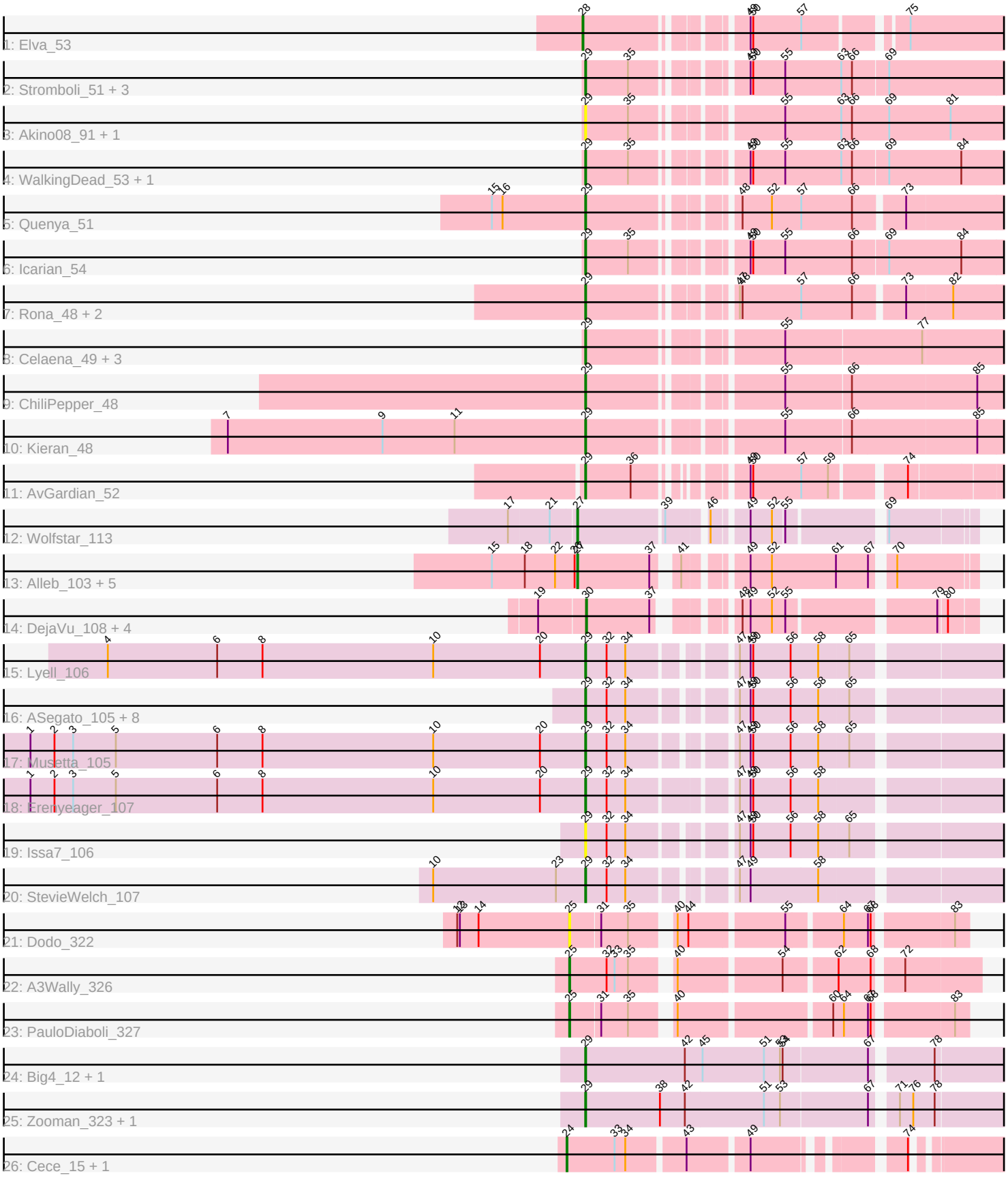
Pham 216216


1: Elva_53
2: Stromboli_51 + 3
3: Akino08_91 + 1
4: WalkingDead_53 + 1
5: Quenya_51
6: Icarian_54
7: Rona_48 + 2
8: Celaena_49 + 3
9: ChiliPepper_48
10: Kieran_48
11: AvGardian_52
12: Wolfstar_113
13: Alleb_103 + 5
14: DejaVu_108 + 4
15: Lyell_106
16: ASegato_105 + 8
17: Musetta_105
18: Eremyeager_107
19: Issa7_106
20: StevieWelch_107
21: Dodo_322
22: A3Wally_326
23: PauloDiaboli_327
24: Big4_12 + 1
25: Zooman_323 + 1
26: Cece_15 + 1

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 216216 Report

This analysis was run 02/22/25 on database version 588.

Pham number 216216 has 56 members, 7 are drafts.

Phages represented in each track:
• Track 1 : Elva_53
• Track 2 : Stromboli_51, DirtyBubble_50, BabyYoda_51, SanaSana_53
• Track 3 : Akino08_91, Loviatar_90
• Track 4 : WalkingDead_53, Stoor_51
• Track 5 : Quenya_51
• Track 6 : Icarian_54
• Track 7 : Rona_48, Sharkboy_49, Dismas_48
• Track 8 : Celaena_49, Katzastrophic_50, Bachaco_49, FlameThrower_48
• Track 9 : ChiliPepper_48
• Track 10 : Kieran_48
• Track 11 : AvGardian_52
• Track 12 : Wolfstar_113
• Track 13 : Alleb_103, OlinDD_107, Platte_106, Tandem_107, Hortus1_107, Pioneer3_107
• Track 14 : DejaVu_108, Pavlo_108, PhillyPhilly_105, Roman_109, Hubbs_107
• Track 15 : Lyell_106
• Track 16 : ASegato_105, Casablancas_107, Fork_103, Yuma_105, Welcome_109, DustyDino_110, Necrophoxinus_109, HollowPurple_107, RunningBrook_108
• Track 17 : Musetta_105
• Track 18 : Erenyeager_107
• Track 19 : Issa7_106
• Track 20 : StevieWelch_107
• Track 21 : Dodo_322
• Track 22 : A3Wally_326
• Track 23 : PauloDiaboli_327
• Track 24 : Big4_12, Big4_338
• Track 25 : Zooman_323, Zooman_10
• Track 26 : Cece_15, Cece_317

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

The start number called the most often in the published annotations is 29, it was called in 32 of the 49 non-draft genes in the pham.

Genes that call this "Most Annotated" start:
• ASegato_105, Akino08_91, AvGardian_52, BabyYoda_51, Bachaco_49, Big4_12, Big4_338, Casablancas_107, Celaena_49, ChiliPepper_48, DirtyBubble_50, Dismas_48, DustyDino_110, Erenyeager_107, FlameThrower_48, Fork_103, HollowPurple_107, Icarian_54, Issa7_106, Katzastrophic_50, Kieran_48, Loviatar_90, Lyell_106, Musetta_105, Necrophoxinus_109, Quenya_51, Rona_48, RunningBrook_108, SanaSana_53, Sharkboy_49, StevieWelch_107, Stoor_51, Stromboli_51, WalkingDead_53, Welcome_109, Yuma_105, Zooman_10, Zooman_323,

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, Cece_15, Cece_317, DejaVu_108, Dodo_322, Elva_53, Hortus1_107, Hubbs_107, OlinDD_107, PauloDiaboli_327, Pavlo_108, PhillyPhilly_105, Pioneer3_107, Platte_106, Roman_109, Tandem_107, Wolfstar_113,

Summary by start number:

Start 24:
• Found in 2 of 56 (3.6%) of genes in pham
• Manual Annotations of this start: 2 of 49
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Cece_15 (GD3), Cece_317 (GD3),

Start 25:
• Found in 3 of 56 (5.4%) of genes in pham
• Manual Annotations of this start: 2 of 49
• Called 100.0% of time when present
• Phage (with cluster) where this start called: A3Wally_326 (GD1), Dodo_322 (GD1), PauloDiaboli_327 (GD1),

Start 27:
• Found in 7 of 56 (12.5%) of genes in pham
• Manual Annotations of this start: 7 of 49
• 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 28:
• Found in 1 of 56 (1.8%) of genes in pham
• Manual Annotations of this start: 1 of 49
• Called 100.0% of time when present
• Phage (with cluster) where this start called: Elva_53 (EB),

Start 29:
• Found in 38 of 56 (67.9%) of genes in pham
• Manual Annotations of this start: 32 of 49
• Called 100.0% of time when present

• Phage (with cluster) where this start called: ASegato_105 (ED2), Akino08_91 (EB), AvGardian_52 (EB), BabyYoda_51 (EB), Bachaco_49 (EB), Big4_12 (GD2), Big4_338 (GD2), Casablancas_107 (ED2), Celaena_49 (EB), ChiliPepper_48 (EB), DirtyBubble_50 (EB), Dismas_48 (EB), DustyDino_110 (ED2), Erenyeager_107 (ED2), FlameThrower_48 (EB), Fork_103 (ED2), HollowPurple_107 (ED2), Icarian_54 (EB), Issa7_106 (ED2), Katzastrophic_50 (EB), Kieran_48 (EB), Loviatar_90 (EB), Lyell_106 (ED2), Musetta_105 (ED2), Necrophoxinus_109 (ED2), Quenya_51 (EB), Rona_48 (EB), RunningBrook_108 (ED2), SanaSana_53 (EB), Sharkboy_49 (EB), StevieWelch_107 (ED2), Stoor_51 (EB), Stromboli_51 (EB), WalkingDead_53 (EB), Welcome_109 (ED2), Yuma_105 (ED2), Zooman_10 (GD2), Zooman_323 (GD2),

Start 30:
• Found in 5 of 56 (8.9%) of genes in pham
• Manual Annotations of this start: 5 of 49
• Called 100.0% of time when present
• Phage (with cluster) where this start called: DejaVu_108 (ED1), Hubbs_107 (ED1), Pavlo_108 (ED1), PhillyPhilly_105 (ED1), Roman_109 (ED1),

Summary by clusters:

There are 7 clusters represented in this pham: GD1, GD2, GD3, ED, EB, ED2, ED1,

Info for manual annotations of cluster EB:
•Start number 28 was manually annotated 1 time for cluster EB.
•Start number 29 was manually annotated 17 times for cluster EB.

Info for manual annotations of cluster ED:
•Start number 27 was manually annotated 1 time for cluster ED.

Info for manual annotations of cluster ED1:
•Start number 27 was manually annotated 6 times for cluster ED1.
•Start number 30 was manually annotated 5 times for cluster ED1.

Info for manual annotations of cluster ED2:
•Start number 29 was manually annotated 11 times for cluster ED2.

Info for manual annotations of cluster GD1:
•Start number 25 was manually annotated 2 times for cluster GD1.

Info for manual annotations of cluster GD2:
•Start number 29 was manually annotated 4 times for cluster GD2.

Info for manual annotations of cluster GD3:
•Start number 24 was manually annotated 2 times for cluster GD3.

Gene Information:

Gene: A3Wally_326 Start: 170993, Stop: 171403, Start Num: 25
Candidate Starts for A3Wally_326:
(Start: 25 @170993 has 2 MA's), (32, 171035), (33, 171044), (35, 171059), (40, 171095), (54, 171203), (62, 171257), (68, 171293), (72, 171320),

Gene: ASegato_105 Start: 56034, Stop: 55597, Start Num: 29
Candidate Starts for ASegato_105:
(Start: 29 @56034 has 32 MA's), (32, 56010), (34, 55989), (47, 55893), (49, 55881), (50, 55878), (56, 55836), (58, 55806), (65, 55773),

Gene: Akino08_91 Start: 36189, Stop: 36629, Start Num: 29
Candidate Starts for Akino08_91:
(Start: 29 @36189 has 32 MA's), (35, 36237), (55, 36375), (63, 36438), (66, 36450), (69, 36492), (81, 36561),

Gene: Alleb_103 Start: 57500, Stop: 57114, Start Num: 27
Candidate Starts for Alleb_103:
(15, 57593), (18, 57557), (22, 57524), (26, 57503), (Start: 27 @57500 has 7 MA's), (37, 57419), (41, 57401), (49, 57347), (52, 57323), (61, 57251), (67, 57215), (70, 57197),

Gene: AvGardian_52 Start: 34737, Stop: 35147, Start Num: 29
Candidate Starts for AvGardian_52:
(Start: 29 @34737 has 32 MA's), (36, 34788), (49, 34878), (50, 34881), (57, 34935), (59, 34965), (74, 35037),

Gene: BabyYoda_51 Start: 35131, Stop: 35568, Start Num: 29
Candidate Starts for BabyYoda_51:
(Start: 29 @35131 has 32 MA's), (35, 35179), (49, 35278), (50, 35281), (55, 35317), (63, 35380), (66, 35392), (69, 35431),

Gene: Bachaco_49 Start: 35861, Stop: 36301, Start Num: 29
Candidate Starts for Bachaco_49:
(Start: 29 @35861 has 32 MA's), (55, 36050), (77, 36200),

Gene: Big4_12 Start: 5535, Stop: 6011, Start Num: 29
Candidate Starts for Big4_12:
(Start: 29 @5535 has 32 MA's), (42, 5646), (45, 5664), (51, 5733), (53, 5751), (54, 5754), (67, 5847), (78, 5907),

Gene: Big4_338 Start: 180229, Stop: 180705, Start Num: 29
Candidate Starts for Big4_338:
(Start: 29 @180229 has 32 MA's), (42, 180340), (45, 180358), (51, 180427), (53, 180445), (54, 180448), (67, 180541), (78, 180601),

Gene: Casablancas_107 Start: 55664, Stop: 55227, Start Num: 29
Candidate Starts for Casablancas_107:
(Start: 29 @55664 has 32 MA's), (32, 55640), (34, 55619), (47, 55523), (49, 55511), (50, 55508), (56, 55466), (58, 55436), (65, 55403),

Gene: Cece_15 Start: 5418, Stop: 5840, Start Num: 24
Candidate Starts for Cece_15:
(Start: 24 @5418 has 2 MA's), (33, 5472), (34, 5484), (43, 5544), (49, 5607), (74, 5742),

Gene: Cece_317 Start: 173852, Stop: 174274, Start Num: 24
Candidate Starts for Cece_317:
(Start: 24 @173852 has 2 MA's), (33, 173906), (34, 173918), (43, 173978), (49, 174041), (74, 174176),

Gene: Celaena_49 Start: 35623, Stop: 36063, Start Num: 29
Candidate Starts for Celaena_49:
(Start: 29 @35623 has 32 MA's), (55, 35812), (77, 35962),

Gene: ChiliPepper_48 Start: 34921, Stop: 35364, Start Num: 29
Candidate Starts for ChiliPepper_48:
(Start: 29 @34921 has 32 MA's), (55, 35110), (66, 35182), (85, 35320),

Gene: DejaVu_108 Start: 57205, Stop: 56840, Start Num: 30
Candidate Starts for DejaVu_108:
(19, 57256), (Start: 30 @57205 has 5 MA's), (37, 57136), (48, 57076), (49, 57067), (52, 57043), (55, 57028), (79, 56878), (80, 56869),

Gene: DirtyBubble_50 Start: 34799, Stop: 35236, Start Num: 29
Candidate Starts for DirtyBubble_50:
(Start: 29 @34799 has 32 MA's), (35, 34847), (49, 34946), (50, 34949), (55, 34985), (63, 35048), (66, 35060), (69, 35099),

Gene: Dismas_48 Start: 34843, Stop: 35286, Start Num: 29
Candidate Starts for Dismas_48:
(Start: 29 @34843 has 32 MA's), (47, 34978), (48, 34981), (57, 35047), (66, 35104), (73, 35155), (82, 35206),

Gene: Dodo_322 Start: 170077, Stop: 170469, Start Num: 25
Candidate Starts for Dodo_322:
(12, 169951), (13, 169954), (14, 169975), (Start: 25 @170077 has 2 MA's), (31, 170110), (35, 170140), (40, 170176), (44, 170188), (55, 170287), (64, 170344), (67, 170371), (68, 170374), (83, 170455),

Gene: DustyDino_110 Start: 56887, Stop: 56450, Start Num: 29
Candidate Starts for DustyDino_110:
(Start: 29 @56887 has 32 MA's), (32, 56863), (34, 56842), (47, 56746), (49, 56734), (50, 56731), (56, 56689), (58, 56659), (65, 56626),

Gene: Elva_53 Start: 35217, Stop: 35639, Start Num: 28
Candidate Starts for Elva_53:
(Start: 28 @35217 has 1 MA's), (49, 35367), (50, 35370), (57, 35424), (75, 35523),

Gene: Erenyeager_107 Start: 55997, Stop: 55551, Start Num: 29
Candidate Starts for Erenyeager_107:
(1, 56621), (2, 56594), (3, 56573), (5, 56525), (6, 56411), (8, 56360), (10, 56168), (20, 56048), (Start: 29 @55997 has 32 MA's), (32, 55973), (34, 55952), (47, 55847), (49, 55835), (50, 55832), (56, 55790), (58, 55760),

Gene: FlameThrower_48 Start: 34660, Stop: 35100, Start Num: 29
Candidate Starts for FlameThrower_48:
(Start: 29 @34660 has 32 MA's), (55, 34849), (77, 34999),

Gene: Fork_103 Start: 55912, Stop: 55475, Start Num: 29
Candidate Starts for Fork_103:
(Start: 29 @55912 has 32 MA's), (32, 55888), (34, 55867), (47, 55771), (49, 55759), (50, 55756), (56, 55714), (58, 55684), (65, 55651),

Gene: HollowPurple_107 Start: 56575, Stop: 56138, Start Num: 29

Candidate Starts for HollowPurple_107:
(Start: 29 @56575 has 32 MA's), (32, 56551), (34, 56530), (47, 56434), (49, 56422), (50, 56419), (56, 56377), (58, 56347), (65, 56314),

Gene: Hortus1_107 Start: 58256, Stop: 57870, Start Num: 27
Candidate Starts for Hortus1_107:
(15, 58349), (18, 58313), (22, 58280), (26, 58259), (Start: 27 @58256 has 7 MA's), (37, 58175), (41, 58157), (49, 58103), (52, 58079), (61, 58007), (67, 57971), (70, 57953),

Gene: Hubbs_107 Start: 57469, Stop: 57104, Start Num: 30
Candidate Starts for Hubbs_107:
(19, 57520), (Start: 30 @57469 has 5 MA's), (37, 57400), (48, 57340), (49, 57331), (52, 57307), (55, 57292), (79, 57142), (80, 57133),

Gene: Icarian_54 Start: 35804, Stop: 36241, Start Num: 29
Candidate Starts for Icarian_54:
(Start: 29 @35804 has 32 MA's), (35, 35852), (49, 35951), (50, 35954), (55, 35990), (66, 36065), (69, 36104), (84, 36185),

Gene: Issa7_106 Start: 55958, Stop: 55521, Start Num: 29
Candidate Starts for Issa7_106:
(Start: 29 @55958 has 32 MA's), (32, 55934), (34, 55913), (47, 55817), (49, 55805), (50, 55802), (56, 55760), (58, 55730), (65, 55697),

Gene: Katzastrophic_50 Start: 35170, Stop: 35610, Start Num: 29
Candidate Starts for Katzastrophic_50:
(Start: 29 @35170 has 32 MA's), (55, 35359), (77, 35509),

Gene: Kieran_48 Start: 34884, Stop: 35327, Start Num: 29
Candidate Starts for Kieran_48:
(7, 34482), (9, 34656), (11, 34737), (Start: 29 @34884 has 32 MA's), (55, 35073), (66, 35145), (85, 35283),

Gene: Loviatar_90 Start: 36204, Stop: 36644, Start Num: 29
Candidate Starts for Loviatar_90:
(Start: 29 @36204 has 32 MA's), (35, 36252), (55, 36390), (63, 36453), (66, 36465), (69, 36507), (81, 36576),

Gene: Lyell_106 Start: 55834, Stop: 55397, Start Num: 29
Candidate Starts for Lyell_106:
(4, 56371), (6, 56248), (8, 56197), (10, 56005), (20, 55885), (Start: 29 @55834 has 32 MA's), (32, 55810), (34, 55789), (47, 55693), (49, 55681), (50, 55678), (56, 55636), (58, 55606), (65, 55573),

Gene: Musetta_105 Start: 56187, Stop: 55750, Start Num: 29
Candidate Starts for Musetta_105:
(1, 56811), (2, 56784), (3, 56763), (5, 56715), (6, 56601), (8, 56550), (10, 56358), (20, 56238), (Start: 29 @56187 has 32 MA's), (32, 56163), (34, 56142), (47, 56046), (49, 56034), (50, 56031), (56, 55989), (58, 55959), (65, 55926),

Gene: Necrophoxinus_109 Start: 56843, Stop: 56406, Start Num: 29
Candidate Starts for Necrophoxinus_109:
(Start: 29 @56843 has 32 MA's), (32, 56819), (34, 56798), (47, 56702), (49, 56690), (50, 56687), (56, 56645), (58, 56615), (65, 56582),

Gene: OlinDD_107 Start: 58261, Stop: 57875, Start Num: 27
Candidate Starts for OlinDD_107:
(15, 58354), (18, 58318), (22, 58285), (26, 58264), (Start: 27 @58261 has 7 MA's), (37, 58180), (41, 58162), (49, 58108), (52, 58084), (61, 58012), (67, 57976), (70, 57958),

Gene: PauloDiaboli_327 Start: 168500, Stop: 168892, Start Num: 25
Candidate Starts for PauloDiaboli_327:
(Start: 25 @168500 has 2 MA's), (31, 168533), (35, 168563), (40, 168599), (60, 168755), (64, 168767), (67, 168794), (68, 168797), (83, 168878),

Gene: Pavlo_108 Start: 57864, Stop: 57499, Start Num: 30
Candidate Starts for Pavlo_108:
(19, 57915), (Start: 30 @57864 has 5 MA's), (37, 57795), (48, 57735), (49, 57726), (52, 57702), (55, 57687), (79, 57537), (80, 57528),

Gene: PhillyPhilly_105 Start: 56853, Stop: 56488, Start Num: 30
Candidate Starts for PhillyPhilly_105:
(19, 56904), (Start: 30 @56853 has 5 MA's), (37, 56784), (48, 56724), (49, 56715), (52, 56691), (55, 56676), (79, 56526), (80, 56517),

Gene: Pioneer3_107 Start: 58059, Stop: 57673, Start Num: 27
Candidate Starts for Pioneer3_107:
(15, 58152), (18, 58116), (22, 58083), (26, 58062), (Start: 27 @58059 has 7 MA's), (37, 57978), (41, 57960), (49, 57906), (52, 57882), (61, 57810), (67, 57774), (70, 57756),

Gene: Platte_106 Start: 57843, Stop: 57457, Start Num: 27
Candidate Starts for Platte_106:
(15, 57936), (18, 57900), (22, 57867), (26, 57846), (Start: 27 @57843 has 7 MA's), (37, 57762), (41, 57744), (49, 57690), (52, 57666), (61, 57594), (67, 57558), (70, 57540),

Gene: Quenya_51 Start: 35296, Stop: 35745, Start Num: 29
Candidate Starts for Quenya_51:
(15, 35191), (16, 35203), (Start: 29 @35296 has 32 MA's), (48, 35434), (52, 35467), (57, 35500), (66, 35557), (73, 35608),

Gene: Roman_109 Start: 57913, Stop: 57548, Start Num: 30
Candidate Starts for Roman_109:
(19, 57964), (Start: 30 @57913 has 5 MA's), (37, 57844), (48, 57784), (49, 57775), (52, 57751), (55, 57736), (79, 57586), (80, 57577),

Gene: Rona_48 Start: 34834, Stop: 35277, Start Num: 29
Candidate Starts for Rona_48:
(Start: 29 @34834 has 32 MA's), (47, 34969), (48, 34972), (57, 35038), (66, 35095), (73, 35146), (82, 35197),

Gene: RunningBrook_108 Start: 56887, Stop: 56450, Start Num: 29
Candidate Starts for RunningBrook_108:
(Start: 29 @56887 has 32 MA's), (32, 56863), (34, 56842), (47, 56746), (49, 56734), (50, 56731), (56, 56689), (58, 56659), (65, 56626),

Gene: SanaSana_53 Start: 35511, Stop: 35948, Start Num: 29
Candidate Starts for SanaSana_53:

(Start: 29 @35511 has 32 MA's), (35, 35559), (49, 35658), (50, 35661), (55, 35697), (63, 35760), (66, 35772), (69, 35811),

Gene: Sharkboy_49 Start: 34933, Stop: 35376, Start Num: 29
Candidate Starts for Sharkboy_49:
(Start: 29 @34933 has 32 MA's), (47, 35068), (48, 35071), (57, 35137), (66, 35194), (73, 35245), (82, 35296),

Gene: StevieWelch_107 Start: 56127, Stop: 55690, Start Num: 29
Candidate Starts for StevieWelch_107:
(10, 56298), (23, 56160), (Start: 29 @56127 has 32 MA's), (32, 56103), (34, 56082), (47, 55986), (49, 55974), (58, 55899),

Gene: Stoor_51 Start: 35304, Stop: 35735, Start Num: 29
Candidate Starts for Stoor_51:
(Start: 29 @35304 has 32 MA's), (35, 35352), (49, 35451), (50, 35454), (55, 35490), (63, 35553), (66, 35565), (69, 35598), (84, 35679),

Gene: Stromboli_51 Start: 35169, Stop: 35606, Start Num: 29
Candidate Starts for Stromboli_51:
(Start: 29 @35169 has 32 MA's), (35, 35217), (49, 35316), (50, 35319), (55, 35355), (63, 35418), (66, 35430), (69, 35469),

Gene: Tandem_107 Start: 58139, Stop: 57753, Start Num: 27
Candidate Starts for Tandem_107:
(15, 58232), (18, 58196), (22, 58163), (26, 58142), (Start: 27 @58139 has 7 MA's), (37, 58058), (41, 58040), (49, 57986), (52, 57962), (61, 57890), (67, 57854), (70, 57836),

Gene: WalkingDead_53 Start: 35918, Stop: 36355, Start Num: 29
Candidate Starts for WalkingDead_53:
(Start: 29 @35918 has 32 MA's), (35, 35966), (49, 36065), (50, 36068), (55, 36104), (63, 36167), (66, 36179), (69, 36218), (84, 36299),

Gene: Welcome_109 Start: 56727, Stop: 56290, Start Num: 29
Candidate Starts for Welcome_109:
(Start: 29 @56727 has 32 MA's), (32, 56703), (34, 56682), (47, 56586), (49, 56574), (50, 56571), (56, 56529), (58, 56499), (65, 56466),

Gene: Wolfstar_113 Start: 59574, Stop: 59188, Start Num: 27
Candidate Starts for Wolfstar_113:
(17, 59646), (21, 59601), (Start: 27 @59574 has 7 MA's), (39, 59481), (46, 59442), (49, 59409), (52, 59385), (55, 59373), (69, 59277),

Gene: Yuma_105 Start: 55848, Stop: 55411, Start Num: 29
Candidate Starts for Yuma_105:
(Start: 29 @55848 has 32 MA's), (32, 55824), (34, 55803), (47, 55707), (49, 55695), (50, 55692), (56, 55650), (58, 55620), (65, 55587),

Gene: Zooman_323 Start: 180374, Stop: 180850, Start Num: 29
Candidate Starts for Zooman_323:
(Start: 29 @180374 has 32 MA's), (38, 180458), (42, 180485), (51, 180572), (53, 180590), (67, 180686), (71, 180707), (76, 180722), (78, 180746),

Gene: Zooman_10 Start: 4723, Stop: 5199, Start Num: 29
Candidate Starts for Zooman_10:
(Start: 29 @4723 has 32 MA's), (38, 4807), (42, 4834), (51, 4921), (53, 4939), (67, 5035), (71, 5056), (76, 5071), (78, 5095),