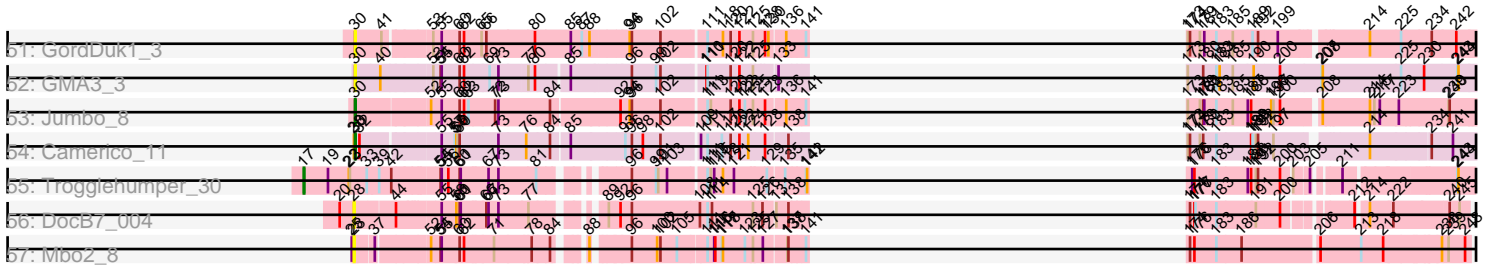




Pham 304885



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 304885 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304885 has 99 members, 14 are drafts.

Phages represented in each track:

- Track 1 : Srilaccoli3\_14
- Track 2 : Reynauld\_16
- Track 3 : GMA7\_3
- Track 4 : Austin\_12, HayZem\_12, Amore2\_12
- Track 5 : GTE7\_3
- Track 6 : Chelms\_11
- Track 7 : SteveFrench\_10
- Track 8 : Flakey\_11, Barbochs\_11, Gorko\_11, Breezic\_11
- Track 9 : Boneham\_11, Butterball\_11, BirksAndSocks\_11, BillyBobJr\_12, CinnamonToast\_12
- Track 10 : Diabla\_10
- Track 11 : Ekhein\_11, Lizzo\_11, CathyBurgh\_11, Exiguo\_11, Beaver\_11, Squibbles\_11, Sam12\_11
- Track 12 : RoyalG\_12
- Track 13 : Monty\_10, Hotorobo\_11
- Track 14 : Eggsie\_11
- Track 15 : John316\_11, Jellybones\_11
- Track 16 : Sombrero\_11
- Track 17 : BenoitCattle\_11, PierreThree\_11, Dakiti\_11, Linetti\_12
- Track 18 : Crete\_12, BigShaq\_11
- Track 19 : Msay19\_12, Poland\_12
- Track 20 : FelixAlejandro\_12
- Track 21 : Kelzog\_11
- Track 22 : GourdThymes\_11
- Track 23 : PokyPuppy\_10
- Track 24 : Adgers\_12
- Track 25 : Worcestershire\_11
- Track 26 : RemRem\_12
- Track 27 : Nimi13\_8
- Track 28 : Lidong\_8, GalacticEye\_8, Berries\_8, Minos\_8, Charianelly\_8
- Track 29 : Bianmat\_8, Neoevie\_8, Guillaume\_8, Newt\_8, Teal\_8, Jormungandr\_8, Harambe\_8, Luker\_8
- Track 30 : Hello\_8
- Track 31 : Lahirium\_8, Woes\_8, Hail2Pitt\_8
- Track 32 : Sticker17\_8
- Track 33 : Anamika\_8
- Track 34 : Damp\_8

- Track 35 : MrWormie\_8
- Track 36 : Shelley\_8, Kaseim\_8
- Track 37 : Jams\_8
- Track 38 : Kvothe\_11, Benczkowski14\_11, Katyusha\_11
- Track 39 : Niagara\_11
- Track 40 : Vitaenoi\_11
- Track 41 : Teech\_11
- Track 42 : Demosthenes\_11
- Track 43 : Teatealatte\_11, Tredge\_11
- Track 44 : Philon9\_11
- Track 45 : ASerpRocky\_11
- Track 46 : Hollow\_11
- Track 47 : Kampe\_11, PatrickStar\_11, Orchid\_11, Gibbles\_10
- Track 48 : RobinSparkles\_15
- Track 49 : Gmala1\_3
- Track 50 : GordTnk2\_3
- Track 51 : GordDuk1\_3
- Track 52 : GMA3\_3
- Track 53 : Jumbo\_8
- Track 54 : Camerico\_11
- Track 55 : Trogglehumper\_30
- Track 56 : DocB7\_004
- Track 57 : Mbo2\_8

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

The start number called the most often in the published annotations is 28, it was called in 64 of the 85 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Adgers\_12, Amore2\_12, Anamika\_8, Austin\_12, Barbochs\_11, Beaver\_11, BenoitCattle\_11, Berries\_8, Bianmat\_8, BigShaq\_11, BillyBobJr\_12, BirksAndSocks\_11, Boneham\_11, Breezic\_11, Butterball\_11, CathyBurgh\_11, Charianelly\_8, Chelms\_11, CinnamonToast\_12, Crete\_12, Dakiti\_11, Damp\_8, Diabla\_10, DocB7\_004, Eggsie\_11, Ekhein\_11, Exiguo\_11, FelixAlejandro\_12, Flakey\_11, GMA7\_3, GalacticEye\_8, Gorko\_11, GourdThymes\_11, Guillaume\_8, Hail2Pitt\_8, Harambe\_8, HayZem\_12, Hotorobo\_11, Jams\_8, Jellybones\_11, John316\_11, Jormungandr\_8, Kaseim\_8, Kelzog\_11, Lahirium\_8, Lidong\_8, Linetti\_12, Lizzo\_11, Luker\_8, Mbo2\_8, Minos\_8, Monty\_10, MrWormie\_8, Msay19\_12, Neoevie\_8, Newt\_8, Nimi13\_8, PierreThree\_11, PokyPuppy\_10, Poland\_12, RemRem\_12, Reynauld\_16, RoyalG\_12, Sam12\_11, Shelley\_8, Sombrero\_11, Squibbles\_11, Srilaccoli3\_14, SteveFrench\_10, Sticker17\_8, Teal\_8, Woes\_8, Worcestershire\_11,

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

- Camerico\_11, GTE7\_3, Hello\_8,

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

- ASerpRocky\_11, Benczkowski14\_11, Demosthenes\_11, GMA3\_3, Gibbles\_10, Gmala1\_3, GordDuk1\_3, GordTnk2\_3, Hollow\_11, Jumbo\_8, Kampe\_11,

Katyusha\_11, Kvothe\_11, Niagara\_11, Orchid\_11, PatrickStar\_11, Philon9\_11, RobinSparkles\_15, Teatealatte\_11, Teech\_11, Tredge\_11, Trogglehumper\_30, Vitaenoi\_11,

### Summary by start number:

#### Start 2:

- Found in 2 of 99 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Philon9\_11 (CS4), Vitaenoi\_11 (CS4),

#### Start 17:

- Found in 1 of 99 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Trogglehumper\_30 (singleton),

#### Start 27:

- Found in 5 of 99 ( 5.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 20.0% of time when present
- Phage (with cluster) where this start called: GTE7\_3 (CS1),

#### Start 28:

- Found in 76 of 99 ( 76.8% ) of genes in pham
- Manual Annotations of this start: 64 of 85
- Called 96.1% of time when present
- Phage (with cluster) where this start called: Adgers\_12 (CS2), Amore2\_12 (CS1), Anamika\_8 (CS3), Austin\_12 (CS1), Barbochs\_11 (CS2), Beaver\_11 (CS2), BenoitCattle\_11 (CS2), Berries\_8 (CS3), Bianmat\_8 (CS3), BigShaq\_11 (CS2), BillyBobJr\_12 (CS2), BirksAndSocks\_11 (CS2), Boneham\_11 (CS2), Breezic\_11 (CS2), Butterball\_11 (CS2), CathyBurgh\_11 (CS2), Charianelly\_8 (CS3), Chelms\_11 (CS2), CinnamonToast\_12 (CS2), Crete\_12 (CS2), Dakiti\_11 (CS2), Damp\_8 (CS3), Diabla\_10 (CS2), DocB7\_004 (singleton), Eggsie\_11 (CS2), Ekhein\_11 (CS2), Exiguo\_11 (CS2), FelixAlejandro\_12 (CS2), Flakey\_11 (CS2), GMA7\_3 (CS1), GalacticEye\_8 (CS3), Gorko\_11 (CS2), GourdThymes\_11 (CS2), Guillaume\_8 (CS3), Hail2Pitt\_8 (CS3), Harambe\_8 (CS3), HayZem\_12 (CS1), Hotorobo\_11 (CS2), Jams\_8 (CS3), Jellybones\_11 (CS2), John316\_11 (CS2), Jormungandr\_8 (CS3), Kaseim\_8 (CS3), Kelzog\_11 (CS2), Lahirium\_8 (CS3), Lidong\_8 (CS3), Linetti\_12 (CS2), Lizzo\_11 (CS2), Luker\_8 (CS3), Mbo2\_8 (singleton), Minos\_8 (CS3), Monty\_10 (CS2), MrWormie\_8 (CS3), Msay19\_12 (CS2), Neoevie\_8 (CS3), Newt\_8 (CS3), Nimi13\_8 (CS3), PierreThree\_11 (CS2), PokyPuppy\_10 (CS2), Poland\_12 (CS2), RemRem\_12 (CS2), Reynauld\_16 (CH), RoyalG\_12 (CS2), Sam12\_11 (CS2), Shelley\_8 (CS3), Sombrero\_11 (CS2), Squibbles\_11 (CS2), Srilaccoli3\_14 (CH), SteveFrench\_10 (CS2), Sticker17\_8 (CS3), Teal\_8 (CS3), Woes\_8 (CS3), Worcestershire\_11 (CS2),

#### Start 29:

- Found in 10 of 99 ( 10.1% ) of genes in pham
- Manual Annotations of this start: 10 of 85
- Called 100.0% of time when present

- Phage (with cluster) where this start called: ASerpRocky\_11 (CS4), Benczkowski14\_11 (CS4), Demosthenes\_11 (CS4), Hollow\_11 (CS4), Katyusha\_11 (CS4), Kvothe\_11 (CS4), Niagara\_11 (CS4), Teatealatte\_11 (CS4), Teech\_11 (CS4), Tredge\_11 (CS4),

Start 30:

- Found in 11 of 99 ( 11.1% ) of genes in pham
- Manual Annotations of this start: 7 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Camerico\_11 (DF4), GMA3\_3 (DF2), Gibbles\_10 (CX), Gmala1\_3 (DF1), GordDuk1\_3 (DF1), GordTnk2\_3 (DF1), Jumbo\_8 (DF3), Kampe\_11 (CX), Orchid\_11 (CX), PatrickStar\_11 (CX), RobinSparkles\_15 (CX),

Start 34:

- Found in 40 of 99 ( 40.4% ) of genes in pham
- Manual Annotations of this start: 1 of 85
- Called 2.5% of time when present
- Phage (with cluster) where this start called: Hello\_8 (CS3),

### Summary by clusters:

There are 11 clusters represented in this pham: singleton, CH, DF4, DF1, DF3, DF2, CX, CS4, CS1, CS3, CS2,

Info for manual annotations of cluster CH:

- Start number 28 was manually annotated 1 time for cluster CH.

Info for manual annotations of cluster CS1:

- Start number 28 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 28 was manually annotated 36 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 28 was manually annotated 24 times for cluster CS3.
- Start number 34 was manually annotated 1 time for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 2 was manually annotated 2 times for cluster CS4.
- Start number 29 was manually annotated 10 times for cluster CS4.

Info for manual annotations of cluster CX:

- Start number 30 was manually annotated 5 times for cluster CX.

Info for manual annotations of cluster DF3:

- Start number 30 was manually annotated 1 time for cluster DF3.

Info for manual annotations of cluster DF4:

- Start number 30 was manually annotated 1 time for cluster DF4.

**Gene Information:**

Gene: ASerpRocky\_11 Start: 10816, Stop: 12555, Start Num: 29

Candidate Starts for ASerpRocky\_11:

(26, 10810), (Start: 29 @10816 has 10 MA's), (Start: 34 @10849 has 1 MA's), (47, 10939), (53, 11005), (55, 11023), (57, 11059), (60, 11071), (61, 11074), (69, 11149), (72, 11164), (74, 11212), (77, 11251), (82, 11290), (88, 11353), (92, 11404), (96, 11434), (104, 11551), (111, 11623), (117, 11662), (118, 11665), (121, 11695), (123, 11725), (125, 11746), (131, 11794), (174, 11878), (176, 11890), (183, 11950), (193, 12070), (194, 12073), (204, 12136), (216, 12304), (233, 12442), (239, 12493), (248, 12538),

Gene: Adgers\_12 Start: 9331, Stop: 11055, Start Num: 28

Candidate Starts for Adgers\_12:

(Start: 28 @9331 has 64 MA's), (49, 9463), (50, 9484), (55, 9532), (60, 9580), (67, 9655), (73, 9682), (94, 9934), (96, 9940), (111, 10129), (117, 10168), (121, 10201), (125, 10252), (131, 10300), (138, 10333), (174, 10384), (176, 10396), (178, 10408), (180, 10420), (183, 10456), (195, 10588), (220, 10831), (224, 10870), (227, 10891), (228, 10900), (229, 10924), (231, 10939),

Gene: Amore2\_12 Start: 9385, Stop: 11100, Start Num: 28

Candidate Starts for Amore2\_12:

(27, 9382), (Start: 28 @9385 has 64 MA's), (Start: 34 @9418 has 1 MA's), (49, 9514), (52, 9559), (55, 9583), (60, 9631), (73, 9733), (77, 9811), (96, 9997), (111, 10186), (118, 10228), (121, 10258), (125, 10309), (131, 10357), (174, 10441), (176, 10453), (180, 10477), (183, 10513), (191, 10615), (221, 10885), (226, 10924), (230, 10978), (231, 10981),

Gene: Anamika\_8 Start: 8400, Stop: 10952, Start Num: 28

Candidate Starts for Anamika\_8:

(21, 8373), (Start: 28 @8400 has 64 MA's), (Start: 34 @8436 has 1 MA's), (47, 8517), (50, 8553), (55, 8601), (60, 8649), (73, 8751), (86, 8913), (93, 8991), (96, 9009), (104, 9126), (111, 9198), (121, 9270), (123, 9300), (124, 9309), (125, 9321), (131, 9369), (145, 9468), (146, 9474), (147, 9483), (148, 9510), (152, 9633), (153, 9690), (154, 9693), (155, 9705), (156, 9726), (161, 9900), (164, 9945), (165, 9978), (166, 9996), (168, 10035), (171, 10188), (176, 10290), (178, 10302), (180, 10314), (183, 10350), (191, 10452), (210, 10632), (220, 10728), (224, 10767), (227, 10788), (228, 10797), (229, 10821), (231, 10836), (232, 10845), (237, 10866),

Gene: Austin\_12 Start: 9385, Stop: 11100, Start Num: 28

Candidate Starts for Austin\_12:

(27, 9382), (Start: 28 @9385 has 64 MA's), (Start: 34 @9418 has 1 MA's), (49, 9514), (52, 9559), (55, 9583), (60, 9631), (73, 9733), (77, 9811), (96, 9997), (111, 10186), (118, 10228), (121, 10258), (125, 10309), (131, 10357), (174, 10441), (176, 10453), (180, 10477), (183, 10513), (191, 10615), (221, 10885), (226, 10924), (230, 10978), (231, 10981),

Gene: Barbochs\_11 Start: 9166, Stop: 10893, Start Num: 28

Candidate Starts for Barbochs\_11:

(Start: 28 @9166 has 64 MA's), (47, 9283), (49, 9298), (50, 9319), (55, 9367), (60, 9415), (62, 9427), (67, 9490), (71, 9505), (73, 9517), (74, 9556), (96, 9775), (111, 9964), (121, 10036), (125, 10087), (131, 10135), (174, 10219), (176, 10231), (178, 10243), (180, 10255), (183, 10291), (189, 10384), (195, 10423), (220, 10669), (224, 10708), (227, 10729), (228, 10738), (229, 10762), (231, 10777),

Gene: Beaver\_11 Start: 9177, Stop: 10901, Start Num: 28

Candidate Starts for Beaver\_11:

(Start: 28 @9177 has 64 MA's), (47, 9294), (49, 9309), (50, 9330), (55, 9378), (60, 9426), (67, 9501), (71, 9516), (73, 9528), (96, 9786), (111, 9975), (121, 10047), (125, 10098), (131, 10146), (174, 10230), (176, 10242), (178, 10254), (180, 10266), (183, 10302), (189, 10395), (195, 10434), (220, 10677), (224, 10716), (227, 10737), (228, 10746), (229, 10770), (231, 10785),

Gene: Benczkowski14\_11 Start: 10878, Stop: 12617, Start Num: 29

Candidate Starts for Benczkowski14\_11:

(26, 10872), (Start: 29 @10878 has 10 MA's), (Start: 34 @10911 has 1 MA's), (47, 11001), (53, 11067), (55, 11085), (57, 11121), (60, 11133), (61, 11136), (69, 11211), (72, 11226), (74, 11274), (77, 11313), (82, 11352), (88, 11415), (90, 11460), (92, 11466), (93, 11478), (96, 11496), (106, 11646), (111, 11685), (117, 11724), (118, 11727), (121, 11757), (125, 11808), (131, 11856), (174, 11940), (176, 11952), (182, 12003), (183, 12012), (193, 12132), (194, 12135), (204, 12198), (216, 12366), (233, 12504), (239, 12555), (248, 12600),

Gene: BenoitCattle\_11 Start: 9161, Stop: 10888, Start Num: 28

Candidate Starts for BenoitCattle\_11:

(Start: 28 @9161 has 64 MA's), (49, 9293), (50, 9314), (55, 9362), (60, 9410), (64, 9455), (67, 9485), (73, 9512), (74, 9551), (84, 9644), (96, 9770), (111, 9959), (121, 10031), (125, 10082), (131, 10130), (137, 10160), (174, 10214), (176, 10226), (178, 10238), (180, 10250), (183, 10286), (187, 10367), (189, 10379), (191, 10388), (220, 10664), (224, 10703), (227, 10724), (228, 10733), (229, 10757), (231, 10772),

Gene: Berries\_8 Start: 8384, Stop: 10936, Start Num: 28

Candidate Starts for Berries\_8:

(Start: 28 @8384 has 64 MA's), (Start: 34 @8420 has 1 MA's), (47, 8501), (50, 8537), (55, 8585), (60, 8633), (73, 8735), (86, 8897), (93, 8975), (96, 8993), (104, 9110), (111, 9182), (121, 9254), (123, 9284), (124, 9293), (125, 9305), (131, 9353), (137, 9383), (145, 9452), (146, 9458), (147, 9467), (148, 9494), (152, 9617), (153, 9674), (154, 9677), (155, 9689), (156, 9710), (161, 9884), (164, 9929), (165, 9962), (166, 9980), (168, 10019), (171, 10172), (176, 10274), (178, 10286), (180, 10298), (183, 10334), (191, 10436), (210, 10616), (220, 10712), (224, 10751), (227, 10772), (228, 10781), (229, 10805), (231, 10820), (232, 10829), (237, 10850),

Gene: Bianmat\_8 Start: 8407, Stop: 10959, Start Num: 28

Candidate Starts for Bianmat\_8:

(Start: 28 @8407 has 64 MA's), (Start: 34 @8443 has 1 MA's), (47, 8524), (50, 8560), (55, 8608), (60, 8656), (67, 8731), (71, 8746), (73, 8758), (84, 8890), (86, 8920), (93, 8998), (96, 9016), (104, 9133), (111, 9205), (121, 9277), (123, 9307), (124, 9316), (125, 9328), (131, 9376), (145, 9475), (146, 9481), (147, 9490), (148, 9517), (152, 9640), (153, 9697), (154, 9700), (155, 9712), (156, 9733), (161, 9907), (164, 9952), (165, 9985), (166, 10003), (168, 10042), (171, 10195), (176, 10297), (178, 10309), (180, 10321), (183, 10357), (191, 10459), (210, 10639), (220, 10735), (224, 10774), (227, 10795), (228, 10804), (229, 10828), (231, 10843), (232, 10852), (237, 10873),

Gene: BigShaq\_11 Start: 9163, Stop: 10890, Start Num: 28

Candidate Starts for BigShaq\_11:

(Start: 28 @9163 has 64 MA's), (47, 9280), (49, 9295), (50, 9316), (55, 9364), (60, 9412), (64, 9457), (67, 9487), (73, 9514), (74, 9553), (84, 9646), (96, 9772), (111, 9961), (121, 10033), (125, 10084), (131, 10132), (137, 10162), (174, 10216), (176, 10228), (178, 10240), (180, 10252), (183, 10288), (187, 10369), (189, 10381), (191, 10390), (220, 10666), (224, 10705), (227, 10726), (228, 10735), (229, 10759), (231, 10774),

Gene: BillyBobJr\_12 Start: 9201, Stop: 10925, Start Num: 28

Candidate Starts for BillyBobJr\_12:

(Start: 28 @9201 has 64 MA's), (49, 9333), (50, 9354), (55, 9402), (60, 9450), (67, 9525), (73, 9552), (74, 9591), (94, 9804), (96, 9810), (111, 9999), (117, 10038), (121, 10071), (125, 10122), (131, 10170), (138, 10203), (174, 10254), (176, 10266), (178, 10278), (180, 10290), (183, 10326), (195, 10458), (220, 10701), (224, 10740), (227, 10761), (228, 10770), (229, 10794), (231, 10809),

Gene: BirksAndSocks\_11 Start: 9166, Stop: 10890, Start Num: 28

Candidate Starts for BirksAndSocks\_11:

(Start: 28 @9166 has 64 MA's), (49, 9298), (50, 9319), (55, 9367), (60, 9415), (67, 9490), (73, 9517), (74, 9556), (94, 9769), (96, 9775), (111, 9964), (117, 10003), (121, 10036), (125, 10087), (131, 10135), (138, 10168), (174, 10219), (176, 10231), (178, 10243), (180, 10255), (183, 10291), (195, 10423), (220, 10666), (224, 10705), (227, 10726), (228, 10735), (229, 10759), (231, 10774),

Gene: Boneham\_11 Start: 9165, Stop: 10889, Start Num: 28

Candidate Starts for Boneham\_11:

(Start: 28 @9165 has 64 MA's), (49, 9297), (50, 9318), (55, 9366), (60, 9414), (67, 9489), (73, 9516), (74, 9555), (94, 9768), (96, 9774), (111, 9963), (117, 10002), (121, 10035), (125, 10086), (131, 10134), (138, 10167), (174, 10218), (176, 10230), (178, 10242), (180, 10254), (183, 10290), (195, 10422), (220, 10665), (224, 10704), (227, 10725), (228, 10734), (229, 10758), (231, 10773),

Gene: Breezic\_11 Start: 9177, Stop: 10904, Start Num: 28

Candidate Starts for Breezic\_11:

(Start: 28 @9177 has 64 MA's), (47, 9294), (49, 9309), (50, 9330), (55, 9378), (60, 9426), (62, 9438), (67, 9501), (71, 9516), (73, 9528), (74, 9567), (96, 9786), (111, 9975), (121, 10047), (125, 10098), (131, 10146), (174, 10230), (176, 10242), (178, 10254), (180, 10266), (183, 10302), (189, 10395), (195, 10434), (220, 10680), (224, 10719), (227, 10740), (228, 10749), (229, 10773), (231, 10788),

Gene: Butterball\_11 Start: 9165, Stop: 10889, Start Num: 28

Candidate Starts for Butterball\_11:

(Start: 28 @9165 has 64 MA's), (49, 9297), (50, 9318), (55, 9366), (60, 9414), (67, 9489), (73, 9516), (74, 9555), (94, 9768), (96, 9774), (111, 9963), (117, 10002), (121, 10035), (125, 10086), (131, 10134), (138, 10167), (174, 10218), (176, 10230), (178, 10242), (180, 10254), (183, 10290), (195, 10422), (220, 10665), (224, 10704), (227, 10725), (228, 10734), (229, 10758), (231, 10773),

Gene: Camerico\_11 Start: 10289, Stop: 12118, Start Num: 30

Candidate Starts for Camerico\_11:

(Start: 28 @10286 has 64 MA's), (Start: 30 @10289 has 7 MA's), (32, 10301), (55, 10493), (57, 10529), (58, 10532), (59, 10535), (60, 10541), (73, 10646), (76, 10721), (84, 10778), (85, 10823), (93, 10961), (96, 10979), (98, 11009), (102, 11057), (109, 11150), (111, 11168), (117, 11207), (120, 11231), (122, 11255), (124, 11279), (128, 11318), (138, 11372), (173, 11417), (174, 11423), (179, 11450), (180, 11459), (183, 11495), (188, 11585), (189, 11588), (191, 11597), (192, 11600), (197, 11636), (214, 11849), (234, 12002), (241, 12053),

Gene: CathyBurgh\_11 Start: 9165, Stop: 10892, Start Num: 28

Candidate Starts for CathyBurgh\_11:

(Start: 28 @9165 has 64 MA's), (47, 9282), (49, 9297), (50, 9318), (55, 9366), (60, 9414), (67, 9489), (71, 9504), (73, 9516), (96, 9774), (111, 9963), (121, 10035), (125, 10086), (131, 10134), (174, 10218), (176, 10230), (178, 10242), (180, 10254), (183, 10290), (189, 10383), (195, 10422), (220, 10668), (224, 10707), (227, 10728), (228, 10737), (229, 10761), (231, 10776),

Gene: Charianelly\_8 Start: 8395, Stop: 10947, Start Num: 28

Candidate Starts for Charianelly\_8:

(Start: 28 @8395 has 64 MA's), (Start: 34 @8431 has 1 MA's), (47, 8512), (50, 8548), (55, 8596), (60, 8644), (73, 8746), (86, 8908), (93, 8986), (96, 9004), (104, 9121), (111, 9193), (121, 9265), (123,

9295), (124, 9304), (125, 9316), (131, 9364), (137, 9394), (145, 9463), (146, 9469), (147, 9478), (148, 9505), (152, 9628), (153, 9685), (154, 9688), (155, 9700), (156, 9721), (161, 9895), (164, 9940), (165, 9973), (166, 9991), (168, 10030), (171, 10183), (176, 10285), (178, 10297), (180, 10309), (183, 10345), (191, 10447), (210, 10627), (220, 10723), (224, 10762), (227, 10783), (228, 10792), (229, 10816), (231, 10831), (232, 10840), (237, 10861),

Gene: Chelms\_11 Start: 9163, Stop: 10890, Start Num: 28

Candidate Starts for Chelms\_11:

(Start: 28 @9163 has 64 MA's), (47, 9280), (49, 9295), (50, 9316), (55, 9364), (60, 9412), (64, 9457), (67, 9487), (73, 9514), (74, 9553), (84, 9646), (96, 9772), (111, 9961), (121, 10033), (125, 10084), (131, 10132), (137, 10162), (174, 10216), (176, 10228), (178, 10240), (180, 10252), (183, 10288), (187, 10369), (191, 10390), (220, 10666), (224, 10705), (227, 10726), (228, 10735), (229, 10759), (231, 10774),

Gene: CinnamonToast\_12 Start: 9201, Stop: 10925, Start Num: 28

Candidate Starts for CinnamonToast\_12:

(Start: 28 @9201 has 64 MA's), (49, 9333), (50, 9354), (55, 9402), (60, 9450), (67, 9525), (73, 9552), (74, 9591), (94, 9804), (96, 9810), (111, 9999), (117, 10038), (121, 10071), (125, 10122), (131, 10170), (138, 10203), (174, 10254), (176, 10266), (178, 10278), (180, 10290), (183, 10326), (195, 10458), (220, 10701), (224, 10740), (227, 10761), (228, 10770), (229, 10794), (231, 10809),

Gene: Crete\_12 Start: 9414, Stop: 11141, Start Num: 28

Candidate Starts for Crete\_12:

(Start: 28 @9414 has 64 MA's), (47, 9531), (49, 9546), (50, 9567), (55, 9615), (60, 9663), (64, 9708), (67, 9738), (73, 9765), (74, 9804), (84, 9897), (96, 10023), (111, 10212), (121, 10284), (125, 10335), (131, 10383), (137, 10413), (174, 10467), (176, 10479), (178, 10491), (180, 10503), (183, 10539), (187, 10620), (189, 10632), (191, 10641), (220, 10917), (224, 10956), (227, 10977), (228, 10986), (229, 11010), (231, 11025),

Gene: Dakiti\_11 Start: 9163, Stop: 10890, Start Num: 28

Candidate Starts for Dakiti\_11:

(Start: 28 @9163 has 64 MA's), (49, 9295), (50, 9316), (55, 9364), (60, 9412), (64, 9457), (67, 9487), (73, 9514), (74, 9553), (84, 9646), (96, 9772), (111, 9961), (121, 10033), (125, 10084), (131, 10132), (137, 10162), (174, 10216), (176, 10228), (178, 10240), (180, 10252), (183, 10288), (187, 10369), (189, 10381), (191, 10390), (220, 10666), (224, 10705), (227, 10726), (228, 10735), (229, 10759), (231, 10774),

Gene: Damp\_8 Start: 8384, Stop: 10111, Start Num: 28

Candidate Starts for Damp\_8:

(Start: 28 @8384 has 64 MA's), (Start: 34 @8420 has 1 MA's), (47, 8501), (50, 8537), (55, 8585), (60, 8633), (67, 8708), (71, 8723), (73, 8735), (84, 8867), (86, 8897), (93, 8975), (96, 8993), (104, 9110), (111, 9182), (121, 9254), (123, 9284), (124, 9293), (125, 9305), (131, 9353), (176, 9449), (178, 9461), (180, 9473), (183, 9509), (191, 9611), (210, 9791), (220, 9887), (224, 9926), (227, 9947), (228, 9956), (229, 9980), (231, 9995), (232, 10004), (237, 10025),

Gene: Demosthenes\_11 Start: 10786, Stop: 12525, Start Num: 29

Candidate Starts for Demosthenes\_11:

(26, 10780), (Start: 29 @10786 has 10 MA's), (Start: 34 @10819 has 1 MA's), (47, 10909), (53, 10975), (55, 10993), (57, 11029), (60, 11041), (61, 11044), (67, 11116), (69, 11119), (72, 11134), (74, 11182), (77, 11221), (82, 11260), (90, 11368), (96, 11404), (104, 11521), (106, 11554), (107, 11560), (109, 11575), (111, 11593), (117, 11632), (118, 11635), (121, 11665), (125, 11716), (131, 11764), (174, 11848), (176, 11860), (183, 11920), (193, 12040), (194, 12043), (204, 12106), (216, 12274), (233, 12412), (239, 12463),

Gene: Diabla\_10 Start: 8971, Stop: 10701, Start Num: 28

Candidate Starts for Diabla\_10:

(Start: 28 @8971 has 64 MA's), (31, 8983), (36, 9019), (49, 9103), (50, 9124), (55, 9172), (60, 9220), (63, 9244), (67, 9295), (69, 9298), (73, 9322), (84, 9454), (96, 9580), (104, 9697), (111, 9769), (121, 9841), (125, 9892), (131, 9940), (174, 10024), (176, 10036), (178, 10048), (180, 10060), (183, 10096), (189, 10189), (195, 10228), (210, 10381), (220, 10477), (224, 10516), (227, 10537), (228, 10546), (229, 10570), (231, 10585),

Gene: DocB7\_004 Start: 3689, Stop: 5428, Start Num: 28

Candidate Starts for DocB7\_004:

(20, 3650), (Start: 28 @3689 has 64 MA's), (44, 3785), (55, 3890), (58, 3929), (60, 3938), (61, 3941), (66, 4007), (67, 4013), (73, 4040), (77, 4118), (89, 4250), (92, 4277), (96, 4307), (108, 4487), (111, 4508), (114, 4520), (125, 4631), (126, 4655), (131, 4679), (138, 4712), (174, 4763), (176, 4775), (177, 4778), (183, 4835), (191, 4937), (200, 4994), (212, 5141), (214, 5165), (222, 5228), (240, 5375), (245, 5402),

Gene: Eggsie\_11 Start: 9171, Stop: 10901, Start Num: 28

Candidate Starts for Eggsie\_11:

(Start: 28 @9171 has 64 MA's), (49, 9303), (50, 9324), (55, 9372), (60, 9420), (63, 9444), (67, 9495), (69, 9498), (73, 9522), (81, 9621), (84, 9654), (96, 9780), (111, 9969), (121, 10041), (125, 10092), (131, 10140), (174, 10224), (176, 10236), (178, 10248), (180, 10260), (183, 10296), (187, 10377), (189, 10389), (195, 10428), (210, 10581), (220, 10677), (224, 10716), (227, 10737), (228, 10746), (229, 10770), (231, 10785),

Gene: Ekhein\_11 Start: 9165, Stop: 10889, Start Num: 28

Candidate Starts for Ekhein\_11:

(Start: 28 @9165 has 64 MA's), (47, 9282), (49, 9297), (50, 9318), (55, 9366), (60, 9414), (67, 9489), (71, 9504), (73, 9516), (96, 9774), (111, 9963), (121, 10035), (125, 10086), (131, 10134), (174, 10218), (176, 10230), (178, 10242), (180, 10254), (183, 10290), (189, 10383), (195, 10422), (220, 10665), (224, 10704), (227, 10725), (228, 10734), (229, 10758), (231, 10773),

Gene: Exiguo\_11 Start: 9177, Stop: 10901, Start Num: 28

Candidate Starts for Exiguo\_11:

(Start: 28 @9177 has 64 MA's), (47, 9294), (49, 9309), (50, 9330), (55, 9378), (60, 9426), (67, 9501), (71, 9516), (73, 9528), (96, 9786), (111, 9975), (121, 10047), (125, 10098), (131, 10146), (174, 10230), (176, 10242), (178, 10254), (180, 10266), (183, 10302), (189, 10395), (195, 10434), (220, 10677), (224, 10716), (227, 10737), (228, 10746), (229, 10770), (231, 10785),

Gene: FelixAlejandro\_12 Start: 9363, Stop: 11087, Start Num: 28

Candidate Starts for FelixAlejandro\_12:

(Start: 28 @9363 has 64 MA's), (47, 9480), (49, 9495), (50, 9516), (55, 9564), (60, 9612), (67, 9687), (73, 9714), (74, 9753), (94, 9966), (96, 9972), (111, 10161), (117, 10200), (121, 10233), (125, 10284), (131, 10332), (174, 10416), (176, 10428), (178, 10440), (180, 10452), (183, 10488), (195, 10620), (220, 10863), (224, 10902), (227, 10923), (228, 10932), (231, 10971),

Gene: Flakey\_11 Start: 9166, Stop: 10893, Start Num: 28

Candidate Starts for Flakey\_11:

(Start: 28 @9166 has 64 MA's), (47, 9283), (49, 9298), (50, 9319), (55, 9367), (60, 9415), (62, 9427), (67, 9490), (71, 9505), (73, 9517), (74, 9556), (96, 9775), (111, 9964), (121, 10036), (125, 10087), (131, 10135), (174, 10219), (176, 10231), (178, 10243), (180, 10255), (183, 10291), (189, 10384), (195, 10423), (220, 10669), (224, 10708), (227, 10729), (228, 10738), (229, 10762), (231, 10777),

Gene: GMA3\_3 Start: 4995, Stop: 6896, Start Num: 30

Candidate Starts for GMA3\_3:

(Start: 30 @4995 has 7 MA's), (40, 5061), (53, 5190), (54, 5205), (55, 5208), (60, 5256), (62, 5268), (69, 5334), (73, 5358), (77, 5430), (80, 5448), (85, 5526), (96, 5676), (99, 5742), (102, 5754), (110, 5862), (111, 5865), (120, 5928), (122, 5952), (125, 5988), (133, 6042), (173, 6114), (180, 6156), (183, 6192), (184, 6201), (185, 6234), (190, 6288), (200, 6351), (207, 6462), (208, 6465), (225, 6678), (230, 6735), (243, 6822), (244, 6825),

Gene: GMA7\_3 Start: 3574, Stop: 5289, Start Num: 28

Candidate Starts for GMA7\_3:

(27, 3571), (Start: 28 @3574 has 64 MA's), (Start: 34 @3607 has 1 MA's), (49, 3703), (52, 3748), (55, 3772), (60, 3820), (73, 3922), (77, 4000), (92, 4156), (96, 4186), (111, 4375), (118, 4417), (121, 4447), (125, 4498), (131, 4546), (174, 4630), (176, 4642), (180, 4666), (183, 4702), (191, 4804), (221, 5074), (226, 5113), (230, 5167), (231, 5170),

Gene: GTE7\_3 Start: 3556, Stop: 5274, Start Num: 27

Candidate Starts for GTE7\_3:

(27, 3556), (Start: 28 @3559 has 64 MA's), (Start: 34 @3592 has 1 MA's), (49, 3688), (52, 3733), (55, 3757), (60, 3805), (73, 3907), (77, 3985), (96, 4171), (111, 4360), (118, 4402), (121, 4432), (125, 4483), (131, 4531), (174, 4615), (176, 4627), (180, 4651), (183, 4687), (191, 4789), (221, 5059), (226, 5098), (230, 5152), (231, 5155),

Gene: GalacticEye\_8 Start: 8384, Stop: 10936, Start Num: 28

Candidate Starts for GalacticEye\_8:

(Start: 28 @8384 has 64 MA's), (Start: 34 @8420 has 1 MA's), (47, 8501), (50, 8537), (55, 8585), (60, 8633), (73, 8735), (86, 8897), (93, 8975), (96, 8993), (104, 9110), (111, 9182), (121, 9254), (123, 9284), (124, 9293), (125, 9305), (131, 9353), (137, 9383), (145, 9452), (146, 9458), (147, 9467), (148, 9494), (152, 9617), (153, 9674), (154, 9677), (155, 9689), (156, 9710), (161, 9884), (164, 9929), (165, 9962), (166, 9980), (168, 10019), (171, 10172), (176, 10274), (178, 10286), (180, 10298), (183, 10334), (191, 10436), (210, 10616), (220, 10712), (224, 10751), (227, 10772), (228, 10781), (229, 10805), (231, 10820), (232, 10829), (237, 10850),

Gene: Gibbles\_10 Start: 8889, Stop: 10658, Start Num: 30

Candidate Starts for Gibbles\_10:

(24, 8877), (Start: 30 @8889 has 7 MA's), (48, 9009), (54, 9084), (55, 9087), (57, 9123), (60, 9135), (64, 9180), (73, 9237), (74, 9276), (75, 9309), (76, 9312), (80, 9333), (95, 9528), (97, 9546), (98, 9561), (101, 9603), (102, 9609), (111, 9720), (116, 9741), (119, 9765), (121, 9792), (125, 9843), (128, 9870), (137, 9921), (174, 9975), (178, 9999), (179, 10002), (180, 10011), (183, 10047), (197, 10188), (246, 10626), (248, 10635),

Gene: Gmala1\_3 Start: 5276, Stop: 7147, Start Num: 30

Candidate Starts for Gmala1\_3:

(Start: 30 @5276 has 7 MA's), (41, 5348), (53, 5462), (55, 5480), (60, 5528), (62, 5540), (65, 5585), (66, 5597), (73, 5630), (80, 5726), (85, 5819), (87, 5849), (88, 5870), (94, 5963), (96, 5969), (102, 6047), (111, 6158), (118, 6200), (120, 6221), (122, 6245), (125, 6281), (128, 6308), (130, 6317), (136, 6356), (141, 6398), (173, 6407), (174, 6413), (179, 6440), (181, 6452), (183, 6485), (185, 6527), (189, 6578), (192, 6590), (199, 6638), (202, 6668), (214, 6851), (225, 6935), (234, 7013), (242, 7079),

Gene: GordDuk1\_3 Start: 5216, Stop: 7087, Start Num: 30

Candidate Starts for GordDuk1\_3:

(Start: 30 @5216 has 7 MA's), (41, 5288), (53, 5402), (55, 5420), (60, 5468), (62, 5480), (65, 5525), (66, 5537), (80, 5666), (85, 5759), (87, 5789), (88, 5810), (94, 5903), (96, 5909), (102, 5987), (111, 6098), (118, 6140), (120, 6161), (122, 6185), (125, 6221), (128, 6248), (130, 6257), (136, 6296), (141,

6338), (173, 6347), (174, 6353), (179, 6380), (181, 6392), (183, 6425), (185, 6467), (189, 6518), (192, 6530), (199, 6578), (214, 6791), (225, 6875), (234, 6953), (242, 7019),

Gene: GordTnk2\_3 Start: 5183, Stop: 7054, Start Num: 30

Candidate Starts for GordTnk2\_3:

(Start: 30 @5183 has 7 MA's), (41, 5255), (53, 5369), (55, 5387), (60, 5435), (62, 5447), (65, 5492), (66, 5504), (80, 5633), (85, 5726), (87, 5756), (88, 5777), (94, 5870), (96, 5876), (102, 5954), (111, 6065), (118, 6107), (120, 6128), (122, 6152), (125, 6188), (128, 6215), (130, 6224), (136, 6263), (141, 6305), (173, 6314), (174, 6320), (179, 6347), (181, 6359), (183, 6392), (185, 6434), (189, 6485), (192, 6497), (199, 6545), (202, 6575), (214, 6758), (225, 6842), (234, 6920), (242, 6986),

Gene: Gorko\_11 Start: 9166, Stop: 10893, Start Num: 28

Candidate Starts for Gorko\_11:

(Start: 28 @9166 has 64 MA's), (47, 9283), (49, 9298), (50, 9319), (55, 9367), (60, 9415), (62, 9427), (67, 9490), (71, 9505), (73, 9517), (74, 9556), (96, 9775), (111, 9964), (121, 10036), (125, 10087), (131, 10135), (174, 10219), (176, 10231), (178, 10243), (180, 10255), (183, 10291), (189, 10384), (195, 10423), (220, 10669), (224, 10708), (227, 10729), (228, 10738), (229, 10762), (231, 10777),

Gene: GourdThymes\_11 Start: 9165, Stop: 10892, Start Num: 28

Candidate Starts for GourdThymes\_11:

(Start: 28 @9165 has 64 MA's), (47, 9282), (49, 9297), (50, 9318), (55, 9366), (60, 9414), (67, 9489), (73, 9516), (74, 9555), (96, 9774), (111, 9963), (117, 10002), (121, 10035), (125, 10086), (131, 10134), (174, 10218), (176, 10230), (178, 10242), (180, 10254), (183, 10290), (189, 10383), (195, 10422), (220, 10668), (224, 10707), (227, 10728), (228, 10737), (229, 10761), (231, 10776),

Gene: Guillaume\_8 Start: 8395, Stop: 10947, Start Num: 28

Candidate Starts for Guillaume\_8:

(Start: 28 @8395 has 64 MA's), (Start: 34 @8431 has 1 MA's), (47, 8512), (50, 8548), (55, 8596), (60, 8644), (67, 8719), (71, 8734), (73, 8746), (84, 8878), (86, 8908), (93, 8986), (96, 9004), (104, 9121), (111, 9193), (121, 9265), (123, 9295), (124, 9304), (125, 9316), (131, 9364), (145, 9463), (146, 9469), (147, 9478), (148, 9505), (152, 9628), (153, 9685), (154, 9688), (155, 9700), (156, 9721), (161, 9895), (164, 9940), (165, 9973), (166, 9991), (168, 10030), (171, 10183), (176, 10285), (178, 10297), (180, 10309), (183, 10345), (191, 10447), (210, 10627), (220, 10723), (224, 10762), (227, 10783), (228, 10792), (229, 10816), (231, 10831), (232, 10840), (237, 10861),

Gene: Hail2Pitt\_8 Start: 8378, Stop: 11167, Start Num: 28

Candidate Starts for Hail2Pitt\_8:

(21, 8351), (Start: 28 @8378 has 64 MA's), (Start: 34 @8414 has 1 MA's), (47, 8495), (50, 8531), (55, 8579), (60, 8627), (73, 8729), (86, 8891), (93, 8969), (96, 8987), (104, 9104), (111, 9176), (121, 9248), (124, 9287), (132, 9368), (134, 9371), (139, 9422), (140, 9428), (143, 9452), (144, 9461), (148, 9533), (149, 9668), (150, 9674), (151, 9677), (153, 9758), (157, 9914), (158, 9935), (159, 9953), (160, 10019), (162, 10043), (163, 10061), (167, 10175), (168, 10184), (169, 10337), (170, 10361), (172, 10409), (174, 10493), (176, 10505), (178, 10517), (180, 10529), (183, 10565), (191, 10667), (210, 10847), (220, 10943), (224, 10982), (227, 11003), (228, 11012), (229, 11036), (231, 11051), (232, 11060), (237, 11081),

Gene: Harambe\_8 Start: 8399, Stop: 10951, Start Num: 28

Candidate Starts for Harambe\_8:

(Start: 28 @8399 has 64 MA's), (Start: 34 @8435 has 1 MA's), (47, 8516), (50, 8552), (55, 8600), (60, 8648), (67, 8723), (71, 8738), (73, 8750), (84, 8882), (86, 8912), (93, 8990), (96, 9008), (104, 9125), (111, 9197), (121, 9269), (123, 9299), (124, 9308), (125, 9320), (131, 9368), (145, 9467), (146, 9473), (147, 9482), (148, 9509), (152, 9632), (153, 9689), (154, 9692), (155, 9704), (156, 9725), (161, 9899), (164, 9944), (165, 9977), (166, 9995), (168, 10034), (171, 10187), (176, 10289), (178, 10301), (180,

10313), (183, 10349), (191, 10451), (210, 10631), (220, 10727), (224, 10766), (227, 10787), (228, 10796), (229, 10820), (231, 10835), (232, 10844), (237, 10865),

Gene: HayZem\_12 Start: 9385, Stop: 11100, Start Num: 28

Candidate Starts for HayZem\_12:

(27, 9382), (Start: 28 @9385 has 64 MA's), (Start: 34 @9418 has 1 MA's), (49, 9514), (52, 9559), (55, 9583), (60, 9631), (73, 9733), (77, 9811), (96, 9997), (111, 10186), (118, 10228), (121, 10258), (125, 10309), (131, 10357), (174, 10441), (176, 10453), (180, 10477), (183, 10513), (191, 10615), (221, 10885), (226, 10924), (230, 10978), (231, 10981),

Gene: Hello\_8 Start: 8421, Stop: 10937, Start Num: 34

Candidate Starts for Hello\_8:

(Start: 28 @8385 has 64 MA's), (Start: 34 @8421 has 1 MA's), (47, 8502), (50, 8538), (55, 8586), (60, 8634), (67, 8709), (71, 8724), (73, 8736), (84, 8868), (86, 8898), (93, 8976), (96, 8994), (104, 9111), (111, 9183), (121, 9255), (123, 9285), (124, 9294), (125, 9306), (131, 9354), (145, 9453), (146, 9459), (147, 9468), (148, 9495), (152, 9618), (153, 9675), (154, 9678), (155, 9690), (156, 9711), (161, 9885), (164, 9930), (165, 9963), (166, 9981), (168, 10020), (171, 10173), (176, 10275), (178, 10287), (180, 10299), (183, 10335), (191, 10437), (210, 10617), (220, 10713), (224, 10752), (227, 10773), (228, 10782), (229, 10806), (231, 10821), (232, 10830), (237, 10851),

Gene: Hollow\_11 Start: 10813, Stop: 12552, Start Num: 29

Candidate Starts for Hollow\_11:

(26, 10807), (Start: 29 @10813 has 10 MA's), (Start: 34 @10846 has 1 MA's), (47, 10936), (53, 11002), (55, 11020), (57, 11056), (58, 11059), (60, 11068), (61, 11071), (69, 11146), (72, 11161), (74, 11209), (77, 11248), (82, 11287), (92, 11401), (93, 11413), (96, 11431), (104, 11548), (111, 11620), (117, 11659), (118, 11662), (121, 11692), (125, 11743), (131, 11791), (174, 11875), (176, 11887), (183, 11947), (193, 12067), (194, 12070), (201, 12112), (204, 12133), (216, 12301), (233, 12439), (239, 12490), (248, 12535),

Gene: Hotorobo\_11 Start: 9176, Stop: 10903, Start Num: 28

Candidate Starts for Hotorobo\_11:

(Start: 28 @9176 has 64 MA's), (47, 9293), (49, 9308), (50, 9329), (55, 9377), (60, 9425), (67, 9500), (73, 9527), (96, 9785), (111, 9974), (121, 10046), (125, 10097), (131, 10145), (174, 10229), (176, 10241), (178, 10253), (180, 10265), (183, 10301), (189, 10394), (195, 10433), (220, 10679), (224, 10718), (227, 10739), (228, 10748), (229, 10772), (231, 10787),

Gene: Jams\_8 Start: 8404, Stop: 10131, Start Num: 28

Candidate Starts for Jams\_8:

(Start: 28 @8404 has 64 MA's), (Start: 34 @8440 has 1 MA's), (47, 8521), (50, 8557), (55, 8605), (60, 8653), (67, 8728), (73, 8755), (84, 8887), (86, 8917), (93, 8995), (96, 9013), (104, 9130), (111, 9202), (121, 9274), (123, 9304), (124, 9313), (125, 9325), (131, 9373), (176, 9469), (178, 9481), (180, 9493), (183, 9529), (191, 9631), (210, 9811), (220, 9907), (224, 9946), (227, 9967), (228, 9976), (229, 10000), (231, 10015), (232, 10024), (237, 10045),

Gene: Jellybones\_11 Start: 9200, Stop: 10924, Start Num: 28

Candidate Starts for Jellybones\_11:

(Start: 28 @9200 has 64 MA's), (47, 9317), (49, 9332), (50, 9353), (55, 9401), (60, 9449), (67, 9524), (73, 9551), (74, 9590), (94, 9803), (96, 9809), (111, 9998), (117, 10037), (121, 10070), (125, 10121), (131, 10169), (138, 10202), (174, 10253), (176, 10265), (178, 10277), (180, 10289), (183, 10325), (195, 10457), (220, 10700), (224, 10739), (227, 10760), (228, 10769), (229, 10793), (231, 10808),

Gene: John316\_11 Start: 9165, Stop: 10889, Start Num: 28

Candidate Starts for John316\_11:

(Start: 28 @9165 has 64 MA's), (47, 9282), (49, 9297), (50, 9318), (55, 9366), (60, 9414), (67, 9489), (73, 9516), (74, 9555), (94, 9768), (96, 9774), (111, 9963), (117, 10002), (121, 10035), (125, 10086), (131, 10134), (138, 10167), (174, 10218), (176, 10230), (178, 10242), (180, 10254), (183, 10290), (195, 10422), (220, 10665), (224, 10704), (227, 10725), (228, 10734), (229, 10758), (231, 10773),

Gene: Jormungandr\_8 Start: 8398, Stop: 10950, Start Num: 28

Candidate Starts for Jormungandr\_8:

(Start: 28 @8398 has 64 MA's), (Start: 34 @8434 has 1 MA's), (47, 8515), (50, 8551), (55, 8599), (60, 8647), (67, 8722), (71, 8737), (73, 8749), (84, 8881), (86, 8911), (93, 8989), (96, 9007), (104, 9124), (111, 9196), (121, 9268), (123, 9298), (124, 9307), (125, 9319), (131, 9367), (145, 9466), (146, 9472), (147, 9481), (148, 9508), (152, 9631), (153, 9688), (154, 9691), (155, 9703), (156, 9724), (161, 9898), (164, 9943), (165, 9976), (166, 9994), (168, 10033), (171, 10186), (176, 10288), (178, 10300), (180, 10312), (183, 10348), (191, 10450), (210, 10630), (220, 10726), (224, 10765), (227, 10786), (228, 10795), (229, 10819), (231, 10834), (232, 10843), (237, 10864),

Gene: Jumbo\_8 Start: 10158, Stop: 12023, Start Num: 30

Candidate Starts for Jumbo\_8:

(Start: 30 @10158 has 7 MA's), (52, 10344), (55, 10368), (60, 10416), (62, 10428), (63, 10440), (72, 10509), (73, 10518), (84, 10650), (92, 10818), (94, 10842), (96, 10848), (102, 10926), (111, 11037), (113, 11046), (120, 11100), (122, 11124), (123, 11139), (125, 11160), (128, 11187), (136, 11235), (141, 11277), (173, 11286), (179, 11319), (180, 11328), (181, 11331), (183, 11364), (185, 11409), (187, 11448), (188, 11457), (196, 11502), (197, 11508), (200, 11526), (208, 11613), (214, 11736), (215, 11748), (217, 11763), (223, 11814), (239, 11940), (240, 11943),

Gene: Kampe\_11 Start: 8747, Stop: 10516, Start Num: 30

Candidate Starts for Kampe\_11:

(24, 8735), (Start: 30 @8747 has 7 MA's), (48, 8867), (54, 8942), (55, 8945), (57, 8981), (60, 8993), (64, 9038), (73, 9095), (74, 9134), (75, 9167), (76, 9170), (80, 9191), (95, 9386), (97, 9404), (98, 9419), (101, 9461), (102, 9467), (111, 9578), (116, 9599), (119, 9623), (121, 9650), (125, 9701), (128, 9728), (137, 9779), (174, 9833), (178, 9857), (179, 9860), (180, 9869), (183, 9905), (197, 10046), (246, 10484), (248, 10493),

Gene: Kaseim\_8 Start: 8395, Stop: 10122, Start Num: 28

Candidate Starts for Kaseim\_8:

(21, 8368), (Start: 28 @8395 has 64 MA's), (Start: 34 @8431 has 1 MA's), (47, 8512), (50, 8548), (55, 8596), (60, 8644), (73, 8746), (86, 8908), (93, 8986), (96, 9004), (104, 9121), (111, 9193), (121, 9265), (123, 9295), (124, 9304), (170, 9316), (172, 9364), (176, 9460), (178, 9472), (180, 9484), (182, 9511), (183, 9520), (191, 9622), (210, 9802), (220, 9898), (224, 9937), (227, 9958), (228, 9967), (229, 9991), (231, 10006), (232, 10015), (237, 10036),

Gene: Katyusha\_11 Start: 10878, Stop: 12617, Start Num: 29

Candidate Starts for Katyusha\_11:

(26, 10872), (Start: 29 @10878 has 10 MA's), (Start: 34 @10911 has 1 MA's), (47, 11001), (53, 11067), (55, 11085), (57, 11121), (60, 11133), (61, 11136), (69, 11211), (72, 11226), (74, 11274), (77, 11313), (82, 11352), (88, 11415), (90, 11460), (92, 11466), (93, 11478), (96, 11496), (106, 11646), (111, 11685), (117, 11724), (118, 11727), (121, 11757), (125, 11808), (131, 11856), (174, 11940), (176, 11952), (182, 12003), (183, 12012), (193, 12132), (194, 12135), (204, 12198), (216, 12366), (233, 12504), (239, 12555), (248, 12600),

Gene: Kelzog\_11 Start: 9177, Stop: 10904, Start Num: 28

Candidate Starts for Kelzog\_11:

(Start: 28 @9177 has 64 MA's), (47, 9294), (49, 9309), (50, 9330), (55, 9378), (60, 9426), (62, 9438), (67, 9501), (71, 9516), (73, 9528), (74, 9567), (96, 9786), (111, 9975), (117, 10014), (121, 10047),

(125, 10098), (131, 10146), (174, 10230), (176, 10242), (178, 10254), (180, 10266), (183, 10302), (189, 10395), (195, 10434), (220, 10680), (224, 10719), (227, 10740), (228, 10749), (229, 10773), (231, 10788),

Gene: Kvothe\_11 Start: 10815, Stop: 12554, Start Num: 29

Candidate Starts for Kvothe\_11:

(26, 10809), (Start: 29 @10815 has 10 MA's), (Start: 34 @10848 has 1 MA's), (47, 10938), (53, 11004), (55, 11022), (57, 11058), (60, 11070), (61, 11073), (69, 11148), (72, 11163), (74, 11211), (77, 11250), (82, 11289), (88, 11352), (90, 11397), (92, 11403), (93, 11415), (96, 11433), (106, 11583), (111, 11622), (117, 11661), (118, 11664), (121, 11694), (125, 11745), (131, 11793), (174, 11877), (176, 11889), (182, 11940), (183, 11949), (193, 12069), (194, 12072), (204, 12135), (216, 12303), (233, 12441), (239, 12492), (248, 12537),

Gene: Lahirium\_8 Start: 8399, Stop: 11188, Start Num: 28

Candidate Starts for Lahirium\_8:

(21, 8372), (Start: 28 @8399 has 64 MA's), (Start: 34 @8435 has 1 MA's), (47, 8516), (50, 8552), (55, 8600), (60, 8648), (73, 8750), (86, 8912), (93, 8990), (96, 9008), (104, 9125), (111, 9197), (121, 9269), (124, 9308), (132, 9389), (134, 9392), (139, 9443), (140, 9449), (143, 9473), (144, 9482), (148, 9554), (149, 9689), (150, 9695), (151, 9698), (153, 9779), (157, 9935), (158, 9956), (159, 9974), (160, 10040), (162, 10064), (163, 10082), (167, 10196), (168, 10205), (169, 10358), (170, 10382), (172, 10430), (174, 10514), (176, 10526), (178, 10538), (180, 10550), (183, 10586), (191, 10688), (210, 10868), (220, 10964), (224, 11003), (227, 11024), (228, 11033), (229, 11057), (231, 11072), (232, 11081), (237, 11102),

Gene: Lidong\_8 Start: 8384, Stop: 10936, Start Num: 28

Candidate Starts for Lidong\_8:

(Start: 28 @8384 has 64 MA's), (Start: 34 @8420 has 1 MA's), (47, 8501), (50, 8537), (55, 8585), (60, 8633), (73, 8735), (86, 8897), (93, 8975), (96, 8993), (104, 9110), (111, 9182), (121, 9254), (123, 9284), (124, 9293), (125, 9305), (131, 9353), (137, 9383), (145, 9452), (146, 9458), (147, 9467), (148, 9494), (152, 9617), (153, 9674), (154, 9677), (155, 9689), (156, 9710), (161, 9884), (164, 9929), (165, 9962), (166, 9980), (168, 10019), (171, 10172), (176, 10274), (178, 10286), (180, 10298), (183, 10334), (191, 10436), (210, 10616), (220, 10712), (224, 10751), (227, 10772), (228, 10781), (229, 10805), (231, 10820), (232, 10829), (237, 10850),

Gene: Linetti\_12 Start: 9316, Stop: 11043, Start Num: 28

Candidate Starts for Linetti\_12:

(Start: 28 @9316 has 64 MA's), (49, 9448), (50, 9469), (55, 9517), (60, 9565), (64, 9610), (67, 9640), (73, 9667), (74, 9706), (84, 9799), (96, 9925), (111, 10114), (121, 10186), (125, 10237), (131, 10285), (137, 10315), (174, 10369), (176, 10381), (178, 10393), (180, 10405), (183, 10441), (187, 10522), (189, 10534), (191, 10543), (220, 10819), (224, 10858), (227, 10879), (228, 10888), (229, 10912), (231, 10927),

Gene: Lizzo\_11 Start: 9165, Stop: 10892, Start Num: 28

Candidate Starts for Lizzo\_11:

(Start: 28 @9165 has 64 MA's), (47, 9282), (49, 9297), (50, 9318), (55, 9366), (60, 9414), (67, 9489), (71, 9504), (73, 9516), (96, 9774), (111, 9963), (121, 10035), (125, 10086), (131, 10134), (174, 10218), (176, 10230), (178, 10242), (180, 10254), (183, 10290), (189, 10383), (195, 10422), (220, 10668), (224, 10707), (227, 10728), (228, 10737), (229, 10761), (231, 10776),

Gene: Luker\_8 Start: 8378, Stop: 10930, Start Num: 28

Candidate Starts for Luker\_8:

(Start: 28 @8378 has 64 MA's), (Start: 34 @8414 has 1 MA's), (47, 8495), (50, 8531), (55, 8579), (60, 8627), (67, 8702), (71, 8717), (73, 8729), (84, 8861), (86, 8891), (93, 8969), (96, 8987), (104, 9104),

(111, 9176), (121, 9248), (123, 9278), (124, 9287), (125, 9299), (131, 9347), (145, 9446), (146, 9452), (147, 9461), (148, 9488), (152, 9611), (153, 9668), (154, 9671), (155, 9683), (156, 9704), (161, 9878), (164, 9923), (165, 9956), (166, 9974), (168, 10013), (171, 10166), (176, 10268), (178, 10280), (180, 10292), (183, 10328), (191, 10430), (210, 10610), (220, 10706), (224, 10745), (227, 10766), (228, 10775), (229, 10799), (231, 10814), (232, 10823), (237, 10844),

Gene: Mbo2\_8 Start: 4883, Stop: 6661, Start Num: 28

Candidate Starts for Mbo2\_8:

(25, 4877), (Start: 28 @4883 has 64 MA's), (37, 4925), (52, 5051), (54, 5072), (55, 5075), (60, 5123), (62, 5135), (71, 5213), (78, 5312), (84, 5357), (88, 5408), (96, 5486), (100, 5555), (102, 5564), (105, 5609), (111, 5678), (115, 5696), (116, 5699), (117, 5717), (118, 5720), (123, 5780), (125, 5801), (127, 5825), (137, 5879), (138, 5882), (141, 5918), (174, 5933), (176, 5945), (183, 6005), (186, 6071), (206, 6269), (213, 6380), (218, 6440), (238, 6590), (239, 6602), (248, 6647),

Gene: Minos\_8 Start: 8384, Stop: 10936, Start Num: 28

Candidate Starts for Minos\_8:

(Start: 28 @8384 has 64 MA's), (Start: 34 @8420 has 1 MA's), (47, 8501), (50, 8537), (55, 8585), (60, 8633), (73, 8735), (86, 8897), (93, 8975), (96, 8993), (104, 9110), (111, 9182), (121, 9254), (123, 9284), (124, 9293), (125, 9305), (131, 9353), (137, 9383), (145, 9452), (146, 9458), (147, 9467), (148, 9494), (152, 9617), (153, 9674), (154, 9677), (155, 9689), (156, 9710), (161, 9884), (164, 9929), (165, 9962), (166, 9980), (168, 10019), (171, 10172), (176, 10274), (178, 10286), (180, 10298), (183, 10334), (191, 10436), (210, 10616), (220, 10712), (224, 10751), (227, 10772), (228, 10781), (229, 10805), (231, 10820), (232, 10829), (237, 10850),

Gene: Monty\_10 Start: 9178, Stop: 10905, Start Num: 28

Candidate Starts for Monty\_10:

(Start: 28 @9178 has 64 MA's), (47, 9295), (49, 9310), (50, 9331), (55, 9379), (60, 9427), (67, 9502), (73, 9529), (96, 9787), (111, 9976), (121, 10048), (125, 10099), (131, 10147), (174, 10231), (176, 10243), (178, 10255), (180, 10267), (183, 10303), (189, 10396), (195, 10435), (220, 10681), (224, 10720), (227, 10741), (228, 10750), (229, 10774), (231, 10789),

Gene: MrWormie\_8 Start: 8373, Stop: 10100, Start Num: 28

Candidate Starts for MrWormie\_8:

(Start: 28 @8373 has 64 MA's), (Start: 34 @8409 has 1 MA's), (47, 8490), (50, 8526), (55, 8574), (60, 8622), (67, 8697), (73, 8724), (86, 8886), (93, 8964), (96, 8982), (104, 9099), (111, 9171), (121, 9243), (123, 9273), (124, 9282), (125, 9294), (131, 9342), (137, 9372), (176, 9438), (178, 9450), (180, 9462), (183, 9498), (191, 9600), (210, 9780), (220, 9876), (224, 9915), (227, 9936), (228, 9945), (229, 9969), (231, 9984), (232, 9993), (237, 10014),

Gene: Msay19\_12 Start: 9355, Stop: 11079, Start Num: 28

Candidate Starts for Msay19\_12:

(Start: 28 @9355 has 64 MA's), (49, 9487), (50, 9508), (55, 9556), (60, 9604), (67, 9679), (73, 9706), (74, 9745), (94, 9958), (96, 9964), (111, 10153), (117, 10192), (121, 10225), (125, 10276), (131, 10324), (138, 10357), (174, 10408), (176, 10420), (178, 10432), (180, 10444), (183, 10480), (195, 10612), (220, 10855), (224, 10894), (227, 10915), (228, 10924), (231, 10963),

Gene: Neoevie\_8 Start: 8376, Stop: 10928, Start Num: 28

Candidate Starts for Neoevie\_8:

(Start: 28 @8376 has 64 MA's), (Start: 34 @8412 has 1 MA's), (47, 8493), (50, 8529), (55, 8577), (60, 8625), (67, 8700), (71, 8715), (73, 8727), (84, 8859), (86, 8889), (93, 8967), (96, 8985), (104, 9102), (111, 9174), (121, 9246), (123, 9276), (124, 9285), (125, 9297), (131, 9345), (145, 9444), (146, 9450), (147, 9459), (148, 9486), (152, 9609), (153, 9666), (154, 9669), (155, 9681), (156, 9702), (161, 9876), (164, 9921), (165, 9954), (166, 9972), (168, 10011), (171, 10164), (176, 10266), (178, 10278), (180,

10290), (183, 10326), (191, 10428), (210, 10608), (220, 10704), (224, 10743), (227, 10764), (228, 10773), (229, 10797), (231, 10812), (232, 10821), (237, 10842),

Gene: Newt\_8 Start: 8395, Stop: 10947, Start Num: 28

Candidate Starts for Newt\_8:

(Start: 28 @8395 has 64 MA's), (Start: 34 @8431 has 1 MA's), (47, 8512), (50, 8548), (55, 8596), (60, 8644), (67, 8719), (71, 8734), (73, 8746), (84, 8878), (86, 8908), (93, 8986), (96, 9004), (104, 9121), (111, 9193), (121, 9265), (123, 9295), (124, 9304), (125, 9316), (131, 9364), (145, 9463), (146, 9469), (147, 9478), (148, 9505), (152, 9628), (153, 9685), (154, 9688), (155, 9700), (156, 9721), (161, 9895), (164, 9940), (165, 9973), (166, 9991), (168, 10030), (171, 10183), (176, 10285), (178, 10297), (180, 10309), (183, 10345), (191, 10447), (210, 10627), (220, 10723), (224, 10762), (227, 10783), (228, 10792), (229, 10816), (231, 10831), (232, 10840), (237, 10861),

Gene: Niagara\_11 Start: 10835, Stop: 12574, Start Num: 29

Candidate Starts for Niagara\_11:

(26, 10829), (Start: 29 @10835 has 10 MA's), (Start: 34 @10868 has 1 MA's), (47, 10958), (53, 11024), (55, 11042), (57, 11078), (60, 11090), (61, 11093), (69, 11168), (72, 11183), (74, 11231), (77, 11270), (82, 11309), (88, 11372), (90, 11417), (92, 11423), (96, 11453), (104, 11570), (111, 11642), (117, 11681), (118, 11684), (121, 11714), (123, 11744), (125, 11765), (130, 11801), (131, 11813), (174, 11897), (176, 11909), (183, 11969), (193, 12089), (194, 12092), (204, 12155), (216, 12323), (233, 12461), (239, 12512), (248, 12557),

Gene: Nimi13\_8 Start: 8396, Stop: 10948, Start Num: 28

Candidate Starts for Nimi13\_8:

(21, 8369), (Start: 28 @8396 has 64 MA's), (Start: 34 @8432 has 1 MA's), (47, 8513), (50, 8549), (55, 8597), (60, 8645), (67, 8720), (71, 8735), (73, 8747), (84, 8879), (86, 8909), (93, 8987), (96, 9005), (104, 9122), (111, 9194), (121, 9266), (123, 9296), (124, 9305), (125, 9317), (131, 9365), (145, 9464), (146, 9470), (147, 9479), (148, 9506), (152, 9629), (153, 9686), (154, 9689), (155, 9701), (156, 9722), (161, 9896), (164, 9941), (165, 9974), (166, 9992), (168, 10031), (171, 10184), (176, 10286), (178, 10298), (180, 10310), (183, 10346), (191, 10448), (210, 10628), (220, 10724), (224, 10763), (227, 10784), (228, 10793), (229, 10817), (231, 10832), (232, 10841), (237, 10862),

Gene: Orchid\_11 Start: 8747, Stop: 10516, Start Num: 30

Candidate Starts for Orchid\_11:

(24, 8735), (Start: 30 @8747 has 7 MA's), (48, 8867), (54, 8942), (55, 8945), (57, 8981), (60, 8993), (64, 9038), (73, 9095), (74, 9134), (75, 9167), (76, 9170), (80, 9191), (95, 9386), (97, 9404), (98, 9419), (101, 9461), (102, 9467), (111, 9578), (116, 9599), (119, 9623), (121, 9650), (125, 9701), (128, 9728), (137, 9779), (174, 9833), (178, 9857), (179, 9860), (180, 9869), (183, 9905), (197, 10046), (246, 10484), (248, 10493),

Gene: PatrickStar\_11 Start: 8747, Stop: 10516, Start Num: 30

Candidate Starts for PatrickStar\_11:

(24, 8735), (Start: 30 @8747 has 7 MA's), (48, 8867), (54, 8942), (55, 8945), (57, 8981), (60, 8993), (64, 9038), (73, 9095), (74, 9134), (75, 9167), (76, 9170), (80, 9191), (95, 9386), (97, 9404), (98, 9419), (101, 9461), (102, 9467), (111, 9578), (116, 9599), (119, 9623), (121, 9650), (125, 9701), (128, 9728), (137, 9779), (174, 9833), (178, 9857), (179, 9860), (180, 9869), (183, 9905), (197, 10046), (246, 10484), (248, 10493),

Gene: Philon9\_11 Start: 10358, Stop: 13012, Start Num: 2

Candidate Starts for Philon9\_11:

(1, 10289), (Start: 2 @10358 has 2 MA's), (3, 10364), (4, 10373), (5, 10397), (6, 10409), (7, 10571), (8, 10607), (9, 10619), (10, 10697), (11, 10709), (12, 10760), (13, 10952), (14, 10988), (15, 11021), (16, 11027), (18, 11090), (35, 11243), (38, 11258), (51, 11378), (68, 11555), (70, 11567), (79, 11675), (83,

11720), (91, 11852), (93, 11867), (96, 11885), (98, 11915), (104, 12002), (106, 12035), (109, 12056), (111, 12074), (116, 12095), (118, 12116), (119, 12119), (121, 12146), (125, 12197), (131, 12245), (137, 12275), (174, 12329), (176, 12341), (178, 12353), (183, 12401), (188, 12491), (189, 12494), (191, 12503), (194, 12524), (204, 12587), (219, 12770), (233, 12893), (239, 12944), (248, 12989),

Gene: PierreThree\_11 Start: 9163, Stop: 10890, Start Num: 28

Candidate Starts for PierreThree\_11:

(Start: 28 @9163 has 64 MA's), (49, 9295), (50, 9316), (55, 9364), (60, 9412), (64, 9457), (67, 9487), (73, 9514), (74, 9553), (84, 9646), (96, 9772), (111, 9961), (121, 10033), (125, 10084), (131, 10132), (137, 10162), (174, 10216), (176, 10228), (178, 10240), (180, 10252), (183, 10288), (187, 10369), (189, 10381), (191, 10390), (220, 10666), (224, 10705), (227, 10726), (228, 10735), (229, 10759), (231, 10774),

Gene: PokyPuppy\_10 Start: 9058, Stop: 10785, Start Num: 28

Candidate Starts for PokyPuppy\_10:

(Start: 28 @9058 has 64 MA's), (43, 9145), (49, 9190), (50, 9211), (55, 9259), (60, 9307), (67, 9382), (71, 9397), (73, 9409), (96, 9667), (111, 9856), (121, 9928), (125, 9979), (131, 10027), (174, 10111), (176, 10123), (178, 10135), (180, 10147), (183, 10183), (189, 10276), (210, 10465), (220, 10561), (224, 10600), (227, 10621), (228, 10630), (229, 10654), (231, 10669),

Gene: Poland\_12 Start: 9331, Stop: 11055, Start Num: 28

Candidate Starts for Poland\_12:

(Start: 28 @9331 has 64 MA's), (49, 9463), (50, 9484), (55, 9532), (60, 9580), (67, 9655), (73, 9682), (74, 9721), (94, 9934), (96, 9940), (111, 10129), (117, 10168), (121, 10201), (125, 10252), (131, 10300), (138, 10333), (174, 10384), (176, 10396), (178, 10408), (180, 10420), (183, 10456), (195, 10588), (220, 10831), (224, 10870), (227, 10891), (228, 10900), (231, 10939),

Gene: RemRem\_12 Start: 9177, Stop: 10901, Start Num: 28

Candidate Starts for RemRem\_12:

(Start: 28 @9177 has 64 MA's), (47, 9294), (49, 9309), (50, 9330), (55, 9378), (60, 9426), (62, 9438), (67, 9501), (73, 9528), (74, 9567), (96, 9786), (111, 9975), (121, 10047), (125, 10098), (131, 10146), (174, 10230), (176, 10242), (178, 10254), (180, 10266), (183, 10302), (189, 10395), (195, 10434), (220, 10677), (224, 10716), (227, 10737), (228, 10746), (229, 10770), (231, 10785),

Gene: Reynauld\_16 Start: 11632, Stop: 13386, Start Num: 28

Candidate Starts for Reynauld\_16:

(Start: 28 @11632 has 64 MA's), (45, 11719), (46, 11734), (54, 11824), (55, 11827), (57, 11863), (60, 11875), (63, 11899), (84, 12103), (90, 12193), (92, 12199), (96, 12229), (105, 12352), (111, 12436), (112, 12439), (114, 12448), (116, 12457), (117, 12475), (118, 12478), (120, 12499), (123, 12538), (125, 12559), (137, 12637), (138, 12640), (141, 12676), (142, 12679), (174, 12691), (176, 12703), (183, 12763), (193, 12895), (198, 12925), (214, 13126), (230, 13264), (235, 13288), (236, 13291), (246, 13357),

Gene: RobinSparkles\_15 Start: 9340, Stop: 11109, Start Num: 30

Candidate Starts for RobinSparkles\_15:

(24, 9328), (Start: 30 @9340 has 7 MA's), (32, 9352), (48, 9460), (54, 9535), (55, 9538), (57, 9574), (60, 9586), (73, 9688), (74, 9727), (76, 9763), (80, 9784), (92, 9952), (95, 9979), (97, 9997), (98, 10012), (101, 10054), (102, 10060), (111, 10171), (116, 10192), (121, 10243), (125, 10294), (128, 10321), (137, 10372), (174, 10426), (180, 10462), (183, 10498), (246, 11077), (248, 11086),

Gene: RoyalG\_12 Start: 9366, Stop: 11090, Start Num: 28

Candidate Starts for RoyalG\_12:

(Start: 28 @9366 has 64 MA's), (31, 9378), (36, 9414), (49, 9498), (50, 9519), (55, 9567), (60, 9615), (63, 9639), (67, 9690), (69, 9693), (73, 9717), (81, 9816), (84, 9849), (94, 9969), (96, 9975), (111, 10164), (121, 10236), (125, 10287), (131, 10335), (137, 10365), (174, 10419), (176, 10431), (178, 10443), (180, 10455), (183, 10491), (189, 10584), (195, 10623), (210, 10770), (220, 10866), (224, 10905), (227, 10926), (228, 10935), (229, 10959), (231, 10974),

Gene: Sam12\_11 Start: 9177, Stop: 10901, Start Num: 28

Candidate Starts for Sam12\_11:

(Start: 28 @9177 has 64 MA's), (47, 9294), (49, 9309), (50, 9330), (55, 9378), (60, 9426), (67, 9501), (71, 9516), (73, 9528), (96, 9786), (111, 9975), (121, 10047), (125, 10098), (131, 10146), (174, 10230), (176, 10242), (178, 10254), (180, 10266), (183, 10302), (189, 10395), (195, 10434), (220, 10677), (224, 10716), (227, 10737), (228, 10746), (229, 10770), (231, 10785),

Gene: Shelley\_8 Start: 8418, Stop: 10145, Start Num: 28

Candidate Starts for Shelley\_8:

(21, 8391), (Start: 28 @8418 has 64 MA's), (Start: 34 @8454 has 1 MA's), (47, 8535), (50, 8571), (55, 8619), (60, 8667), (73, 8769), (86, 8931), (93, 9009), (96, 9027), (104, 9144), (111, 9216), (121, 9288), (123, 9318), (124, 9327), (170, 9339), (172, 9387), (176, 9483), (178, 9495), (180, 9507), (182, 9534), (183, 9543), (191, 9645), (210, 9825), (220, 9921), (224, 9960), (227, 9981), (228, 9990), (229, 10014), (231, 10029), (232, 10038), (237, 10059),

Gene: Sombrero\_11 Start: 9211, Stop: 10935, Start Num: 28

Candidate Starts for Sombrero\_11:

(Start: 28 @9211 has 64 MA's), (47, 9328), (49, 9343), (50, 9364), (55, 9412), (60, 9460), (67, 9535), (71, 9550), (73, 9562), (94, 9814), (96, 9820), (111, 10009), (117, 10048), (121, 10081), (125, 10132), (131, 10180), (138, 10213), (174, 10264), (176, 10276), (178, 10288), (180, 10300), (183, 10336), (195, 10468), (220, 10711), (224, 10750), (227, 10771), (228, 10780), (231, 10819),

Gene: Squibbles\_11 Start: 9165, Stop: 10892, Start Num: 28

Candidate Starts for Squibbles\_11:

(Start: 28 @9165 has 64 MA's), (47, 9282), (49, 9297), (50, 9318), (55, 9366), (60, 9414), (67, 9489), (71, 9504), (73, 9516), (96, 9774), (111, 9963), (121, 10035), (125, 10086), (131, 10134), (174, 10218), (176, 10230), (178, 10242), (180, 10254), (183, 10290), (189, 10383), (195, 10422), (220, 10668), (224, 10707), (227, 10728), (228, 10737), (229, 10761), (231, 10776),

Gene: Srilaccoli3\_14 Start: 11386, Stop: 13146, Start Num: 28

Candidate Starts for Srilaccoli3\_14:

(Start: 28 @11386 has 64 MA's), (45, 11473), (46, 11488), (54, 11578), (55, 11581), (60, 11629), (61, 11632), (72, 11722), (84, 11857), (90, 11950), (92, 11956), (96, 11986), (105, 12109), (106, 12136), (111, 12193), (112, 12196), (114, 12205), (116, 12214), (117, 12232), (118, 12235), (120, 12256), (125, 12316), (137, 12394), (138, 12397), (141, 12433), (142, 12436), (174, 12448), (176, 12460), (183, 12520), (193, 12652), (198, 12682), (209, 12802), (214, 12886), (230, 13024), (235, 13048), (236, 13051), (246, 13117), (247, 13123),

Gene: SteveFrench\_10 Start: 8960, Stop: 10684, Start Num: 28

Candidate Starts for SteveFrench\_10:

(Start: 28 @8960 has 64 MA's), (31, 8972), (36, 9008), (49, 9092), (50, 9113), (55, 9161), (60, 9209), (63, 9233), (67, 9284), (69, 9287), (73, 9311), (84, 9443), (96, 9569), (111, 9758), (121, 9830), (125, 9881), (131, 9929), (174, 10013), (176, 10025), (178, 10037), (180, 10049), (183, 10085), (187, 10166), (189, 10178), (195, 10217), (220, 10460), (224, 10499), (227, 10520), (228, 10529), (229, 10553), (231, 10568),

Gene: Sticker17\_8 Start: 8395, Stop: 10947, Start Num: 28

Candidate Starts for Sticker17\_8:

(21, 8368), (Start: 28 @8395 has 64 MA's), (Start: 34 @8431 has 1 MA's), (47, 8512), (50, 8548), (55, 8596), (60, 8644), (73, 8746), (86, 8908), (93, 8986), (96, 9004), (104, 9121), (111, 9193), (121, 9265), (123, 9295), (124, 9304), (125, 9316), (131, 9364), (137, 9394), (145, 9463), (146, 9469), (147, 9478), (148, 9505), (152, 9628), (153, 9685), (154, 9688), (155, 9700), (156, 9721), (161, 9895), (164, 9940), (165, 9973), (166, 9991), (168, 10030), (171, 10183), (176, 10285), (178, 10297), (180, 10309), (183, 10345), (191, 10447), (210, 10627), (220, 10723), (224, 10762), (227, 10783), (228, 10792), (229, 10816), (231, 10831), (232, 10840), (237, 10861),

Gene: Teal\_8 Start: 8372, Stop: 10924, Start Num: 28

Candidate Starts for Teal\_8:

(Start: 28 @8372 has 64 MA's), (Start: 34 @8408 has 1 MA's), (47, 8489), (50, 8525), (55, 8573), (60, 8621), (67, 8696), (71, 8711), (73, 8723), (84, 8855), (86, 8885), (93, 8963), (96, 8981), (104, 9098), (111, 9170), (121, 9242), (123, 9272), (124, 9281), (125, 9293), (131, 9341), (145, 9440), (146, 9446), (147, 9455), (148, 9482), (152, 9605), (153, 9662), (154, 9665), (155, 9677), (156, 9698), (161, 9872), (164, 9917), (165, 9950), (166, 9968), (168, 10007), (171, 10160), (176, 10262), (178, 10274), (180, 10286), (183, 10322), (191, 10424), (210, 10604), (220, 10700), (224, 10739), (227, 10760), (228, 10769), (229, 10793), (231, 10808), (232, 10817), (237, 10838),

Gene: Teatealatte\_11 Start: 10798, Stop: 12537, Start Num: 29

Candidate Starts for Teatealatte\_11:

(26, 10792), (Start: 29 @10798 has 10 MA's), (Start: 34 @10831 has 1 MA's), (47, 10921), (53, 10987), (55, 11005), (57, 11041), (60, 11053), (61, 11056), (69, 11131), (72, 11146), (74, 11194), (77, 11233), (88, 11335), (90, 11380), (92, 11386), (96, 11416), (104, 11533), (106, 11566), (111, 11605), (117, 11644), (118, 11647), (121, 11677), (123, 11707), (125, 11728), (131, 11776), (174, 11860), (176, 11872), (183, 11932), (193, 12052), (194, 12055), (204, 12118), (216, 12286), (233, 12424), (239, 12475), (248, 12520),

Gene: Teech\_11 Start: 10870, Stop: 12609, Start Num: 29

Candidate Starts for Teech\_11:

(26, 10864), (Start: 29 @10870 has 10 MA's), (Start: 34 @10903 has 1 MA's), (47, 10993), (53, 11059), (55, 11077), (57, 11113), (60, 11125), (61, 11128), (69, 11203), (72, 11218), (74, 11266), (77, 11305), (82, 11344), (88, 11407), (90, 11452), (92, 11458), (96, 11488), (104, 11605), (106, 11638), (111, 11677), (117, 11716), (118, 11719), (121, 11749), (123, 11779), (125, 11800), (131, 11848), (174, 11932), (176, 11944), (183, 12004), (193, 12124), (194, 12127), (204, 12190), (216, 12358), (233, 12496), (239, 12547), (248, 12592),

Gene: Tredge\_11 Start: 10798, Stop: 12537, Start Num: 29

Candidate Starts for Tredge\_11:

(26, 10792), (Start: 29 @10798 has 10 MA's), (Start: 34 @10831 has 1 MA's), (47, 10921), (53, 10987), (55, 11005), (57, 11041), (60, 11053), (61, 11056), (69, 11131), (72, 11146), (74, 11194), (77, 11233), (88, 11335), (90, 11380), (92, 11386), (96, 11416), (104, 11533), (106, 11566), (111, 11605), (117, 11644), (118, 11647), (121, 11677), (123, 11707), (125, 11728), (131, 11776), (174, 11860), (176, 11872), (183, 11932), (193, 12052), (194, 12055), (204, 12118), (216, 12286), (233, 12424), (239, 12475), (248, 12520),

Gene: Trogglehumper\_30 Start: 17919, Stop: 19799, Start Num: 17

Candidate Starts for Trogglehumper\_30:

(Start: 17 @17919 has 1 MA's), (19, 17985), (22, 18042), (23, 18045), (33, 18090), (39, 18120), (42, 18153), (54, 18267), (55, 18270), (56, 18288), (60, 18318), (61, 18321), (67, 18393), (73, 18420), (81, 18519), (96, 18684), (99, 18750), (101, 18756), (103, 18780), (111, 18873), (113, 18882), (115, 18891), (118, 18915), (121, 18945), (129, 19029), (135, 19068), (141, 19113), (142, 19116), (175, 19134), (176, 19140), (183, 19200), (187, 19281), (188, 19290), (191, 19302), (192, 19305), (200,

19359), (203, 19383), (205, 19416), (211, 19470), (243, 19752), (244, 19755),

Gene: Vitaenoi\_11 Start: 10357, Stop: 13011, Start Num: 2

Candidate Starts for Vitaenoi\_11:

(1, 10288), (Start: 2 @10357 has 2 MA's), (3, 10363), (4, 10372), (5, 10396), (6, 10408), (7, 10570), (8, 10606), (9, 10618), (10, 10696), (11, 10708), (12, 10759), (13, 10951), (14, 10987), (15, 11020), (16, 11026), (18, 11089), (35, 11242), (38, 11257), (51, 11377), (68, 11554), (70, 11566), (79, 11674), (83, 11719), (91, 11851), (93, 11866), (96, 11884), (98, 11914), (104, 12001), (106, 12034), (109, 12055), (111, 12073), (116, 12094), (117, 12112), (118, 12115), (121, 12145), (125, 12196), (131, 12244), (137, 12274), (174, 12328), (176, 12340), (178, 12352), (183, 12400), (188, 12490), (189, 12493), (191, 12502), (194, 12523), (219, 12769), (233, 12892), (239, 12943), (248, 12988),

Gene: Woes\_8 Start: 8408, Stop: 11197, Start Num: 28

Candidate Starts for Woes\_8:

(21, 8381), (Start: 28 @8408 has 64 MA's), (Start: 34 @8444 has 1 MA's), (47, 8525), (50, 8561), (55, 8609), (60, 8657), (73, 8759), (86, 8921), (93, 8999), (96, 9017), (104, 9134), (111, 9206), (121, 9278), (124, 9317), (132, 9398), (134, 9401), (139, 9452), (140, 9458), (143, 9482), (144, 9491), (148, 9563), (149, 9698), (150, 9704), (151, 9707), (153, 9788), (157, 9944), (158, 9965), (159, 9983), (160, 10049), (162, 10073), (163, 10091), (167, 10205), (168, 10214), (169, 10367), (170, 10391), (172, 10439), (174, 10523), (176, 10535), (178, 10547), (180, 10559), (183, 10595), (191, 10697), (210, 10877), (220, 10973), (224, 11012), (227, 11033), (228, 11042), (229, 11066), (231, 11081), (232, 11090), (237, 11111),

Gene: Worcestershire\_11 Start: 9176, Stop: 10903, Start Num: 28

Candidate Starts for Worcestershire\_11:

(Start: 28 @9176 has 64 MA's), (47, 9293), (49, 9308), (50, 9329), (55, 9377), (60, 9425), (62, 9437), (67, 9500), (71, 9515), (73, 9527), (96, 9785), (111, 9974), (121, 10046), (125, 10097), (131, 10145), (174, 10229), (176, 10241), (178, 10253), (180, 10265), (183, 10301), (189, 10394), (195, 10433), (220, 10679), (224, 10718), (227, 10739), (228, 10748), (229, 10772), (231, 10787),