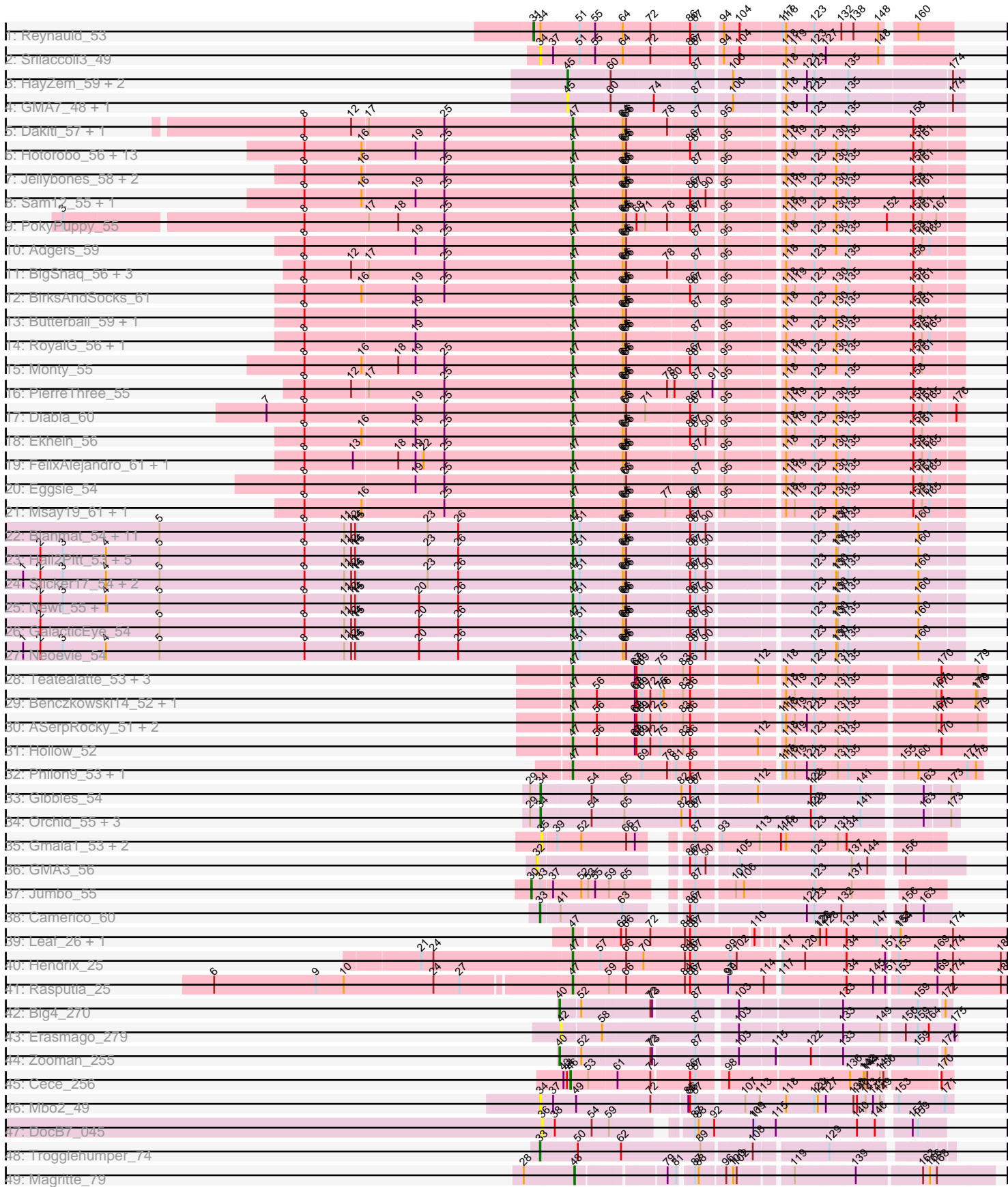


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Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. 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 296409 Report

This analysis was run 04/25/26 on database version 644.

Pham number 296409 has 108 members, 15 are drafts.

Phages represented in each track:

- Track 1 : Reynauld\_53
- Track 2 : Srilaccoli3\_49
- Track 3 : HayZem\_59, Austin\_58, Amore2\_59
- Track 4 : GMA7\_48, GTE7\_47
- Track 5 : Dakiti\_57, Chelms\_56
- Track 6 : Hotorobo\_56, CathyBurgh\_56, Squibbles\_55, John316\_59, GourdThymes\_56, Kelzog\_58, RemRem\_57, Worcestershire\_56, Barbochs\_54, Flakey\_55, Gorko\_55, Lizzo\_56, Breezic\_56, Beaver\_59
- Track 7 : Jellybones\_58, CinnamonToast\_62, BillyBobJr\_62
- Track 8 : Sam12\_55, Exiguo\_55
- Track 9 : PokyPuppy\_55
- Track 10 : Adgers\_59
- Track 11 : BigShaq\_56, Linetti\_56, BenoitCattle\_56, Crete\_57
- Track 12 : BirksAndSocks\_61
- Track 13 : Butterball\_59, Boneham\_60
- Track 14 : RoyalG\_56, SteveFrench\_55
- Track 15 : Monty\_55
- Track 16 : PierreThree\_55
- Track 17 : Diabla\_60
- Track 18 : Ekhein\_56
- Track 19 : FelixAlejandro\_61, Sombrero\_57
- Track 20 : Eggsie\_54
- Track 21 : Msay19\_61, Poland\_61
- Track 22 : Bianmat\_54, Jormungandr\_54, Charianelly\_54, Nimi13\_54, Shelley\_54, MrWormie\_54, Lahirium\_54, Kaseim\_54, Lidong\_54, Guillaume\_54, Berries\_54, Jams\_54
- Track 23 : Hail2Pitt\_53, Luker\_55, Anamika\_54, Damp\_54, Hello\_54, Minos\_55
- Track 24 : Sticker17\_54, Harambe\_54, Woes\_54
- Track 25 : Newt\_55, Teal\_54
- Track 26 : GalacticEye\_54
- Track 27 : Neoevie\_54
- Track 28 : Teatealatte\_53, Tredge\_53, Teech\_53, Niagara\_52
- Track 29 : Benczkowski14\_52, Katyusha\_52
- Track 30 : ASerpRocky\_51, Demosthenes\_51, Kvothe\_51
- Track 31 : Hollow\_52
- Track 32 : Philon9\_53, Vitaenoi\_53
- Track 33 : Gibbles\_54

- Track 34 : Orchid\_55, RobinSparkles\_59, PatrickStar\_56, Kampe\_56
- Track 35 : Gmala1\_53, GordDuk1\_57, GordTnk2\_58
- Track 36 : GMA3\_56
- Track 37 : Jumbo\_55
- Track 38 : Camerico\_60
- Track 39 : Leaf\_26, Dewdrop\_26
- Track 40 : Hendrix\_25
- Track 41 : Rasputia\_25
- Track 42 : Big4\_270
- Track 43 : Erasmago\_279
- Track 44 : Zooman\_255
- Track 45 : Cece\_256
- Track 46 : Mbo2\_49
- Track 47 : DocB7\_045
- Track 48 : Trogglehumper\_74
- Track 49 : Magritte\_79

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

The start number called the most often in the published annotations is 47, it was called in 77 of the 93 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ASerpRocky\_51, Adgers\_59, Anamika\_54, Barbochs\_54, Beaver\_59, Benczkowski14\_52, BenoitCattle\_56, Berries\_54, Bianmat\_54, BigShaq\_56, BillyBobJr\_62, BirksAndSocks\_61, Boneham\_60, Breezic\_56, Butterball\_59, CathyBurgh\_56, Charianelly\_54, Chelms\_56, CinnamonToast\_62, Crete\_57, Dakiti\_57, Damp\_54, Demosthenes\_51, Dewdrop\_26, Diabla\_60, Eggsie\_54, Ekhein\_56, Exiguo\_55, FelixAlejandro\_61, Flakey\_55, GalacticEye\_54, Gorko\_55, GourdThymes\_56, Guillaume\_54, Hail2Pitt\_53, Harambe\_54, Hello\_54, Hendrix\_25, Hollow\_52, Hotorobo\_56, Jams\_54, Jellybones\_58, John316\_59, Jormungandr\_54, Kaseim\_54, Katyusha\_52, Kelzog\_58, Kvothe\_51, Lahirium\_54, Leaf\_26, Lidong\_54, Linetti\_56, Lizzo\_56, Luker\_55, Minos\_55, Monty\_55, MrWormie\_54, Msay19\_61, Neoevie\_54, Newt\_55, Niagara\_52, Nimi13\_54, Philon9\_53, PierreThree\_55, PokyPuppy\_55, Poland\_61, Rasputia\_25, RemRem\_57, RoyalG\_56, Sam12\_55, Shelley\_54, Sombrero\_57, Squibbles\_55, SteveFrench\_55, Sticker17\_54, Teal\_54, Teatealatte\_53, Teech\_53, Tredge\_53, Vitaenoi\_53, Woes\_54, Worcestershire\_56,

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

- 

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

- Amore2\_59, Austin\_58, Big4\_270, Camerico\_60, Cece\_256, DocB7\_045, Erasmago\_279, GMA3\_56, GMA7\_48, GTE7\_47, Gibbles\_54, Gmala1\_53, GordDuk1\_57, GordTnk2\_58, HayZem\_59, Jumbo\_55, Kampe\_56, Magritte\_79, Mbo2\_49, Orchid\_55, PatrickStar\_56, Reynauld\_53, RobinSparkles\_59, Srilaccoli3\_49, Trogglehumper\_74, Zooman\_255,

**Summary by start number:**

Start 30:

- Found in 1 of 108 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jumbo\_55 (DF3),

Start 31:

- Found in 1 of 108 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Reynauld\_53 (CH),

Start 32:

- Found in 1 of 108 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GMA3\_56 (DF2),

Start 33:

- Found in 3 of 108 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 2 of 93
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Camerico\_60 (DF4), Trogglehumper\_74 (singleton),

Start 34:

- Found in 8 of 108 ( 7.4% ) of genes in pham
- Manual Annotations of this start: 5 of 93
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Gibbles\_54 (CX), Kampe\_56 (CX), Mbo2\_49 (singleton), Orchid\_55 (CX), PatrickStar\_56 (CX), RobinSparkles\_59 (CX), Srilaccoli3\_49 (CH),

Start 35:

- Found in 3 of 108 ( 2.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gmala1\_53 (DF1), GordDuk1\_57 (DF1), GordTnk2\_58 (DF1),

Start 36:

- Found in 1 of 108 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DocB7\_045 (singleton),

Start 40:

- Found in 2 of 108 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 2 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Big4\_270 (GD2), Zooman\_255 (GD2),

Start 42:

- Found in 1 of 108 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Erasmago\_279 (GD2),

#### Start 45:

- Found in 5 of 108 ( 4.6% ) of genes in pham
- Manual Annotations of this start: 3 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amore2\_59 (CS1), Austin\_58 (CS1), GMA7\_48 (CS1), GTE7\_47 (CS1), HayZem\_59 (CS1),

#### Start 46:

- Found in 1 of 108 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cece\_256 (GD3),

#### Start 47:

- Found in 82 of 108 ( 75.9% ) of genes in pham
- Manual Annotations of this start: 77 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_51 (CS4), Adgers\_59 (CS2), Anamika\_54 (CS3), Barbochs\_54 (CS2), Beaver\_59 (CS2), Benczkowski14\_52 (CS4), BenoitCattle\_56 (CS2), Berries\_54 (CS3), Bianmat\_54 (CS3), BigShaq\_56 (CS2), BillyBobJr\_62 (CS2), BirksAndSocks\_61 (CS2), Boneham\_60 (CS2), Breezic\_56 (CS2), Butterball\_59 (CS2), CathyBurgh\_56 (CS2), Charianelly\_54 (CS3), Chelms\_56 (CS2), CinnamonToast\_62 (CS2), Crete\_57 (CS2), Dakiti\_57 (CS2), Damp\_54 (CS3), Demosthenes\_51 (CS4), Dewdrop\_26 (GC), Diabla\_60 (CS2), Eggsie\_54 (CS2), Ekhein\_56 (CS2), Exiguo\_55 (CS2), FelixAlejandro\_61 (CS2), Flakey\_55 (CS2), GalacticEye\_54 (CS3), Gorko\_55 (CS2), GourdThymes\_56 (CS2), Guillaume\_54 (CS3), Hail2Pitt\_53 (CS3), Harambe\_54 (CS3), Hello\_54 (CS3), Hendrix\_25 (GC), Hollow\_52 (CS4), Hotorobo\_56 (CS2), Jams\_54 (CS3), Jellybones\_58 (CS2), John316\_59 (CS2), Jormungandr\_54 (CS3), Kaseim\_54 (CS3), Katyusha\_52 (CS4), Kelzog\_58 (CS2), Kvothe\_51 (CS4), Lahirium\_54 (CS3), Leaf\_26 (GC), Lidong\_54 (CS3), Linetti\_56 (CS2), Lizzo\_56 (CS2), Luker\_55 (CS3), Minos\_55 (CS3), Monty\_55 (CS2), MrWormie\_54 (CS3), Msay19\_61 (CS2), Neoevie\_54 (CS3), Newt\_55 (CS3), Niagara\_52 (CS4), Nimi13\_54 (CS3), Philon9\_53 (CS4), PierreThree\_55 (CS2), PokyPuppy\_55 (CS2), Poland\_61 (CS2), Rasputia\_25 (GC), RemRem\_57 (CS2), RoyalG\_56 (CS2), Sam12\_55 (CS2), Shelley\_54 (CS3), Sombrero\_57 (CS2), Squibbles\_55 (CS2), SteveFrench\_55 (CS2), Sticker17\_54 (CS3), Teal\_54 (CS3), Teatealatte\_53 (CS4), Teech\_53 (CS4), Tredge\_53 (CS4), Vitaenoi\_53 (CS4), Woes\_54 (CS3), Worcestershire\_56 (CS2),

#### Start 48:

- Found in 1 of 108 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Magritte\_79 (singleton),

### Summary by clusters:

There are 14 clusters represented in this pham: singleton, CH, DF4, CX, DF1, GD2, DF3, DF2, GD3, GC, CS4, CS1, CS3, CS2,

Info for manual annotations of cluster CH:

- Start number 31 was manually annotated 1 time for cluster CH.

Info for manual annotations of cluster CS1:

- Start number 45 was manually annotated 3 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 47 was manually annotated 36 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 47 was manually annotated 25 times for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 47 was manually annotated 12 times for cluster CS4.

Info for manual annotations of cluster CX:

- Start number 34 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 33 was manually annotated 1 time for cluster DF4.

Info for manual annotations of cluster GC:

- Start number 47 was manually annotated 4 times for cluster GC.

Info for manual annotations of cluster GD2:

- Start number 40 was manually annotated 2 times for cluster GD2.

Info for manual annotations of cluster GD3:

- Start number 46 was manually annotated 1 time for cluster GD3.

### ***Gene Information:***

Gene: ASerpRocky\_51 Start: 50470, Stop: 49820, Start Num: 47

Candidate Starts for ASerpRocky\_51:

(Start: 47 @50470 has 77 MA's), (56, 50431), (67, 50371), (68, 50368), (69, 50362), (72, 50347), (75, 50332), (83, 50296), (86, 50284), (117, 50152), (118, 50146), (119, 50131), (121, 50110), (123, 50098), (131, 50062), (135, 50044), (167, 49906), (170, 49897), (179, 49834),

Gene: Adgers\_59 Start: 49923, Stop: 49297, Start Num: 47

Candidate Starts for Adgers\_59:

(8, 50382), (19, 50193), (25, 50145), (Start: 47 @49923 has 77 MA's), (64, 49845), (65, 49842), (66, 49839), (87, 49725), (95, 49683), (118, 49593), (123, 49545), (130, 49512), (135, 49491), (158, 49380), (161, 49365), (165, 49353),

Gene: Amore2\_59 Start: 50370, Stop: 49750, Start Num: 45

Candidate Starts for Amore2\_59:

(Start: 45 @50370 has 3 MA's), (60, 50304), (87, 50172), (100, 50115), (118, 50040), (121, 50004), (123, 49992), (135, 49938), (174, 49770),

Gene: Anamika\_54 Start: 50720, Stop: 50094, Start Num: 47

Candidate Starts for Anamika\_54:

(2, 51641), (3, 51602), (4, 51527), (5, 51434), (8, 51182), (11, 51113), (12, 51101), (14, 51095), (15, 51092), (23, 50969), (26, 50918), (Start: 47 @50720 has 77 MA's), (51, 50708), (64, 50642), (65, 50639), (66, 50636), (86, 50531), (87, 50522), (90, 50504), (123, 50342), (130, 50309), (131, 50306), (135, 50288), (160, 50168),

Gene: Austin\_58 Start: 50368, Stop: 49748, Start Num: 45

Candidate Starts for Austin\_58:

(Start: 45 @50368 has 3 MA's), (60, 50302), (87, 50170), (100, 50113), (118, 50038), (121, 50002), (123, 49990), (135, 49936), (174, 49768),

Gene: Barbochs\_54 Start: 49467, Stop: 48841, Start Num: 47

Candidate Starts for Barbochs\_54:

(8, 49926), (16, 49827), (19, 49737), (25, 49689), (Start: 47 @49467 has 77 MA's), (64, 49389), (65, 49386), (66, 49383), (86, 49278), (87, 49269), (95, 49227), (118, 49137), (119, 49122), (123, 49089), (130, 49056), (135, 49035), (158, 48924), (161, 48909),

Gene: Beaver\_59 Start: 51237, Stop: 50611, Start Num: 47

Candidate Starts for Beaver\_59:

(8, 51696), (16, 51597), (19, 51507), (25, 51459), (Start: 47 @51237 has 77 MA's), (64, 51159), (65, 51156), (66, 51153), (86, 51048), (87, 51039), (95, 50997), (118, 50907), (119, 50892), (123, 50859), (130, 50826), (135, 50805), (158, 50694), (161, 50679),

Gene: Benczkowski14\_52 Start: 50741, Stop: 50091, Start Num: 47

Candidate Starts for Benczkowski14\_52:

(Start: 47 @50741 has 77 MA's), (56, 50702), (67, 50642), (68, 50639), (69, 50633), (72, 50618), (75, 50603), (76, 50597), (83, 50567), (86, 50555), (118, 50417), (119, 50402), (123, 50369), (131, 50333), (135, 50315), (167, 50177), (170, 50168), (178, 50108), (179, 50105),

Gene: BenoitCattle\_56 Start: 49874, Stop: 49248, Start Num: 47

Candidate Starts for BenoitCattle\_56:

(8, 50333), (12, 50252), (17, 50225), (25, 50096), (Start: 47 @49874 has 77 MA's), (64, 49796), (65, 49793), (66, 49790), (78, 49721), (87, 49676), (95, 49634), (118, 49544), (123, 49496), (135, 49442), (158, 49331),

Gene: Berries\_54 Start: 50692, Stop: 50066, Start Num: 47

Candidate Starts for Berries\_54:

(5, 51406), (8, 51154), (11, 51085), (12, 51073), (14, 51067), (15, 51064), (23, 50941), (26, 50890), (Start: 47 @50692 has 77 MA's), (51, 50680), (64, 50614), (65, 50611), (66, 50608), (86, 50503), (87, 50494), (90, 50476), (123, 50314), (130, 50281), (131, 50278), (135, 50260), (160, 50140),

Gene: Bianmat\_54 Start: 50732, Stop: 50106, Start Num: 47

Candidate Starts for Bianmat\_54:

(5, 51446), (8, 51194), (11, 51125), (12, 51113), (14, 51107), (15, 51104), (23, 50981), (26, 50930), (Start: 47 @50732 has 77 MA's), (51, 50720), (64, 50654), (65, 50651), (66, 50648), (86, 50543), (87, 50534), (90, 50516), (123, 50354), (130, 50321), (131, 50318), (135, 50300), (160, 50180),

Gene: Big4\_270 Start: 153748, Stop: 154353, Start Num: 40

Candidate Starts for Big4\_270:

(Start: 40 @153748 has 2 MA's), (52, 153781), (72, 153892), (73, 153895), (87, 153964), (103, 154024), (133, 154183), (159, 154303), (172, 154342),

Gene: BigShaq\_56 Start: 49879, Stop: 49253, Start Num: 47

Candidate Starts for BigShaq\_56:

(8, 50338), (12, 50257), (17, 50230), (25, 50101), (Start: 47 @49879 has 77 MA's), (64, 49801), (65, 49798), (66, 49795), (78, 49726), (87, 49681), (95, 49639), (118, 49549), (123, 49501), (135, 49447), (158, 49336),

Gene: BillyBobJr\_62 Start: 51547, Stop: 50921, Start Num: 47

Candidate Starts for BillyBobJr\_62:

(8, 52006), (16, 51907), (25, 51769), (Start: 47 @51547 has 77 MA's), (64, 51469), (65, 51466), (66, 51463), (87, 51349), (95, 51307), (118, 51217), (123, 51169), (130, 51136), (135, 51115), (158, 51004), (161, 50989),

Gene: BirksAndSocks\_61 Start: 51587, Stop: 50961, Start Num: 47

Candidate Starts for BirksAndSocks\_61:

(8, 52046), (16, 51947), (19, 51857), (25, 51809), (Start: 47 @51587 has 77 MA's), (64, 51509), (65, 51506), (66, 51503), (86, 51398), (87, 51389), (95, 51347), (118, 51257), (119, 51242), (123, 51209), (130, 51176), (135, 51155), (158, 51044), (161, 51029),

Gene: Boneham\_60 Start: 51488, Stop: 50862, Start Num: 47

Candidate Starts for Boneham\_60:

(8, 51947), (19, 51758), (Start: 47 @51488 has 77 MA's), (64, 51410), (65, 51407), (66, 51404), (87, 51290), (95, 51248), (118, 51158), (123, 51110), (130, 51077), (135, 51056), (158, 50945), (161, 50930),

Gene: Breezic\_56 Start: 49480, Stop: 48854, Start Num: 47

Candidate Starts for Breezic\_56:

(8, 49939), (16, 49840), (19, 49750), (25, 49702), (Start: 47 @49480 has 77 MA's), (64, 49402), (65, 49399), (66, 49396), (86, 49291), (87, 49282), (95, 49240), (118, 49150), (119, 49135), (123, 49102), (130, 49069), (135, 49048), (158, 48937), (161, 48922),

Gene: Butterball\_59 Start: 51493, Stop: 50867, Start Num: 47

Candidate Starts for Butterball\_59:

(8, 51952), (19, 51763), (Start: 47 @51493 has 77 MA's), (64, 51415), (65, 51412), (66, 51409), (87, 51295), (95, 51253), (118, 51163), (123, 51115), (130, 51082), (135, 51061), (158, 50950), (161, 50935),

Gene: Camerico\_60 Start: 52716, Stop: 52111, Start Num: 33

Candidate Starts for Camerico\_60:

(Start: 33 @52716 has 2 MA's), (41, 52686), (63, 52587), (86, 52524), (87, 52515), (121, 52335), (123, 52323), (132, 52281), (156, 52185), (163, 52155),

Gene: CathyBurgh\_56 Start: 50057, Stop: 49431, Start Num: 47

Candidate Starts for CathyBurgh\_56:

(8, 50516), (16, 50417), (19, 50327), (25, 50279), (Start: 47 @50057 has 77 MA's), (64, 49979), (65, 49976), (66, 49973), (86, 49868), (87, 49859), (95, 49817), (118, 49727), (119, 49712), (123, 49679), (130, 49646), (135, 49625), (158, 49514), (161, 49499),

Gene: Cece\_256 Start: 150473, Stop: 151066, Start Num: 46

Candidate Starts for Cece\_256:

(43, 150461), (44, 150467), (Start: 46 @150473 has 1 MA's), (53, 150500), (61, 150545), (72, 150602), (86, 150662), (87, 150671), (98, 150716), (136, 150908), (142, 150932), (143, 150935), (144, 150938), (149, 150959), (150, 150965), (170, 151046),

Gene: Charianelly\_54 Start: 50442, Stop: 49816, Start Num: 47

Candidate Starts for Charianelly\_54:

(5, 51156), (8, 50904), (11, 50835), (12, 50823), (14, 50817), (15, 50814), (23, 50691), (26, 50640), (Start: 47 @50442 has 77 MA's), (51, 50430), (64, 50364), (65, 50361), (66, 50358), (86, 50253), (87, 50244), (90, 50226), (123, 50064), (130, 50031), (131, 50028), (135, 50010), (160, 49890),

Gene: Chelms\_56 Start: 50023, Stop: 49397, Start Num: 47

Candidate Starts for Chelms\_56:

(8, 50482), (12, 50401), (17, 50374), (25, 50245), (Start: 47 @50023 has 77 MA's), (64, 49945), (65, 49942), (66, 49939), (78, 49870), (87, 49825), (95, 49783), (118, 49693), (123, 49645), (135, 49591), (158, 49480),

Gene: CinnamonToast\_62 Start: 51547, Stop: 50921, Start Num: 47

Candidate Starts for CinnamonToast\_62:

(8, 52006), (16, 51907), (25, 51769), (Start: 47 @51547 has 77 MA's), (64, 51469), (65, 51466), (66, 51463), (87, 51349), (95, 51307), (118, 51217), (123, 51169), (130, 51136), (135, 51115), (158, 51004), (161, 50989),

Gene: Crete\_57 Start: 50145, Stop: 49519, Start Num: 47

Candidate Starts for Crete\_57:

(8, 50604), (12, 50523), (17, 50496), (25, 50367), (Start: 47 @50145 has 77 MA's), (64, 50067), (65, 50064), (66, 50061), (78, 49992), (87, 49947), (95, 49905), (118, 49815), (123, 49767), (135, 49713), (158, 49602),

Gene: Dakiti\_57 Start: 50891, Stop: 50265, Start Num: 47

Candidate Starts for Dakiti\_57:

(8, 51350), (12, 51269), (17, 51242), (25, 51113), (Start: 47 @50891 has 77 MA's), (64, 50813), (65, 50810), (66, 50807), (78, 50738), (87, 50693), (95, 50651), (118, 50561), (123, 50513), (135, 50459), (158, 50348),

Gene: Damp\_54 Start: 49606, Stop: 48980, Start Num: 47

Candidate Starts for Damp\_54:

(2, 50527), (3, 50488), (4, 50413), (5, 50320), (8, 50068), (11, 49999), (12, 49987), (14, 49981), (15, 49978), (23, 49855), (26, 49804), (Start: 47 @49606 has 77 MA's), (51, 49594), (64, 49528), (65, 49525), (66, 49522), (86, 49417), (87, 49408), (90, 49390), (123, 49228), (130, 49195), (131, 49192), (135, 49174), (160, 49054),

Gene: Demosthenes\_51 Start: 50446, Stop: 49796, Start Num: 47

Candidate Starts for Demosthenes\_51:

(Start: 47 @50446 has 77 MA's), (56, 50407), (67, 50347), (68, 50344), (69, 50338), (72, 50323), (75, 50308), (83, 50272), (86, 50260), (117, 50128), (118, 50122), (119, 50107), (121, 50086), (123, 50074), (131, 50038), (135, 50020), (167, 49882), (170, 49873), (179, 49810),

Gene: Dewdrop\_26 Start: 10810, Stop: 11490, Start Num: 47

Candidate Starts for Dewdrop\_26:

(Start: 47 @10810 has 77 MA's), (62, 10882), (66, 10891), (72, 10933), (84, 10990), (86, 10999), (87, 11008), (110, 11095), (125, 11179), (126, 11182), (128, 11191), (134, 11224), (147, 11275), (153,

11305), (154, 11308), (174, 11398),

Gene: Diabla\_60 Start: 51546, Stop: 50920, Start Num: 47

Candidate Starts for Diabla\_60:

(7, 52071), (8, 52005), (19, 51816), (25, 51768), (Start: 47 @51546 has 77 MA's), (65, 51465), (66, 51462), (71, 51429), (86, 51357), (87, 51348), (95, 51306), (118, 51216), (119, 51201), (123, 51168), (130, 51135), (135, 51114), (158, 51003), (161, 50988), (165, 50976), (176, 50934),

Gene: DocB7\_045 Start: 41920, Stop: 41297, Start Num: 36

Candidate Starts for DocB7\_045:

(36, 41920), (38, 41899), (54, 41839), (59, 41812), (87, 41707), (88, 41701), (92, 41674), (109, 41608), (111, 41605), (115, 41569), (140, 41431), (146, 41401), (157, 41353), (159, 41344),

Gene: Eggsie\_54 Start: 49323, Stop: 48697, Start Num: 47

Candidate Starts for Eggsie\_54:

(8, 49782), (19, 49593), (25, 49545), (Start: 47 @49323 has 77 MA's), (65, 49242), (66, 49239), (87, 49125), (95, 49083), (118, 48993), (119, 48978), (123, 48945), (130, 48912), (135, 48891), (158, 48780), (161, 48765), (165, 48753),

Gene: Ekhein\_56 Start: 49185, Stop: 48559, Start Num: 47

Candidate Starts for Ekhein\_56:

(8, 49644), (16, 49545), (19, 49455), (25, 49407), (Start: 47 @49185 has 77 MA's), (64, 49107), (65, 49104), (66, 49101), (86, 48996), (87, 48987), (90, 48969), (95, 48945), (118, 48855), (119, 48840), (123, 48807), (130, 48774), (135, 48753), (158, 48642), (161, 48627),

Gene: Erasmago\_279 Start: 154021, Stop: 154644, Start Num: 42

Candidate Starts for Erasmago\_279:

(42, 154021), (58, 154084), (87, 154237), (103, 154297), (133, 154456), (149, 154519), (156, 154555), (159, 154576), (164, 154594), (175, 154639),

Gene: Exiguo\_55 Start: 49197, Stop: 48571, Start Num: 47

Candidate Starts for Exiguo\_55:

(8, 49656), (16, 49557), (19, 49467), (25, 49419), (Start: 47 @49197 has 77 MA's), (64, 49119), (65, 49116), (66, 49113), (86, 49008), (87, 48999), (90, 48981), (95, 48957), (118, 48867), (119, 48852), (123, 48819), (130, 48786), (135, 48765), (158, 48654), (161, 48639),

Gene: FelixAlejandro\_61 Start: 51891, Stop: 51265, Start Num: 47

Candidate Starts for FelixAlejandro\_61:

(8, 52350), (13, 52266), (18, 52191), (19, 52161), (22, 52149), (25, 52113), (Start: 47 @51891 has 77 MA's), (64, 51813), (65, 51810), (66, 51807), (87, 51693), (95, 51651), (118, 51561), (123, 51513), (130, 51480), (135, 51459), (158, 51348), (161, 51333), (165, 51321),

Gene: Flakey\_55 Start: 50061, Stop: 49435, Start Num: 47

Candidate Starts for Flakey\_55:

(8, 50520), (16, 50421), (19, 50331), (25, 50283), (Start: 47 @50061 has 77 MA's), (64, 49983), (65, 49980), (66, 49977), (86, 49872), (87, 49863), (95, 49821), (118, 49731), (119, 49716), (123, 49683), (130, 49650), (135, 49629), (158, 49518), (161, 49503),

Gene: GMA3\_56 Start: 49106, Stop: 48480, Start Num: 32

Candidate Starts for GMA3\_56:

(32, 49106), (86, 48908), (87, 48899), (90, 48881), (105, 48836), (123, 48713), (137, 48653), (144, 48626), (156, 48578),

Gene: GMA7\_48 Start: 44584, Stop: 43964, Start Num: 45

Candidate Starts for GMA7\_48:

(Start: 45 @44584 has 3 MA's), (60, 44518), (74, 44452), (87, 44386), (100, 44329), (118, 44254), (121, 44218), (123, 44206), (135, 44152), (174, 43984),

Gene: GTE7\_47 Start: 44615, Stop: 43995, Start Num: 45

Candidate Starts for GTE7\_47:

(Start: 45 @44615 has 3 MA's), (60, 44549), (74, 44483), (87, 44417), (100, 44360), (118, 44285), (121, 44249), (123, 44237), (135, 44183), (174, 44015),

Gene: GalacticEye\_54 Start: 50403, Stop: 49777, Start Num: 47

Candidate Starts for GalacticEye\_54:

(2, 51324), (5, 51117), (8, 50865), (11, 50796), (12, 50784), (14, 50778), (15, 50775), (20, 50667), (26, 50601), (Start: 47 @50403 has 77 MA's), (51, 50391), (64, 50325), (65, 50322), (66, 50319), (86, 50214), (87, 50205), (90, 50187), (123, 50025), (130, 49992), (131, 49989), (135, 49971), (160, 49851),

Gene: Gibbles\_54 Start: 48737, Stop: 48075, Start Num: 34

Candidate Starts for Gibbles\_54:

(29, 48755), (Start: 34 @48737 has 5 MA's), (54, 48659), (65, 48605), (82, 48512), (86, 48497), (87, 48488), (112, 48392), (122, 48305), (123, 48299), (141, 48221), (163, 48131), (173, 48089),

Gene: Gmala1\_53 Start: 46814, Stop: 46224, Start Num: 35

Candidate Starts for Gmala1\_53:

(35, 46814), (39, 46793), (52, 46751), (66, 46682), (67, 46667), (87, 46616), (93, 46580), (113, 46517), (116, 46484), (118, 46475), (123, 46427), (131, 46391), (134, 46376),

Gene: GordDuk1\_57 Start: 47378, Stop: 46788, Start Num: 35

Candidate Starts for GordDuk1\_57:

(35, 47378), (39, 47357), (52, 47315), (66, 47246), (67, 47231), (87, 47180), (93, 47144), (113, 47081), (116, 47048), (118, 47039), (123, 46991), (131, 46955), (134, 46940),

Gene: GordTnk2\_58 Start: 47532, Stop: 46942, Start Num: 35

Candidate Starts for GordTnk2\_58:

(35, 47532), (39, 47511), (52, 47469), (66, 47400), (67, 47385), (87, 47334), (93, 47298), (113, 47235), (116, 47202), (118, 47193), (123, 47145), (131, 47109), (134, 47094),

Gene: Gorko\_55 Start: 49189, Stop: 48563, Start Num: 47

Candidate Starts for Gorko\_55:

(8, 49648), (16, 49549), (19, 49459), (25, 49411), (Start: 47 @49189 has 77 MA's), (64, 49111), (65, 49108), (66, 49105), (86, 49000), (87, 48991), (95, 48949), (118, 48859), (119, 48844), (123, 48811), (130, 48778), (135, 48757), (158, 48646), (161, 48631),

Gene: GourdThymes\_56 Start: 50063, Stop: 49437, Start Num: 47

Candidate Starts for GourdThymes\_56:

(8, 50522), (16, 50423), (19, 50333), (25, 50285), (Start: 47 @50063 has 77 MA's), (64, 49985), (65, 49982), (66, 49979), (86, 49874), (87, 49865), (95, 49823), (118, 49733), (119, 49718), (123, 49685), (130, 49652), (135, 49631), (158, 49520), (161, 49505),

Gene: Guillaume\_54 Start: 50453, Stop: 49827, Start Num: 47

Candidate Starts for Guillaume\_54:

(5, 51167), (8, 50915), (11, 50846), (12, 50834), (14, 50828), (15, 50825), (23, 50702), (26, 50651), (Start: 47 @50453 has 77 MA's), (51, 50441), (64, 50375), (65, 50372), (66, 50369), (86, 50264), (87,

50255), (90, 50237), (123, 50075), (130, 50042), (131, 50039), (135, 50021), (160, 49901),

Gene: Hail2Pitt\_53 Start: 50929, Stop: 50303, Start Num: 47

Candidate Starts for Hail2Pitt\_53:

(2, 51850), (3, 51811), (4, 51736), (5, 51643), (8, 51391), (11, 51322), (12, 51310), (14, 51304), (15, 51301), (23, 51178), (26, 51127), (Start: 47 @50929 has 77 MA's), (51, 50917), (64, 50851), (65, 50848), (66, 50845), (86, 50740), (87, 50731), (90, 50713), (123, 50551), (130, 50518), (131, 50515), (135, 50497), (160, 50377),

Gene: Harambe\_54 Start: 50720, Stop: 50094, Start Num: 47

Candidate Starts for Harambe\_54:

(1, 51671), (2, 51641), (3, 51602), (4, 51527), (5, 51434), (8, 51182), (11, 51113), (12, 51101), (14, 51095), (15, 51092), (23, 50969), (26, 50918), (Start: 47 @50720 has 77 MA's), (51, 50708), (64, 50642), (65, 50639), (66, 50636), (86, 50531), (87, 50522), (90, 50504), (123, 50342), (130, 50309), (131, 50306), (135, 50288), (160, 50168),

Gene: HayZem\_59 Start: 50367, Stop: 49747, Start Num: 45

Candidate Starts for HayZem\_59:

(Start: 45 @50367 has 3 MA's), (60, 50301), (87, 50169), (100, 50112), (118, 50037), (121, 50001), (123, 49989), (135, 49935), (174, 49767),

Gene: Hello\_54 Start: 50682, Stop: 50056, Start Num: 47

Candidate Starts for Hello\_54:

(2, 51603), (3, 51564), (4, 51489), (5, 51396), (8, 51144), (11, 51075), (12, 51063), (14, 51057), (15, 51054), (23, 50931), (26, 50880), (Start: 47 @50682 has 77 MA's), (51, 50670), (64, 50604), (65, 50601), (66, 50598), (86, 50493), (87, 50484), (90, 50466), (123, 50304), (130, 50271), (131, 50268), (135, 50250), (160, 50130),

Gene: Hendrix\_25 Start: 11316, Stop: 12032, Start Num: 47

Candidate Starts for Hendrix\_25:

(21, 11058), (24, 11079), (Start: 47 @11316 has 77 MA's), (57, 11364), (66, 11406), (70, 11436), (84, 11505), (86, 11514), (87, 11523), (99, 11583), (102, 11595), (117, 11661), (120, 11700), (134, 11766), (151, 11832), (153, 11847), (169, 11913), (174, 11940), (180, 12021),

Gene: Hollow\_52 Start: 50922, Stop: 50272, Start Num: 47

Candidate Starts for Hollow\_52:

(Start: 47 @50922 has 77 MA's), (56, 50883), (67, 50823), (68, 50820), (69, 50814), (72, 50799), (75, 50784), (83, 50748), (86, 50736), (112, 50631), (118, 50598), (119, 50583), (123, 50550), (131, 50514), (135, 50496), (170, 50349),

Gene: Hotorobo\_56 Start: 50068, Stop: 49442, Start Num: 47

Candidate Starts for Hotorobo\_56:

(8, 50527), (16, 50428), (19, 50338), (25, 50290), (Start: 47 @50068 has 77 MA's), (64, 49990), (65, 49987), (66, 49984), (86, 49879), (87, 49870), (95, 49828), (118, 49738), (119, 49723), (123, 49690), (130, 49657), (135, 49636), (158, 49525), (161, 49510),

Gene: Jams\_54 Start: 49892, Stop: 49266, Start Num: 47

Candidate Starts for Jams\_54:

(5, 50606), (8, 50354), (11, 50285), (12, 50273), (14, 50267), (15, 50264), (23, 50141), (26, 50090), (Start: 47 @49892 has 77 MA's), (51, 49880), (64, 49814), (65, 49811), (66, 49808), (86, 49703), (87, 49694), (90, 49676), (123, 49514), (130, 49481), (131, 49478), (135, 49460), (160, 49340),

Gene: Jellybones\_58 Start: 51163, Stop: 50537, Start Num: 47

Candidate Starts for Jellybones\_58:

(8, 51622), (16, 51523), (25, 51385), (Start: 47 @51163 has 77 MA's), (64, 51085), (65, 51082), (66, 51079), (87, 50965), (95, 50923), (118, 50833), (123, 50785), (130, 50752), (135, 50731), (158, 50620), (161, 50605),

Gene: John316\_59 Start: 51226, Stop: 50600, Start Num: 47

Candidate Starts for John316\_59:

(8, 51685), (16, 51586), (19, 51496), (25, 51448), (Start: 47 @51226 has 77 MA's), (64, 51148), (65, 51145), (66, 51142), (86, 51037), (87, 51028), (95, 50986), (118, 50896), (119, 50881), (123, 50848), (130, 50815), (135, 50794), (158, 50683), (161, 50668),

Gene: Jormungandr\_54 Start: 50435, Stop: 49809, Start Num: 47

Candidate Starts for Jormungandr\_54:

(5, 51149), (8, 50897), (11, 50828), (12, 50816), (14, 50810), (15, 50807), (23, 50684), (26, 50633), (Start: 47 @50435 has 77 MA's), (51, 50423), (64, 50357), (65, 50354), (66, 50351), (86, 50246), (87, 50237), (90, 50219), (123, 50057), (130, 50024), (131, 50021), (135, 50003), (160, 49883),

Gene: Jumbo\_55 Start: 51510, Stop: 50908, Start Num: 30

Candidate Starts for Jumbo\_55:

(Start: 30 @51510 has 1 MA's), (Start: 33 @51495 has 2 MA's), (37, 51477), (52, 51429), (53, 51420), (55, 51408), (59, 51387), (65, 51363), (87, 51288), (101, 51228), (106, 51216), (123, 51099), (137, 51039),

Gene: Kampe\_56 Start: 48715, Stop: 48053, Start Num: 34

Candidate Starts for Kampe\_56:

(29, 48733), (Start: 34 @48715 has 5 MA's), (54, 48637), (65, 48583), (82, 48490), (86, 48475), (87, 48466), (122, 48283), (123, 48277), (141, 48199), (163, 48109), (173, 48067),

Gene: Kaseim\_54 Start: 49877, Stop: 49251, Start Num: 47

Candidate Starts for Kaseim\_54:

(5, 50591), (8, 50339), (11, 50270), (12, 50258), (14, 50252), (15, 50249), (23, 50126), (26, 50075), (Start: 47 @49877 has 77 MA's), (51, 49865), (64, 49799), (65, 49796), (66, 49793), (86, 49688), (87, 49679), (90, 49661), (123, 49499), (130, 49466), (131, 49463), (135, 49445), (160, 49325),

Gene: Katyusha\_52 Start: 50741, Stop: 50091, Start Num: 47

Candidate Starts for Katyusha\_52:

(Start: 47 @50741 has 77 MA's), (56, 50702), (67, 50642), (68, 50639), (69, 50633), (72, 50618), (75, 50603), (76, 50597), (83, 50567), (86, 50555), (118, 50417), (119, 50402), (123, 50369), (131, 50333), (135, 50315), (167, 50177), (170, 50168), (178, 50108), (179, 50105),

Gene: Kelzog\_58 Start: 50075, Stop: 49449, Start Num: 47

Candidate Starts for Kelzog\_58:

(8, 50534), (16, 50435), (19, 50345), (25, 50297), (Start: 47 @50075 has 77 MA's), (64, 49997), (65, 49994), (66, 49991), (86, 49886), (87, 49877), (95, 49835), (118, 49745), (119, 49730), (123, 49697), (130, 49664), (135, 49643), (158, 49532), (161, 49517),

Gene: Kvothe\_51 Start: 50640, Stop: 49990, Start Num: 47

Candidate Starts for Kvothe\_51:

(Start: 47 @50640 has 77 MA's), (56, 50601), (67, 50541), (68, 50538), (69, 50532), (72, 50517), (75, 50502), (83, 50466), (86, 50454), (117, 50322), (118, 50316), (119, 50301), (121, 50280), (123, 50268), (131, 50232), (135, 50214), (167, 50076), (170, 50067), (179, 50004),

Gene: Lahirium\_54 Start: 50957, Stop: 50331, Start Num: 47

Candidate Starts for Lahirium\_54:

(5, 51671), (8, 51419), (11, 51350), (12, 51338), (14, 51332), (15, 51329), (23, 51206), (26, 51155), (Start: 47 @50957 has 77 MA's), (51, 50945), (64, 50879), (65, 50876), (66, 50873), (86, 50768), (87, 50759), (90, 50741), (123, 50579), (130, 50546), (131, 50543), (135, 50525), (160, 50405),

Gene: Leaf\_26 Start: 10810, Stop: 11490, Start Num: 47

Candidate Starts for Leaf\_26:

(Start: 47 @10810 has 77 MA's), (62, 10882), (66, 10891), (72, 10933), (84, 10990), (86, 10999), (87, 11008), (110, 11095), (125, 11179), (126, 11182), (128, 11191), (134, 11224), (147, 11275), (153, 11305), (154, 11308), (174, 11398),

Gene: Lidong\_54 Start: 50692, Stop: 50066, Start Num: 47

Candidate Starts for Lidong\_54:

(5, 51406), (8, 51154), (11, 51085), (12, 51073), (14, 51067), (15, 51064), (23, 50941), (26, 50890), (Start: 47 @50692 has 77 MA's), (51, 50680), (64, 50614), (65, 50611), (66, 50608), (86, 50503), (87, 50494), (90, 50476), (123, 50314), (130, 50281), (131, 50278), (135, 50260), (160, 50140),

Gene: Linetti\_56 Start: 50876, Stop: 50250, Start Num: 47

Candidate Starts for Linetti\_56:

(8, 51335), (12, 51254), (17, 51227), (25, 51098), (Start: 47 @50876 has 77 MA's), (64, 50798), (65, 50795), (66, 50792), (78, 50723), (87, 50678), (95, 50636), (118, 50546), (123, 50498), (135, 50444), (158, 50333),

Gene: Lizzo\_56 Start: 50057, Stop: 49431, Start Num: 47

Candidate Starts for Lizzo\_56:

(8, 50516), (16, 50417), (19, 50327), (25, 50279), (Start: 47 @50057 has 77 MA's), (64, 49979), (65, 49976), (66, 49973), (86, 49868), (87, 49859), (95, 49817), (118, 49727), (119, 49712), (123, 49679), (130, 49646), (135, 49625), (158, 49514), (161, 49499),

Gene: Luker\_55 Start: 50910, Stop: 50284, Start Num: 47

Candidate Starts for Luker\_55:

(2, 51831), (3, 51792), (4, 51717), (5, 51624), (8, 51372), (11, 51303), (12, 51291), (14, 51285), (15, 51282), (23, 51159), (26, 51108), (Start: 47 @50910 has 77 MA's), (51, 50898), (64, 50832), (65, 50829), (66, 50826), (86, 50721), (87, 50712), (90, 50694), (123, 50532), (130, 50499), (131, 50496), (135, 50478), (160, 50358),

Gene: Magritte\_79 Start: 66166, Stop: 66795, Start Num: 48

Candidate Starts for Magritte\_79:

(28, 66079), (Start: 48 @66166 has 1 MA's), (79, 66298), (81, 66313), (87, 66334), (88, 66340), (96, 66382), (100, 66391), (102, 66397), (119, 66478), (139, 66571), (162, 66673), (166, 66685), (168, 66697),

Gene: Mbo2\_49 Start: 40996, Stop: 40346, Start Num: 34

Candidate Starts for Mbo2\_49:

(Start: 34 @40996 has 5 MA's), (37, 40975), (49, 40936), (72, 40816), (85, 40762), (86, 40759), (87, 40750), (107, 40675), (113, 40651), (118, 40609), (123, 40561), (124, 40555), (127, 40543), (138, 40498), (140, 40492), (143, 40477), (145, 40465), (149, 40453), (153, 40438), (171, 40360),

Gene: Minos\_55 Start: 50434, Stop: 49808, Start Num: 47

Candidate Starts for Minos\_55:

(2, 51355), (3, 51316), (4, 51241), (5, 51148), (8, 50896), (11, 50827), (12, 50815), (14, 50809), (15, 50806), (23, 50683), (26, 50632), (Start: 47 @50434 has 77 MA's), (51, 50422), (64, 50356), (65, 50353), (66, 50350), (86, 50245), (87, 50236), (90, 50218), (123, 50056), (130, 50023), (131, 50020),

(135, 50002), (160, 49882),

Gene: Monty\_55 Start: 49207, Stop: 48581, Start Num: 47

Candidate Starts for Monty\_55:

(8, 49666), (16, 49567), (18, 49507), (19, 49477), (25, 49429), (Start: 47 @49207 has 77 MA's), (64, 49129), (65, 49126), (66, 49123), (86, 49018), (87, 49009), (95, 48967), (118, 48877), (119, 48862), (123, 48829), (130, 48796), (135, 48775), (158, 48664), (161, 48649),

Gene: MrWormie\_54 Start: 49595, Stop: 48969, Start Num: 47

Candidate Starts for MrWormie\_54:

(5, 50309), (8, 50057), (11, 49988), (12, 49976), (14, 49970), (15, 49967), (23, 49844), (26, 49793), (Start: 47 @49595 has 77 MA's), (51, 49583), (64, 49517), (65, 49514), (66, 49511), (86, 49406), (87, 49397), (90, 49379), (123, 49217), (130, 49184), (131, 49181), (135, 49163), (160, 49043),

Gene: Msay19\_61 Start: 51777, Stop: 51151, Start Num: 47

Candidate Starts for Msay19\_61:

(8, 52236), (16, 52137), (25, 51999), (Start: 47 @51777 has 77 MA's), (64, 51699), (65, 51696), (66, 51693), (77, 51627), (86, 51588), (87, 51579), (95, 51537), (118, 51447), (119, 51432), (123, 51399), (130, 51366), (135, 51345), (158, 51234), (161, 51219), (165, 51207),

Gene: Neoevie\_54 Start: 50696, Stop: 50070, Start Num: 47

Candidate Starts for Neoevie\_54:

(1, 51647), (2, 51617), (3, 51578), (4, 51503), (5, 51410), (8, 51158), (11, 51089), (12, 51077), (14, 51071), (15, 51068), (20, 50960), (26, 50894), (Start: 47 @50696 has 77 MA's), (51, 50684), (64, 50618), (65, 50615), (66, 50612), (86, 50507), (87, 50498), (90, 50480), (123, 50318), (130, 50285), (131, 50282), (135, 50264), (160, 50144),

Gene: Newt\_55 Start: 50924, Stop: 50298, Start Num: 47

Candidate Starts for Newt\_55:

(2, 51845), (3, 51806), (4, 51731), (5, 51638), (8, 51386), (11, 51317), (12, 51305), (14, 51299), (15, 51296), (20, 51188), (26, 51122), (Start: 47 @50924 has 77 MA's), (51, 50912), (64, 50846), (65, 50843), (66, 50840), (86, 50735), (87, 50726), (90, 50708), (123, 50546), (130, 50513), (131, 50510), (135, 50492), (160, 50372),

Gene: Niagara\_52 Start: 50731, Stop: 50081, Start Num: 47

Candidate Starts for Niagara\_52:

(Start: 47 @50731 has 77 MA's), (67, 50632), (68, 50629), (69, 50623), (75, 50593), (83, 50557), (86, 50545), (112, 50440), (118, 50407), (123, 50359), (131, 50323), (135, 50305), (170, 50158), (179, 50095),

Gene: Nimi13\_54 Start: 50443, Stop: 49817, Start Num: 47

Candidate Starts for Nimi13\_54:

(5, 51157), (8, 50905), (11, 50836), (12, 50824), (14, 50818), (15, 50815), (23, 50692), (26, 50641), (Start: 47 @50443 has 77 MA's), (51, 50431), (64, 50365), (65, 50362), (66, 50359), (86, 50254), (87, 50245), (90, 50227), (123, 50065), (130, 50032), (131, 50029), (135, 50011), (160, 49891),

Gene: Orchid\_55 Start: 48716, Stop: 48054, Start Num: 34

Candidate Starts for Orchid\_55:

(29, 48734), (Start: 34 @48716 has 5 MA's), (54, 48638), (65, 48584), (82, 48491), (86, 48476), (87, 48467), (122, 48284), (123, 48278), (141, 48200), (163, 48110), (173, 48068),

Gene: PatrickStar\_56 Start: 48715, Stop: 48053, Start Num: 34

Candidate Starts for PatrickStar\_56:

(29, 48733), (Start: 34 @48715 has 5 MA's), (54, 48637), (65, 48583), (82, 48490), (86, 48475), (87, 48466), (122, 48283), (123, 48277), (141, 48199), (163, 48109), (173, 48067),

Gene: Philon9\_53 Start: 51588, Stop: 50944, Start Num: 47

Candidate Starts for Philon9\_53:

(Start: 47 @51588 has 77 MA's), (69, 51480), (78, 51438), (81, 51426), (86, 51402), (117, 51270), (118, 51264), (119, 51249), (121, 51228), (123, 51216), (131, 51180), (135, 51162), (155, 51078), (160, 51054), (177, 50970), (178, 50955),

Gene: PierreThree\_55 Start: 50522, Stop: 49896, Start Num: 47

Candidate Starts for PierreThree\_55:

(8, 50981), (12, 50900), (17, 50873), (25, 50744), (Start: 47 @50522 has 77 MA's), (64, 50444), (65, 50441), (66, 50438), (78, 50369), (80, 50360), (87, 50324), (91, 50294), (95, 50282), (118, 50192), (123, 50144), (135, 50090), (158, 49979),

Gene: PokyPuppy\_55 Start: 50516, Stop: 49890, Start Num: 47

Candidate Starts for PokyPuppy\_55:

(3, 51380), (8, 50978), (17, 50867), (18, 50816), (25, 50738), (Start: 47 @50516 has 77 MA's), (64, 50438), (65, 50435), (66, 50432), (68, 50414), (71, 50399), (78, 50363), (86, 50327), (87, 50318), (95, 50276), (118, 50186), (119, 50171), (123, 50138), (130, 50105), (135, 50084), (152, 50018), (158, 49973), (161, 49958), (167, 49934),

Gene: Poland\_61 Start: 51756, Stop: 51130, Start Num: 47

Candidate Starts for Poland\_61:

(8, 52215), (16, 52116), (25, 51978), (Start: 47 @51756 has 77 MA's), (64, 51678), (65, 51675), (66, 51672), (77, 51606), (86, 51567), (87, 51558), (95, 51516), (118, 51426), (119, 51411), (123, 51378), (130, 51345), (135, 51324), (158, 51213), (161, 51198), (165, 51186),

Gene: Rasputia\_25 Start: 10886, Stop: 11599, Start Num: 47

Candidate Starts for Rasputia\_25:

(6, 10286), (9, 10463), (10, 10511), (24, 10667), (27, 10712), (Start: 47 @10886 has 77 MA's), (59, 10946), (66, 10973), (84, 11072), (86, 11081), (87, 11090), (97, 11147), (99, 11150), (114, 11207), (117, 11228), (134, 11333), (145, 11378), (151, 11399), (153, 11414), (169, 11480), (174, 11507), (180, 11588),

Gene: RemRem\_57 Start: 49197, Stop: 48571, Start Num: 47

Candidate Starts for RemRem\_57:

(8, 49656), (16, 49557), (19, 49467), (25, 49419), (Start: 47 @49197 has 77 MA's), (64, 49119), (65, 49116), (66, 49113), (86, 49008), (87, 48999), (95, 48957), (118, 48867), (119, 48852), (123, 48819), (130, 48786), (135, 48765), (158, 48654), (161, 48639),

Gene: Reynauld\_53 Start: 48643, Stop: 47975, Start Num: 31

Candidate Starts for Reynauld\_53:

(Start: 31 @48643 has 1 MA's), (Start: 34 @48634 has 5 MA's), (51, 48568), (55, 48544), (64, 48502), (72, 48454), (86, 48388), (87, 48379), (94, 48340), (104, 48313), (117, 48244), (118, 48238), (123, 48190), (132, 48148), (138, 48127), (148, 48085), (160, 48034),

Gene: RobinSparkles\_59 Start: 49268, Stop: 48606, Start Num: 34

Candidate Starts for RobinSparkles\_59:

(29, 49286), (Start: 34 @49268 has 5 MA's), (54, 49190), (65, 49136), (82, 49043), (86, 49028), (87, 49019), (122, 48836), (123, 48830), (141, 48752), (163, 48662), (173, 48620),

Gene: RoyalG\_56 Start: 49972, Stop: 49346, Start Num: 47

Candidate Starts for RoyalG\_56:

(8, 50431), (19, 50242), (Start: 47 @49972 has 77 MA's), (64, 49894), (65, 49891), (66, 49888), (87, 49774), (95, 49732), (118, 49642), (123, 49594), (130, 49561), (135, 49540), (158, 49429), (161, 49414), (165, 49402),

Gene: Sam12\_55 Start: 49197, Stop: 48571, Start Num: 47

Candidate Starts for Sam12\_55:

(8, 49656), (16, 49557), (19, 49467), (25, 49419), (Start: 47 @49197 has 77 MA's), (64, 49119), (65, 49116), (66, 49113), (86, 49008), (87, 48999), (90, 48981), (95, 48957), (118, 48867), (119, 48852), (123, 48819), (130, 48786), (135, 48765), (158, 48654), (161, 48639),

Gene: Shelley\_54 Start: 49919, Stop: 49293, Start Num: 47

Candidate Starts for Shelley\_54:

(5, 50633), (8, 50381), (11, 50312), (12, 50300), (14, 50294), (15, 50291), (23, 50168), (26, 50117), (Start: 47 @49919 has 77 MA's), (51, 49907), (64, 49841), (65, 49838), (66, 49835), (86, 49730), (87, 49721), (90, 49703), (123, 49541), (130, 49508), (131, 49505), (135, 49487), (160, 49367),

Gene: Sombrero\_57 Start: 49764, Stop: 49138, Start Num: 47

Candidate Starts for Sombrero\_57:

(8, 50223), (13, 50139), (18, 50064), (19, 50034), (22, 50022), (25, 49986), (Start: 47 @49764 has 77 MA's), (64, 49686), (65, 49683), (66, 49680), (87, 49566), (95, 49524), (118, 49434), (123, 49386), (130, 49353), (135, 49332), (158, 49221), (161, 49206), (165, 49194),

Gene: Squibbles\_55 Start: 50060, Stop: 49434, Start Num: 47

Candidate Starts for Squibbles\_55:

(8, 50519), (16, 50420), (19, 50330), (25, 50282), (Start: 47 @50060 has 77 MA's), (64, 49982), (65, 49979), (66, 49976), (86, 49871), (87, 49862), (95, 49820), (118, 49730), (119, 49715), (123, 49682), (130, 49649), (135, 49628), (158, 49517), (161, 49502),

Gene: Srilaccoli3\_49 Start: 47866, Stop: 47207, Start Num: 34

Candidate Starts for Srilaccoli3\_49:

(Start: 34 @47866 has 5 MA's), (37, 47845), (51, 47800), (55, 47776), (64, 47734), (72, 47686), (86, 47620), (87, 47611), (94, 47572), (104, 47545), (118, 47470), (119, 47455), (123, 47422), (127, 47404), (148, 47317),

Gene: SteveFrench\_55 Start: 50212, Stop: 49586, Start Num: 47

Candidate Starts for SteveFrench\_55:

(8, 50671), (19, 50482), (Start: 47 @50212 has 77 MA's), (64, 50134), (65, 50131), (66, 50128), (87, 50014), (95, 49972), (118, 49882), (123, 49834), (130, 49801), (135, 49780), (158, 49669), (161, 49654), (165, 49642),

Gene: Sticker17\_54 Start: 50434, Stop: 49808, Start Num: 47

Candidate Starts for Sticker17\_54:

(1, 51385), (2, 51355), (3, 51316), (4, 51241), (5, 51148), (8, 50896), (11, 50827), (12, 50815), (14, 50809), (15, 50806), (23, 50683), (26, 50632), (Start: 47 @50434 has 77 MA's), (51, 50422), (64, 50356), (65, 50353), (66, 50350), (86, 50245), (87, 50236), (90, 50218), (123, 50056), (130, 50023), (131, 50020), (135, 50002), (160, 49882),

Gene: Teal\_54 Start: 50901, Stop: 50275, Start Num: 47

Candidate Starts for Teal\_54:

(2, 51822), (3, 51783), (4, 51708), (5, 51615), (8, 51363), (11, 51294), (12, 51282), (14, 51276), (15, 51273), (20, 51165), (26, 51099), (Start: 47 @50901 has 77 MA's), (51, 50889), (64, 50823), (65, 50820), (66, 50817), (86, 50712), (87, 50703), (90, 50685), (123, 50523), (130, 50490), (131, 50487),

(135, 50469), (160, 50349),

Gene: Teatealatte\_53 Start: 50643, Stop: 49993, Start Num: 47

Candidate Starts for Teatealatte\_53:

(Start: 47 @50643 has 77 MA's), (67, 50544), (68, 50541), (69, 50535), (75, 50505), (83, 50469), (86, 50457), (112, 50352), (118, 50319), (123, 50271), (131, 50235), (135, 50217), (170, 50070), (179, 50007),

Gene: Teech\_53 Start: 50444, Stop: 49794, Start Num: 47

Candidate Starts for Teech\_53:

(Start: 47 @50444 has 77 MA's), (67, 50345), (68, 50342), (69, 50336), (75, 50306), (83, 50270), (86, 50258), (112, 50153), (118, 50120), (123, 50072), (131, 50036), (135, 50018), (170, 49871), (179, 49808),

Gene: Tredge\_53 Start: 50643, Stop: 49993, Start Num: 47

Candidate Starts for Tredge\_53:

(Start: 47 @50643 has 77 MA's), (67, 50544), (68, 50541), (69, 50535), (75, 50505), (83, 50469), (86, 50457), (112, 50352), (118, 50319), (123, 50271), (131, 50235), (135, 50217), (170, 50070), (179, 50007),

Gene: Trogglehumper\_74 Start: 57897, Stop: 57250, Start Num: 33

Candidate Starts for Trogglehumper\_74:

(Start: 33 @57897 has 2 MA's), (50, 57834), (62, 57765), (89, 57627), (108, 57552), (129, 57438),

Gene: Vitaenoi\_53 Start: 51587, Stop: 50943, Start Num: 47

Candidate Starts for Vitaenoi\_53:

(Start: 47 @51587 has 77 MA's), (69, 51479), (78, 51437), (81, 51425), (86, 51401), (117, 51269), (118, 51263), (119, 51248), (121, 51227), (123, 51215), (131, 51179), (135, 51161), (155, 51077), (160, 51053), (177, 50969), (178, 50954),

Gene: Woes\_54 Start: 50952, Stop: 50326, Start Num: 47

Candidate Starts for Woes\_54:

(1, 51903), (2, 51873), (3, 51834), (4, 51759), (5, 51666), (8, 51414), (11, 51345), (12, 51333), (14, 51327), (15, 51324), (23, 51201), (26, 51150), (Start: 47 @50952 has 77 MA's), (51, 50940), (64, 50874), (65, 50871), (66, 50868), (86, 50763), (87, 50754), (90, 50736), (123, 50574), (130, 50541), (131, 50538), (135, 50520), (160, 50400),

Gene: Worcestershire\_56 Start: 49199, Stop: 48573, Start Num: 47

Candidate Starts for Worcestershire\_56:

(8, 49658), (16, 49559), (19, 49469), (25, 49421), (Start: 47 @49199 has 77 MA's), (64, 49121), (65, 49118), (66, 49115), (86, 49010), (87, 49001), (95, 48959), (118, 48869), (119, 48854), (123, 48821), (130, 48788), (135, 48767), (158, 48656), (161, 48641),

Gene: Zooman\_255 Start: 153487, Stop: 154092, Start Num: 40

Candidate Starts for Zooman\_255:

(Start: 40 @153487 has 2 MA's), (52, 153520), (72, 153631), (73, 153634), (87, 153703), (103, 153763), (115, 153820), (122, 153874), (133, 153922), (159, 154042), (172, 154081),