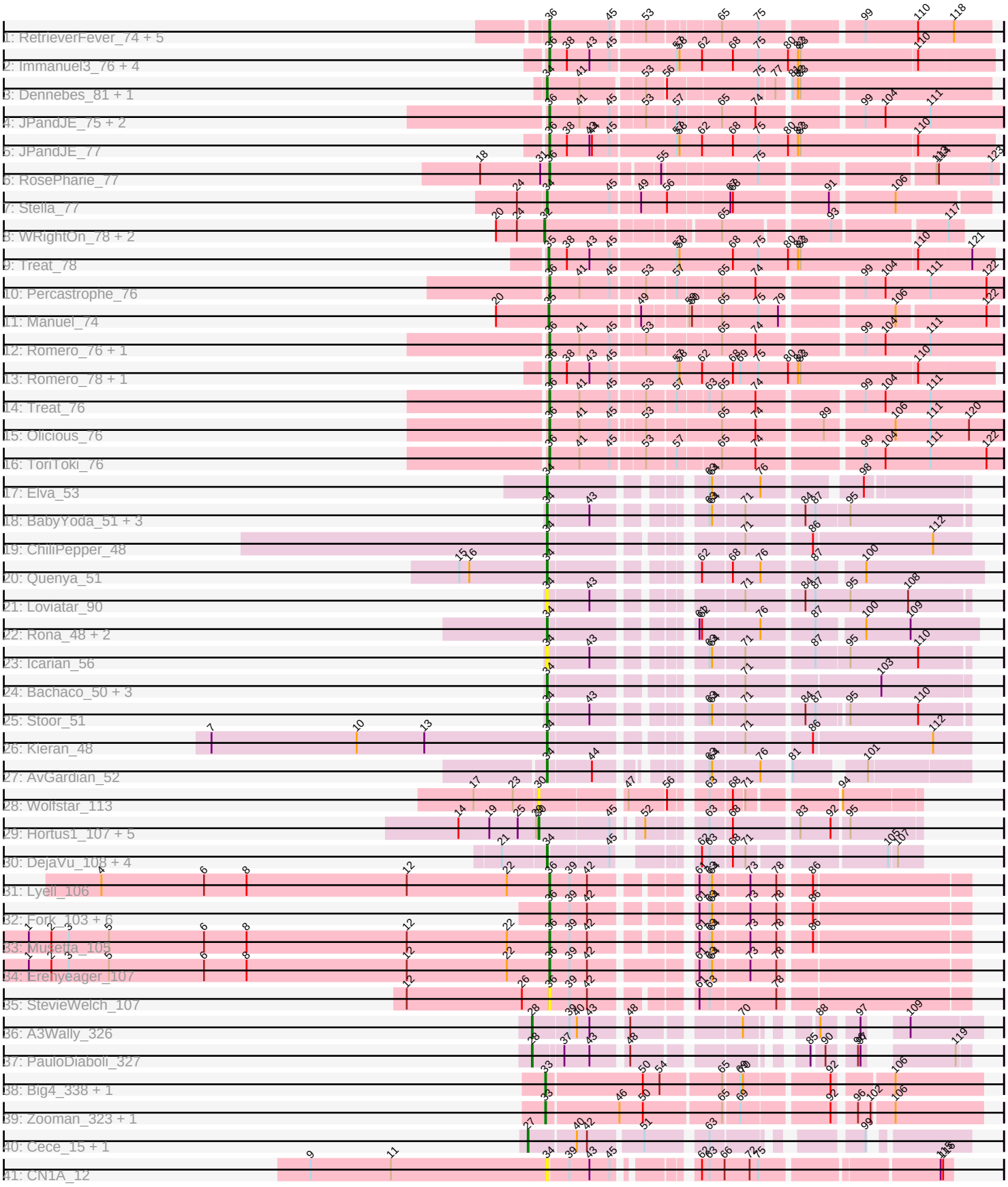
Pham 163540


1: RetrieverFever_74 + 5
2: Immanuel3_76 + 4
3: Dennebes_81 + 1
4: JPandJE_75 + 2
5: JPandJE_77
6: RosePharie_77
7: Stella_77
8: WRightOn_78 + 2
9: Treat_78
10: Percastrophe_76
11: Manuel_74
12: Romero_76 + 1
13: Romero_78 + 1
14: Treat_76
15: Olicious_76
16: ToriToki_76
17: Elva_53
18: BabyYoda_51 + 3
19: ChiliPepper_48
20: Quenya_51
21: Loviatar_90
22: Rona_48 + 2
23: Icarian_56
24: Bachaco_50 + 3
25: Stoor_51
26: Kieran_48
27: AvGardian_52
28: Wolfstar_113
29: Hortus1_107 + 5
30: DejaVu_108 + 4
31: Lyell_106
32: Fork_103 + 6
33: Musetta_105
34: Erehyeager_107
35: StevieWelch_107
36: A3Wally_326
37: PauloDiaboli_327
38: Big4_338 + 1
39: Zooman_323 + 1
40: Cece_15 + 1
41: CN1A_12

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 163540 Report

This analysis was run 04/28/24 on database version 559.

Pham number 163540 has 83 members, 9 are drafts.

Phages represented in each track:
• Track 1 : RetrieverFever_74, Gremlin23_74, Fabian_73, Geostin_69, Vorvolakos_75, FlowerPower_74
• Track 2 : Immanuel3_76, Percastrophe_78, ZooBear_78, HaugeAnator_78, ToriToki_78
• Track 3 : Dennebes_81, Rideau_80
• Track 4 : JPandJE_75, HaugeAnator_76, ZooBear_76
• Track 5 : JPandJE_77
• Track 6 : RosePharie_77
• Track 7 : Stella_77
• Track 8 : WRightOn_78, Kumquat_74, Zeigle_74
• Track 9 : Treat_78
• Track 10 : Percastrophe_76
• Track 11 : Manuel_74
• Track 12 : Romero_76, Immanuel3_74
• Track 13 : Romero_78, Olicious_78
• Track 14 : Treat_76
• Track 15 : Olicious_76
• Track 16 : ToriToki_76
• Track 17 : Elva_53
• Track 18 : BabyYoda_51, DirtyBubble_50, SanaSana_53, Stromboli_51
• Track 19 : ChiliPepper_48
• Track 20 : Quenya_51
• Track 21 : Loviatar_90
• Track 22 : Rona_48, Sharkboy_49, Dismas_48
• Track 23 : Icarian_56
• Track 24 : Bachaco_50, Celaena_49, FlameThrower_48, Katzastrophic_50
• Track 25 : Stoor_51
• Track 26 : Kieran_48
• Track 27 : AvGardian_52
• Track 28 : Wolfstar_113
• Track 29 : Hortus1_107, Alleb_103, OlinDD_107, Platte_106, Tandem_107, Pioneer3_107
• Track 30 : DejaVu_108, Pavlo_108, PhillyPhilly_105, Roman_109, Hubbs_107
• Track 31 : Lyell_106
• Track 32 : Fork_103, Necrophoxinus_109, Yuma_105, Welcome_109, DustyDino_110, ASegato_105, RunningBrook_109
• Track 33 : Musetta_105

• Track 34 : Erenyeager_107
• Track 35 : StevieWelch_107
• Track 36 : A3Wally_326
• Track 37 : PauloDiaboli_327
• Track 38 : Big4_338, Big4_12
• Track 39 : Zooman_323, Zooman_10
• Track 40 : Cece_15, Cece_317
• Track 41 : CN1A_12

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

The start number called the most often in the published annotations is 36, it was called in 32 of the 74 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• ASegato_105, DustyDino_110, Erenyeager_107, Fabian_73, FlowerPower_74, Fork_103, Geostin_69, Gremlin23_74, HaugeAnator_76, HaugeAnator_78, Immanuel3_74, Immanuel3_76, JPandJE_75, JPandJE_77, Lyell_106, Musetta_105, Necrophoxinus_109, Olicious_76, Olicious_78, Percastrophe_76, Percastrophe_78, RetrieverFever_74, Romero_76, Romero_78, RosePharie_77, RunningBrook_109, StevieWelch_107, ToriToki_76, ToriToki_78, Treat_76, Vorvolakos_75, Welcome_109, Yuma_105, ZooBear_76, ZooBear_78,

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

Genes that do not have the "Most Annotated" start:
• A3Wally_326, Alleb_103, AvGardian_52, BabyYoda_51, Bachaco_50, Big4_12, Big4_338, CN1A_12, Cece_15, Cece_317, Celaena_49, ChiliPepper_48, DejaVu_108, Dennebes_81, DirtyBubble_50, Dismas_48, Elva_53, FlameThrower_48, Hortus1_107, Hubbs_107, Icarian_56, Katzastrophic_50, Kieran_48, Kumquat_74, Loviatar_90, Manuel_74, OlinDD_107, PauloDiaboli_327, Pavlo_108, PhillyPhilly_105, Pioneer3_107, Platte_106, Quenya_51, Rideau_80, Roman_109, Rona_48, SanaSana_53, Sharkboy_49, Stella_77, Stoor_51, Stromboli_51, Tandem_107, Treat_78, WRightOn_78, Wolfstar_113, Zeigle_74, Zooman_10, Zooman_323,

Summary by start number:

Start 27:
• Found in 2 of 83 (2.4%) of genes in pham
• Manual Annotations of this start: 2 of 74
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Cece_15 (GD3), Cece_317 (GD3),

Start 28:
• Found in 2 of 83 (2.4%) of genes in pham
• Manual Annotations of this start: 2 of 74
• Called 100.0% of time when present

• Phage (with cluster) where this start called: A3Wally_326 (GD1), PauloDiaboli_327 (GD1),

Start 30:
• Found in 7 of 83 (8.4%) of genes in pham
• Manual Annotations of this start: 6 of 74
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Alleb_103 (ED1), Hortus1_107 (ED1), OlinDD_107 (ED1), Pioneer3_107 (ED1), Platte_106 (ED1), Tandem_107 (ED1), Wolfstar_113 (ED),

Start 32:
• Found in 3 of 83 (3.6%) of genes in pham
• Manual Annotations of this start: 3 of 74
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Kumquat_74 (BF), WRightOn_78 (BF), Zeigle_74 (BF),

Start 33:
• Found in 4 of 83 (4.8%) of genes in pham
• Manual Annotations of this start: 4 of 74
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Big4_12 (GD2), Big4_338 (GD2), Zooman_10 (GD2), Zooman_323 (GD2),

Start 34:
• Found in 28 of 83 (33.7%) of genes in pham
• Manual Annotations of this start: 23 of 74
• Called 100.0% of time when present
• Phage (with cluster) where this start called: AvGardian_52 (EB), BabyYoda_51 (EB), Bachaco_50 (EB), CN1A_12 (singleton), Celaena_49 (EB), ChiliPepper_48 (EB), DejaVu_108 (ED1), Dennebes_81 (BF), DirtyBubble_50 (EB), Dismas_48 (EB), Elva_53 (EB), FlameThrower_48 (EB), Hubbs_107 (ED1), Icarian_56 (EB), Katzastrophic_50 (EB), Kieran_48 (EB), Loviatar_90 (EB), Pavlo_108 (ED1), PhillyPhilly_105 (ED1), Quenya_51 (EB), Rideau_80 (BF), Roman_109 (ED1), Rona_48 (EB), SanaSana_53 (EB), Sharkboy_49 (EB), Stella_77 (BF), Stoor_51 (EB), Stromboli_51 (EB),

Start 35:
• Found in 2 of 83 (2.4%) of genes in pham
• Manual Annotations of this start: 2 of 74
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Manuel_74 (BF), Treat_78 (BF),

Start 36:
• Found in 35 of 83 (42.2%) of genes in pham
• Manual Annotations of this start: 32 of 74
• Called 100.0% of time when present
• Phage (with cluster) where this start called: ASegato_105 (ED2), DustyDino_110 (ED2), Erenyeager_107 (ED2), Fabian_73 (BF), FlowerPower_74 (BF), Fork_103 (ED2), Geostin_69 (BF), Gremlin23_74 (BF), HaugeAnator_76 (BF), HaugeAnator_78 (BF), Immanuel3_74 (BF), Immanuel3_76 (BF), JPandJE_75 (BF), JPandJE_77 (BF), Lyell_106 (ED2), Musetta_105 (ED2), Necrophoxinus_109 (ED2),

Olicious_76 (BF), Olicious_78 (BF), Percastrophe_76 (BF), Percastrophe_78 (BF), RetrieverFever_74 (BF), Romero_76 (BF), Romero_78 (BF), RosePharie_77 (BF), RunningBrook_109 (ED2), StevieWelch_107 (ED2), ToriToki_76 (BF), ToriToki_78 (BF), Treat_76 (BF), Vorvolakos_75 (BF), Welcome_109 (ED2), Yuma_105 (ED2), ZooBear_76 (BF), ZooBear_78 (BF),

Summary by clusters:

There are 9 clusters represented in this pham: GD1, BF, GD3, ED, GD2, EB, ED2, ED1, singleton,

Info for manual annotations of cluster BF:
•Start number 32 was manually annotated 3 times for cluster BF.
•Start number 34 was manually annotated 2 times for cluster BF.
•Start number 35 was manually annotated 2 times for cluster BF.
•Start number 36 was manually annotated 23 times for cluster BF.

Info for manual annotations of cluster EB:
•Start number 34 was manually annotated 16 times for cluster EB.

Info for manual annotations of cluster ED1:
•Start number 30 was manually annotated 6 times for cluster ED1.
•Start number 34 was manually annotated 5 times for cluster ED1.

Info for manual annotations of cluster ED2:
•Start number 36 was manually annotated 9 times for cluster ED2.

Info for manual annotations of cluster GD1:
•Start number 28 was manually annotated 2 times for cluster GD1.

Info for manual annotations of cluster GD2:
•Start number 33 was manually annotated 4 times for cluster GD2.

Info for manual annotations of cluster GD3:
•Start number 27 was manually annotated 2 times for cluster GD3.

Gene Information:

Gene: A3Wally_326 Start: 170993, Stop: 171403, Start Num: 28
Candidate Starts for A3Wally_326:
(Start: 28 @170993 has 2 MA's), (39, 171035), (40, 171044), (43, 171059), (48, 171095), (70, 171203), (88, 171257), (97, 171293), (109, 171320),

Gene: ASegato_105 Start: 56034, Stop: 55597, Start Num: 36
Candidate Starts for ASegato_105:
(Start: 36 @56034 has 32 MA's), (39, 56010), (42, 55989), (61, 55893), (63, 55881), (64, 55878), (73, 55836), (78, 55806), (86, 55773),

Gene: Alleb_103 Start: 57500, Stop: 57114, Start Num: 30
Candidate Starts for Alleb_103:

(14, 57593), (19, 57557), (25, 57524), (29, 57503), (Start: 30 @57500 has 6 MA's), (45, 57419), (52, 57401), (63, 57347), (68, 57323), (83, 57251), (92, 57215), (95, 57197),

Gene: AvGardian_52 Start: 34737, Stop: 35147, Start Num: 34
Candidate Starts for AvGardian_52:
(Start: 34 @34737 has 23 MA's), (44, 34788), (63, 34878), (64, 34881), (76, 34935), (81, 34965), (101, 35037),

Gene: BabyYoda_51 Start: 35131, Stop: 35568, Start Num: 34
Candidate Starts for BabyYoda_51:
(Start: 34 @35131 has 23 MA's), (43, 35179), (63, 35278), (64, 35281), (71, 35317), (84, 35380), (87, 35392), (95, 35431),

Gene: Bachaco_50 Start: 35861, Stop: 36301, Start Num: 34
Candidate Starts for Bachaco_50:
(Start: 34 @35861 has 23 MA's), (71, 36050), (103, 36200),

Gene: Big4_338 Start: 180229, Stop: 180705, Start Num: 33
Candidate Starts for Big4_338:
(Start: 33 @180229 has 4 MA's), (50, 180340), (54, 180358), (65, 180427), (69, 180445), (70, 180448), (92, 180541), (106, 180601),

Gene: Big4_12 Start: 5535, Stop: 6011, Start Num: 33
Candidate Starts for Big4_12:
(Start: 33 @5535 has 4 MA's), (50, 5646), (54, 5664), (65, 5733), (69, 5751), (70, 5754), (92, 5847), (106, 5907),

Gene: CN1A_12 Start: 5964, Stop: 6377, Start Num: 34
Candidate Starts for CN1A_12:
(9, 5682), (11, 5778), (Start: 34 @5964 has 23 MA's), (39, 5988), (43, 6012), (45, 6036), (62, 6102), (63, 6111), (66, 6129), (72, 6159), (75, 6168), (115, 6363), (116, 6366),

Gene: Cece_15 Start: 5418, Stop: 5840, Start Num: 27
Candidate Starts for Cece_15:
(Start: 27 @5418 has 2 MA's), (40, 5472), (42, 5484), (51, 5544), (63, 5607), (99, 5742),

Gene: Cece_317 Start: 173852, Stop: 174274, Start Num: 27
Candidate Starts for Cece_317:
(Start: 27 @173852 has 2 MA's), (40, 173906), (42, 173918), (51, 173978), (63, 174041), (99, 174176),

Gene: Celaena_49 Start: 35623, Stop: 36063, Start Num: 34
Candidate Starts for Celaena_49:
(Start: 34 @35623 has 23 MA's), (71, 35812), (103, 35962),

Gene: ChiliPepper_48 Start: 34921, Stop: 35364, Start Num: 34
Candidate Starts for ChiliPepper_48:
(Start: 34 @34921 has 23 MA's), (71, 35110), (86, 35182), (112, 35320),

Gene: DejaVu_108 Start: 57205, Stop: 56840, Start Num: 34
Candidate Starts for DejaVu_108:
(21, 57256), (Start: 34 @57205 has 23 MA's), (45, 57136), (62, 57076), (63, 57067), (68, 57043), (71, 57028), (105, 56878), (107, 56869),

Gene: Dennebes_81 Start: 39474, Stop: 38989, Start Num: 34
Candidate Starts for Dennebes_81:
(Start: 34 @39474 has 23 MA's), (41, 39435), (53, 39366), (56, 39345), (75, 39243), (77, 39225), (81, 39213), (82, 39207), (83, 39204),

Gene: DirtyBubble_50 Start: 34799, Stop: 35236, Start Num: 34
Candidate Starts for DirtyBubble_50:
(Start: 34 @34799 has 23 MA's), (43, 34847), (63, 34946), (64, 34949), (71, 34985), (84, 35048), (87, 35060), (95, 35099),

Gene: Dismas_48 Start: 34843, Stop: 35286, Start Num: 34
Candidate Starts for Dismas_48:
(Start: 34 @34843 has 23 MA's), (61, 34978), (62, 34981), (76, 35047), (87, 35104), (100, 35155), (109, 35206),

Gene: DustyDino_110 Start: 56887, Stop: 56450, Start Num: 36
Candidate Starts for DustyDino_110:
(Start: 36 @56887 has 32 MA's), (39, 56863), (42, 56842), (61, 56746), (63, 56734), (64, 56731), (73, 56689), (78, 56659), (86, 56626),

Gene: Elva_53 Start: 35217, Stop: 35639, Start Num: 34
Candidate Starts for Elva_53:
(Start: 34 @35217 has 23 MA's), (63, 35367), (64, 35370), (76, 35424), (98, 35523),

Gene: Erenyeager_107 Start: 55997, Stop: 55551, Start Num: 36
Candidate Starts for Erenyeager_107:
(1, 56621), (2, 56594), (3, 56573), (5, 56525), (6, 56411), (8, 56360), (12, 56168), (22, 56048), (Start: 36 @55997 has 32 MA's), (39, 55973), (42, 55952), (61, 55847), (63, 55835), (64, 55832), (73, 55790), (78, 55760),

Gene: Fabian_73 Start: 38951, Stop: 38469, Start Num: 36
Candidate Starts for Fabian_73:
(Start: 36 @38951 has 32 MA's), (45, 38879), (53, 38846), (65, 38768), (75, 38726), (99, 38618), (110, 38555), (118, 38513),

Gene: FlameThrower_48 Start: 34660, Stop: 35100, Start Num: 34
Candidate Starts for FlameThrower_48:
(Start: 34 @34660 has 23 MA's), (71, 34849), (103, 34999),

Gene: FlowerPower_74 Start: 38621, Stop: 38139, Start Num: 36
Candidate Starts for FlowerPower_74:
(Start: 36 @38621 has 32 MA's), (45, 38549), (53, 38516), (65, 38438), (75, 38396), (99, 38288), (110, 38225), (118, 38183),

Gene: Fork_103 Start: 55912, Stop: 55475, Start Num: 36
Candidate Starts for Fork_103:
(Start: 36 @55912 has 32 MA's), (39, 55888), (42, 55867), (61, 55771), (63, 55759), (64, 55756), (73, 55714), (78, 55684), (86, 55651),

Gene: Geostin_69 Start: 38621, Stop: 38139, Start Num: 36
Candidate Starts for Geostin_69:

(Start: 36 @38621 has 32 MA's), (45, 38549), (53, 38516), (65, 38438), (75, 38396), (99, 38288), (110, 38225), (118, 38183),

Gene: Gremlin23_74 Start: 38621, Stop: 38139, Start Num: 36
Candidate Starts for Gremlin23_74:
(Start: 36 @38621 has 32 MA's), (45, 38549), (53, 38516), (65, 38438), (75, 38396), (99, 38288), (110, 38225), (118, 38183),

Gene: HaugeAnator_76 Start: 38999, Stop: 38496, Start Num: 36
Candidate Starts for HaugeAnator_76:
(Start: 36 @38999 has 32 MA's), (41, 38963), (45, 38927), (53, 38891), (57, 38858), (65, 38810), (74, 38771), (99, 38660), (104, 38636), (111, 38582),

Gene: HaugeAnator_78 Start: 40177, Stop: 39656, Start Num: 36
Candidate Starts for HaugeAnator_78:
(Start: 36 @40177 has 32 MA's), (38, 40156), (43, 40129), (45, 40105), (57, 40030), (58, 40027), (62, 40000), (68, 39964), (75, 39934), (80, 39898), (82, 39886), (83, 39883), (110, 39745),

Gene: Hortus1_107 Start: 58256, Stop: 57870, Start Num: 30
Candidate Starts for Hortus1_107:
(14, 58349), (19, 58313), (25, 58280), (29, 58259), (Start: 30 @58256 has 6 MA's), (45, 58175), (52, 58157), (63, 58103), (68, 58079), (83, 58007), (92, 57971), (95, 57953),

Gene: Hubbs_107 Start: 57469, Stop: 57104, Start Num: 34
Candidate Starts for Hubbs_107:
(21, 57520), (Start: 34 @57469 has 23 MA's), (45, 57400), (62, 57340), (63, 57331), (68, 57307), (71, 57292), (105, 57142), (107, 57133),

Gene: Icarian_56 Start: 35804, Stop: 36241, Start Num: 34
Candidate Starts for Icarian_56:
(Start: 34 @35804 has 23 MA's), (43, 35852), (63, 35951), (64, 35954), (71, 35990), (87, 36065), (95, 36104), (110, 36185),

Gene: Immanuel3_76 Start: 40182, Stop: 39661, Start Num: 36
Candidate Starts for Immanuel3_76:
(Start: 36 @40182 has 32 MA's), (38, 40161), (43, 40134), (45, 40110), (57, 40035), (58, 40032), (62, 40005), (68, 39969), (75, 39939), (80, 39903), (82, 39891), (83, 39888), (110, 39750),

Gene: Immanuel3_74 Start: 39005, Stop: 38502, Start Num: 36
Candidate Starts for Immanuel3_74:
(Start: 36 @39005 has 32 MA's), (41, 38969), (45, 38933), (53, 38897), (65, 38816), (74, 38777), (99, 38666), (104, 38642), (111, 38588),

Gene: JPandJE_75 Start: 39350, Stop: 38847, Start Num: 36
Candidate Starts for JPandJE_75:
(Start: 36 @39350 has 32 MA's), (41, 39314), (45, 39278), (53, 39242), (57, 39209), (65, 39161), (74, 39122), (99, 39011), (104, 38987), (111, 38933),

Gene: JPandJE_77 Start: 40528, Stop: 40007, Start Num: 36
Candidate Starts for JPandJE_77:
(Start: 36 @40528 has 32 MA's), (38, 40507), (43, 40480), (44, 40477), (45, 40456), (57, 40381), (58, 40378), (62, 40351), (68, 40315), (75, 40285), (80, 40249), (82, 40237), (83, 40234), (110, 40096),

Gene: Katzastrophic_50 Start: 35170, Stop: 35610, Start Num: 34
Candidate Starts for Katzastrophic_50:
(Start: 34 @35170 has 23 MA's), (71, 35359), (103, 35509),

Gene: Kieran_48 Start: 34884, Stop: 35327, Start Num: 34
Candidate Starts for Kieran_48:
(7, 34482), (10, 34656), (13, 34737), (Start: 34 @34884 has 23 MA's), (71, 35073), (86, 35145), (112, 35283),

Gene: Kumquat_74 Start: 38229, Stop: 37786, Start Num: 32
Candidate Starts for Kumquat_74:
(20, 38286), (24, 38262), (Start: 32 @38229 has 3 MA's), (65, 38040), (93, 37926), (117, 37803),

Gene: Loviatar_90 Start: 36204, Stop: 36644, Start Num: 34
Candidate Starts for Loviatar_90:
(Start: 34 @36204 has 23 MA's), (43, 36252), (71, 36390), (84, 36453), (87, 36465), (95, 36507), (108, 36576),

Gene: Lyell_106 Start: 55834, Stop: 55397, Start Num: 36
Candidate Starts for Lyell_106:
(4, 56371), (6, 56248), (8, 56197), (12, 56005), (22, 55885), (Start: 36 @55834 has 32 MA's), (39, 55810), (42, 55789), (61, 55693), (63, 55681), (64, 55678), (73, 55636), (78, 55606), (86, 55573),

Gene: Manuel_74 Start: 38664, Stop: 38179, Start Num: 35
Candidate Starts for Manuel_74:
(20, 38724), (Start: 35 @38664 has 2 MA's), (49, 38565), (59, 38517), (60, 38514), (65, 38481), (75, 38439), (79, 38415), (106, 38295), (122, 38193),

Gene: Musetta_105 Start: 56187, Stop: 55750, Start Num: 36
Candidate Starts for Musetta_105:
(1, 56811), (2, 56784), (3, 56763), (5, 56715), (6, 56601), (8, 56550), (12, 56358), (22, 56238), (Start: 36 @56187 has 32 MA's), (39, 56163), (42, 56142), (61, 56046), (63, 56034), (64, 56031), (73, 55989), (78, 55959), (86, 55926),

Gene: Necrophoxinus_109 Start: 56843, Stop: 56406, Start Num: 36
Candidate Starts for Necrophoxinus_109:
(Start: 36 @56843 has 32 MA's), (39, 56819), (42, 56798), (61, 56702), (63, 56690), (64, 56687), (73, 56645), (78, 56615), (86, 56582),

Gene: Olicious_78 Start: 40180, Stop: 39659, Start Num: 36
Candidate Starts for Olicious_78:
(Start: 36 @40180 has 32 MA's), (38, 40159), (43, 40132), (45, 40108), (57, 40033), (58, 40030), (62, 40003), (68, 39967), (69, 39958), (75, 39937), (80, 39901), (82, 39889), (83, 39886), (110, 39748),

Gene: Olicious_76 Start: 39002, Stop: 38499, Start Num: 36
Candidate Starts for Olicious_76:
(Start: 36 @39002 has 32 MA's), (41, 38966), (45, 38930), (53, 38897), (65, 38813), (74, 38774), (89, 38702), (106, 38627), (111, 38585), (120, 38540),

Gene: OlinDD_107 Start: 58261, Stop: 57875, Start Num: 30
Candidate Starts for OlinDD_107:
(14, 58354), (19, 58318), (25, 58285), (29, 58264), (Start: 30 @58261 has 6 MA's), (45, 58180), (52, 58162), (63, 58108), (68, 58084), (83, 58012), (92, 57976), (95, 57958),

Gene: PauloDiaboli_327 Start: 168500, Stop: 168892, Start Num: 28
Candidate Starts for PauloDiaboli_327:
(Start: 28 @168500 has 2 MA's), (37, 168533), (43, 168563), (48, 168599), (85, 168755), (90, 168767), (96, 168794), (97, 168797), (119, 168878),

Gene: Pavlo_108 Start: 57864, Stop: 57499, Start Num: 34
Candidate Starts for Pavlo_108:
(21, 57915), (Start: 34 @57864 has 23 MA's), (45, 57795), (62, 57735), (63, 57726), (68, 57702), (71, 57687), (105, 57537), (107, 57528),

Gene: Percastrophe_78 Start: 40112, Stop: 39591, Start Num: 36
Candidate Starts for Percastrophe_78:
(Start: 36 @40112 has 32 MA's), (38, 40091), (43, 40064), (45, 40040), (57, 39965), (58, 39962), (62, 39935), (68, 39899), (75, 39869), (80, 39833), (82, 39821), (83, 39818), (110, 39680),

Gene: Percastrophe_76 Start: 38934, Stop: 38431, Start Num: 36
Candidate Starts for Percastrophe_76:
(Start: 36 @38934 has 32 MA's), (41, 38898), (45, 38862), (53, 38826), (57, 38793), (65, 38745), (74, 38706), (99, 38595), (104, 38571), (111, 38517), (122, 38451),

Gene: PhillyPhilly_105 Start: 56853, Stop: 56488, Start Num: 34
Candidate Starts for PhillyPhilly_105:
(21, 56904), (Start: 34 @56853 has 23 MA's), (45, 56784), (62, 56724), (63, 56715), (68, 56691), (71, 56676), (105, 56526), (107, 56517),

Gene: Pioneer3_107 Start: 58059, Stop: 57673, Start Num: 30
Candidate Starts for Pioneer3_107:
(14, 58152), (19, 58116), (25, 58083), (29, 58062), (Start: 30 @58059 has 6 MA's), (45, 57978), (52, 57960), (63, 57906), (68, 57882), (83, 57810), (92, 57774), (95, 57756),

Gene: Platte_106 Start: 57843, Stop: 57457, Start Num: 30
Candidate Starts for Platte_106:
(14, 57936), (19, 57900), (25, 57867), (29, 57846), (Start: 30 @57843 has 6 MA's), (45, 57762), (52, 57744), (63, 57690), (68, 57666), (83, 57594), (92, 57558), (95, 57540),

Gene: Quenya_51 Start: 35296, Stop: 35745, Start Num: 34
Candidate Starts for Quenya_51:
(15, 35191), (16, 35203), (Start: 34 @35296 has 23 MA's), (62, 35434), (68, 35467), (76, 35500), (87, 35557), (100, 35608),

Gene: RetrieverFever_74 Start: 38621, Stop: 38139, Start Num: 36
Candidate Starts for RetrieverFever_74:
(Start: 36 @38621 has 32 MA's), (45, 38549), (53, 38516), (65, 38438), (75, 38396), (99, 38288), (110, 38225), (118, 38183),

Gene: Rideau_80 Start: 39365, Stop: 38880, Start Num: 34
Candidate Starts for Rideau_80:
(Start: 34 @39365 has 23 MA's), (41, 39326), (53, 39257), (56, 39236), (75, 39134), (77, 39116), (81, 39104), (82, 39098), (83, 39095),

Gene: Roman_109 Start: 57913, Stop: 57548, Start Num: 34
Candidate Starts for Roman_109:

(21, 57964), (Start: 34 @57913 has 23 MA's), (45, 57844), (62, 57784), (63, 57775), (68, 57751), (71, 57736), (105, 57586), (107, 57577),

Gene: Romero_76 Start: 38995, Stop: 38492, Start Num: 36
Candidate Starts for Romero_76:
(Start: 36 @38995 has 32 MA's), (41, 38959), (45, 38923), (53, 38887), (65, 38806), (74, 38767), (99, 38656), (104, 38632), (111, 38578),

Gene: Romero_78 Start: 40173, Stop: 39652, Start Num: 36
Candidate Starts for Romero_78:
(Start: 36 @40173 has 32 MA's), (38, 40152), (43, 40125), (45, 40101), (57, 40026), (58, 40023), (62, 39996), (68, 39960), (69, 39951), (75, 39930), (80, 39894), (82, 39882), (83, 39879), (110, 39741),

Gene: Rona_48 Start: 34834, Stop: 35277, Start Num: 34
Candidate Starts for Rona_48:
(Start: 34 @34834 has 23 MA's), (61, 34969), (62, 34972), (76, 35038), (87, 35095), (100, 35146), (109, 35197),

Gene: RosePharie_77 Start: 39114, Stop: 38629, Start Num: 36
Candidate Starts for RosePharie_77:
(18, 39192), (31, 39123), (Start: 36 @39114 has 32 MA's), (55, 38994), (75, 38889), (113, 38703), (114, 38700), (123, 38637),

Gene: RunningBrook_109 Start: 56887, Stop: 56450, Start Num: 36
Candidate Starts for RunningBrook_109:
(Start: 36 @56887 has 32 MA's), (39, 56863), (42, 56842), (61, 56746), (63, 56734), (64, 56731), (73, 56689), (78, 56659), (86, 56626),

Gene: SanaSana_53 Start: 35511, Stop: 35948, Start Num: 34
Candidate Starts for SanaSana_53:
(Start: 34 @35511 has 23 MA's), (43, 35559), (63, 35658), (64, 35661), (71, 35697), (84, 35760), (87, 35772), (95, 35811),

Gene: Sharkboy_49 Start: 34933, Stop: 35376, Start Num: 34
Candidate Starts for Sharkboy_49:
(Start: 34 @34933 has 23 MA's), (61, 35068), (62, 35071), (76, 35137), (87, 35194), (100, 35245), (109, 35296),

Gene: Stella_77 Start: 39604, Stop: 39116, Start Num: 34
Candidate Starts for Stella_77:
(24, 39637), (Start: 34 @39604 has 23 MA's), (45, 39529), (49, 39499), (56, 39469), (67, 39400), (68, 39397), (91, 39292), (106, 39223),

Gene: StevieWelch_107 Start: 56127, Stop: 55690, Start Num: 36
Candidate Starts for StevieWelch_107:
(12, 56298), (26, 56160), (Start: 36 @56127 has 32 MA's), (39, 56103), (42, 56082), (61, 55986), (63, 55974), (78, 55899),

Gene: Stoor_51 Start: 35304, Stop: 35735, Start Num: 34
Candidate Starts for Stoor_51:
(Start: 34 @35304 has 23 MA's), (43, 35352), (63, 35451), (64, 35454), (71, 35490), (84, 35553), (87, 35565), (95, 35598), (110, 35679),

Gene: Stromboli_51 Start: 35169, Stop: 35606, Start Num: 34
Candidate Starts for Stromboli_51:
(Start: 34 @35169 has 23 MA's), (43, 35217), (63, 35316), (64, 35319), (71, 35355), (84, 35418), (87, 35430), (95, 35469),

Gene: Tandem_107 Start: 58139, Stop: 57753, Start Num: 30
Candidate Starts for Tandem_107:
(14, 58232), (19, 58196), (25, 58163), (29, 58142), (Start: 30 @58139 has 6 MA's), (45, 58058), (52, 58040), (63, 57986), (68, 57962), (83, 57890), (92, 57854), (95, 57836),

Gene: ToriToki_76 Start: 38998, Stop: 38495, Start Num: 36
Candidate Starts for ToriToki_76:
(Start: 36 @38998 has 32 MA's), (41, 38962), (45, 38926), (53, 38890), (57, 38857), (65, 38809), (74, 38770), (99, 38659), (104, 38635), (111, 38581), (122, 38515),

Gene: ToriToki_78 Start: 40176, Stop: 39655, Start Num: 36
Candidate Starts for ToriToki_78:
(Start: 36 @40176 has 32 MA's), (38, 40155), (43, 40128), (45, 40104), (57, 40029), (58, 40026), (62, 39999), (68, 39963), (75, 39933), (80, 39897), (82, 39885), (83, 39882), (110, 39744),

Gene: Treat_78 Start: 40051, Stop: 39530, Start Num: 35
Candidate Starts for Treat_78:
(Start: 35 @40051 has 2 MA's), (38, 40030), (43, 40003), (45, 39979), (57, 39904), (58, 39901), (68, 39838), (75, 39808), (80, 39772), (82, 39760), (83, 39757), (110, 39619), (121, 39556),

Gene: Treat_76 Start: 38873, Stop: 38370, Start Num: 36
Candidate Starts for Treat_76:
(Start: 36 @38873 has 32 MA's), (41, 38837), (45, 38801), (53, 38765), (57, 38732), (63, 38699), (65, 38684), (74, 38645), (99, 38534), (104, 38510), (111, 38456),

Gene: Vorvolakos_75 Start: 38620, Stop: 38138, Start Num: 36
Candidate Starts for Vorvolakos_75:
(Start: 36 @38620 has 32 MA's), (45, 38548), (53, 38515), (65, 38437), (75, 38395), (99, 38287), (110, 38224), (118, 38182),

Gene: WRightOn_78 Start: 38385, Stop: 37942, Start Num: 32
Candidate Starts for WRightOn_78:
(20, 38442), (24, 38418), (Start: 32 @38385 has 3 MA's), (65, 38196), (93, 38082), (117, 37959),

Gene: Welcome_109 Start: 56727, Stop: 56290, Start Num: 36
Candidate Starts for Welcome_109:
(Start: 36 @56727 has 32 MA's), (39, 56703), (42, 56682), (61, 56586), (63, 56574), (64, 56571), (73, 56529), (78, 56499), (86, 56466),

Gene: Wolfstar_113 Start: 59574, Stop: 59188, Start Num: 30
Candidate Starts for Wolfstar_113:
(17, 59646), (23, 59601), (Start: 30 @59574 has 6 MA's), (47, 59481), (56, 59442), (63, 59409), (68, 59385), (71, 59373), (94, 59277),

Gene: Yuma_105 Start: 55848, Stop: 55411, Start Num: 36
Candidate Starts for Yuma_105:
(Start: 36 @55848 has 32 MA's), (39, 55824), (42, 55803), (61, 55707), (63, 55695), (64, 55692), (73, 55650), (78, 55620), (86, 55587),

Gene: Zeigle_74 Start: 38229, Stop: 37786, Start Num: 32
Candidate Starts for Zeigle_74:
(20, 38286), (24, 38262), (Start: 32 @38229 has 3 MA's), (65, 38040), (93, 37926), (117, 37803),

Gene: ZooBear_78 Start: 40177, Stop: 39656, Start Num: 36
Candidate Starts for ZooBear_78:
(Start: 36 @40177 has 32 MA's), (38, 40156), (43, 40129), (45, 40105), (57, 40030), (58, 40027), (62, 40000), (68, 39964), (75, 39934), (80, 39898), (82, 39886), (83, 39883), (110, 39745),

Gene: ZooBear_76 Start: 38999, Stop: 38496, Start Num: 36
Candidate Starts for ZooBear_76:
(Start: 36 @38999 has 32 MA's), (41, 38963), (45, 38927), (53, 38891), (57, 38858), (65, 38810), (74, 38771), (99, 38660), (104, 38636), (111, 38582),

Gene: Zooman_323 Start: 180374, Stop: 180850, Start Num: 33
Candidate Starts for Zooman_323:
(Start: 33 @180374 has 4 MA's), (46, 180458), (50, 180485), (65, 180572), (69, 180590), (92, 180686), (96, 180707), (102, 180722), (106, 180746),

Gene: Zooman_10 Start: 4723, Stop: 5199, Start Num: 33
Candidate Starts for Zooman_10:
(Start: 33 @4723 has 4 MA's), (46, 4807), (50, 4834), (65, 4921), (69, 4939), (92, 5035), (96, 5056), (102, 5071), (106, 5095),