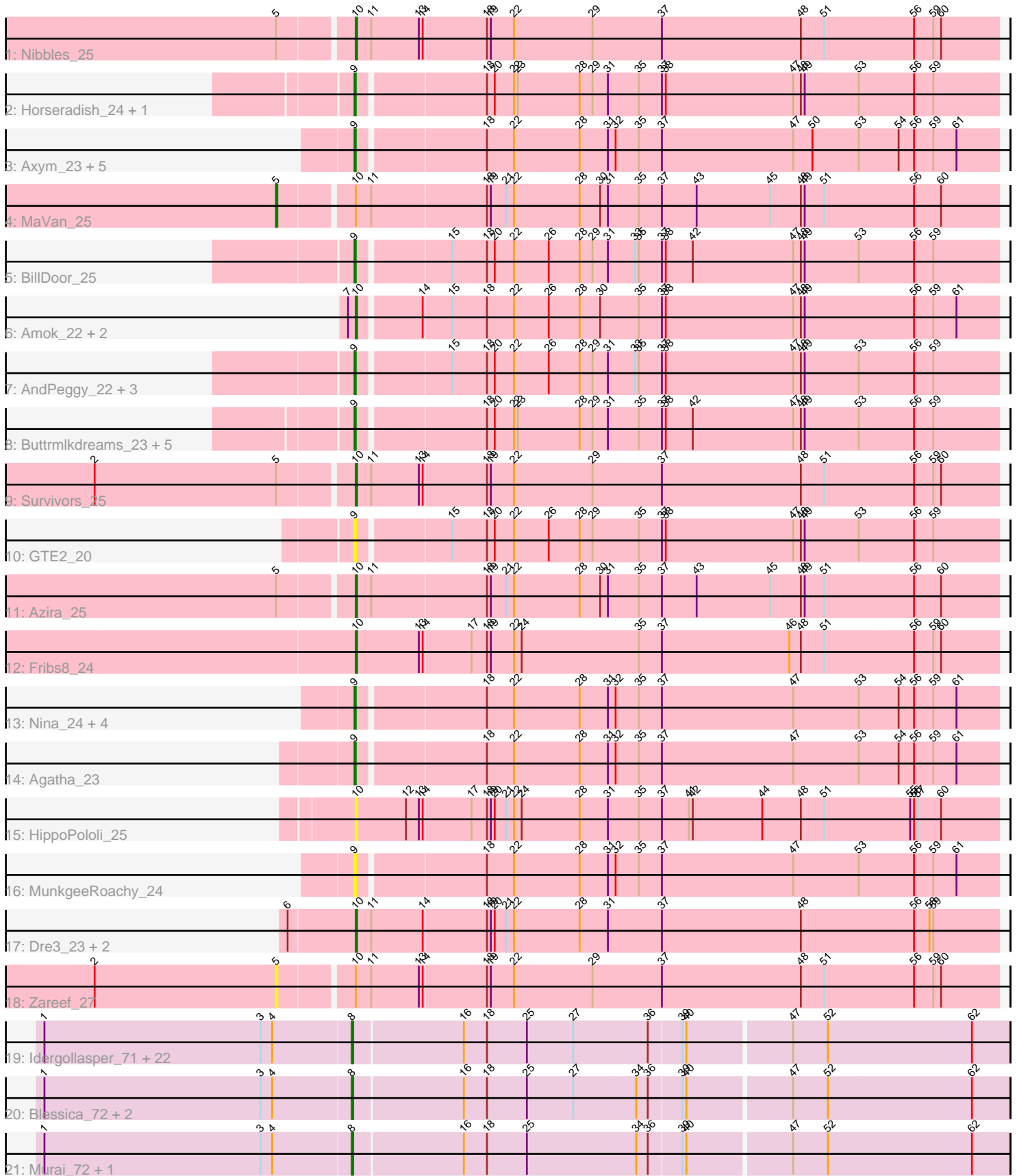


Pham 163593



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 163593 Report

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

Pham number 163593 has 68 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Nibbles_25
- Track 2 : Horseradish_24, Yummy_24
- Track 3 : Axym_23, Sopespian_23, RedBaron_24, Elliott_23, GoldHunter_24, PsychoKiller_23
- Track 4 : MaVan_25
- Track 5 : BillDoor_25
- Track 6 : Amok_22, Emalyn_22, AikoCarson_22
- Track 7 : AndPeggy_22, Tolls_25, Yarn_22, SteamedHams_25
- Track 8 : Buttrmilkdreams_23, Troje_23, MScarn_25, Biskit_24, SketchMex_22, SweatNTears_25
- Track 9 : Survivors_25
- Track 10 : GTE2_20
- Track 11 : Azira_25
- Track 12 : Fribs8_24
- Track 13 : Nina_24, Cozz_23, Typhonmachy_24, Burnsey_23, Quasar_23
- Track 14 : Agatha_23
- Track 15 : HippoPololi_25
- Track 16 : MunkgeeRoachy_24
- Track 17 : Dre3_23, Cleo_23, Gibbous_23
- Track 18 : Zareef_27
- Track 19 : Idergollasper_71, Corndog_74, Krili_70, Catdawg_71, FoulBall_68, Alkhayr_69, Firecracker_73, JangDynasty_71, TelAviv_68, YungJamal_76, Dylan_71, Familton_72, Vorrps_71, Wildflower_69, Mori_71, Zakhe101_70, Smooch_74, Schuy_69, Winget_72, NiebruSaylor_70, Ashwin_72, Shida_71, SchoolBus_71
- Track 20 : Blessica_72, Ryadel_75, MadKillah_72
- Track 21 : Murai_72, Bora_69

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

The start number called the most often in the published annotations is 8, it was called in 22 of the 52 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alkhayr_69, Ashwin_72, Blessica_72, Bora_69, Catdawg_71, Corndog_74, Dylan_71, Familton_72, Firecracker_73, FoulBall_68, Idergollasper_71, JangDynasty_71, Krili_70, MadKillah_72, Mori_71, Murai_72, NiebruSaylor_70, Ryadel_75, SchoolBus_71, Schuy_69, Shida_71, Smooch_74, TelAviv_68, Vorrrps_71, Wildflower_69, Winget_72, YungJamal_76, Zakhe101_70,

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

-

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

- Agatha_23, AikoCarson_22, Amok_22, AndPeggy_22, Axym_23, Azira_25, BillDoor_25, Biskit_24, Burnsey_23, Buttrmlkdreams_23, Cleo_23, Cozz_23, Dre3_23, Elliott_23, Emalyn_22, Fribs8_24, GTE2_20, Gibbous_23, GoldHunter_24, HippoPololi_25, Horseradish_24, MScarn_25, MaVan_25, MunkgeeRoachy_24, Nibbles_25, Nina_24, PsychoKiller_23, Quasar_23, RedBaron_24, SketchMex_22, Sopespian_23, SteamedHams_25, Survivors_25, SweatNTears_25, Tolls_25, Troje_23, Typhonomachy_24, Yarn_22, Yummy_24, Zareef_27,

Summary by start number:

Start 5:

- Found in 5 of 68 (7.4%) of genes in pham
- Manual Annotations of this start: 1 of 52
- Called 40.0% of time when present
- Phage (with cluster) where this start called: MaVan_25 (CT), Zareef_27 (CT),

Start 8:

- Found in 28 of 68 (41.2%) of genes in pham
- Manual Annotations of this start: 22 of 52
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alkhayr_69 (O), Ashwin_72 (O), Blessica_72 (O), Bora_69 (O), Catdawg_71 (O), Corndog_74 (O), Dylan_71 (O), Familton_72 (O), Firecracker_73 (O), FoulBall_68 (O), Idergollasper_71 (O), JangDynasty_71 (O), Krili_70 (O), MadKillah_72 (O), Mori_71 (O), Murai_72 (O), NiebruSaylor_70 (O), Ryadel_75 (O), SchoolBus_71 (O), Schuy_69 (O), Shida_71 (O), Smooch_74 (O), TelAviv_68 (O), Vorrrps_71 (O), Wildflower_69 (O), Winget_72 (O), YungJamal_76 (O), Zakhe101_70 (O),

Start 9:

- Found in 27 of 68 (39.7%) of genes in pham
- Manual Annotations of this start: 19 of 52
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Agatha_23 (CT), AndPeggy_22 (CT), Axym_23 (CT), BillDoor_25 (CT), Biskit_24 (CT), Burnsey_23 (CT), Buttrmlkdreams_23 (CT), Cozz_23 (CT), Elliott_23 (CT), GTE2_20 (CT), GoldHunter_24 (CT), Horseradish_24 (CT), MScarn_25 (CT), MunkgeeRoachy_24 (CT), Nina_24 (CT), PsychoKiller_23 (CT), Quasar_23 (CT), RedBaron_24 (CT), SketchMex_22 (CT), Sopespian_23 (CT), SteamedHams_25 (CT), SweatNTears_25 (CT), Tolls_25 (CT), Troje_23 (CT), Typhonomachy_24 (CT), Yarn_22 (CT), Yummy_24 (CT),

Start 10:

- Found in 13 of 68 (19.1%) of genes in pham

- Manual Annotations of this start: 10 of 52
- Called 84.6% of time when present
- Phage (with cluster) where this start called: AikoCarson_22 (CT), Amok_22 (CT), Azira_25 (CT), Cleo_23 (CT), Dre3_23 (CT), Emalyn_22 (CT), Fribs8_24 (CT), Gibbous_23 (CT), HippoPololi_25 (CT), Nibbles_25 (CT), Survivors_25 (CT),

Summary by clusters:

There are 2 clusters represented in this pham: O, CT,

Info for manual annotations of cluster CT:

- Start number 5 was manually annotated 1 time for cluster CT.
- Start number 9 was manually annotated 19 times for cluster CT.
- Start number 10 was manually annotated 10 times for cluster CT.

Info for manual annotations of cluster O:

- Start number 8 was manually annotated 22 times for cluster O.

Gene Information:

Gene: Agatha_23 Start: 19719, Stop: 20207, Start Num: 9

Candidate Starts for Agatha_23:

(Start: 9 @19719 has 19 MA's), (18, 19812), (22, 19833), (28, 19884), (31, 19905), (32, 19911), (35, 19929), (37, 19947), (47, 20049), (53, 20100), (54, 20130), (56, 20142), (59, 20157), (61, 20175),

Gene: AikoCarson_22 Start: 18977, Stop: 19465, Start Num: 10

Candidate Starts for AikoCarson_22:

(7, 18971), (Start: 10 @18977 has 10 MA's), (14, 19022), (15, 19043), (18, 19070), (22, 19091), (26, 19118), (28, 19142), (30, 19157), (35, 19187), (37, 19205), (38, 19208), (47, 19307), (48, 19313), (49, 19316), (56, 19400), (59, 19415), (61, 19433),

Gene: Alkhayr_69 Start: 45256, Stop: 45753, Start Num: 8

Candidate Starts for Alkhayr_69:

(1, 45019), (3, 45187), (4, 45196), (Start: 8 @45256 has 22 MA's), (16, 45340), (18, 45358), (25, 45388), (27, 45424), (36, 45481), (39, 45505), (40, 45508), (47, 45586), (52, 45613), (62, 45724),

Gene: Amok_22 Start: 18974, Stop: 19462, Start Num: 10

Candidate Starts for Amok_22:

(7, 18968), (Start: 10 @18974 has 10 MA's), (14, 19019), (15, 19040), (18, 19067), (22, 19088), (26, 19115), (28, 19139), (30, 19154), (35, 19184), (37, 19202), (38, 19205), (47, 19304), (48, 19310), (49, 19313), (56, 19397), (59, 19412), (61, 19430),

Gene: AndPeggy_22 Start: 19379, Stop: 19867, Start Num: 9

Candidate Starts for AndPeggy_22:

(Start: 9 @19379 has 19 MA's), (15, 19445), (18, 19472), (20, 19478), (22, 19493), (26, 19520), (28, 19544), (29, 19553), (31, 19565), (33, 19586), (35, 19589), (37, 19607), (38, 19610), (47, 19709), (48, 19715), (49, 19718), (53, 19760), (56, 19802), (59, 19817),

Gene: Ashwin_72 Start: 46026, Stop: 46523, Start Num: 8

Candidate Starts for Ashwin_72:

(1, 45789), (3, 45957), (4, 45966), (Start: 8 @46026 has 22 MA's), (16, 46110), (18, 46128), (25, 46158), (27, 46194), (36, 46251), (39, 46275), (40, 46278), (47, 46356), (52, 46383), (62, 46494),

Gene: Axym_23 Start: 19719, Stop: 20207, Start Num: 9

Candidate Starts for Axym_23:

(Start: 9 @19719 has 19 MA's), (18, 19812), (22, 19833), (28, 19884), (31, 19905), (32, 19911), (35, 19929), (37, 19947), (47, 20049), (50, 20064), (53, 20100), (54, 20130), (56, 20142), (59, 20157), (61, 20175),

Gene: Azira_25 Start: 20672, Stop: 21166, Start Num: 10

Candidate Starts for Azira_25:

(Start: 5 @20618 has 1 MA's), (Start: 10 @20672 has 10 MA's), (11, 20684), (18, 20771), (19, 20774), (21, 20786), (22, 20792), (28, 20843), (30, 20858), (31, 20864), (35, 20888), (37, 20906), (43, 20933), (45, 20990), (48, 21014), (49, 21017), (51, 21032), (56, 21101), (60, 21122),

Gene: BillDoor_25 Start: 19347, Stop: 19835, Start Num: 9

Candidate Starts for BillDoor_25:

(Start: 9 @19347 has 19 MA's), (15, 19413), (18, 19440), (20, 19446), (22, 19461), (26, 19488), (28, 19512), (29, 19521), (31, 19533), (33, 19554), (35, 19557), (37, 19575), (38, 19578), (42, 19599), (47, 19677), (48, 19683), (49, 19686), (53, 19728), (56, 19770), (59, 19785),

Gene: Biskit_24 Start: 19367, Stop: 19855, Start Num: 9

Candidate Starts for Biskit_24:

(Start: 9 @19367 has 19 MA's), (18, 19460), (20, 19466), (22, 19481), (23, 19484), (28, 19532), (29, 19541), (31, 19553), (35, 19577), (37, 19595), (38, 19598), (42, 19619), (47, 19697), (48, 19703), (49, 19706), (53, 19748), (56, 19790), (59, 19805),

Gene: Blessica_72 Start: 45855, Stop: 46352, Start Num: 8

Candidate Starts for Blessica_72:

(1, 45618), (3, 45786), (4, 45795), (Start: 8 @45855 has 22 MA's), (16, 45939), (18, 45957), (25, 45987), (27, 46023), (34, 46071), (36, 46080), (39, 46104), (40, 46107), (47, 46185), (52, 46212), (62, 46323),

Gene: Bora_69 Start: 45236, Stop: 45733, Start Num: 8

Candidate Starts for Bora_69:

(1, 44999), (3, 45167), (4, 45176), (Start: 8 @45236 has 22 MA's), (16, 45320), (18, 45338), (25, 45368), (34, 45452), (36, 45461), (39, 45485), (40, 45488), (47, 45566), (52, 45593), (62, 45704),

Gene: Burnsey_23 Start: 19720, Stop: 20208, Start Num: 9

Candidate Starts for Burnsey_23:

(Start: 9 @19720 has 19 MA's), (18, 19813), (22, 19834), (28, 19885), (31, 19906), (32, 19912), (35, 19930), (37, 19948), (47, 20050), (53, 20101), (54, 20131), (56, 20143), (59, 20158), (61, 20176),

Gene: Buttrmlkdreams_23 Start: 19349, Stop: 19837, Start Num: 9

Candidate Starts for Buttrmlkdreams_23:

(Start: 9 @19349 has 19 MA's), (18, 19442), (20, 19448), (22, 19463), (23, 19466), (28, 19514), (29, 19523), (31, 19535), (35, 19559), (37, 19577), (38, 19580), (42, 19601), (47, 19679), (48, 19685), (49, 19688), (53, 19730), (56, 19772), (59, 19787),

Gene: Catdawg_71 Start: 45591, Stop: 46088, Start Num: 8

Candidate Starts for Catdawg_71:

(1, 45354), (3, 45522), (4, 45531), (Start: 8 @45591 has 22 MA's), (16, 45675), (18, 45693), (25, 45723), (27, 45759), (36, 45816), (39, 45840), (40, 45843), (47, 45921), (52, 45948), (62, 46059),

Gene: Cleo_23 Start: 20016, Stop: 20510, Start Num: 10

Candidate Starts for Cleo_23:

(6, 19965), (Start: 10 @20016 has 10 MA's), (11, 20028), (14, 20067), (18, 20115), (19, 20118), (20, 20121), (21, 20130), (22, 20136), (28, 20187), (31, 20208), (37, 20250), (48, 20358), (56, 20445), (58, 20457), (59, 20460),

Gene: Corndog_74 Start: 46585, Stop: 47082, Start Num: 8

Candidate Starts for Corndog_74:

(1, 46348), (3, 46516), (4, 46525), (Start: 8 @46585 has 22 MA's), (16, 46669), (18, 46687), (25, 46717), (27, 46753), (36, 46810), (39, 46834), (40, 46837), (47, 46915), (52, 46942), (62, 47053),

Gene: Cozz_23 Start: 19720, Stop: 20208, Start Num: 9

Candidate Starts for Cozz_23:

(Start: 9 @19720 has 19 MA's), (18, 19813), (22, 19834), (28, 19885), (31, 19906), (32, 19912), (35, 19930), (37, 19948), (47, 20050), (53, 20101), (54, 20131), (56, 20143), (59, 20158), (61, 20176),

Gene: Dre3_23 Start: 19942, Stop: 20436, Start Num: 10

Candidate Starts for Dre3_23:

(6, 19891), (Start: 10 @19942 has 10 MA's), (11, 19954), (14, 19993), (18, 20041), (19, 20044), (20, 20047), (21, 20056), (22, 20062), (28, 20113), (31, 20134), (37, 20176), (48, 20284), (56, 20371), (58, 20383), (59, 20386),

Gene: Dylan_71 Start: 45638, Stop: 46135, Start Num: 8

Candidate Starts for Dylan_71:

(1, 45401), (3, 45569), (4, 45578), (Start: 8 @45638 has 22 MA's), (16, 45722), (18, 45740), (25, 45770), (27, 45806), (36, 45863), (39, 45887), (40, 45890), (47, 45968), (52, 45995), (62, 46106),

Gene: Elliott_23 Start: 19719, Stop: 20207, Start Num: 9

Candidate Starts for Elliott_23:

(Start: 9 @19719 has 19 MA's), (18, 19812), (22, 19833), (28, 19884), (31, 19905), (32, 19911), (35, 19929), (37, 19947), (47, 20049), (50, 20064), (53, 20100), (54, 20130), (56, 20142), (59, 20157), (61, 20175),

Gene: Emalyn_22 Start: 18976, Stop: 19464, Start Num: 10

Candidate Starts for Emalyn_22:

(7, 18970), (Start: 10 @18976 has 10 MA's), (14, 19021), (15, 19042), (18, 19069), (22, 19090), (26, 19117), (28, 19141), (30, 19156), (35, 19186), (37, 19204), (38, 19207), (47, 19306), (48, 19312), (49, 19315), (56, 19399), (59, 19414), (61, 19432),

Gene: Familton_72 Start: 45548, Stop: 46045, Start Num: 8

Candidate Starts for Familton_72:

(1, 45311), (3, 45479), (4, 45488), (Start: 8 @45548 has 22 MA's), (16, 45632), (18, 45650), (25, 45680), (27, 45716), (36, 45773), (39, 45797), (40, 45800), (47, 45878), (52, 45905), (62, 46016),

Gene: Firecracker_73 Start: 45938, Stop: 46435, Start Num: 8

Candidate Starts for Firecracker_73:

(1, 45701), (3, 45869), (4, 45878), (Start: 8 @45938 has 22 MA's), (16, 46022), (18, 46040), (25, 46070), (27, 46106), (36, 46163), (39, 46187), (40, 46190), (47, 46268), (52, 46295), (62, 46406),

Gene: FoulBall_68 Start: 45542, Stop: 46039, Start Num: 8

Candidate Starts for FoulBall_68:

(1, 45305), (3, 45473), (4, 45482), (Start: 8 @45542 has 22 MA's), (16, 45626), (18, 45644), (25, 45674), (27, 45710), (36, 45767), (39, 45791), (40, 45794), (47, 45872), (52, 45899), (62, 46010),

Gene: Fribs8_24 Start: 20525, Stop: 21019, Start Num: 10

Candidate Starts for Fribs8_24:

(Start: 10 @20525 has 10 MA's), (13, 20573), (14, 20576), (17, 20612), (18, 20624), (19, 20627), (22, 20645), (24, 20651), (35, 20741), (37, 20759), (46, 20858), (48, 20867), (51, 20885), (56, 20954), (59, 20969), (60, 20975),

Gene: GTE2_20 Start: 19052, Stop: 19540, Start Num: 9

Candidate Starts for GTE2_20:

(Start: 9 @19052 has 19 MA's), (15, 19118), (18, 19145), (20, 19151), (22, 19166), (26, 19193), (28, 19217), (29, 19226), (35, 19262), (37, 19280), (38, 19283), (47, 19382), (48, 19388), (49, 19391), (53, 19433), (56, 19475), (59, 19490),

Gene: Gibbous_23 Start: 19942, Stop: 20436, Start Num: 10

Candidate Starts for Gibbous_23:

(6, 19891), (Start: 10 @19942 has 10 MA's), (11, 19954), (14, 19993), (18, 20041), (19, 20044), (20, 20047), (21, 20056), (22, 20062), (28, 20113), (31, 20134), (37, 20176), (48, 20284), (56, 20371), (58, 20383), (59, 20386),

Gene: GoldHunter_24 Start: 19720, Stop: 20208, Start Num: 9

Candidate Starts for GoldHunter_24:

(Start: 9 @19720 has 19 MA's), (18, 19813), (22, 19834), (28, 19885), (31, 19906), (32, 19912), (35, 19930), (37, 19948), (47, 20050), (50, 20065), (53, 20101), (54, 20131), (56, 20143), (59, 20158), (61, 20176),

Gene: HippoPololi_25 Start: 20591, Stop: 21085, Start Num: 10

Candidate Starts for HippoPololi_25:

(Start: 10 @20591 has 10 MA's), (12, 20630), (13, 20639), (14, 20642), (17, 20678), (18, 20690), (19, 20693), (20, 20696), (21, 20705), (22, 20711), (24, 20717), (28, 20762), (31, 20783), (35, 20807), (37, 20825), (41, 20846), (42, 20849), (44, 20903), (48, 20933), (51, 20951), (55, 21017), (56, 21020), (57, 21023), (60, 21041),

Gene: Horseradish_24 Start: 19263, Stop: 19751, Start Num: 9

Candidate Starts for Horseradish_24:

(Start: 9 @19263 has 19 MA's), (18, 19356), (20, 19362), (22, 19377), (23, 19380), (28, 19428), (29, 19437), (31, 19449), (35, 19473), (37, 19491), (38, 19494), (47, 19593), (48, 19599), (49, 19602), (53, 19644), (56, 19686), (59, 19701),

Gene: Idergollasper_71 Start: 45542, Stop: 46039, Start Num: 8

Candidate Starts for Idergollasper_71:

(1, 45305), (3, 45473), (4, 45482), (Start: 8 @45542 has 22 MA's), (16, 45626), (18, 45644), (25, 45674), (27, 45710), (36, 45767), (39, 45791), (40, 45794), (47, 45872), (52, 45899), (62, 46010),

Gene: JangDynasty_71 Start: 45628, Stop: 46125, Start Num: 8

Candidate Starts for JangDynasty_71:

(1, 45391), (3, 45559), (4, 45568), (Start: 8 @45628 has 22 MA's), (16, 45712), (18, 45730), (25, 45760), (27, 45796), (36, 45853), (39, 45877), (40, 45880), (47, 45958), (52, 45985), (62, 46096),

Gene: Krili_70 Start: 45052, Stop: 45549, Start Num: 8

Candidate Starts for Krili_70:

(1, 44815), (3, 44983), (4, 44992), (Start: 8 @45052 has 22 MA's), (16, 45136), (18, 45154), (25, 45184), (27, 45220), (36, 45277), (39, 45301), (40, 45304), (47, 45382), (52, 45409), (62, 45520),

Gene: MScarn_25 Start: 19352, Stop: 19840, Start Num: 9

Candidate Starts for MScarn_25:

(Start: 9 @19352 has 19 MA's), (18, 19445), (20, 19451), (22, 19466), (23, 19469), (28, 19517), (29, 19526), (31, 19538), (35, 19562), (37, 19580), (38, 19583), (42, 19604), (47, 19682), (48, 19688), (49, 19691), (53, 19733), (56, 19775), (59, 19790),

Gene: MaVan_25 Start: 20618, Stop: 21166, Start Num: 5

Candidate Starts for MaVan_25:

(Start: 5 @20618 has 1 MA's), (Start: 10 @20672 has 10 MA's), (11, 20684), (18, 20771), (19, 20774), (21, 20786), (22, 20792), (28, 20843), (30, 20858), (31, 20864), (35, 20888), (37, 20906), (43, 20933), (45, 20990), (48, 21014), (49, 21017), (51, 21032), (56, 21101), (60, 21122),

Gene: MadKillah_72 Start: 45321, Stop: 45818, Start Num: 8

Candidate Starts for MadKillah_72:

(1, 45084), (3, 45252), (4, 45261), (Start: 8 @45321 has 22 MA's), (16, 45405), (18, 45423), (25, 45453), (27, 45489), (34, 45537), (36, 45546), (39, 45570), (40, 45573), (47, 45651), (52, 45678), (62, 45789),

Gene: Mori_71 Start: 45583, Stop: 46080, Start Num: 8

Candidate Starts for Mori_71:

(1, 45346), (3, 45514), (4, 45523), (Start: 8 @45583 has 22 MA's), (16, 45667), (18, 45685), (25, 45715), (27, 45751), (36, 45808), (39, 45832), (40, 45835), (47, 45913), (52, 45940), (62, 46051),

Gene: MunkgeeRoachy_24 Start: 19767, Stop: 20255, Start Num: 9

Candidate Starts for MunkgeeRoachy_24:

(Start: 9 @19767 has 19 MA's), (18, 19860), (22, 19881), (28, 19932), (31, 19953), (32, 19959), (35, 19977), (37, 19995), (47, 20097), (53, 20148), (56, 20190), (59, 20205), (61, 20223),

Gene: Murai_72 Start: 45764, Stop: 46261, Start Num: 8

Candidate Starts for Murai_72:

(1, 45527), (3, 45695), (4, 45704), (Start: 8 @45764 has 22 MA's), (16, 45848), (18, 45866), (25, 45896), (34, 45980), (36, 45989), (39, 46013), (40, 46016), (47, 46094), (52, 46121), (62, 46232),

Gene: Nibbles_25 Start: 20672, Stop: 21166, Start Num: 10

Candidate Starts for Nibbles_25:

(Start: 5 @20618 has 1 MA's), (Start: 10 @20672 has 10 MA's), (11, 20684), (13, 20720), (14, 20723), (18, 20771), (19, 20774), (22, 20792), (29, 20852), (37, 20906), (48, 21014), (51, 21032), (56, 21101), (59, 21116), (60, 21122),

Gene: NiebruSaylor_70 Start: 44971, Stop: 45468, Start Num: 8

Candidate Starts for NiebruSaylor_70:

(1, 44734), (3, 44902), (4, 44911), (Start: 8 @44971 has 22 MA's), (16, 45055), (18, 45073), (25, 45103), (27, 45139), (36, 45196), (39, 45220), (40, 45223), (47, 45301), (52, 45328), (62, 45439),

Gene: Nina_24 Start: 20762, Stop: 21250, Start Num: 9

Candidate Starts for Nina_24:

(Start: 9 @20762 has 19 MA's), (18, 20855), (22, 20876), (28, 20927), (31, 20948), (32, 20954), (35, 20972), (37, 20990), (47, 21092), (53, 21143), (54, 21173), (56, 21185), (59, 21200), (61, 21218),

Gene: PsychoKiller_23 Start: 19719, Stop: 20207, Start Num: 9

Candidate Starts for PsychoKiller_23:

(Start: 9 @19719 has 19 MA's), (18, 19812), (22, 19833), (28, 19884), (31, 19905), (32, 19911), (35, 19929), (37, 19947), (47, 20049), (50, 20064), (53, 20100), (54, 20130), (56, 20142), (59, 20157), (61, 20175),

Gene: Quasar_23 Start: 20328, Stop: 20816, Start Num: 9

Candidate Starts for Quasar_23:

(Start: 9 @20328 has 19 MA's), (18, 20421), (22, 20442), (28, 20493), (31, 20514), (32, 20520), (35, 20538), (37, 20556), (47, 20658), (53, 20709), (54, 20739), (56, 20751), (59, 20766), (61, 20784),

Gene: RedBaron_24 Start: 19763, Stop: 20251, Start Num: 9

Candidate Starts for RedBaron_24:

(Start: 9 @19763 has 19 MA's), (18, 19856), (22, 19877), (28, 19928), (31, 19949), (32, 19955), (35, 19973), (37, 19991), (47, 20093), (50, 20108), (53, 20144), (54, 20174), (56, 20186), (59, 20201), (61, 20219),

Gene: Ryadel_75 Start: 46376, Stop: 46873, Start Num: 8

Candidate Starts for Ryadel_75:

(1, 46139), (3, 46307), (4, 46316), (Start: 8 @46376 has 22 MA's), (16, 46460), (18, 46478), (25, 46508), (27, 46544), (34, 46592), (36, 46601), (39, 46625), (40, 46628), (47, 46706), (52, 46733), (62, 46844),

Gene: SchoolBus_71 Start: 45524, Stop: 46021, Start Num: 8

Candidate Starts for SchoolBus_71:

(1, 45287), (3, 45455), (4, 45464), (Start: 8 @45524 has 22 MA's), (16, 45608), (18, 45626), (25, 45656), (27, 45692), (36, 45749), (39, 45773), (40, 45776), (47, 45854), (52, 45881), (62, 45992),

Gene: Schuy_69 Start: 45327, Stop: 45824, Start Num: 8

Candidate Starts for Schuy_69:

(1, 45090), (3, 45258), (4, 45267), (Start: 8 @45327 has 22 MA's), (16, 45411), (18, 45429), (25, 45459), (27, 45495), (36, 45552), (39, 45576), (40, 45579), (47, 45657), (52, 45684), (62, 45795),

Gene: Shida_71 Start: 45234, Stop: 45731, Start Num: 8

Candidate Starts for Shida_71:

(1, 44997), (3, 45165), (4, 45174), (Start: 8 @45234 has 22 MA's), (16, 45318), (18, 45336), (25, 45366), (27, 45402), (36, 45459), (39, 45483), (40, 45486), (47, 45564), (52, 45591), (62, 45702),

Gene: SketchMex_22 Start: 19367, Stop: 19855, Start Num: 9

Candidate Starts for SketchMex_22:

(Start: 9 @19367 has 19 MA's), (18, 19460), (20, 19466), (22, 19481), (23, 19484), (28, 19532), (29, 19541), (31, 19553), (35, 19577), (37, 19595), (38, 19598), (42, 19619), (47, 19697), (48, 19703), (49, 19706), (53, 19748), (56, 19790), (59, 19805),

Gene: Smooch_74 Start: 47280, Stop: 47777, Start Num: 8

Candidate Starts for Smooch_74:

(1, 47043), (3, 47211), (4, 47220), (Start: 8 @47280 has 22 MA's), (16, 47364), (18, 47382), (25, 47412), (27, 47448), (36, 47505), (39, 47529), (40, 47532), (47, 47610), (52, 47637), (62, 47748),

Gene: Sopespian_23 Start: 19720, Stop: 20208, Start Num: 9

Candidate Starts for Sopespian_23:

(Start: 9 @19720 has 19 MA's), (18, 19813), (22, 19834), (28, 19885), (31, 19906), (32, 19912), (35, 19930), (37, 19948), (47, 20050), (50, 20065), (53, 20101), (54, 20131), (56, 20143), (59, 20158), (61, 20176),

Gene: SteamedHams_25 Start: 19380, Stop: 19868, Start Num: 9

Candidate Starts for SteamedHams_25:

(Start: 9 @19380 has 19 MA's), (15, 19446), (18, 19473), (20, 19479), (22, 19494), (26, 19521), (28, 19545), (29, 19554), (31, 19566), (33, 19587), (35, 19590), (37, 19608), (38, 19611), (47, 19710), (48, 19716), (49, 19719), (53, 19761), (56, 19803), (59, 19818),

Gene: Survivors_25 Start: 20521, Stop: 21015, Start Num: 10

Candidate Starts for Survivors_25:

(2, 20326), (Start: 5 @20467 has 1 MA's), (Start: 10 @20521 has 10 MA's), (11, 20533), (13, 20569), (14, 20572), (18, 20620), (19, 20623), (22, 20641), (29, 20701), (37, 20755), (48, 20863), (51, 20881), (56, 20950), (59, 20965), (60, 20971),

Gene: SweatNTears_25 Start: 19878, Stop: 20366, Start Num: 9

Candidate Starts for SweatNTears_25:

(Start: 9 @19878 has 19 MA's), (18, 19971), (20, 19977), (22, 19992), (23, 19995), (28, 20043), (29, 20052), (31, 20064), (35, 20088), (37, 20106), (38, 20109), (42, 20130), (47, 20208), (48, 20214), (49, 20217), (53, 20259), (56, 20301), (59, 20316),

Gene: TelAviv_68 Start: 45509, Stop: 46006, Start Num: 8

Candidate Starts for TelAviv_68:

(1, 45272), (3, 45440), (4, 45449), (Start: 8 @45509 has 22 MA's), (16, 45593), (18, 45611), (25, 45641), (27, 45677), (36, 45734), (39, 45758), (40, 45761), (47, 45839), (52, 45866), (62, 45977),

Gene: Tolls_25 Start: 19383, Stop: 19871, Start Num: 9

Candidate Starts for Tolls_25:

(Start: 9 @19383 has 19 MA's), (15, 19449), (18, 19476), (20, 19482), (22, 19497), (26, 19524), (28, 19548), (29, 19557), (31, 19569), (33, 19590), (35, 19593), (37, 19611), (38, 19614), (47, 19713), (48, 19719), (49, 19722), (53, 19764), (56, 19806), (59, 19821),

Gene: Troje_23 Start: 19349, Stop: 19837, Start Num: 9

Candidate Starts for Troje_23:

(Start: 9 @19349 has 19 MA's), (18, 19442), (20, 19448), (22, 19463), (23, 19466), (28, 19514), (29, 19523), (31, 19535), (35, 19559), (37, 19577), (38, 19580), (42, 19601), (47, 19679), (48, 19685), (49, 19688), (53, 19730), (56, 19772), (59, 19787),

Gene: Typhonomachy_24 Start: 19719, Stop: 20207, Start Num: 9

Candidate Starts for Typhonomachy_24:

(Start: 9 @19719 has 19 MA's), (18, 19812), (22, 19833), (28, 19884), (31, 19905), (32, 19911), (35, 19929), (37, 19947), (47, 20049), (53, 20100), (54, 20130), (56, 20142), (59, 20157), (61, 20175),

Gene: Vorrps_71 Start: 45584, Stop: 46081, Start Num: 8

Candidate Starts for Vorrps_71:

(1, 45347), (3, 45515), (4, 45524), (Start: 8 @45584 has 22 MA's), (16, 45668), (18, 45686), (25, 45716), (27, 45752), (36, 45809), (39, 45833), (40, 45836), (47, 45914), (52, 45941), (62, 46052),

Gene: Wildflower_69 Start: 45096, Stop: 45593, Start Num: 8

Candidate Starts for Wildflower_69:

(1, 44859), (3, 45027), (4, 45036), (Start: 8 @45096 has 22 MA's), (16, 45180), (18, 45198), (25, 45228), (27, 45264), (36, 45321), (39, 45345), (40, 45348), (47, 45426), (52, 45453), (62, 45564),

Gene: Winget_72 Start: 45802, Stop: 46299, Start Num: 8

Candidate Starts for Winget_72:

(1, 45565), (3, 45733), (4, 45742), (Start: 8 @45802 has 22 MA's), (16, 45886), (18, 45904), (25, 45934), (27, 45970), (36, 46027), (39, 46051), (40, 46054), (47, 46132), (52, 46159), (62, 46270),

Gene: Yarn_22 Start: 19373, Stop: 19861, Start Num: 9

Candidate Starts for Yarn_22:

(Start: 9 @19373 has 19 MA's), (15, 19439), (18, 19466), (20, 19472), (22, 19487), (26, 19514), (28, 19538), (29, 19547), (31, 19559), (33, 19580), (35, 19583), (37, 19601), (38, 19604), (47, 19703), (48, 19709), (49, 19712), (53, 19754), (56, 19796), (59, 19811),

Gene: Yummy_24 Start: 19263, Stop: 19751, Start Num: 9

Candidate Starts for Yummy_24:

(Start: 9 @19263 has 19 MA's), (18, 19356), (20, 19362), (22, 19377), (23, 19380), (28, 19428), (29, 19437), (31, 19449), (35, 19473), (37, 19491), (38, 19494), (47, 19593), (48, 19599), (49, 19602), (53, 19644), (56, 19686), (59, 19701),

Gene: YungJamal_76 Start: 46994, Stop: 47491, Start Num: 8

Candidate Starts for YungJamal_76:

(1, 46757), (3, 46925), (4, 46934), (Start: 8 @46994 has 22 MA's), (16, 47078), (18, 47096), (25, 47126), (27, 47162), (36, 47219), (39, 47243), (40, 47246), (47, 47324), (52, 47351), (62, 47462),

Gene: Zakhe101_70 Start: 45642, Stop: 46139, Start Num: 8

Candidate Starts for Zakhe101_70:

(1, 45405), (3, 45573), (4, 45582), (Start: 8 @45642 has 22 MA's), (16, 45726), (18, 45744), (25, 45774), (27, 45810), (36, 45867), (39, 45891), (40, 45894), (47, 45972), (52, 45999), (62, 46110),

Gene: Zareef_27 Start: 20619, Stop: 21167, Start Num: 5

Candidate Starts for Zareef_27:

(2, 20478), (Start: 5 @20619 has 1 MA's), (Start: 10 @20673 has 10 MA's), (11, 20685), (13, 20721), (14, 20724), (18, 20772), (19, 20775), (22, 20793), (29, 20853), (37, 20907), (48, 21015), (51, 21033), (56, 21102), (59, 21117), (60, 21123),