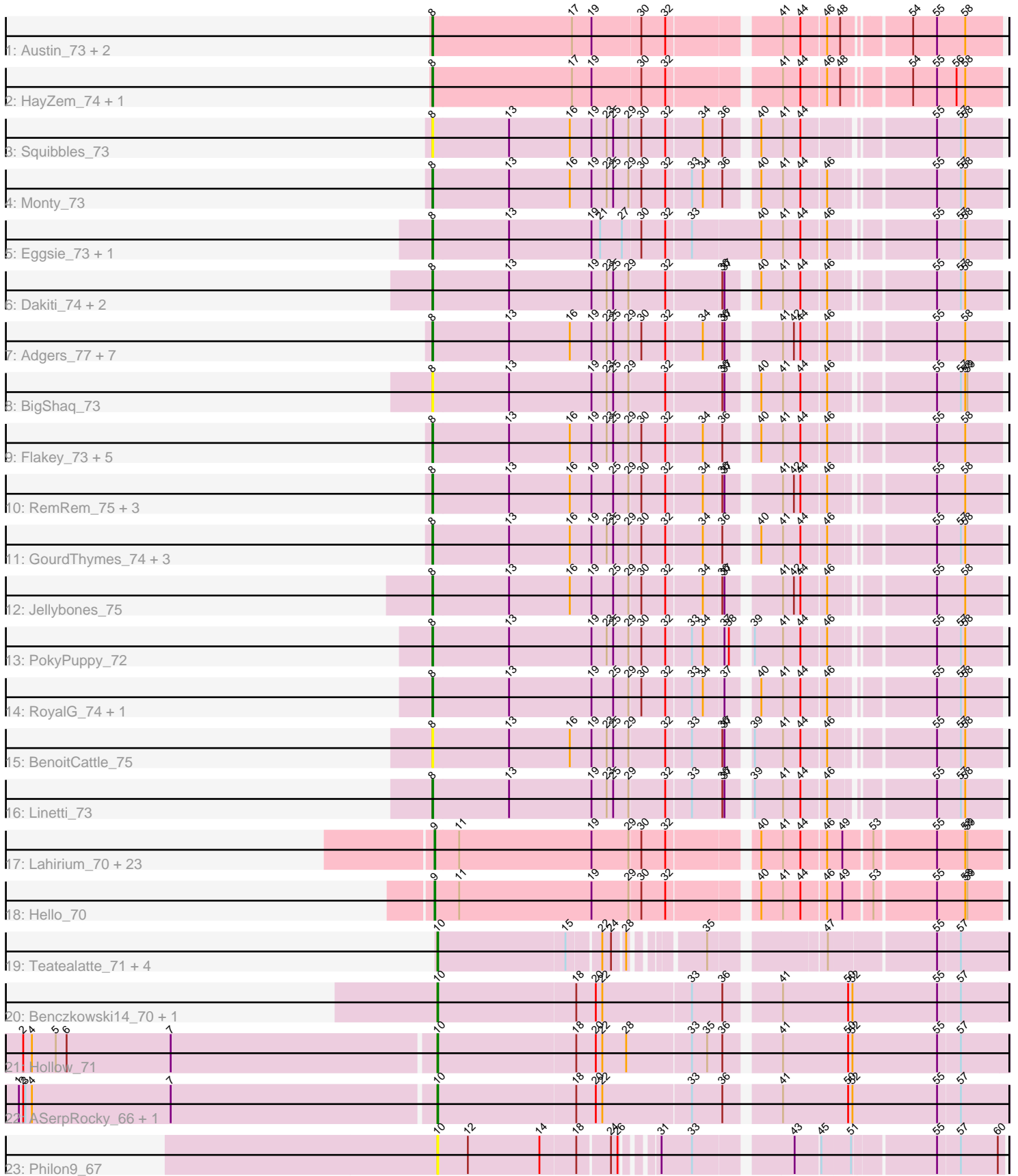


# Pham 1438



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 1438 Report

This analysis was run 07/09/24 on database version 566.

Pham number 1438 has 77 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Austin\_73, Amore2\_74, GTE7\_62
- Track 2 : HayZem\_74, GMA7\_63
- Track 3 : Squibbles\_73
- Track 4 : Monty\_73
- Track 5 : Eggsie\_73, Diabla\_79
- Track 6 : Dakiti\_74, PierreThree\_72, Chelms\_73
- Track 7 : Adgers\_77, Boneham\_77, FelixAlejandro\_78, BirksAndSocks\_78, Poland\_79, Msay19\_78, Sombrero\_75, Butterball\_76
- Track 8 : BigShaq\_73
- Track 9 : Flakey\_73, Breezic\_74, John316\_77, Beaver\_77, Ekhein\_74, Gorko\_73
- Track 10 : RemRem\_75, Sam12\_73, Barbochs\_73, Exiguo\_73
- Track 11 : GourdThymes\_74, CathyBurgh\_73, Hotorobo\_74, Lizzo\_74
- Track 12 : Jellybones\_75
- Track 13 : PokyPuppy\_72
- Track 14 : RoyalG\_74, SteveFrench\_73
- Track 15 : BenoitCattle\_75
- Track 16 : Linetti\_73
- Track 17 : Lahirium\_70, Anamika\_70, Hail2Pitt\_69, Berries\_71, Woes\_70, Neoevie\_70, Guillaume\_70, Jormungandr\_70, Nimi13\_70, Jams\_71, Luker\_72, MrWormie\_71, Lidong\_71, Bianmat\_71, Damp\_68, Newt\_72, Teal\_70, GalacticEye\_71, Harambe\_70, Charianelly\_71, Kaseim\_70, Sticker17\_71, Shelley\_71, Minos\_72
- Track 18 : Hello\_70
- Track 19 : Teatealatte\_71, Teech\_68, Tredge\_70, Niagara\_70, Kvothe\_69
- Track 20 : Benczkowski14\_70, Katyusha\_69
- Track 21 : Hollow\_71
- Track 22 : ASerpRocky\_66, Demosthenes\_66
- Track 23 : Philon9\_67

### ***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 32 of the 64 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Adgers\_77, Amore2\_74, Austin\_73, Barbochs\_73, Beaver\_77, BenoitCattle\_75, BigShaq\_73, BirksAndSocks\_78, Boneham\_77, Breezic\_74, Butterball\_76, CathyBurgh\_73, Chelms\_73, Dakiti\_74, Diabla\_79, Eggsie\_73, Ekhein\_74, Exiguo\_73, FelixAlejandro\_78, Flakey\_73, GMA7\_63, GTE7\_62, Gorko\_73, GourdThymes\_74, HayZem\_74, Hotorobo\_74, Jellybones\_75, John316\_77, Linetti\_73, Lizzo\_74, Monty\_73, Msay19\_78, PierreThree\_72, PokyPuppy\_72, Poland\_79, RemRem\_75, RoyalG\_74, Sam12\_73, Sombrero\_75, Squibbles\_73, SteveFrench\_73,

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

- 

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

- ASerpRocky\_66, Anamika\_70, Benczkowski14\_70, Berries\_71, Bianmat\_71, Charianelly\_71, Damp\_68, Demosthenes\_66, GalacticEye\_71, Guillaume\_70, Hail2Pitt\_69, Harambe\_70, Hello\_70, Hollow\_71, Jams\_71, Jormungandr\_70, Kaseim\_70, Katyusha\_69, Kvothe\_69, Lahirium\_70, Lidong\_71, Luker\_72, Minos\_72, MrWormie\_71, Neoevie\_70, Newt\_72, Niagara\_70, Nimi13\_70, Philon9\_67, Shelley\_71, Sticker17\_71, Teal\_70, Teatealatte\_71, Teech\_68, Tredge\_70, Woes\_70,

### Summary by start number:

Start 8:

- Found in 41 of 77 ( 53.2% ) of genes in pham
- Manual Annotations of this start: 32 of 64
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adgers\_77 (CS2), Amore2\_74 (CS1), Austin\_73 (CS1), Barbochs\_73 (CS2), Beaver\_77 (CS2), BenoitCattle\_75 (CS2), BigShaq\_73 (CS2), BirksAndSocks\_78 (CS2), Boneham\_77 (CS2), Breezic\_74 (CS2), Butterball\_76 (CS2), CathyBurgh\_73 (CS2), Chelms\_73 (CS2), Dakiti\_74 (CS2), Diabla\_79 (CS2), Eggsie\_73 (CS2), Ekhein\_74 (CS2), Exiguo\_73 (CS2), FelixAlejandro\_78 (CS2), Flakey\_73 (CS2), GMA7\_63 (CS1), GTE7\_62 (CS1), Gorko\_73 (CS2), GourdThymes\_74 (CS2), HayZem\_74 (CS1), Hotorobo\_74 (CS2), Jellybones\_75 (CS2), John316\_77 (CS2), Linetti\_73 (CS2), Lizzo\_74 (CS2), Monty\_73 (CS2), Msay19\_78 (CS2), PierreThree\_72 (CS2), PokyPuppy\_72 (CS2), Poland\_79 (CS2), RemRem\_75 (CS2), RoyalG\_74 (CS2), Sam12\_73 (CS2), Sombrero\_75 (CS2), Squibbles\_73 (CS2), SteveFrench\_73 (CS2),

Start 9:

- Found in 25 of 77 ( 32.5% ) of genes in pham
- Manual Annotations of this start: 23 of 64
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Anamika\_70 (CS3), Berries\_71 (CS3), Bianmat\_71 (CS3), Charianelly\_71 (CS3), Damp\_68 (CS3), GalacticEye\_71 (CS3), Guillaume\_70 (CS3), Hail2Pitt\_69 (CS3), Harambe\_70 (CS3), Hello\_70 (CS3), Jams\_71 (CS3), Jormungandr\_70 (CS3), Kaseim\_70 (CS3), Lahirium\_70 (CS3), Lidong\_71 (CS3), Luker\_72 (CS3), Minos\_72 (CS3), MrWormie\_71 (CS3), Neoevie\_70 (CS3), Newt\_72 (CS3), Nimi13\_70 (CS3), Shelley\_71 (CS3), Sticker17\_71 (CS3), Teal\_70 (CS3), Woes\_70 (CS3),

Start 10:

- Found in 11 of 77 ( 14.3% ) of genes in pham
- Manual Annotations of this start: 9 of 64
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_66 (CS4), Benczkowski14\_70 (CS4), Demosthenes\_66 (CS4), Hollow\_71 (CS4), Katyusha\_69 (CS4), Kvothe\_69 (CS4), Niagara\_70 (CS4), Philon9\_67 (CS4), Teatealatte\_71 (CS4), Teech\_68 (CS4), Tredge\_70 (CS4),

### **Summary by clusters:**

There are 4 clusters represented in this pham: CS4, CS1, CS3, CS2,

Info for manual annotations of cluster CS1:

- Start number 8 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 8 was manually annotated 29 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 9 was manually annotated 23 times for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 10 was manually annotated 9 times for cluster CS4.

### **Gene Information:**

Gene: ASerpRocky\_66 Start: 58829, Stop: 58071, Start Num: 10

Candidate Starts for ASerpRocky\_66:

(1, 59399), (2, 59393), (3, 59390), (4, 59381), (7, 59189), (Start: 10 @58829 has 9 MA's), (18, 58640), (20, 58613), (22, 58604), (33, 58484), (36, 58442), (41, 58376), (50, 58286), (52, 58280), (55, 58163), (57, 58133),

Gene: Adgers\_77 Start: 59651, Stop: 58923, Start Num: 8

Candidate Starts for Adgers\_77:

(Start: 8 @59651 has 32 MA's), (13, 59546), (16, 59462), (19, 59432), (23, 59411), (25, 59402), (29, 59381), (30, 59366), (32, 59333), (34, 59285), (36, 59261), (37, 59258), (41, 59195), (42, 59180), (44, 59171), (46, 59138), (55, 59012), (58, 58973),

Gene: Amore2\_74 Start: 59188, Stop: 58454, Start Num: 8

Candidate Starts for Amore2\_74:

(Start: 8 @59188 has 32 MA's), (17, 58996), (19, 58969), (30, 58903), (32, 58870), (41, 58732), (44, 58708), (46, 58675), (48, 58657), (54, 58576), (55, 58543), (58, 58504),

Gene: Anamika\_70 Start: 59702, Stop: 58965, Start Num: 9

Candidate Starts for Anamika\_70:

(Start: 9 @59702 has 23 MA's), (11, 59669), (19, 59486), (29, 59435), (30, 59420), (32, 59387), (40, 59279), (41, 59249), (44, 59225), (46, 59192), (49, 59171), (53, 59135), (55, 59054), (58, 59015), (59, 59012),

Gene: Austin\_73 Start: 59186, Stop: 58452, Start Num: 8

Candidate Starts for Austin\_73:

(Start: 8 @59186 has 32 MA's), (17, 58994), (19, 58967), (30, 58901), (32, 58868), (41, 58730), (44, 58706), (46, 58673), (48, 58655), (54, 58574), (55, 58541), (58, 58502),

Gene: Barbochs\_73 Start: 59025, Stop: 58297, Start Num: 8

Candidate Starts for Barbochs\_73:

(Start: 8 @59025 has 32 MA's), (13, 58920), (16, 58836), (19, 58806), (25, 58776), (29, 58755), (30, 58740), (32, 58707), (34, 58659), (36, 58635), (37, 58632), (41, 58569), (42, 58554), (44, 58545), (46, 58512), (55, 58386), (58, 58347),

Gene: Beaver\_77 Start: 60963, Stop: 60235, Start Num: 8

Candidate Starts for Beaver\_77:

(Start: 8 @60963 has 32 MA's), (13, 60858), (16, 60774), (19, 60744), (23, 60723), (25, 60714), (29, 60693), (30, 60678), (32, 60645), (34, 60597), (36, 60573), (40, 60537), (41, 60507), (44, 60483), (46, 60450), (55, 60324), (58, 60285),

Gene: Benczkowski14\_70 Start: 59662, Stop: 58901, Start Num: 10

Candidate Starts for Benczkowski14\_70:

(Start: 10 @59662 has 9 MA's), (18, 59473), (20, 59446), (22, 59437), (33, 59317), (36, 59275), (41, 59209), (50, 59119), (52, 59113), (55, 58996), (57, 58966),

Gene: BenoitCattle\_75 Start: 59628, Stop: 58900, Start Num: 8

Candidate Starts for BenoitCattle\_75:

(Start: 8 @59628 has 32 MA's), (13, 59523), (16, 59439), (19, 59409), (23, 59388), (25, 59379), (29, 59358), (32, 59310), (33, 59277), (36, 59238), (37, 59235), (39, 59211), (41, 59172), (44, 59148), (46, 59115), (55, 58989), (57, 58956), (58, 58950),

Gene: Berries\_71 Start: 59674, Stop: 58937, Start Num: 9

Candidate Starts for Berries\_71:

(Start: 9 @59674 has 23 MA's), (11, 59641), (19, 59458), (29, 59407), (30, 59392), (32, 59359), (40, 59251), (41, 59221), (44, 59197), (46, 59164), (49, 59143), (53, 59107), (55, 59026), (58, 58987), (59, 58984),

Gene: Bianmat\_71 Start: 59714, Stop: 58977, Start Num: 9

Candidate Starts for Bianmat\_71:

(Start: 9 @59714 has 23 MA's), (11, 59681), (19, 59498), (29, 59447), (30, 59432), (32, 59399), (40, 59291), (41, 59261), (44, 59237), (46, 59204), (49, 59183), (53, 59147), (55, 59066), (58, 59027), (59, 59024),

Gene: BigShaq\_73 Start: 59632, Stop: 58904, Start Num: 8

Candidate Starts for BigShaq\_73:

(Start: 8 @59632 has 32 MA's), (13, 59527), (19, 59413), (23, 59392), (25, 59383), (29, 59362), (32, 59314), (36, 59242), (37, 59239), (40, 59206), (41, 59176), (44, 59152), (46, 59119), (55, 58993), (57, 58960), (58, 58954), (59, 58951),

Gene: BirksAndSocks\_78 Start: 61109, Stop: 60381, Start Num: 8

Candidate Starts for BirksAndSocks\_78:

(Start: 8 @61109 has 32 MA's), (13, 61004), (16, 60920), (19, 60890), (23, 60869), (25, 60860), (29, 60839), (30, 60824), (32, 60791), (34, 60743), (36, 60719), (37, 60716), (41, 60653), (42, 60638), (44, 60629), (46, 60596), (55, 60470), (58, 60431),

Gene: Boneham\_77 Start: 61034, Stop: 60306, Start Num: 8

Candidate Starts for Boneham\_77:

(Start: 8 @61034 has 32 MA's), (13, 60929), (16, 60845), (19, 60815), (23, 60794), (25, 60785), (29, 60764), (30, 60749), (32, 60716), (34, 60668), (36, 60644), (37, 60641), (41, 60578), (42, 60563), (44, 60554), (46, 60521), (55, 60395), (58, 60356),

Gene: Breezic\_74 Start: 59206, Stop: 58478, Start Num: 8

Candidate Starts for Breezic\_74:

(Start: 8 @59206 has 32 MA's), (13, 59101), (16, 59017), (19, 58987), (23, 58966), (25, 58957), (29, 58936), (30, 58921), (32, 58888), (34, 58840), (36, 58816), (40, 58780), (41, 58750), (44, 58726), (46, 58693), (55, 58567), (58, 58528),

Gene: Butterball\_76 Start: 61039, Stop: 60311, Start Num: 8

Candidate Starts for Butterball\_76:

(Start: 8 @61039 has 32 MA's), (13, 60934), (16, 60850), (19, 60820), (23, 60799), (25, 60790), (29, 60769), (30, 60754), (32, 60721), (34, 60673), (36, 60649), (37, 60646), (41, 60583), (42, 60568), (44, 60559), (46, 60526), (55, 60400), (58, 60361),

Gene: CathyBurgh\_73 Start: 59714, Stop: 58986, Start Num: 8

Candidate Starts for CathyBurgh\_73:

(Start: 8 @59714 has 32 MA's), (13, 59609), (16, 59525), (19, 59495), (23, 59474), (25, 59465), (29, 59444), (30, 59429), (32, 59396), (34, 59348), (36, 59324), (40, 59288), (41, 59258), (44, 59234), (46, 59201), (55, 59075), (57, 59042), (58, 59036),

Gene: Charianelly\_71 Start: 59424, Stop: 58687, Start Num: 9

Candidate Starts for Charianelly\_71:

(Start: 9 @59424 has 23 MA's), (11, 59391), (19, 59208), (29, 59157), (30, 59142), (32, 59109), (40, 59001), (41, 58971), (44, 58947), (46, 58914), (49, 58893), (53, 58857), (55, 58776), (58, 58737), (59, 58734),

Gene: Chelms\_73 Start: 59571, Stop: 58843, Start Num: 8

Candidate Starts for Chelms\_73:

(Start: 8 @59571 has 32 MA's), (13, 59466), (19, 59352), (23, 59331), (25, 59322), (29, 59301), (32, 59253), (36, 59181), (37, 59178), (40, 59145), (41, 59115), (44, 59091), (46, 59058), (55, 58932), (57, 58899), (58, 58893),

Gene: Dakiti\_74 Start: 60439, Stop: 59711, Start Num: 8

Candidate Starts for Dakiti\_74:

(Start: 8 @60439 has 32 MA's), (13, 60334), (19, 60220), (23, 60199), (25, 60190), (29, 60169), (32, 60121), (36, 60049), (37, 60046), (40, 60013), (41, 59983), (44, 59959), (46, 59926), (55, 59800), (57, 59767), (58, 59761),

Gene: Damp\_68 Start: 58588, Stop: 57851, Start Num: 9

Candidate Starts for Damp\_68:

(Start: 9 @58588 has 23 MA's), (11, 58555), (19, 58372), (29, 58321), (30, 58306), (32, 58273), (40, 58165), (41, 58135), (44, 58111), (46, 58078), (49, 58057), (53, 58021), (55, 57940), (58, 57901), (59, 57898),

Gene: Demosthenes\_66 Start: 58802, Stop: 58044, Start Num: 10

Candidate Starts for Demosthenes\_66:

(1, 59372), (2, 59366), (3, 59363), (4, 59354), (7, 59162), (Start: 10 @58802 has 9 MA's), (18, 58613), (20, 58586), (22, 58577), (33, 58457), (36, 58415), (41, 58349), (50, 58259), (52, 58253), (55, 58136), (57, 58106),

Gene: Diabla\_79 Start: 61134, Stop: 60388, Start Num: 8

Candidate Starts for Diabla\_79:

(Start: 8 @61134 has 32 MA's), (13, 61029), (19, 60915), (21, 60903), (27, 60873), (30, 60849), (32, 60816), (33, 60783), (40, 60690), (41, 60660), (44, 60636), (46, 60603), (55, 60477), (57, 60444), (58, 60438),

Gene: Eggsie\_73 Start: 58935, Stop: 58189, Start Num: 8

Candidate Starts for Eggsie\_73:

(Start: 8 @58935 has 32 MA's), (13, 58830), (19, 58716), (21, 58704), (27, 58674), (30, 58650), (32, 58617), (33, 58584), (40, 58491), (41, 58461), (44, 58437), (46, 58404), (55, 58278), (57, 58245), (58, 58239),

Gene: Ekhein\_74 Start: 58905, Stop: 58177, Start Num: 8

Candidate Starts for Ekhein\_74:

(Start: 8 @58905 has 32 MA's), (13, 58800), (16, 58716), (19, 58686), (23, 58665), (25, 58656), (29, 58635), (30, 58620), (32, 58587), (34, 58539), (36, 58515), (40, 58479), (41, 58449), (44, 58425), (46, 58392), (55, 58266), (58, 58227),

Gene: Exiguo\_73 Start: 58941, Stop: 58213, Start Num: 8

Candidate Starts for Exiguo\_73:

(Start: 8 @58941 has 32 MA's), (13, 58836), (16, 58752), (19, 58722), (25, 58692), (29, 58671), (30, 58656), (32, 58623), (34, 58575), (36, 58551), (37, 58548), (41, 58485), (42, 58470), (44, 58461), (46, 58428), (55, 58302), (58, 58263),

Gene: FelixAlejandro\_78 Start: 61437, Stop: 60709, Start Num: 8

Candidate Starts for FelixAlejandro\_78:

(Start: 8 @61437 has 32 MA's), (13, 61332), (16, 61248), (19, 61218), (23, 61197), (25, 61188), (29, 61167), (30, 61152), (32, 61119), (34, 61071), (36, 61047), (37, 61044), (41, 60981), (42, 60966), (44, 60957), (46, 60924), (55, 60798), (58, 60759),

Gene: Flakey\_73 Start: 59700, Stop: 58972, Start Num: 8

Candidate Starts for Flakey\_73:

(Start: 8 @59700 has 32 MA's), (13, 59595), (16, 59511), (19, 59481), (23, 59460), (25, 59451), (29, 59430), (30, 59415), (32, 59382), (34, 59334), (36, 59310), (40, 59274), (41, 59244), (44, 59220), (46, 59187), (55, 59061), (58, 59022),

Gene: GMA7\_63 Start: 53402, Stop: 52668, Start Num: 8

Candidate Starts for GMA7\_63:

(Start: 8 @53402 has 32 MA's), (17, 53210), (19, 53183), (30, 53117), (32, 53084), (41, 52946), (44, 52922), (46, 52889), (48, 52871), (54, 52790), (55, 52757), (56, 52730), (58, 52718),

Gene: GTE7\_62 Start: 53433, Stop: 52699, Start Num: 8

Candidate Starts for GTE7\_62:

(Start: 8 @53433 has 32 MA's), (17, 53241), (19, 53214), (30, 53148), (32, 53115), (41, 52977), (44, 52953), (46, 52920), (48, 52902), (54, 52821), (55, 52788), (58, 52749),

Gene: GalacticEye\_71 Start: 59385, Stop: 58648, Start Num: 9

Candidate Starts for GalacticEye\_71:

(Start: 9 @59385 has 23 MA's), (11, 59352), (19, 59169), (29, 59118), (30, 59103), (32, 59070), (40, 58962), (41, 58932), (44, 58908), (46, 58875), (49, 58854), (53, 58818), (55, 58737), (58, 58698), (59, 58695),

Gene: Gorko\_73 Start: 58846, Stop: 58118, Start Num: 8

Candidate Starts for Gorko\_73:

(Start: 8 @58846 has 32 MA's), (13, 58741), (16, 58657), (19, 58627), (23, 58606), (25, 58597), (29, 58576), (30, 58561), (32, 58528), (34, 58480), (36, 58456), (40, 58420), (41, 58390), (44, 58366), (46, 58333), (55, 58207), (58, 58168),

Gene: GourdThymes\_74 Start: 59801, Stop: 59073, Start Num: 8

Candidate Starts for GourdThymes\_74:

(Start: 8 @59801 has 32 MA's), (13, 59696), (16, 59612), (19, 59582), (23, 59561), (25, 59552), (29, 59531), (30, 59516), (32, 59483), (34, 59435), (36, 59411), (40, 59375), (41, 59345), (44, 59321), (46, 59288), (55, 59162), (57, 59129), (58, 59123),

Gene: Guillaume\_70 Start: 59435, Stop: 58698, Start Num: 9

Candidate Starts for Guillaume\_70:

(Start: 9 @59435 has 23 MA's), (11, 59402), (19, 59219), (29, 59168), (30, 59153), (32, 59120), (40, 59012), (41, 58982), (44, 58958), (46, 58925), (49, 58904), (53, 58868), (55, 58787), (58, 58748), (59, 58745),

Gene: Hail2Pitt\_69 Start: 59911, Stop: 59174, Start Num: 9

Candidate Starts for Hail2Pitt\_69:

(Start: 9 @59911 has 23 MA's), (11, 59878), (19, 59695), (29, 59644), (30, 59629), (32, 59596), (40, 59488), (41, 59458), (44, 59434), (46, 59401), (49, 59380), (53, 59344), (55, 59263), (58, 59224), (59, 59221),

Gene: Harambe\_70 Start: 59702, Stop: 58965, Start Num: 9

Candidate Starts for Harambe\_70:

(Start: 9 @59702 has 23 MA's), (11, 59669), (19, 59486), (29, 59435), (30, 59420), (32, 59387), (40, 59279), (41, 59249), (44, 59225), (46, 59192), (49, 59171), (53, 59135), (55, 59054), (58, 59015), (59, 59012),

Gene: HayZem\_74 Start: 59185, Stop: 58451, Start Num: 8

Candidate Starts for HayZem\_74:

(Start: 8 @59185 has 32 MA's), (17, 58993), (19, 58966), (30, 58900), (32, 58867), (41, 58729), (44, 58705), (46, 58672), (48, 58654), (54, 58573), (55, 58540), (56, 58513), (58, 58501),

Gene: Hello\_70 Start: 59664, Stop: 58927, Start Num: 9

Candidate Starts for Hello\_70:

(Start: 9 @59664 has 23 MA's), (11, 59631), (19, 59448), (29, 59397), (30, 59382), (32, 59349), (40, 59241), (41, 59211), (44, 59187), (46, 59154), (49, 59133), (53, 59097), (55, 59016), (58, 58977), (59, 58974),

Gene: Hollow\_71 Start: 59842, Stop: 59081, Start Num: 10

Candidate Starts for Hollow\_71:

(2, 60406), (4, 60394), (5, 60361), (6, 60346), (7, 60202), (Start: 10 @59842 has 9 MA's), (18, 59653), (20, 59626), (22, 59617), (28, 59584), (33, 59497), (35, 59476), (36, 59455), (41, 59389), (50, 59299), (52, 59293), (55, 59176), (57, 59146),

Gene: Hotorobo\_74 Start: 59788, Stop: 59060, Start Num: 8

Candidate Starts for Hotorobo\_74:

(Start: 8 @59788 has 32 MA's), (13, 59683), (16, 59599), (19, 59569), (23, 59548), (25, 59539), (29, 59518), (30, 59503), (32, 59470), (34, 59422), (36, 59398), (40, 59362), (41, 59332), (44, 59308), (46, 59275), (55, 59149), (57, 59116), (58, 59110),

Gene: Jams\_71 Start: 58874, Stop: 58137, Start Num: 9

Candidate Starts for Jams\_71:



(Start: 9 @58874 has 23 MA's), (11, 58841), (19, 58658), (29, 58607), (30, 58592), (32, 58559), (40, 58451), (41, 58421), (44, 58397), (46, 58364), (49, 58343), (53, 58307), (55, 58226), (58, 58187), (59, 58184),

Gene: Jellybones\_75 Start: 60722, Stop: 59994, Start Num: 8

Candidate Starts for Jellybones\_75:

(Start: 8 @60722 has 32 MA's), (13, 60617), (16, 60533), (19, 60503), (25, 60473), (29, 60452), (30, 60437), (32, 60404), (34, 60356), (36, 60332), (37, 60329), (41, 60266), (42, 60251), (44, 60242), (46, 60209), (55, 60083), (58, 60044),

Gene: John316\_77 Start: 60865, Stop: 60137, Start Num: 8

Candidate Starts for John316\_77:

(Start: 8 @60865 has 32 MA's), (13, 60760), (16, 60676), (19, 60646), (23, 60625), (25, 60616), (29, 60595), (30, 60580), (32, 60547), (34, 60499), (36, 60475), (40, 60439), (41, 60409), (44, 60385), (46, 60352), (55, 60226), (58, 60187),

Gene: Jormungandr\_70 Start: 59417, Stop: 58680, Start Num: 9

Candidate Starts for Jormungandr\_70:

(Start: 9 @59417 has 23 MA's), (11, 59384), (19, 59201), (29, 59150), (30, 59135), (32, 59102), (40, 58994), (41, 58964), (44, 58940), (46, 58907), (49, 58886), (53, 58850), (55, 58769), (58, 58730), (59, 58727),

Gene: Kaseim\_70 Start: 58859, Stop: 58122, Start Num: 9

Candidate Starts for Kaseim\_70:

(Start: 9 @58859 has 23 MA's), (11, 58826), (19, 58643), (29, 58592), (30, 58577), (32, 58544), (40, 58436), (41, 58406), (44, 58382), (46, 58349), (49, 58328), (53, 58292), (55, 58211), (58, 58172), (59, 58169),

Gene: Katyusha\_69 Start: 59662, Stop: 58901, Start Num: 10

Candidate Starts for Katyusha\_69:

(Start: 10 @59662 has 9 MA's), (18, 59473), (20, 59446), (22, 59437), (33, 59317), (36, 59275), (41, 59209), (50, 59119), (52, 59113), (55, 58996), (57, 58966),

Gene: Kvothe\_69 Start: 59495, Stop: 58803, Start Num: 10

Candidate Starts for Kvothe\_69:

(Start: 10 @59495 has 9 MA's), (15, 59321), (22, 59279), (24, 59267), (28, 59252), (35, 59174), (47, 59036), (55, 58898), (57, 58868),

Gene: Lahirium\_70 Start: 59939, Stop: 59202, Start Num: 9

Candidate Starts for Lahirium\_70:

(Start: 9 @59939 has 23 MA's), (11, 59906), (19, 59723), (29, 59672), (30, 59657), (32, 59624), (40, 59516), (41, 59486), (44, 59462), (46, 59429), (49, 59408), (53, 59372), (55, 59291), (58, 59252), (59, 59249),

Gene: Lidong\_71 Start: 59674, Stop: 58937, Start Num: 9

Candidate Starts for Lidong\_71:

(Start: 9 @59674 has 23 MA's), (11, 59641), (19, 59458), (29, 59407), (30, 59392), (32, 59359), (40, 59251), (41, 59221), (44, 59197), (46, 59164), (49, 59143), (53, 59107), (55, 59026), (58, 58987), (59, 58984),

Gene: Linetti\_73 Start: 60593, Stop: 59865, Start Num: 8

Candidate Starts for Linetti\_73:

(Start: 8 @60593 has 32 MA's), (13, 60488), (19, 60374), (23, 60353), (25, 60344), (29, 60323), (32, 60275), (33, 60242), (36, 60203), (37, 60200), (39, 60176), (41, 60137), (44, 60113), (46, 60080), (55, 59954), (57, 59921), (58, 59915),

Gene: Lizzo\_74 Start: 59714, Stop: 58986, Start Num: 8

Candidate Starts for Lizzo\_74:

(Start: 8 @59714 has 32 MA's), (13, 59609), (16, 59525), (19, 59495), (23, 59474), (25, 59465), (29, 59444), (30, 59429), (32, 59396), (34, 59348), (36, 59324), (40, 59288), (41, 59258), (44, 59234), (46, 59201), (55, 59075), (57, 59042), (58, 59036),

Gene: Luker\_72 Start: 59892, Stop: 59155, Start Num: 9

Candidate Starts for Luker\_72:

(Start: 9 @59892 has 23 MA's), (11, 59859), (19, 59676), (29, 59625), (30, 59610), (32, 59577), (40, 59469), (41, 59439), (44, 59415), (46, 59382), (49, 59361), (53, 59325), (55, 59244), (58, 59205), (59, 59202),

Gene: Minos\_72 Start: 59416, Stop: 58679, Start Num: 9

Candidate Starts for Minos\_72:

(Start: 9 @59416 has 23 MA's), (11, 59383), (19, 59200), (29, 59149), (30, 59134), (32, 59101), (40, 58993), (41, 58963), (44, 58939), (46, 58906), (49, 58885), (53, 58849), (55, 58768), (58, 58729), (59, 58726),

Gene: Monty\_73 Start: 58927, Stop: 58199, Start Num: 8

Candidate Starts for Monty\_73:

(Start: 8 @58927 has 32 MA's), (13, 58822), (16, 58738), (19, 58708), (23, 58687), (25, 58678), (29, 58657), (30, 58642), (32, 58609), (33, 58576), (34, 58561), (36, 58537), (40, 58501), (41, 58471), (44, 58447), (46, 58414), (55, 58288), (57, 58255), (58, 58249),

Gene: MrWormie\_71 Start: 58577, Stop: 57840, Start Num: 9

Candidate Starts for MrWormie\_71:

(Start: 9 @58577 has 23 MA's), (11, 58544), (19, 58361), (29, 58310), (30, 58295), (32, 58262), (40, 58154), (41, 58124), (44, 58100), (46, 58067), (49, 58046), (53, 58010), (55, 57929), (58, 57890), (59, 57887),

Gene: Msay19\_78 Start: 61323, Stop: 60595, Start Num: 8

Candidate Starts for Msay19\_78:

(Start: 8 @61323 has 32 MA's), (13, 61218), (16, 61134), (19, 61104), (23, 61083), (25, 61074), (29, 61053), (30, 61038), (32, 61005), (34, 60957), (36, 60933), (37, 60930), (41, 60867), (42, 60852), (44, 60843), (46, 60810), (55, 60684), (58, 60645),

Gene: Neevie\_70 Start: 59678, Stop: 58941, Start Num: 9

Candidate Starts for Neevie\_70:

(Start: 9 @59678 has 23 MA's), (11, 59645), (19, 59462), (29, 59411), (30, 59396), (32, 59363), (40, 59255), (41, 59225), (44, 59201), (46, 59168), (49, 59147), (53, 59111), (55, 59030), (58, 58991), (59, 58988),

Gene: Newt\_72 Start: 59906, Stop: 59169, Start Num: 9

Candidate Starts for Newt\_72:

(Start: 9 @59906 has 23 MA's), (11, 59873), (19, 59690), (29, 59639), (30, 59624), (32, 59591), (40, 59483), (41, 59453), (44, 59429), (46, 59396), (49, 59375), (53, 59339), (55, 59258), (58, 59219), (59, 59216),

Gene: Niagara\_70 Start: 59586, Stop: 58894, Start Num: 10

Candidate Starts for Niagara\_70:

(Start: 10 @59586 has 9 MA's), (15, 59412), (22, 59370), (24, 59358), (28, 59343), (35, 59265), (47, 59127), (55, 58989), (57, 58959),

Gene: Nimi13\_70 Start: 59425, Stop: 58688, Start Num: 9

Candidate Starts for Nimi13\_70:

(Start: 9 @59425 has 23 MA's), (11, 59392), (19, 59209), (29, 59158), (30, 59143), (32, 59110), (40, 59002), (41, 58972), (44, 58948), (46, 58915), (49, 58894), (53, 58858), (55, 58777), (58, 58738), (59, 58735),

Gene: Philon9\_67 Start: 60466, Stop: 59765, Start Num: 10

Candidate Starts for Philon9\_67:

(Start: 10 @60466 has 9 MA's), (12, 60424), (14, 60325), (18, 60277), (24, 60235), (26, 60226), (31, 60193), (33, 60151), (43, 60031), (45, 59998), (51, 59959), (55, 59854), (57, 59824), (60, 59773),

Gene: PierreThree\_72 Start: 60070, Stop: 59342, Start Num: 8

Candidate Starts for PierreThree\_72:

(Start: 8 @60070 has 32 MA's), (13, 59965), (19, 59851), (23, 59830), (25, 59821), (29, 59800), (32, 59752), (36, 59680), (37, 59677), (40, 59644), (41, 59614), (44, 59590), (46, 59557), (55, 59431), (57, 59398), (58, 59392),

Gene: PokyPuppy\_72 Start: 59903, Stop: 59175, Start Num: 8

Candidate Starts for PokyPuppy\_72:

(Start: 8 @59903 has 32 MA's), (13, 59798), (19, 59684), (23, 59663), (25, 59654), (29, 59633), (30, 59618), (32, 59585), (33, 59552), (34, 59537), (37, 59510), (38, 59504), (39, 59486), (41, 59447), (44, 59423), (46, 59390), (55, 59264), (57, 59231), (58, 59225),

Gene: Poland\_79 Start: 61302, Stop: 60574, Start Num: 8

Candidate Starts for Poland\_79:

(Start: 8 @61302 has 32 MA's), (13, 61197), (16, 61113), (19, 61083), (23, 61062), (25, 61053), (29, 61032), (30, 61017), (32, 60984), (34, 60936), (36, 60912), (37, 60909), (41, 60846), (42, 60831), (44, 60822), (46, 60789), (55, 60663), (58, 60624),

Gene: RemRem\_75 Start: 58917, Stop: 58189, Start Num: 8

Candidate Starts for RemRem\_75:

(Start: 8 @58917 has 32 MA's), (13, 58812), (16, 58728), (19, 58698), (25, 58668), (29, 58647), (30, 58632), (32, 58599), (34, 58551), (36, 58527), (37, 58524), (41, 58461), (42, 58446), (44, 58437), (46, 58404), (55, 58278), (58, 58239),

Gene: RoyalG\_74 Start: 59574, Stop: 58846, Start Num: 8

Candidate Starts for RoyalG\_74:

(Start: 8 @59574 has 32 MA's), (13, 59469), (19, 59355), (25, 59325), (29, 59304), (30, 59289), (32, 59256), (33, 59223), (34, 59208), (37, 59181), (40, 59148), (41, 59118), (44, 59094), (46, 59061), (55, 58935), (57, 58902), (58, 58896),

Gene: Sam12\_73 Start: 58941, Stop: 58213, Start Num: 8

Candidate Starts for Sam12\_73:

(Start: 8 @58941 has 32 MA's), (13, 58836), (16, 58752), (19, 58722), (25, 58692), (29, 58671), (30, 58656), (32, 58623), (34, 58575), (36, 58551), (37, 58548), (41, 58485), (42, 58470), (44, 58461), (46, 58428), (55, 58302), (58, 58263),

Gene: Shelley\_71 Start: 58901, Stop: 58164, Start Num: 9

Candidate Starts for Shelley\_71:

(Start: 9 @58901 has 23 MA's), (11, 58868), (19, 58685), (29, 58634), (30, 58619), (32, 58586), (40, 58478), (41, 58448), (44, 58424), (46, 58391), (49, 58370), (53, 58334), (55, 58253), (58, 58214), (59, 58211),

Gene: Sombrero\_75 Start: 59514, Stop: 58786, Start Num: 8

Candidate Starts for Sombrero\_75:

(Start: 8 @59514 has 32 MA's), (13, 59409), (16, 59325), (19, 59295), (23, 59274), (25, 59265), (29, 59244), (30, 59229), (32, 59196), (34, 59148), (36, 59124), (37, 59121), (41, 59058), (42, 59043), (44, 59034), (46, 59001), (55, 58875), (58, 58836),

Gene: Squibbles\_73 Start: 59780, Stop: 59052, Start Num: 8

Candidate Starts for Squibbles\_73:

(Start: 8 @59780 has 32 MA's), (13, 59675), (16, 59591), (19, 59561), (23, 59540), (25, 59531), (29, 59510), (30, 59495), (32, 59462), (34, 59414), (36, 59390), (40, 59354), (41, 59324), (44, 59300), (55, 59141), (57, 59108), (58, 59102),

Gene: SteveFrench\_73 Start: 59814, Stop: 59086, Start Num: 8

Candidate Starts for SteveFrench\_73:

(Start: 8 @59814 has 32 MA's), (13, 59709), (19, 59595), (25, 59565), (29, 59544), (30, 59529), (32, 59496), (33, 59463), (34, 59448), (37, 59421), (40, 59388), (41, 59358), (44, 59334), (46, 59301), (55, 59175), (57, 59142), (58, 59136),

Gene: Sticker17\_71 Start: 59389, Stop: 58652, Start Num: 9

Candidate Starts for Sticker17\_71:

(Start: 9 @59389 has 23 MA's), (11, 59356), (19, 59173), (29, 59122), (30, 59107), (32, 59074), (40, 58966), (41, 58936), (44, 58912), (46, 58879), (49, 58858), (53, 58822), (55, 58741), (58, 58702), (59, 58699),

Gene: Teal\_70 Start: 59883, Stop: 59146, Start Num: 9

Candidate Starts for Teal\_70:

(Start: 9 @59883 has 23 MA's), (11, 59850), (19, 59667), (29, 59616), (30, 59601), (32, 59568), (40, 59460), (41, 59430), (44, 59406), (46, 59373), (49, 59352), (53, 59316), (55, 59235), (58, 59196), (59, 59193),

Gene: Teatealatte\_71 Start: 59483, Stop: 58791, Start Num: 10

Candidate Starts for Teatealatte\_71:

(Start: 10 @59483 has 9 MA's), (15, 59309), (22, 59267), (24, 59255), (28, 59240), (35, 59162), (47, 59024), (55, 58886), (57, 58856),

Gene: Teech\_68 Start: 59299, Stop: 58607, Start Num: 10

Candidate Starts for Teech\_68:

(Start: 10 @59299 has 9 MA's), (15, 59125), (22, 59083), (24, 59071), (28, 59056), (35, 58978), (47, 58840), (55, 58702), (57, 58672),

Gene: Tredge\_70 Start: 59483, Stop: 58791, Start Num: 10

Candidate Starts for Tredge\_70:

(Start: 10 @59483 has 9 MA's), (15, 59309), (22, 59267), (24, 59255), (28, 59240), (35, 59162), (47, 59024), (55, 58886), (57, 58856),

Gene: Woes\_70 Start: 59934, Stop: 59197, Start Num: 9

Candidate Starts for Woes\_70:

(Start: 9 @59934 has 23 MA's), (11, 59901), (19, 59718), (29, 59667), (30, 59652), (32, 59619), (40, 59511), (41, 59481), (44, 59457), (46, 59424), (49, 59403), (53, 59367), (55, 59286), (58, 59247), (59,

59244),