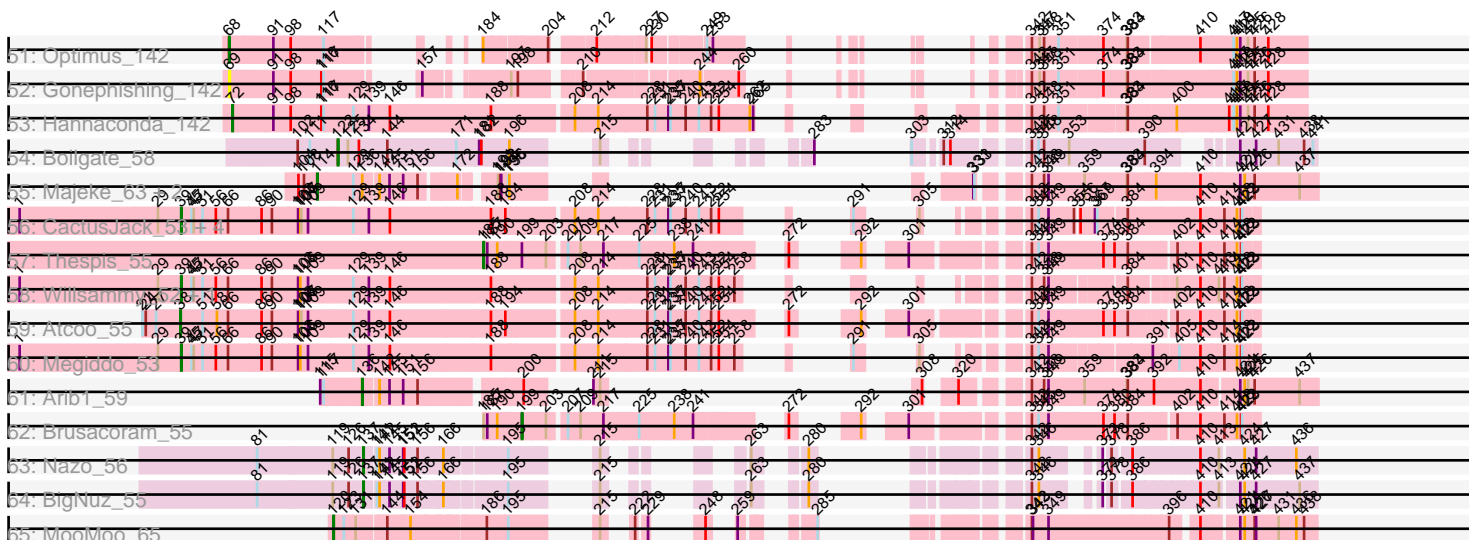


1: Inyanga_54 + 1	89	91	117	188	188	188	210	244	260	332	331	384	410	410	428
2: Violet_57	88	91	111	184	184	204	212	238	248	331	351	384	408	410	428
3: Molly_60 + 1	88	91	111	184	184	204	212	238	248	331	351	384	408	410	428
4: Applejack_54	88	91	111	184	184	204	212	238	248	331	351	384	408	410	428
5: HanShotFirst_60	88	91	111	184	184	204	212	238	248	331	351	384	408	410	428
6: Tasp14_62	88	91	111	184	184	204	212	238	248	331	351	384	408	410	428
7: Lamina13_61	81	96	120	131	131	180	201	231	263	304	311	384	408	410	428
8: Scavito_83 + 8	81	96	120	131	131	180	201	231	263	304	311	384	408	410	428
9: ArV1_069	81	96	120	131	131	180	201	231	263	304	311	384	408	410	428
10: Lymara_79	81	96	120	131	131	180	201	231	263	304	311	384	408	410	428
11: DfYang_79	81	96	120	131	131	180	201	231	263	304	311	384	408	410	428
12: Linus_82 + 4	81	96	120	131	131	180	201	231	263	304	311	384	408	410	428
13: Colucci_85	81	96	120	131	131	180	201	231	263	304	311	384	408	410	428
14: KBurroustX_81	81	96	120	131	131	180	201	231	263	304	311	384	408	410	428
15: Chubster_83	81	96	120	131	131	180	201	231	263	304	311	384	408	410	428
16: PrincessTina_83	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
17: Wocket_66	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
18: Beiphegor_63	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
19: Munica_102	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
20: StellaBean_81	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
21: Lilac_101	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
22: Tarkin_69	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
23: KingJulian_61	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
24: Wee_78 + 1	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
25: Moga_71	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
26: DRuby9_70 F1	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
27: Daenerys_61 + 5	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
28: Harley_68	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
29: Kersh_64	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
30: BlueCrab_67	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
31: Younger_66	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
32: Mantra_64	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
33: SG4_70	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
34: Phalconer_61	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
35: Martik_66	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
36: Hegedechy_63	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
37: ShiLan_63	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
38: Pollywog_67	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
39: AKhila_67 + 1	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
40: Bob_73	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
41: RedBird_61	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
42: Conjur_61	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
43: TootsiePop_112	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
44: Bipolar_76	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
45: Filuzino_71	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
46: Awesomesauce_76	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
47: Shmoo_61	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
48: Owini_271_66	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
49: StAnns_61	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428
50: Starcavich_61	88	101	121	131	131	181	201	231	263	304	311	384	408	410	428

Pham 216040



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 216040 Report

This analysis was run 02/22/25 on database version 588.

Pham number 216040 has 98 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Inyanga\_54, Iqorha\_54
- Track 2 : Violet\_57
- Track 3 : Molly\_60, Briton15\_63
- Track 4 : Applejack\_54
- Track 5 : HanShotFirst\_60
- Track 6 : Tasp14\_62
- Track 7 : Lamina13\_61
- Track 8 : Scavito\_83, Kabreeze\_82, HumptyDumpty\_82, JaNo\_81, Chocolat\_82, Tophat\_83, Chipper1996\_830, Mordred\_82, EdgarPoe\_81
- Track 9 : ArV1\_069
- Track 10 : Lymara\_79
- Track 11 : DrYang\_79
- Track 12 : Linus\_82, RosiePosie\_82, Conboy\_80, MoyaNatalis\_81, JayCookie\_82
- Track 13 : Colucci\_85
- Track 14 : KBurrousTX\_81
- Track 15 : Chubster\_83
- Track 16 : PrincessTrina\_83
- Track 17 : Wocket\_66
- Track 18 : Belphegor\_65
- Track 19 : Murica\_102, MISSy\_100
- Track 20 : StellaBean\_97
- Track 21 : Lilac\_101
- Track 22 : Tarkin\_98
- Track 23 : KingJulian\_67
- Track 24 : Wee\_78, Taj\_79
- Track 25 : Mova\_70
- Track 26 : DRBy19\_70, Philus\_70
- Track 27 : Daenerys\_61, JoeyJr\_62, PHappiness\_62, Polka14\_65, Leperchaun\_59, RitaG\_62
- Track 28 : Harley\_68
- Track 29 : Kersh\_68
- Track 30 : BlueCrab\_67, FreddyB\_67
- Track 31 : Totinger\_66
- Track 32 : Mantra\_64
- Track 33 : SG4\_70
- Track 34 : Phalconet\_70
- Track 35 : Martik\_66

- Track 36 : Hegedechwinu\_73
- Track 37 : ShiLan\_65
- Track 38 : Pollywog\_67
- Track 39 : Akhila\_67, MilanaBonita\_66
- Track 40 : Bobi\_73
- Track 41 : RedBird\_75, Dorothy\_75
- Track 42 : Corium\_67
- Track 43 : TootsiePop\_75, Misha28\_75
- Track 44 : Bipolar\_76
- Track 45 : Filuzino\_74
- Track 46 : Awesomesauce\_76
- Track 47 : ShroomBoi\_67
- Track 48 : OwlsT2W\_66
- Track 49 : StAnnes\_70
- Track 50 : Starcevich\_66
- Track 51 : Optimus\_142
- Track 52 : Gonephishing\_142
- Track 53 : Hannaconda\_142
- Track 54 : Boilgate\_58
- Track 55 : Majeke\_63, Phegasus\_63, Mangethe\_63
- Track 56 : CactusJack\_53, Gavriela\_53, Glaske\_53, Phalm\_53, StressBall\_53
- Track 57 : Thespis\_55
- Track 58 : Willsammy\_52, KilKor\_53
- Track 59 : Atcoo\_55
- Track 60 : Megiddo\_53
- Track 61 : Arib1\_59
- Track 62 : Brusacoram\_55
- Track 63 : Nazo\_56
- Track 64 : BigNuz\_55
- Track 65 : MooMoo\_65

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

The start number called the most often in the published annotations is 81, it was called in 17 of the 89 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Chipper1996\_830, Chocolat\_82, Chubster\_83, Conboy\_80, DrYang\_79, EdgarPoe\_81, HumptyDumpty\_82, JaNo\_81, JayCookie\_82, Kabreeze\_82, Linus\_82, Lymara\_79, Mordred\_82, MoyaNatalis\_81, PrincessTrina\_83, RosiePosie\_82, Scavito\_83, Tophat\_83,

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

- BigNuz\_55, Nazo\_56,

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

- Akhila\_67, Applejack\_54, ArV1\_069, Arib1\_59, Atcoo\_55, Awesomesauce\_76, Belphegor\_65, Bipolar\_76, BlueCrab\_67, Bobi\_73, Boilgate\_58, Briton15\_63, Brusacoram\_55, CactusJack\_53, Colucci\_85, Corium\_67, DRBy19\_70, Daenerys\_61, Dorothy\_75, Filuzino\_74, FreddyB\_67, Gavriela\_53, Glaske\_53,

Gonephishing\_142, HanShotFirst\_60, Hannaconda\_142, Harley\_68, Hegedechwinu\_73, Inyanga\_54, Iqorha\_54, JoeyJr\_62, KBurroustX\_81, Kersh\_68, KilKor\_53, KingJulian\_67, Lamina13\_61, Leperchaun\_59, Lilac\_101, MISSy\_100, Majeke\_63, Mangethe\_63, Mantra\_64, Martik\_66, Megiddo\_53, MilanaBonita\_66, Misha28\_75, Molly\_60, MooMoo\_65, Mova\_70, Murica\_102, Optimus\_142, OwlsT2W\_66, PHappiness\_62, Phalconet\_70, Phalm\_53, Phegasus\_63, Philus\_70, Polka14\_65, Pollywog\_67, RedBird\_75, RitaG\_62, SG4\_70, ShiLan\_65, ShroomBoi\_67, StAnnes\_70, Starcevich\_66, StellaBean\_97, StressBall\_53, Taj\_79, Tarkin\_98, Tasp14\_62, Thespis\_55, TootsiePop\_75, Totinger\_66, Violet\_57, Wee\_78, Willsammy\_52, Wocket\_66,

### Summary by start number:

#### Start 19:

- Found in 2 of 98 ( 2.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Corium\_67 (F1),

#### Start 20:

- Found in 2 of 98 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dorothy\_75 (F1), RedBird\_75 (F1),

#### Start 22:

- Found in 3 of 98 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 3 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Awesomesauce\_76 (F1), Misha28\_75 (F1), TootsiePop\_75 (F1),

#### Start 23:

- Found in 7 of 98 ( 7.1% ) of genes in pham
- Manual Annotations of this start: 7 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BlueCrab\_67 (F1), DRBy19\_70 (F1), FreddyB\_67 (F1), Martik\_66 (F1), Philus\_70 (F1), ShiLan\_65 (F1), Starcevich\_66 (F1),

#### Start 25:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: OwlsT2W\_66 (F1),

#### Start 36:

- Found in 3 of 98 ( 3.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 33.3% of time when present
- Phage (with cluster) where this start called: KingJulian\_67 (F1),

#### Start 38:

- Found in 4 of 98 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Atcoo\_55 (P1),

Start 39:

- Found in 8 of 98 ( 8.2% ) of genes in pham
- Manual Annotations of this start: 7 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CactusJack\_53 (P1), Gavriela\_53 (P1), Glaske\_53 (P1), KilKor\_53 (P1), Megiddo\_53 (P1), Phalm\_53 (P1), StressBall\_53 (P1), Willsammy\_52 (P1),

Start 42:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bipolar\_76 (F1),

Start 57:

- Found in 2 of 98 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Bobi\_73 (F1),

Start 60:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SG4\_70 (F1),

Start 63:

- Found in 3 of 98 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 2 of 89
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Filuzino\_74 (F1), Pollywog\_67 (F1),

Start 64:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: StAnnes\_70 (F1),

Start 65:

- Found in 2 of 98 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: StellaBean\_97 (E), Tarkin\_98 (E),

Start 67:

- Found in 3 of 98 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 3 of 89
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Lilac\_101 (E), MISSy\_100 (E), Murica\_102 (E),

#### Start 68:

- Found in 8 of 98 ( 8.2% ) of genes in pham
- Manual Annotations of this start: 8 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Applejack\_54 (A1), Briton15\_63 (A1), HanShotFirst\_60 (A1), Lamina13\_61 (A1), Molly\_60 (A1), Optimus\_142 (J), Tasp14\_62 (A1), Violet\_57 (A1),

#### Start 69:

- Found in 3 of 98 ( 3.1% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Gonephishing\_142 (J), Inyanga\_54 (A1), Iqorha\_54 (A1),

#### Start 72:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hannaconda\_142 (J),

#### Start 78:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hegedechwinu\_73 (F1),

#### Start 79:

- Found in 5 of 98 ( 5.1% ) of genes in pham
- Manual Annotations of this start: 5 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Akhila\_67 (F1), MilanaBonita\_66 (F1), Phalconet\_70 (F1), Taj\_79 (F1), Wee\_78 (F1),

#### Start 80:

- Found in 4 of 98 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 4 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kersh\_68 (F1), Mantra\_64 (F1), Mova\_70 (F1), Totinger\_66 (F1),

#### Start 81:

- Found in 20 of 98 ( 20.4% ) of genes in pham
- Manual Annotations of this start: 17 of 89
- Called 90.0% of time when present
- Phage (with cluster) where this start called: Chipper1996\_830 (AR), Chocolat\_82 (AR), Chubster\_83 (AR), Conboy\_80 (AR), DrYang\_79 (AR), EdgarPoe\_81 (AR), HumptyDumpty\_82 (AR), JaNo\_81 (AR), JayCookie\_82 (AR), Kabreeze\_82 (AR), Linus\_82 (AR), Lymara\_79 (AR), Mordred\_82 (AR), MoyaNatalis\_81 (AR), PrincessTrina\_83 (AR), RosiePosie\_82 (AR), Scavito\_83 (AR), Tophat\_83 (AR),

Start 100:

- Found in 1 of 98 ( 1.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Belphegor\_65 (DE),

Start 114:

- Found in 4 of 98 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 3 of 89
- Called 75.0% of time when present
- Phage (with cluster) where this start called: Majeke\_63 (P1), Mangethe\_63 (P1), Phegasus\_63 (P1),

Start 120:

- Found in 22 of 98 ( 22.4% ) of genes in pham
- Manual Annotations of this start: 3 of 89
- Called 18.2% of time when present
- Phage (with cluster) where this start called: ArV1\_069 (AR), Colucci\_85 (AR), KBurrousTX\_81 (AR), MooMoo\_65 (singleton),

Start 121:

- Found in 8 of 98 ( 8.2% ) of genes in pham
- Manual Annotations of this start: 8 of 89
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Daenerys\_61 (F1), Harley\_68 (F1), JoeyJr\_62 (F1), Leperchaun\_59 (F1), PHappiness\_62 (F1), Polka14\_65 (F1), RitaG\_62 (F1), ShroomBoi\_67 (F1),

Start 122:

- Found in 2 of 98 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Boilgate\_58 (K8),

Start 136:

- Found in 4 of 98 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Arib1\_59 (P1),

Start 137:

- Found in 4 of 98 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 3 of 89
- Called 75.0% of time when present
- Phage (with cluster) where this start called: BigNuz\_55 (P4), Nazo\_56 (P4), Wocket\_66 (CV),

Start 185:

- Found in 2 of 98 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Thespis\_55 (P1),



Start 199:

- Found in 2 of 98 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 89
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Brusacoram\_55 (P1),

### **Summary by clusters:**

There are 11 clusters represented in this pham: F1, singleton, P1, E, P4, J, DE, A1, AR, K8, CV,

Info for manual annotations of cluster A1:

- Start number 68 was manually annotated 7 times for cluster A1.

Info for manual annotations of cluster AR:

- Start number 81 was manually annotated 17 times for cluster AR.
- Start number 120 was manually annotated 2 times for cluster AR.

Info for manual annotations of cluster CV:

- Start number 137 was manually annotated 1 time for cluster CV.

Info for manual annotations of cluster E:

- Start number 65 was manually annotated 2 times for cluster E.
- Start number 67 was manually annotated 3 times for cluster E.

Info for manual annotations of cluster F1:

- Start number 20 was manually annotated 2 times for cluster F1.
- Start number 22 was manually annotated 3 times for cluster F1.
- Start number 23 was manually annotated 7 times for cluster F1.
- Start number 25 was manually annotated 1 time for cluster F1.
- Start number 42 was manually annotated 1 time for cluster F1.
- Start number 57 was manually annotated 1 time for cluster F1.
- Start number 60 was manually annotated 1 time for cluster F1.
- Start number 63 was manually annotated 2 times for cluster F1.
- Start number 64 was manually annotated 1 time for cluster F1.
- Start number 78 was manually annotated 1 time for cluster F1.
- Start number 79 was manually annotated 5 times for cluster F1.
- Start number 80 was manually annotated 4 times for cluster F1.
- Start number 121 was manually annotated 8 times for cluster F1.

Info for manual annotations of cluster J:

- Start number 68 was manually annotated 1 time for cluster J.
- Start number 72 was manually annotated 1 time for cluster J.

Info for manual annotations of cluster K8:

- Start number 122 was manually annotated 1 time for cluster K8.

Info for manual annotations of cluster P1:

- Start number 38 was manually annotated 1 time for cluster P1.
- Start number 39 was manually annotated 7 times for cluster P1.
- Start number 114 was manually annotated 3 times for cluster P1.

- Start number 136 was manually annotated 1 time for cluster P1.
- Start number 185 was manually annotated 1 time for cluster P1.
- Start number 199 was manually annotated 1 time for cluster P1.

Info for manual annotations of cluster P4:

- Start number 137 was manually annotated 2 times for cluster P4.

### **Gene Information:**

Gene: Akhila\_67 Start: 42333, Stop: 45014, Start Num: 79

Candidate Starts for Akhila\_67:

(59, 42243), (62, 42252), (Start: 79 @42333 has 5 MA's), (92, 42393), (97, 42429), (105, 42462), (141, 42663), (145, 42696), (171, 42873), (176, 42897), (189, 42960), (192, 42984), (193, 42987), (195, 43005), (196, 43008), (203, 43107), (205, 43128), (216, 43260), (220, 43341), (234, 43422), (247, 43536), (256, 43593), (264, 43665), (270, 43749), (273, 43767), (277, 43788), (286, 43857), (287, 43875), (289, 43908), (295, 44022), (297, 44028), (298, 44046), (299, 44067), (309, 44109), (313, 44151), (326, 44196), (328, 44208), (342, 44313), (347, 44334), (348, 44343), (349, 44355), (351, 44379), (355, 44421), (384, 44520), (410, 44706), (421, 44808), (424, 44820), (426, 44847),

Gene: Applejack\_54 Start: 38217, Stop: 36658, Start Num: 68

Candidate Starts for Applejack\_54:

(Start: 68 @38217 has 8 MA's), (91, 38109), (98, 38064), (117, 37980), (184, 37839), (204, 37689), (212, 37611), (227, 37506), (230, 37503), (249, 37401), (253, 37392), (342, 37185), (351, 37119), (400, 36978), (403, 36975), (410, 36921), (415, 36867), (421, 36834), (427, 36792), (428, 36759),

Gene: ArV1\_069 Start: 53043, Stop: 54641, Start Num: 120

Candidate Starts for ArV1\_069:

(Start: 120 @53043 has 3 MA's), (135, 53115), (141, 53151), (142, 53157), (144, 53175), (148, 53193), (156, 53250), (160, 53286), (166, 53316), (167, 53328), (180, 53391), (201, 53520), (213, 53589), (219, 53616), (251, 53697), (261, 53712), (263, 53727), (274, 53769), (276, 53778), (280, 53796), (284, 53814), (304, 53829), (317, 53913), (335, 53979), (338, 53985), (340, 54039), (343, 54066), (346, 54081), (349, 54105), (351, 54129), (353, 54150), (367, 54213), (382, 54267), (383, 54291), (399, 54405), (417, 54429), (421, 54447), (425, 54468), (430, 54537), (431, 54546), (434, 54588), (439, 54621),

Gene: Arib1\_59 Start: 37790, Stop: 39160, Start Num: 136

Candidate Starts for Arib1\_59:

(115, 37688), (117, 37697), (Start: 136 @37790 has 1 MA's), (142, 37826), (145, 37850), (151, 37886), (156, 37919), (200, 38165), (211, 38228), (215, 38246), (308, 38288), (320, 38330), (342, 38453), (348, 38483), (349, 38495), (359, 38582), (383, 38684), (384, 38687), (392, 38750), (410, 38867), (421, 38954), (424, 38966), (425, 38975), (426, 38993), (437, 39110),

Gene: Atcoo\_55 Start: 37344, Stop: 39803, Start Num: 38

Candidate Starts for Atcoo\_55:

(21, 37242), (24, 37251), (27, 37278), (Start: 38 @37344 has 1 MA's), (51, 37404), (58, 37443), (66, 37473), (86, 37563), (90, 37590), (103, 37653), (106, 37659), (107, 37662), (109, 37680), (129, 37800), (139, 37842), (146, 37899), (188, 38169), (194, 38208), (208, 38373), (214, 38436), (228, 38568), (231, 38589), (235, 38625), (237, 38631), (240, 38670), (243, 38706), (252, 38739), (254, 38760), (272, 38865), (292, 38940), (301, 39012), (342, 39258), (345, 39276), (349, 39300), (374, 39435), (380, 39465), (384, 39501), (402, 39603), (410, 39660), (414, 39720), (418, 39753), (422, 39762), (423, 39765),

Gene: Awesomesauce\_76 Start: 46078, Stop: 48528, Start Num: 22

Candidate Starts for Awesomesauce\_76:

(Start: 22 @46078 has 3 MA's), (26, 46108), (31, 46138), (37, 46174), (45, 46207), (94, 46438), (106, 46489), (107, 46492), (129, 46630), (139, 46672), (146, 46729), (188, 46999), (194, 47038), (208, 47203), (214, 47266), (228, 47398), (231, 47419), (235, 47455), (237, 47461), (240, 47500), (243, 47536), (252, 47569), (254, 47590), (319, 47725), (342, 47827), (343, 47830), (349, 47869), (356, 47950), (383, 48061), (384, 48064), (402, 48166), (410, 48223), (421, 48325), (424, 48337), (425, 48346), (427, 48367),

Gene: Belphegor\_65 Start: 51910, Stop: 53616, Start Num: 100

Candidate Starts for Belphegor\_65:

(99, 51907), (100, 51910), (109, 51937), (118, 51979), (Start: 122 @52006 has 1 MA's), (124, 52027), (127, 52036), (145, 52114), (155, 52165), (165, 52216), (179, 52267), (191, 52312), (213, 52456), (226, 52504), (263, 52600), (275, 52645), (304, 52702), (306, 52714), (342, 52918), (349, 52960), (370, 53080), (383, 53146), (415, 53383), (417, 53398), (421, 53416), (429, 53503), (431, 53515), (438, 53584),

Gene: BigNuz\_55 Start: 38221, Stop: 39756, Start Num: 137

Candidate Starts for BigNuz\_55:

(Start: 81 @37939 has 17 MA's), (119, 38140), (126, 38182), (Start: 137 @38221 has 3 MA's), (141, 38248), (142, 38254), (145, 38278), (151, 38314), (152, 38317), (156, 38347), (166, 38413), (195, 38563), (215, 38686), (263, 38824), (280, 38896), (342, 39142), (346, 39160), (373, 39250), (378, 39259), (386, 39301), (410, 39466), (413, 39511), (421, 39553), (424, 39565), (427, 39595), (437, 39709),

Gene: Bipolar\_76 Start: 46390, Stop: 48396, Start Num: 42

Candidate Starts for Bipolar\_76:

(Start: 42 @46390 has 1 MA's), (Start: 63 @46483 has 2 MA's), (73, 46513), (76, 46543), (84, 46579), (91, 46612), (98, 46657), (109, 46699), (110, 46702), (116, 46735), (117, 46741), (130, 46822), (147, 46864), (150, 46879), (169, 46972), (197, 47062), (198, 47074), (210, 47206), (223, 47326), (244, 47449), (260, 47536), (342, 47671), (347, 47692), (348, 47701), (349, 47713), (351, 47737), (383, 47905), (384, 47908), (410, 48088), (411, 48118), (421, 48190), (424, 48202), (425, 48211), (426, 48229), (437, 48346),

Gene: BlueCrab\_67 Start: 43881, Stop: 46157, Start Num: 23

Candidate Starts for BlueCrab\_67:

(2, 43704), (3, 43710), (5, 43719), (7, 43728), (12, 43767), (17, 43824), (Start: 23 @43881 has 7 MA's), (31, 43938), (45, 44007), (94, 44238), (109, 44310), (129, 44430), (139, 44472), (146, 44529), (188, 44799), (194, 44838), (208, 45003), (214, 45066), (228, 45198), (231, 45219), (235, 45255), (237, 45261), (240, 45300), (243, 45336), (252, 45369), (254, 45390), (330, 45555), (331, 45558), (342, 45642), (349, 45684), (402, 45957), (410, 46014), (414, 46074), (418, 46107), (422, 46116), (423, 46119),

Gene: Bobi\_73 Start: 44682, Stop: 46739, Start Num: 57

Candidate Starts for Bobi\_73:

(Start: 57 @44682 has 1 MA's), (74, 44721), (76, 44751), (84, 44787), (91, 44820), (98, 44865), (124, 45009), (130, 45030), (151, 45162), (161, 45243), (174, 45324), (194, 45438), (202, 45495), (206, 45567), (214, 45651), (218, 45690), (224, 45759), (233, 45810), (236, 45843), (245, 45924), (246, 45930), (252, 45948), (254, 45969), (288, 46053), (292, 46095), (342, 46218), (347, 46239), (348, 46248), (349, 46260), (351, 46284), (353, 46305), (360, 46338), (377, 46383), (378, 46395), (383, 46434), (384, 46437), (397, 46539), (410, 46596), (414, 46656), (419, 46689), (422, 46698), (423, 46701),

Gene: Boilgate\_58 Start: 41641, Stop: 43257, Start Num: 122

Candidate Starts for Boilgate\_58:

(102, 41533), (111, 41566), (Start: 122 @41641 has 1 MA's), (125, 41668), (134, 41698), (144, 41767), (171, 41941), (181, 41992), (182, 41998), (196, 42073), (215, 42193), (283, 42400), (303, 42403), (312, 42451), (314, 42469), (342, 42622), (345, 42640), (348, 42655), (353, 42712), (390, 42904), (421, 43054), (427, 43096), (431, 43153), (438, 43222), (441, 43246),

Gene: Briton15\_63 Start: 42021, Stop: 40291, Start Num: 68

Candidate Starts for Briton15\_63:

(Start: 68 @42021 has 8 MA's), (91, 41913), (98, 41868), (117, 41784), (184, 41643), (204, 41493), (212, 41415), (227, 41310), (230, 41307), (249, 41205), (253, 41196), (348, 40959), (351, 40923), (363, 40860), (383, 40758), (384, 40755), (395, 40677), (410, 40569), (416, 40497), (417, 40485), (418, 40476), (421, 40467), (425, 40446), (426, 40428),

Gene: Brusacoram\_55 Start: 36850, Stop: 38346, Start Num: 199

Candidate Starts for Brusacoram\_55:

(Start: 185 @36748 has 1 MA's), (187, 36757), (190, 36784), (Start: 199 @36850 has 1 MA's), (203, 36910), (207, 36949), (209, 36979), (217, 37036), (225, 37123), (238, 37201), (241, 37246), (272, 37408), (292, 37483), (301, 37555), (342, 37801), (345, 37819), (349, 37843), (374, 37978), (380, 38008), (384, 38044), (402, 38146), (410, 38203), (414, 38263), (418, 38296), (422, 38305), (423, 38308),

Gene: CactusJack\_53 Start: 36390, Stop: 38582, Start Num: 39

Candidate Starts for CactusJack\_53:

(1, 35955), (29, 36327), (Start: 39 @36390 has 7 MA's), (45, 36417), (47, 36423), (51, 36447), (56, 36483), (66, 36516), (86, 36606), (90, 36633), (103, 36696), (106, 36702), (107, 36705), (109, 36723), (129, 36843), (139, 36885), (146, 36942), (188, 37212), (194, 37251), (208, 37416), (214, 37479), (228, 37611), (231, 37632), (235, 37668), (237, 37674), (240, 37713), (243, 37749), (252, 37782), (254, 37803), (291, 37887), (305, 37923), (342, 38046), (345, 38064), (349, 38088), (354, 38145), (356, 38151), (367, 38181), (369, 38187), (384, 38253), (410, 38439), (414, 38499), (418, 38532), (422, 38541), (423, 38544),

Gene: Chipper1996\_830 Start: 54205, Stop: 56127, Start Num: 81

Candidate Starts for Chipper1996\_830:

(Start: 81 @54205 has 17 MA's), (96, 54277), (Start: 120 @54409 has 3 MA's), (135, 54481), (141, 54517), (144, 54541), (148, 54559), (156, 54616), (160, 54652), (166, 54682), (167, 54694), (201, 54886), (213, 54955), (219, 54982), (251, 55063), (261, 55078), (263, 55093), (276, 55144), (280, 55162), (304, 55195), (317, 55279), (325, 55306), (335, 55345), (338, 55351), (340, 55405), (341, 55426), (342, 55429), (343, 55432), (346, 55447), (351, 55495), (353, 55516), (367, 55579), (376, 55603), (379, 55621), (381, 55630), (383, 55657), (407, 55792), (408, 55810), (412, 55879), (416, 55903), (417, 55915), (418, 55924), (421, 55933), (430, 56023), (431, 56032), (439, 56107), (440, 56113),

Gene: Chocolat\_82 Start: 53912, Stop: 55834, Start Num: 81

Candidate Starts for Chocolat\_82:

(Start: 81 @53912 has 17 MA's), (96, 53984), (Start: 120 @54116 has 3 MA's), (135, 54188), (141, 54224), (144, 54248), (148, 54266), (156, 54323), (160, 54359), (166, 54389), (167, 54401), (201, 54593), (213, 54662), (219, 54689), (251, 54770), (261, 54785), (263, 54800), (276, 54851), (280, 54869), (304, 54902), (317, 54986), (325, 55013), (335, 55052), (338, 55058), (340, 55112), (341, 55133), (342, 55136), (343, 55139), (346, 55154), (351, 55202), (353, 55223), (367, 55286), (376, 55310), (379, 55328), (381, 55337), (383, 55364), (407, 55499), (408, 55517), (412, 55586), (416, 55610), (417, 55622), (418, 55631), (421, 55640), (430, 55730), (431, 55739), (439, 55814), (440,

55820),

Gene: Chubster\_83 Start: 54594, Stop: 56483, Start Num: 81

Candidate Starts for Chubster\_83:

(Start: 81 @54594 has 17 MA's), (96, 54666), (Start: 120 @54798 has 3 MA's), (135, 54837), (141, 54873), (144, 54897), (148, 54915), (156, 54972), (160, 55008), (166, 55038), (167, 55050), (201, 55242), (219, 55338), (251, 55419), (261, 55434), (263, 55449), (276, 55500), (280, 55518), (304, 55551), (317, 55635), (335, 55701), (338, 55707), (340, 55761), (341, 55782), (342, 55785), (343, 55788), (346, 55803), (351, 55851), (353, 55872), (367, 55935), (376, 55959), (379, 55977), (381, 55986), (383, 56013), (407, 56148), (408, 56166), (412, 56235), (416, 56259), (417, 56271), (418, 56280), (421, 56289), (429, 56376), (430, 56379), (431, 56388), (439, 56463), (440, 56469),

Gene: Colucci\_85 Start: 54914, Stop: 56491, Start Num: 120

Candidate Starts for Colucci\_85:

(Start: 120 @54914 has 3 MA's), (141, 55001), (142, 55007), (144, 55025), (156, 55100), (160, 55136), (166, 55166), (213, 55439), (219, 55466), (251, 55547), (261, 55562), (263, 55577), (274, 55619), (276, 55628), (280, 55646), (304, 55679), (335, 55829), (338, 55835), (340, 55889), (343, 55916), (346, 55931), (351, 55979), (353, 56000), (358, 56036), (367, 56063), (382, 56117), (383, 56141), (399, 56255), (416, 56267), (421, 56297), (430, 56387), (431, 56396), (439, 56471),

Gene: Conboy\_80 Start: 53694, Stop: 55583, Start Num: 81

Candidate Starts for Conboy\_80:

(Start: 81 @53694 has 17 MA's), (96, 53766), (Start: 120 @53898 has 3 MA's), (135, 53937), (141, 53973), (144, 53997), (148, 54015), (156, 54072), (160, 54108), (166, 54138), (167, 54150), (201, 54342), (213, 54411), (219, 54438), (251, 54519), (261, 54534), (263, 54549), (276, 54600), (280, 54618), (304, 54651), (317, 54735), (335, 54801), (338, 54807), (340, 54861), (341, 54882), (342, 54885), (343, 54888), (346, 54903), (351, 54951), (353, 54972), (367, 55035), (376, 55059), (379, 55077), (381, 55086), (383, 55113), (407, 55248), (408, 55266), (412, 55335), (416, 55359), (417, 55371), (418, 55380), (421, 55389), (430, 55479), (431, 55488), (439, 55563), (440, 55569),

Gene: Corium\_67 Start: 44493, Stop: 46790, Start Num: 19

Candidate Starts for Corium\_67:

(13, 44409), (15, 44421), (19, 44493), (36, 44592), (45, 44622), (51, 44652), (56, 44688), (66, 44721), (86, 44811), (90, 44838), (103, 44901), (106, 44907), (109, 44928), (129, 45048), (139, 45090), (146, 45147), (188, 45417), (208, 45621), (214, 45684), (228, 45816), (231, 45837), (235, 45873), (237, 45879), (240, 45918), (243, 45954), (252, 45987), (254, 46008), (258, 46050), (291, 46092), (305, 46128), (342, 46251), (345, 46269), (349, 46293), (391, 46530), (405, 46593), (410, 46647), (414, 46707), (418, 46740), (422, 46749), (423, 46752),

Gene: DRBy19\_70 Start: 44260, Stop: 46806, Start Num: 23

Candidate Starts for DRBy19\_70:

(2, 44083), (3, 44089), (5, 44098), (7, 44107), (17, 44203), (Start: 23 @44260 has 7 MA's), (31, 44317), (37, 44353), (44, 44377), (45, 44386), (94, 44617), (106, 44668), (107, 44671), (129, 44809), (139, 44851), (146, 44908), (188, 45178), (194, 45217), (208, 45382), (214, 45445), (228, 45577), (231, 45598), (235, 45634), (237, 45640), (240, 45679), (243, 45715), (252, 45748), (254, 45769), (296, 45961), (300, 46009), (306, 46045), (321, 46135), (327, 46153), (342, 46276), (345, 46294), (348, 46306), (349, 46318), (352, 46363), (359, 46411), (402, 46606), (410, 46663), (414, 46723), (418, 46756), (422, 46765), (423, 46768),

Gene: Daenerys\_61 Start: 41682, Stop: 43196, Start Num: 121

Candidate Starts for Daenerys\_61:

(83, 41505), (Start: 121 @41682 has 8 MA's), (132, 41739), (140, 41775), (144, 41808), (183, 42030), (192, 42072), (211, 42198), (215, 42216), (232, 42276), (250, 42318), (260, 42330), (304, 42423),

(310, 42447), (321, 42507), (342, 42630), (347, 42651), (348, 42660), (357, 42753), (393, 42933), (410, 43053), (414, 43113), (418, 43146), (422, 43155), (423, 43158),

Gene: Dorothy\_75 Start: 45729, Stop: 48410, Start Num: 20

Candidate Starts for Dorothy\_75:

(Start: 20 @45729 has 2 MA's), (26, 45768), (31, 45798), (37, 45834), (45, 45867), (94, 46098), (103, 46143), (106, 46149), (107, 46152), (109, 46170), (110, 46173), (124, 46272), (130, 46293), (151, 46425), (161, 46506), (174, 46587), (194, 46701), (202, 46758), (206, 46830), (214, 46914), (218, 46953), (224, 47022), (233, 47073), (245, 47187), (246, 47193), (252, 47211), (254, 47232), (281, 47379), (290, 47415), (299, 47484), (311, 47532), (323, 47565), (329, 47592), (342, 47685), (347, 47706), (348, 47715), (351, 47751), (374, 47853), (383, 47916), (384, 47919), (395, 47997), (410, 48105), (421, 48207), (424, 48219), (425, 48228), (426, 48246), (437, 48363),

Gene: DrYang\_79 Start: 54332, Stop: 56248, Start Num: 81

Candidate Starts for DrYang\_79:

(Start: 81 @54332 has 17 MA's), (96, 54404), (113, 54491), (Start: 120 @54536 has 3 MA's), (135, 54602), (141, 54638), (144, 54662), (145, 54668), (151, 54704), (156, 54737), (160, 54773), (166, 54803), (201, 55007), (213, 55076), (219, 55103), (251, 55184), (261, 55199), (263, 55214), (274, 55256), (276, 55265), (284, 55301), (304, 55316), (335, 55466), (338, 55472), (340, 55526), (341, 55547), (342, 55550), (343, 55553), (346, 55568), (350, 55595), (351, 55616), (353, 55637), (367, 55700), (376, 55724), (383, 55778), (393, 55847), (408, 55931), (412, 56000), (415, 56021), (417, 56036), (418, 56045), (421, 56054), (425, 56075), (427, 56096), (430, 56144), (431, 56153), (439, 56228),

Gene: EdgarPoe\_81 Start: 54069, Stop: 55991, Start Num: 81

Candidate Starts for EdgarPoe\_81:

(Start: 81 @54069 has 17 MA's), (96, 54141), (Start: 120 @54273 has 3 MA's), (135, 54345), (141, 54381), (144, 54405), (148, 54423), (156, 54480), (160, 54516), (166, 54546), (167, 54558), (201, 54750), (213, 54819), (219, 54846), (251, 54927), (261, 54942), (263, 54957), (276, 55008), (280, 55026), (304, 55059), (317, 55143), (325, 55170), (335, 55209), (338, 55215), (340, 55269), (341, 55290), (342, 55293), (343, 55296), (346, 55311), (351, 55359), (353, 55380), (367, 55443), (376, 55467), (379, 55485), (381, 55494), (383, 55521), (407, 55656), (408, 55674), (412, 55743), (416, 55767), (417, 55779), (418, 55788), (421, 55797), (430, 55887), (431, 55896), (439, 55971), (440, 55977),

Gene: Filuzino\_74 Start: 46234, Stop: 48309, Start Num: 63

Candidate Starts for Filuzino\_74:

(30, 46084), (32, 46099), (40, 46135), (Start: 63 @46234 has 2 MA's), (73, 46264), (76, 46294), (84, 46330), (91, 46363), (98, 46408), (109, 46450), (110, 46453), (125, 46555), (138, 46603), (143, 46657), (149, 46696), (159, 46771), (162, 46783), (169, 46828), (175, 46873), (197, 46978), (198, 46990), (210, 47122), (244, 47365), (260, 47452), (342, 47587), (347, 47608), (348, 47617), (351, 47653), (374, 47755), (383, 47818), (384, 47821), (392, 47884), (410, 48001), (421, 48103), (424, 48115), (426, 48142), (437, 48259),

Gene: FreddyB\_67 Start: 41676, Stop: 43952, Start Num: 23

Candidate Starts for FreddyB\_67:

(2, 41499), (3, 41505), (5, 41514), (7, 41523), (12, 41562), (17, 41619), (Start: 23 @41676 has 7 MA's), (31, 41733), (45, 41802), (94, 42033), (109, 42105), (129, 42225), (139, 42267), (146, 42324), (188, 42594), (194, 42633), (208, 42798), (214, 42861), (228, 42993), (231, 43014), (235, 43050), (237, 43056), (240, 43095), (243, 43131), (252, 43164), (254, 43185), (330, 43350), (331, 43353), (342, 43437), (349, 43479), (402, 43752), (410, 43809), (414, 43869), (418, 43902), (422, 43911), (423, 43914),

Gene: Gavriela\_53 Start: 36390, Stop: 38582, Start Num: 39

Candidate Starts for Gavriela\_53:

(1, 35955), (29, 36327), (Start: 39 @36390 has 7 MA's), (45, 36417), (47, 36423), (51, 36447), (56, 36483), (66, 36516), (86, 36606), (90, 36633), (103, 36696), (106, 36702), (107, 36705), (109, 36723), (129, 36843), (139, 36885), (146, 36942), (188, 37212), (194, 37251), (208, 37416), (214, 37479), (228, 37611), (231, 37632), (235, 37668), (237, 37674), (240, 37713), (243, 37749), (252, 37782), (254, 37803), (291, 37887), (305, 37923), (342, 38046), (345, 38064), (349, 38088), (354, 38145), (356, 38151), (367, 38181), (369, 38187), (384, 38253), (410, 38439), (414, 38499), (418, 38532), (422, 38541), (423, 38544),

Gene: Glaske\_53 Start: 36390, Stop: 38582, Start Num: 39

Candidate Starts for Glaske\_53:

(1, 35955), (29, 36327), (Start: 39 @36390 has 7 MA's), (45, 36417), (47, 36423), (51, 36447), (56, 36483), (66, 36516), (86, 36606), (90, 36633), (103, 36696), (106, 36702), (107, 36705), (109, 36723), (129, 36843), (139, 36885), (146, 36942), (188, 37212), (194, 37251), (208, 37416), (214, 37479), (228, 37611), (231, 37632), (235, 37668), (237, 37674), (240, 37713), (243, 37749), (252, 37782), (254, 37803), (291, 37887), (305, 37923), (342, 38046), (345, 38064), (349, 38088), (354, 38145), (356, 38151), (367, 38181), (369, 38187), (384, 38253), (410, 38439), (414, 38499), (418, 38532), (422, 38541), (423, 38544),

Gene: Gonephishing\_142 Start: 76140, Stop: 77969, Start Num: 69

Candidate Starts for Gonephishing\_142:

(69, 76140), (91, 76248), (98, 76293), (116, 76371), (117, 76377), (157, 76500), (197, 76662), (198, 76674), (210, 76806), (244, 77049), (260, 77136), (342, 77271), (347, 77292), (348, 77301), (351, 77337), (374, 77439), (383, 77502), (384, 77505), (417, 77775), (418, 77784), (421, 77793), (425, 77814), (426, 77832), (428, 77868),

Gene: HanShotFirst\_60 Start: 41970, Stop: 40321, Start Num: 68

Candidate Starts for HanShotFirst\_60:

(Start: 68 @41970 has 8 MA's), (91, 41862), (98, 41817), (117, 41733), (184, 41592), (204, 41442), (212, 41364), (227, 41259), (230, 41256), (249, 41154), (253, 41145), (342, 40938), (348, 40908), (351, 40872), (384, 40785), (417, 40515), (418, 40506), (421, 40497), (425, 40476), (426, 40458), (428, 40422),

Gene: Hannaconda\_142 Start: 76662, Stop: 78896, Start Num: 72

Candidate Starts for Hannaconda\_142:

(Start: 72 @76662 has 1 MA's), (91, 76770), (98, 76815), (116, 76893), (117, 76899), (129, 76977), (139, 77019), (146, 77076), (188, 77346), (208, 77550), (214, 77613), (228, 77745), (231, 77766), (235, 77802), (237, 77808), (240, 77847), (243, 77883), (252, 77916), (254, 77937), (262, 78021), (265, 78030), (342, 78231), (348, 78261), (351, 78297), (383, 78438), (384, 78441), (400, 78558), (416, 78690), (417, 78702), (418, 78711), (421, 78720), (425, 78741), (426, 78759), (428, 78795),

Gene: Harley\_68 Start: 43294, Stop: 44805, Start Num: 121

Candidate Starts for Harley\_68:

(82, 43117), (84, 43123), (88, 43132), (Start: 121 @43294 has 8 MA's), (132, 43351), (140, 43387), (144, 43420), (183, 43642), (192, 43684), (211, 43810), (215, 43828), (232, 43888), (250, 43930), (260, 43942), (304, 44035), (310, 44059), (321, 44119), (342, 44242), (347, 44263), (348, 44272), (351, 44308), (371, 44410), (383, 44473), (384, 44476), (410, 44662), (414, 44722), (418, 44755), (422, 44764), (423, 44767),

Gene: Hegedechwinu\_73 Start: 43329, Stop: 44918, Start Num: 78

Candidate Starts for Hegedechwinu\_73:

(Start: 78 @43329 has 1 MA's), (87, 43368), (92, 43398), (97, 43434), (105, 43467), (141, 43668), (145, 43701), (171, 43878), (176, 43902), (189, 43965), (192, 43989), (193, 43992), (328, 44226), (342, 44328), (347, 44349), (348, 44358), (351, 44394), (404, 44553), (410, 44610), (421, 44712), (424, 44724), (425, 44733), (427, 44754), (437, 44868),

Gene: HumptyDumpty\_82 Start: 53872, Stop: 55794, Start Num: 81

Candidate Starts for HumptyDumpty\_82:

(Start: 81 @53872 has 17 MA's), (96, 53944), (Start: 120 @54076 has 3 MA's), (135, 54148), (141, 54184), (144, 54208), (148, 54226), (156, 54283), (160, 54319), (166, 54349), (167, 54361), (201, 54553), (213, 54622), (219, 54649), (251, 54730), (261, 54745), (263, 54760), (276, 54811), (280, 54829), (304, 54862), (317, 54946), (325, 54973), (335, 55012), (338, 55018), (340, 55072), (341, 55093), (342, 55096), (343, 55099), (346, 55114), (351, 55162), (353, 55183), (367, 55246), (376, 55270), (379, 55288), (381, 55297), (383, 55324), (407, 55459), (408, 55477), (412, 55546), (416, 55570), (417, 55582), (418, 55591), (421, 55600), (430, 55690), (431, 55699), (439, 55774), (440, 55780),

Gene: Inyanga\_54 Start: 39801, Stop: 38044, Start Num: 69

Candidate Starts for Inyanga\_54:

(69, 39801), (91, 39693), (98, 39648), (117, 39564), (157, 39441), (158, 39429), (168, 39384), (197, 39267), (198, 39255), (210, 39123), (244, 38880), (260, 38793), (342, 38658), (348, 38628), (351, 38592), (384, 38505), (410, 38322), (417, 38238), (418, 38229), (421, 38220), (425, 38199), (426, 38181), (428, 38145),

Gene: Iqorha\_54 Start: 39800, Stop: 38043, Start Num: 69

Candidate Starts for Iqorha\_54:

(69, 39800), (91, 39692), (98, 39647), (117, 39563), (157, 39440), (158, 39428), (168, 39383), (197, 39266), (198, 39254), (210, 39122), (244, 38879), (260, 38792), (342, 38657), (348, 38627), (351, 38591), (384, 38504), (410, 38321), (417, 38237), (418, 38228), (421, 38219), (425, 38198), (426, 38180), (428, 38144),

Gene: JaNo\_81 Start: 53843, Stop: 55765, Start Num: 81

Candidate Starts for JaNo\_81:

(Start: 81 @53843 has 17 MA's), (96, 53915), (Start: 120 @54047 has 3 MA's), (135, 54119), (141, 54155), (144, 54179), (148, 54197), (156, 54254), (160, 54290), (166, 54320), (167, 54332), (201, 54524), (213, 54593), (219, 54620), (251, 54701), (261, 54716), (263, 54731), (276, 54782), (280, 54800), (304, 54833), (317, 54917), (325, 54944), (335, 54983), (338, 54989), (340, 55043), (341, 55064), (342, 55067), (343, 55070), (346, 55085), (351, 55133), (353, 55154), (367, 55217), (376, 55241), (379, 55259), (381, 55268), (383, 55295), (407, 55430), (408, 55448), (412, 55517), (416, 55541), (417, 55553), (418, 55562), (421, 55571), (430, 55661), (431, 55670), (439, 55745), (440, 55751),

Gene: JayCookie\_82 Start: 54405, Stop: 56327, Start Num: 81

Candidate Starts for JayCookie\_82:

(Start: 81 @54405 has 17 MA's), (96, 54477), (Start: 120 @54609 has 3 MA's), (135, 54681), (141, 54717), (144, 54741), (148, 54759), (156, 54816), (160, 54852), (166, 54882), (167, 54894), (201, 55086), (213, 55155), (219, 55182), (251, 55263), (261, 55278), (263, 55293), (276, 55344), (280, 55362), (304, 55395), (317, 55479), (335, 55545), (338, 55551), (340, 55605), (341, 55626), (342, 55629), (343, 55632), (346, 55647), (351, 55695), (353, 55716), (367, 55779), (376, 55803), (379, 55821), (381, 55830), (383, 55857), (407, 55992), (408, 56010), (412, 56079), (416, 56103), (417, 56115), (418, 56124), (421, 56133), (430, 56223), (431, 56232), (439, 56307), (440, 56313),

Gene: JoeyJr\_62 Start: 41850, Stop: 43364, Start Num: 121

Candidate Starts for JoeyJr\_62:



(83, 41673), (Start: 121 @41850 has 8 MA's), (132, 41907), (140, 41943), (144, 41976), (183, 42198), (192, 42240), (211, 42366), (215, 42384), (232, 42444), (250, 42486), (260, 42498), (304, 42591), (310, 42615), (321, 42675), (342, 42798), (347, 42819), (348, 42828), (357, 42921), (393, 43101), (410, 43221), (414, 43281), (418, 43314), (422, 43323), (423, 43326),

Gene: KBurrousTX\_81 Start: 56110, Stop: 57699, Start Num: 120

Candidate Starts for KBurrousTX\_81:

(Start: 114 @56071 has 3 MA's), (Start: 120 @56110 has 3 MA's), (135, 56176), (141, 56212), (142, 56218), (144, 56236), (156, 56311), (160, 56347), (166, 56377), (201, 56581), (213, 56650), (219, 56677), (251, 56758), (261, 56773), (263, 56788), (274, 56830), (276, 56839), (280, 56857), (284, 56875), (304, 56890), (335, 57040), (338, 57046), (340, 57100), (342, 57124), (346, 57142), (350, 57169), (351, 57190), (353, 57211), (361, 57256), (367, 57274), (382, 57331), (383, 57355), (385, 57361), (388, 57382), (417, 57493), (421, 57511), (425, 57532), (430, 57601), (431, 57610), (433, 57625), (439, 57685), (440, 57691),

Gene: Kabreeze\_82 Start: 53929, Stop: 55851, Start Num: 81

Candidate Starts for Kabreeze\_82:

(Start: 81 @53929 has 17 MA's), (96, 54001), (Start: 120 @54133 has 3 MA's), (135, 54205), (141, 54241), (144, 54265), (148, 54283), (156, 54340), (160, 54376), (166, 54406), (167, 54418), (201, 54610), (213, 54679), (219, 54706), (251, 54787), (261, 54802), (263, 54817), (276, 54868), (280, 54886), (304, 54919), (317, 55003), (325, 55030), (335, 55069), (338, 55075), (340, 55129), (341, 55150), (342, 55153), (343, 55156), (346, 55171), (351, 55219), (353, 55240), (367, 55303), (376, 55327), (379, 55345), (381, 55354), (383, 55381), (407, 55516), (408, 55534), (412, 55603), (416, 55627), (417, 55639), (418, 55648), (421, 55657), (430, 55747), (431, 55756), (439, 55831), (440, 55837),

Gene: Kersh\_68 Start: 45094, Stop: 47070, Start Num: 80

Candidate Starts for Kersh\_68:

(53, 44980), (Start: 80 @45094 has 4 MA's), (92, 45151), (93, 45163), (105, 45220), (128, 45361), (Start: 137 @45391 has 3 MA's), (139, 45406), (145, 45454), (153, 45505), (161, 45568), (170, 45616), (171, 45631), (173, 45640), (176, 45655), (179, 45679), (191, 45736), (192, 45742), (193, 45745), (195, 45763), (196, 45766), (266, 46036), (278, 46084), (304, 46120), (321, 46210), (327, 46228), (342, 46351), (345, 46369), (348, 46381), (349, 46393), (371, 46519), (383, 46582), (384, 46585), (410, 46765), (411, 46795), (421, 46867), (424, 46879), (427, 46909),

Gene: KilKor\_53 Start: 36390, Stop: 38570, Start Num: 39

Candidate Starts for KilKor\_53:

(1, 35955), (29, 36327), (Start: 39 @36390 has 7 MA's), (45, 36417), (47, 36423), (51, 36447), (56, 36483), (66, 36516), (86, 36606), (90, 36633), (103, 36696), (106, 36702), (109, 36723), (129, 36843), (139, 36885), (146, 36942), (188, 37212), (208, 37416), (214, 37479), (228, 37611), (231, 37632), (235, 37668), (237, 37674), (240, 37713), (243, 37749), (252, 37782), (254, 37803), (258, 37845), (342, 38052), (348, 38082), (349, 38094), (384, 38268), (401, 38370), (410, 38427), (413, 38472), (414, 38487), (418, 38520), (422, 38529), (423, 38532),

Gene: KingJulian\_67 Start: 44592, Stop: 46790, Start Num: 36

Candidate Starts for KingJulian\_67:

(13, 44409), (15, 44421), (19, 44493), (36, 44592), (45, 44622), (51, 44652), (56, 44688), (66, 44721), (86, 44811), (90, 44838), (103, 44901), (106, 44907), (109, 44928), (129, 45048), (139, 45090), (146, 45147), (188, 45417), (208, 45621), (214, 45684), (228, 45816), (231, 45837), (235, 45873), (237, 45879), (240, 45918), (243, 45954), (252, 45987), (254, 46008), (258, 46050), (291, 46092), (305, 46128), (342, 46251), (345, 46269), (349, 46293), (391, 46530), (405, 46593), (410, 46647), (414, 46707), (418, 46740), (422, 46749), (423, 46752),

Gene: Lamina13\_61 Start: 41357, Stop: 39765, Start Num: 68

Candidate Starts for Lamina13\_61:

(Start: 68 @41357 has 8 MA's), (91, 41249), (98, 41204), (117, 41120), (184, 40979), (204, 40829), (212, 40751), (227, 40646), (230, 40643), (249, 40541), (253, 40532), (342, 40325), (348, 40295), (353, 40238), (401, 40100), (406, 40097), (410, 40043), (417, 39959), (418, 39950), (421, 39941), (425, 39920), (426, 39902), (428, 39866),

Gene: Leperchaun\_59 Start: 41080, Stop: 42594, Start Num: 121

Candidate Starts for Leperchaun\_59:

(83, 40903), (Start: 121 @41080 has 8 MA's), (132, 41137), (140, 41173), (144, 41206), (183, 41428), (192, 41470), (211, 41596), (215, 41614), (232, 41674), (250, 41716), (260, 41728), (304, 41821), (310, 41845), (321, 41905), (342, 42028), (347, 42049), (348, 42058), (357, 42151), (393, 42331), (410, 42451), (414, 42511), (418, 42544), (422, 42553), (423, 42556),

Gene: Lilac\_101 Start: 58401, Stop: 60605, Start Num: 67

Candidate Starts for Lilac\_101:

(34, 58254), (41, 58284), (50, 58332), (52, 58347), (54, 58359), (Start: 67 @58401 has 3 MA's), (75, 58419), (91, 58515), (98, 58560), (117, 58644), (124, 58704), (130, 58725), (151, 58857), (161, 58938), (174, 59019), (194, 59133), (202, 59190), (206, 59262), (214, 59346), (218, 59385), (224, 59454), (233, 59505), (236, 59538), (245, 59619), (246, 59625), (252, 59643), (254, 59664), (288, 59748), (294, 59793), (303, 59805), (342, 59910), (343, 59913), (349, 59952), (362, 60039), (383, 60141), (384, 60144), (394, 60207), (421, 60426), (427, 60468), (428, 60501), (430, 60516),

Gene: Linus\_82 Start: 54377, Stop: 56299, Start Num: 81

Candidate Starts for Linus\_82:

(Start: 81 @54377 has 17 MA's), (96, 54449), (Start: 120 @54581 has 3 MA's), (135, 54653), (141, 54689), (144, 54713), (148, 54731), (156, 54788), (160, 54824), (166, 54854), (167, 54866), (201, 55058), (213, 55127), (219, 55154), (251, 55235), (261, 55250), (263, 55265), (276, 55316), (280, 55334), (304, 55367), (317, 55451), (335, 55517), (338, 55523), (340, 55577), (341, 55598), (342, 55601), (343, 55604), (346, 55619), (351, 55667), (353, 55688), (367, 55751), (376, 55775), (379, 55793), (381, 55802), (383, 55829), (407, 55964), (408, 55982), (412, 56051), (416, 56075), (417, 56087), (418, 56096), (421, 56105), (430, 56195), (431, 56204), (439, 56279), (440, 56285),

Gene: Lymara\_79 Start: 53015, Stop: 54817, Start Num: 81

Candidate Starts for Lymara\_79:

(Start: 81 @53015 has 17 MA's), (113, 53174), (Start: 120 @53219 has 3 MA's), (133, 53285), (135, 53291), (141, 53327), (144, 53351), (148, 53369), (156, 53426), (160, 53462), (166, 53492), (167, 53504), (180, 53567), (201, 53696), (213, 53765), (219, 53792), (251, 53873), (261, 53888), (263, 53903), (276, 53954), (280, 53972), (304, 54005), (317, 54089), (325, 54116), (335, 54155), (338, 54161), (340, 54215), (341, 54236), (343, 54242), (346, 54257), (349, 54281), (351, 54305), (353, 54326), (367, 54389), (376, 54413), (383, 54467), (417, 54605), (421, 54623), (430, 54713), (431, 54722), (434, 54764), (439, 54797),

Gene: MISSy\_100 Start: 58583, Stop: 60391, Start Num: 67

Candidate Starts for MISSy\_100:

(34, 58436), (41, 58466), (50, 58514), (52, 58529), (54, 58541), (Start: 67 @58583 has 3 MA's), (75, 58601), (91, 58697), (98, 58742), (117, 58826), (157, 58949), (177, 59036), (178, 59042), (197, 59129), (198, 59141), (210, 59273), (244, 59516), (260, 59603), (348, 59768), (349, 59780), (398, 60053), (421, 60212), (427, 60254), (428, 60287), (430, 60302),

Gene: Majeke\_63 Start: 39197, Stop: 40675, Start Num: 114

Candidate Starts for Majeke\_63:

(104, 39146), (108, 39161), (Start: 114 @39197 has 3 MA's), (129, 39290), (Start: 136 @39308 has 1 MA's), (142, 39344), (145, 39368), (151, 39404), (156, 39437), (172, 39527), (191, 39596), (192, 39602), (193, 39605), (195, 39623), (196, 39626), (331, 39869), (333, 39872), (342, 39956), (348, 39986), (349, 39998), (359, 40085), (383, 40187), (384, 40190), (394, 40253), (410, 40367), (421, 40469), (424, 40481), (426, 40508), (437, 40625),

Gene: Mangethe\_63 Start: 39197, Stop: 40675, Start Num: 114

Candidate Starts for Mangethe\_63:

(104, 39146), (108, 39161), (Start: 114 @39197 has 3 MA's), (129, 39290), (Start: 136 @39308 has 1 MA's), (142, 39344), (145, 39368), (151, 39404), (156, 39437), (172, 39527), (191, 39596), (192, 39602), (193, 39605), (195, 39623), (196, 39626), (331, 39869), (333, 39872), (342, 39956), (348, 39986), (349, 39998), (359, 40085), (383, 40187), (384, 40190), (394, 40253), (410, 40367), (421, 40469), (424, 40481), (426, 40508), (437, 40625),

Gene: Mantra\_64 Start: 42536, Stop: 44860, Start Num: 80

Candidate Starts for Mantra\_64:

(74, 42488), (Start: 80 @42536 has 4 MA's), (92, 42593), (105, 42662), (141, 42863), (145, 42896), (171, 43073), (176, 43097), (189, 43160), (191, 43178), (192, 43184), (195, 43205), (215, 43328), (239, 43532), (275, 43826), (307, 43922), (322, 44003), (324, 44009), (334, 44042), (342, 44141), (347, 44162), (348, 44171), (351, 44207), (371, 44309), (383, 44372), (384, 44375), (410, 44555), (420, 44654), (421, 44657), (424, 44669), (425, 44678), (427, 44699), (442, 44852),

Gene: Martik\_66 Start: 42749, Stop: 45055, Start Num: 23

Candidate Starts for Martik\_66:

(Start: 23 @42749 has 7 MA's), (31, 42806), (33, 42818), (Start: 38 @42845 has 1 MA's), (45, 42875), (94, 43106), (106, 43157), (107, 43160), (117, 43220), (129, 43298), (139, 43340), (146, 43397), (188, 43667), (208, 43871), (214, 43934), (228, 44066), (231, 44087), (235, 44123), (237, 44129), (240, 44168), (243, 44204), (252, 44237), (254, 44258), (330, 44423), (331, 44426), (342, 44510), (349, 44552), (374, 44687), (380, 44717), (384, 44753), (402, 44855), (410, 44912), (414, 44972), (418, 45005), (422, 45014), (423, 45017),

Gene: Megiddo\_53 Start: 36390, Stop: 38585, Start Num: 39

Candidate Starts for Megiddo\_53:

(1, 35955), (29, 36327), (Start: 39 @36390 has 7 MA's), (45, 36417), (47, 36423), (51, 36447), (56, 36483), (66, 36516), (86, 36606), (90, 36633), (103, 36696), (106, 36702), (109, 36723), (129, 36843), (139, 36885), (146, 36942), (188, 37212), (208, 37416), (214, 37479), (228, 37611), (231, 37632), (235, 37668), (237, 37674), (240, 37713), (243, 37749), (252, 37782), (254, 37803), (258, 37845), (291, 37887), (305, 37923), (342, 38046), (345, 38064), (349, 38088), (391, 38325), (405, 38388), (410, 38442), (414, 38502), (418, 38535), (422, 38544), (423, 38547),

Gene: MilanaBonita\_66 Start: 42333, Stop: 45014, Start Num: 79

Candidate Starts for MilanaBonita\_66:

(59, 42243), (62, 42252), (Start: 79 @42333 has 5 MA's), (92, 42393), (97, 42429), (105, 42462), (141, 42663), (145, 42696), (171, 42873), (176, 42897), (189, 42960), (192, 42984), (193, 42987), (195, 43005), (196, 43008), (203, 43107), (205, 43128), (216, 43260), (220, 43341), (234, 43422), (247, 43536), (256, 43593), (264, 43665), (270, 43749), (273, 43767), (277, 43788), (286, 43857), (287, 43875), (289, 43908), (295, 44022), (297, 44028), (298, 44046), (299, 44067), (309, 44109), (313, 44151), (326, 44196), (328, 44208), (342, 44313), (347, 44334), (348, 44343), (349, 44355), (351, 44379), (355, 44421), (384, 44520), (410, 44706), (421, 44808), (424, 44820), (426, 44847),

Gene: Misha28\_75 Start: 46524, Stop: 48974, Start Num: 22

Candidate Starts for Misha28\_75:

(10, 46422), (11, 46431), (16, 46458), (Start: 22 @46524 has 3 MA's), (28, 46560), (31, 46584), (37, 46620), (45, 46653), (94, 46884), (106, 46935), (107, 46938), (129, 47076), (139, 47118), (146, 47175), (188, 47445), (194, 47484), (208, 47649), (214, 47712), (228, 47844), (231, 47865), (235, 47901), (237, 47907), (240, 47946), (243, 47982), (252, 48015), (254, 48036), (319, 48171), (342, 48273), (343, 48276), (349, 48315), (356, 48396), (383, 48507), (384, 48510), (402, 48612), (410, 48669), (421, 48771), (424, 48783), (425, 48792), (427, 48813),

Gene: Molly\_60 Start: 40691, Stop: 38961, Start Num: 68

Candidate Starts for Molly\_60:

(Start: 68 @40691 has 8 MA's), (91, 40583), (98, 40538), (117, 40454), (184, 40313), (204, 40163), (212, 40085), (227, 39980), (230, 39977), (249, 39875), (253, 39866), (348, 39629), (351, 39593), (363, 39530), (383, 39428), (384, 39425), (395, 39347), (410, 39239), (416, 39167), (417, 39155), (418, 39146), (421, 39137), (425, 39116), (426, 39098),

Gene: MooMoo\_65 Start: 41964, Stop: 43592, Start Num: 120

Candidate Starts for MooMoo\_65:

(Start: 120 @41964 has 3 MA's), (123, 41991), (131, 42021), (144, 42090), (154, 42144), (186, 42321), (195, 42378), (215, 42501), (222, 42534), (229, 42555), (248, 42588), (259, 42603), (285, 42708), (342, 42912), (343, 42915), (349, 42954), (396, 43245), (410, 43302), (421, 43389), (424, 43401), (426, 43428), (427, 43431), (431, 43488), (436, 43536), (438, 43557),

Gene: Mordred\_82 Start: 53968, Stop: 55890, Start Num: 81

Candidate Starts for Mordred\_82:

(Start: 81 @53968 has 17 MA's), (96, 54040), (Start: 120 @54172 has 3 MA's), (135, 54244), (141, 54280), (144, 54304), (148, 54322), (156, 54379), (160, 54415), (166, 54445), (167, 54457), (201, 54649), (213, 54718), (219, 54745), (251, 54826), (261, 54841), (263, 54856), (276, 54907), (280, 54925), (304, 54958), (317, 55042), (325, 55069), (335, 55108), (338, 55114), (340, 55168), (341, 55189), (342, 55192), (343, 55195), (346, 55210), (351, 55258), (353, 55279), (367, 55342), (376, 55366), (379, 55384), (381, 55393), (383, 55420), (407, 55555), (408, 55573), (412, 55642), (416, 55666), (417, 55678), (418, 55687), (421, 55696), (430, 55786), (431, 55795), (439, 55870), (440, 55876),

Gene: Mova\_70 Start: 42582, Stop: 44489, Start Num: 80

Candidate Starts for Mova\_70:

(43, 42405), (46, 42420), (48, 42429), (70, 42525), (Start: 80 @42582 has 4 MA's), (92, 42639), (105, 42708), (141, 42909), (145, 42942), (171, 43119), (176, 43143), (189, 43206), (195, 43251), (221, 43410), (242, 43464), (255, 43491), (307, 43611), (326, 43668), (342, 43776), (348, 43806), (351, 43842), (366, 43920), (368, 43926), (410, 44184), (420, 44283), (421, 44286), (424, 44298), (425, 44307), (427, 44328), (442, 44481),

Gene: MoyaNatalis\_81 Start: 53851, Stop: 55773, Start Num: 81

Candidate Starts for MoyaNatalis\_81:

(Start: 81 @53851 has 17 MA's), (96, 53923), (Start: 120 @54055 has 3 MA's), (135, 54127), (141, 54163), (144, 54187), (148, 54205), (156, 54262), (160, 54298), (166, 54328), (167, 54340), (201, 54532), (213, 54601), (219, 54628), (251, 54709), (261, 54724), (263, 54739), (276, 54790), (280, 54808), (304, 54841), (317, 54925), (335, 54991), (338, 54997), (340, 55051), (341, 55072), (342, 55075), (343, 55078), (346, 55093), (351, 55141), (353, 55162), (367, 55225), (376, 55249), (379, 55267), (381, 55276), (383, 55303), (407, 55438), (408, 55456), (412, 55525), (416, 55549), (417, 55561), (418, 55570), (421, 55579), (430, 55669), (431, 55678), (439, 55753), (440, 55759),

Gene: Murica\_102 Start: 59799, Stop: 61607, Start Num: 67

Candidate Starts for Murica\_102:

(34, 59652), (41, 59682), (50, 59730), (52, 59745), (54, 59757), (Start: 67 @59799 has 3 MA's), (75, 59817), (91, 59913), (98, 59958), (117, 60042), (157, 60165), (177, 60252), (178, 60258), (197, 60345), (198, 60357), (210, 60489), (244, 60732), (260, 60819), (348, 60984), (349, 60996), (398, 61269), (421, 61428), (427, 61470), (428, 61503), (430, 61518),

Gene: Nazo\_56 Start: 38421, Stop: 39956, Start Num: 137

Candidate Starts for Nazo\_56:

(Start: 81 @38139 has 17 MA's), (119, 38340), (126, 38382), (Start: 137 @38421 has 3 MA's), (141, 38448), (142, 38454), (145, 38478), (151, 38514), (152, 38517), (156, 38547), (166, 38613), (195, 38763), (215, 38886), (263, 39024), (280, 39096), (342, 39342), (346, 39360), (373, 39450), (378, 39459), (386, 39501), (410, 39666), (413, 39711), (424, 39765), (427, 39795), (436, 39900),

Gene: Optimus\_142 Start: 77338, Stop: 79065, Start Num: 68

Candidate Starts for Optimus\_142:

(Start: 68 @77338 has 8 MA's), (91, 77446), (98, 77491), (117, 77575), (184, 77716), (204, 77866), (212, 77944), (227, 78049), (230, 78052), (249, 78154), (253, 78163), (342, 78370), (347, 78391), (348, 78400), (351, 78436), (374, 78538), (383, 78601), (384, 78604), (410, 78787), (417, 78871), (418, 78880), (421, 78889), (425, 78910), (426, 78928), (428, 78964),

Gene: OwlsT2W\_66 Start: 42373, Stop: 44289, Start Num: 25

Candidate Starts for OwlsT2W\_66:

(4, 42196), (6, 42202), (8, 42211), (9, 42220), (14, 42259), (18, 42316), (Start: 25 @42373 has 1 MA's), (33, 42430), (35, 42442), (49, 42499), (Start: 57 @42553 has 1 MA's), (106, 42766), (107, 42769), (110, 42790), (130, 42910), (157, 42952), (163, 42988), (197, 43132), (198, 43144), (210, 43276), (223, 43396), (244, 43519), (260, 43606), (342, 43741), (348, 43771), (351, 43807), (374, 43909), (387, 43990), (410, 44146), (414, 44206), (418, 44239), (422, 44248), (423, 44251),

Gene: PHappiness\_62 Start: 41626, Stop: 43140, Start Num: 121

Candidate Starts for PHappiness\_62:

(83, 41449), (Start: 121 @41626 has 8 MA's), (132, 41683), (140, 41719), (144, 41752), (183, 41974), (192, 42016), (211, 42142), (215, 42160), (232, 42220), (250, 42262), (260, 42274), (304, 42367), (310, 42391), (321, 42451), (342, 42574), (347, 42595), (348, 42604), (357, 42697), (393, 42877), (410, 42997), (414, 43057), (418, 43090), (422, 43099), (423, 43102),

Gene: Phalconet\_70 Start: 43833, Stop: 45551, Start Num: 79

Candidate Starts for Phalconet\_70:

(59, 43743), (62, 43752), (71, 43779), (Start: 79 @43833 has 5 MA's), (87, 43863), (92, 43893), (97, 43929), (105, 43962), (141, 44163), (145, 44196), (171, 44373), (176, 44397), (189, 44460), (192, 44484), (193, 44487), (328, 44721), (342, 44823), (347, 44844), (348, 44853), (351, 44889), (371, 44991), (410, 45243), (421, 45345), (424, 45357), (427, 45387), (437, 45501),

Gene: Phalm\_53 Start: 36390, Stop: 38582, Start Num: 39

Candidate Starts for Phalm\_53:

(1, 35955), (29, 36327), (Start: 39 @36390 has 7 MA's), (45, 36417), (47, 36423), (51, 36447), (56, 36483), (66, 36516), (86, 36606), (90, 36633), (103, 36696), (106, 36702), (107, 36705), (109, 36723), (129, 36843), (139, 36885), (146, 36942), (188, 37212), (194, 37251), (208, 37416), (214, 37479), (228, 37611), (231, 37632), (235, 37668), (237, 37674), (240, 37713), (243, 37749), (252, 37782), (254, 37803), (291, 37887), (305, 37923), (342, 38046), (345, 38064), (349, 38088), (354, 38145), (356, 38151), (367, 38181), (369, 38187), (384, 38253), (410, 38439), (414, 38499), (418, 38532), (422, 38541), (423, 38544),

Gene: Phegasus\_63 Start: 39164, Stop: 40642, Start Num: 114

Candidate Starts for Phegasus\_63:

(104, 39113), (108, 39128), (Start: 114 @39164 has 3 MA's), (129, 39257), (Start: 136 @39275 has 1 MA's), (142, 39311), (145, 39335), (151, 39371), (156, 39404), (172, 39494), (191, 39563), (192, 39569), (193, 39572), (195, 39590), (196, 39593), (331, 39836), (333, 39839), (342, 39923), (348, 39953), (349, 39965), (359, 40052), (383, 40154), (384, 40157), (394, 40220), (410, 40334), (421, 40436), (424, 40448), (426, 40475), (437, 40592),

Gene: Philus\_70 Start: 44236, Stop: 46782, Start Num: 23

Candidate Starts for Philus\_70:

(2, 44059), (3, 44065), (5, 44074), (7, 44083), (17, 44179), (Start: 23 @44236 has 7 MA's), (31, 44293), (37, 44329), (44, 44353), (45, 44362), (94, 44593), (106, 44644), (107, 44647), (129, 44785), (139, 44827), (146, 44884), (188, 45154), (194, 45193), (208, 45358), (214, 45421), (228, 45553), (231, 45574), (235, 45610), (237, 45616), (240, 45655), (243, 45691), (252, 45724), (254, 45745), (296, 45937), (300, 45985), (306, 46021), (321, 46111), (327, 46129), (342, 46252), (345, 46270), (348, 46282), (349, 46294), (352, 46339), (359, 46387), (402, 46582), (410, 46639), (414, 46699), (418, 46732), (422, 46741), (423, 46744),

Gene: Polka14\_65 Start: 42690, Stop: 44204, Start Num: 121

Candidate Starts for Polka14\_65:

(83, 42513), (Start: 121 @42690 has 8 MA's), (132, 42747), (140, 42783), (144, 42816), (183, 43038), (192, 43080), (211, 43206), (215, 43224), (232, 43284), (250, 43326), (260, 43338), (304, 43431), (310, 43455), (321, 43515), (342, 43638), (347, 43659), (348, 43668), (357, 43761), (393, 43941), (410, 44061), (414, 44121), (418, 44154), (422, 44163), (423, 44166),

Gene: Pollywog\_67 Start: 43356, Stop: 45239, Start Num: 63

Candidate Starts for Pollywog\_67:

(36, 43242), (Start: 63 @43356 has 2 MA's), (76, 43413), (84, 43449), (91, 43482), (98, 43527), (109, 43569), (110, 43572), (117, 43611), (157, 43734), (197, 43899), (198, 43911), (210, 44043), (223, 44163), (244, 44286), (260, 44373), (342, 44508), (348, 44538), (351, 44574), (364, 44652), (372, 44679), (375, 44685), (383, 44745), (384, 44748), (395, 44826), (410, 44934), (417, 45018), (421, 45036), (424, 45048), (426, 45075),

Gene: PrincessTrina\_83 Start: 54273, Stop: 56075, Start Num: 81

Candidate Starts for PrincessTrina\_83:

(Start: 81 @54273 has 17 MA's), (96, 54345), (Start: 120 @54477 has 3 MA's), (135, 54549), (141, 54585), (144, 54609), (148, 54627), (156, 54684), (160, 54720), (166, 54750), (167, 54762), (201, 54954), (213, 55023), (219, 55050), (251, 55131), (261, 55146), (263, 55161), (276, 55212), (280, 55230), (304, 55263), (317, 55347), (325, 55374), (335, 55413), (338, 55419), (340, 55473), (341, 55494), (342, 55497), (343, 55500), (346, 55515), (351, 55563), (353, 55584), (367, 55647), (376, 55671), (379, 55689), (381, 55698), (383, 55725), (417, 55863), (421, 55881), (430, 55971), (431, 55980), (439, 56055), (440, 56061),

Gene: RedBird\_75 Start: 45596, Stop: 48277, Start Num: 20

Candidate Starts for RedBird\_75:

(Start: 20 @45596 has 2 MA's), (26, 45635), (31, 45665), (37, 45701), (45, 45734), (94, 45965), (103, 46010), (106, 46016), (107, 46019), (109, 46037), (110, 46040), (124, 46139), (130, 46160), (151, 46292), (161, 46373), (174, 46454), (194, 46568), (202, 46625), (206, 46697), (214, 46781), (218, 46820), (224, 46889), (233, 46940), (245, 47054), (246, 47060), (252, 47078), (254, 47099), (281, 47246), (290, 47282), (299, 47351), (311, 47399), (323, 47432), (329, 47459), (342, 47552), (347, 47573), (348, 47582), (351, 47618), (374, 47720), (383, 47783), (384, 47786), (395, 47864), (410, 47972), (421, 48074), (424, 48086), (425, 48095), (426, 48113), (437, 48230),

Gene: RitaG\_62 Start: 41971, Stop: 43485, Start Num: 121

Candidate Starts for RitaG\_62:

(83, 41794), (Start: 121 @41971 has 8 MA's), (132, 42028), (140, 42064), (144, 42097), (183, 42319), (192, 42361), (211, 42487), (215, 42505), (232, 42565), (250, 42607), (260, 42619), (304, 42712), (310, 42736), (321, 42796), (342, 42919), (347, 42940), (348, 42949), (357, 43042), (393, 43222), (410, 43342), (414, 43402), (418, 43435), (422, 43444), (423, 43447),

Gene: RosiePosie\_82 Start: 54057, Stop: 55946, Start Num: 81

Candidate Starts for RosiePosie\_82:

(Start: 81 @54057 has 17 MA's), (96, 54129), (Start: 120 @54261 has 3 MA's), (135, 54300), (141, 54336), (144, 54360), (148, 54378), (156, 54435), (160, 54471), (166, 54501), (167, 54513), (201, 54705), (213, 54774), (219, 54801), (251, 54882), (261, 54897), (263, 54912), (276, 54963), (280, 54981), (304, 55014), (317, 55098), (335, 55164), (338, 55170), (340, 55224), (341, 55245), (342, 55248), (343, 55251), (346, 55266), (351, 55314), (353, 55335), (367, 55398), (376, 55422), (379, 55440), (381, 55449), (383, 55476), (407, 55611), (408, 55629), (412, 55698), (416, 55722), (417, 55734), (418, 55743), (421, 55752), (430, 55842), (431, 55851), (439, 55926), (440, 55932),

Gene: SG4\_70 Start: 43702, Stop: 45480, Start Num: 60

Candidate Starts for SG4\_70:

(Start: 60 @43702 has 1 MA's), (73, 43741), (76, 43771), (84, 43807), (91, 43840), (98, 43885), (184, 44110), (204, 44260), (212, 44338), (227, 44443), (230, 44446), (249, 44548), (253, 44557), (342, 44764), (347, 44785), (348, 44794), (351, 44830), (374, 44932), (383, 44995), (384, 44998), (387, 45013), (410, 45172), (421, 45274), (424, 45286), (425, 45295), (426, 45313), (437, 45430),

Gene: Scavito\_83 Start: 54017, Stop: 55939, Start Num: 81

Candidate Starts for Scavito\_83:

(Start: 81 @54017 has 17 MA's), (96, 54089), (Start: 120 @54221 has 3 MA's), (135, 54293), (141, 54329), (144, 54353), (148, 54371), (156, 54428), (160, 54464), (166, 54494), (167, 54506), (201, 54698), (213, 54767), (219, 54794), (251, 54875), (261, 54890), (263, 54905), (276, 54956), (280, 54974), (304, 55007), (317, 55091), (325, 55118), (335, 55157), (338, 55163), (340, 55217), (341, 55238), (342, 55241), (343, 55244), (346, 55259), (351, 55307), (353, 55328), (367, 55391), (376, 55415), (379, 55433), (381, 55442), (383, 55469), (407, 55604), (408, 55622), (412, 55691), (416, 55715), (417, 55727), (418, 55736), (421, 55745), (430, 55835), (431, 55844), (439, 55919), (440, 55925),

Gene: ShiLan\_65 Start: 42785, Stop: 45667, Start Num: 23

Candidate Starts for ShiLan\_65:

(Start: 23 @42785 has 7 MA's), (31, 42842), (33, 42854), (Start: 38 @42881 has 1 MA's), (45, 42911), (94, 43142), (103, 43187), (106, 43193), (107, 43196), (109, 43214), (110, 43217), (124, 43316), (130, 43337), (151, 43469), (161, 43550), (174, 43631), (194, 43745), (202, 43802), (206, 43874), (214, 43958), (218, 43997), (224, 44066), (233, 44117), (245, 44231), (246, 44237), (252, 44255), (254, 44276), (257, 44312), (288, 44360), (302, 44411), (341, 44513), (344, 44525), (365, 44657), (389, 44777), (409, 44900), (416, 44987), (432, 45122), (435, 45164), (443, 45299), (444, 45329), (445, 45365), (446, 45467), (447, 45524), (448, 45584), (449, 45617), (450, 45626), (451, 45629),

Gene: ShroomBoi\_67 Start: 43105, Stop: 44667, Start Num: 121

Candidate Starts for ShroomBoi\_67:

(83, 42928), (85, 42934), (88, 42943), (89, 42952), (95, 42991), (Start: 121 @43105 has 8 MA's), (132, 43162), (140, 43198), (144, 43231), (183, 43453), (192, 43495), (266, 43789), (278, 43837), (304, 43873), (316, 43942), (321, 43963), (327, 43981), (342, 44104), (347, 44125), (348, 44134), (349, 44146), (371, 44272), (383, 44335), (393, 44404), (410, 44524), (414, 44584), (418, 44617), (422, 44626), (423, 44629),

Gene: StAnnes\_70 Start: 44611, Stop: 46869, Start Num: 64

Candidate Starts for StAnnes\_70:

(55, 44581), (61, 44605), (Start: 64 @44611 has 1 MA's), (77, 44665), (84, 44701), (91, 44734), (98, 44779), (129, 44941), (139, 44983), (146, 45040), (188, 45310), (208, 45514), (214, 45577), (228, 45709), (231, 45730), (235, 45766), (237, 45772), (240, 45811), (243, 45847), (252, 45880), (254, 45901), (262, 45985), (271, 45997), (308, 46042), (342, 46162), (348, 46192), (351, 46228), (383, 46387), (384, 46390), (395, 46468), (410, 46576), (421, 46663), (424, 46675), (425, 46684), (427, 46705),

Gene: Starcevich\_66 Start: 42297, Stop: 45341, Start Num: 23

Candidate Starts for Starcevich\_66:

(12, 42183), (Start: 23 @42297 has 7 MA's), (31, 42354), (33, 42366), (Start: 38 @42393 has 1 MA's), (45, 42423), (94, 42654), (103, 42699), (106, 42705), (107, 42708), (109, 42726), (110, 42729), (129, 42846), (139, 42888), (146, 42945), (188, 43215), (194, 43254), (208, 43419), (214, 43482), (228, 43614), (231, 43635), (235, 43671), (237, 43677), (240, 43716), (243, 43752), (252, 43785), (254, 43806), (262, 43890), (268, 43935), (269, 43947), (279, 44049), (282, 44061), (293, 44193), (299, 44313), (315, 44436), (336, 44517), (337, 44523), (339, 44556), (342, 44655), (348, 44685), (351, 44721), (383, 44862), (384, 44865), (410, 45051), (421, 45138), (424, 45150),

Gene: StellaBean\_97 Start: 58301, Stop: 60040, Start Num: 65

Candidate Starts for StellaBean\_97:

(34, 58154), (41, 58184), (50, 58232), (52, 58247), (54, 58259), (Start: 65 @58301 has 2 MA's), (74, 58319), (91, 58415), (98, 58460), (117, 58544), (184, 58685), (204, 58835), (212, 58913), (227, 59018), (230, 59021), (249, 59123), (253, 59132), (342, 59339), (348, 59369), (363, 59468), (383, 59570), (384, 59573), (395, 59651), (410, 59759), (416, 59831), (421, 59861), (427, 59903), (428, 59936), (430, 59951),

Gene: StressBall\_53 Start: 36390, Stop: 38582, Start Num: 39

Candidate Starts for StressBall\_53:

(1, 35955), (29, 36327), (Start: 39 @36390 has 7 MA's), (45, 36417), (47, 36423), (51, 36447), (56, 36483), (66, 36516), (86, 36606), (90, 36633), (103, 36696), (106, 36702), (107, 36705), (109, 36723), (129, 36843), (139, 36885), (146, 36942), (188, 37212), (194, 37251), (208, 37416), (214, 37479), (228, 37611), (231, 37632), (235, 37668), (237, 37674), (240, 37713), (243, 37749), (252, 37782), (254, 37803), (291, 37887), (305, 37923), (342, 38046), (345, 38064), (349, 38088), (354, 38145), (356, 38151), (367, 38181), (369, 38187), (384, 38253), (410, 38439), (414, 38499), (418, 38532), (422, 38541), (423, 38544),

Gene: Taj\_79 Start: 46662, Stop: 48335, Start Num: 79

Candidate Starts for Taj\_79:

(59, 46572), (62, 46581), (Start: 79 @46662 has 5 MA's), (87, 46692), (92, 46722), (93, 46734), (105, 46791), (141, 46992), (145, 47025), (171, 47202), (176, 47226), (189, 47289), (192, 47313), (193, 47316), (309, 47457), (313, 47499), (326, 47544), (328, 47556), (342, 47661), (347, 47682), (348, 47691), (349, 47703), (355, 47769), (383, 47865), (384, 47868), (399, 47970), (410, 48027), (421, 48129), (424, 48141), (425, 48150), (427, 48171), (437, 48285),

Gene: Tarkin\_98 Start: 58765, Stop: 60504, Start Num: 65

Candidate Starts for Tarkin\_98:

(34, 58618), (41, 58648), (50, 58696), (52, 58711), (54, 58723), (Start: 65 @58765 has 2 MA's), (74, 58783), (91, 58879), (98, 58924), (117, 59008), (125, 59071), (184, 59149), (204, 59299), (212, 59377), (227, 59482), (230, 59485), (249, 59587), (253, 59596), (342, 59803), (347, 59824), (348, 59833), (349, 59845), (363, 59932), (383, 60034), (384, 60037), (395, 60115), (410, 60223), (421, 60325), (427, 60367), (428, 60400), (430, 60415),

Gene: Tasp14\_62 Start: 41981, Stop: 40389, Start Num: 68

Candidate Starts for Tasp14\_62:



(Start: 68 @41981 has 8 MA's), (91, 41873), (98, 41828), (117, 41744), (184, 41603), (204, 41453), (212, 41375), (227, 41270), (230, 41267), (249, 41165), (253, 41156), (342, 40949), (348, 40919), (353, 40862), (401, 40724), (406, 40721), (410, 40667), (417, 40583), (418, 40574), (421, 40565), (425, 40544), (426, 40526), (428, 40490),

Gene: Thespis\_55 Start: 36748, Stop: 38346, Start Num: 185

Candidate Starts for Thespis\_55:

(Start: 185 @36748 has 1 MA's), (187, 36757), (190, 36784), (Start: 199 @36850 has 1 MA's), (203, 36910), (207, 36949), (209, 36979), (217, 37036), (225, 37123), (238, 37201), (241, 37246), (272, 37408), (292, 37483), (301, 37555), (342, 37801), (345, 37819), (349, 37843), (374, 37978), (380, 38008), (384, 38044), (402, 38146), (410, 38203), (414, 38263), (418, 38296), (422, 38305), (423, 38308),

Gene: TootsiePop\_75 Start: 46524, Stop: 48974, Start Num: 22

Candidate Starts for TootsiePop\_75:

(10, 46422), (11, 46431), (16, 46458), (Start: 22 @46524 has 3 MA's), (28, 46560), (31, 46584), (37, 46620), (45, 46653), (94, 46884), (106, 46935), (107, 46938), (129, 47076), (139, 47118), (146, 47175), (188, 47445), (194, 47484), (208, 47649), (214, 47712), (228, 47844), (231, 47865), (235, 47901), (237, 47907), (240, 47946), (243, 47982), (252, 48015), (254, 48036), (319, 48171), (342, 48273), (343, 48276), (349, 48315), (356, 48396), (383, 48507), (384, 48510), (402, 48612), (410, 48669), (421, 48771), (424, 48783), (425, 48792), (427, 48813),

Gene: Tophat\_83 Start: 54206, Stop: 56128, Start Num: 81

Candidate Starts for Tophat\_83:

(Start: 81 @54206 has 17 MA's), (96, 54278), (Start: 120 @54410 has 3 MA's), (135, 54482), (141, 54518), (144, 54542), (148, 54560), (156, 54617), (160, 54653), (166, 54683), (167, 54695), (201, 54887), (213, 54956), (219, 54983), (251, 55064), (261, 55079), (263, 55094), (276, 55145), (280, 55163), (304, 55196), (317, 55280), (325, 55307), (335, 55346), (338, 55352), (340, 55406), (341, 55427), (342, 55430), (343, 55433), (346, 55448), (351, 55496), (353, 55517), (367, 55580), (376, 55604), (379, 55622), (381, 55631), (383, 55658), (407, 55793), (408, 55811), (412, 55880), (416, 55904), (417, 55916), (418, 55925), (421, 55934), (430, 56024), (431, 56033), (439, 56108), (440, 56114),

Gene: Totinger\_66 Start: 41872, Stop: 44196, Start Num: 80

Candidate Starts for Totinger\_66:

(43, 41695), (46, 41710), (48, 41719), (70, 41815), (Start: 80 @41872 has 4 MA's), (92, 41929), (105, 41998), (141, 42199), (145, 42232), (171, 42409), (176, 42433), (189, 42496), (191, 42514), (192, 42520), (195, 42541), (215, 42664), (239, 42868), (275, 43162), (307, 43258), (322, 43339), (324, 43345), (334, 43378), (342, 43477), (345, 43495), (349, 43519), (371, 43645), (383, 43708), (384, 43711), (410, 43891), (420, 43990), (421, 43993), (424, 44005), (425, 44014), (427, 44035), (442, 44188),

Gene: Violet\_57 Start: 42062, Stop: 40485, Start Num: 68

Candidate Starts for Violet\_57:

(Start: 68 @42062 has 8 MA's), (91, 41954), (98, 41909), (117, 41825), (184, 41684), (204, 41534), (212, 41456), (227, 41351), (230, 41348), (249, 41246), (253, 41237), (342, 41030), (347, 41009), (348, 41000), (351, 40964), (405, 40805), (410, 40748), (421, 40661), (427, 40619), (428, 40586),

Gene: Wee\_78 Start: 46738, Stop: 48411, Start Num: 79

Candidate Starts for Wee\_78:

(59, 46648), (62, 46657), (Start: 79 @46738 has 5 MA's), (87, 46768), (92, 46798), (93, 46810), (105, 46867), (141, 47068), (145, 47101), (171, 47278), (176, 47302), (189, 47365), (192, 47389), (193, 47392), (309, 47533), (313, 47575), (326, 47620), (328, 47632), (342, 47737), (347, 47758), (348,

47767), (349, 47779), (355, 47845), (383, 47941), (384, 47944), (399, 48046), (410, 48103), (421, 48205), (424, 48217), (425, 48226), (427, 48247), (437, 48361),

Gene: Willsammy\_52 Start: 35873, Stop: 38053, Start Num: 39

Candidate Starts for Willsammy\_52:

(1, 35438), (29, 35810), (Start: 39 @35873 has 7 MA's), (45, 35900), (47, 35906), (51, 35930), (56, 35966), (66, 35999), (86, 36089), (90, 36116), (103, 36179), (106, 36185), (109, 36206), (129, 36326), (139, 36368), (146, 36425), (188, 36695), (208, 36899), (214, 36962), (228, 37094), (231, 37115), (235, 37151), (237, 37157), (240, 37196), (243, 37232), (252, 37265), (254, 37286), (258, 37328), (342, 37535), (348, 37565), (349, 37577), (384, 37751), (401, 37853), (410, 37910), (413, 37955), (414, 37970), (418, 38003), (422, 38012), (423, 38015),

Gene: Wocket\_66 Start: 42075, Stop: 43580, Start Num: 137

Candidate Starts for Wocket\_66:

(92, 41838), (93, 41850), (101, 41898), (112, 41946), (Start: 137 @42075 has 3 MA's), (141, 42102), (145, 42132), (148, 42144), (151, 42168), (156, 42201), (164, 42258), (167, 42282), (219, 42576), (263, 42687), (267, 42717), (280, 42759), (304, 42789), (306, 42801), (318, 42858), (332, 42903), (378, 43185), (388, 43248), (417, 43359), (421, 43377), (431, 43476), (436, 43524),