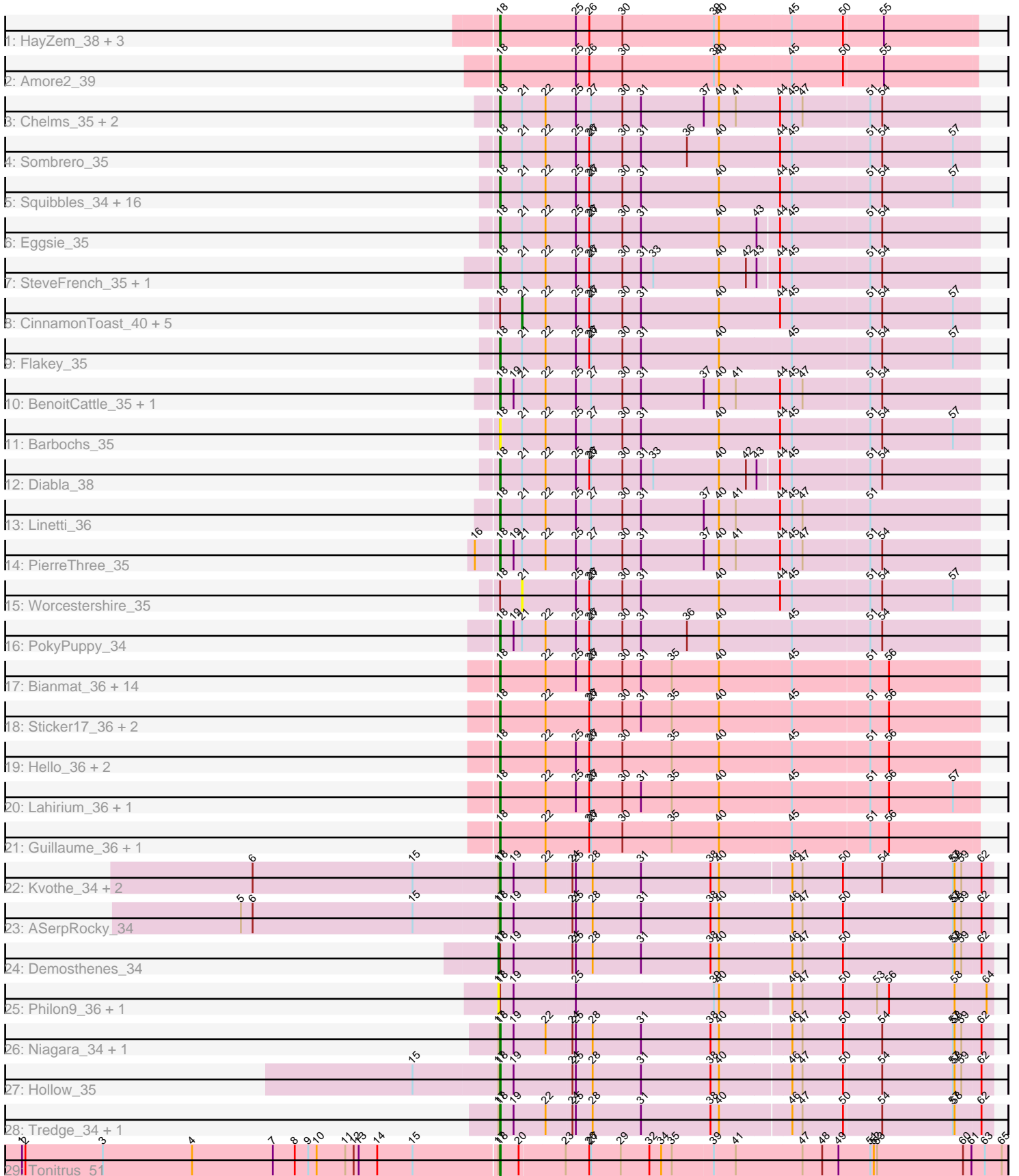


Pham 219656



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 219656 Report

This analysis was run 03/28/25 on database version 593.

Pham number 219656 has 82 members, 12 are drafts.

Phages represented in each track:

- Track 1 : HayZem_38, GMA7_29, Austin_39, GTE7_29
- Track 2 : Amore2_39
- Track 3 : Chelms_35, BigShaq_35, Dakiti_35
- Track 4 : Sombrero_35
- Track 5 : Squibbles_34, Adgers_36, Boneham_39, CathyBurgh_34, RemRem_36, Sam12_35, Breezic_35, FelixAlejandro_40, John316_39, Gorko_35, Ekhein_35, Poland_40, BirksAndSocks_39, Lizzo_35, GourdThymes_35, Hotorobo_35, Beaver_39
- Track 6 : Eggsie_35
- Track 7 : SteveFrench_35, RoyalG_36
- Track 8 : CinnamonToast_40, Exiguo_35, Butterball_39, Msay19_40, Jellybones_39, Monty_34
- Track 9 : Flakey_35
- Track 10 : BenoitCattle_35, Crete_36
- Track 11 : Barbochs_35
- Track 12 : Diabla_38
- Track 13 : Linetti_36
- Track 14 : PierreThree_35
- Track 15 : Worcestershire_35
- Track 16 : PokyPuppy_34
- Track 17 : Bianmat_36, Shelley_36, Luker_37, Charianelly_36, MrWormie_36, GalacticEye_36, Anamika_36, Jams_36, Hail2Pitt_36, Berries_36, Newt_37, Woes_36, Lidong_36, Minos_37, Kaseim_37
- Track 18 : Sticker17_36, Damp_36, Nimi13_36
- Track 19 : Hello_36, Neoevie_36, Teal_36
- Track 20 : Lahirium_36, Harambe_36
- Track 21 : Guillaume_36, Jormungandr_36
- Track 22 : Kvothe_34, Benczkowski14_34, Katyusha_34
- Track 23 : ASerpRocky_34
- Track 24 : Demosthenes_34
- Track 25 : Philon9_36, Vitaenoi_36
- Track 26 : Niagara_34, Teech_34
- Track 27 : Hollow_35
- Track 28 : Tredge_34, Teatealatte_34
- Track 29 : Tonitrus_51

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 64 of the 70 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ASerpRocky_34, Adgers_36, Amore2_39, Anamika_36, Austin_39, Barbochs_35, Beaver_39, Benczkowski14_34, BenoitCattle_35, Berries_36, Bianmat_36, BigShaq_35, BirksAndSocks_39, Boneham_39, Breezic_35, CathyBurgh_34, Charianelly_36, Chelms_35, Crete_36, Dakiti_35, Damp_36, Diabla_38, Eggsie_35, Ekhein_35, FelixAlejandro_40, Flakey_35, GMA7_29, GTE7_29, GalacticEye_36, Gorko_35, GourdThymes_35, Guillaume_36, Hail2Pitt_36, Harambe_36, HayZem_38, Hello_36, Hollow_35, Hotorobo_35, Jams_36, John316_39, Jormungandr_36, Kaseim_37, Katyusha_34, Kvothe_34, Lahirium_36, Lidong_36, Linetti_36, Lizzo_35, Luker_37, Minos_37, MrWormie_36, Neoevie_36, Newt_37, Niagara_34, Nimi13_36, PierreThree_35, PokyPuppy_34, Poland_40, RemRem_36, RoyalG_36, Sam12_35, Shelley_36, Sombrero_35, Squibbles_34, SteveFrench_35, Sticker17_36, Teal_36, Teatealatte_34, Teech_34, Tonitrus_51, Tredge_34, Woes_36,

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

- Butterball_39, CinnamonToast_40, Demosthenes_34, Exiguo_35, Jellybones_39, Monty_34, Msay19_40, Philon9_36, Vitaenoi_36, Worcestershire_35,

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

-

Summary by start number:

Start 17:

- Found in 13 of 82 (15.9%) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 23.1% of time when present
- Phage (with cluster) where this start called: Demosthenes_34 (CS4), Philon9_36 (CS4), Vitaenoi_36 (CS4),

Start 18:

- Found in 82 of 82 (100.0%) of genes in pham
- Manual Annotations of this start: 64 of 70
- Called 87.8% of time when present
- Phage (with cluster) where this start called: ASerpRocky_34 (CS4), Adgers_36 (CS2), Amore2_39 (CS1), Anamika_36 (CS3), Austin_39 (CS1), Barbochs_35 (CS2), Beaver_39 (CS2), Benczkowski14_34 (CS4), BenoitCattle_35 (CS2), Berries_36 (CS3), Bianmat_36 (CS3), BigShaq_35 (CS2), BirksAndSocks_39 (CS2), Boneham_39 (CS2), Breezic_35 (CS2), CathyBurgh_34 (CS2), Charianelly_36 (CS3), Chelms_35 (CS2), Crete_36 (CS2), Dakiti_35 (CS2), Damp_36 (CS3), Diabla_38 (CS2), Eggsie_35 (CS2), Ekhein_35 (CS2), FelixAlejandro_40 (CS2), Flakey_35 (CS2), GMA7_29 (CS1), GTE7_29 (CS1), GalacticEye_36 (CS3), Gorko_35 (CS2), GourdThymes_35 (CS2), Guillaume_36 (CS3), Hail2Pitt_36 (CS3), Harambe_36 (CS3), HayZem_38 (CS1), Hello_36 (CS3), Hollow_35 (CS4), Hotorobo_35 (CS2), Jams_36 (CS3), John316_39 (CS2), Jormungandr_36 (CS3), Kaseim_37 (CS3), Katyusha_34 (CS4), Kvothe_34 (CS4), Lahirium_36 (CS3), Lidong_36 (CS3),

Linetti_36 (CS2), Lizzo_35 (CS2), Luker_37 (CS3), Minos_37 (CS3), MrWormie_36 (CS3), Neoevie_36 (CS3), Newt_37 (CS3), Niagara_34 (CS4), Nimi13_36 (CS3), PierreThree_35 (CS2), PokyPuppy_34 (CS2), Poland_40 (CS2), RemRem_36 (CS2), RoyalG_36 (CS2), Sam12_35 (CS2), Shelley_36 (CS3), Sombrero_35 (CS2), Squibbles_34 (CS2), SteveFrench_35 (CS2), Sticker17_36 (CS3), Teal_36 (CS3), Teatealatte_34 (CS4), Teech_34 (CS4), Tonitrus_51 (singleton), Tredge_34 (CS4), Woes_36 (CS3),

Start 21:

- Found in 39 of 82 (47.6%) of genes in pham
- Manual Annotations of this start: 5 of 70
- Called 17.9% of time when present
- Phage (with cluster) where this start called: Butterball_39 (CS2), CinnamonToast_40 (CS2), Exiguo_35 (CS2), Jellybones_39 (CS2), Monty_34 (CS2), Msay19_40 (CS2), Worcestershire_35 (CS2),

Summary by clusters:

There are 5 clusters represented in this pham: CS4, singleton, CS1, CS3, CS2,

Info for manual annotations of cluster CS1:

- Start number 18 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 18 was manually annotated 28 times for cluster CS2.
- Start number 21 was manually annotated 5 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 18 was manually annotated 24 times for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 17 was manually annotated 1 time for cluster CS4.
- Start number 18 was manually annotated 8 times for cluster CS4.

Gene Information:

Gene: ASerpRocky_34 Start: 40526, Stop: 41386, Start Num: 18

Candidate Starts for ASerpRocky_34:

(5, 40067), (6, 40088), (15, 40373), (Start: 17 @40523 has 1 MA's), (Start: 18 @40526 has 64 MA's), (19, 40547), (24, 40649), (25, 40655), (28, 40685), (31, 40769), (38, 40892), (40, 40907), (46, 41036), (47, 41054), (50, 41126), (57, 41318), (58, 41321), (59, 41333), (62, 41366),

Gene: Adgers_36 Start: 39056, Stop: 39892, Start Num: 18

Candidate Starts for Adgers_36:

(Start: 18 @39056 has 64 MA's), (Start: 21 @39092 has 5 MA's), (22, 39134), (25, 39188), (26, 39212), (27, 39215), (30, 39269), (31, 39302), (40, 39440), (44, 39545), (45, 39566), (51, 39701), (54, 39722), (57, 39848),

Gene: Amore2_39 Start: 39586, Stop: 40413, Start Num: 18

Candidate Starts for Amore2_39:

(Start: 18 @39586 has 64 MA's), (25, 39718), (26, 39742), (30, 39799), (39, 39961), (40, 39970), (45, 40090), (50, 40180), (55, 40249),

Gene: Anamika_36 Start: 41432, Stop: 42265, Start Num: 18

Candidate Starts for Anamika_36:

(Start: 18 @41432 has 64 MA's), (22, 41510), (25, 41564), (26, 41588), (27, 41591), (30, 41645), (31, 41678), (35, 41732), (40, 41816), (45, 41939), (51, 42074), (56, 42107),

Gene: Austin_39 Start: 39586, Stop: 40413, Start Num: 18

Candidate Starts for Austin_39:

(Start: 18 @39586 has 64 MA's), (25, 39718), (26, 39742), (30, 39799), (39, 39961), (40, 39970), (45, 40090), (50, 40180), (55, 40249),

Gene: Barbochs_35 Start: 38895, Stop: 39731, Start Num: 18

Candidate Starts for Barbochs_35:

(Start: 18 @38895 has 64 MA's), (Start: 21 @38931 has 5 MA's), (22, 38973), (25, 39027), (27, 39054), (30, 39108), (31, 39141), (40, 39279), (44, 39384), (45, 39405), (51, 39540), (54, 39561), (57, 39687),

Gene: Beaver_39 Start: 40942, Stop: 41778, Start Num: 18

Candidate Starts for Beaver_39:

(Start: 18 @40942 has 64 MA's), (Start: 21 @40978 has 5 MA's), (22, 41020), (25, 41074), (26, 41098), (27, 41101), (30, 41155), (31, 41188), (40, 41326), (44, 41431), (45, 41452), (51, 41587), (54, 41608), (57, 41734),

Gene: Benczkowski14_34 Start: 40565, Stop: 41419, Start Num: 18

Candidate Starts for Benczkowski14_34:

(6, 40127), (15, 40412), (Start: 17 @40562 has 1 MA's), (Start: 18 @40565 has 64 MA's), (19, 40586), (22, 40643), (24, 40688), (25, 40694), (28, 40724), (31, 40808), (38, 40931), (40, 40946), (46, 41069), (47, 41087), (50, 41159), (54, 41225), (57, 41351), (58, 41354), (59, 41366), (62, 41399),

Gene: BenoitCattle_35 Start: 39000, Stop: 39836, Start Num: 18

Candidate Starts for BenoitCattle_35:

(Start: 18 @39000 has 64 MA's), (19, 39021), (Start: 21 @39036 has 5 MA's), (22, 39078), (25, 39132), (27, 39159), (30, 39213), (31, 39246), (37, 39357), (40, 39384), (41, 39414), (44, 39489), (45, 39510), (47, 39528), (51, 39645), (54, 39666),

Gene: Berries_36 Start: 41403, Stop: 42236, Start Num: 18

Candidate Starts for Berries_36:

(Start: 18 @41403 has 64 MA's), (22, 41481), (25, 41535), (26, 41559), (27, 41562), (30, 41616), (31, 41649), (35, 41703), (40, 41787), (45, 41910), (51, 42045), (56, 42078),

Gene: Bianmat_36 Start: 41443, Stop: 42276, Start Num: 18

Candidate Starts for Bianmat_36:

(Start: 18 @41443 has 64 MA's), (22, 41521), (25, 41575), (26, 41599), (27, 41602), (30, 41656), (31, 41689), (35, 41743), (40, 41827), (45, 41950), (51, 42085), (56, 42118),

Gene: BigShaq_35 Start: 39005, Stop: 39841, Start Num: 18

Candidate Starts for BigShaq_35:

(Start: 18 @39005 has 64 MA's), (Start: 21 @39041 has 5 MA's), (22, 39083), (25, 39137), (27, 39164), (30, 39218), (31, 39251), (37, 39362), (40, 39389), (41, 39419), (44, 39494), (45, 39515), (47, 39533), (51, 39650), (54, 39671),

Gene: BirksAndSocks_39 Start: 40920, Stop: 41756, Start Num: 18

Candidate Starts for BirksAndSocks_39:

(Start: 18 @40920 has 64 MA's), (Start: 21 @40956 has 5 MA's), (22, 40998), (25, 41052), (26, 41076), (27, 41079), (30, 41133), (31, 41166), (40, 41304), (44, 41409), (45, 41430), (51, 41565), (54, 41586), (57, 41712),

Gene: Boneham_39 Start: 40919, Stop: 41755, Start Num: 18

Candidate Starts for Boneham_39:

(Start: 18 @40919 has 64 MA's), (Start: 21 @40955 has 5 MA's), (22, 40997), (25, 41051), (26, 41075), (27, 41078), (30, 41132), (31, 41165), (40, 41303), (44, 41408), (45, 41429), (51, 41564), (54, 41585), (57, 41711),

Gene: Breezic_35 Start: 38908, Stop: 39744, Start Num: 18

Candidate Starts for Breezic_35:

(Start: 18 @38908 has 64 MA's), (Start: 21 @38944 has 5 MA's), (22, 38986), (25, 39040), (26, 39064), (27, 39067), (30, 39121), (31, 39154), (40, 39292), (44, 39397), (45, 39418), (51, 39553), (54, 39574), (57, 39700),

Gene: Butterball_39 Start: 40955, Stop: 41755, Start Num: 21

Candidate Starts for Butterball_39:

(Start: 18 @40919 has 64 MA's), (Start: 21 @40955 has 5 MA's), (22, 40997), (25, 41051), (26, 41075), (27, 41078), (30, 41132), (31, 41165), (40, 41303), (44, 41408), (45, 41429), (51, 41564), (54, 41585), (57, 41711),

Gene: CathyBurgh_34 Start: 39762, Stop: 40598, Start Num: 18

Candidate Starts for CathyBurgh_34:

(Start: 18 @39762 has 64 MA's), (Start: 21 @39798 has 5 MA's), (22, 39840), (25, 39894), (26, 39918), (27, 39921), (30, 39975), (31, 40008), (40, 40146), (44, 40251), (45, 40272), (51, 40407), (54, 40428), (57, 40554),

Gene: Charianelly_36 Start: 41153, Stop: 41986, Start Num: 18

Candidate Starts for Charianelly_36:

(Start: 18 @41153 has 64 MA's), (22, 41231), (25, 41285), (26, 41309), (27, 41312), (30, 41366), (31, 41399), (35, 41453), (40, 41537), (45, 41660), (51, 41795), (56, 41828),

Gene: Chelms_35 Start: 39008, Stop: 39844, Start Num: 18

Candidate Starts for Chelms_35:

(Start: 18 @39008 has 64 MA's), (Start: 21 @39044 has 5 MA's), (22, 39086), (25, 39140), (27, 39167), (30, 39221), (31, 39254), (37, 39365), (40, 39392), (41, 39422), (44, 39497), (45, 39518), (47, 39536), (51, 39653), (54, 39674),

Gene: CinnamonToast_40 Start: 41009, Stop: 41809, Start Num: 21

Candidate Starts for CinnamonToast_40:

(Start: 18 @40973 has 64 MA's), (Start: 21 @41009 has 5 MA's), (22, 41051), (25, 41105), (26, 41129), (27, 41132), (30, 41186), (31, 41219), (40, 41357), (44, 41462), (45, 41483), (51, 41618), (54, 41639), (57, 41765),

Gene: Crete_36 Start: 39271, Stop: 40107, Start Num: 18

Candidate Starts for Crete_36:

(Start: 18 @39271 has 64 MA's), (19, 39292), (Start: 21 @39307 has 5 MA's), (22, 39349), (25, 39403), (27, 39430), (30, 39484), (31, 39517), (37, 39628), (40, 39655), (41, 39685), (44, 39760), (45, 39781), (47, 39799), (51, 39916), (54, 39937),

Gene: Dakiti_35 Start: 39876, Stop: 40712, Start Num: 18

Candidate Starts for Dakiti_35:

(Start: 18 @39876 has 64 MA's), (Start: 21 @39912 has 5 MA's), (22, 39954), (25, 40008), (27, 40035), (30, 40089), (31, 40122), (37, 40233), (40, 40260), (41, 40290), (44, 40365), (45, 40386), (47, 40404), (51, 40521), (54, 40542),

Gene: Damp_36 Start: 40317, Stop: 41150, Start Num: 18

Candidate Starts for Damp_36:

(Start: 18 @40317 has 64 MA's), (22, 40395), (26, 40473), (27, 40476), (30, 40530), (31, 40563), (35, 40617), (40, 40701), (45, 40824), (51, 40959), (56, 40992),

Gene: Demosthenes_34 Start: 40496, Stop: 41359, Start Num: 17

Candidate Starts for Demosthenes_34:

(Start: 17 @40496 has 1 MA's), (Start: 18 @40499 has 64 MA's), (19, 40520), (24, 40622), (25, 40628), (28, 40658), (31, 40742), (38, 40865), (40, 40880), (46, 41009), (47, 41027), (50, 41099), (57, 41291), (58, 41294), (59, 41306), (62, 41339),

Gene: Diabla_38 Start: 40763, Stop: 41593, Start Num: 18

Candidate Starts for Diabla_38:

(Start: 18 @40763 has 64 MA's), (Start: 21 @40799 has 5 MA's), (22, 40841), (25, 40895), (26, 40919), (27, 40922), (30, 40976), (31, 41009), (33, 41030), (40, 41147), (42, 41195), (43, 41213), (44, 41246), (45, 41267), (51, 41402), (54, 41423),

Gene: Eggsie_35 Start: 39032, Stop: 39862, Start Num: 18

Candidate Starts for Eggsie_35:

(Start: 18 @39032 has 64 MA's), (Start: 21 @39068 has 5 MA's), (22, 39110), (25, 39164), (26, 39188), (27, 39191), (30, 39245), (31, 39278), (40, 39416), (43, 39482), (44, 39515), (45, 39536), (51, 39671), (54, 39692),

Gene: Ekhein_35 Start: 38890, Stop: 39726, Start Num: 18

Candidate Starts for Ekhein_35:

(Start: 18 @38890 has 64 MA's), (Start: 21 @38926 has 5 MA's), (22, 38968), (25, 39022), (26, 39046), (27, 39049), (30, 39103), (31, 39136), (40, 39274), (44, 39379), (45, 39400), (51, 39535), (54, 39556), (57, 39682),

Gene: Exiguo_35 Start: 38938, Stop: 39738, Start Num: 21

Candidate Starts for Exiguo_35:

(Start: 18 @38902 has 64 MA's), (Start: 21 @38938 has 5 MA's), (22, 38980), (25, 39034), (26, 39058), (27, 39061), (30, 39115), (31, 39148), (40, 39286), (44, 39391), (45, 39412), (51, 39547), (54, 39568), (57, 39694),

Gene: FelixAlejandro_40 Start: 41117, Stop: 41953, Start Num: 18

Candidate Starts for FelixAlejandro_40:

(Start: 18 @41117 has 64 MA's), (Start: 21 @41153 has 5 MA's), (22, 41195), (25, 41249), (26, 41273), (27, 41276), (30, 41330), (31, 41363), (40, 41501), (44, 41606), (45, 41627), (51, 41762), (54, 41783), (57, 41909),

Gene: Flakey_35 Start: 39766, Stop: 40602, Start Num: 18

Candidate Starts for Flakey_35:

(Start: 18 @39766 has 64 MA's), (Start: 21 @39802 has 5 MA's), (22, 39844), (25, 39898), (26, 39922), (27, 39925), (30, 39979), (31, 40012), (40, 40150), (45, 40276), (51, 40411), (54, 40432), (57, 40558),

Gene: GMA7_29 Start: 33800, Stop: 34627, Start Num: 18

Candidate Starts for GMA7_29:

(Start: 18 @33800 has 64 MA's), (25, 33932), (26, 33956), (30, 34013), (39, 34175), (40, 34184), (45, 34304), (50, 34394), (55, 34463),

Gene: GTE7_29 Start: 33831, Stop: 34658, Start Num: 18

Candidate Starts for GTE7_29:

(Start: 18 @33831 has 64 MA's), (25, 33963), (26, 33987), (30, 34044), (39, 34206), (40, 34215), (45, 34335), (50, 34425), (55, 34494),

Gene: GalacticEye_36 Start: 41115, Stop: 41948, Start Num: 18

Candidate Starts for GalacticEye_36:

(Start: 18 @41115 has 64 MA's), (22, 41193), (25, 41247), (26, 41271), (27, 41274), (30, 41328), (31, 41361), (35, 41415), (40, 41499), (45, 41622), (51, 41757), (56, 41790),

Gene: Gorko_35 Start: 38894, Stop: 39730, Start Num: 18

Candidate Starts for Gorko_35:

(Start: 18 @38894 has 64 MA's), (Start: 21 @38930 has 5 MA's), (22, 38972), (25, 39026), (26, 39050), (27, 39053), (30, 39107), (31, 39140), (40, 39278), (44, 39383), (45, 39404), (51, 39539), (54, 39560), (57, 39686),

Gene: GourdThymes_35 Start: 39768, Stop: 40604, Start Num: 18

Candidate Starts for GourdThymes_35:

(Start: 18 @39768 has 64 MA's), (Start: 21 @39804 has 5 MA's), (22, 39846), (25, 39900), (26, 39924), (27, 39927), (30, 39981), (31, 40014), (40, 40152), (44, 40257), (45, 40278), (51, 40413), (54, 40434), (57, 40560),

Gene: Guillaume_36 Start: 41165, Stop: 41998, Start Num: 18

Candidate Starts for Guillaume_36:

(Start: 18 @41165 has 64 MA's), (22, 41243), (26, 41321), (27, 41324), (30, 41378), (35, 41465), (40, 41549), (45, 41672), (51, 41807), (56, 41840),

Gene: Hail2Pitt_36 Start: 41641, Stop: 42474, Start Num: 18

Candidate Starts for Hail2Pitt_36:

(Start: 18 @41641 has 64 MA's), (22, 41719), (25, 41773), (26, 41797), (27, 41800), (30, 41854), (31, 41887), (35, 41941), (40, 42025), (45, 42148), (51, 42283), (56, 42316),

Gene: Harambe_36 Start: 41432, Stop: 42265, Start Num: 18

Candidate Starts for Harambe_36:

(Start: 18 @41432 has 64 MA's), (22, 41510), (25, 41564), (26, 41588), (27, 41591), (30, 41645), (31, 41678), (35, 41732), (40, 41816), (45, 41939), (51, 42074), (56, 42107), (57, 42221),

Gene: HayZem_38 Start: 39583, Stop: 40410, Start Num: 18

Candidate Starts for HayZem_38:

(Start: 18 @39583 has 64 MA's), (25, 39715), (26, 39739), (30, 39796), (39, 39958), (40, 39967), (45, 40087), (50, 40177), (55, 40246),

Gene: Hello_36 Start: 41394, Stop: 42227, Start Num: 18

Candidate Starts for Hello_36:

(Start: 18 @41394 has 64 MA's), (22, 41472), (25, 41526), (26, 41550), (27, 41553), (30, 41607), (35, 41694), (40, 41778), (45, 41901), (51, 42036), (56, 42069),

Gene: Hollow_35 Start: 40911, Stop: 41765, Start Num: 18

Candidate Starts for Hollow_35:

(15, 40758), (Start: 17 @40908 has 1 MA's), (Start: 18 @40911 has 64 MA's), (19, 40932), (24, 41034), (25, 41040), (28, 41070), (31, 41154), (38, 41277), (40, 41292), (46, 41415), (47, 41433), (50, 41505), (54, 41571), (57, 41697), (58, 41700), (59, 41712), (62, 41745),

Gene: Hotorobo_35 Start: 39773, Stop: 40609, Start Num: 18

Candidate Starts for Hotorobo_35:

(Start: 18 @39773 has 64 MA's), (Start: 21 @39809 has 5 MA's), (22, 39851), (25, 39905), (26, 39929), (27, 39932), (30, 39986), (31, 40019), (40, 40157), (44, 40262), (45, 40283), (51, 40418), (54, 40439), (57, 40565),

Gene: Jams_36 Start: 40603, Stop: 41436, Start Num: 18

Candidate Starts for Jams_36:

(Start: 18 @40603 has 64 MA's), (22, 40681), (25, 40735), (26, 40759), (27, 40762), (30, 40816), (31, 40849), (35, 40903), (40, 40987), (45, 41110), (51, 41245), (56, 41278),

Gene: Jellybones_39 Start: 41014, Stop: 41814, Start Num: 21

Candidate Starts for Jellybones_39:

(Start: 18 @40978 has 64 MA's), (Start: 21 @41014 has 5 MA's), (22, 41056), (25, 41110), (26, 41134), (27, 41137), (30, 41191), (31, 41224), (40, 41362), (44, 41467), (45, 41488), (51, 41623), (54, 41644), (57, 41770),

Gene: John316_39 Start: 40931, Stop: 41767, Start Num: 18

Candidate Starts for John316_39:

(Start: 18 @40931 has 64 MA's), (Start: 21 @40967 has 5 MA's), (22, 41009), (25, 41063), (26, 41087), (27, 41090), (30, 41144), (31, 41177), (40, 41315), (44, 41420), (45, 41441), (51, 41576), (54, 41597), (57, 41723),

Gene: Jormungandr_36 Start: 41147, Stop: 41980, Start Num: 18

Candidate Starts for Jormungandr_36:

(Start: 18 @41147 has 64 MA's), (22, 41225), (26, 41303), (27, 41306), (30, 41360), (35, 41447), (40, 41531), (45, 41654), (51, 41789), (56, 41822),

Gene: Kaseim_37 Start: 40588, Stop: 41421, Start Num: 18

Candidate Starts for Kaseim_37:

(Start: 18 @40588 has 64 MA's), (22, 40666), (25, 40720), (26, 40744), (27, 40747), (30, 40801), (31, 40834), (35, 40888), (40, 40972), (45, 41095), (51, 41230), (56, 41263),

Gene: Katyusha_34 Start: 40565, Stop: 41419, Start Num: 18

Candidate Starts for Katyusha_34:

(6, 40127), (15, 40412), (Start: 17 @40562 has 1 MA's), (Start: 18 @40565 has 64 MA's), (19, 40586), (22, 40643), (24, 40688), (25, 40694), (28, 40724), (31, 40808), (38, 40931), (40, 40946), (46, 41069), (47, 41087), (50, 41159), (54, 41225), (57, 41351), (58, 41354), (59, 41366), (62, 41399),

Gene: Kvothe_34 Start: 40464, Stop: 41318, Start Num: 18

Candidate Starts for Kvothe_34:

(6, 40026), (15, 40311), (Start: 17 @40461 has 1 MA's), (Start: 18 @40464 has 64 MA's), (19, 40485), (22, 40542), (24, 40587), (25, 40593), (28, 40623), (31, 40707), (38, 40830), (40, 40845), (46, 40968), (47, 40986), (50, 41058), (54, 41124), (57, 41250), (58, 41253), (59, 41265), (62, 41298),

Gene: Lahirium_36 Start: 41669, Stop: 42502, Start Num: 18

Candidate Starts for Lahirium_36:

(Start: 18 @41669 has 64 MA's), (22, 41747), (25, 41801), (26, 41825), (27, 41828), (30, 41882), (31, 41915), (35, 41969), (40, 42053), (45, 42176), (51, 42311), (56, 42344), (57, 42458),

Gene: Lidong_36 Start: 41403, Stop: 42236, Start Num: 18

Candidate Starts for Lidong_36:

(Start: 18 @41403 has 64 MA's), (22, 41481), (25, 41535), (26, 41559), (27, 41562), (30, 41616), (31, 41649), (35, 41703), (40, 41787), (45, 41910), (51, 42045), (56, 42078),

Gene: Linetti_36 Start: 40002, Stop: 40838, Start Num: 18

Candidate Starts for Linetti_36:

(Start: 18 @40002 has 64 MA's), (Start: 21 @40038 has 5 MA's), (22, 40080), (25, 40134), (27, 40161), (30, 40215), (31, 40248), (37, 40359), (40, 40386), (41, 40416), (44, 40491), (45, 40512), (47, 40530), (51, 40647),

Gene: Lizzo_35 Start: 39762, Stop: 40598, Start Num: 18

Candidate Starts for Lizzo_35:

(Start: 18 @39762 has 64 MA's), (Start: 21 @39798 has 5 MA's), (22, 39840), (25, 39894), (26, 39918), (27, 39921), (30, 39975), (31, 40008), (40, 40146), (44, 40251), (45, 40272), (51, 40407), (54, 40428), (57, 40554),

Gene: Luker_37 Start: 41622, Stop: 42455, Start Num: 18

Candidate Starts for Luker_37:

(Start: 18 @41622 has 64 MA's), (22, 41700), (25, 41754), (26, 41778), (27, 41781), (30, 41835), (31, 41868), (35, 41922), (40, 42006), (45, 42129), (51, 42264), (56, 42297),

Gene: Minos_37 Start: 41145, Stop: 41978, Start Num: 18

Candidate Starts for Minos_37:

(Start: 18 @41145 has 64 MA's), (22, 41223), (25, 41277), (26, 41301), (27, 41304), (30, 41358), (31, 41391), (35, 41445), (40, 41529), (45, 41652), (51, 41787), (56, 41820),

Gene: Monty_34 Start: 38948, Stop: 39748, Start Num: 21

Candidate Starts for Monty_34:

(Start: 18 @38912 has 64 MA's), (Start: 21 @38948 has 5 MA's), (22, 38990), (25, 39044), (26, 39068), (27, 39071), (30, 39125), (31, 39158), (40, 39296), (44, 39401), (45, 39422), (51, 39557), (54, 39578), (57, 39704),

Gene: MrWormie_36 Start: 40306, Stop: 41139, Start Num: 18

Candidate Starts for MrWormie_36:

(Start: 18 @40306 has 64 MA's), (22, 40384), (25, 40438), (26, 40462), (27, 40465), (30, 40519), (31, 40552), (35, 40606), (40, 40690), (45, 40813), (51, 40948), (56, 40981),

Gene: Msay19_40 Start: 41144, Stop: 41944, Start Num: 21

Candidate Starts for Msay19_40:

(Start: 18 @41108 has 64 MA's), (Start: 21 @41144 has 5 MA's), (22, 41186), (25, 41240), (26, 41264), (27, 41267), (30, 41321), (31, 41354), (40, 41492), (44, 41597), (45, 41618), (51, 41753), (54, 41774), (57, 41900),

Gene: Neevie_36 Start: 41408, Stop: 42241, Start Num: 18

Candidate Starts for Neevie_36:

(Start: 18 @41408 has 64 MA's), (22, 41486), (25, 41540), (26, 41564), (27, 41567), (30, 41621), (35, 41708), (40, 41792), (45, 41915), (51, 42050), (56, 42083),

Gene: Newt_37 Start: 41636, Stop: 42469, Start Num: 18

Candidate Starts for Newt_37:

(Start: 18 @41636 has 64 MA's), (22, 41714), (25, 41768), (26, 41792), (27, 41795), (30, 41849), (31, 41882), (35, 41936), (40, 42020), (45, 42143), (51, 42278), (56, 42311),

Gene: Niagara_34 Start: 40522, Stop: 41376, Start Num: 18

Candidate Starts for Niagara_34:

(Start: 17 @40519 has 1 MA's), (Start: 18 @40522 has 64 MA's), (19, 40543), (22, 40600), (24, 40645), (25, 40651), (28, 40681), (31, 40765), (38, 40888), (40, 40903), (46, 41026), (47, 41044), (50, 41116), (54, 41182), (57, 41308), (58, 41311), (59, 41323), (62, 41356),

Gene: Nimi13_36 Start: 41154, Stop: 41987, Start Num: 18

Candidate Starts for Nimi13_36:

(Start: 18 @41154 has 64 MA's), (22, 41232), (26, 41310), (27, 41313), (30, 41367), (31, 41400), (35, 41454), (40, 41538), (45, 41661), (51, 41796), (56, 41829),

Gene: Philon9_36 Start: 41732, Stop: 42586, Start Num: 17

Candidate Starts for Philon9_36:

(Start: 17 @41732 has 1 MA's), (Start: 18 @41735 has 64 MA's), (19, 41756), (25, 41864), (39, 42107), (40, 42116), (46, 42236), (47, 42254), (50, 42326), (53, 42383), (56, 42404), (58, 42521), (64, 42575),

Gene: PierreThree_35 Start: 39873, Stop: 40709, Start Num: 18

Candidate Starts for PierreThree_35:

(16, 39834), (Start: 18 @39873 has 64 MA's), (19, 39894), (Start: 21 @39909 has 5 MA's), (22, 39951), (25, 40005), (27, 40032), (30, 40086), (31, 40119), (37, 40230), (40, 40257), (41, 40287), (44, 40362), (45, 40383), (47, 40401), (51, 40518), (54, 40539),

Gene: PokyPuppy_34 Start: 39816, Stop: 40652, Start Num: 18

Candidate Starts for PokyPuppy_34:

(Start: 18 @39816 has 64 MA's), (19, 39837), (Start: 21 @39852 has 5 MA's), (22, 39894), (25, 39948), (26, 39972), (27, 39975), (30, 40029), (31, 40062), (36, 40143), (40, 40200), (45, 40326), (51, 40461), (54, 40482),

Gene: Poland_40 Start: 41087, Stop: 41923, Start Num: 18

Candidate Starts for Poland_40:

(Start: 18 @41087 has 64 MA's), (Start: 21 @41123 has 5 MA's), (22, 41165), (25, 41219), (26, 41243), (27, 41246), (30, 41300), (31, 41333), (40, 41471), (44, 41576), (45, 41597), (51, 41732), (54, 41753), (57, 41879),

Gene: RemRem_36 Start: 38902, Stop: 39738, Start Num: 18

Candidate Starts for RemRem_36:

(Start: 18 @38902 has 64 MA's), (Start: 21 @38938 has 5 MA's), (22, 38980), (25, 39034), (26, 39058), (27, 39061), (30, 39115), (31, 39148), (40, 39286), (44, 39391), (45, 39412), (51, 39547), (54, 39568), (57, 39694),

Gene: RoyalG_36 Start: 39375, Stop: 40205, Start Num: 18

Candidate Starts for RoyalG_36:

(Start: 18 @39375 has 64 MA's), (Start: 21 @39411 has 5 MA's), (22, 39453), (25, 39507), (26, 39531), (27, 39534), (30, 39588), (31, 39621), (33, 39642), (40, 39759), (42, 39807), (43, 39825), (44, 39858), (45, 39879), (51, 40014), (54, 40035),

Gene: Sam12_35 Start: 38902, Stop: 39738, Start Num: 18

Candidate Starts for Sam12_35:

(Start: 18 @38902 has 64 MA's), (Start: 21 @38938 has 5 MA's), (22, 38980), (25, 39034), (26, 39058), (27, 39061), (30, 39115), (31, 39148), (40, 39286), (44, 39391), (45, 39412), (51, 39547), (54, 39568),

(57, 39694),

Gene: Shelley_36 Start: 40630, Stop: 41463, Start Num: 18

Candidate Starts for Shelley_36:

(Start: 18 @40630 has 64 MA's), (22, 40708), (25, 40762), (26, 40786), (27, 40789), (30, 40843), (31, 40876), (35, 40930), (40, 41014), (45, 41137), (51, 41272), (56, 41305),

Gene: Sombrero_35 Start: 38904, Stop: 39740, Start Num: 18

Candidate Starts for Sombrero_35:

(Start: 18 @38904 has 64 MA's), (Start: 21 @38940 has 5 MA's), (22, 38982), (25, 39036), (26, 39060), (27, 39063), (30, 39117), (31, 39150), (36, 39231), (40, 39288), (44, 39393), (45, 39414), (51, 39549), (54, 39570), (57, 39696),

Gene: Squibbles_34 Start: 39765, Stop: 40601, Start Num: 18

Candidate Starts for Squibbles_34:

(Start: 18 @39765 has 64 MA's), (Start: 21 @39801 has 5 MA's), (22, 39843), (25, 39897), (26, 39921), (27, 39924), (30, 39978), (31, 40011), (40, 40149), (44, 40254), (45, 40275), (51, 40410), (54, 40431), (57, 40557),

Gene: SteveFrench_35 Start: 39615, Stop: 40445, Start Num: 18

Candidate Starts for SteveFrench_35:

(Start: 18 @39615 has 64 MA's), (Start: 21 @39651 has 5 MA's), (22, 39693), (25, 39747), (26, 39771), (27, 39774), (30, 39828), (31, 39861), (33, 39882), (40, 39999), (42, 40047), (43, 40065), (44, 40098), (45, 40119), (51, 40254), (54, 40275),

Gene: Sticker17_36 Start: 41145, Stop: 41978, Start Num: 18

Candidate Starts for Sticker17_36:

(Start: 18 @41145 has 64 MA's), (22, 41223), (26, 41301), (27, 41304), (30, 41358), (31, 41391), (35, 41445), (40, 41529), (45, 41652), (51, 41787), (56, 41820),

Gene: Teal_36 Start: 41613, Stop: 42446, Start Num: 18

Candidate Starts for Teal_36:

(Start: 18 @41613 has 64 MA's), (22, 41691), (25, 41745), (26, 41769), (27, 41772), (30, 41826), (35, 41913), (40, 41997), (45, 42120), (51, 42255), (56, 42288),

Gene: Teatealatte_34 Start: 40467, Stop: 41321, Start Num: 18

Candidate Starts for Teatealatte_34:

(Start: 17 @40464 has 1 MA's), (Start: 18 @40467 has 64 MA's), (19, 40488), (22, 40545), (24, 40590), (25, 40596), (28, 40626), (31, 40710), (38, 40833), (40, 40848), (46, 40971), (47, 40989), (50, 41061), (54, 41127), (57, 41253), (58, 41256), (62, 41301),

Gene: Teech_34 Start: 40268, Stop: 41122, Start Num: 18

Candidate Starts for Teech_34:

(Start: 17 @40265 has 1 MA's), (Start: 18 @40268 has 64 MA's), (19, 40289), (22, 40346), (24, 40391), (25, 40397), (28, 40427), (31, 40511), (38, 40634), (40, 40649), (46, 40772), (47, 40790), (50, 40862), (54, 40928), (57, 41054), (58, 41057), (59, 41069), (62, 41102),

Gene: Tonitrus_51 Start: 39078, Stop: 39962, Start Num: 18

Candidate Starts for Tonitrus_51:

(1, 38232), (2, 38238), (3, 38376), (4, 38535), (7, 38679), (8, 38718), (9, 38742), (10, 38757), (11, 38808), (12, 38823), (13, 38832), (14, 38865), (15, 38928), (Start: 17 @39075 has 1 MA's), (Start: 18 @39078 has 64 MA's), (20, 39111), (23, 39189), (26, 39231), (27, 39234), (29, 39285), (32, 39336), (34, 39357), (35, 39375), (39, 39447), (41, 39483), (47, 39600), (48, 39633), (49, 39660), (51, 39717),

(52, 39723), (53, 39729), (60, 39882), (61, 39897), (63, 39921), (65, 39951),

Gene: Tredge_34 Start: 40467, Stop: 41321, Start Num: 18

Candidate Starts for Tredge_34:

(Start: 17 @40464 has 1 MA's), (Start: 18 @40467 has 64 MA's), (19, 40488), (22, 40545), (24, 40590), (25, 40596), (28, 40626), (31, 40710), (38, 40833), (40, 40848), (46, 40971), (47, 40989), (50, 41061), (54, 41127), (57, 41253), (58, 41256), (62, 41301),

Gene: Vitaenoi_36 Start: 41731, Stop: 42585, Start Num: 17

Candidate Starts for Vitaenoi_36:

(Start: 17 @41731 has 1 MA's), (Start: 18 @41734 has 64 MA's), (19, 41755), (25, 41863), (39, 42106), (40, 42115), (46, 42235), (47, 42253), (50, 42325), (53, 42382), (56, 42403), (58, 42520), (64, 42574),

Gene: Woes_36 Start: 41664, Stop: 42497, Start Num: 18

Candidate Starts for Woes_36:

(Start: 18 @41664 has 64 MA's), (22, 41742), (25, 41796), (26, 41820), (27, 41823), (30, 41877), (31, 41910), (35, 41964), (40, 42048), (45, 42171), (51, 42306), (56, 42339),

Gene: Worcestershire_35 Start: 38940, Stop: 39740, Start Num: 21

Candidate Starts for Worcestershire_35:

(Start: 18 @38904 has 64 MA's), (Start: 21 @38940 has 5 MA's), (25, 39036), (26, 39060), (27, 39063), (30, 39117), (31, 39150), (40, 39288), (44, 39393), (45, 39414), (51, 39549), (54, 39570), (57, 39696),