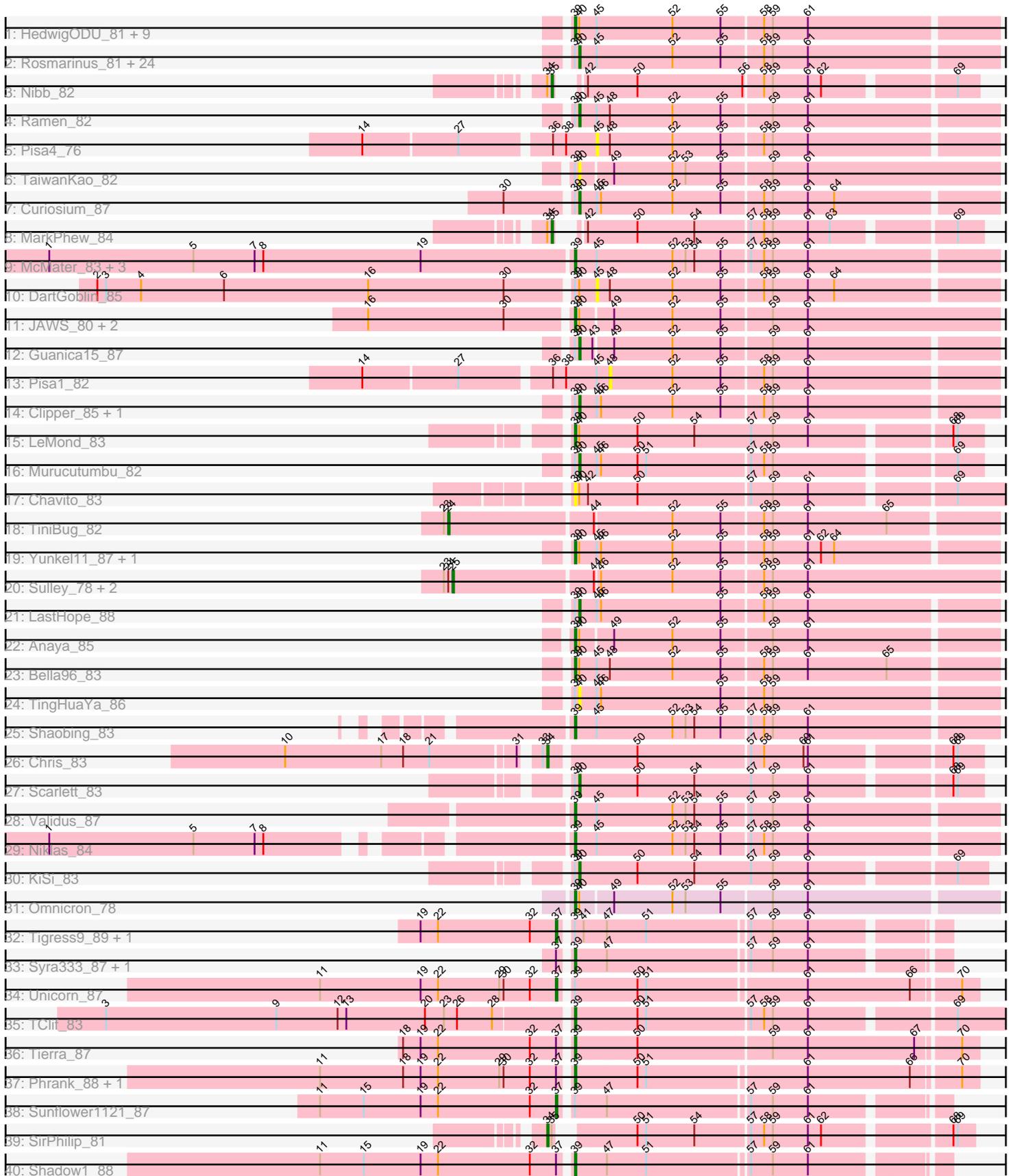# Pham 287814

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 287814 Report

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

Pham number 287814 has 85 members, 10 are drafts.

Phages represented in each track:
• Track 1 : HedwigODU_81, Asayake_81, Tachez_81, BaghaKamala_80, Twitch_81, Atiba_82, Adephagia_80, Joy99_82, Padfoot_81, Blizzard_81
• Track 2 : Rosmarinus_81, Topper_81, Dalmuri_81, Homura_80, BEEST_81, CaseJules_83, Piatt_80, Jarvi_81, Capricorn_81, Boiiii_81, CREW_80, Jeckyll_81, Llorens_81, CallaLilly_81, Hyperbowlee_80, ActinUp_82, Inky_81, Durfee_81, TruffulaTree_83, Peel_81, Spock_81, Zabiza_77, Lunahalos_81, ShiaSurprise_82, Belladonna_81
• Track 3 : Nibb_82
• Track 4 : Ramen_82
• Track 5 : Pisa4_76
• Track 6 : TaiwanKao_82
• Track 7 : Curiosium_87
• Track 8 : MarkPhew_84
• Track 9 : McMater_83, Peanam_84, Dartin_83, Richo_83
• Track 10 : DartGoblin_85
• Track 11 : JAWS_80, Slimphazie_83, Veliki_82
• Track 12 : Guanica15_87
• Track 13 : Pisa1_82
• Track 14 : Clipper_85, MacKat_77
• Track 15 : LeMond_83
• Track 16 : Murucutumbu_82
• Track 17 : Chavito_83
• Track 18 : TiniBug_82
• Track 19 : Yunkel11_87, Efra2_88
• Track 20 : Sulley_78, Deby_81, Angelica_79
• Track 21 : LastHope_88
• Track 22 : Anaya_85
• Track 23 : Bella96_83
• Track 24 : TingHuaYa_86
• Track 25 : Shaobing_83
• Track 26 : Chris_83
• Track 27 : Scarlett_83
• Track 28 : Validus_87
• Track 29 : Niklas_84
• Track 30 : KiSi_83
• Track 31 : Omnicron_78
• Track 32 : Tigress9_89, Krueger_88

- Track 33 : Syra333_87, Ximenita_89
- Track 34 : Unicorn_87
- Track 35 : TClif_83
- Track 36 : Tierra_87
- Track 37 : Phrank_88, Cain_88
- Track 38 : Sunflower1121_87
- Track 39 : SirPhilip_81
- Track 40 : Shadow1_88

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

The start number called the most often in the published annotations is 40, it was called in 34 of the 75 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
- ActinUp_82, BEEST_81, Belladonna_81, Boiiii_81, CREW_80, CallaLilly_81, Capricorn_81, CaseJules_83, Clipper_85, Curiosium_87, Dalmuri_81, Durfee_81, Guanica15_87, Homura_80, Hyperbowlee_80, Inky_81, Jarvi_81, Jeckyll_81, KiSi_83, LastHope_88, Llorens_81, Lunahalos_81, MacKat_77, Murucutumbu_82, Peel_81, Piatt_80, Ramen_82, Rosmarinus_81, Scarlett_83, ShiaSurprise_82, Spock_81, TaiwanKao_82, TingHuaYa_86, Topper_81, TruffulaTree_83, Zabiza_77,

Genes that have the "Most Annotated" start but do not call it:
- Adephagia_80, Anaya_85, Asayake_81, Atiba_82, BaghaKamala_80, Bella96_83, Blizzard_81, Chavito_83, DartGoblin_85, Efra2_88, HedwigODU_81, JAWS_80, Joy99_82, LeMond_83, Omnicron_78, Padfoot_81, Slimphazie_83, Tachez_81, Twitch_81, Veliki_82, Yunkel11_87,

Genes that do not have the "Most Annotated" start:
- Angelica_79, Cain_88, Chris_83, Dartin_83, Deby_81, Krueger_88, MarkPhew_84, McMater_83, Nibb_82, Niklas_84, Peanam_84, Phrank_88, Pisa1_82, Pisa4_76, Richo_83, Shadow1_88, Shaobing_83, SirPhilip_81, Sulley_78, Sunflower1121_87, Syra333_87, TClif_83, Tierra_87, Tigress9_89, TiniBug_82, Unicorn_87, Validus_87, Ximenita_89,

Summary by start number:

Start 24:
- Found in 4 of 85 (4.7%) of genes in pham
- Manual Annotations of this start: 1 of 75
- Called 25.0% of time when present
- Phage (with cluster) where this start called: TiniBug_82 (K1),

Start 25:
- Found in 3 of 85 (3.5%) of genes in pham
- Manual Annotations of this start: 3 of 75
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Angelica_79 (K1), Deby_81 (K1), Sulley_78 (K1),

Start 34:
• Found in 4 of 85 (4.7%) of genes in pham
• Manual Annotations of this start: 2 of 75
• Called 50.0% of time when present
• Phage (with cluster) where this start called: Chris_83 (K1), SirPhilip_81 (K6),

Start 35:
• Found in 3 of 85 (3.5%) of genes in pham
• Manual Annotations of this start: 2 of 75
• Called 66.7% of time when present
• Phage (with cluster) where this start called: MarkPhew_84 (K1), Nibb_82 (K1),

Start 37:
• Found in 10 of 85 (11.8%) of genes in pham
• Manual Annotations of this start: 3 of 75
• Called 40.0% of time when present
• Phage (with cluster) where this start called: Krueger_88 (K6), Sunflower1121_87 (K6), Tigress9_89 (K6), Unicorn_87 (K6),

Start 39:
• Found in 75 of 85 (88.2%) of genes in pham
• Manual Annotations of this start: 30 of 75
• Called 45.3% of time when present
• Phage (with cluster) where this start called: Adephagia_80 (K1), Anaya_85 (K1), Asayake_81 (K1), Atiba_82 (K1), BaghaKamala_80 (K1), Bella96_83 (K1), Blizzard_81 (K1), Cain_88 (K6), Chavito_83 (K1), Dartin_83 (K1), Efra2_88 (K1), HedwigODU_81 (K1), JAWS_80 (K1), Joy99_82 (K1), LeMond_83 (K1), McMater_83 (K1), Niklas_84 (K1), Omnicron_78 (K5), Padfoot_81 (K1), Peanam_84 (K1), Phrank_88 (K6), Richo_83 (K1), Shadow1_88 (K6), Shaobing_83 (K1), Slimphazie_83 (K1), Syra333_87 (K6), TClif_83 (K6), Tachez_81 (K1), Tierra_87 (K6), Twitch_81 (K1), Validus_87 (K1), Veliki_82 (K1), Ximenita_89 (K6), Yunkel11_87 (K1),

Start 40:
• Found in 57 of 85 (67.1%) of genes in pham
• Manual Annotations of this start: 34 of 75
• Called 63.2% of time when present
• Phage (with cluster) where this start called: ActinUp_82 (K1), BEEST_81 (K1), Belladonna_81 (K1), Boiiii_81 (K1), CREW_80 (K1), CallaLilly_81 (K1), Capricorn_81 (K1), CaseJules_83 (K1), Clipper_85 (K1), Curiosium_87 (K1), Dalmuri_81 (K1), Durfee_81 (K1), Guanica15_87 (K1), Homura_80 (K1), Hyperbowlee_80 (K1), Inky_81 (K1), Jarvi_81 (K1), Jeckyll_81 (K1), KiSi_83 (K1), LastHope_88 (K1), Llorens_81 (K1), Lunahalos_81 (K1), MacKat_77 (K1), Murucutumbu_82 (K1), Peel_81 (K1), Piatt_80 (K1), Ramen_82 (K1), Rosmarinus_81 (K1), Scarlett_83 (K1), ShiaSurprise_82 (K1), Spock_81 (K1), TaiwanKao_82 (K1), TingHuaYa_86 (K1), Topper_81 (K1), TruffulaTree_83 (K1), Zabiza_77 (K1),

Start 45:
• Found in 55 of 85 (64.7%) of genes in pham
• No Manual Annotations of this start.
• Called 3.6% of time when present
• Phage (with cluster) where this start called: DartGoblin_85 (K1), Pisa4_76 (K1),

Start 48:
• Found in 5 of 85 (5.9%) of genes in pham
• No Manual Annotations of this start.
• Called 20.0% of time when present
• Phage (with cluster) where this start called: Pisa1_82 (K1),

Summary by clusters:

There are 3 clusters represented in this pham: K1, K6, K5,

Info for manual annotations of cluster K1:
•Start number 24 was manually annotated 1 time for cluster K1.
•Start number 25 was manually annotated 3 times for cluster K1.
•Start number 34 was manually annotated 1 time for cluster K1.
•Start number 35 was manually annotated 2 times for cluster K1.
•Start number 39 was manually annotated 22 times for cluster K1.
•Start number 40 was manually annotated 34 times for cluster K1.

Info for manual annotations of cluster K5:
•Start number 39 was manually annotated 1 time for cluster K5.

Info for manual annotations of cluster K6:
•Start number 34 was manually annotated 1 time for cluster K6.
•Start number 37 was manually annotated 3 times for cluster K6.
•Start number 39 was manually annotated 7 times for cluster K6.

Gene Information:

Gene: ActinUp_82 Start: 52951, Stop: 53229, Start Num: 40
Candidate Starts for ActinUp_82:
(Start: 39 @52948 has 30 MA's), (Start: 40 @52951 has 34 MA's), (45, 52963), (52, 53014), (55, 53047), (58, 53074), (59, 53080), (61, 53104),

Gene: Adephagia_80 Start: 52785, Stop: 53066, Start Num: 39
Candidate Starts for Adephagia_80:
(Start: 39 @52785 has 30 MA's), (Start: 40 @52788 has 34 MA's), (45, 52800), (52, 52851), (55, 52884), (58, 52911), (59, 52917), (61, 52941),

Gene: Anaya_85 Start: 53830, Stop: 54108, Start Num: 39
Candidate Starts for Anaya_85:
(Start: 39 @53830 has 30 MA's), (Start: 40 @53833 has 34 MA's), (49, 53854), (52, 53893), (55, 53926), (59, 53959), (61, 53983),

Gene: Angelica_79 Start: 52375, Stop: 52740, Start Num: 25
Candidate Starts for Angelica_79:
(23, 52369), (Start: 24 @52372 has 1 MA's), (Start: 25 @52375 has 3 MA's), (44, 52468), (46, 52471), (52, 52519), (55, 52552), (58, 52579), (59, 52585), (61, 52609),

Gene: Asayake_81 Start: 53100, Stop: 53381, Start Num: 39
Candidate Starts for Asayake_81:

(Start: 39 @53100 has 30 MA's), (Start: 40 @53103 has 34 MA's), (45, 53115), (52, 53166), (55, 53199), (58, 53226), (59, 53232), (61, 53256),

Gene: Atiba_82 Start: 52748, Stop: 53029, Start Num: 39
Candidate Starts for Atiba_82:
(Start: 39 @52748 has 30 MA's), (Start: 40 @52751 has 34 MA's), (45, 52763), (52, 52814), (55, 52847), (58, 52874), (59, 52880), (61, 52904),

Gene: BEEST_81 Start: 53103, Stop: 53381, Start Num: 40
Candidate Starts for BEEST_81:
(Start: 39 @53100 has 30 MA's), (Start: 40 @53103 has 34 MA's), (45, 53115), (52, 53166), (55, 53199), (58, 53226), (59, 53232), (61, 53256),

Gene: BaghaKamala_80 Start: 52334, Stop: 52615, Start Num: 39
Candidate Starts for BaghaKamala_80:
(Start: 39 @52334 has 30 MA's), (Start: 40 @52337 has 34 MA's), (45, 52349), (52, 52400), (55, 52433), (58, 52460), (59, 52466), (61, 52490),

Gene: Bella96_83 Start: 53274, Stop: 53555, Start Num: 39
Candidate Starts for Bella96_83:
(Start: 39 @53274 has 30 MA's), (Start: 40 @53277 has 34 MA's), (45, 53289), (48, 53298), (52, 53340), (55, 53373), (58, 53400), (59, 53406), (61, 53430), (65, 53484),

Gene: Belladonna_81 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Belladonna_81:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: Blizzard_81 Start: 53100, Stop: 53381, Start Num: 39
Candidate Starts for Blizzard_81:
(Start: 39 @53100 has 30 MA's), (Start: 40 @53103 has 34 MA's), (45, 53115), (52, 53166), (55, 53199), (58, 53226), (59, 53232), (61, 53256),

Gene: Boiiii_81 Start: 53105, Stop: 53383, Start Num: 40
Candidate Starts for Boiiii_81:
(Start: 39 @53102 has 30 MA's), (Start: 40 @53105 has 34 MA's), (45, 53117), (52, 53168), (55, 53201), (58, 53228), (59, 53234), (61, 53258),

Gene: CREW_80 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for CREW_80:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: Cain_88 Start: 53666, Stop: 53929, Start Num: 39
Candidate Starts for Cain_88:
(11, 53498), (18, 53555), (19, 53567), (22, 53579), (29, 53621), (30, 53624), (32, 53642), (Start: 37 @53660 has 3 MA's), (Start: 39 @53666 has 30 MA's), (50, 53708), (51, 53714), (61, 53819), (66, 53888), (70, 53918),

Gene: CallaLilly_81 Start: 52829, Stop: 53107, Start Num: 40
Candidate Starts for CallaLilly_81:
(Start: 39 @52826 has 30 MA's), (Start: 40 @52829 has 34 MA's), (45, 52841), (52, 52892), (55, 52925), (58, 52952), (59, 52958), (61, 52982),

Gene: Capricorn_81 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Capricorn_81:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: CaseJules_83 Start: 53103, Stop: 53381, Start Num: 40
Candidate Starts for CaseJules_83:
(Start: 39 @53100 has 30 MA's), (Start: 40 @53103 has 34 MA's), (45, 53115), (52, 53166), (55, 53199), (58, 53226), (59, 53232), (61, 53256),

Gene: Chavito_83 Start: 54564, Stop: 54908, Start Num: 39
Candidate Starts for Chavito_83:
(Start: 39 @54564 has 30 MA's), (Start: 40 @54567 has 34 MA's), (42, 54573), (50, 54606), (57, 54681), (59, 54696), (61, 54720), (69, 54810),

Gene: Chris_83 Start: 53462, Stop: 53737, Start Num: 34
Candidate Starts for Chris_83:
(10, 53297), (17, 53363), (18, 53378), (21, 53396), (31, 53450), (33, 53459), (Start: 34 @53462 has 2 MA's), (50, 53516), (57, 53591), (58, 53600), (60, 53627), (61, 53630), (68, 53717), (69, 53720),

Gene: Clipper_85 Start: 53469, Stop: 53747, Start Num: 40
Candidate Starts for Clipper_85:
(Start: 39 @53466 has 30 MA's), (Start: 40 @53469 has 34 MA's), (45, 53481), (46, 53484), (52, 53532), (55, 53565), (58, 53592), (59, 53598), (61, 53622),

Gene: Curiosium_87 Start: 52762, Stop: 53040, Start Num: 40
Candidate Starts for Curiosium_87:
(30, 52717), (Start: 39 @52759 has 30 MA's), (Start: 40 @52762 has 34 MA's), (45, 52774), (46, 52777), (52, 52825), (55, 52858), (58, 52885), (59, 52891), (61, 52915), (64, 52933),

Gene: Dalmuri_81 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Dalmuri_81:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: DartGoblin_85 Start: 53252, Stop: 53518, Start Num: 45
Candidate Starts for DartGoblin_85:
(2, 52916), (3, 52922), (4, 52946), (6, 53003), (16, 53102), (30, 53195), (Start: 39 @53237 has 30 MA's), (Start: 40 @53240 has 34 MA's), (45, 53252), (48, 53261), (52, 53303), (55, 53336), (58, 53363), (59, 53369), (61, 53393), (64, 53411),

Gene: Dartin_83 Start: 54044, Stop: 54325, Start Num: 39
Candidate Starts for Dartin_83:
(1, 53687), (5, 53786), (7, 53828), (8, 53834), (19, 53942), (Start: 39 @54044 has 30 MA's), (45, 54059), (52, 54110), (53, 54119), (54, 54125), (55, 54143), (57, 54161), (58, 54170), (59, 54176), (61, 54200),

Gene: Deby_81 Start: 53273, Stop: 53638, Start Num: 25
Candidate Starts for Deby_81:
(23, 53267), (Start: 24 @53270 has 1 MA's), (Start: 25 @53273 has 3 MA's), (44, 53366), (46, 53369), (52, 53417), (55, 53450), (58, 53477), (59, 53483), (61, 53507),

Gene: Durfee_81 Start: 53103, Stop: 53381, Start Num: 40
Candidate Starts for Durfee_81:
(Start: 39 @53100 has 30 MA's), (Start: 40 @53103 has 34 MA's), (45, 53115), (52, 53166), (55, 53199), (58, 53226), (59, 53232), (61, 53256),

Gene: Efra2_88 Start: 53692, Stop: 53973, Start Num: 39
Candidate Starts for Efra2_88:
(Start: 39 @53692 has 30 MA's), (Start: 40 @53695 has 34 MA's), (45, 53707), (46, 53710), (52, 53758), (55, 53791), (58, 53818), (59, 53824), (61, 53848), (62, 53857), (64, 53866),

Gene: Guanica15_87 Start: 53392, Stop: 53667, Start Num: 40
Candidate Starts for Guanica15_87:
(Start: 39 @53389 has 30 MA's), (Start: 40 @53392 has 34 MA's), (43, 53401), (49, 53413), (52, 53452), (55, 53485), (59, 53518), (61, 53542),

Gene: HedwigODU_81 Start: 52948, Stop: 53229, Start Num: 39
Candidate Starts for HedwigODU_81:
(Start: 39 @52948 has 30 MA's), (Start: 40 @52951 has 34 MA's), (45, 52963), (52, 53014), (55, 53047), (58, 53074), (59, 53080), (61, 53104),

Gene: Homura_80 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Homura_80:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: Hyperbowlee_80 Start: 53103, Stop: 53381, Start Num: 40
Candidate Starts for Hyperbowlee_80:
(Start: 39 @53100 has 30 MA's), (Start: 40 @53103 has 34 MA's), (45, 53115), (52, 53166), (55, 53199), (58, 53226), (59, 53232), (61, 53256),

Gene: Inky_81 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Inky_81:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: JAWS_80 Start: 52865, Stop: 53149, Start Num: 39
Candidate Starts for JAWS_80:
(16, 52730), (30, 52823), (Start: 39 @52865 has 30 MA's), (Start: 40 @52868 has 34 MA's), (49, 52889), (52, 52928), (55, 52961), (59, 52994), (61, 53018),

Gene: Jarvi_81 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Jarvi_81:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: Jeckyll_81 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Jeckyll_81:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: Joy99_82 Start: 53032, Stop: 53313, Start Num: 39
Candidate Starts for Joy99_82:

(Start: 39 @53032 has 30 MA's), (Start: 40 @53035 has 34 MA's), (45, 53047), (52, 53098), (55, 53131), (58, 53158), (59, 53164), (61, 53188),

Gene: KiSi_83 Start: 53332, Stop: 53598, Start Num: 40
Candidate Starts for KiSi_83:
(Start: 39 @53329 has 30 MA's), (Start: 40 @53332 has 34 MA's), (50, 53371), (54, 53410), (57, 53449), (59, 53464), (61, 53488), (69, 53578),

Gene: Krueger_88 Start: 53939, Stop: 54181, Start Num: 37
Candidate Starts for Krueger_88:
(19, 53846), (22, 53858), (32, 53921), (Start: 37 @53939 has 3 MA's), (Start: 39 @53945 has 30 MA's), (41, 53951), (47, 53966), (51, 53993), (57, 54059), (59, 54074), (61, 54098),

Gene: LastHope_88 Start: 53488, Stop: 53766, Start Num: 40
Candidate Starts for LastHope_88:
(Start: 39 @53485 has 30 MA's), (Start: 40 @53488 has 34 MA's), (45, 53500), (46, 53503), (55, 53584), (58, 53611), (59, 53617), (61, 53641),

Gene: LeMond_83 Start: 53391, Stop: 53657, Start Num: 39
Candidate Starts for LeMond_83:
(Start: 39 @53391 has 30 MA's), (Start: 40 @53394 has 34 MA's), (50, 53433), (54, 53472), (57, 53511), (59, 53526), (61, 53550), (68, 53637), (69, 53640),

Gene: Llorens_81 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Llorens_81:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: Lunahalos_81 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Lunahalos_81:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: MacKat_77 Start: 48353, Stop: 48631, Start Num: 40
Candidate Starts for MacKat_77:
(Start: 39 @48350 has 30 MA's), (Start: 40 @48353 has 34 MA's), (45, 48365), (46, 48368), (52, 48416), (55, 48449), (58, 48476), (59, 48482), (61, 48506),

Gene: MarkPhew_84 Start: 53449, Stop: 53709, Start Num: 35
Candidate Starts for MarkPhew_84:
(Start: 34 @53446 has 2 MA's), (Start: 35 @53449 has 2 MA's), (42, 53455), (50, 53488), (54, 53527), (57, 53563), (58, 53572), (59, 53578), (61, 53602), (63, 53617), (69, 53692),

Gene: McMater_83 Start: 54044, Stop: 54325, Start Num: 39
Candidate Starts for McMater_83:
(1, 53687), (5, 53786), (7, 53828), (8, 53834), (19, 53942), (Start: 39 @54044 has 30 MA's), (45, 54059), (52, 54110), (53, 54119), (54, 54125), (55, 54143), (57, 54161), (58, 54170), (59, 54176), (61, 54200),

Gene: Murucutumbu_82 Start: 54127, Stop: 54387, Start Num: 40
Candidate Starts for Murucutumbu_82:
(Start: 39 @54124 has 30 MA's), (Start: 40 @54127 has 34 MA's), (45, 54139), (46, 54142), (50, 54166), (51, 54172), (57, 54241), (58, 54250), (59, 54256), (69, 54370),

Gene: Nibb_82 Start: 52761, Stop: 53018, Start Num: 35
Candidate Starts for Nibb_82:
(Start: 34 @52758 has 2 MA's), (Start: 35 @52761 has 2 MA's), (42, 52767), (50, 52800), (56, 52872), (58, 52884), (59, 52890), (61, 52914), (62, 52923), (69, 53004),

Gene: Niklas_84 Start: 54084, Stop: 54365, Start Num: 39
Candidate Starts for Niklas_84:
(1, 53763), (5, 53862), (7, 53904), (8, 53910), (Start: 39 @54084 has 30 MA's), (45, 54099), (52, 54150), (53, 54159), (54, 54165), (55, 54183), (57, 54201), (58, 54210), (59, 54216), (61, 54240),

Gene: Omnicron_78 Start: 52916, Stop: 53194, Start Num: 39
Candidate Starts for Omnicron_78:
(Start: 39 @52916 has 30 MA's), (Start: 40 @52919 has 34 MA's), (49, 52940), (52, 52979), (53, 52988), (55, 53012), (59, 53045), (61, 53069),

Gene: Padfoot_81 Start: 53100, Stop: 53381, Start Num: 39
Candidate Starts for Padfoot_81:
(Start: 39 @53100 has 30 MA's), (Start: 40 @53103 has 34 MA's), (45, 53115), (52, 53166), (55, 53199), (58, 53226), (59, 53232), (61, 53256),

Gene: Peanam_84 Start: 54063, Stop: 54344, Start Num: 39
Candidate Starts for Peanam_84:
(1, 53706), (5, 53805), (7, 53847), (8, 53853), (19, 53961), (Start: 39 @54063 has 30 MA's), (45, 54078), (52, 54129), (53, 54138), (54, 54144), (55, 54162), (57, 54180), (58, 54189), (59, 54195), (61, 54219),

Gene: Peel_81 Start: 52908, Stop: 53186, Start Num: 40
Candidate Starts for Peel_81:
(Start: 39 @52905 has 30 MA's), (Start: 40 @52908 has 34 MA's), (45, 52920), (52, 52971), (55, 53004), (58, 53031), (59, 53037), (61, 53061),

Gene: Phrank_88 Start: 53653, Stop: 53916, Start Num: 39
Candidate Starts for Phrank_88:
(11, 53485), (18, 53542), (19, 53554), (22, 53566), (29, 53608), (30, 53611), (32, 53629), (Start: 37 @53647 has 3 MA's), (Start: 39 @53653 has 30 MA's), (50, 53695), (51, 53701), (61, 53806), (66, 53875), (70, 53905),

Gene: Piatt_80 Start: 53103, Stop: 53381, Start Num: 40
Candidate Starts for Piatt_80:
(Start: 39 @53100 has 30 MA's), (Start: 40 @53103 has 34 MA's), (45, 53115), (52, 53166), (55, 53199), (58, 53226), (59, 53232), (61, 53256),

Gene: Pisa1_82 Start: 53600, Stop: 53857, Start Num: 48
Candidate Starts for Pisa1_82:
(14, 53441), (27, 53504), (36, 53561), (38, 53570), (45, 53591), (48, 53600), (52, 53642), (55, 53675), (58, 53702), (59, 53708), (61, 53732),

Gene: Pisa4_76 Start: 48960, Stop: 49226, Start Num: 45
Candidate Starts for Pisa4_76:
(14, 48810), (27, 48873), (36, 48930), (38, 48939), (45, 48960), (48, 48969), (52, 49011), (55, 49044), (58, 49071), (59, 49077), (61, 49101),

Gene: Ramen_82 Start: 52676, Stop: 52954, Start Num: 40
Candidate Starts for Ramen_82:
(Start: 39 @52673 has 30 MA's), (Start: 40 @52676 has 34 MA's), (45, 52688), (48, 52697), (52, 52739), (55, 52772), (59, 52805), (61, 52829),

Gene: Richo_83 Start: 54044, Stop: 54325, Start Num: 39
Candidate Starts for Richo_83:
(1, 53687), (5, 53786), (7, 53828), (8, 53834), (19, 53942), (Start: 39 @54044 has 30 MA's), (45, 54059), (52, 54110), (53, 54119), (54, 54125), (55, 54143), (57, 54161), (58, 54170), (59, 54176), (61, 54200),

Gene: Rosmarinus_81 Start: 52894, Stop: 53172, Start Num: 40
Candidate Starts for Rosmarinus_81:
(Start: 39 @52891 has 30 MA's), (Start: 40 @52894 has 34 MA's), (45, 52906), (52, 52957), (55, 52990), (58, 53017), (59, 53023), (61, 53047),

Gene: Scarlett_83 Start: 53191, Stop: 53454, Start Num: 40
Candidate Starts for Scarlett_83:
(Start: 39 @53188 has 30 MA's), (Start: 40 @53191 has 34 MA's), (50, 53230), (54, 53269), (57, 53308), (59, 53323), (61, 53347), (68, 53434), (69, 53437),

Gene: Shadow1_88 Start: 54085, Stop: 54321, Start Num: 39
Candidate Starts for Shadow1_88:
(11, 53917), (15, 53947), (19, 53986), (22, 53998), (32, 54061), (Start: 37 @54079 has 3 MA's), (Start: 39 @54085 has 30 MA's), (47, 54106), (51, 54133), (57, 54199), (59, 54214), (61, 54238),

Gene: Shaobing_83 Start: 54131, Stop: 54412, Start Num: 39
Candidate Starts for Shaobing_83:
(Start: 39 @54131 has 30 MA's), (45, 54146), (52, 54197), (53, 54206), (54, 54212), (55, 54230), (57, 54248), (58, 54257), (59, 54263), (61, 54287),

Gene: ShiaSurprise_82 Start: 53103, Stop: 53381, Start Num: 40
Candidate Starts for ShiaSurprise_82:
(Start: 39 @53100 has 30 MA's), (Start: 40 @53103 has 34 MA's), (45, 53115), (52, 53166), (55, 53199), (58, 53226), (59, 53232), (61, 53256),

Gene: SirPhilip_81 Start: 53235, Stop: 53495, Start Num: 34
Candidate Starts for SirPhilip_81:
(Start: 34 @53235 has 2 MA's), (Start: 35 @53238 has 2 MA's), (50, 53280), (51, 53286), (54, 53319), (57, 53355), (58, 53364), (59, 53370), (61, 53394), (62, 53403), (68, 53481), (69, 53484),

Gene: Slimphazie_83 Start: 53315, Stop: 53599, Start Num: 39
Candidate Starts for Slimphazie_83:
(16, 53180), (30, 53273), (Start: 39 @53315 has 30 MA's), (Start: 40 @53318 has 34 MA's), (49, 53339), (52, 53378), (55, 53411), (59, 53444), (61, 53468),

Gene: Spock_81 Start: 52907, Stop: 53185, Start Num: 40
Candidate Starts for Spock_81:
(Start: 39 @52904 has 30 MA's), (Start: 40 @52907 has 34 MA's), (45, 52919), (52, 52970), (55, 53003), (58, 53030), (59, 53036), (61, 53060),

Gene: Sulley_78 Start: 52370, Stop: 52735, Start Num: 25
Candidate Starts for Sulley_78:

(23, 52364), (Start: 24 @52367 has 1 MA's), (Start: 25 @52370 has 3 MA's), (44, 52463), (46, 52466), (52, 52514), (55, 52547), (58, 52574), (59, 52580), (61, 52604),

Gene: Sunflower1121_87 Start: 53623, Stop: 53865, Start Num: 37
Candidate Starts for Sunflower1121_87:
(11, 53461), (15, 53491), (19, 53530), (22, 53542), (32, 53605), (Start: 37 @53623 has 3 MA's), (Start: 39 @53629 has 30 MA's), (47, 53650), (57, 53743), (59, 53758), (61, 53782),

Gene: Syra333_87 Start: 53998, Stop: 54234, Start Num: 39
Candidate Starts for Syra333_87:
(Start: 37 @53992 has 3 MA's), (Start: 39 @53998 has 30 MA's), (47, 54019), (57, 54112), (59, 54127), (61, 54151),

Gene: TClif_83 Start: 52831, Stop: 53172, Start Num: 39
Candidate Starts for TClif_83:
(3, 52519), (9, 52636), (12, 52678), (13, 52684), (20, 52738), (23, 52750), (26, 52759), (28, 52783), (Start: 39 @52831 has 30 MA's), (50, 52873), (51, 52879), (57, 52948), (58, 52957), (59, 52963), (61, 52987), (69, 53077),

Gene: Tachez_81 Start: 52748, Stop: 53029, Start Num: 39
Candidate Starts for Tachez_81:
(Start: 39 @52748 has 30 MA's), (Start: 40 @52751 has 34 MA's), (45, 52763), (52, 52814), (55, 52847), (58, 52874), (59, 52880), (61, 52904),

Gene: TaiwanKao_82 Start: 52883, Stop: 53164, Start Num: 40
Candidate Starts for TaiwanKao_82:
(Start: 39 @52880 has 30 MA's), (Start: 40 @52883 has 34 MA's), (49, 52904), (52, 52943), (53, 52952), (55, 52976), (59, 53009), (61, 53033),

Gene: Tierra_87 Start: 54067, Stop: 54333, Start Num: 39
Candidate Starts for Tierra_87:
(18, 53956), (19, 53968), (22, 53980), (32, 54043), (Start: 37 @54061 has 3 MA's), (Start: 39 @54067 has 30 MA's), (50, 54109), (59, 54199), (61, 54223), (67, 54295), (70, 54322),

Gene: Tigress9_89 Start: 54267, Stop: 54509, Start Num: 37
Candidate Starts for Tigress9_89:
(19, 54174), (22, 54186), (32, 54249), (Start: 37 @54267 has 3 MA's), (Start: 39 @54273 has 30 MA's), (41, 54279), (47, 54294), (51, 54321), (57, 54387), (59, 54402), (61, 54426),

Gene: TingHuaYa_86 Start: 53796, Stop: 54074, Start Num: 40
Candidate Starts for TingHuaYa_86:
(Start: 39 @53793 has 30 MA's), (Start: 40 @53796 has 34 MA's), (45, 53808), (46, 53811), (55, 53892), (58, 53919), (59, 53925),

Gene: TiniBug_82 Start: 53409, Stop: 53771, Start Num: 24
Candidate Starts for TiniBug_82:
(23, 53406), (Start: 24 @53409 has 1 MA's), (44, 53505), (52, 53556), (55, 53589), (58, 53616), (59, 53622), (61, 53646), (65, 53700),

Gene: Topper_81 Start: 52906, Stop: 53184, Start Num: 40
Candidate Starts for Topper_81:
(Start: 39 @52903 has 30 MA's), (Start: 40 @52906 has 34 MA's), (45, 52918), (52, 52969), (55, 53002), (58, 53029), (59, 53035), (61, 53059),

Gene: TruffulaTree_83 Start: 53314, Stop: 53592, Start Num: 40
Candidate Starts for TruffulaTree_83:
(Start: 39 @53311 has 30 MA's), (Start: 40 @53314 has 34 MA's), (45, 53326), (52, 53377), (55, 53410), (58, 53437), (59, 53443), (61, 53467),

Gene: Twitch_81 Start: 52905, Stop: 53186, Start Num: 39
Candidate Starts for Twitch_81:
(Start: 39 @52905 has 30 MA's), (Start: 40 @52908 has 34 MA's), (45, 52920), (52, 52971), (55, 53004), (58, 53031), (59, 53037), (61, 53061),

Gene: Unicorn_87 Start: 53787, Stop: 54056, Start Num: 37
Candidate Starts for Unicorn_87:
(11, 53625), (19, 53694), (22, 53706), (29, 53748), (30, 53751), (32, 53769), (Start: 37 @53787 has 3 MA's), (Start: 39 @53793 has 30 MA's), (50, 53835), (51, 53841), (61, 53946), (66, 54015), (70, 54045),

Gene: Validus_87 Start: 54683, Stop: 54964, Start Num: 39
Candidate Starts for Validus_87:
(Start: 39 @54683 has 30 MA's), (45, 54698), (52, 54749), (53, 54758), (54, 54764), (55, 54782), (57, 54800), (59, 54815), (61, 54839),

Gene: Veliki_82 Start: 52850, Stop: 53134, Start Num: 39
Candidate Starts for Veliki_82:
(16, 52715), (30, 52808), (Start: 39 @52850 has 30 MA's), (Start: 40 @52853 has 34 MA's), (49, 52874), (52, 52913), (55, 52946), (59, 52979), (61, 53003),

Gene: Ximenita_89 Start: 54322, Stop: 54558, Start Num: 39
Candidate Starts for Ximenita_89:
(Start: 37 @54316 has 3 MA's), (Start: 39 @54322 has 30 MA's), (47, 54343), (57, 54436), (59, 54451), (61, 54475),

Gene: Yunkel11_87 Start: 53374, Stop: 53655, Start Num: 39
Candidate Starts for Yunkel11_87:
(Start: 39 @53374 has 30 MA's), (Start: 40 @53377 has 34 MA's), (45, 53389), (46, 53392), (52, 53440), (55, 53473), (58, 53500), (59, 53506), (61, 53530), (62, 53539), (64, 53548),

Gene: Zabiza_77 Start: 49256, Stop: 49534, Start Num: 40
Candidate Starts for Zabiza_77:
(Start: 39 @49253 has 30 MA's), (Start: 40 @49256 has 34 MA's), (45, 49268), (52, 49319), (55, 49352), (58, 49379), (59, 49385), (61, 49409),