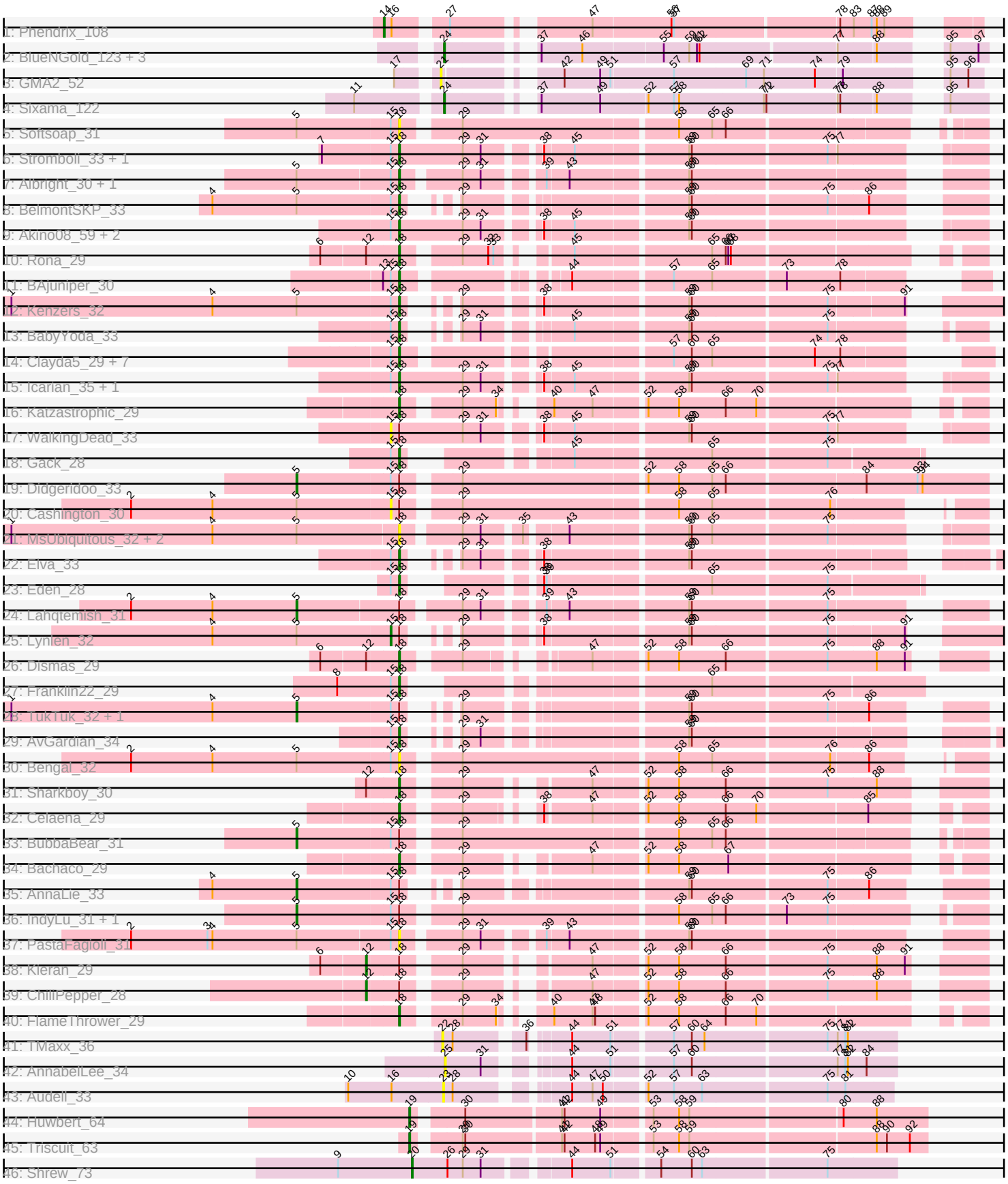
# Pham 200218


1: Phendrix_108
2: BlueNGold_123 + 3
3: GMA2_52
4: Sixama_122
5: Softsoap_31
6: Stromboli_33 + 1
7: Albright_30 + 1
8: BelmontSKP_33
9: Akino08_59 + 2
10: Rona_29
11: BAjuniper_30
12: Kenzers_32
13: BabyYoda_33
14: Clayda5_29 + 7
15: Icarian_35 + 1
16: Katzastrophic_29
17: WalkingDead_33
18: Gack_28
19: Didgeridoo_33
20: Cashington_30
21: MsUbiquitous_32 + 2
22: Elva_33
23: Eden_28
24: Lahqtemish_31
25: Lynlen_32
26: Dismas_29
27: Franklin22_29
28: TukTuk_32 + 1
29: AvGardian_34
30: Bengal_32
31: Sharkboy_30
32: Celaena_29
33: BubbaBear_31
34: Bachaco_29
35: AnnaLie_33
36: IndyLu_31 + 1
37: PastaFagioli_31
38: Kieran_29
39: ChiliPepper_28
40: FlameThrower_29
41: TMaxx_36
42: AnnabelLee_34
43: Audell_33
44: Huwbert_64
45: Triscuit_63
46: Shrew_73

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 200218 Report

This analysis was run 01/18/25 on database version 583.

Pham number 200218 has 65 members, 14 are drafts.

Phages represented in each track:
- Track 1 : Phendrix_108
- Track 2 : BlueNGold_123, Mareelih_122, Forza_124, Boopy_124
- Track 3 : GMA2_52
- Track 4 : Sixama_122
- Track 5 : Softsoap_31
- Track 6 : Stromboli_33, DirtyBubble_32
- Track 7 : Albright_30, CroZenni_31
- Track 8 : BelmontSKP_33
- Track 9 : Akino08_59, SanaSana_35, Loviatar_57
- Track 10 : Rona_29
- Track 11 : BAjuniper_30
- Track 12 : Kenzers_32
- Track 13 : BabyYoda_33
- Track 14 : Clayda5_29, Bernstein_28, Rollins_28, Armstrong_28, Skylord_28, Coltrane_28, Vitas_28, Brahms_28
- Track 15 : Icarian_35, Stoor_33
- Track 16 : Katzastrophic_29
- Track 17 : WalkingDead_33
- Track 18 : Gack_28
- Track 19 : Didgeridoo_33
- Track 20 : Cashington_30
- Track 21 : MsUbiquitous_32, Jabb_32, CupcakePrincess_32
- Track 22 : Elva_33
- Track 23 : Eden_28
- Track 24 : Lahqtemish_31
- Track 25 : Lynlen_32
- Track 26 : Dismas_29
- Track 27 : Franklin22_29
- Track 28 : TukTuk_32, Albedo_32
- Track 29 : AvGardian_34
- Track 30 : Bengal_32
- Track 31 : Sharkboy_30
- Track 32 : Celaena_29
- Track 33 : BubbaBear_31
- Track 34 : Bachaco_29
- Track 35 : AnnaLie_33
- Track 36 : IndyLu_31, BabyDaisy_31

• Track 37 : PastaFagioli_31
• Track 38 : Kieran_29
• Track 39 : ChiliPepper_28
• Track 40 : FlameThrower_29
• Track 41 : TMaxx_36
• Track 42 : AnnabelLee_34
• Track 43 : Audell_33
• Track 44 : Huwbert_64
• Track 45 : Triscuit_63
• Track 46 : Shrew_73

***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 31 of the 51 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• Akino08_59, Albright_30, Armstrong_28, AvGardian_34, BAjuniper_30, BabyYoda_33, Bachaco_29, BelmontSKP_33, Bengal_32, Bernstein_28, Brahms_28, Celaena_29, Clayda5_29, Coltrane_28, CroZenni_31, CupcakePrincess_32, DirtyBubble_32, Dismas_29, Eden_28, Elva_33, FlameThrower_29, Franklin22_29, Gack_28, Icarian_35, Jabb_32, Katzastrophic_29, Kenzers_32, Loviatar_57, MsUbiquitous_32, PastaFagioli_31, Rollins_28, Rona_29, SanaSana_35, Sharkboy_30, Skylord_28, Softsoap_31, Stoor_33, Stromboli_33, Vitas_28,

Genes that have the "Most Annotated" start but do not call it:
• Albedo_32, AnnaLie_33, BabyDaisy_31, BubbaBear_31, Cashington_30, ChiliPepper_28, Didgeridoo_33, IndyLu_31, Kieran_29, Lahqtemish_31, Lynlen_32, TukTuk_32, WalkingDead_33,

Genes that do not have the "Most Annotated" start:
• AnnabelLee_34, Audell_33, BlueNGold_123, Boopy_124, Forza_124, GMA2_52, Huwbert_64, Mareelih_122, Phendrix_108, Shrew_73, Sixama_122, TMaxx_36, Triscuit_63,

**Summary by start number:**

Start 5:
• Found in 20 of 65 ( 30.8% ) of genes in pham
• Manual Annotations of this start: 8 of 51
• Called 40.0% of time when present
• Phage (with cluster) where this start called: Albedo_32 (EB), AnnaLie_33 (EB), BabyDaisy_31 (EB), BubbaBear_31 (EB), Didgeridoo_33 (EB), IndyLu_31 (EB), Lahqtemish_31 (EB), TukTuk_32 (EB),

Start 12:
• Found in 5 of 65 ( 7.7% ) of genes in pham
• Manual Annotations of this start: 2 of 51
• Called 40.0% of time when present
• Phage (with cluster) where this start called: ChiliPepper_28 (EB), Kieran_29 (EB),

Start 14:
• Found in 1 of 65 ( 1.5% ) of genes in pham
• Manual Annotations of this start: 1 of 51
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Phendrix_108 (DK),

Start 15:
• Found in 39 of 65 ( 60.0% ) of genes in pham
• Manual Annotations of this start: 1 of 51
• Called 7.7% of time when present
• Phage (with cluster) where this start called: Cashington_30 (EB), Lynlen_32 (EB), WalkingDead_33 (EB),

Start 18:
• Found in 52 of 65 ( 80.0% ) of genes in pham
• Manual Annotations of this start: 31 of 51
• Called 75.0% of time when present
• Phage (with cluster) where this start called: Akino08_59 (EB), Albright_30 (EB), Armstrong_28 (EB), AvGardian_34 (EB), BAjuniper_30 (EB), BabyYoda_33 (EB), Bachaco_29 (EB), BelmontSKP_33 (EB), Bengal_32 (EB), Bernstein_28 (EB), Brahms_28 (EB), Celaena_29 (EB), Clayda5_29 (EB), Coltrane_28 (EB), CroZenni_31 (EB), CupcakePrincess_32 (EB), DirtyBubble_32 (EB), Dismas_29 (EB), Eden_28 (EB), Elva_33 (EB), FlameThrower_29 (EB), Franklin22_29 (EB), Gack_28 (EB), Icarian_35 (EB), Jabb_32 (EB), Katzastrophic_29 (EB), Kenzers_32 (EB), Loviatar_57 (EB), MsUbiquitous_32 (EB), PastaFagioli_31 (EB), Rollins_28 (EB), Rona_29 (EB), SanaSana_35 (EB), Sharkboy_30 (EB), Skylord_28 (EB), Softsoap_31 (EB), Stoor_33 (EB), Stromboli_33 (EB), Vitas_28 (EB),

Start 19:
• Found in 2 of 65 ( 3.1% ) of genes in pham
• Manual Annotations of this start: 2 of 51
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Huwbert_64 (GG), Triscuit_63 (GG),

Start 20:
• Found in 1 of 65 ( 1.5% ) of genes in pham
• Manual Annotations of this start: 1 of 51
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Shrew_73 (singleton),

Start 21:
• Found in 1 of 65 ( 1.5% ) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: GMA2_52 (DS),

Start 22:
• Found in 1 of 65 ( 1.5% ) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: TMaxx_36 (FR),

Start 23:
• Found in 1 of 65 ( 1.5% ) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Audell_33 (FR),

Start 24:
• Found in 5 of 65 ( 7.7% ) of genes in pham
• Manual Annotations of this start: 5 of 51
• Called 100.0% of time when present
• Phage (with cluster) where this start called: BlueNGold_123 (DS), Boopy_124 (DS), Forza_124 (DS), Mareelih_122 (DS), Sixama_122 (DS),

Start 25:
• Found in 1 of 65 ( 1.5% ) of genes in pham
• No Manual Annotations of this start.
• Called 100.0% of time when present
• Phage (with cluster) where this start called: AnnabelLee_34 (FR),

**Summary by clusters:**

There are 6 clusters represented in this pham: FR, DK, singleton, EB, GG, DS,

Info for manual annotations of cluster DK:
•Start number 14 was manually annotated 1 time for cluster DK.

Info for manual annotations of cluster DS:
•Start number 24 was manually annotated 5 times for cluster DS.

Info for manual annotations of cluster EB:
•Start number 5 was manually annotated 8 times for cluster EB.
•Start number 12 was manually annotated 2 times for cluster EB.
•Start number 15 was manually annotated 1 time for cluster EB.
•Start number 18 was manually annotated 31 times for cluster EB.

Info for manual annotations of cluster GG:
•Start number 19 was manually annotated 2 times for cluster GG.

***Gene Information:***

Gene: Akino08_59 Start: 24925, Stop: 25521, Start Num: 18
Candidate Starts for Akino08_59:
(Start: 15 @24916 has 1 MA's), (Start: 18 @24925 has 31 MA's), (29, 25000), (31, 25021), (38, 25072), (45, 25105), (59, 25228), (60, 25231),

Gene: Albedo_32 Start: 22977, Stop: 23642, Start Num: 5
Candidate Starts for Albedo_32:
(1, 22641), (4, 22878), (Start: 5 @22977 has 8 MA's), (Start: 15 @23085 has 1 MA's), (Start: 18 @23094 has 31 MA's), (29, 23118), (59, 23346), (60, 23349), (75, 23502), (86, 23547),

Gene: Albright_30 Start: 22216, Stop: 22803, Start Num: 18
Candidate Starts for Albright_30:
(Start: 5 @22099 has 8 MA's), (Start: 15 @22207 has 1 MA's), (Start: 18 @22216 has 31 MA's), (29, 22276), (31, 22297), (39, 22354), (43, 22378), (59, 22507), (60, 22510),

Gene: AnnaLie_33 Start: 23260, Stop: 23925, Start Num: 5
Candidate Starts for AnnaLie_33:
(4, 23161), (Start: 5 @23260 has 8 MA's), (Start: 15 @23368 has 1 MA's), (Start: 18 @23377 has 31 MA's), (29, 23401), (59, 23629), (60, 23632), (75, 23785), (86, 23830),

Gene: AnnabelLee_34 Start: 22212, Stop: 21736, Start Num: 25
Candidate Starts for AnnabelLee_34:
(25, 22212), (31, 22170), (44, 22098), (51, 22053), (57, 21990), (60, 21969), (77, 21804), (81, 21795), (82, 21792), (84, 21771),

Gene: Armstrong_28 Start: 20941, Stop: 21507, Start Num: 18
Candidate Starts for Armstrong_28:
(Start: 15 @20932 has 1 MA's), (Start: 18 @20941 has 31 MA's), (57, 21208), (60, 21229), (65, 21253), (74, 21367), (78, 21397),

Gene: Audell_33 Start: 24613, Stop: 24143, Start Num: 23
Candidate Starts for Audell_33:
(10, 24724), (16, 24673), (23, 24613), (28, 24604), (44, 24499), (47, 24475), (50, 24463), (52, 24421), (57, 24391), (63, 24358), (75, 24217), (81, 24196),

Gene: AvGardian_34 Start: 23607, Stop: 24188, Start Num: 18
Candidate Starts for AvGardian_34:
(Start: 15 @23598 has 1 MA's), (Start: 18 @23607 has 31 MA's), (29, 23631), (31, 23652), (59, 23859), (60, 23862),

Gene: BAjuniper_30 Start: 23839, Stop: 24396, Start Num: 18
Candidate Starts for BAjuniper_30:
(13, 23821), (Start: 15 @23830 has 1 MA's), (Start: 18 @23839 has 31 MA's), (44, 23992), (57, 24100), (65, 24145), (73, 24226), (78, 24289),

Gene: BabyDaisy_31 Start: 22831, Stop: 23553, Start Num: 5
Candidate Starts for BabyDaisy_31:
(Start: 5 @22831 has 8 MA's), (Start: 15 @22939 has 1 MA's), (Start: 18 @22948 has 31 MA's), (29, 23002), (58, 23245), (65, 23284), (66, 23299), (73, 23365), (75, 23413),

Gene: BabyYoda_33 Start: 24127, Stop: 24666, Start Num: 18
Candidate Starts for BabyYoda_33:
(Start: 15 @24118 has 1 MA's), (Start: 18 @24127 has 31 MA's), (29, 24151), (31, 24172), (45, 24256), (59, 24379), (60, 24382), (75, 24535),

Gene: Bachaco_29 Start: 24051, Stop: 24608, Start Num: 18
Candidate Starts for Bachaco_29:
(Start: 18 @24051 has 31 MA's), (29, 24105), (47, 24216), (52, 24270), (58, 24306), (67, 24363),

Gene: BelmontSKP_33 Start: 23377, Stop: 23925, Start Num: 18
Candidate Starts for BelmontSKP_33:
(4, 23161), (Start: 5 @23260 has 8 MA's), (Start: 15 @23368 has 1 MA's), (Start: 18 @23377 has 31 MA's), (29, 23401), (59, 23629), (60, 23632), (75, 23785), (86, 23830),

Gene: Bengal_32 Start: 22963, Stop: 23553, Start Num: 18
Candidate Starts for Bengal_32:
(2, 22651), (4, 22747), (Start: 5 @22846 has 8 MA's), (Start: 15 @22954 has 1 MA's), (Start: 18 @22963 has 31 MA's), (29, 23017), (58, 23260), (65, 23299), (76, 23431), (86, 23473),

Gene: Bernstein_28 Start: 20996, Stop: 21562, Start Num: 18
Candidate Starts for Bernstein_28:
(Start: 15 @20987 has 1 MA's), (Start: 18 @20996 has 31 MA's), (57, 21263), (60, 21284), (65, 21308), (74, 21422), (78, 21452),

Gene: BlueNGold_123 Start: 79020, Stop: 78475, Start Num: 24
Candidate Starts for BlueNGold_123:
(Start: 24 @79020 has 5 MA's), (37, 78942), (46, 78894), (55, 78804), (59, 78774), (61, 78765), (62, 78762), (77, 78609), (88, 78567), (95, 78519), (97, 78486),

Gene: Boopy_124 Start: 79032, Stop: 78487, Start Num: 24
Candidate Starts for Boopy_124:
(Start: 24 @79032 has 5 MA's), (37, 78954), (46, 78906), (55, 78816), (59, 78786), (61, 78777), (62, 78774), (77, 78621), (88, 78579), (95, 78531), (97, 78498),

Gene: Brahms_28 Start: 20943, Stop: 21509, Start Num: 18
Candidate Starts for Brahms_28:
(Start: 15 @20934 has 1 MA's), (Start: 18 @20943 has 31 MA's), (57, 21210), (60, 21231), (65, 21255), (74, 21369), (78, 21399),

Gene: BubbaBear_31 Start: 22778, Stop: 23494, Start Num: 5
Candidate Starts for BubbaBear_31:
(Start: 5 @22778 has 8 MA's), (Start: 15 @22886 has 1 MA's), (Start: 18 @22895 has 31 MA's), (29, 22949), (58, 23192), (65, 23231), (66, 23246),

Gene: Cashington_30 Start: 22242, Stop: 22841, Start Num: 15
Candidate Starts for Cashington_30:
(2, 21939), (4, 22035), (Start: 5 @22134 has 8 MA's), (Start: 15 @22242 has 1 MA's), (Start: 18 @22251 has 31 MA's), (29, 22305), (58, 22548), (65, 22587), (76, 22719),

Gene: Celaena_29 Start: 23736, Stop: 24290, Start Num: 18
Candidate Starts for Celaena_29:
(Start: 18 @23736 has 31 MA's), (29, 23790), (38, 23847), (47, 23898), (52, 23952), (58, 23988), (66, 24042), (70, 24078), (85, 24198),

Gene: ChiliPepper_28 Start: 23178, Stop: 23786, Start Num: 12
Candidate Starts for ChiliPepper_28:
(Start: 12 @23178 has 2 MA's), (Start: 18 @23214 has 31 MA's), (29, 23268), (47, 23379), (52, 23433), (58, 23469), (66, 23523), (75, 23637), (88, 23691),

Gene: Clayda5_29 Start: 20930, Stop: 21496, Start Num: 18
Candidate Starts for Clayda5_29:
(Start: 15 @20921 has 1 MA's), (Start: 18 @20930 has 31 MA's), (57, 21197), (60, 21218), (65, 21242), (74, 21356), (78, 21386),

Gene: Coltrane_28 Start: 20943, Stop: 21509, Start Num: 18
Candidate Starts for Coltrane_28:

(Start: 15 @20934 has 1 MA's), (Start: 18 @20943 has 31 MA's), (57, 21210), (60, 21231), (65, 21255), (74, 21369), (78, 21399),

Gene: CroZenni_31 Start: 22800, Stop: 23387, Start Num: 18
Candidate Starts for CroZenni_31:
(Start: 5 @22683 has 8 MA's), (Start: 15 @22791 has 1 MA's), (Start: 18 @22800 has 31 MA's), (29, 22860), (31, 22881), (39, 22938), (43, 22962), (59, 23091), (60, 23094),

Gene: CupcakePrincess_32 Start: 23092, Stop: 23676, Start Num: 18
Candidate Starts for CupcakePrincess_32:
(1, 22639), (4, 22876), (Start: 5 @22975 has 8 MA's), (Start: 18 @23092 has 31 MA's), (29, 23152), (31, 23173), (35, 23212), (43, 23254), (59, 23383), (60, 23386), (65, 23410), (75, 23539),

Gene: Didgeridoo_33 Start: 23183, Stop: 23950, Start Num: 5
Candidate Starts for Didgeridoo_33:
(Start: 5 @23183 has 8 MA's), (Start: 15 @23291 has 1 MA's), (Start: 18 @23300 has 31 MA's), (29, 23354), (52, 23561), (58, 23597), (65, 23636), (66, 23651), (84, 23807), (93, 23867), (94, 23873),

Gene: DirtyBubble_32 Start: 23754, Stop: 24350, Start Num: 18
Candidate Starts for DirtyBubble_32:
(7, 23667), (Start: 15 @23745 has 1 MA's), (Start: 18 @23754 has 31 MA's), (29, 23829), (31, 23850), (38, 23901), (45, 23934), (59, 24057), (60, 24060), (75, 24213), (77, 24222),

Gene: Dismas_29 Start: 23391, Stop: 23957, Start Num: 18
Candidate Starts for Dismas_29:
(6, 23304), (Start: 12 @23355 has 2 MA's), (Start: 18 @23391 has 31 MA's), (29, 23445), (47, 23550), (52, 23604), (58, 23640), (66, 23694), (75, 23808), (88, 23862), (91, 23895),

Gene: Eden_28 Start: 21161, Stop: 21682, Start Num: 18
Candidate Starts for Eden_28:
(Start: 15 @21152 has 1 MA's), (Start: 18 @21161 has 31 MA's), (38, 21263), (39, 21266), (65, 21446), (75, 21575),

Gene: Elva_33 Start: 23789, Stop: 24370, Start Num: 18
Candidate Starts for Elva_33:
(Start: 15 @23780 has 1 MA's), (Start: 18 @23789 has 31 MA's), (29, 23813), (31, 23834), (38, 23885), (59, 24041), (60, 24044),

Gene: FlameThrower_29 Start: 23222, Stop: 23782, Start Num: 18
Candidate Starts for FlameThrower_29:
(Start: 18 @23222 has 31 MA's), (29, 23276), (34, 23315), (40, 23345), (47, 23390), (48, 23393), (52, 23444), (58, 23480), (66, 23534), (70, 23570),

Gene: Forza_124 Start: 78948, Stop: 78403, Start Num: 24
Candidate Starts for Forza_124:
(Start: 24 @78948 has 5 MA's), (37, 78870), (46, 78822), (55, 78732), (59, 78702), (61, 78693), (62, 78690), (77, 78537), (88, 78495), (95, 78447), (97, 78414),

Gene: Franklin22_29 Start: 21323, Stop: 21847, Start Num: 18
Candidate Starts for Franklin22_29:
(8, 21251), (Start: 15 @21314 has 1 MA's), (Start: 18 @21323 has 31 MA's), (65, 21608),

Gene: GMA2_52 Start: 53375, Stop: 52827, Start Num: 21

Candidate Starts for GMA2_52:
(17, 53411), (21, 53375), (42, 53270), (49, 53228), (51, 53216), (57, 53144), (69, 53060), (71, 53039), (74, 52979), (79, 52949), (95, 52865), (96, 52844),

Gene: Gack_28 Start: 21205, Stop: 21726, Start Num: 18
Candidate Starts for Gack_28:
(Start: 15 @21196 has 1 MA's), (Start: 18 @21205 has 31 MA's), (45, 21340), (65, 21490), (75, 21619),

Gene: Huwbert_64 Start: 39565, Stop: 40128, Start Num: 19
Candidate Starts for Huwbert_64:
(Start: 19 @39565 has 2 MA's), (30, 39613), (41, 39721), (42, 39724), (49, 39766), (53, 39817), (58, 39847), (59, 39859), (80, 40030), (88, 40069),

Gene: Icarian_35 Start: 24388, Stop: 24984, Start Num: 18
Candidate Starts for Icarian_35:
(Start: 15 @24379 has 1 MA's), (Start: 18 @24388 has 31 MA's), (29, 24463), (31, 24484), (38, 24535), (45, 24568), (59, 24691), (60, 24694), (75, 24847), (77, 24856),

Gene: IndyLu_31 Start: 22792, Stop: 23514, Start Num: 5
Candidate Starts for IndyLu_31:
(Start: 5 @22792 has 8 MA's), (Start: 15 @22900 has 1 MA's), (Start: 18 @22909 has 31 MA's), (29, 22963), (58, 23206), (65, 23245), (66, 23260), (73, 23326), (75, 23374),

Gene: Jabb_32 Start: 23092, Stop: 23676, Start Num: 18
Candidate Starts for Jabb_32:
(1, 22639), (4, 22876), (Start: 5 @22975 has 8 MA's), (Start: 18 @23092 has 31 MA's), (29, 23152), (31, 23173), (35, 23212), (43, 23254), (59, 23383), (60, 23386), (65, 23410), (75, 23539),

Gene: Katzastrophic_29 Start: 23340, Stop: 23900, Start Num: 18
Candidate Starts for Katzastrophic_29:
(Start: 18 @23340 has 31 MA's), (29, 23394), (34, 23433), (40, 23463), (47, 23508), (52, 23562), (58, 23598), (66, 23652), (70, 23688),

Gene: Kenzers_32 Start: 23043, Stop: 23639, Start Num: 18
Candidate Starts for Kenzers_32:
(1, 22590), (4, 22827), (Start: 5 @22926 has 8 MA's), (Start: 15 @23034 has 1 MA's), (Start: 18 @23043 has 31 MA's), (29, 23067), (38, 23139), (59, 23295), (60, 23298), (75, 23451), (91, 23535),

Gene: Kieran_29 Start: 23358, Stop: 23966, Start Num: 12
Candidate Starts for Kieran_29:
(6, 23307), (Start: 12 @23358 has 2 MA's), (Start: 18 @23394 has 31 MA's), (29, 23448), (47, 23559), (52, 23613), (58, 23649), (66, 23703), (75, 23817), (88, 23871), (91, 23904),

Gene: Lahqtemish_31 Start: 22843, Stop: 23547, Start Num: 5
Candidate Starts for Lahqtemish_31:
(2, 22648), (4, 22744), (Start: 5 @22843 has 8 MA's), (Start: 18 @22960 has 31 MA's), (29, 23020), (31, 23041), (39, 23098), (43, 23122), (59, 23251), (60, 23254), (75, 23407),

Gene: Loviatar_57 Start: 24940, Stop: 25536, Start Num: 18
Candidate Starts for Loviatar_57:
(Start: 15 @24931 has 1 MA's), (Start: 18 @24940 has 31 MA's), (29, 25015), (31, 25036), (38, 25087), (45, 25120), (59, 25243), (60, 25246),

Gene: Lynlen_32 Start: 23034, Stop: 23639, Start Num: 15
Candidate Starts for Lynlen_32:
(4, 22827), (Start: 5 @22926 has 8 MA's), (Start: 15 @23034 has 1 MA's), (Start: 18 @23043 has 31 MA's), (29, 23067), (38, 23139), (59, 23295), (60, 23298), (75, 23451), (91, 23535),

Gene: Mareelih_122 Start: 78450, Stop: 77905, Start Num: 24
Candidate Starts for Mareelih_122:
(Start: 24 @78450 has 5 MA's), (37, 78372), (46, 78324), (55, 78234), (59, 78204), (61, 78195), (62, 78192), (77, 78039), (88, 77997), (95, 77949), (97, 77916),

Gene: MsUbiquitous_32 Start: 23092, Stop: 23676, Start Num: 18
Candidate Starts for MsUbiquitous_32:
(1, 22639), (4, 22876), (Start: 5 @22975 has 8 MA's), (Start: 18 @23092 has 31 MA's), (29, 23152), (31, 23173), (35, 23212), (43, 23254), (59, 23383), (60, 23386), (65, 23410), (75, 23539),

Gene: PastaFagioli_31 Start: 22945, Stop: 23532, Start Num: 18
Candidate Starts for PastaFagioli_31:
(2, 22633), (3, 22723), (4, 22729), (Start: 5 @22828 has 8 MA's), (Start: 15 @22936 has 1 MA's), (Start: 18 @22945 has 31 MA's), (29, 23005), (31, 23026), (39, 23083), (43, 23107), (59, 23236), (60, 23239),

Gene: Phendrix_108 Start: 70145, Stop: 69552, Start Num: 14
Candidate Starts for Phendrix_108:
(Start: 14 @70145 has 1 MA's), (16, 70136), (27, 70085), (47, 69953), (56, 69866), (57, 69863), (78, 69677), (83, 69662), (87, 69641), (88, 69635), (89, 69626),

Gene: Rollins_28 Start: 20996, Stop: 21562, Start Num: 18
Candidate Starts for Rollins_28:
(Start: 15 @20987 has 1 MA's), (Start: 18 @20996 has 31 MA's), (57, 21263), (60, 21284), (65, 21308), (74, 21422), (78, 21452),

Gene: Rona_29 Start: 23391, Stop: 23948, Start Num: 18
Candidate Starts for Rona_29:
(6, 23304), (Start: 12 @23355 has 2 MA's), (Start: 18 @23391 has 31 MA's), (29, 23445), (32, 23475), (33, 23481), (45, 23535), (65, 23685), (66, 23700), (67, 23703), (68, 23706),

Gene: SanaSana_35 Start: 24590, Stop: 25186, Start Num: 18
Candidate Starts for SanaSana_35:
(Start: 15 @24581 has 1 MA's), (Start: 18 @24590 has 31 MA's), (29, 24665), (31, 24686), (38, 24737), (45, 24770), (59, 24893), (60, 24896),

Gene: Sharkboy_30 Start: 23475, Stop: 24047, Start Num: 18
Candidate Starts for Sharkboy_30:
(Start: 12 @23439 has 2 MA's), (Start: 18 @23475 has 31 MA's), (29, 23529), (47, 23640), (52, 23694), (58, 23730), (66, 23784), (75, 23898), (88, 23952),

Gene: Shrew_73 Start: 43134, Stop: 43658, Start Num: 20
Candidate Starts for Shrew_73:
(9, 43047), (Start: 20 @43134 has 1 MA's), (26, 43173), (29, 43191), (31, 43212), (44, 43296), (51, 43341), (54, 43389), (60, 43425), (63, 43437), (75, 43578),

Gene: Sixama_122 Start: 78458, Stop: 77907, Start Num: 24
Candidate Starts for Sixama_122:

(11, 78548), (Start: 24 @78458 has 5 MA's), (37, 78380), (49, 78311), (52, 78260), (57, 78230), (58, 78224), (71, 78125), (72, 78122), (77, 78041), (78, 78038), (88, 77999), (95, 77951),

Gene: Skylord_28 Start: 20927, Stop: 21493, Start Num: 18
Candidate Starts for Skylord_28:
(Start: 15 @20918 has 1 MA's), (Start: 18 @20927 has 31 MA's), (57, 21194), (60, 21215), (65, 21239), (74, 21353), (78, 21383),

Gene: Softsoap_31 Start: 22801, Stop: 23400, Start Num: 18
Candidate Starts for Softsoap_31:
(Start: 5 @22684 has 8 MA's), (Start: 15 @22792 has 1 MA's), (Start: 18 @22801 has 31 MA's), (29, 22855), (58, 23098), (65, 23137), (66, 23152),

Gene: Stoor_33 Start: 24258, Stop: 24854, Start Num: 18
Candidate Starts for Stoor_33:
(Start: 15 @24249 has 1 MA's), (Start: 18 @24258 has 31 MA's), (29, 24333), (31, 24354), (38, 24405), (45, 24438), (59, 24561), (60, 24564), (75, 24717), (77, 24726),

Gene: Stromboli_33 Start: 24124, Stop: 24720, Start Num: 18
Candidate Starts for Stromboli_33:
(7, 24037), (Start: 15 @24115 has 1 MA's), (Start: 18 @24124 has 31 MA's), (29, 24199), (31, 24220), (38, 24271), (45, 24304), (59, 24427), (60, 24430), (75, 24583), (77, 24592),

Gene: TMaxx_36 Start: 22869, Stop: 22390, Start Num: 22
Candidate Starts for TMaxx_36:
(22, 22869), (28, 22857), (36, 22788), (44, 22752), (51, 22707), (57, 22644), (60, 22623), (64, 22608), (75, 22470), (77, 22458), (81, 22449), (82, 22446),

Gene: Triscuit_63 Start: 39489, Stop: 40052, Start Num: 19
Candidate Starts for Triscuit_63:
(Start: 19 @39489 has 2 MA's), (29, 39534), (30, 39537), (41, 39645), (42, 39648), (48, 39684), (49, 39690), (53, 39741), (58, 39771), (59, 39783), (88, 39993), (90, 40005), (92, 40032),

Gene: TukTuk_32 Start: 22975, Stop: 23640, Start Num: 5
Candidate Starts for TukTuk_32:
(1, 22639), (4, 22876), (Start: 5 @22975 has 8 MA's), (Start: 15 @23083 has 1 MA's), (Start: 18 @23092 has 31 MA's), (29, 23116), (59, 23344), (60, 23347), (75, 23500), (86, 23545),

Gene: Vitas_28 Start: 20936, Stop: 21502, Start Num: 18
Candidate Starts for Vitas_28:
(Start: 15 @20927 has 1 MA's), (Start: 18 @20936 has 31 MA's), (57, 21203), (60, 21224), (65, 21248), (74, 21362), (78, 21392),

Gene: WalkingDead_33 Start: 24355, Stop: 24960, Start Num: 15
Candidate Starts for WalkingDead_33:
(Start: 15 @24355 has 1 MA's), (Start: 18 @24364 has 31 MA's), (29, 24439), (31, 24460), (38, 24511), (45, 24544), (59, 24667), (60, 24670), (75, 24823), (77, 24832),