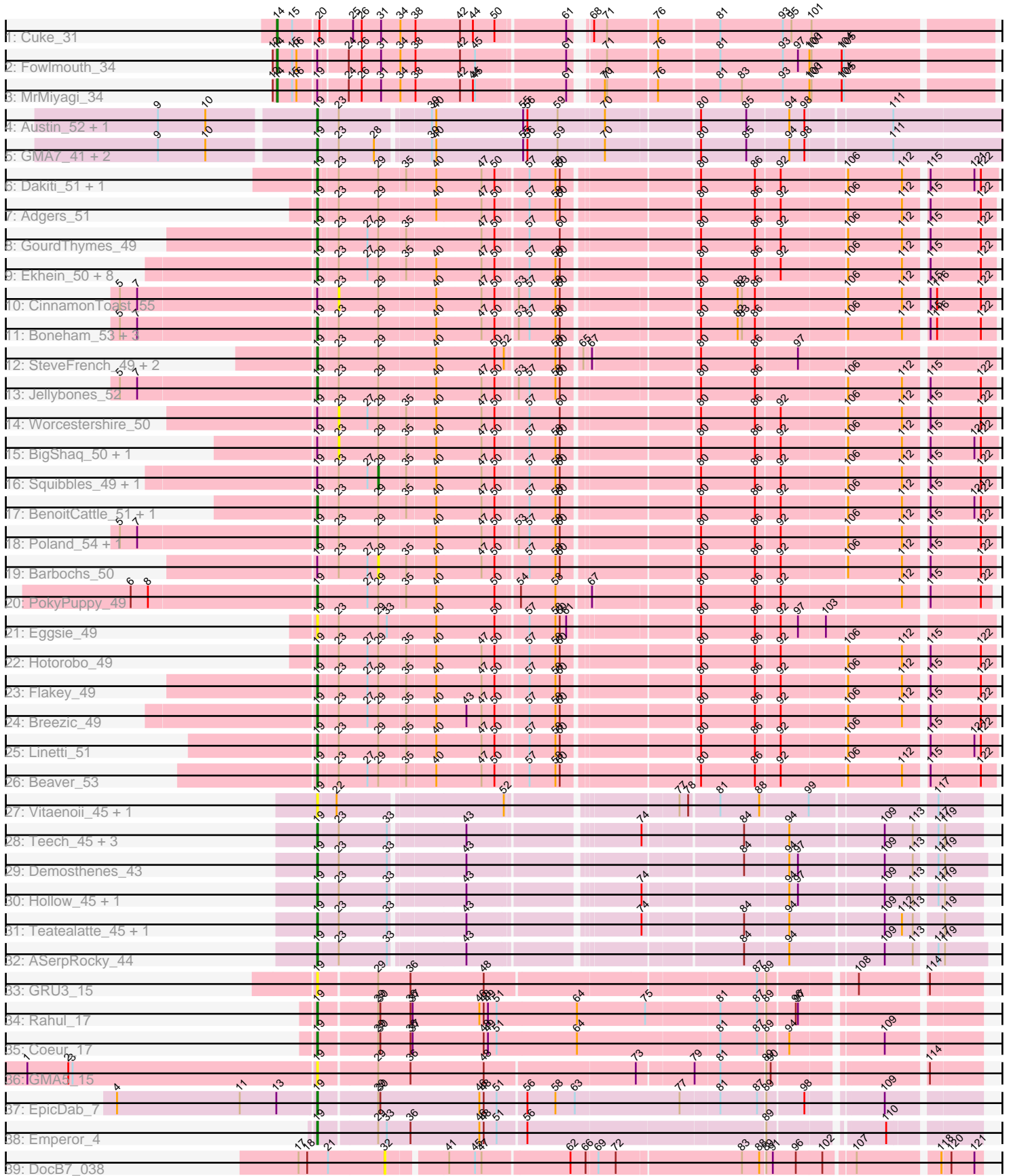


Pham 202929



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 202929 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202929 has 66 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Cuke\_31
- Track 2 : Fowlmouth\_34
- Track 3 : MrMiyagi\_34
- Track 4 : Austin\_52, Amore2\_52
- Track 5 : GMA7\_41, HayZem\_51, GTE7\_40
- Track 6 : Dakiti\_51, Chelms\_50
- Track 7 : Adgers\_51
- Track 8 : GourdThymes\_49
- Track 9 : Ekhein\_50, BirksAndSocks\_54, Lizzo\_49, John316\_53, CathyBurgh\_49, Gorko\_49, Exiguo\_49, Sam12\_49, RemRem\_50
- Track 10 : CinnamonToast\_55
- Track 11 : Boneham\_53, Sombrero\_50, FelixAlejandro\_54, Butterball\_53
- Track 12 : SteveFrench\_49, Diabla\_53, RoyalG\_50
- Track 13 : Jellybones\_52
- Track 14 : Worcestershire\_50
- Track 15 : BigShaq\_50, Crete\_51
- Track 16 : Squibbles\_49, Monty\_48
- Track 17 : BenoitCattle\_51, PierreThree\_50
- Track 18 : Poland\_54, Msay19\_54
- Track 19 : Barbochs\_50
- Track 20 : PokyPuppy\_49
- Track 21 : Eggsie\_49
- Track 22 : Hotorobo\_49
- Track 23 : Flakey\_49
- Track 24 : Breezic\_49
- Track 25 : Linetti\_51
- Track 26 : Beaver\_53
- Track 27 : Vitaenoi\_45, Philon9\_45
- Track 28 : Teech\_45, Kvothe\_44, Katyusha\_44, Benczkowski14\_44
- Track 29 : Demosthenes\_43
- Track 30 : Hollow\_45, Niagara\_44
- Track 31 : Teatealatte\_45, Tredge\_45
- Track 32 : ASerpRocky\_44
- Track 33 : GRU3\_15
- Track 34 : Rahul\_17
- Track 35 : Coeur\_17
- Track 36 : GMA5\_15

- Track 37 : EpicDab\_7
- Track 38 : Emperor\_4
- Track 39 : DocB7\_038

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

The start number called the most often in the published annotations is 19, it was called in 46 of the 50 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ASerpRocky\_44, Adgers\_51, Amore2\_52, Austin\_52, Beaver\_53, Benczkowski14\_44, BenoitCattle\_51, BirksAndSocks\_54, Boneham\_53, Breezic\_49, Butterball\_53, CathyBurgh\_49, Chelms\_50, Coeur\_17, Dakiti\_51, Demosthenes\_43, Diabla\_53, Eggsie\_49, Ekhein\_50, Emperor\_4, EpicDab\_7, Exiguo\_49, FelixAlejandro\_54, Flakey\_49, GMA5\_15, GMA7\_41, GRU3\_15, GTE7\_40, Gorko\_49, GourdThymes\_49, HayZem\_51, Hollow\_45, Hotorobo\_49, Jellybones\_52, John316\_53, Katyusha\_44, Kvothe\_44, Linetti\_51, Lizzo\_49, Msay19\_54, Niagara\_44, Philon9\_45, PierreThree\_50, PokyPuppy\_49, Poland\_54, Rahul\_17, RemRem\_50, RoyalG\_50, Sam12\_49, Sombrero\_50, SteveFrench\_49, Teatealatte\_45, Teech\_45, Tredge\_45, Vitaenoi\_45,

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

- Barbochs\_50, BigShaq\_50, CinnamonToast\_55, Crete\_51, Fowlmouth\_34, Monty\_48, MrMiyagi\_34, Squibbles\_49, Worcestershire\_50,

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

- Cuke\_31, DocB7\_038,

### **Summary by start number:**

Start 14:

- Found in 3 of 66 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 3 of 50
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cuke\_31 (AC), Fowlmouth\_34 (AC), MrMiyagi\_34 (AC),

Start 19:

- Found in 64 of 66 ( 97.0% ) of genes in pham
- Manual Annotations of this start: 46 of 50
- Called 85.9% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_44 (CS4), Adgers\_51 (CS2), Amore2\_52 (CS1), Austin\_52 (CS1), Beaver\_53 (CS2), Benczkowski14\_44 (CS4), BenoitCattle\_51 (CS2), BirksAndSocks\_54 (CS2), Boneham\_53 (CS2), Breezic\_49 (CS2), Butterball\_53 (CS2), CathyBurgh\_49 (CS2), Chelms\_50 (CS2), Coeur\_17 (CW2), Dakiti\_51 (CS2), Demosthenes\_43 (CS4), Diabla\_53 (CS2), Eggsie\_49 (CS2), Ekhein\_50 (CS2), Emperor\_4 (DM), EpicDab\_7 (DM), Exiguo\_49 (CS2), FelixAlejandro\_54 (CS2), Flakey\_49 (CS2), GMA5\_15 (CW2), GMA7\_41 (CS1), GRU3\_15 (CW2), GTE7\_40 (CS1), Gorko\_49 (CS2), GourdThymes\_49 (CS2), HayZem\_51 (CS1), Hollow\_45 (CS4), Hotorobo\_49 (CS2), Jellybones\_52 (CS2),

John316\_53 (CS2), Katyusha\_44 (CS4), Kvothe\_44 (CS4), Linetti\_51 (CS2), Lizzo\_49 (CS2), Msay19\_54 (CS2), Niagara\_44 (CS4), Philon9\_45 (CS4), PierreThree\_50 (CS2), PokyPuppy\_49 (CS2), Poland\_54 (CS2), Rahul\_17 (CW2), RemRem\_50 (CS2), RoyalG\_50 (CS2), Sam12\_49 (CS2), Sombrero\_50 (CS2), SteveFrench\_49 (CS2), Teatealatte\_45 (CS4), Teech\_45 (CS4), Tredge\_45 (CS4), Vitaenoi\_45 (CS4),

Start 23:

- Found in 53 of 66 ( 80.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 7.5% of time when present
- Phage (with cluster) where this start called: BigShaq\_50 (CS2), CinnamonToast\_55 (CS2), Crete\_51 (CS2), Worcestershire\_50 (CS2),

Start 29:

- Found in 45 of 66 ( 68.2% ) of genes in pham
- Manual Annotations of this start: 1 of 50
- Called 6.7% of time when present
- Phage (with cluster) where this start called: Barbochs\_50 (CS2), Monty\_48 (CS2), Squibbles\_49 (CS2),

Start 32:

- Found in 1 of 66 ( 1.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DocB7\_038 (singleton),

### **Summary by clusters:**

There are 7 clusters represented in this pham: AC, DM, CW2, singleton, CS4, CS1, CS2,

Info for manual annotations of cluster AC:

- Start number 14 was manually annotated 3 times for cluster AC.

Info for manual annotations of cluster CS1:

- Start number 19 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 19 was manually annotated 30 times for cluster CS2.
- Start number 29 was manually annotated 1 time for cluster CS2.

Info for manual annotations of cluster CS4:

- Start number 19 was manually annotated 9 times for cluster CS4.

Info for manual annotations of cluster CW2:

- Start number 19 was manually annotated 2 times for cluster CW2.

Info for manual annotations of cluster DM:

- Start number 19 was manually annotated 2 times for cluster DM.

### **Gene Information:**

Gene: ASerpRocky\_44 Start: 46453, Stop: 45620, Start Num: 19

Candidate Starts for ASerpRocky\_44:

(Start: 19 @46453 has 46 MA's), (23, 46426), (33, 46360), (43, 46267), (84, 45925), (94, 45868), (109, 45745), (113, 45706), (117, 45682), (119, 45676),

Gene: Adgers\_51 Start: 46251, Stop: 45394, Start Num: 19

Candidate Starts for Adgers\_51:

(Start: 19 @46251 has 46 MA's), (23, 46227), (Start: 29 @46173 has 1 MA's), (40, 46098), (47, 46038), (50, 46020), (57, 45981), (58, 45945), (60, 45939), (80, 45768), (86, 45693), (92, 45663), (106, 45576), (112, 45501), (115, 45474), (122, 45414),

Gene: Amore2\_52 Start: 46682, Stop: 45783, Start Num: 19

Candidate Starts for Amore2\_52:

(9, 46889), (10, 46823), (Start: 19 @46682 has 46 MA's), (23, 46655), (39, 46541), (40, 46535), (55, 46418), (56, 46412), (59, 46370), (70, 46310), (80, 46190), (85, 46127), (94, 46073), (98, 46052), (111, 45941),

Gene: Austin\_52 Start: 46682, Stop: 45783, Start Num: 19

Candidate Starts for Austin\_52:

(9, 46889), (10, 46823), (Start: 19 @46682 has 46 MA's), (23, 46655), (39, 46541), (40, 46535), (55, 46418), (56, 46412), (59, 46370), (70, 46310), (80, 46190), (85, 46127), (94, 46073), (98, 46052), (111, 45941),

Gene: Barbochs\_50 Start: 45917, Stop: 45138, Start Num: 29

Candidate Starts for Barbochs\_50:

(Start: 19 @45995 has 46 MA's), (23, 45971), (27, 45932), (Start: 29 @45917 has 1 MA's), (35, 45881), (40, 45842), (47, 45782), (50, 45764), (57, 45725), (58, 45689), (60, 45683), (80, 45512), (86, 45437), (92, 45407), (106, 45320), (112, 45245), (115, 45218), (122, 45158),

Gene: Beaver\_53 Start: 47765, Stop: 46908, Start Num: 19

Candidate Starts for Beaver\_53:

(Start: 19 @47765 has 46 MA's), (23, 47741), (27, 47702), (Start: 29 @47687 has 1 MA's), (35, 47651), (40, 47612), (47, 47552), (50, 47534), (57, 47495), (58, 47459), (60, 47453), (80, 47282), (86, 47207), (92, 47177), (106, 47090), (112, 47015), (115, 46988), (122, 46928),

Gene: Benczkowski14\_44 Start: 46742, Stop: 45915, Start Num: 19

Candidate Starts for Benczkowski14\_44:

(Start: 19 @46742 has 46 MA's), (23, 46715), (33, 46649), (43, 46556), (74, 46343), (84, 46214), (94, 46157), (109, 46034), (113, 45995), (117, 45971), (119, 45965),

Gene: BenoitCattle\_51 Start: 46512, Stop: 45652, Start Num: 19

Candidate Starts for BenoitCattle\_51:

(Start: 19 @46512 has 46 MA's), (23, 46488), (Start: 29 @46434 has 1 MA's), (35, 46398), (40, 46359), (47, 46299), (50, 46281), (57, 46242), (58, 46206), (60, 46200), (80, 46029), (86, 45954), (92, 45924), (106, 45837), (112, 45762), (115, 45735), (121, 45681), (122, 45675),

Gene: BigShaq\_50 Start: 46493, Stop: 45657, Start Num: 23

Candidate Starts for BigShaq\_50:

(Start: 19 @46517 has 46 MA's), (23, 46493), (Start: 29 @46439 has 1 MA's), (35, 46403), (40, 46364), (47, 46304), (50, 46286), (57, 46247), (58, 46211), (60, 46205), (80, 46034), (86, 45959), (92, 45929), (106, 45842), (112, 45767), (115, 45740), (121, 45686), (122, 45680),

Gene: BirksAndSocks\_54 Start: 48115, Stop: 47258, Start Num: 19

Candidate Starts for BirksAndSocks\_54:

(Start: 19 @48115 has 46 MA's), (23, 48091), (27, 48052), (Start: 29 @48037 has 1 MA's), (35, 48001), (40, 47962), (47, 47902), (50, 47884), (57, 47845), (58, 47809), (60, 47803), (80, 47632), (86, 47557), (92, 47527), (106, 47440), (112, 47365), (115, 47338), (122, 47278),

Gene: Boneham\_53 Start: 48016, Stop: 47162, Start Num: 19

Candidate Starts for Boneham\_53:

(5, 48283), (7, 48259), (Start: 19 @48016 has 46 MA's), (23, 47992), (Start: 29 @47938 has 1 MA's), (40, 47863), (47, 47803), (50, 47785), (53, 47761), (57, 47746), (58, 47710), (60, 47704), (80, 47536), (82, 47485), (83, 47479), (86, 47461), (106, 47344), (112, 47269), (115, 47242), (116, 47233), (122, 47182),

Gene: Breezic\_49 Start: 46008, Stop: 45151, Start Num: 19

Candidate Starts for Breezic\_49:

(Start: 19 @46008 has 46 MA's), (23, 45984), (27, 45945), (Start: 29 @45930 has 1 MA's), (35, 45894), (40, 45855), (43, 45816), (47, 45795), (50, 45777), (57, 45738), (58, 45702), (60, 45696), (80, 45525), (86, 45450), (92, 45420), (106, 45333), (112, 45258), (115, 45231), (122, 45171),

Gene: Butterball\_53 Start: 48021, Stop: 47167, Start Num: 19

Candidate Starts for Butterball\_53:

(5, 48288), (7, 48264), (Start: 19 @48021 has 46 MA's), (23, 47997), (Start: 29 @47943 has 1 MA's), (40, 47868), (47, 47808), (50, 47790), (53, 47766), (57, 47751), (58, 47715), (60, 47709), (80, 47541), (82, 47490), (83, 47484), (86, 47466), (106, 47349), (112, 47274), (115, 47247), (116, 47238), (122, 47187),

Gene: CathyBurgh\_49 Start: 46585, Stop: 45728, Start Num: 19

Candidate Starts for CathyBurgh\_49:

(Start: 19 @46585 has 46 MA's), (23, 46561), (27, 46522), (Start: 29 @46507 has 1 MA's), (35, 46471), (40, 46432), (47, 46372), (50, 46354), (57, 46315), (58, 46279), (60, 46273), (80, 46102), (86, 46027), (92, 45997), (106, 45910), (112, 45835), (115, 45808), (122, 45748),

Gene: Chelms\_50 Start: 46517, Stop: 45657, Start Num: 19

Candidate Starts for Chelms\_50:

(Start: 19 @46517 has 46 MA's), (23, 46493), (Start: 29 @46439 has 1 MA's), (35, 46403), (40, 46364), (47, 46304), (50, 46286), (57, 46247), (58, 46211), (60, 46205), (80, 46034), (86, 45959), (92, 45929), (106, 45842), (112, 45767), (115, 45740), (121, 45686), (122, 45680),

Gene: CinnamonToast\_55 Start: 48051, Stop: 47221, Start Num: 23

Candidate Starts for CinnamonToast\_55:

(5, 48342), (7, 48318), (Start: 19 @48075 has 46 MA's), (23, 48051), (Start: 29 @47997 has 1 MA's), (40, 47922), (47, 47862), (50, 47844), (53, 47820), (57, 47805), (58, 47769), (60, 47763), (80, 47595), (82, 47544), (83, 47538), (86, 47520), (106, 47403), (112, 47328), (115, 47301), (116, 47292), (122, 47241),

Gene: Coeur\_17 Start: 11931, Stop: 12794, Start Num: 19

Candidate Starts for Coeur\_17:

(Start: 19 @11931 has 46 MA's), (Start: 29 @12009 has 1 MA's), (30, 12012), (36, 12054), (37, 12057), (48, 12156), (49, 12162), (51, 12174), (64, 12285), (81, 12477), (87, 12528), (89, 12537), (94, 12564), (109, 12675),

Gene: Crete\_51 Start: 46759, Stop: 45923, Start Num: 23

Candidate Starts for Crete\_51:

(Start: 19 @46783 has 46 MA's), (23, 46759), (Start: 29 @46705 has 1 MA's), (35, 46669), (40, 46630), (47, 46570), (50, 46552), (57, 46513), (58, 46477), (60, 46471), (80, 46300), (86, 46225), (92, 46195), (106, 46108), (112, 46033), (115, 46006), (121, 45952), (122, 45946),

Gene: Cuke\_31 Start: 27339, Stop: 28265, Start Num: 14

Candidate Starts for Cuke\_31:

(Start: 14 @27339 has 3 MA's), (15, 27360), (20, 27393), (25, 27432), (26, 27444), (31, 27471), (34, 27498), (38, 27519), (42, 27579), (44, 27597), (50, 27627), (61, 27717), (68, 27732), (71, 27750), (76, 27816), (81, 27897), (93, 27984), (95, 27996), (101, 28023),

Gene: Dakiti\_51 Start: 47385, Stop: 46525, Start Num: 19

Candidate Starts for Dakiti\_51:

(Start: 19 @47385 has 46 MA's), (23, 47361), (Start: 29 @47307 has 1 MA's), (35, 47271), (40, 47232), (47, 47172), (50, 47154), (57, 47115), (58, 47079), (60, 47073), (80, 46902), (86, 46827), (92, 46797), (106, 46710), (112, 46635), (115, 46608), (121, 46554), (122, 46548),

Gene: Demosthenes\_43 Start: 46429, Stop: 45593, Start Num: 19

Candidate Starts for Demosthenes\_43:

(Start: 19 @46429 has 46 MA's), (23, 46399), (33, 46333), (43, 46240), (84, 45898), (94, 45841), (97, 45829), (109, 45718), (113, 45679), (117, 45655), (119, 45649),

Gene: Diabla\_53 Start: 47946, Stop: 47092, Start Num: 19

Candidate Starts for Diabla\_53:

(Start: 19 @47946 has 46 MA's), (23, 47922), (Start: 29 @47868 has 1 MA's), (40, 47790), (50, 47712), (52, 47700), (58, 47637), (60, 47631), (65, 47607), (67, 47601), (80, 47466), (86, 47391), (97, 47337),

Gene: DocB7\_038 Start: 38440, Stop: 37679, Start Num: 32

Candidate Starts for DocB7\_038:

(17, 38557), (18, 38545), (21, 38518), (32, 38440), (41, 38365), (45, 38329), (47, 38320), (62, 38203), (66, 38182), (69, 38167), (72, 38143), (83, 37975), (88, 37951), (89, 37945), (91, 37936), (96, 37906), (102, 37870), (107, 37834), (118, 37729), (120, 37720), (121, 37690),

Gene: Eggsie\_49 Start: 45908, Stop: 45054, Start Num: 19

Candidate Starts for Eggsie\_49:

(Start: 19 @45908 has 46 MA's), (23, 45884), (Start: 29 @45830 has 1 MA's), (33, 45818), (40, 45752), (50, 45674), (57, 45635), (58, 45599), (60, 45593), (61, 45584), (80, 45428), (86, 45353), (92, 45323), (97, 45299), (103, 45263),

Gene: Ekhein\_50 Start: 45713, Stop: 44856, Start Num: 19

Candidate Starts for Ekhein\_50:

(Start: 19 @45713 has 46 MA's), (23, 45689), (27, 45650), (Start: 29 @45635 has 1 MA's), (35, 45599), (40, 45560), (47, 45500), (50, 45482), (57, 45443), (58, 45407), (60, 45401), (80, 45230), (86, 45155), (92, 45125), (106, 45038), (112, 44963), (115, 44936), (122, 44876),

Gene: Emperor\_4 Start: 2151, Stop: 2993, Start Num: 19

Candidate Starts for Emperor\_4:

(Start: 19 @2151 has 46 MA's), (Start: 29 @2229 has 1 MA's), (33, 2241), (36, 2274), (46, 2370), (48, 2376), (51, 2394), (56, 2430), (89, 2745), (110, 2880),

Gene: EpicDab\_7 Start: 4348, Stop: 5202, Start Num: 19

Candidate Starts for EpicDab\_7:

(4, 4075), (11, 4246), (13, 4297), (Start: 19 @4348 has 46 MA's), (Start: 29 @4426 has 1 MA's), (30, 4429), (46, 4567), (48, 4573), (51, 4591), (56, 4627), (58, 4666), (63, 4693), (77, 4834), (81, 4885), (87, 4936), (89, 4945), (98, 4993), (109, 5083),

Gene: Exiguo\_49 Start: 45725, Stop: 44868, Start Num: 19

Candidate Starts for Exiguo\_49:

(Start: 19 @45725 has 46 MA's), (23, 45701), (27, 45662), (Start: 29 @45647 has 1 MA's), (35, 45611), (40, 45572), (47, 45512), (50, 45494), (57, 45455), (58, 45419), (60, 45413), (80, 45242), (86, 45167), (92, 45137), (106, 45050), (112, 44975), (115, 44948), (122, 44888),

Gene: FelixAlejandro\_54 Start: 48219, Stop: 47365, Start Num: 19

Candidate Starts for FelixAlejandro\_54:

(5, 48486), (7, 48462), (Start: 19 @48219 has 46 MA's), (23, 48195), (Start: 29 @48141 has 1 MA's), (40, 48066), (47, 48006), (50, 47988), (53, 47964), (57, 47949), (58, 47913), (60, 47907), (80, 47739), (82, 47688), (83, 47682), (86, 47664), (106, 47547), (112, 47472), (115, 47445), (116, 47436), (122, 47385),

Gene: Flakey\_49 Start: 46589, Stop: 45732, Start Num: 19

Candidate Starts for Flakey\_49:

(Start: 19 @46589 has 46 MA's), (23, 46565), (27, 46526), (Start: 29 @46511 has 1 MA's), (35, 46475), (40, 46436), (47, 46376), (50, 46358), (57, 46319), (58, 46283), (60, 46277), (80, 46106), (86, 46031), (92, 46001), (106, 45914), (112, 45839), (115, 45812), (122, 45752),

Gene: Fowlmouth\_34 Start: 30830, Stop: 31756, Start Num: 14

Candidate Starts for Fowlmouth\_34:

(12, 30824), (Start: 14 @30830 has 3 MA's), (15, 30851), (16, 30857), (Start: 19 @30881 has 46 MA's), (24, 30917), (26, 30935), (31, 30962), (34, 30989), (38, 31010), (42, 31070), (45, 31091), (61, 31208), (71, 31241), (76, 31307), (81, 31388), (93, 31475), (97, 31496), (100, 31511), (101, 31514), (104, 31556), (105, 31559),

Gene: GMA5\_15 Start: 12085, Stop: 12933, Start Num: 19

Candidate Starts for GMA5\_15:

(1, 11686), (2, 11743), (3, 11749), (Start: 19 @12085 has 46 MA's), (Start: 29 @12163 has 1 MA's), (36, 12208), (48, 12310), (73, 12511), (79, 12583), (81, 12616), (89, 12676), (90, 12682), (114, 12865),

Gene: GMA7\_41 Start: 40896, Stop: 39997, Start Num: 19

Candidate Starts for GMA7\_41:

(9, 41103), (10, 41037), (Start: 19 @40896 has 46 MA's), (23, 40869), (28, 40821), (39, 40755), (40, 40749), (55, 40632), (56, 40626), (59, 40584), (70, 40524), (80, 40404), (85, 40341), (94, 40287), (98, 40266), (111, 40155),

Gene: GRU3\_15 Start: 12090, Stop: 12938, Start Num: 19

Candidate Starts for GRU3\_15:

(Start: 19 @12090 has 46 MA's), (Start: 29 @12168 has 1 MA's), (36, 12213), (48, 12315), (87, 12672), (89, 12681), (108, 12783), (114, 12870),

Gene: GTE7\_40 Start: 40927, Stop: 40028, Start Num: 19

Candidate Starts for GTE7\_40:

(9, 41134), (10, 41068), (Start: 19 @40927 has 46 MA's), (23, 40900), (28, 40852), (39, 40786), (40, 40780), (55, 40663), (56, 40657), (59, 40615), (70, 40555), (80, 40435), (85, 40372), (94, 40318), (98, 40297), (111, 40186),

Gene: Gorko\_49 Start: 45717, Stop: 44860, Start Num: 19



Candidate Starts for Gorko\_49:

(Start: 19 @45717 has 46 MA's), (23, 45693), (27, 45654), (Start: 29 @45639 has 1 MA's), (35, 45603), (40, 45564), (47, 45504), (50, 45486), (57, 45447), (58, 45411), (60, 45405), (80, 45234), (86, 45159), (92, 45129), (106, 45042), (112, 44967), (115, 44940), (122, 44880),

Gene: GourdThymes\_49 Start: 46591, Stop: 45734, Start Num: 19

Candidate Starts for GourdThymes\_49:

(Start: 19 @46591 has 46 MA's), (23, 46567), (27, 46528), (Start: 29 @46513 has 1 MA's), (35, 46477), (47, 46378), (50, 46360), (57, 46321), (60, 46279), (80, 46108), (86, 46033), (92, 46003), (106, 45916), (112, 45841), (115, 45814), (122, 45754),

Gene: HayZem\_51 Start: 46679, Stop: 45780, Start Num: 19

Candidate Starts for HayZem\_51:

(9, 46886), (10, 46820), (Start: 19 @46679 has 46 MA's), (23, 46652), (28, 46604), (39, 46538), (40, 46532), (55, 46415), (56, 46409), (59, 46367), (70, 46307), (80, 46187), (85, 46124), (94, 46070), (98, 46049), (111, 45938),

Gene: Hollow\_45 Start: 47078, Stop: 46251, Start Num: 19

Candidate Starts for Hollow\_45:

(Start: 19 @47078 has 46 MA's), (23, 47051), (33, 46985), (43, 46892), (74, 46679), (94, 46493), (97, 46481), (109, 46370), (113, 46331), (117, 46307), (119, 46301),

Gene: Hotorobo\_49 Start: 46596, Stop: 45739, Start Num: 19

Candidate Starts for Hotorobo\_49:

(Start: 19 @46596 has 46 MA's), (23, 46572), (27, 46533), (Start: 29 @46518 has 1 MA's), (35, 46482), (40, 46443), (47, 46383), (50, 46365), (57, 46326), (58, 46290), (60, 46284), (80, 46113), (86, 46038), (92, 46008), (106, 45921), (112, 45846), (115, 45819), (122, 45759),

Gene: Jellybones\_52 Start: 47697, Stop: 46843, Start Num: 19

Candidate Starts for Jellybones\_52:

(5, 47964), (7, 47940), (Start: 19 @47697 has 46 MA's), (23, 47673), (Start: 29 @47619 has 1 MA's), (40, 47544), (47, 47484), (50, 47466), (53, 47442), (57, 47427), (58, 47391), (60, 47385), (80, 47217), (86, 47142), (106, 47025), (112, 46950), (115, 46923), (122, 46863),

Gene: John316\_53 Start: 47754, Stop: 46897, Start Num: 19

Candidate Starts for John316\_53:

(Start: 19 @47754 has 46 MA's), (23, 47730), (27, 47691), (Start: 29 @47676 has 1 MA's), (35, 47640), (40, 47601), (47, 47541), (50, 47523), (57, 47484), (58, 47448), (60, 47442), (80, 47271), (86, 47196), (92, 47166), (106, 47079), (112, 47004), (115, 46977), (122, 46917),

Gene: Katyusha\_44 Start: 46742, Stop: 45915, Start Num: 19

Candidate Starts for Katyusha\_44:

(Start: 19 @46742 has 46 MA's), (23, 46715), (33, 46649), (43, 46556), (74, 46343), (84, 46214), (94, 46157), (109, 46034), (113, 45995), (117, 45971), (119, 45965),

Gene: Kvothe\_44 Start: 46641, Stop: 45814, Start Num: 19

Candidate Starts for Kvothe\_44:

(Start: 19 @46641 has 46 MA's), (23, 46614), (33, 46548), (43, 46455), (74, 46242), (84, 46113), (94, 46056), (109, 45933), (113, 45894), (117, 45870), (119, 45864),

Gene: Linetti\_51 Start: 47526, Stop: 46666, Start Num: 19

Candidate Starts for Linetti\_51:

(Start: 19 @47526 has 46 MA's), (23, 47502), (Start: 29 @47448 has 1 MA's), (35, 47412), (40, 47373), (47, 47313), (50, 47295), (57, 47256), (58, 47220), (60, 47214), (80, 47043), (86, 46968), (92, 46938), (106, 46851), (115, 46749), (121, 46695), (122, 46689),

Gene: Lizzo\_49 Start: 46585, Stop: 45728, Start Num: 19

Candidate Starts for Lizzo\_49:

(Start: 19 @46585 has 46 MA's), (23, 46561), (27, 46522), (Start: 29 @46507 has 1 MA's), (35, 46471), (40, 46432), (47, 46372), (50, 46354), (57, 46315), (58, 46279), (60, 46273), (80, 46102), (86, 46027), (92, 45997), (106, 45910), (112, 45835), (115, 45808), (122, 45748),

Gene: Monty\_48 Start: 45657, Stop: 44878, Start Num: 29

Candidate Starts for Monty\_48:

(Start: 19 @45735 has 46 MA's), (23, 45711), (27, 45672), (Start: 29 @45657 has 1 MA's), (35, 45621), (40, 45582), (47, 45522), (50, 45504), (57, 45465), (58, 45429), (60, 45423), (80, 45252), (86, 45177), (92, 45147), (106, 45060), (112, 44985), (115, 44958), (122, 44898),

Gene: MrMiyagi\_34 Start: 30841, Stop: 31767, Start Num: 14

Candidate Starts for MrMiyagi\_34:

(12, 30835), (Start: 14 @30841 has 3 MA's), (15, 30862), (16, 30868), (Start: 19 @30892 has 46 MA's), (24, 30928), (26, 30946), (31, 30973), (34, 31000), (38, 31021), (42, 31081), (44, 31099), (45, 31102), (61, 31219), (70, 31249), (71, 31252), (76, 31318), (81, 31399), (83, 31429), (93, 31486), (100, 31522), (101, 31525), (104, 31567), (105, 31570),

Gene: Msay19\_54 Start: 48208, Stop: 47351, Start Num: 19

Candidate Starts for Msay19\_54:

(5, 48475), (7, 48451), (Start: 19 @48208 has 46 MA's), (23, 48184), (Start: 29 @48130 has 1 MA's), (40, 48055), (47, 47995), (50, 47977), (53, 47953), (57, 47938), (58, 47902), (60, 47896), (80, 47725), (86, 47650), (92, 47620), (106, 47533), (112, 47458), (115, 47431), (122, 47371),

Gene: Niagara\_44 Start: 46720, Stop: 45893, Start Num: 19

Candidate Starts for Niagara\_44:

(Start: 19 @46720 has 46 MA's), (23, 46693), (33, 46627), (43, 46534), (74, 46321), (94, 46135), (97, 46123), (109, 46012), (113, 45973), (117, 45949), (119, 45943),

Gene: Philon9\_45 Start: 47751, Stop: 46924, Start Num: 19

Candidate Starts for Philon9\_45:

(Start: 19 @47751 has 46 MA's), (22, 47727), (52, 47514), (77, 47307), (78, 47295), (81, 47256), (88, 47202), (99, 47139), (117, 46980),

Gene: PierreThree\_50 Start: 47263, Stop: 46403, Start Num: 19

Candidate Starts for PierreThree\_50:

(Start: 19 @47263 has 46 MA's), (23, 47239), (Start: 29 @47185 has 1 MA's), (35, 47149), (40, 47110), (47, 47050), (50, 47032), (57, 46993), (58, 46957), (60, 46951), (80, 46780), (86, 46705), (92, 46675), (106, 46588), (112, 46513), (115, 46486), (121, 46432), (122, 46426),

Gene: PokyPuppy\_49 Start: 47212, Stop: 46361, Start Num: 19

Candidate Starts for PokyPuppy\_49:

(6, 47464), (8, 47440), (Start: 19 @47212 has 46 MA's), (27, 47149), (Start: 29 @47134 has 1 MA's), (35, 47098), (40, 47056), (50, 46978), (54, 46951), (58, 46903), (67, 46864), (80, 46729), (86, 46654), (92, 46624), (112, 46462), (115, 46435), (122, 46375),

Gene: Poland\_54 Start: 48187, Stop: 47330, Start Num: 19

Candidate Starts for Poland\_54:

(5, 48454), (7, 48430), (Start: 19 @48187 has 46 MA's), (23, 48163), (Start: 29 @48109 has 1 MA's), (40, 48034), (47, 47974), (50, 47956), (53, 47932), (57, 47917), (58, 47881), (60, 47875), (80, 47704), (86, 47629), (92, 47599), (106, 47512), (112, 47437), (115, 47410), (122, 47350),

Gene: Rahul\_17 Start: 11952, Stop: 12815, Start Num: 19

Candidate Starts for Rahul\_17:

(Start: 19 @11952 has 46 MA's), (Start: 29 @12030 has 1 MA's), (30, 12033), (36, 12075), (37, 12078), (46, 12171), (48, 12177), (49, 12183), (51, 12195), (64, 12306), (75, 12399), (81, 12498), (87, 12549), (89, 12558), (96, 12594), (97, 12597),

Gene: RemRem\_50 Start: 45725, Stop: 44868, Start Num: 19

Candidate Starts for RemRem\_50:

(Start: 19 @45725 has 46 MA's), (23, 45701), (27, 45662), (Start: 29 @45647 has 1 MA's), (35, 45611), (40, 45572), (47, 45512), (50, 45494), (57, 45455), (58, 45419), (60, 45413), (80, 45242), (86, 45167), (92, 45137), (106, 45050), (112, 44975), (115, 44948), (122, 44888),

Gene: RoyalG\_50 Start: 46557, Stop: 45703, Start Num: 19

Candidate Starts for RoyalG\_50:

(Start: 19 @46557 has 46 MA's), (23, 46533), (Start: 29 @46479 has 1 MA's), (40, 46401), (50, 46323), (52, 46311), (58, 46248), (60, 46242), (65, 46218), (67, 46212), (80, 46077), (86, 46002), (97, 45948),

Gene: Sam12\_49 Start: 45725, Stop: 44868, Start Num: 19

Candidate Starts for Sam12\_49:

(Start: 19 @45725 has 46 MA's), (23, 45701), (27, 45662), (Start: 29 @45647 has 1 MA's), (35, 45611), (40, 45572), (47, 45512), (50, 45494), (57, 45455), (58, 45419), (60, 45413), (80, 45242), (86, 45167), (92, 45137), (106, 45050), (112, 44975), (115, 44948), (122, 44888),

Gene: Sombrero\_50 Start: 46098, Stop: 45244, Start Num: 19

Candidate Starts for Sombrero\_50:

(5, 46365), (7, 46341), (Start: 19 @46098 has 46 MA's), (23, 46074), (Start: 29 @46020 has 1 MA's), (40, 45945), (47, 45885), (50, 45867), (53, 45843), (57, 45828), (58, 45792), (60, 45786), (80, 45618), (82, 45567), (83, 45561), (86, 45543), (106, 45426), (112, 45351), (115, 45324), (116, 45315), (122, 45264),

Gene: Squibbles\_49 Start: 46510, Stop: 45731, Start Num: 29

Candidate Starts for Squibbles\_49:

(Start: 19 @46588 has 46 MA's), (23, 46564), (27, 46525), (Start: 29 @46510 has 1 MA's), (35, 46474), (40, 46435), (47, 46375), (50, 46357), (57, 46318), (58, 46282), (60, 46276), (80, 46105), (86, 46030), (92, 46000), (106, 45913), (112, 45838), (115, 45811), (122, 45751),

Gene: SteveFrench\_49 Start: 46797, Stop: 45943, Start Num: 19

Candidate Starts for SteveFrench\_49:

(Start: 19 @46797 has 46 MA's), (23, 46773), (Start: 29 @46719 has 1 MA's), (40, 46641), (50, 46563), (52, 46551), (58, 46488), (60, 46482), (65, 46458), (67, 46452), (80, 46317), (86, 46242), (97, 46188),

Gene: Teatealatte\_45 Start: 46644, Stop: 45817, Start Num: 19

Candidate Starts for Teatealatte\_45:

(Start: 19 @46644 has 46 MA's), (23, 46617), (33, 46551), (43, 46458), (74, 46245), (84, 46116), (94, 46059), (109, 45936), (112, 45912), (113, 45897), (119, 45867),

Gene: Teech\_45 Start: 46445, Stop: 45618, Start Num: 19

Candidate Starts for Teech\_45:

(Start: 19 @46445 has 46 MA's), (23, 46418), (33, 46352), (43, 46259), (74, 46046), (84, 45917), (94, 45860), (109, 45737), (113, 45698), (117, 45674), (119, 45668),

Gene: Tredge\_45 Start: 46644, Stop: 45817, Start Num: 19

Candidate Starts for Tredge\_45:

(Start: 19 @46644 has 46 MA's), (23, 46617), (33, 46551), (43, 46458), (74, 46245), (84, 46116), (94, 46059), (109, 45936), (112, 45912), (113, 45897), (119, 45867),

Gene: Vitaenoi\_45 Start: 47750, Stop: 46923, Start Num: 19

Candidate Starts for Vitaenoi\_45:

(Start: 19 @47750 has 46 MA's), (22, 47726), (52, 47513), (77, 47306), (78, 47294), (81, 47255), (88, 47201), (99, 47138), (117, 46979),

Gene: Worcestershire\_50 Start: 45703, Stop: 44870, Start Num: 23

Candidate Starts for Worcestershire\_50:

(Start: 19 @45727 has 46 MA's), (23, 45703), (27, 45664), (Start: 29 @45649 has 1 MA's), (35, 45613), (40, 45574), (47, 45514), (50, 45496), (57, 45457), (60, 45415), (80, 45244), (86, 45169), (92, 45139), (106, 45052), (112, 44977), (115, 44950), (122, 44890),