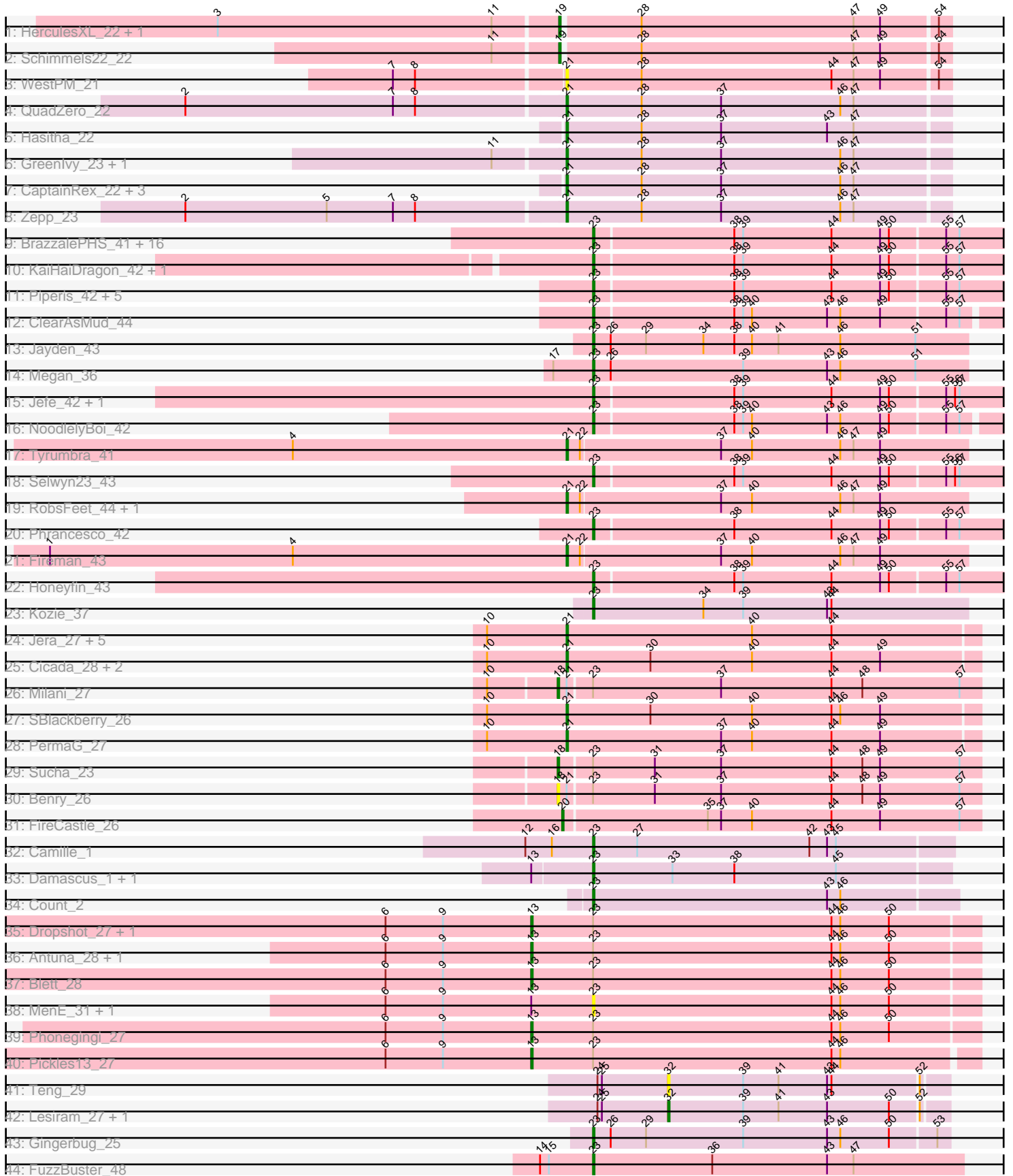


Pham 163530



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 163530 Report

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

Pham number 163530 has 85 members, 14 are drafts.

Phages represented in each track:

- Track 1 : HerculesXL_22, Tinyman4_22
- Track 2 : Schimmels22_22
- Track 3 : WestPM_21
- Track 4 : QuadZero_22
- Track 5 : Hasitha_22
- Track 6 : Greenlvy_23, Zayuliv_22
- Track 7 : CaptainRex_22, LilTerminator_23, Librie_22, Fulton_23
- Track 8 : Zepp_23
- Track 9 : BrazzalePHS_41, Hermeonysus_41, Paschalis_41, CrazyRich_41, Cranjis_43, Ganandorf_41, Phorgeous_41, Crisis_43, Quhwah_45, Scumberland_43, Savannah_41, Ramiel05_41, Jollipop_42, LittleFortune_43, Kowalski_41, Antares_42, Onika_41
- Track 10 : KaiHaiDragon_42, EarickHC_42
- Track 11 : Piperis_42, Busephilis_41, PierreOrion_42, Pulchra_43, PiperSansNom_42, Shotgun_41
- Track 12 : ClearAsMud_44
- Track 13 : Jayden_43
- Track 14 : Megan_36
- Track 15 : Jefe_42, Yeti_42
- Track 16 : NoodlelyBoi_42
- Track 17 : Tyumbra_41
- Track 18 : Selwyn23_43
- Track 19 : RobsFeet_44, Metamorphoo_43
- Track 20 : Phrancesco_42
- Track 21 : Fireman_43
- Track 22 : Honeyfin_43
- Track 23 : Kozie_37
- Track 24 : Jera_27, Htur_26, Rasovi_26, TurboVicky_26, Typher_28, Zanella_26
- Track 25 : Cicada_28, Goodman_27, Johann_27
- Track 26 : Milani_27
- Track 27 : SBlackberry_26
- Track 28 : PermaG_27
- Track 29 : Sucha_23
- Track 30 : Benry_26
- Track 31 : FireCastle_26
- Track 32 : Camille_1
- Track 33 : Damascus_1, DizzyRudy_1

- Track 34 : Count_2
- Track 35 : Dropshot_27, Warren_28
- Track 36 : Antuna_28, Appa_27
- Track 37 : Blett_28
- Track 38 : MenE_31, Bush_29
- Track 39 : Phonegingi_27
- Track 40 : Pickles13_27
- Track 41 : Teng_29
- Track 42 : Lesiram_27, DelaGarza_27
- Track 43 : Gingerbug_25
- Track 44 : FuzzBuster_48

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

The start number called the most often in the published annotations is 23, it was called in 37 of the 71 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antares_42, BrazzalePHS_41, Busephilis_41, Bush_29, Camille_1, ClearAsMud_44, Count_2, Cranjis_43, CrazyRich_41, Crisis_43, Damascus_1, DizzyRudy_1, EarickHC_42, FuzzBuster_48, Ganandorf_41, Gingerbug_25, Hermeonysus_41, Honeyfin_43, Jayden_43, Jefe_42, Jollipop_42, KaiHaiDragon_42, Kowalski_41, Kozie_37, LittleFortune_43, Megan_36, MenE_31, NoodlelyBoi_42, Onika_41, Paschalis_41, Phorgeous_41, Phrancesco_42, PierreOrion_42, PiperSansNom_42, Piperis_42, Pulchra_43, Quhwah_45, Ramiel05_41, Savannah_41, Scumberland_43, Selwyn23_43, Shotgun_41, Yeti_42,

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

- Antuna_28, Appa_27, Benry_26, Blett_28, Dropshot_27, Milani_27, Phonegingi_27, Pickles13_27, Sucha_23, Warren_28,

Genes that do not have the "Most Annotated" start:

- CaptainRex_22, Cicada_28, DelaGarza_27, FireCastle_26, Fireman_43, Fulton_23, Goodman_27, Greenlvy_23, Hasitha_22, HerculesXL_22, Htur_26, Jera_27, Johann_27, Lesiram_27, Librie_22, LilTerminator_23, Metamorphoo_43, PermaG_27, QuadZero_22, Rasovi_26, RobsFeet_44, SBlackberry_26, Schimmels22_22, Teng_29, Tinyman4_22, TurboVicky_26, Typher_28, Tyrumbra_41, WestPM_21, Zanella_26, Zayuliv_22, Zepp_23,

Summary by start number:

Start 13:

- Found in 11 of 85 (12.9%) of genes in pham
- Manual Annotations of this start: 7 of 71
- Called 63.6% of time when present
- Phage (with cluster) where this start called: Antuna_28 (GA), Appa_27 (GA), Blett_28 (GA), Dropshot_27 (GA), Phonegingi_27 (GA), Pickles13_27 (GA), Warren_28 (GA),

Start 18:

- Found in 3 of 85 (3.5%) of genes in pham
- Manual Annotations of this start: 2 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Berry_26 (EJ), Milani_27 (EJ), Sucha_23 (EJ),

Start 19:

- Found in 3 of 85 (3.5%) of genes in pham
- Manual Annotations of this start: 3 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: HerculesXL_22 (EA11), Schimmels22_22 (EA11), Tinyman4_22 (EA11),

Start 20:

- Found in 1 of 85 (1.2%) of genes in pham
- Manual Annotations of this start: 1 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: FireCastle_26 (EJ),

Start 21:

- Found in 27 of 85 (31.8%) of genes in pham
- Manual Annotations of this start: 20 of 71
- Called 92.6% of time when present
- Phage (with cluster) where this start called: CaptainRex_22 (EA5), Cicada_28 (EJ), Fireman_43 (EC), Fulton_23 (EA5), Goodman_27 (EJ), Greenlvy_23 (EA5), Hasitha_22 (EA5), Htur_26 (EJ), Jera_27 (EJ), Johann_27 (EJ), Librie_22 (EA5), LilTerminator_23 (EA5), Metamorphoo_43 (EC), PermaG_27 (EJ), QuadZero_22 (EA5), Rasovi_26 (EJ), RobsFeet_44 (EC), SBlackberry_26 (EJ), TurboVicky_26 (EJ), Typher_28 (EJ), Tyumbra_41 (EC), WestPM_21 (EA11), Zanella_26 (EJ), Zayuliv_22 (EA5), Zepp_23 (EA5),

Start 23:

- Found in 53 of 85 (62.4%) of genes in pham
- Manual Annotations of this start: 37 of 71
- Called 81.1% of time when present
- Phage (with cluster) where this start called: Antares_42 (EC), BrazzalePHS_41 (EC), Busephilis_41 (EC), Bush_29 (GA), Camille_1 (EL), ClearAsMud_44 (EC), Count_2 (EL), Cranjis_43 (EC), CrazyRich_41 (EC), Crisis_43 (EC), Damascus_1 (EL), DizzyRudy_1 (EL), EarickHC_42 (EC), FuzzBuster_48 (singleton), Ganandorf_41 (EC), Gingerbug_25 (GF), Hermeonysus_41 (EC), Honeyfin_43 (EC), Jayden_43 (EC), Jefe_42 (EC), Jollipop_42 (EC), KaiHaiDragon_42 (EC), Kowalski_41 (EC), Kozie_37 (EI), LittleFortune_43 (EC), Megan_36 (EC), MenE_31 (GA), NoodlelyBoi_42 (EC), Onika_41 (EC), Paschalis_41 (EC), Phorgeous_41 (EC), Phrancesco_42 (EC), PierreOrion_42 (EC), PiperSansNom_42 (EC), Piperis_42 (EC), Pulchra_43 (EC), Quhwah_45 (EC), Ramiel05_41 (EC), Savannah_41 (EC), Scumberland_43 (EC), Selwyn23_43 (EC), Shotgun_41 (EC), Yeti_42 (EC),

Start 32:

- Found in 3 of 85 (3.5%) of genes in pham
- Manual Annotations of this start: 1 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DelaGarza_27 (GF), Lesiram_27 (GF), Teng_29 (GF),

Summary by clusters:

There are 9 clusters represented in this pham: EL, singleton, EA11, EJ, EC, GF, GA, EI, EA5,

Info for manual annotations of cluster EA11:

- Start number 19 was manually annotated 3 times for cluster EA11.

Info for manual annotations of cluster EA5:

- Start number 21 was manually annotated 6 times for cluster EA5.

Info for manual annotations of cluster EC:

- Start number 21 was manually annotated 4 times for cluster EC.
- Start number 23 was manually annotated 30 times for cluster EC.

Info for manual annotations of cluster EI:

- Start number 23 was manually annotated 1 time for cluster EI.

Info for manual annotations of cluster EJ:

- Start number 18 was manually annotated 2 times for cluster EJ.
- Start number 20 was manually annotated 1 time for cluster EJ.
- Start number 21 was manually annotated 10 times for cluster EJ.

Info for manual annotations of cluster EL:

- Start number 23 was manually annotated 4 times for cluster EL.

Info for manual annotations of cluster GA:

- Start number 13 was manually annotated 7 times for cluster GA.

Info for manual annotations of cluster GF:

- Start number 23 was manually annotated 1 time for cluster GF.
- Start number 32 was manually annotated 1 time for cluster GF.

Gene Information:

Gene: Antares_42 Start: 29929, Stop: 30222, Start Num: 23

Candidate Starts for Antares_42:

(Start: 23 @29929 has 37 MA's), (38, 30022), (39, 30028), (44, 30088), (49, 30121), (50, 30127), (55, 30163), (57, 30172),

Gene: Antuna_28 Start: 18326, Stop: 18628, Start Num: 13

Candidate Starts for Antuna_28:

(6, 18227), (9, 18266), (Start: 13 @18326 has 7 MA's), (Start: 23 @18368 has 37 MA's), (44, 18530), (46, 18536), (50, 18569),

Gene: Appa_27 Start: 18188, Stop: 18493, Start Num: 13

Candidate Starts for Appa_27:

(6, 18089), (9, 18128), (Start: 13 @18188 has 7 MA's), (Start: 23 @18230 has 37 MA's), (44, 18392), (46, 18398), (50, 18431),

Gene: Benry_26 Start: 18897, Stop: 19181, Start Num: 18

Candidate Starts for Benry_26:

(Start: 18 @18897 has 2 MA's), (Start: 21 @18903 has 20 MA's), (Start: 23 @18918 has 37 MA's), (31, 18960), (37, 19005), (44, 19080), (48, 19101), (49, 19113), (57, 19167),

Gene: Blett_28 Start: 18338, Stop: 18640, Start Num: 13

Candidate Starts for Blett_28:

(6, 18239), (9, 18278), (Start: 13 @18338 has 7 MA's), (Start: 23 @18380 has 37 MA's), (44, 18542), (46, 18548), (50, 18581),

Gene: BrazzalePHS_41 Start: 29724, Stop: 30017, Start Num: 23

Candidate Starts for BrazzalePHS_41:

(Start: 23 @29724 has 37 MA's), (38, 29817), (39, 29823), (44, 29883), (49, 29916), (50, 29922), (55, 29958), (57, 29967),

Gene: Busephilis_41 Start: 29665, Stop: 29958, Start Num: 23

Candidate Starts for Busephilis_41:

(Start: 23 @29665 has 37 MA's), (38, 29758), (39, 29764), (44, 29824), (49, 29857), (50, 29863), (55, 29899), (57, 29908),

Gene: Bush_29 Start: 18358, Stop: 18618, Start Num: 23

Candidate Starts for Bush_29:

(6, 18217), (9, 18256), (Start: 13 @18316 has 7 MA's), (Start: 23 @18358 has 37 MA's), (44, 18520), (46, 18526), (50, 18559),

Gene: Camille_1 Start: 116, Stop: 358, Start Num: 23

Candidate Starts for Camille_1:

(12, 71), (16, 89), (Start: 23 @116 has 37 MA's), (27, 146), (42, 263), (43, 275), (45, 281),

Gene: CaptainRex_22 Start: 16502, Stop: 16759, Start Num: 21

Candidate Starts for CaptainRex_22:

(Start: 21 @16502 has 20 MA's), (28, 16553), (37, 16607), (46, 16688), (47, 16697),

Gene: Cicada_28 Start: 20423, Stop: 20701, Start Num: 21

Candidate Starts for Cicada_28:

(10, 20369), (Start: 21 @20423 has 20 MA's), (30, 20480), (40, 20549), (44, 20603), (49, 20636),

Gene: ClearAsMud_44 Start: 29829, Stop: 30116, Start Num: 23

Candidate Starts for ClearAsMud_44:

(Start: 23 @29829 has 37 MA's), (38, 29922), (39, 29928), (40, 29934), (43, 29985), (46, 29994), (49, 30021), (55, 30063), (57, 30072),

Gene: Count_2 Start: 251, Stop: 496, Start Num: 23

Candidate Starts for Count_2:

(Start: 23 @251 has 37 MA's), (43, 410), (46, 419),

Gene: Cranjis_43 Start: 29884, Stop: 30177, Start Num: 23

Candidate Starts for Cranjis_43:

(Start: 23 @29884 has 37 MA's), (38, 29977), (39, 29983), (44, 30043), (49, 30076), (50, 30082), (55, 30118), (57, 30127),

Gene: CrazyRich_41 Start: 29693, Stop: 29986, Start Num: 23

Candidate Starts for CrazyRich_41:

(Start: 23 @29693 has 37 MA's), (38, 29786), (39, 29792), (44, 29852), (49, 29885), (50, 29891), (55, 29927), (57, 29936),

Gene: Crisis_43 Start: 29684, Stop: 29977, Start Num: 23

Candidate Starts for Crisis_43:

(Start: 23 @29684 has 37 MA's), (38, 29777), (39, 29783), (44, 29843), (49, 29876), (50, 29882), (55, 29918), (57, 29927),

Gene: Damascus_1 Start: 74, Stop: 313, Start Num: 23

Candidate Starts for Damascus_1:

(Start: 13 @35 has 7 MA's), (Start: 23 @74 has 37 MA's), (33, 128), (38, 170), (45, 239),

Gene: DelaGarza_27 Start: 18870, Stop: 19055, Start Num: 32

Candidate Starts for DelaGarza_27:

(24, 18822), (25, 18825), (Start: 32 @18870 has 1 MA's), (39, 18921), (41, 18945), (43, 18978), (50, 19020), (52, 19038),

Gene: DizzyRudy_1 Start: 74, Stop: 313, Start Num: 23

Candidate Starts for DizzyRudy_1:

(Start: 13 @35 has 7 MA's), (Start: 23 @74 has 37 MA's), (33, 128), (38, 170), (45, 239),

Gene: Dropshot_27 Start: 18188, Stop: 18490, Start Num: 13

Candidate Starts for Dropshot_27:

(6, 18089), (9, 18128), (Start: 13 @18188 has 7 MA's), (Start: 23 @18230 has 37 MA's), (44, 18392), (46, 18398), (50, 18431),

Gene: EarickHC_42 Start: 29607, Stop: 29900, Start Num: 23

Candidate Starts for EarickHC_42:

(Start: 23 @29607 has 37 MA's), (38, 29700), (39, 29706), (44, 29766), (49, 29799), (50, 29805), (55, 29841), (57, 29850),

Gene: FireCastle_26 Start: 20491, Stop: 20772, Start Num: 20

Candidate Starts for FireCastle_26:

(Start: 20 @20491 has 1 MA's), (35, 20587), (37, 20596), (40, 20617), (44, 20671), (49, 20704), (57, 20758),

Gene: Fireman_43 Start: 31207, Stop: 31476, Start Num: 21

Candidate Starts for Fireman_43:

(1, 30856), (4, 31021), (Start: 21 @31207 has 20 MA's), (22, 31216), (37, 31309), (40, 31330), (46, 31390), (47, 31399), (49, 31417),

Gene: Fulton_23 Start: 16484, Stop: 16741, Start Num: 21

Candidate Starts for Fulton_23:

(Start: 21 @16484 has 20 MA's), (28, 16535), (37, 16589), (46, 16670), (47, 16679),

Gene: FuzzBuster_48 Start: 30251, Stop: 30502, Start Num: 23

Candidate Starts for FuzzBuster_48:

(14, 30215), (15, 30221), (Start: 23 @30251 has 37 MA's), (36, 30332), (43, 30410), (47, 30428),

Gene: Ganandorf_41 Start: 29746, Stop: 30039, Start Num: 23

Candidate Starts for Ganandorf_41:

(Start: 23 @29746 has 37 MA's), (38, 29839), (39, 29845), (44, 29905), (49, 29938), (50, 29944), (55, 29980), (57, 29989),

Gene: Gingerbug_25 Start: 18946, Stop: 19185, Start Num: 23

Candidate Starts for Gingerbug_25:

(Start: 23 @18946 has 37 MA's), (26, 18958), (29, 18982), (39, 19048), (43, 19105), (46, 19114), (50, 19147), (53, 19177),

Gene: Goodman_27 Start: 20336, Stop: 20614, Start Num: 21

Candidate Starts for Goodman_27:

(10, 20282), (Start: 21 @20336 has 20 MA's), (30, 20393), (40, 20462), (44, 20516), (49, 20549),

Gene: Greenlvy_23 Start: 17076, Stop: 17333, Start Num: 21

Candidate Starts for Greenlvy_23:

(11, 17034), (Start: 21 @17076 has 20 MA's), (28, 17127), (37, 17181), (46, 17262), (47, 17271),

Gene: Hasitha_22 Start: 16502, Stop: 16759, Start Num: 21

Candidate Starts for Hasitha_22:

(Start: 21 @16502 has 20 MA's), (28, 16553), (37, 16607), (43, 16679), (47, 16697),

Gene: HerculesXL_22 Start: 16593, Stop: 16850, Start Num: 19

Candidate Starts for HerculesXL_22:

(3, 16365), (11, 16551), (Start: 19 @16593 has 3 MA's), (28, 16644), (47, 16788), (49, 16806), (54, 16842),

Gene: Hermeonysus_41 Start: 29613, Stop: 29906, Start Num: 23

Candidate Starts for Hermeonysus_41:

(Start: 23 @29613 has 37 MA's), (38, 29706), (39, 29712), (44, 29772), (49, 29805), (50, 29811), (55, 29847), (57, 29856),

Gene: Honeyfin_43 Start: 29934, Stop: 30227, Start Num: 23

Candidate Starts for Honeyfin_43:

(Start: 23 @29934 has 37 MA's), (38, 30027), (39, 30033), (44, 30093), (49, 30126), (50, 30132), (55, 30168), (57, 30177),

Gene: Htur_26 Start: 20391, Stop: 20669, Start Num: 21

Candidate Starts for Htur_26:

(10, 20337), (Start: 21 @20391 has 20 MA's), (40, 20517), (44, 20571),

Gene: Jayden_43 Start: 30188, Stop: 30442, Start Num: 23

Candidate Starts for Jayden_43:

(Start: 23 @30188 has 37 MA's), (26, 30200), (29, 30224), (34, 30263), (38, 30284), (40, 30296), (41, 30314), (46, 30356), (51, 30407),

Gene: Jefe_42 Start: 29671, Stop: 29964, Start Num: 23

Candidate Starts for Jefe_42:

(Start: 23 @29671 has 37 MA's), (38, 29764), (39, 29770), (44, 29830), (49, 29863), (50, 29869), (55, 29905), (56, 29911), (57, 29914),

Gene: Jera_27 Start: 19448, Stop: 19726, Start Num: 21

Candidate Starts for Jera_27:

(10, 19394), (Start: 21 @19448 has 20 MA's), (40, 19574), (44, 19628),

Gene: Johann_27 Start: 20336, Stop: 20614, Start Num: 21

Candidate Starts for Johann_27:

(10, 20282), (Start: 21 @20336 has 20 MA's), (30, 20393), (40, 20462), (44, 20516), (49, 20549),

Gene: Jollipop_42 Start: 30010, Stop: 30303, Start Num: 23

Candidate Starts for Jollipop_42:

(Start: 23 @30010 has 37 MA's), (38, 30103), (39, 30109), (44, 30169), (49, 30202), (50, 30208), (55, 30244), (57, 30253),

Gene: KaiHaiDragon_42 Start: 29607, Stop: 29900, Start Num: 23

Candidate Starts for KaiHaiDragon_42:

(Start: 23 @29607 has 37 MA's), (38, 29700), (39, 29706), (44, 29766), (49, 29799), (50, 29805), (55, 29841), (57, 29850),

Gene: Kowalski_41 Start: 29720, Stop: 30013, Start Num: 23

Candidate Starts for Kowalski_41:

(Start: 23 @29720 has 37 MA's), (38, 29813), (39, 29819), (44, 29879), (49, 29912), (50, 29918), (55, 29954), (57, 29963),

Gene: Kozie_37 Start: 29192, Stop: 29446, Start Num: 23

Candidate Starts for Kozie_37:

(Start: 23 @29192 has 37 MA's), (34, 29267), (39, 29294), (43, 29351), (44, 29354),

Gene: Lesiram_27 Start: 18839, Stop: 19024, Start Num: 32

Candidate Starts for Lesiram_27:

(24, 18791), (25, 18794), (Start: 32 @18839 has 1 MA's), (39, 18890), (41, 18914), (43, 18947), (50, 18989), (52, 19007),

Gene: Librie_22 Start: 16502, Stop: 16759, Start Num: 21

Candidate Starts for Librie_22:

(Start: 21 @16502 has 20 MA's), (28, 16553), (37, 16607), (46, 16688), (47, 16697),

Gene: LilTerminator_23 Start: 16508, Stop: 16765, Start Num: 21

Candidate Starts for LilTerminator_23:

(Start: 21 @16508 has 20 MA's), (28, 16559), (37, 16613), (46, 16694), (47, 16703),

Gene: LittleFortune_43 Start: 29976, Stop: 30269, Start Num: 23

Candidate Starts for LittleFortune_43:

(Start: 23 @29976 has 37 MA's), (38, 30069), (39, 30075), (44, 30135), (49, 30168), (50, 30174), (55, 30210), (57, 30219),

Gene: Megan_36 Start: 30627, Stop: 30881, Start Num: 23

Candidate Starts for Megan_36:

(17, 30600), (Start: 23 @30627 has 37 MA's), (26, 30639), (39, 30729), (43, 30786), (46, 30795), (51, 30846),

Gene: MenE_31 Start: 18498, Stop: 18758, Start Num: 23

Candidate Starts for MenE_31:

(6, 18357), (9, 18396), (Start: 13 @18456 has 7 MA's), (Start: 23 @18498 has 37 MA's), (44, 18660), (46, 18666), (50, 18699),

Gene: Metamorphoo_43 Start: 30469, Stop: 30738, Start Num: 21

Candidate Starts for Metamorphoo_43:

(Start: 21 @30469 has 20 MA's), (22, 30478), (37, 30571), (40, 30592), (46, 30652), (47, 30661), (49, 30679),

Gene: Milani_27 Start: 19537, Stop: 19821, Start Num: 18

Candidate Starts for Milani_27:

(10, 19492), (Start: 18 @19537 has 2 MA's), (Start: 21 @19543 has 20 MA's), (Start: 23 @19558 has 37 MA's), (37, 19645), (44, 19720), (48, 19741), (57, 19807),

Gene: NoodlelyBoi_42 Start: 30039, Stop: 30326, Start Num: 23

Candidate Starts for NoodlelyBoi_42:

(Start: 23 @30039 has 37 MA's), (38, 30132), (39, 30138), (40, 30144), (43, 30195), (46, 30204), (49, 30231), (50, 30237), (55, 30273), (57, 30282),

Gene: Onika_41 Start: 29695, Stop: 29988, Start Num: 23

Candidate Starts for Onika_41:

(Start: 23 @29695 has 37 MA's), (38, 29788), (39, 29794), (44, 29854), (49, 29887), (50, 29893), (55, 29929), (57, 29938),

Gene: Paschalis_41 Start: 29702, Stop: 29995, Start Num: 23

Candidate Starts for Paschalis_41:

(Start: 23 @29702 has 37 MA's), (38, 29795), (39, 29801), (44, 29861), (49, 29894), (50, 29900), (55, 29936), (57, 29945),

Gene: PermaG_27 Start: 20401, Stop: 20679, Start Num: 21

Candidate Starts for PermaG_27:

(10, 20347), (Start: 21 @20401 has 20 MA's), (37, 20506), (40, 20527), (44, 20581), (49, 20614),

Gene: Phonegingi_27 Start: 18231, Stop: 18533, Start Num: 13

Candidate Starts for Phonegingi_27:

(6, 18132), (9, 18171), (Start: 13 @18231 has 7 MA's), (Start: 23 @18273 has 37 MA's), (44, 18435), (46, 18441), (50, 18474),

Gene: Phorgeous_41 Start: 29565, Stop: 29858, Start Num: 23

Candidate Starts for Phorgeous_41:

(Start: 23 @29565 has 37 MA's), (38, 29658), (39, 29664), (44, 29724), (49, 29757), (50, 29763), (55, 29799), (57, 29808),

Gene: Phrancesco_42 Start: 29846, Stop: 30148, Start Num: 23

Candidate Starts for Phrancesco_42:

(Start: 23 @29846 has 37 MA's), (38, 29939), (44, 30005), (49, 30038), (50, 30044), (55, 30080), (57, 30089),

Gene: Pickles13_27 Start: 18619, Stop: 18918, Start Num: 13

Candidate Starts for Pickles13_27:

(6, 18520), (9, 18559), (Start: 13 @18619 has 7 MA's), (Start: 23 @18661 has 37 MA's), (44, 18823), (46, 18829),

Gene: PierreOrion_42 Start: 29869, Stop: 30162, Start Num: 23

Candidate Starts for PierreOrion_42:

(Start: 23 @29869 has 37 MA's), (38, 29962), (39, 29968), (44, 30028), (49, 30061), (50, 30067), (55, 30103), (57, 30112),

Gene: PiperSansNom_42 Start: 30009, Stop: 30302, Start Num: 23

Candidate Starts for PiperSansNom_42:

(Start: 23 @30009 has 37 MA's), (38, 30102), (39, 30108), (44, 30168), (49, 30201), (50, 30207), (55, 30243), (57, 30252),

Gene: Piperis_42 Start: 29688, Stop: 29981, Start Num: 23

Candidate Starts for Piperis_42:

(Start: 23 @29688 has 37 MA's), (38, 29781), (39, 29787), (44, 29847), (49, 29880), (50, 29886), (55, 29922), (57, 29931),

Gene: Pulchra_43 Start: 30085, Stop: 30378, Start Num: 23

Candidate Starts for Pulchra_43:

(Start: 23 @30085 has 37 MA's), (38, 30178), (39, 30184), (44, 30244), (49, 30277), (50, 30283), (55, 30319), (57, 30328),

Gene: QuadZero_22 Start: 16512, Stop: 16769, Start Num: 21

Candidate Starts for QuadZero_22:

(2, 16263), (7, 16404), (8, 16419), (Start: 21 @16512 has 20 MA's), (28, 16563), (37, 16617), (46, 16698), (47, 16707),

Gene: Quhwah_45 Start: 30317, Stop: 30610, Start Num: 23

Candidate Starts for Quhwah_45:

(Start: 23 @30317 has 37 MA's), (38, 30410), (39, 30416), (44, 30476), (49, 30509), (50, 30515), (55, 30551), (57, 30560),

Gene: Ramiel05_41 Start: 29720, Stop: 30013, Start Num: 23

Candidate Starts for Ramiel05_41:

(Start: 23 @29720 has 37 MA's), (38, 29813), (39, 29819), (44, 29879), (49, 29912), (50, 29918), (55, 29954), (57, 29963),

Gene: Rasovi_26 Start: 20391, Stop: 20669, Start Num: 21

Candidate Starts for Rasovi_26:

(10, 20337), (Start: 21 @20391 has 20 MA's), (40, 20517), (44, 20571),

Gene: RobsFeet_44 Start: 30750, Stop: 31019, Start Num: 21

Candidate Starts for RobsFeet_44:

(Start: 21 @30750 has 20 MA's), (22, 30759), (37, 30852), (40, 30873), (46, 30933), (47, 30942), (49, 30960),

Gene: SBlackberry_26 Start: 20201, Stop: 20479, Start Num: 21

Candidate Starts for SBlackberry_26:

(10, 20147), (Start: 21 @20201 has 20 MA's), (30, 20258), (40, 20327), (44, 20381), (46, 20387), (49, 20414),

Gene: Savannah_41 Start: 29747, Stop: 30040, Start Num: 23

Candidate Starts for Savannah_41:

(Start: 23 @29747 has 37 MA's), (38, 29840), (39, 29846), (44, 29906), (49, 29939), (50, 29945), (55, 29981), (57, 29990),

Gene: Schimmels22_22 Start: 16956, Stop: 17213, Start Num: 19

Candidate Starts for Schimmels22_22:

(11, 16914), (Start: 19 @16956 has 3 MA's), (28, 17007), (47, 17151), (49, 17169), (54, 17205),

Gene: Scumberland_43 Start: 29942, Stop: 30235, Start Num: 23

Candidate Starts for Scumberland_43:

(Start: 23 @29942 has 37 MA's), (38, 30035), (39, 30041), (44, 30101), (49, 30134), (50, 30140), (55, 30176), (57, 30185),

Gene: Selwyn23_43 Start: 29919, Stop: 30212, Start Num: 23

Candidate Starts for Selwyn23_43:

(Start: 23 @29919 has 37 MA's), (38, 30012), (39, 30018), (44, 30078), (49, 30111), (50, 30117), (55, 30153), (56, 30159), (57, 30162),

Gene: Shotgun_41 Start: 29546, Stop: 29839, Start Num: 23

Candidate Starts for Shotgun_41:

(Start: 23 @29546 has 37 MA's), (38, 29639), (39, 29645), (44, 29705), (49, 29738), (50, 29744), (55, 29780), (57, 29789),

Gene: Sucha_23 Start: 17894, Stop: 18178, Start Num: 18

Candidate Starts for Sucha_23:

(Start: 18 @17894 has 2 MA's), (Start: 23 @17915 has 37 MA's), (31, 17957), (37, 18002), (44, 18077), (48, 18098), (49, 18110), (57, 18164),

Gene: Teng_29 Start: 18889, Stop: 19074, Start Num: 32

Candidate Starts for Teng_29:

(24, 18841), (25, 18844), (Start: 32 @18889 has 1 MA's), (39, 18940), (41, 18964), (43, 18997), (44, 19000), (52, 19057),

Gene: Tinyman4_22 Start: 16593, Stop: 16850, Start Num: 19

Candidate Starts for Tinyman4_22:

(3, 16365), (11, 16551), (Start: 19 @16593 has 3 MA's), (28, 16644), (47, 16788), (49, 16806), (54, 16842),

Gene: TurboVicky_26 Start: 20200, Stop: 20478, Start Num: 21

Candidate Starts for TurboVicky_26:

(10, 20146), (Start: 21 @20200 has 20 MA's), (40, 20326), (44, 20380),

Gene: Typher_28 Start: 20329, Stop: 20607, Start Num: 21

Candidate Starts for Typher_28:

(10, 20275), (Start: 21 @20329 has 20 MA's), (40, 20455), (44, 20509),

Gene: Tyumbra_41 Start: 30550, Stop: 30819, Start Num: 21

Candidate Starts for Tyumbra_41:

(4, 30364), (Start: 21 @30550 has 20 MA's), (22, 30559), (37, 30652), (40, 30673), (46, 30733), (47, 30742), (49, 30760),

Gene: Warren_28 Start: 18392, Stop: 18691, Start Num: 13

Candidate Starts for Warren_28:

(6, 18293), (9, 18332), (Start: 13 @18392 has 7 MA's), (Start: 23 @18434 has 37 MA's), (44, 18596), (46, 18602), (50, 18635),

Gene: WestPM_21 Start: 16437, Stop: 16694, Start Num: 21

Candidate Starts for WestPM_21:

(7, 16326), (8, 16341), (Start: 21 @16437 has 20 MA's), (28, 16488), (44, 16617), (47, 16632), (49, 16650), (54, 16686),

Gene: Yeti_42 Start: 29721, Stop: 30014, Start Num: 23

Candidate Starts for Yeti_42:

(Start: 23 @29721 has 37 MA's), (38, 29814), (39, 29820), (44, 29880), (49, 29913), (50, 29919), (55, 29955), (56, 29961), (57, 29964),

Gene: Zanella_26 Start: 20203, Stop: 20481, Start Num: 21

Candidate Starts for Zanella_26:

(10, 20149), (Start: 21 @20203 has 20 MA's), (40, 20329), (44, 20383),

Gene: Zayuliv_22 Start: 17098, Stop: 17355, Start Num: 21

Candidate Starts for Zayuliv_22:

(11, 17056), (Start: 21 @17098 has 20 MA's), (28, 17149), (37, 17203), (46, 17284), (47, 17293),

Gene: Zepp_23 Start: 16496, Stop: 16753, Start Num: 21

Candidate Starts for Zepp_23:

(2, 16247), (5, 16343), (7, 16388), (8, 16403), (Start: 21 @16496 has 20 MA's), (28, 16547), (37, 16601), (46, 16682), (47, 16691),