67 MA's), (Start: 21 @44438 has 1 MA's), (23, 44474),
(31, 44567),

Gene: Virizion_70 Start: 46539, Stop: 46363, Start Num: 19
Candidate Starts for Virizion_70:
(8, 46659), (11, 46641), (Start: 19 @46539 has 9 MA's), (31, 46392),

Gene: Visconti_59 Start: 44297, Stop: 44485, Start Num: 18
Candidate Starts for Visconti_59:
(13, 44213), (14, 44216), (Start: 18 @44297 has 67 MA's), (Start: 21 @44318 has 1 MA's), (23, 44354),
(31, 44447),

Gene: WaldoWhy_60 Start: 44350, Stop: 44538, Start Num: 18
Candidate Starts for WaldoWhy_60:
(13, 44266), (14, 44269), (Start: 18 @44350 has 67 MA's), (Start: 21 @44371 has 1 MA's), (23, 44407),
(31, 44500),

Gene: Wentworth_65 Start: 46293, Stop: 46117, Start Num: 19
Candidate Starts for Wentworth_65:
(8, 46413), (11, 46395), (Start: 19 @46293 has 9 MA's), (22, 46251), (31, 46146),

Gene: Wilkos_67 Start: 46448, Stop: 46272, Start Num: 19
Candidate Starts for Wilkos_67:
(8, 46568), (11, 46550), (Start: 19 @46448 has 9 MA's), (22, 46406), (31, 46301),

Gene: Wojtek_62 Start: 44136, Stop: 44330, Start Num: 18
Candidate Starts for Wojtek_62:
(Start: 18 @44136 has 67 MA's), (23, 44193), (25, 44211),

Gene: Wollypog_47 Start: 34596, Stop: 34784, Start Num: 17
Candidate Starts for Wollypog_47:
(Start: 17 @34596 has 4 MA's), (Start: 18 @34599 has 67 MA's), (30, 34740), (31, 34749),

Gene: Xenia2_65 Start: 43903, Stop: 44097, Start Num: 18
Candidate Starts for Xenia2_65:
(Start: 18 @43903 has 67 MA's), (23, 43960), (25, 43978), (29, 44041),

Gene: Yara_61 Start: 45153, Stop: 44977, Start Num: 19
Candidate Starts for Yara_61:
(1, 45399), (7, 45279), (8, 45273), (11, 45255), (Start: 19 @45153 has 9 MA's), (20, 45144), (27, 45048), (31, 45006),

Gene: Yikes_68 Start: 46149, Stop: 46343, Start Num: 18
Candidate Starts for Yikes_68:
(Start: 18 @46149 has 67 MA's), (23, 46206), (25, 46224),

Gene: Zany_64 Start: 45550, Stop: 45744, Start Num: 18
Candidate Starts for Zany_64:
(Start: 18 @45550 has 67 MA's), (23, 45607), (25, 45625),