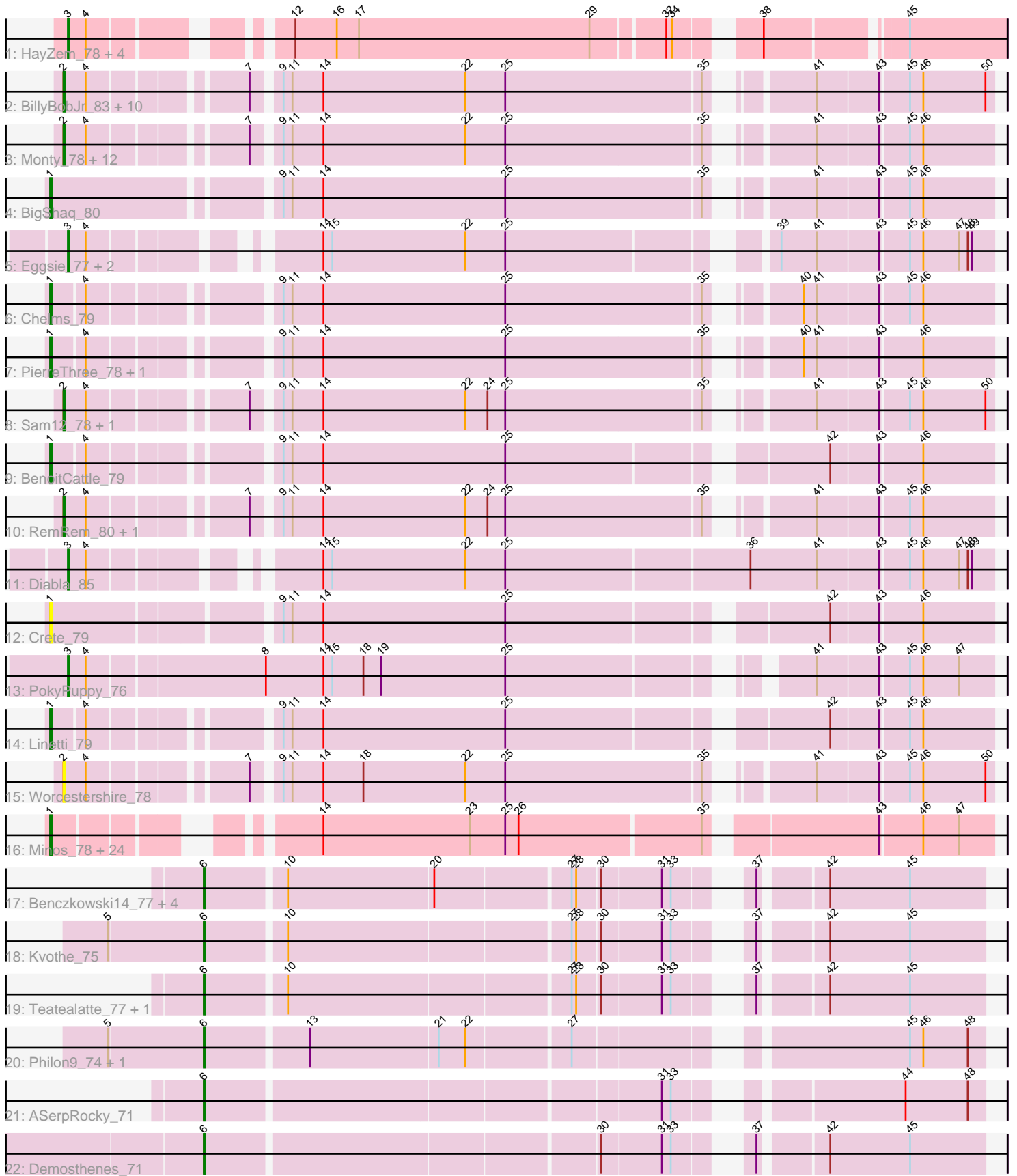


Pham 308463



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 308463 Report

This analysis was run 06/27/26 on database version 652.

Pham number 308463 has 83 members, 7 are drafts.

Phages represented in each track:

- Track 1 : HayZem\_78, GMA7\_67, Austin\_77, Amore2\_78, GTE7\_66
- Track 2 : BillyBobJr\_83, Butterball\_81, Boneham\_82, Poland\_83, Jellybones\_80, CinnamonToast\_83, FelixAlejandro\_83, Sombrero\_80, Adgers\_82, BirksAndSocks\_83, Msay19\_83
- Track 3 : Monty\_78, CathyBurgh\_79, GourdThymes\_79, Squibbles\_78, Flakey\_78, Barbochs\_76, Beaver\_82, Breezic\_79, Kelzog\_80, Gorko\_78, Hotorobo\_79, John316\_82, Lizzo\_79
- Track 4 : BigShaq\_80
- Track 5 : Eggsie\_77, SteveFrench\_78, RoyalG\_79
- Track 6 : Chelms\_79
- Track 7 : PierreThree\_78, Dakiti\_80
- Track 8 : Sam12\_78, Exiguo\_78
- Track 9 : BenoitCattle\_79
- Track 10 : RemRem\_80, Ekhein\_79
- Track 11 : Diabla\_85
- Track 12 : Crete\_79
- Track 13 : PokyPuppy\_76
- Track 14 : Linetti\_79
- Track 15 : Worcestershire\_78
- Track 16 : Minos\_78, GalacticEye\_77, Neoevie\_76, Kaseim\_77, Hail2Pitt\_75, Berries\_77, Hello\_76, Damp\_77, Newt\_78, Harambe\_76, Lidong\_77, Guillaume\_76, Luker\_78, Anamika\_76, Charianelly\_77, Jams\_77, Bianmat\_77, Lahirium\_76, Woes\_76, Shelley\_77, Jormungandr\_76, Teal\_76, Sticker17\_77, Nimi13\_76, MrWormie\_77
- Track 17 : Benczkowski14\_77, Niagara\_76, Teech\_77, Hollow\_77, Katyusha\_75
- Track 18 : Kvothe\_75
- Track 19 : Teatealatte\_77, Tredge\_76
- Track 20 : Philon9\_74, Vitaenoi\_74
- Track 21 : ASerpRocky\_71
- Track 22 : Demosthenes\_71

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

The start number called the most often in the published annotations is 1, it was called in 31 of the 76 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Anamika\_76, BenoitCattle\_79, Berries\_77, Bianmat\_77, BigShaq\_80, Charianelly\_77, Chelms\_79, Crete\_79, Dakiti\_80, Damp\_77, GalacticEye\_77, Guillaume\_76, Hail2Pitt\_75, Harambe\_76, Hello\_76, Jams\_77, Jormungandr\_76, Kaseim\_77, Lahirium\_76, Lidong\_77, Linetti\_79, Luker\_78, Minos\_78, MrWormie\_77, Neoevie\_76, Newt\_78, Nimi13\_76, PierreThree\_78, Shelley\_77, Sticker17\_77, Teal\_76, Woes\_76,

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

- 

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

- ASerpRocky\_71, Adgers\_82, Amore2\_78, Austin\_77, Barbochs\_76, Beaver\_82, Benczkowski14\_77, BillyBobJr\_83, BirksAndSocks\_83, Boneham\_82, Breezic\_79, Butterball\_81, CathyBurgh\_79, CinnamonToast\_83, Demosthenes\_71, Diabla\_85, Eggsie\_77, Ekhein\_79, Exiguo\_78, FelixAlejandro\_83, Flakey\_78, GMA7\_67, GTE7\_66, Gorko\_78, GourdThymes\_79, HayZem\_78, Hollow\_77, Hotorobo\_79, Jellybones\_80, John316\_82, Katyusha\_75, Kelzog\_80, Kvothe\_75, Lizzo\_79, Monty\_78, Msay19\_83, Niagara\_76, Philon9\_74, PokyPuppy\_76, Poland\_83, RemRem\_80, RoyalG\_79, Sam12\_78, Sombrero\_80, Squibbles\_78, SteveFrench\_78, Teatealatte\_77, Teech\_77, Tredge\_76, Vitaenoi\_74, Worcestershire\_78,

### Summary by start number:

Start 1:

- Found in 32 of 83 ( 38.6% ) of genes in pham
- Manual Annotations of this start: 31 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Anamika\_76 (CS3), BenoitCattle\_79 (CS2), Berries\_77 (CS3), Bianmat\_77 (CS3), BigShaq\_80 (CS2), Charianelly\_77 (CS3), Chelms\_79 (CS2), Crete\_79 (CS2), Dakiti\_80 (CS2), Damp\_77 (CS3), GalacticEye\_77 (CS3), Guillaume\_76 (CS3), Hail2Pitt\_75 (CS3), Harambe\_76 (CS3), Hello\_76 (CS3), Jams\_77 (CS3), Jormungandr\_76 (CS3), Kaseim\_77 (CS3), Lahirium\_76 (CS3), Lidong\_77 (CS3), Linetti\_79 (CS2), Luker\_78 (CS3), Minos\_78 (CS3), MrWormie\_77 (CS3), Neoevie\_76 (CS3), Newt\_78 (CS3), Nimi13\_76 (CS3), PierreThree\_78 (CS2), Shelley\_77 (CS3), Sticker17\_77 (CS3), Teal\_76 (CS3), Woes\_76 (CS3),

Start 2:

- Found in 29 of 83 ( 34.9% ) of genes in pham
- Manual Annotations of this start: 25 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adgers\_82 (CS2), Barbochs\_76 (CS2), Beaver\_82 (CS2), BillyBobJr\_83 (CS2), BirksAndSocks\_83 (CS2), Boneham\_82 (CS2), Breezic\_79 (CS2), Butterball\_81 (CS2), CathyBurgh\_79 (CS2), CinnamonToast\_83 (CS2), Ekhein\_79 (CS2), Exiguo\_78 (CS2), FelixAlejandro\_83 (CS2), Flakey\_78 (CS2), Gorko\_78 (CS2), GourdThymes\_79 (CS2), Hotorobo\_79 (CS2), Jellybones\_80 (CS2), John316\_82 (CS2), Kelzog\_80 (CS2), Lizzo\_79 (CS2), Monty\_78 (CS2), Msay19\_83 (CS2), Poland\_83 (CS2), RemRem\_80 (CS2),

Sam12\_78 (CS2), Sombrero\_80 (CS2), Squibbles\_78 (CS2), Worcestershire\_78 (CS2),

Start 3:

- Found in 10 of 83 ( 12.0% ) of genes in pham
- Manual Annotations of this start: 8 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amore2\_78 (CS1), Austin\_77 (CS1), Diabla\_85 (CS2), Eggsie\_77 (CS2), GMA7\_67 (CS1), GTE7\_66 (CS1), HayZem\_78 (CS1), PokyPuppy\_76 (CS2), RoyalG\_79 (CS2), SteveFrench\_78 (CS2),

Start 6:

- Found in 12 of 83 ( 14.5% ) of genes in pham
- Manual Annotations of this start: 12 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_71 (CS4), Benczkowski14\_77 (CS4), Demosthenes\_71 (CS4), Hollow\_77 (CS4), Katyusha\_75 (CS4), Kvothe\_75 (CS4), Niagara\_76 (CS4), Philon9\_74 (CS4), Teatealatte\_77 (CS4), Teech\_77 (CS4), Tredge\_76 (CS4), Vitaenoi\_74 (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 3 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 1 was manually annotated 6 times for cluster CS2.
- Start number 2 was manually annotated 25 times for cluster CS2.
- Start number 3 was manually annotated 5 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 1 was manually annotated 25 times for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 6 was manually annotated 12 times for cluster CS4.

### **Gene Information:**

Gene: ASerpRocky\_71 Start: 61030, Stop: 60557, Start Num: 6

Candidate Starts for ASerpRocky\_71:

(Start: 6 @61030 has 12 MA's), (31, 60739), (33, 60733), (44, 60610), (48, 60568),

Gene: Adgers\_82 Start: 61857, Stop: 61294, Start Num: 2

Candidate Starts for Adgers\_82:

(Start: 2 @61857 has 25 MA's), (4, 61842), (7, 61752), (9, 61737), (11, 61731), (14, 61710), (22, 61614), (25, 61587), (35, 61458), (41, 61407), (43, 61368), (45, 61350), (46, 61341), (50, 61299),

Gene: Amore2\_78 Start: 60850, Stop: 60299, Start Num: 3

Candidate Starts for Amore2\_78:

(Start: 3 @60850 has 8 MA's), (4, 60838), (12, 60736), (16, 60709), (17, 60694), (29, 60538), (32, 60493), (34, 60490), (38, 60448), (45, 60364),

Gene: Anamika\_76 Start: 62127, Stop: 61564, Start Num: 1

Candidate Starts for Anamika\_76:

(Start: 1 @62127 has 31 MA's), (14, 61992), (23, 61893), (25, 61869), (26, 61860), (35, 61740), (43, 61638), (46, 61611), (47, 61587),

Gene: Austin\_77 Start: 60848, Stop: 60297, Start Num: 3

Candidate Starts for Austin\_77:

(Start: 3 @60848 has 8 MA's), (4, 60836), (12, 60734), (16, 60707), (17, 60692), (29, 60536), (32, 60491), (34, 60488), (38, 60446), (45, 60362),

Gene: Barbochs\_76 Start: 61234, Stop: 60671, Start Num: 2

Candidate Starts for Barbochs\_76:

(Start: 2 @61234 has 25 MA's), (4, 61219), (7, 61129), (9, 61114), (11, 61108), (14, 61087), (22, 60991), (25, 60964), (35, 60835), (41, 60784), (43, 60745), (45, 60727), (46, 60718),

Gene: Beaver\_82 Start: 63178, Stop: 62615, Start Num: 2

Candidate Starts for Beaver\_82:

(Start: 2 @63178 has 25 MA's), (4, 63163), (7, 63073), (9, 63058), (11, 63052), (14, 63031), (22, 62935), (25, 62908), (35, 62779), (41, 62728), (43, 62689), (45, 62671), (46, 62662),

Gene: Benczkowski14\_77 Start: 62275, Stop: 61802, Start Num: 6

Candidate Starts for Benczkowski14\_77:

(Start: 6 @62275 has 12 MA's), (10, 62224), (20, 62128), (27, 62041), (28, 62038), (30, 62023), (31, 61984), (33, 61978), (37, 61945), (42, 61906), (45, 61852),

Gene: BenoitCattle\_79 Start: 61905, Stop: 61333, Start Num: 1

Candidate Starts for BenoitCattle\_79:

(Start: 1 @61905 has 31 MA's), (4, 61884), (9, 61779), (11, 61773), (14, 61752), (25, 61629), (42, 61437), (43, 61407), (46, 61380),

Gene: Berries\_77 Start: 62099, Stop: 61536, Start Num: 1

Candidate Starts for Berries\_77:

(Start: 1 @62099 has 31 MA's), (14, 61964), (23, 61865), (25, 61841), (26, 61832), (35, 61712), (43, 61610), (46, 61583), (47, 61559),

Gene: Bianmat\_77 Start: 62139, Stop: 61576, Start Num: 1

Candidate Starts for Bianmat\_77:

(Start: 1 @62139 has 31 MA's), (14, 62004), (23, 61905), (25, 61881), (26, 61872), (35, 61752), (43, 61650), (46, 61623), (47, 61599),

Gene: BigShaq\_80 Start: 62086, Stop: 61505, Start Num: 1

Candidate Starts for BigShaq\_80:

(Start: 1 @62086 has 31 MA's), (9, 61948), (11, 61942), (14, 61921), (25, 61798), (35, 61669), (41, 61618), (43, 61579), (45, 61561), (46, 61552),

Gene: BillyBobJr\_83 Start: 63305, Stop: 62742, Start Num: 2

Candidate Starts for BillyBobJr\_83:

(Start: 2 @63305 has 25 MA's), (4, 63290), (7, 63200), (9, 63185), (11, 63179), (14, 63158), (22, 63062), (25, 63035), (35, 62906), (41, 62855), (43, 62816), (45, 62798), (46, 62789), (50, 62747),

Gene: BirksAndSocks\_83 Start: 63300, Stop: 62737, Start Num: 2

Candidate Starts for BirksAndSocks\_83:

(Start: 2 @63300 has 25 MA's), (4, 63285), (7, 63195), (9, 63180), (11, 63174), (14, 63153), (22, 63057), (25, 63030), (35, 62901), (41, 62850), (43, 62811), (45, 62793), (46, 62784), (50, 62742),

Gene: Boneham\_82 Start: 63225, Stop: 62662, Start Num: 2

Candidate Starts for Boneham\_82:

(Start: 2 @63225 has 25 MA's), (4, 63210), (7, 63120), (9, 63105), (11, 63099), (14, 63078), (22, 62982), (25, 62955), (35, 62826), (41, 62775), (43, 62736), (45, 62718), (46, 62709), (50, 62667),

Gene: Breezic\_79 Start: 61445, Stop: 60882, Start Num: 2

Candidate Starts for Breezic\_79:

(Start: 2 @61445 has 25 MA's), (4, 61430), (7, 61340), (9, 61325), (11, 61319), (14, 61298), (22, 61202), (25, 61175), (35, 61046), (41, 60995), (43, 60956), (45, 60938), (46, 60929),

Gene: Butterball\_81 Start: 63230, Stop: 62667, Start Num: 2

Candidate Starts for Butterball\_81:

(Start: 2 @63230 has 25 MA's), (4, 63215), (7, 63125), (9, 63110), (11, 63104), (14, 63083), (22, 62987), (25, 62960), (35, 62831), (41, 62780), (43, 62741), (45, 62723), (46, 62714), (50, 62672),

Gene: CathyBurgh\_79 Start: 61965, Stop: 61402, Start Num: 2

Candidate Starts for CathyBurgh\_79:

(Start: 2 @61965 has 25 MA's), (4, 61950), (7, 61860), (9, 61845), (11, 61839), (14, 61818), (22, 61722), (25, 61695), (35, 61566), (41, 61515), (43, 61476), (45, 61458), (46, 61449),

Gene: Charianelly\_77 Start: 61849, Stop: 61286, Start Num: 1

Candidate Starts for Charianelly\_77:

(Start: 1 @61849 has 31 MA's), (14, 61714), (23, 61615), (25, 61591), (26, 61582), (35, 61462), (43, 61360), (46, 61333), (47, 61309),

Gene: Chelms\_79 Start: 62004, Stop: 61435, Start Num: 1

Candidate Starts for Chelms\_79:

(Start: 1 @62004 has 31 MA's), (4, 61983), (9, 61878), (11, 61872), (14, 61851), (25, 61728), (35, 61599), (40, 61557), (41, 61548), (43, 61509), (45, 61491), (46, 61482),

Gene: CinnamonToast\_83 Start: 63305, Stop: 62742, Start Num: 2

Candidate Starts for CinnamonToast\_83:

(Start: 2 @63305 has 25 MA's), (4, 63290), (7, 63200), (9, 63185), (11, 63179), (14, 63158), (22, 63062), (25, 63035), (35, 62906), (41, 62855), (43, 62816), (45, 62798), (46, 62789), (50, 62747),

Gene: Crete\_79 Start: 62147, Stop: 61563, Start Num: 1

Candidate Starts for Crete\_79:

(Start: 1 @62147 has 31 MA's), (9, 62009), (11, 62003), (14, 61982), (25, 61859), (42, 61667), (43, 61637), (46, 61610),

Gene: Dakiti\_80 Start: 62802, Stop: 62233, Start Num: 1

Candidate Starts for Dakiti\_80:

(Start: 1 @62802 has 31 MA's), (4, 62781), (9, 62676), (11, 62670), (14, 62649), (25, 62526), (35, 62397), (40, 62355), (41, 62346), (43, 62307), (46, 62280),

Gene: Damp\_77 Start: 61013, Stop: 60450, Start Num: 1

Candidate Starts for Damp\_77:

(Start: 1 @61013 has 31 MA's), (14, 60878), (23, 60779), (25, 60755), (26, 60746), (35, 60626), (43, 60524), (46, 60497), (47, 60473),

Gene: Demosthenes\_71 Start: 61052, Stop: 60579, Start Num: 6

Candidate Starts for Demosthenes\_71:

(Start: 6 @61052 has 12 MA's), (30, 60800), (31, 60761), (33, 60755), (37, 60722), (42, 60683), (45, 60629),

Gene: Diabla\_85 Start: 63272, Stop: 62700, Start Num: 3

Candidate Starts for Diabla\_85:

(Start: 3 @63272 has 8 MA's), (4, 63260), (14, 63140), (15, 63134), (22, 63044), (25, 63017), (36, 62858), (41, 62813), (43, 62774), (45, 62756), (46, 62747), (47, 62723), (48, 62717), (49, 62714),

Gene: Eggsie\_77 Start: 60712, Stop: 60167, Start Num: 3

Candidate Starts for Eggsie\_77:

(Start: 3 @60712 has 8 MA's), (4, 60700), (14, 60580), (15, 60574), (22, 60484), (25, 60457), (39, 60304), (41, 60280), (43, 60241), (45, 60223), (46, 60214), (47, 60190), (48, 60184), (49, 60181),

Gene: Ekhein\_79 Start: 61135, Stop: 60572, Start Num: 2

Candidate Starts for Ekhein\_79:

(Start: 2 @61135 has 25 MA's), (4, 61120), (7, 61030), (9, 61015), (11, 61009), (14, 60988), (22, 60892), (24, 60877), (25, 60865), (35, 60736), (41, 60685), (43, 60646), (45, 60628), (46, 60619),

Gene: Exiguo\_78 Start: 61141, Stop: 60578, Start Num: 2

Candidate Starts for Exiguo\_78:

(Start: 2 @61141 has 25 MA's), (4, 61126), (7, 61036), (9, 61021), (11, 61015), (14, 60994), (22, 60898), (24, 60883), (25, 60871), (35, 60742), (41, 60691), (43, 60652), (45, 60634), (46, 60625), (50, 60583),

Gene: FelixAlejandro\_83 Start: 63655, Stop: 63092, Start Num: 2

Candidate Starts for FelixAlejandro\_83:

(Start: 2 @63655 has 25 MA's), (4, 63640), (7, 63550), (9, 63535), (11, 63529), (14, 63508), (22, 63412), (25, 63385), (35, 63256), (41, 63205), (43, 63166), (45, 63148), (46, 63139), (50, 63097),

Gene: Flakey\_78 Start: 61951, Stop: 61388, Start Num: 2

Candidate Starts for Flakey\_78:

(Start: 2 @61951 has 25 MA's), (4, 61936), (7, 61846), (9, 61831), (11, 61825), (14, 61804), (22, 61708), (25, 61681), (35, 61552), (41, 61501), (43, 61462), (45, 61444), (46, 61435),

Gene: GMA7\_67 Start: 55064, Stop: 54513, Start Num: 3

Candidate Starts for GMA7\_67:

(Start: 3 @55064 has 8 MA's), (4, 55052), (12, 54950), (16, 54923), (17, 54908), (29, 54752), (32, 54707), (34, 54704), (38, 54662), (45, 54578),

Gene: GTE7\_66 Start: 55095, Stop: 54544, Start Num: 3

Candidate Starts for GTE7\_66:

(Start: 3 @55095 has 8 MA's), (4, 55083), (12, 54981), (16, 54954), (17, 54939), (29, 54783), (32, 54738), (34, 54735), (38, 54693), (45, 54609),

Gene: GalacticEye\_77 Start: 61810, Stop: 61247, Start Num: 1

Candidate Starts for GalacticEye\_77:

(Start: 1 @61810 has 31 MA's), (14, 61675), (23, 61576), (25, 61552), (26, 61543), (35, 61423), (43, 61321), (46, 61294), (47, 61270),

Gene: Gorko\_78 Start: 61052, Stop: 60489, Start Num: 2

Candidate Starts for Gorko\_78:

(Start: 2 @61052 has 25 MA's), (4, 61037), (7, 60947), (9, 60932), (11, 60926), (14, 60905), (22, 60809), (25, 60782), (35, 60653), (41, 60602), (43, 60563), (45, 60545), (46, 60536),

Gene: GourdThymes\_79 Start: 61992, Stop: 61429, Start Num: 2

Candidate Starts for GourdThymes\_79:

(Start: 2 @61992 has 25 MA's), (4, 61977), (7, 61887), (9, 61872), (11, 61866), (14, 61845), (22, 61749), (25, 61722), (35, 61593), (41, 61542), (43, 61503), (45, 61485), (46, 61476),

Gene: Guillaume\_76 Start: 61860, Stop: 61297, Start Num: 1

Candidate Starts for Guillaume\_76:

(Start: 1 @61860 has 31 MA's), (14, 61725), (23, 61626), (25, 61602), (26, 61593), (35, 61473), (43, 61371), (46, 61344), (47, 61320),

Gene: Hail2Pitt\_75 Start: 62336, Stop: 61773, Start Num: 1

Candidate Starts for Hail2Pitt\_75:

(Start: 1 @62336 has 31 MA's), (14, 62201), (23, 62102), (25, 62078), (26, 62069), (35, 61949), (43, 61847), (46, 61820), (47, 61796),

Gene: Harambe\_76 Start: 62127, Stop: 61564, Start Num: 1

Candidate Starts for Harambe\_76:

(Start: 1 @62127 has 31 MA's), (14, 61992), (23, 61893), (25, 61869), (26, 61860), (35, 61740), (43, 61638), (46, 61611), (47, 61587),

Gene: HayZem\_78 Start: 60848, Stop: 60297, Start Num: 3

Candidate Starts for HayZem\_78:

(Start: 3 @60848 has 8 MA's), (4, 60836), (12, 60734), (16, 60707), (17, 60692), (29, 60536), (32, 60491), (34, 60488), (38, 60446), (45, 60362),

Gene: Hello\_76 Start: 62089, Stop: 61526, Start Num: 1

Candidate Starts for Hello\_76:

(Start: 1 @62089 has 31 MA's), (14, 61954), (23, 61855), (25, 61831), (26, 61822), (35, 61702), (43, 61600), (46, 61573), (47, 61549),

Gene: Hollow\_77 Start: 62444, Stop: 61971, Start Num: 6

Candidate Starts for Hollow\_77:

(Start: 6 @62444 has 12 MA's), (10, 62393), (20, 62297), (27, 62210), (28, 62207), (30, 62192), (31, 62153), (33, 62147), (37, 62114), (42, 62075), (45, 62021),

Gene: Hotorobo\_79 Start: 62015, Stop: 61452, Start Num: 2

Candidate Starts for Hotorobo\_79:

(Start: 2 @62015 has 25 MA's), (4, 62000), (7, 61910), (9, 61895), (11, 61889), (14, 61868), (22, 61772), (25, 61745), (35, 61616), (41, 61565), (43, 61526), (45, 61508), (46, 61499),

Gene: Jams\_77 Start: 61299, Stop: 60736, Start Num: 1

Candidate Starts for Jams\_77:

(Start: 1 @61299 has 31 MA's), (14, 61164), (23, 61065), (25, 61041), (26, 61032), (35, 60912), (43, 60810), (46, 60783), (47, 60759),

Gene: Jellybones\_80 Start: 62939, Stop: 62376, Start Num: 2

Candidate Starts for Jellybones\_80:

(Start: 2 @62939 has 25 MA's), (4, 62924), (7, 62834), (9, 62819), (11, 62813), (14, 62792), (22, 62696), (25, 62669), (35, 62540), (41, 62489), (43, 62450), (45, 62432), (46, 62423), (50, 62381),

Gene: John316\_82 Start: 63103, Stop: 62540, Start Num: 2

Candidate Starts for John316\_82:

(Start: 2 @63103 has 25 MA's), (4, 63088), (7, 62998), (9, 62983), (11, 62977), (14, 62956), (22, 62860), (25, 62833), (35, 62704), (41, 62653), (43, 62614), (45, 62596), (46, 62587),

Gene: Jormungandr\_76 Start: 61842, Stop: 61279, Start Num: 1

Candidate Starts for Jormungandr\_76:

(Start: 1 @61842 has 31 MA's), (14, 61707), (23, 61608), (25, 61584), (26, 61575), (35, 61455), (43, 61353), (46, 61326), (47, 61302),

Gene: Kaseim\_77 Start: 61284, Stop: 60721, Start Num: 1

Candidate Starts for Kaseim\_77:

(Start: 1 @61284 has 31 MA's), (14, 61149), (23, 61050), (25, 61026), (26, 61017), (35, 60897), (43, 60795), (46, 60768), (47, 60744),

Gene: Katyusha\_75 Start: 62275, Stop: 61802, Start Num: 6

Candidate Starts for Katyusha\_75:

(Start: 6 @62275 has 12 MA's), (10, 62224), (20, 62128), (27, 62041), (28, 62038), (30, 62023), (31, 61984), (33, 61978), (37, 61945), (42, 61906), (45, 61852),

Gene: Kelzog\_80 Start: 61892, Stop: 61329, Start Num: 2

Candidate Starts for Kelzog\_80:

(Start: 2 @61892 has 25 MA's), (4, 61877), (7, 61787), (9, 61772), (11, 61766), (14, 61745), (22, 61649), (25, 61622), (35, 61493), (41, 61442), (43, 61403), (45, 61385), (46, 61376),

Gene: Kvothe\_75 Start: 62117, Stop: 61644, Start Num: 6

Candidate Starts for Kvothe\_75:

(5, 62180), (Start: 6 @62117 has 12 MA's), (10, 62066), (27, 61883), (28, 61880), (30, 61865), (31, 61826), (33, 61820), (37, 61787), (42, 61748), (45, 61694),

Gene: Lahirium\_76 Start: 62364, Stop: 61801, Start Num: 1

Candidate Starts for Lahirium\_76:

(Start: 1 @62364 has 31 MA's), (14, 62229), (23, 62130), (25, 62106), (26, 62097), (35, 61977), (43, 61875), (46, 61848), (47, 61824),

Gene: Lidong\_77 Start: 62099, Stop: 61536, Start Num: 1

Candidate Starts for Lidong\_77:

(Start: 1 @62099 has 31 MA's), (14, 61964), (23, 61865), (25, 61841), (26, 61832), (35, 61712), (43, 61610), (46, 61583), (47, 61559),

Gene: Linetti\_79 Start: 63029, Stop: 62457, Start Num: 1

Candidate Starts for Linetti\_79:

(Start: 1 @63029 has 31 MA's), (4, 63008), (9, 62903), (11, 62897), (14, 62876), (25, 62753), (42, 62561), (43, 62531), (45, 62513), (46, 62504),

Gene: Lizzo\_79 Start: 61965, Stop: 61402, Start Num: 2

Candidate Starts for Lizzo\_79:

(Start: 2 @61965 has 25 MA's), (4, 61950), (7, 61860), (9, 61845), (11, 61839), (14, 61818), (22, 61722), (25, 61695), (35, 61566), (41, 61515), (43, 61476), (45, 61458), (46, 61449),

Gene: Luker\_78 Start: 62317, Stop: 61754, Start Num: 1  
Candidate Starts for Luker\_78:  
(Start: 1 @62317 has 31 MA's), (14, 62182), (23, 62083), (25, 62059), (26, 62050), (35, 61930), (43, 61828), (46, 61801), (47, 61777),

Gene: Minos\_78 Start: 61841, Stop: 61278, Start Num: 1  
Candidate Starts for Minos\_78:  
(Start: 1 @61841 has 31 MA's), (14, 61706), (23, 61607), (25, 61583), (26, 61574), (35, 61454), (43, 61352), (46, 61325), (47, 61301),

Gene: Monty\_78 Start: 61178, Stop: 60615, Start Num: 2  
Candidate Starts for Monty\_78:  
(Start: 2 @61178 has 25 MA's), (4, 61163), (7, 61073), (9, 61058), (11, 61052), (14, 61031), (22, 60935), (25, 60908), (35, 60779), (41, 60728), (43, 60689), (45, 60671), (46, 60662),

Gene: MrWormie\_77 Start: 61002, Stop: 60439, Start Num: 1  
Candidate Starts for MrWormie\_77:  
(Start: 1 @61002 has 31 MA's), (14, 60867), (23, 60768), (25, 60744), (26, 60735), (35, 60615), (43, 60513), (46, 60486), (47, 60462),

Gene: Msay19\_83 Start: 63541, Stop: 62978, Start Num: 2  
Candidate Starts for Msay19\_83:  
(Start: 2 @63541 has 25 MA's), (4, 63526), (7, 63436), (9, 63421), (11, 63415), (14, 63394), (22, 63298), (25, 63271), (35, 63142), (41, 63091), (43, 63052), (45, 63034), (46, 63025), (50, 62983),

Gene: Neoevie\_76 Start: 62103, Stop: 61540, Start Num: 1  
Candidate Starts for Neoevie\_76:  
(Start: 1 @62103 has 31 MA's), (14, 61968), (23, 61869), (25, 61845), (26, 61836), (35, 61716), (43, 61614), (46, 61587), (47, 61563),

Gene: Newt\_78 Start: 62331, Stop: 61768, Start Num: 1  
Candidate Starts for Newt\_78:  
(Start: 1 @62331 has 31 MA's), (14, 62196), (23, 62097), (25, 62073), (26, 62064), (35, 61944), (43, 61842), (46, 61815), (47, 61791),

Gene: Niagara\_76 Start: 62208, Stop: 61735, Start Num: 6  
Candidate Starts for Niagara\_76:  
(Start: 6 @62208 has 12 MA's), (10, 62157), (20, 62061), (27, 61974), (28, 61971), (30, 61956), (31, 61917), (33, 61911), (37, 61878), (42, 61839), (45, 61785),

Gene: Nimi13\_76 Start: 61850, Stop: 61287, Start Num: 1  
Candidate Starts for Nimi13\_76:  
(Start: 1 @61850 has 31 MA's), (14, 61715), (23, 61616), (25, 61592), (26, 61583), (35, 61463), (43, 61361), (46, 61334), (47, 61310),

Gene: Philon9\_74 Start: 62676, Stop: 62200, Start Num: 6  
Candidate Starts for Philon9\_74:  
(5, 62739), (Start: 6 @62676 has 12 MA's), (13, 62610), (21, 62526), (22, 62508), (27, 62442), (45, 62250), (46, 62241), (48, 62211),

Gene: PierreThree\_78 Start: 62433, Stop: 61864, Start Num: 1  
Candidate Starts for PierreThree\_78:

(Start: 1 @62433 has 31 MA's), (4, 62412), (9, 62307), (11, 62301), (14, 62280), (25, 62157), (35, 62028), (40, 61986), (41, 61977), (43, 61938), (46, 61911),

Gene: PokyPuppy\_76 Start: 61703, Stop: 61131, Start Num: 3

Candidate Starts for PokyPuppy\_76:

(Start: 3 @61703 has 8 MA's), (4, 61691), (8, 61577), (14, 61538), (15, 61532), (18, 61511), (19, 61499), (25, 61415), (41, 61244), (43, 61205), (45, 61187), (46, 61178), (47, 61154),

Gene: Poland\_83 Start: 63520, Stop: 62957, Start Num: 2

Candidate Starts for Poland\_83:

(Start: 2 @63520 has 25 MA's), (4, 63505), (7, 63415), (9, 63400), (11, 63394), (14, 63373), (22, 63277), (25, 63250), (35, 63121), (41, 63070), (43, 63031), (45, 63013), (46, 63004), (50, 62962),

Gene: RemRem\_80 Start: 61118, Stop: 60555, Start Num: 2

Candidate Starts for RemRem\_80:

(Start: 2 @61118 has 25 MA's), (4, 61103), (7, 61013), (9, 60998), (11, 60992), (14, 60971), (22, 60875), (24, 60860), (25, 60848), (35, 60719), (41, 60668), (43, 60629), (45, 60611), (46, 60602),

Gene: RoyalG\_79 Start: 61707, Stop: 61141, Start Num: 3

Candidate Starts for RoyalG\_79:

(Start: 3 @61707 has 8 MA's), (4, 61695), (14, 61554), (15, 61548), (22, 61458), (25, 61431), (39, 61278), (41, 61254), (43, 61215), (45, 61197), (46, 61188), (47, 61164), (48, 61158), (49, 61155),

Gene: Sam12\_78 Start: 61141, Stop: 60578, Start Num: 2

Candidate Starts for Sam12\_78:

(Start: 2 @61141 has 25 MA's), (4, 61126), (7, 61036), (9, 61021), (11, 61015), (14, 60994), (22, 60898), (24, 60883), (25, 60871), (35, 60742), (41, 60691), (43, 60652), (45, 60634), (46, 60625), (50, 60583),

Gene: Shelley\_77 Start: 61326, Stop: 60763, Start Num: 1

Candidate Starts for Shelley\_77:

(Start: 1 @61326 has 31 MA's), (14, 61191), (23, 61092), (25, 61068), (26, 61059), (35, 60939), (43, 60837), (46, 60810), (47, 60786),

Gene: Sombrero\_80 Start: 61731, Stop: 61168, Start Num: 2

Candidate Starts for Sombrero\_80:

(Start: 2 @61731 has 25 MA's), (4, 61716), (7, 61626), (9, 61611), (11, 61605), (14, 61584), (22, 61488), (25, 61461), (35, 61332), (41, 61281), (43, 61242), (45, 61224), (46, 61215), (50, 61173),

Gene: Squibbles\_78 Start: 61995, Stop: 61432, Start Num: 2

Candidate Starts for Squibbles\_78:

(Start: 2 @61995 has 25 MA's), (4, 61980), (7, 61890), (9, 61875), (11, 61869), (14, 61848), (22, 61752), (25, 61725), (35, 61596), (41, 61545), (43, 61506), (45, 61488), (46, 61479),

Gene: SteveFrench\_78 Start: 61947, Stop: 61381, Start Num: 3

Candidate Starts for SteveFrench\_78:

(Start: 3 @61947 has 8 MA's), (4, 61935), (14, 61794), (15, 61788), (22, 61698), (25, 61671), (39, 61518), (41, 61494), (43, 61455), (45, 61437), (46, 61428), (47, 61404), (48, 61398), (49, 61395),

Gene: Sticker17\_77 Start: 61814, Stop: 61251, Start Num: 1

Candidate Starts for Sticker17\_77:

(Start: 1 @61814 has 31 MA's), (14, 61679), (23, 61580), (25, 61556), (26, 61547), (35, 61427), (43, 61325), (46, 61298), (47, 61274),

Gene: Teal\_76 Start: 62308, Stop: 61745, Start Num: 1

Candidate Starts for Teal\_76:

(Start: 1 @62308 has 31 MA's), (14, 62173), (23, 62074), (25, 62050), (26, 62041), (35, 61921), (43, 61819), (46, 61792), (47, 61768),

Gene: Teatealatte\_77 Start: 62105, Stop: 61632, Start Num: 6

Candidate Starts for Teatealatte\_77:

(Start: 6 @62105 has 12 MA's), (10, 62054), (27, 61871), (28, 61868), (30, 61853), (31, 61814), (33, 61808), (37, 61775), (42, 61736), (45, 61682),

Gene: Teech\_77 Start: 61924, Stop: 61451, Start Num: 6

Candidate Starts for Teech\_77:

(Start: 6 @61924 has 12 MA's), (10, 61873), (20, 61777), (27, 61690), (28, 61687), (30, 61672), (31, 61633), (33, 61627), (37, 61594), (42, 61555), (45, 61501),

Gene: Tredge\_76 Start: 62105, Stop: 61632, Start Num: 6

Candidate Starts for Tredge\_76:

(Start: 6 @62105 has 12 MA's), (10, 62054), (27, 61871), (28, 61868), (30, 61853), (31, 61814), (33, 61808), (37, 61775), (42, 61736), (45, 61682),

Gene: Vitaenoi\_74 Start: 62660, Stop: 62184, Start Num: 6

Candidate Starts for Vitaenoi\_74:

(5, 62723), (Start: 6 @62660 has 12 MA's), (13, 62594), (21, 62510), (22, 62492), (27, 62426), (45, 62234), (46, 62225), (48, 62195),

Gene: Woes\_76 Start: 62359, Stop: 61796, Start Num: 1

Candidate Starts for Woes\_76:

(Start: 1 @62359 has 31 MA's), (14, 62224), (23, 62125), (25, 62101), (26, 62092), (35, 61972), (43, 61870), (46, 61843), (47, 61819),

Gene: Worcestershire\_78 Start: 61125, Stop: 60562, Start Num: 2

Candidate Starts for Worcestershire\_78:

(Start: 2 @61125 has 25 MA's), (4, 61110), (7, 61020), (9, 61005), (11, 60999), (14, 60978), (18, 60951), (22, 60882), (25, 60855), (35, 60726), (41, 60675), (43, 60636), (45, 60618), (46, 60609), (50, 60567),