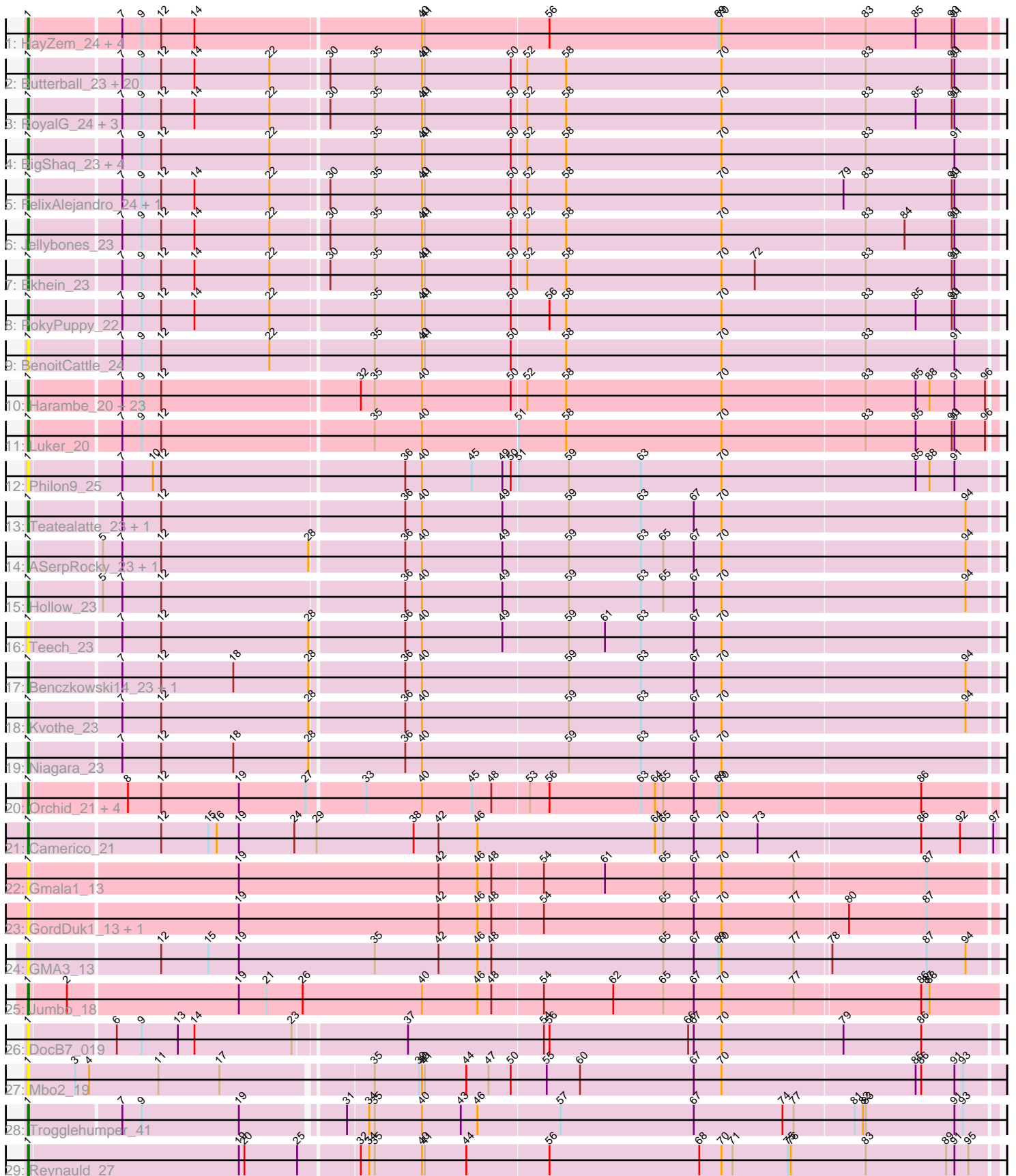


# Pham 1186



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 1186 Report

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

Pham number 1186 has 92 members, 22 are drafts.

Phages represented in each track:

- Track 1 : HayZem\_24, GMA7\_16, Amore2\_25, Austin\_25, GTE7\_16
- Track 2 : Butterball\_23, Monty\_22, Squibbles\_23, Exiguo\_23, Flakey\_23, Boneham\_23, John316\_23, Beaver\_23, Lizzo\_23, Hotorobo\_23, Adgers\_24, Breezic\_23, GourdThymes\_23, Gorko\_23, Barbochs\_23, Sam12\_23, BirksAndSocks\_23, Msay19\_24, Poland\_26, CathyBurgh\_23, RemRem\_24
- Track 3 : RoyalG\_24, Eggsie\_24, Diabla\_22, SteveFrench\_23
- Track 4 : BigShaq\_23, PierreThree\_23, Dakiti\_23, Linetti\_24, Chelms\_23
- Track 5 : FelixAlejandro\_24, Sombrero\_23
- Track 6 : Jellybones\_23
- Track 7 : Ekhein\_23
- Track 8 : PokyPuppy\_22
- Track 9 : BenoitCattle\_24
- Track 10 : Harambe\_20, Jormungandr\_20, Woes\_20, Minos\_20, Lidong\_20, Shelley\_20, Jams\_20, Anamika\_20, Sticker17\_20, Hello\_20, Berries\_20, Lahirium\_20, Hail2Pitt\_20, Neoevie\_20, Charianelly\_20, Bianmat\_20, Damp\_20, Guillaume\_20, GalacticEye\_20, MrWormie\_20, Kaseim\_20, Newt\_20, Teal\_20, Nimi13\_20
- Track 11 : Luker\_20
- Track 12 : Philon9\_25
- Track 13 : Teatealatte\_23, Tredge\_23
- Track 14 : ASerpRocky\_23, Demosthenes\_23
- Track 15 : Hollow\_23
- Track 16 : Teech\_23
- Track 17 : Benczkowski14\_23, Katyusha\_23
- Track 18 : Kvothe\_23
- Track 19 : Niagara\_23
- Track 20 : Orchid\_21, Gibbles\_20, RobinSparkles\_24, Kampe\_21, PatrickStar\_21
- Track 21 : Camerico\_21
- Track 22 : Gmala1\_13
- Track 23 : GordDuk1\_13, GordTnk2\_13
- Track 24 : GMA3\_13
- Track 25 : Jumbo\_18
- Track 26 : DocB7\_019
- Track 27 : Mbo2\_19
- Track 28 : Trogglehumper\_41
- Track 29 : Reynauld\_27

### **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 70 of the 70 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ASerpRocky\_23, Adgers\_24, Amore2\_25, Anamika\_20, Austin\_25, Barbochs\_23, Beaver\_23, Benczkowski14\_23, BenoitCattle\_24, Berries\_20, Bianmat\_20, BigShaq\_23, BirksAndSocks\_23, Boneham\_23, Breezic\_23, Butterball\_23, Camerico\_21, CathyBurgh\_23, Charianelly\_20, Chelms\_23, Dakiti\_23, Damp\_20, Demosthenes\_23, Diabla\_22, DocB7\_019, Eggsie\_24, Ekhein\_23, Exiguo\_23, FelixAlejandro\_24, Flakey\_23, GMA3\_13, GMA7\_16, GTE7\_16, GalacticEye\_20, Gibbles\_20, Gmala1\_13, GordDuk1\_13, GordTnk2\_13, Gorko\_23, GourdThymes\_23, Guillaume\_20, Hail2Pitt\_20, Harambe\_20, HayZem\_24, Hello\_20, Hollow\_23, Hotorobo\_23, Jams\_20, Jellybones\_23, John316\_23, Jormungandr\_20, Jumbo\_18, Kampe\_21, Kaseim\_20, Katyusha\_23, Kvothe\_23, Lahirium\_20, Lidong\_20, Linetti\_24, Lizzo\_23, Luker\_20, Mbo2\_19, Minos\_20, Monty\_22, MrWormie\_20, Msay19\_24, Neoovie\_20, Newt\_20, Niagara\_23, Nimi13\_20, Orchid\_21, PatrickStar\_21, Philon9\_25, PierreThree\_23, PokyPuppy\_22, Poland\_26, RemRem\_24, Reynauld\_27, RobinSparkles\_24, RoyalG\_24, Sam12\_23, Shelley\_20, Sombrero\_23, Squibbles\_23, SteveFrench\_23, Sticker17\_20, Teal\_20, Teatealatte\_23, Teech\_23, Tredge\_23, Trogglehumper\_41, Woes\_20,

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

- 

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

- 

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

Start 1:

- Found in 92 of 92 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 70 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_23 (CS4), Adgers\_24 (CS2), Amore2\_25 (CS1), Anamika\_20 (CS3), Austin\_25 (CS1), Barbochs\_23 (CS2), Beaver\_23 (CS2), Benczkowski14\_23 (CS4), BenoitCattle\_24 (CS2), Berries\_20 (CS3), Bianmat\_20 (CS3), BigShaq\_23 (CS2), BirksAndSocks\_23 (CS2), Boneham\_23 (CS2), Breezic\_23 (CS2), Butterball\_23 (CS2), Camerico\_21 (DF), CathyBurgh\_23 (CS2), Charianelly\_20 (CS3), Chelms\_23 (CS2), Dakiti\_23 (CS2), Damp\_20 (CS3), Demosthenes\_23 (CS4), Diabla\_22 (CS2), DocB7\_019 (singleton), Eggsie\_24 (CS2), Ekhein\_23 (CS2), Exiguo\_23 (CS2), FelixAlejandro\_24 (CS2), Flakey\_23 (CS2), GMA3\_13 (DF2), GMA7\_16 (CS1), GTE7\_16 (CS1), GalacticEye\_20 (CS3), Gibbles\_20 (CX), Gmala1\_13 (DF1), GordDuk1\_13 (DF1), GordTnk2\_13 (DF1), Gorko\_23 (CS2), GourdThymes\_23 (CS2), Guillaume\_20 (CS3), Hail2Pitt\_20 (CS3), Harambe\_20 (CS3), HayZem\_24 (CS1), Hello\_20 (CS3), Hollow\_23 (CS4), Hotorobo\_23 (CS2), Jams\_20 (CS3), Jellybones\_23 (CS2), John316\_23 (CS2), Jormungandr\_20 (CS3), Jumbo\_18 (DF3), Kampe\_21 (CX), Kaseim\_20 (CS3), Katyusha\_23 (CS4), Kvothe\_23 (CS4), Lahirium\_20 (CS3),

Lidong\_20 (CS3), Linetti\_24 (CS2), Lizzo\_23 (CS2), Luker\_20 (CS3), Mbo2\_19 (singleton), Minos\_20 (CS3), Monty\_22 (CS2), MrWormie\_20 (CS3), Msay19\_24 (CS2), Neoevie\_20 (CS3), Newt\_20 (CS3), Niagara\_23 (CS4), Nimi13\_20 (CS3), Orchid\_21 (CX), PatrickStar\_21 (CX), Philon9\_25 (CS4), PierreThree\_23 (CS2), PokyPuppy\_22 (CS2), Poland\_26 (CS2), RemRem\_24 (CS2), Reynauld\_27 (singleton), RobinSparkles\_24 (CX), RoyalG\_24 (CS2), Sam12\_23 (CS2), Shelley\_20 (CS3), Sombrero\_23 (CS2), Squibbles\_23 (CS2), SteveFrench\_23 (CS2), Sticker17\_20 (CS3), Teal\_20 (CS3), Teatealatte\_23 (CS4), Teech\_23 (CS4), Tredge\_23 (CS4), Trogglehumper\_41 (singleton), Woes\_20 (CS3),

### **Summary by clusters:**

There are 10 clusters represented in this pham: singleton, DF, DF1, DF3, DF2, CX, CS4, CS1, CS3, CS2,

Info for manual annotations of cluster CS1:

- Start number 1 was manually annotated 2 times for cluster CS1.

Info for manual annotations of cluster CS2:

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

Info for manual annotations of cluster CS3:

- Start number 1 was manually annotated 21 times for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 1 was manually annotated 9 times for cluster CS4.

Info for manual annotations of cluster CX:

- Start number 1 was manually annotated 5 times for cluster CX.

Info for manual annotations of cluster DF:

- Start number 1 was manually annotated 1 time for cluster DF.

Info for manual annotations of cluster DF3:

- Start number 1 was manually annotated 1 time for cluster DF3.

### **Gene Information:**

Gene: ASerpRocky\_23 Start: 20767, Stop: 21786, Start Num: 1

Candidate Starts for ASerpRocky\_23:

(Start: 1 @20767 has 70 MA's), (5, 20839), (7, 20860), (12, 20902), (28, 21061), (36, 21157), (40, 21175), (49, 21262), (59, 21331), (63, 21409), (65, 21433), (67, 21466), (70, 21496), (94, 21757),

Gene: Adgers\_24 Start: 18321, Stop: 19340, Start Num: 1

Candidate Starts for Adgers\_24:

(Start: 1 @18321 has 70 MA's), (7, 18414), (9, 18435), (12, 18456), (14, 18492), (22, 18573), (30, 18630), (35, 18678), (40, 18729), (41, 18732), (50, 18825), (52, 18840), (58, 18882), (70, 19050), (83, 19203), (90, 19296), (91, 19299),

Gene: Amore2\_25 Start: 18085, Stop: 19104, Start Num: 1

Candidate Starts for Amore2\_25:

(Start: 1 @18085 has 70 MA's), (7, 18178), (9, 18199), (12, 18220), (14, 18256), (40, 18493), (41, 18496), (56, 18628), (69, 18811), (70, 18814), (83, 18967), (85, 19021), (90, 19060), (91, 19063),

Gene: Anamika\_20 Start: 19170, Stop: 20189, Start Num: 1

Candidate Starts for Anamika\_20:

(Start: 1 @19170 has 70 MA's), (7, 19263), (9, 19284), (12, 19305), (32, 19512), (35, 19527), (40, 19578), (50, 19674), (52, 19689), (58, 19731), (70, 19899), (83, 20052), (85, 20106), (88, 20121), (91, 20148), (96, 20181),

Gene: Austin\_25 Start: 18085, Stop: 19104, Start Num: 1

Candidate Starts for Austin\_25:

(Start: 1 @18085 has 70 MA's), (7, 18178), (9, 18199), (12, 18220), (14, 18256), (40, 18493), (41, 18496), (56, 18628), (69, 18811), (70, 18814), (83, 18967), (85, 19021), (90, 19060), (91, 19063),

Gene: Barbochs\_23 Start: 18159, Stop: 19178, Start Num: 1

Candidate Starts for Barbochs\_23:

(Start: 1 @18159 has 70 MA's), (7, 18252), (9, 18273), (12, 18294), (14, 18330), (22, 18411), (30, 18468), (35, 18516), (40, 18567), (41, 18570), (50, 18663), (52, 18678), (58, 18720), (70, 18888), (83, 19041), (90, 19134), (91, 19137),

Gene: Beaver\_23 Start: 18167, Stop: 19186, Start Num: 1

Candidate Starts for Beaver\_23:

(Start: 1 @18167 has 70 MA's), (7, 18260), (9, 18281), (12, 18302), (14, 18338), (22, 18419), (30, 18476), (35, 18524), (40, 18575), (41, 18578), (50, 18671), (52, 18686), (58, 18728), (70, 18896), (83, 19049), (90, 19142), (91, 19145),

Gene: Benczkowski14\_23 Start: 20846, Stop: 21865, Start Num: 1

Candidate Starts for Benczkowski14\_23:

(Start: 1 @20846 has 70 MA's), (7, 20939), (12, 20981), (18, 21059), (28, 21140), (36, 21236), (40, 21254), (59, 21410), (63, 21488), (67, 21545), (70, 21575), (94, 21836),

Gene: BenoitCattle\_24 Start: 18190, Stop: 19209, Start Num: 1

Candidate Starts for BenoitCattle\_24:

(Start: 1 @18190 has 70 MA's), (7, 18283), (9, 18304), (12, 18325), (22, 18442), (35, 18547), (40, 18598), (41, 18601), (50, 18694), (58, 18751), (70, 18919), (83, 19072), (91, 19168),

Gene: Berries\_20 Start: 19137, Stop: 20156, Start Num: 1

Candidate Starts for Berries\_20:

(Start: 1 @19137 has 70 MA's), (7, 19230), (9, 19251), (12, 19272), (32, 19479), (35, 19494), (40, 19545), (50, 19641), (52, 19656), (58, 19698), (70, 19866), (83, 20019), (85, 20073), (88, 20088), (91, 20115), (96, 20148),

Gene: Bianmat\_20 Start: 19177, Stop: 20196, Start Num: 1

Candidate Starts for Bianmat\_20:

(Start: 1 @19177 has 70 MA's), (7, 19270), (9, 19291), (12, 19312), (32, 19519), (35, 19534), (40, 19585), (50, 19681), (52, 19696), (58, 19738), (70, 19906), (83, 20059), (85, 20113), (88, 20128), (91, 20155), (96, 20188),

Gene: BigShaq\_23 Start: 18177, Stop: 19196, Start Num: 1

Candidate Starts for BigShaq\_23:

(Start: 1 @18177 has 70 MA's), (7, 18270), (9, 18291), (12, 18312), (22, 18429), (35, 18534), (40, 18585), (41, 18588), (50, 18681), (52, 18696), (58, 18738), (70, 18906), (83, 19059), (91, 19155),

Gene: BirksAndSocks\_23 Start: 18165, Stop: 19184, Start Num: 1

Candidate Starts for BirksAndSocks\_23:

(Start: 1 @18165 has 70 MA's), (7, 18258), (9, 18279), (12, 18300), (14, 18336), (22, 18417), (30, 18474), (35, 18522), (40, 18573), (41, 18576), (50, 18669), (52, 18684), (58, 18726), (70, 18894), (83, 19047), (90, 19140), (91, 19143),

Gene: Boneham\_23 Start: 18164, Stop: 19183, Start Num: 1

Candidate Starts for Boneham\_23:

(Start: 1 @18164 has 70 MA's), (7, 18257), (9, 18278), (12, 18299), (14, 18335), (22, 18416), (30, 18473), (35, 18521), (40, 18572), (41, 18575), (50, 18668), (52, 18683), (58, 18725), (70, 18893), (83, 19046), (90, 19139), (91, 19142),

Gene: Breezic\_23 Start: 18173, Stop: 19192, Start Num: 1

Candidate Starts for Breezic\_23:

(Start: 1 @18173 has 70 MA's), (7, 18266), (9, 18287), (12, 18308), (14, 18344), (22, 18425), (30, 18482), (35, 18530), (40, 18581), (41, 18584), (50, 18677), (52, 18692), (58, 18734), (70, 18902), (83, 19055), (90, 19148), (91, 19151),

Gene: Butterball\_23 Start: 18164, Stop: 19183, Start Num: 1

Candidate Starts for Butterball\_23:

(Start: 1 @18164 has 70 MA's), (7, 18257), (9, 18278), (12, 18299), (14, 18335), (22, 18416), (30, 18473), (35, 18521), (40, 18572), (41, 18575), (50, 18668), (52, 18683), (58, 18725), (70, 18893), (83, 19046), (90, 19139), (91, 19142),

Gene: Camerico\_21 Start: 17528, Stop: 18556, Start Num: 1

Candidate Starts for Camerico\_21:

(Start: 1 @17528 has 70 MA's), (12, 17663), (15, 17714), (16, 17723), (19, 17747), (24, 17807), (29, 17831), (38, 17936), (42, 17963), (46, 18005), (64, 18197), (65, 18206), (67, 18239), (70, 18269), (73, 18308), (86, 18479), (92, 18521), (97, 18551),

Gene: CathyBurgh\_23 Start: 19027, Stop: 20046, Start Num: 1

Candidate Starts for CathyBurgh\_23:

(Start: 1 @19027 has 70 MA's), (7, 19120), (9, 19141), (12, 19162), (14, 19198), (22, 19279), (30, 19336), (35, 19384), (40, 19435), (41, 19438), (50, 19531), (52, 19546), (58, 19588), (70, 19756), (83, 19909), (90, 20002), (91, 20005),

Gene: Charianelly\_20 Start: 18887, Stop: 19906, Start Num: 1

Candidate Starts for Charianelly\_20:

(Start: 1 @18887 has 70 MA's), (7, 18980), (9, 19001), (12, 19022), (32, 19229), (35, 19244), (40, 19295), (50, 19391), (52, 19406), (58, 19448), (70, 19616), (83, 19769), (85, 19823), (88, 19838), (91, 19865), (96, 19898),

Gene: Chelms\_23 Start: 18177, Stop: 19196, Start Num: 1

Candidate Starts for Chelms\_23:

(Start: 1 @18177 has 70 MA's), (7, 18270), (9, 18291), (12, 18312), (22, 18429), (35, 18534), (40, 18585), (41, 18588), (50, 18681), (52, 18696), (58, 18738), (70, 18906), (83, 19059), (91, 19155),

Gene: Dakiti\_23 Start: 19045, Stop: 20064, Start Num: 1

Candidate Starts for Dakiti\_23:

(Start: 1 @19045 has 70 MA's), (7, 19138), (9, 19159), (12, 19180), (22, 19297), (35, 19402), (40, 19453), (41, 19456), (50, 19549), (52, 19564), (58, 19606), (70, 19774), (83, 19927), (91, 20023),

Gene: Damp\_20 Start: 18051, Stop: 19070, Start Num: 1

Candidate Starts for Damp\_20:

(Start: 1 @18051 has 70 MA's), (7, 18144), (9, 18165), (12, 18186), (32, 18393), (35, 18408), (40, 18459), (50, 18555), (52, 18570), (58, 18612), (70, 18780), (83, 18933), (85, 18987), (88, 19002), (91, 19029), (96, 19062),

Gene: Demosthenes\_23 Start: 20740, Stop: 21759, Start Num: 1

Candidate Starts for Demosthenes\_23:

(Start: 1 @20740 has 70 MA's), (5, 20812), (7, 20833), (12, 20875), (28, 21034), (36, 21130), (40, 21148), (49, 21235), (59, 21304), (63, 21382), (65, 21406), (67, 21439), (70, 21469), (94, 21730),

Gene: Diabla\_22 Start: 17990, Stop: 19009, Start Num: 1

Candidate Starts for Diabla\_22:

(Start: 1 @17990 has 70 MA's), (7, 18083), (9, 18104), (12, 18125), (14, 18161), (22, 18242), (30, 18299), (35, 18347), (40, 18398), (41, 18401), (50, 18494), (52, 18509), (58, 18551), (70, 18719), (83, 18872), (85, 18926), (90, 18965), (91, 18968),

Gene: DocB7\_019 Start: 15877, Stop: 16893, Start Num: 1

Candidate Starts for DocB7\_019:

(Start: 1 @15877 has 70 MA's), (6, 15964), (9, 15991), (13, 16030), (14, 16048), (23, 16153), (37, 16267), (54, 16411), (56, 16417), (66, 16567), (67, 16573), (70, 16603), (79, 16732), (86, 16816),

Gene: Eggsie\_24 Start: 18185, Stop: 19204, Start Num: 1

Candidate Starts for Eggsie\_24:

(Start: 1 @18185 has 70 MA's), (7, 18278), (9, 18299), (12, 18320), (14, 18356), (22, 18437), (30, 18494), (35, 18542), (40, 18593), (41, 18596), (50, 18689), (52, 18704), (58, 18746), (70, 18914), (83, 19067), (85, 19121), (90, 19160), (91, 19163),

Gene: Ekhein\_23 Start: 18155, Stop: 19174, Start Num: 1

Candidate Starts for Ekhein\_23:

(Start: 1 @18155 has 70 MA's), (7, 18248), (9, 18269), (12, 18290), (14, 18326), (22, 18407), (30, 18464), (35, 18512), (40, 18563), (41, 18566), (50, 18659), (52, 18674), (58, 18716), (70, 18884), (72, 18920), (83, 19037), (90, 19130), (91, 19133),

Gene: Exiguo\_23 Start: 18167, Stop: 19186, Start Num: 1

Candidate Starts for Exiguo\_23:

(Start: 1 @18167 has 70 MA's), (7, 18260), (9, 18281), (12, 18302), (14, 18338), (22, 18419), (30, 18476), (35, 18524), (40, 18575), (41, 18578), (50, 18671), (52, 18686), (58, 18728), (70, 18896), (83, 19049), (90, 19142), (91, 19145),

Gene: FelixAlejandro\_24 Start: 18362, Stop: 19381, Start Num: 1

Candidate Starts for FelixAlejandro\_24:

(Start: 1 @18362 has 70 MA's), (7, 18455), (9, 18476), (12, 18497), (14, 18533), (22, 18614), (30, 18671), (35, 18719), (40, 18770), (41, 18773), (50, 18866), (52, 18881), (58, 18923), (70, 19091), (79, 19220), (83, 19244), (90, 19337), (91, 19340),

Gene: Flakey\_23 Start: 19031, Stop: 20050, Start Num: 1

Candidate Starts for Flakey\_23:

(Start: 1 @19031 has 70 MA's), (7, 19124), (9, 19145), (12, 19166), (14, 19202), (22, 19283), (30, 19340), (35, 19388), (40, 19439), (41, 19442), (50, 19535), (52, 19550), (58, 19592), (70, 19760), (83,

19913), (90, 20006), (91, 20009),

Gene: GMA3\_13 Start: 12749, Stop: 13774, Start Num: 1

Candidate Starts for GMA3\_13:

(Start: 1 @12749 has 70 MA's), (12, 12884), (15, 12935), (19, 12968), (35, 13115), (42, 13184), (46, 13226), (48, 13241), (65, 13424), (67, 13457), (69, 13484), (70, 13487), (77, 13565), (78, 13601), (87, 13703), (94, 13745),

Gene: GMA7\_16 Start: 12271, Stop: 13290, Start Num: 1

Candidate Starts for GMA7\_16:

(Start: 1 @12271 has 70 MA's), (7, 12364), (9, 12385), (12, 12406), (14, 12442), (40, 12679), (41, 12682), (56, 12814), (69, 12997), (70, 13000), (83, 13153), (85, 13207), (90, 13246), (91, 13249),

Gene: GTE7\_16 Start: 12330, Stop: 13349, Start Num: 1

Candidate Starts for GTE7\_16:

(Start: 1 @12330 has 70 MA's), (7, 12423), (9, 12444), (12, 12465), (14, 12501), (40, 12738), (41, 12741), (56, 12873), (69, 13056), (70, 13059), (83, 13212), (85, 13266), (90, 13305), (91, 13308),

Gene: GalacticEye\_20 Start: 18858, Stop: 19877, Start Num: 1

Candidate Starts for GalacticEye\_20:

(Start: 1 @18858 has 70 MA's), (7, 18951), (9, 18972), (12, 18993), (32, 19200), (35, 19215), (40, 19266), (50, 19362), (52, 19377), (58, 19419), (70, 19587), (83, 19740), (85, 19794), (88, 19809), (91, 19836), (96, 19869),

Gene: Gibbles\_20 Start: 16271, Stop: 17293, Start Num: 1

Candidate Starts for Gibbles\_20:

(Start: 1 @16271 has 70 MA's), (8, 16370), (12, 16406), (19, 16490), (27, 16562), (33, 16622), (40, 16682), (45, 16736), (48, 16757), (53, 16796), (56, 16817), (63, 16916), (64, 16931), (65, 16940), (67, 16973), (69, 17000), (70, 17003), (86, 17216),

Gene: Gmala1\_13 Start: 12596, Stop: 13621, Start Num: 1

Candidate Starts for Gmala1\_13:

(Start: 1 @12596 has 70 MA's), (19, 12815), (42, 13031), (46, 13073), (48, 13088), (54, 13142), (61, 13208), (65, 13271), (67, 13304), (70, 13334), (77, 13412), (87, 13550),

Gene: GordDuk1\_13 Start: 12536, Stop: 13561, Start Num: 1

Candidate Starts for GordDuk1\_13:

(Start: 1 @12536 has 70 MA's), (19, 12755), (42, 12971), (46, 13013), (48, 13028), (54, 13082), (65, 13211), (67, 13244), (70, 13274), (77, 13352), (80, 13406), (87, 13490),

Gene: GordTnk2\_13 Start: 12503, Stop: 13528, Start Num: 1

Candidate Starts for GordTnk2\_13:

(Start: 1 @12503 has 70 MA's), (19, 12722), (42, 12938), (46, 12980), (48, 12995), (54, 13049), (65, 13178), (67, 13211), (70, 13241), (77, 13319), (80, 13373), (87, 13457),

Gene: Gorko\_23 Start: 18159, Stop: 19178, Start Num: 1

Candidate Starts for Gorko\_23:

(Start: 1 @18159 has 70 MA's), (7, 18252), (9, 18273), (12, 18294), (14, 18330), (22, 18411), (30, 18468), (35, 18516), (40, 18567), (41, 18570), (50, 18663), (52, 18678), (58, 18720), (70, 18888), (83, 19041), (90, 19134), (91, 19137),

Gene: GourdThymes\_23 Start: 19027, Stop: 20046, Start Num: 1

Candidate Starts for GourdThymes\_23:



(Start: 1 @19027 has 70 MA's), (7, 19120), (9, 19141), (12, 19162), (14, 19198), (22, 19279), (30, 19336), (35, 19384), (40, 19435), (41, 19438), (50, 19531), (52, 19546), (58, 19588), (70, 19756), (83, 19909), (90, 20002), (91, 20005),

Gene: Guillaume\_20 Start: 18908, Stop: 19927, Start Num: 1

Candidate Starts for Guillaume\_20:

(Start: 1 @18908 has 70 MA's), (7, 19001), (9, 19022), (12, 19043), (32, 19250), (35, 19265), (40, 19316), (50, 19412), (52, 19427), (58, 19469), (70, 19637), (83, 19790), (85, 19844), (88, 19859), (91, 19886), (96, 19919),

Gene: Hail2Pitt\_20 Start: 19385, Stop: 20404, Start Num: 1

Candidate Starts for Hail2Pitt\_20:

(Start: 1 @19385 has 70 MA's), (7, 19478), (9, 19499), (12, 19520), (32, 19727), (35, 19742), (40, 19793), (50, 19889), (52, 19904), (58, 19946), (70, 20114), (83, 20267), (85, 20321), (88, 20336), (91, 20363), (96, 20396),

Gene: Harambe\_20 Start: 19169, Stop: 20188, Start Num: 1

Candidate Starts for Harambe\_20:

(Start: 1 @19169 has 70 MA's), (7, 19262), (9, 19283), (12, 19304), (32, 19511), (35, 19526), (40, 19577), (50, 19673), (52, 19688), (58, 19730), (70, 19898), (83, 20051), (85, 20105), (88, 20120), (91, 20147), (96, 20180),

Gene: HayZem\_24 Start: 18082, Stop: 19101, Start Num: 1

Candidate Starts for HayZem\_24:

(Start: 1 @18082 has 70 MA's), (7, 18175), (9, 18196), (12, 18217), (14, 18253), (40, 18490), (41, 18493), (56, 18625), (69, 18808), (70, 18811), (83, 18964), (85, 19018), (90, 19057), (91, 19060),

Gene: Hello\_20 Start: 19137, Stop: 20156, Start Num: 1

Candidate Starts for Hello\_20:

(Start: 1 @19137 has 70 MA's), (7, 19230), (9, 19251), (12, 19272), (32, 19479), (35, 19494), (40, 19545), (50, 19641), (52, 19656), (58, 19698), (70, 19866), (83, 20019), (85, 20073), (88, 20088), (91, 20115), (96, 20148),

Gene: Hollow\_23 Start: 19994, Stop: 21013, Start Num: 1

Candidate Starts for Hollow\_23:

(Start: 1 @19994 has 70 MA's), (5, 20066), (7, 20087), (12, 20129), (36, 20384), (40, 20402), (49, 20489), (59, 20558), (63, 20636), (65, 20660), (67, 20693), (70, 20723), (94, 20984),

Gene: Hotorobo\_23 Start: 19038, Stop: 20057, Start Num: 1

Candidate Starts for Hotorobo\_23:

(Start: 1 @19038 has 70 MA's), (7, 19131), (9, 19152), (12, 19173), (14, 19209), (22, 19290), (30, 19347), (35, 19395), (40, 19446), (41, 19449), (50, 19542), (52, 19557), (58, 19599), (70, 19767), (83, 19920), (90, 20013), (91, 20016),

Gene: Jams\_20 Start: 18331, Stop: 19350, Start Num: 1

Candidate Starts for Jams\_20:

(Start: 1 @18331 has 70 MA's), (7, 18424), (9, 18445), (12, 18466), (32, 18673), (35, 18688), (40, 18739), (50, 18835), (52, 18850), (58, 18892), (70, 19060), (83, 19213), (85, 19267), (88, 19282), (91, 19309), (96, 19342),

Gene: Jellybones\_23 Start: 18199, Stop: 19218, Start Num: 1

Candidate Starts for Jellybones\_23:

(Start: 1 @18199 has 70 MA's), (7, 18292), (9, 18313), (12, 18334), (14, 18370), (22, 18451), (30, 18508), (35, 18556), (40, 18607), (41, 18610), (50, 18703), (52, 18718), (58, 18760), (70, 18928), (83, 19081), (84, 19123), (90, 19174), (91, 19177),

Gene: John316\_23 Start: 18155, Stop: 19174, Start Num: 1

Candidate Starts for John316\_23:

(Start: 1 @18155 has 70 MA's), (7, 18248), (9, 18269), (12, 18290), (14, 18326), (22, 18407), (30, 18464), (35, 18512), (40, 18563), (41, 18566), (50, 18659), (52, 18674), (58, 18716), (70, 18884), (83, 19037), (90, 19130), (91, 19133),

Gene: Jormungandr\_20 Start: 18890, Stop: 19909, Start Num: 1

Candidate Starts for Jormungandr\_20:

(Start: 1 @18890 has 70 MA's), (7, 18983), (9, 19004), (12, 19025), (32, 19232), (35, 19247), (40, 19298), (50, 19394), (52, 19409), (58, 19451), (70, 19619), (83, 19772), (85, 19826), (88, 19841), (91, 19868), (96, 19901),

Gene: Jumbo\_18 Start: 17409, Stop: 18440, Start Num: 1

Candidate Starts for Jumbo\_18:

(Start: 1 @17409 has 70 MA's), (2, 17448), (19, 17628), (21, 17658), (26, 17697), (40, 17826), (46, 17886), (48, 17901), (54, 17955), (62, 18030), (65, 18084), (67, 18117), (70, 18147), (77, 18225), (86, 18357), (87, 18363), (88, 18366),

Gene: Kampe\_21 Start: 16129, Stop: 17151, Start Num: 1

Candidate Starts for Kampe\_21:

(Start: 1 @16129 has 70 MA's), (8, 16228), (12, 16264), (19, 16348), (27, 16420), (33, 16480), (40, 16540), (45, 16594), (48, 16615), (53, 16654), (56, 16675), (63, 16774), (64, 16789), (65, 16798), (67, 16831), (69, 16858), (70, 16861), (86, 17074),

Gene: Kaseim\_20 Start: 18322, Stop: 19341, Start Num: 1

Candidate Starts for Kaseim\_20:

(Start: 1 @18322 has 70 MA's), (7, 18415), (9, 18436), (12, 18457), (32, 18664), (35, 18679), (40, 18730), (50, 18826), (52, 18841), (58, 18883), (70, 19051), (83, 19204), (85, 19258), (88, 19273), (91, 19300), (96, 19333),

Gene: Katyusha\_23 Start: 20846, Stop: 21865, Start Num: 1

Candidate Starts for Katyusha\_23:

(Start: 1 @20846 has 70 MA's), (7, 20939), (12, 20981), (18, 21059), (28, 21140), (36, 21236), (40, 21254), (59, 21410), (63, 21488), (67, 21545), (70, 21575), (94, 21836),

Gene: Kvothe\_23 Start: 20766, Stop: 21785, Start Num: 1

Candidate Starts for Kvothe\_23:

(Start: 1 @20766 has 70 MA's), (7, 20859), (12, 20901), (28, 21060), (36, 21156), (40, 21174), (59, 21330), (63, 21408), (67, 21465), (70, 21495), (94, 21756),

Gene: Lahirium\_20 Start: 19406, Stop: 20425, Start Num: 1

Candidate Starts for Lahirium\_20:

(Start: 1 @19406 has 70 MA's), (7, 19499), (9, 19520), (12, 19541), (32, 19748), (35, 19763), (40, 19814), (50, 19910), (52, 19925), (58, 19967), (70, 20135), (83, 20288), (85, 20342), (88, 20357), (91, 20384), (96, 20417),

Gene: Lidong\_20 Start: 19137, Stop: 20156, Start Num: 1

Candidate Starts for Lidong\_20:

(Start: 1 @19137 has 70 MA's), (7, 19230), (9, 19251), (12, 19272), (32, 19479), (35, 19494), (40, 19545), (50, 19641), (52, 19656), (58, 19698), (70, 19866), (83, 20019), (85, 20073), (88, 20088), (91, 20115), (96, 20148),

Gene: Linetti\_24 Start: 19194, Stop: 20213, Start Num: 1

Candidate Starts for Linetti\_24:

(Start: 1 @19194 has 70 MA's), (7, 19287), (9, 19308), (12, 19329), (22, 19446), (35, 19551), (40, 19602), (41, 19605), (50, 19698), (52, 19713), (58, 19755), (70, 19923), (83, 20076), (91, 20172),

Gene: Lizzo\_23 Start: 19027, Stop: 20046, Start Num: 1

Candidate Starts for Lizzo\_23:

(Start: 1 @19027 has 70 MA's), (7, 19120), (9, 19141), (12, 19162), (14, 19198), (22, 19279), (30, 19336), (35, 19384), (40, 19435), (41, 19438), (50, 19531), (52, 19546), (58, 19588), (70, 19756), (83, 19909), (90, 20002), (91, 20005),

Gene: Luker\_20 Start: 18870, Stop: 19889, Start Num: 1

Candidate Starts for Luker\_20:

(Start: 1 @18870 has 70 MA's), (7, 18963), (9, 18984), (12, 19005), (35, 19227), (40, 19278), (51, 19380), (58, 19431), (70, 19599), (83, 19752), (85, 19806), (90, 19845), (91, 19848), (96, 19881),

Gene: Mbo2\_19 Start: 12265, Stop: 13293, Start Num: 1

Candidate Starts for Mbo2\_19:

(Start: 1 @12265 has 70 MA's), (3, 12316), (4, 12331), (11, 12406), (17, 12472), (35, 12622), (39, 12670), (40, 12673), (41, 12676), (44, 12721), (47, 12745), (50, 12769), (55, 12805), (60, 12841), (67, 12964), (70, 12994), (85, 13201), (86, 13207), (91, 13243), (93, 13252),

Gene: Minos\_20 Start: 18879, Stop: 19898, Start Num: 1

Candidate Starts for Minos\_20:

(Start: 1 @18879 has 70 MA's), (7, 18972), (9, 18993), (12, 19014), (32, 19221), (35, 19236), (40, 19287), (50, 19383), (52, 19398), (58, 19440), (70, 19608), (83, 19761), (85, 19815), (88, 19830), (91, 19857), (96, 19890),

Gene: Monty\_22 Start: 18171, Stop: 19190, Start Num: 1

Candidate Starts for Monty\_22:

(Start: 1 @18171 has 70 MA's), (7, 18264), (9, 18285), (12, 18306), (14, 18342), (22, 18423), (30, 18480), (35, 18528), (40, 18579), (41, 18582), (50, 18675), (52, 18690), (58, 18732), (70, 18900), (83, 19053), (90, 19146), (91, 19149),

Gene: MrWormie\_20 Start: 18040, Stop: 19059, Start Num: 1

Candidate Starts for MrWormie\_20:

(Start: 1 @18040 has 70 MA's), (7, 18133), (9, 18154), (12, 18175), (32, 18382), (35, 18397), (40, 18448), (50, 18544), (52, 18559), (58, 18601), (70, 18769), (83, 18922), (85, 18976), (88, 18991), (91, 19018), (96, 19051),

Gene: Msay19\_24 Start: 18354, Stop: 19373, Start Num: 1

Candidate Starts for Msay19\_24:

(Start: 1 @18354 has 70 MA's), (7, 18447), (9, 18468), (12, 18489), (14, 18525), (22, 18606), (30, 18663), (35, 18711), (40, 18762), (41, 18765), (50, 18858), (52, 18873), (58, 18915), (70, 19083), (83, 19236), (90, 19329), (91, 19332),

Gene: Neoevie\_20 Start: 19146, Stop: 20165, Start Num: 1

Candidate Starts for Neoevie\_20:

(Start: 1 @19146 has 70 MA's), (7, 19239), (9, 19260), (12, 19281), (32, 19488), (35, 19503), (40, 19554), (50, 19650), (52, 19665), (58, 19707), (70, 19875), (83, 20028), (85, 20082), (88, 20097), (91, 20124), (96, 20157),

Gene: Newt\_20 Start: 18887, Stop: 19906, Start Num: 1

Candidate Starts for Newt\_20:

(Start: 1 @18887 has 70 MA's), (7, 18980), (9, 19001), (12, 19022), (32, 19229), (35, 19244), (40, 19295), (50, 19391), (52, 19406), (58, 19448), (70, 19616), (83, 19769), (85, 19823), (88, 19838), (91, 19865), (96, 19898),

Gene: Niagara\_23 Start: 20803, Stop: 21822, Start Num: 1

Candidate Starts for Niagara\_23:

(Start: 1 @20803 has 70 MA's), (7, 20896), (12, 20938), (18, 21016), (28, 21097), (36, 21193), (40, 21211), (59, 21367), (63, 21445), (67, 21502), (70, 21532),

Gene: Nimi13\_20 Start: 18888, Stop: 19907, Start Num: 1

Candidate Starts for Nimi13\_20:

(Start: 1 @18888 has 70 MA's), (7, 18981), (9, 19002), (12, 19023), (32, 19230), (35, 19245), (40, 19296), (50, 19392), (52, 19407), (58, 19449), (70, 19617), (83, 19770), (85, 19824), (88, 19839), (91, 19866), (96, 19899),

Gene: Orchid\_21 Start: 16129, Stop: 17151, Start Num: 1

Candidate Starts for Orchid\_21:

(Start: 1 @16129 has 70 MA's), (8, 16228), (12, 16264), (19, 16348), (27, 16420), (33, 16480), (40, 16540), (45, 16594), (48, 16615), (53, 16654), (56, 16675), (63, 16774), (64, 16789), (65, 16798), (67, 16831), (69, 16858), (70, 16861), (86, 17074),

Gene: PatrickStar\_21 Start: 16129, Stop: 17151, Start Num: 1

Candidate Starts for PatrickStar\_21:

(Start: 1 @16129 has 70 MA's), (8, 16228), (12, 16264), (19, 16348), (27, 16420), (33, 16480), (40, 16540), (45, 16594), (48, 16615), (53, 16654), (56, 16675), (63, 16774), (64, 16789), (65, 16798), (67, 16831), (69, 16858), (70, 16861), (86, 17074),

Gene: Philon9\_25 Start: 22606, Stop: 23625, Start Num: 1

Candidate Starts for Philon9\_25:

(Start: 1 @22606 has 70 MA's), (7, 22699), (10, 22732), (12, 22741), (36, 22996), (40, 23014), (45, 23068), (49, 23101), (50, 23110), (51, 23116), (59, 23170), (63, 23248), (70, 23335), (85, 23542), (88, 23557), (91, 23584),

Gene: PierreThree\_23 Start: 19045, Stop: 20064, Start Num: 1

Candidate Starts for PierreThree\_23:

(Start: 1 @19045 has 70 MA's), (7, 19138), (9, 19159), (12, 19180), (22, 19297), (35, 19402), (40, 19453), (41, 19456), (50, 19549), (52, 19564), (58, 19606), (70, 19774), (83, 19927), (91, 20023),

Gene: PokyPuppy\_22 Start: 18923, Stop: 19942, Start Num: 1

Candidate Starts for PokyPuppy\_22:

(Start: 1 @18923 has 70 MA's), (7, 19016), (9, 19037), (12, 19058), (14, 19094), (22, 19175), (35, 19280), (40, 19331), (41, 19334), (50, 19427), (56, 19466), (58, 19484), (70, 19652), (83, 19805), (85, 19859), (90, 19898), (91, 19901),

Gene: Poland\_26 Start: 18330, Stop: 19349, Start Num: 1

Candidate Starts for Poland\_26:

(Start: 1 @18330 has 70 MA's), (7, 18423), (9, 18444), (12, 18465), (14, 18501), (22, 18582), (30, 18639), (35, 18687), (40, 18738), (41, 18741), (50, 18834), (52, 18849), (58, 18891), (70, 19059), (83, 19212), (90, 19305), (91, 19308),

Gene: RemRem\_24 Start: 18167, Stop: 19186, Start Num: 1

Candidate Starts for RemRem\_24:

(Start: 1 @18167 has 70 MA's), (7, 18260), (9, 18281), (12, 18302), (14, 18338), (22, 18419), (30, 18476), (35, 18524), (40, 18575), (41, 18578), (50, 18671), (52, 18686), (58, 18728), (70, 18896), (83, 19049), (90, 19142), (91, 19145),

Gene: Reynauld\_27 Start: 19061, Stop: 20089, Start Num: 1

Candidate Starts for Reynauld\_27:

(Start: 1 @19061 has 70 MA's), (19, 19286), (20, 19292), (25, 19349), (32, 19409), (34, 19418), (35, 19424), (40, 19475), (41, 19478), (44, 19523), (56, 19610), (68, 19772), (70, 19796), (71, 19808), (75, 19868), (76, 19871), (83, 19952), (89, 20039), (91, 20048), (95, 20063),

Gene: RobinSparkles\_24 Start: 16740, Stop: 17762, Start Num: 1

Candidate Starts for RobinSparkles\_24:

(Start: 1 @16740 has 70 MA's), (8, 16839), (12, 16875), (19, 16959), (27, 17031), (33, 17091), (40, 17151), (45, 17205), (48, 17226), (53, 17265), (56, 17286), (63, 17385), (64, 17400), (65, 17409), (67, 17442), (69, 17469), (70, 17472), (86, 17685),

Gene: RoyalG\_24 Start: 18667, Stop: 19686, Start Num: 1

Candidate Starts for RoyalG\_24:

(Start: 1 @18667 has 70 MA's), (7, 18760), (9, 18781), (12, 18802), (14, 18838), (22, 18919), (30, 18976), (35, 19024), (40, 19075), (41, 19078), (50, 19171), (52, 19186), (58, 19228), (70, 19396), (83, 19549), (85, 19603), (90, 19642), (91, 19645),

Gene: Sam12\_23 Start: 18167, Stop: 19186, Start Num: 1

Candidate Starts for Sam12\_23:

(Start: 1 @18167 has 70 MA's), (7, 18260), (9, 18281), (12, 18302), (14, 18338), (22, 18419), (30, 18476), (35, 18524), (40, 18575), (41, 18578), (50, 18671), (52, 18686), (58, 18728), (70, 18896), (83, 19049), (90, 19142), (91, 19145),

Gene: Shelley\_20 Start: 18364, Stop: 19383, Start Num: 1

Candidate Starts for Shelley\_20:

(Start: 1 @18364 has 70 MA's), (7, 18457), (9, 18478), (12, 18499), (32, 18706), (35, 18721), (40, 18772), (50, 18868), (52, 18883), (58, 18925), (70, 19093), (83, 19246), (85, 19300), (88, 19315), (91, 19342), (96, 19375),

Gene: Sombrero\_23 Start: 18208, Stop: 19227, Start Num: 1

Candidate Starts for Sombrero\_23:

(Start: 1 @18208 has 70 MA's), (7, 18301), (9, 18322), (12, 18343), (14, 18379), (22, 18460), (30, 18517), (35, 18565), (40, 18616), (41, 18619), (50, 18712), (52, 18727), (58, 18769), (70, 18937), (79, 19066), (83, 19090), (90, 19183), (91, 19186),

Gene: Squibbles\_23 Start: 19030, Stop: 20049, Start Num: 1

Candidate Starts for Squibbles\_23:

(Start: 1 @19030 has 70 MA's), (7, 19123), (9, 19144), (12, 19165), (14, 19201), (22, 19282), (30, 19339), (35, 19387), (40, 19438), (41, 19441), (50, 19534), (52, 19549), (58, 19591), (70, 19759), (83, 19912), (90, 20005), (91, 20008),

Gene: SteveFrench\_23 Start: 18863, Stop: 19882, Start Num: 1

Candidate Starts for SteveFrench\_23:

(Start: 1 @18863 has 70 MA's), (7, 18956), (9, 18977), (12, 18998), (14, 19034), (22, 19115), (30, 19172), (35, 19220), (40, 19271), (41, 19274), (50, 19367), (52, 19382), (58, 19424), (70, 19592), (83, 19745), (85, 19799), (90, 19838), (91, 19841),

Gene: Sticker17\_20 Start: 18887, Stop: 19906, Start Num: 1

Candidate Starts for Sticker17\_20:

(Start: 1 @18887 has 70 MA's), (7, 18980), (9, 19001), (12, 19022), (32, 19229), (35, 19244), (40, 19295), (50, 19391), (52, 19406), (58, 19448), (70, 19616), (83, 19769), (85, 19823), (88, 19838), (91, 19865), (96, 19898),

Gene: Teal\_20 Start: 18864, Stop: 19883, Start Num: 1

Candidate Starts for Teal\_20:

(Start: 1 @18864 has 70 MA's), (7, 18957), (9, 18978), (12, 18999), (32, 19206), (35, 19221), (40, 19272), (50, 19368), (52, 19383), (58, 19425), (70, 19593), (83, 19746), (85, 19800), (88, 19815), (91, 19842), (96, 19875),

Gene: Teatealatte\_23 Start: 20748, Stop: 21767, Start Num: 1

Candidate Starts for Teatealatte\_23:

(Start: 1 @20748 has 70 MA's), (7, 20841), (12, 20883), (36, 21138), (40, 21156), (49, 21243), (59, 21312), (63, 21390), (67, 21447), (70, 21477), (94, 21738),

Gene: Teech\_23 Start: 20549, Stop: 21568, Start Num: 1

Candidate Starts for Teech\_23:

(Start: 1 @20549 has 70 MA's), (7, 20642), (12, 20684), (28, 20843), (36, 20939), (40, 20957), (49, 21044), (59, 21113), (61, 21152), (63, 21191), (67, 21248), (70, 21278),

Gene: Tredge\_23 Start: 20748, Stop: 21767, Start Num: 1

Candidate Starts for Tredge\_23:

(Start: 1 @20748 has 70 MA's), (7, 20841), (12, 20883), (36, 21138), (40, 21156), (49, 21243), (59, 21312), (63, 21390), (67, 21447), (70, 21477), (94, 21738),

Gene: Trogglehumper\_41 Start: 25455, Stop: 26468, Start Num: 1

Candidate Starts for Trogglehumper\_41:

(Start: 1 @25455 has 70 MA's), (7, 25551), (9, 25572), (19, 25677), (31, 25779), (34, 25800), (35, 25806), (40, 25857), (43, 25899), (46, 25917), (57, 26004), (67, 26148), (74, 26244), (77, 26256), (81, 26319), (82, 26328), (83, 26331), (91, 26427), (93, 26436),

Gene: Woes\_20 Start: 19398, Stop: 20417, Start Num: 1

Candidate Starts for Woes\_20:

(Start: 1 @19398 has 70 MA's), (7, 19491), (9, 19512), (12, 19533), (32, 19740), (35, 19755), (40, 19806), (50, 19902), (52, 19917), (58, 19959), (70, 20127), (83, 20280), (85, 20334), (88, 20349), (91, 20376), (96, 20409),