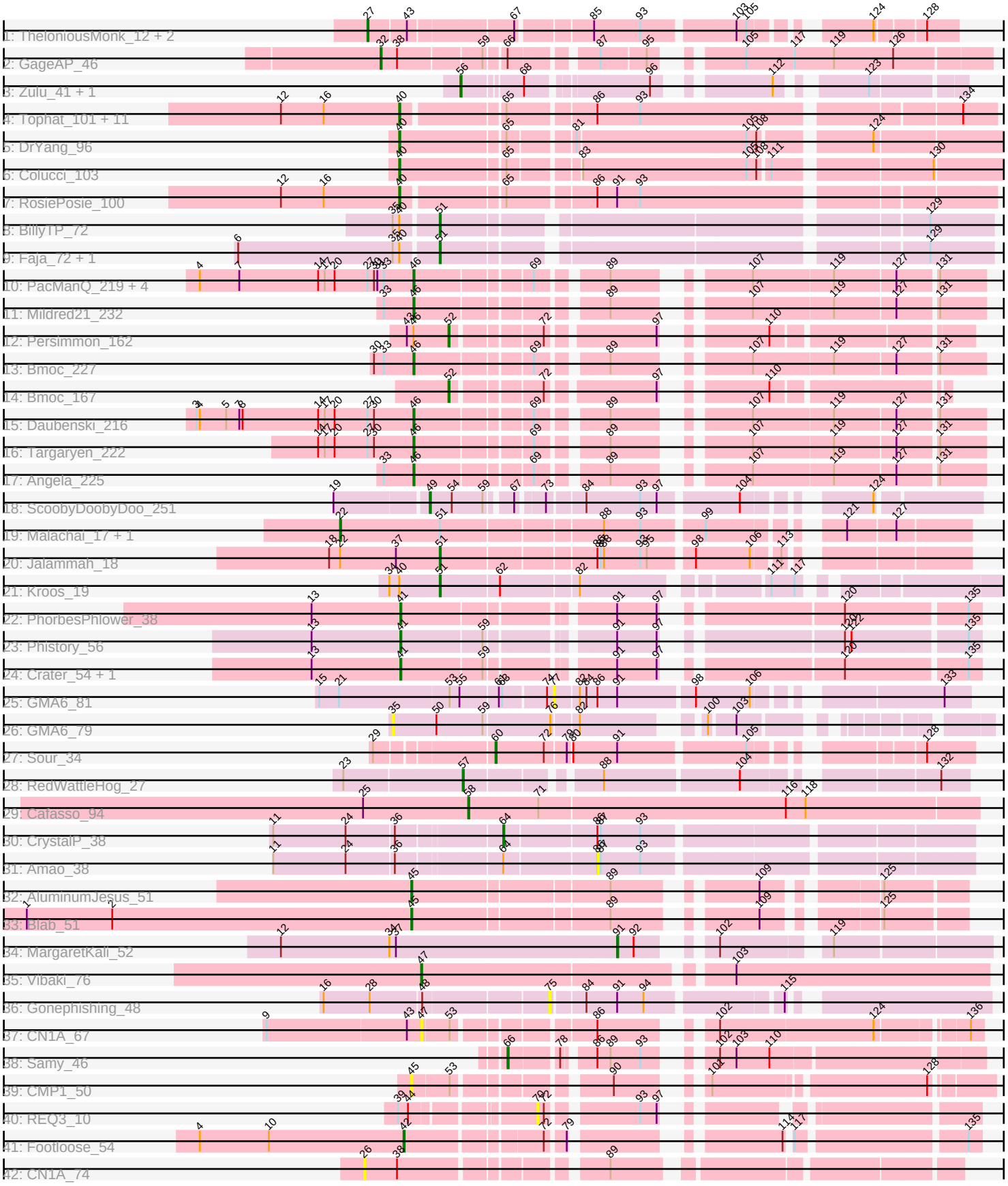
Pham 196545


1: TheloniousMonk_12 + 2
2: GageAP_46
3: Zulu_41 + 1
4: Tophat_101 + 11
5: DrYang_96
6: Colucci_103
7: RosiePosie_100
8: BillyTP_72
9: Faja_72 + 1
10: PacManQ_219 + 4
11: Mildred21_232
12: Persimmon_162
13: Bmoc_227
14: Bmoc_167
15: Daubenski_216
16: Targaryen_222
17: Angela_225
18: ScoobyDoobyDoo_251
19: Malachai_17 + 1
20: Jalammah_18
21: Kroos_19
22: PhorbesPhlower_38
23: Phistory_56
24: Crater_54 + 1
25: GMA6_81
26: GMA6_79
27: Sour_34
28: RedWattleHog_27
29: Cafasso_94
30: CrystalP_38
31: Amao_38
32: AluminumJesus_51
33: Blab_51
34: MargaretKali_52
35: Vibaki_76
36: Gonephishing_48
37: CN1A_67
38: Samy_46
39: CMP1_50
40: REQ3_10
41: Footloose_54
42: CN1A_74

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 196545 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196545 has 63 members, 8 are drafts.

Phages represented in each track:
- Track 1 : TheloniousMonk_12, Target_12, Gwendoluna_12
- Track 2 : GageAP_46
- Track 3 : Zulu_41, Tucker_41
- Track 4 : Tophat_101, JaNo_99, HumptyDumpty_100, Linus_100, Kabreeze_100, EdgarPoe_100, Scavito_101, Chubster_100, PrincessTrina_101, Chipper1996_1010, Chocolat_100, Mordred_100
- Track 5 : DrYang_96
- Track 6 : Colucci_103
- Track 7 : RosiePosie_100
- Track 8 : BillyTP_72
- Track 9 : Faja_72, Hestia_63
- Track 10 : PacManQ_219, Sushi23_223, Lululemon_219, Cursive_225, Larnav_222
- Track 11 : Mildred21_232
- Track 12 : Persimmon_162
- Track 13 : Bmoc_227
- Track 14 : Bmoc_167
- Track 15 : Daubenski_216
- Track 16 : Targaryen_222
- Track 17 : Angela_225
- Track 18 : ScoobyDoobyDoo_251
- Track 19 : Malachai_17, Begonia_17
- Track 20 : Jalammah_18
- Track 21 : Kroos_19
- Track 22 : PhorbesPhlower_38
- Track 23 : Phistory_56
- Track 24 : Crater_54, Apricot_54
- Track 25 : GMA6_81
- Track 26 : GMA6_79
- Track 27 : Sour_34
- Track 28 : RedWattleHog_27
- Track 29 : Cafasso_94
- Track 30 : CrystalP_38
- Track 31 : Amao_38
- Track 32 : AluminumJesus_51
- Track 33 : Blab_51
- Track 34 : MargaretKali_52
- Track 35 : Vibaki_76

• Track 36 : Gonephishing_48
• Track 37 : CN1A_67
• Track 38 : Samy_46
• Track 39 : CMP1_50
• Track 40 : REQ3_10
• Track 41 : Footloose_54
• Track 42 : CN1A_74

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 15 of the 55 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Chipper1996_1010, Chocolat_100, Chubster_100, Colucci_103, DrYang_96, EdgarPoe_100, HumptyDumpty_100, JaNo_99, Kabreeze_100, Linus_100, Mordred_100, PrincessTrina_101, RosiePosie_100, Scavito_101, Tophat_101,

Genes that have the "Most Annotated" start but do not call it:
• BillyTP_72, Faja_72, Hestia_63, Kroos_19,

Genes that do not have the "Most Annotated" start:
• AluminumJesus_51, Amao_38, Angela_225, Apricot_54, Begonia_17, Blab_51, Bmoc_167, Bmoc_227, CMP1_50, CN1A_67, CN1A_74, Cafasso_94, Crater_54, CrystalP_38, Cursive_225, Daubenski_216, Footloose_54, GMA6_79, GMA6_81, GageAP_46, Gonephishing_48, Gwendoluna_12, Jalammah_18, Larnav_222, Lululemon_219, Malachai_17, MargaretKali_52, Mildred21_232, PacManQ_219, Persimmon_162, Phistory_56, PhorbesPhlower_38, REQ3_10, RedWattleHog_27, Samy_46, ScoobyDoobyDoo_251, Sour_34, Sushi23_223, Targaryen_222, Target_12, TheloniousMonk_12, Tucker_41, Vibaki_76, Zulu_41,

Summary by start number:

Start 22:
• Found in 3 of 63 (4.8%) of genes in pham
• Manual Annotations of this start: 2 of 55
• Called 66.7% of time when present
• Phage (with cluster) where this start called: Begonia_17 (CV), Malachai_17 (CV),

Start 26:
• Found in 1 of 63 (1.6%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: CN1A_74 (singleton),

Start 27:
• Found in 10 of 63 (15.9%) of genes in pham
• Manual Annotations of this start: 3 of 55
• Called 30.0% of time when present

• Phage (with cluster) where this start called: Gwendoluna_12 (A1), Target_12 (A1), TheloniousMonk_12 (A1),

Start 32:
• Found in 1 of 63 (1.6%) of genes in pham
• Manual Annotations of this start: 1 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: GageAP_46 (A1),

Start 35:
• Found in 4 of 63 (6.3%) of genes in pham
• No Manual Annotations of this start.
• Called 25.0% of time when present
• Phage (with cluster) where this start called: GMA6_79 (DQ),

Start 40:
• Found in 19 of 63 (30.2%) of genes in pham
• Manual Annotations of this start: 15 of 55
• Called 78.9% of time when present
• Phage (with cluster) where this start called: Chipper1996_1010 (AR), Chocolat_100 (AR), Chubster_100 (AR), Colucci_103 (AR), DrYang_96 (AR), EdgarPoe_100 (AR), HumptyDumpty_100 (AR), JaNo_99 (AR), Kabreeze_100 (AR), Linus_100 (AR), Mordred_100 (AR), PrincessTrina_101 (AR), RosiePosie_100 (AR), Scavito_101 (AR), Tophat_101 (AR),

Start 41:
• Found in 4 of 63 (6.3%) of genes in pham
• Manual Annotations of this start: 4 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Apricot_54 (DN3), Crater_54 (DN3), Phistory_56 (DN1), PhorbesPhlower_38 (DH),

Start 42:
• Found in 1 of 63 (1.6%) of genes in pham
• Manual Annotations of this start: 1 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Footloose_54 (singleton),

Start 45:
• Found in 3 of 63 (4.8%) of genes in pham
• Manual Annotations of this start: 2 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: AluminumJesus_51 (EG), Blab_51 (EG), CMP1_50 (singleton),

Start 46:
• Found in 11 of 63 (17.5%) of genes in pham
• Manual Annotations of this start: 10 of 55
• Called 90.9% of time when present
• Phage (with cluster) where this start called: Angela_225 (BE1), Bmoc_227 (BE1), Cursive_225 (BE1), Daubenski_216 (BE1), Larnav_222 (BE1), Lululemon_219 (BE1), Mildred21_232 (BE1), PacManQ_219 (BE1), Sushi23_223 (BE1), Targaryen_222 (BE1),

Start 47:
• Found in 2 of 63 (3.2%) of genes in pham
• Manual Annotations of this start: 1 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: CN1A_67 (singleton), Vibaki_76 (FL),

Start 49:
• Found in 1 of 63 (1.6%) of genes in pham
• Manual Annotations of this start: 1 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: ScoobyDoobyDoo_251 (C2),

Start 51:
• Found in 7 of 63 (11.1%) of genes in pham
• Manual Annotations of this start: 5 of 55
• Called 71.4% of time when present
• Phage (with cluster) where this start called: BillyTP_72 (AY), Faja_72 (AY), Hestia_63 (AY), Jalammah_18 (CV), Kroos_19 (DE1),

Start 52:
• Found in 2 of 63 (3.2%) of genes in pham
• Manual Annotations of this start: 2 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Bmoc_167 (BE1), Persimmon_162 (BE1),

Start 56:
• Found in 2 of 63 (3.2%) of genes in pham
• Manual Annotations of this start: 2 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Tucker_41 (A6), Zulu_41 (A6),

Start 57:
• Found in 1 of 63 (1.6%) of genes in pham
• Manual Annotations of this start: 1 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: RedWattleHog_27 (DX),

Start 58:
• Found in 1 of 63 (1.6%) of genes in pham
• Manual Annotations of this start: 1 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Cafasso_94 (DZ),

Start 60:
• Found in 1 of 63 (1.6%) of genes in pham
• Manual Annotations of this start: 1 of 55
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Sour_34 (DR),

Start 64:
• Found in 2 of 63 (3.2%) of genes in pham

• Manual Annotations of this start: 1 of 55
• Called 50.0% of time when present
• Phage (with cluster) where this start called: CrystalP_38 (E),

Start 66:
• Found in 2 of 63 (3.2%) of genes in pham
• Manual Annotations of this start: 1 of 55
• Called 50.0% of time when present
• Phage (with cluster) where this start called: Samy_46 (singleton),

Start 70:
• Found in 1 of 63 (1.6%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: REQ3_10 (singleton),

Start 75:
• Found in 1 of 63 (1.6%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Gonephishing_48 (J),

Start 77:
• Found in 1 of 63 (1.6%) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: GMA6_81 (DQ),

Start 86:
• Found in 19 of 63 (30.2%) of genes in pham
• No Manual Annotations of this start.
• Called 5.3% of time when present
• Phage (with cluster) where this start called: Amao_38 (E),

Start 91:
• Found in 9 of 63 (14.3%) of genes in pham
• Manual Annotations of this start: 1 of 55
• Called 11.1% of time when present
• Phage (with cluster) where this start called: MargaretKali_52 (FB),

Summary by clusters:

There are 21 clusters represented in this pham: DN1, singleton, E, DX, DH, DE1, EG, J, A1, FB, AR, DZ, FL, DN3, A6, AY, C2, BE1, DR, CV, DQ,

Info for manual annotations of cluster A1:
•Start number 27 was manually annotated 3 times for cluster A1.
•Start number 32 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster A6:
•Start number 56 was manually annotated 2 times for cluster A6.

Info for manual annotations of cluster AR:

•Start number 40 was manually annotated 15 times for cluster AR.

Info for manual annotations of cluster AY:
•Start number 51 was manually annotated 3 times for cluster AY.

Info for manual annotations of cluster BE1:
•Start number 46 was manually annotated 10 times for cluster BE1.
•Start number 52 was manually annotated 2 times for cluster BE1.

Info for manual annotations of cluster C2:
•Start number 49 was manually annotated 1 time for cluster C2.

Info for manual annotations of cluster CV:
•Start number 22 was manually annotated 2 times for cluster CV.
•Start number 51 was manually annotated 1 time for cluster CV.

Info for manual annotations of cluster DE1:
•Start number 51 was manually annotated 1 time for cluster DE1.

Info for manual annotations of cluster DH:
•Start number 41 was manually annotated 1 time for cluster DH.

Info for manual annotations of cluster DN1:
•Start number 41 was manually annotated 1 time for cluster DN1.

Info for manual annotations of cluster DN3:
•Start number 41 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DR:
•Start number 60 was manually annotated 1 time for cluster DR.

Info for manual annotations of cluster DX:
•Start number 57 was manually annotated 1 time for cluster DX.

Info for manual annotations of cluster DZ:
•Start number 58 was manually annotated 1 time for cluster DZ.

Info for manual annotations of cluster E:
•Start number 64 was manually annotated 1 time for cluster E.

Info for manual annotations of cluster EG:
•Start number 45 was manually annotated 2 times for cluster EG.

Info for manual annotations of cluster FB:
•Start number 91 was manually annotated 1 time for cluster FB.

Info for manual annotations of cluster FL:
•Start number 47 was manually annotated 1 time for cluster FL.

Gene Information:

Gene: AluminumJesus_51 Start: 40979, Stop: 40554, Start Num: 45
Candidate Starts for AluminumJesus_51:
(Start: 45 @40979 has 2 MA's), (89, 40811), (109, 40709), (125, 40625),

Gene: Amao_38 Start: 33060, Stop: 32746, Start Num: 86
Candidate Starts for Amao_38:
(11, 33333), (24, 33267), (36, 33225), (Start: 64 @33138 has 1 MA's), (86, 33060), (87, 33057), (93, 33021),

Gene: Angela_225 Start: 112366, Stop: 112806, Start Num: 46
Candidate Starts for Angela_225:
(33, 112339), (Start: 46 @112366 has 10 MA's), (69, 112462), (89, 112513), (107, 112606), (119, 112678), (127, 112732), (131, 112765),

Gene: Apricot_54 Start: 35119, Stop: 35568, Start Num: 41
Candidate Starts for Apricot_54:
(13, 35038), (Start: 41 @35119 has 4 MA's), (59, 35191), (Start: 91 @35287 has 1 MA's), (97, 35323), (120, 35452), (135, 35557),

Gene: Begonia_17 Start: 10279, Stop: 10785, Start Num: 22
Candidate Starts for Begonia_17:
(Start: 22 @10279 has 2 MA's), (Start: 51 @10369 has 5 MA's), (88, 10504), (93, 10537), (99, 10588), (121, 10681), (127, 10723),

Gene: BillyTP_72 Start: 38938, Stop: 39390, Start Num: 51
Candidate Starts for BillyTP_72:
(35, 38902), (Start: 40 @38908 has 15 MA's), (Start: 51 @38938 has 5 MA's), (129, 39334),

Gene: Blab_51 Start: 40826, Stop: 40401, Start Num: 45
Candidate Starts for Blab_51:
(1, 41177), (2, 41099), (Start: 45 @40826 has 2 MA's), (89, 40658), (109, 40556), (125, 40472),

Gene: Bmoc_227 Start: 112807, Stop: 113247, Start Num: 46
Candidate Starts for Bmoc_227:
(30, 112771), (33, 112780), (Start: 46 @112807 has 10 MA's), (69, 112903), (89, 112954), (107, 113047), (119, 113119), (127, 113173), (131, 113206),

Gene: Bmoc_167 Start: 91666, Stop: 92031, Start Num: 52
Candidate Starts for Bmoc_167:
(Start: 52 @91666 has 2 MA's), (72, 91735), (97, 91822), (110, 91888),

Gene: CMP1_50 Start: 47245, Stop: 46814, Start Num: 45
Candidate Starts for CMP1_50:
(Start: 45 @47245 has 2 MA's), (53, 47212), (90, 47098), (101, 47044), (128, 46864),

Gene: CN1A_67 Start: 52198, Stop: 51770, Start Num: 47
Candidate Starts for CN1A_67:
(9, 52336), (43, 52210), (Start: 47 @52198 has 1 MA's), (53, 52174), (86, 52066), (102, 51991), (124, 51853), (136, 51781),

Gene: CN1A_74 Start: 54320, Stop: 53856, Start Num: 26

Candidate Starts for CN1A_74:
(26, 54320), (38, 54290), (89, 54131),

Gene: Cafasso_94 Start: 55360, Stop: 55818, Start Num: 58
Candidate Starts for Cafasso_94:
(25, 55264), (Start: 58 @55360 has 1 MA's), (71, 55423), (116, 55645), (118, 55663),

Gene: Chipper1996_1010 Start: 63867, Stop: 64361, Start Num: 40
Candidate Starts for Chipper1996_1010:
(12, 63759), (16, 63798), (Start: 40 @63867 has 15 MA's), (65, 63951), (86, 64023), (93, 64062), (134, 64332),

Gene: Chocolat_100 Start: 63574, Stop: 64068, Start Num: 40
Candidate Starts for Chocolat_100:
(12, 63466), (16, 63505), (Start: 40 @63574 has 15 MA's), (65, 63658), (86, 63730), (93, 63769), (134, 64039),

Gene: Chubster_100 Start: 63814, Stop: 64308, Start Num: 40
Candidate Starts for Chubster_100:
(12, 63706), (16, 63745), (Start: 40 @63814 has 15 MA's), (65, 63898), (86, 63970), (93, 64009), (134, 64279),

Gene: Colucci_103 Start: 64172, Stop: 64684, Start Num: 40
Candidate Starts for Colucci_103:
(Start: 40 @64172 has 15 MA's), (65, 64262), (83, 64316), (105, 64463), (108, 64472), (111, 64481), (130, 64610),

Gene: Crater_54 Start: 35514, Stop: 35963, Start Num: 41
Candidate Starts for Crater_54:
(13, 35433), (Start: 41 @35514 has 4 MA's), (59, 35586), (Start: 91 @35682 has 1 MA's), (97, 35718), (120, 35847), (135, 35952),

Gene: CrystalP_38 Start: 33934, Stop: 33542, Start Num: 64
Candidate Starts for CrystalP_38:
(11, 34129), (24, 34063), (36, 34021), (Start: 64 @33934 has 1 MA's), (86, 33856), (87, 33853), (93, 33817),

Gene: Cursive_225 Start: 113007, Stop: 113447, Start Num: 46
Candidate Starts for Cursive_225:
(4, 112812), (7, 112848), (14, 112920), (17, 112926), (20, 112935), (Start: 27 @112965 has 3 MA's), (30, 112971), (31, 112974), (33, 112980), (Start: 46 @113007 has 10 MA's), (69, 113103), (89, 113154), (107, 113247), (119, 113319), (127, 113373), (131, 113406),

Gene: Daubenski_216 Start: 113389, Stop: 113829, Start Num: 46
Candidate Starts for Daubenski_216:
(3, 113191), (4, 113194), (5, 113218), (7, 113230), (8, 113233), (14, 113302), (17, 113308), (20, 113317), (Start: 27 @113347 has 3 MA's), (30, 113353), (Start: 46 @113389 has 10 MA's), (69, 113485), (89, 113536), (107, 113629), (119, 113701), (127, 113755), (131, 113788),

Gene: DrYang_96 Start: 63051, Stop: 63563, Start Num: 40
Candidate Starts for DrYang_96:
(Start: 40 @63051 has 15 MA's), (65, 63141), (81, 63192), (105, 63342), (108, 63351), (124, 63438),

Gene: EdgarPoe_100 Start: 63731, Stop: 64225, Start Num: 40
Candidate Starts for EdgarPoe_100:
(12, 63623), (16, 63662), (Start: 40 @63731 has 15 MA's), (65, 63815), (86, 63887), (93, 63926), (134, 64196),

Gene: Faja_72 Start: 38688, Stop: 39140, Start Num: 51
Candidate Starts for Faja_72:
(6, 38511), (35, 38652), (Start: 40 @38658 has 15 MA's), (Start: 51 @38688 has 5 MA's), (129, 39084),

Gene: Footloose_54 Start: 31404, Stop: 31829, Start Num: 42
Candidate Starts for Footloose_54:
(4, 31218), (10, 31281), (Start: 42 @31404 has 1 MA's), (72, 31515), (79, 31530), (114, 31677), (117, 31680), (135, 31818),

Gene: GMA6_81 Start: 64168, Stop: 64497, Start Num: 77
Candidate Starts for GMA6_81:
(15, 63964), (21, 63982), (53, 64081), (55, 64090), (61, 64123), (63, 64126), (74, 64162), (77, 64168), (82, 64189), (84, 64195), (86, 64204), (Start: 91 @64222 has 1 MA's), (98, 64288), (106, 64336), (133, 64474),

Gene: GMA6_79 Start: 60811, Stop: 61245, Start Num: 35
Candidate Starts for GMA6_79:
(35, 60811), (50, 60850), (59, 60892), (76, 60946), (82, 60967), (100, 61051), (103, 61072),

Gene: GageAP_46 Start: 34874, Stop: 34401, Start Num: 32
Candidate Starts for GageAP_46:
(Start: 32 @34874 has 1 MA's), (38, 34859), (59, 34787), (Start: 66 @34772 has 1 MA's), (87, 34709), (95, 34670), (105, 34616), (117, 34574), (119, 34538), (126, 34484),

Gene: Gonephishing_48 Start: 38804, Stop: 38457, Start Num: 75
Candidate Starts for Gonephishing_48:
(16, 38996), (28, 38954), (48, 38909), (75, 38804), (84, 38777), (Start: 91 @38750 has 1 MA's), (94, 38726), (115, 38615),

Gene: Gwendoluna_12 Start: 7666, Stop: 8121, Start Num: 27
Candidate Starts for Gwendoluna_12:
(Start: 27 @7666 has 3 MA's), (43, 7699), (67, 7786), (85, 7846), (93, 7888), (103, 7966), (105, 7975), (124, 8056), (128, 8095),

Gene: Hestia_63 Start: 34911, Stop: 35363, Start Num: 51
Candidate Starts for Hestia_63:
(6, 34734), (35, 34875), (Start: 40 @34881 has 15 MA's), (Start: 51 @34911 has 5 MA's), (129, 35307),

Gene: HumptyDumpty_100 Start: 63534, Stop: 64028, Start Num: 40
Candidate Starts for HumptyDumpty_100:
(12, 63426), (16, 63465), (Start: 40 @63534 has 15 MA's), (65, 63618), (86, 63690), (93, 63729), (134, 63999),

Gene: JaNo_99 Start: 63505, Stop: 63999, Start Num: 40
Candidate Starts for JaNo_99:

(12, 63397), (16, 63436), (Start: 40 @63505 has 15 MA's), (65, 63589), (86, 63661), (93, 63700), (134, 63970),

Gene: Jalammah_18 Start: 10634, Stop: 11050, Start Num: 51
Candidate Starts for Jalammah_18:
(18, 10535), (Start: 22 @10544 has 2 MA's), (37, 10595), (Start: 51 @10634 has 5 MA's), (86, 10763), (87, 10766), (88, 10769), (93, 10802), (95, 10808), (98, 10844), (106, 10892), (113, 10913),

Gene: Kabreeze_100 Start: 63591, Stop: 64085, Start Num: 40
Candidate Starts for Kabreeze_100:
(12, 63483), (16, 63522), (Start: 40 @63591 has 15 MA's), (65, 63675), (86, 63747), (93, 63786), (134, 64056),

Gene: Kroos_19 Start: 14665, Stop: 15102, Start Num: 51
Candidate Starts for Kroos_19:
(34, 14620), (Start: 40 @14629 has 15 MA's), (Start: 51 @14665 has 5 MA's), (62, 14716), (82, 14782), (111, 14926), (117, 14947),

Gene: Larnav_222 Start: 113173, Stop: 113613, Start Num: 46
Candidate Starts for Larnav_222:
(4, 112978), (7, 113014), (14, 113086), (17, 113092), (20, 113101), (Start: 27 @113131 has 3 MA's), (30, 113137), (31, 113140), (33, 113146), (Start: 46 @113173 has 10 MA's), (69, 113269), (89, 113320), (107, 113413), (119, 113485), (127, 113539), (131, 113572),

Gene: Linus_100 Start: 64039, Stop: 64533, Start Num: 40
Candidate Starts for Linus_100:
(12, 63931), (16, 63970), (Start: 40 @64039 has 15 MA's), (65, 64123), (86, 64195), (93, 64234), (134, 64504),

Gene: Lululemon_219 Start: 112060, Stop: 112500, Start Num: 46
Candidate Starts for Lululemon_219:
(4, 111865), (7, 111901), (14, 111973), (17, 111979), (20, 111988), (Start: 27 @112018 has 3 MA's), (30, 112024), (31, 112027), (33, 112033), (Start: 46 @112060 has 10 MA's), (69, 112156), (89, 112207), (107, 112300), (119, 112372), (127, 112426), (131, 112459),

Gene: Malachai_17 Start: 10279, Stop: 10785, Start Num: 22
Candidate Starts for Malachai_17:
(Start: 22 @10279 has 2 MA's), (Start: 51 @10369 has 5 MA's), (88, 10504), (93, 10537), (99, 10588), (121, 10681), (127, 10723),

Gene: MargaretKali_52 Start: 31304, Stop: 31582, Start Num: 91
Candidate Starts for MargaretKali_52:
(12, 30998), (34, 31097), (37, 31103), (Start: 91 @31304 has 1 MA's), (92, 31319), (102, 31361), (119, 31445),

Gene: Mildred21_232 Start: 111445, Stop: 111885, Start Num: 46
Candidate Starts for Mildred21_232:
(33, 111418), (Start: 46 @111445 has 10 MA's), (89, 111592), (107, 111685), (119, 111757), (127, 111811), (131, 111844),

Gene: Mordred_100 Start: 63630, Stop: 64124, Start Num: 40
Candidate Starts for Mordred_100:

(12, 63522), (16, 63561), (Start: 40 @63630 has 15 MA's), (65, 63714), (86, 63786), (93, 63825), (134, 64095),

Gene: PacManQ_219 Start: 112060, Stop: 112500, Start Num: 46
Candidate Starts for PacManQ_219:
(4, 111865), (7, 111901), (14, 111973), (17, 111979), (20, 111988), (Start: 27 @112018 has 3 MA's), (30, 112024), (31, 112027), (33, 112033), (Start: 46 @112060 has 10 MA's), (69, 112156), (89, 112207), (107, 112300), (119, 112372), (127, 112426), (131, 112459),

Gene: Persimmon_162 Start: 90873, Stop: 91259, Start Num: 52
Candidate Starts for Persimmon_162:
(43, 90837), (Start: 46 @90843 has 10 MA's), (Start: 52 @90873 has 2 MA's), (72, 90942), (97, 91029), (110, 91095),

Gene: Phistory_56 Start: 36066, Stop: 36515, Start Num: 41
Candidate Starts for Phistory_56:
(13, 35985), (Start: 41 @36066 has 4 MA's), (59, 36138), (Start: 91 @36234 has 1 MA's), (97, 36270), (120, 36399), (122, 36405), (135, 36504),

Gene: PhorbesPhlower_38 Start: 28562, Stop: 29011, Start Num: 41
Candidate Starts for PhorbesPhlower_38:
(13, 28481), (Start: 41 @28562 has 4 MA's), (Start: 91 @28730 has 1 MA's), (97, 28766), (120, 28895), (135, 29000),

Gene: PrincessTrina_101 Start: 63821, Stop: 64315, Start Num: 40
Candidate Starts for PrincessTrina_101:
(12, 63713), (16, 63752), (Start: 40 @63821 has 15 MA's), (65, 63905), (86, 63977), (93, 64016), (134, 64286),

Gene: REQ3_10 Start: 4829, Stop: 5143, Start Num: 70
Candidate Starts for REQ3_10:
(39, 4724), (44, 4733), (70, 4829), (72, 4835), (93, 4904), (97, 4919),

Gene: RedWattleHog_27 Start: 28545, Stop: 28156, Start Num: 57
Candidate Starts for RedWattleHog_27:
(23, 28650), (Start: 57 @28545 has 1 MA's), (88, 28443), (104, 28326), (132, 28179),

Gene: RosiePosie_100 Start: 63686, Stop: 64180, Start Num: 40
Candidate Starts for RosiePosie_100:
(12, 63578), (16, 63617), (Start: 40 @63686 has 15 MA's), (65, 63770), (86, 63842), (Start: 91 @63860 has 1 MA's), (93, 63881),

Gene: Samy_46 Start: 31456, Stop: 31815, Start Num: 66
Candidate Starts for Samy_46:
(Start: 66 @31456 has 1 MA's), (78, 31495), (86, 31516), (89, 31528), (93, 31555), (102, 31591), (103, 31606), (110, 31636),

Gene: Scavito_101 Start: 63679, Stop: 64173, Start Num: 40
Candidate Starts for Scavito_101:
(12, 63571), (16, 63610), (Start: 40 @63679 has 15 MA's), (65, 63763), (86, 63835), (93, 63874), (134, 64144),

Gene: ScoobyDoobyDoo_251 Start: 151338, Stop: 151754, Start Num: 49

Candidate Starts for ScoobyDoobyDoo_251:
(19, 151257), (Start: 49 @151338 has 1 MA's), (54, 151356), (59, 151383), (67, 151401), (73, 151422), (84, 151452), (93, 151500), (97, 151515), (104, 151581), (124, 151668),

Gene: Sour_34 Start: 32659, Stop: 32288, Start Num: 60
Candidate Starts for Sour_34:
(29, 32755), (Start: 60 @32659 has 1 MA's), (72, 32617), (79, 32599), (80, 32596), (Start: 91 @32557 has 1 MA's), (105, 32449), (128, 32329),

Gene: Sushi23_223 Start: 114010, Stop: 114450, Start Num: 46
Candidate Starts for Sushi23_223:
(4, 113815), (7, 113851), (14, 113923), (17, 113929), (20, 113938), (Start: 27 @113968 has 3 MA's), (30, 113974), (31, 113977), (33, 113983), (Start: 46 @114010 has 10 MA's), (69, 114106), (89, 114157), (107, 114250), (119, 114322), (127, 114376), (131, 114409),

Gene: Targaryen_222 Start: 114182, Stop: 114622, Start Num: 46
Candidate Starts for Targaryen_222:
(14, 114095), (17, 114101), (20, 114110), (Start: 27 @114140 has 3 MA's), (30, 114146), (Start: 46 @114182 has 10 MA's), (69, 114278), (89, 114329), (107, 114422), (119, 114494), (127, 114548), (131, 114581),

Gene: Target_12 Start: 7244, Stop: 7699, Start Num: 27
Candidate Starts for Target_12:
(Start: 27 @7244 has 3 MA's), (43, 7277), (67, 7364), (85, 7424), (93, 7466), (103, 7544), (105, 7553), (124, 7634), (128, 7673),

Gene: TheloniousMonk_12 Start: 7471, Stop: 7926, Start Num: 27
Candidate Starts for TheloniousMonk_12:
(Start: 27 @7471 has 3 MA's), (43, 7504), (67, 7591), (85, 7651), (93, 7693), (103, 7771), (105, 7780), (124, 7861), (128, 7900),

Gene: Tophat_101 Start: 63868, Stop: 64362, Start Num: 40
Candidate Starts for Tophat_101:
(12, 63760), (16, 63799), (Start: 40 @63868 has 15 MA's), (65, 63952), (86, 64024), (93, 64063), (134, 64333),

Gene: Tucker_41 Start: 26756, Stop: 26394, Start Num: 56
Candidate Starts for Tucker_41:
(Start: 56 @26756 has 2 MA's), (68, 26708), (96, 26609), (112, 26531), (123, 26471),

Gene: Vibaki_76 Start: 46752, Stop: 47243, Start Num: 47
Candidate Starts for Vibaki_76:
(Start: 47 @46752 has 1 MA's), (103, 47013),

Gene: Zulu_41 Start: 26737, Stop: 26375, Start Num: 56
Candidate Starts for Zulu_41:
(Start: 56 @26737 has 2 MA's), (68, 26689), (96, 26590), (112, 26512), (123, 26452),