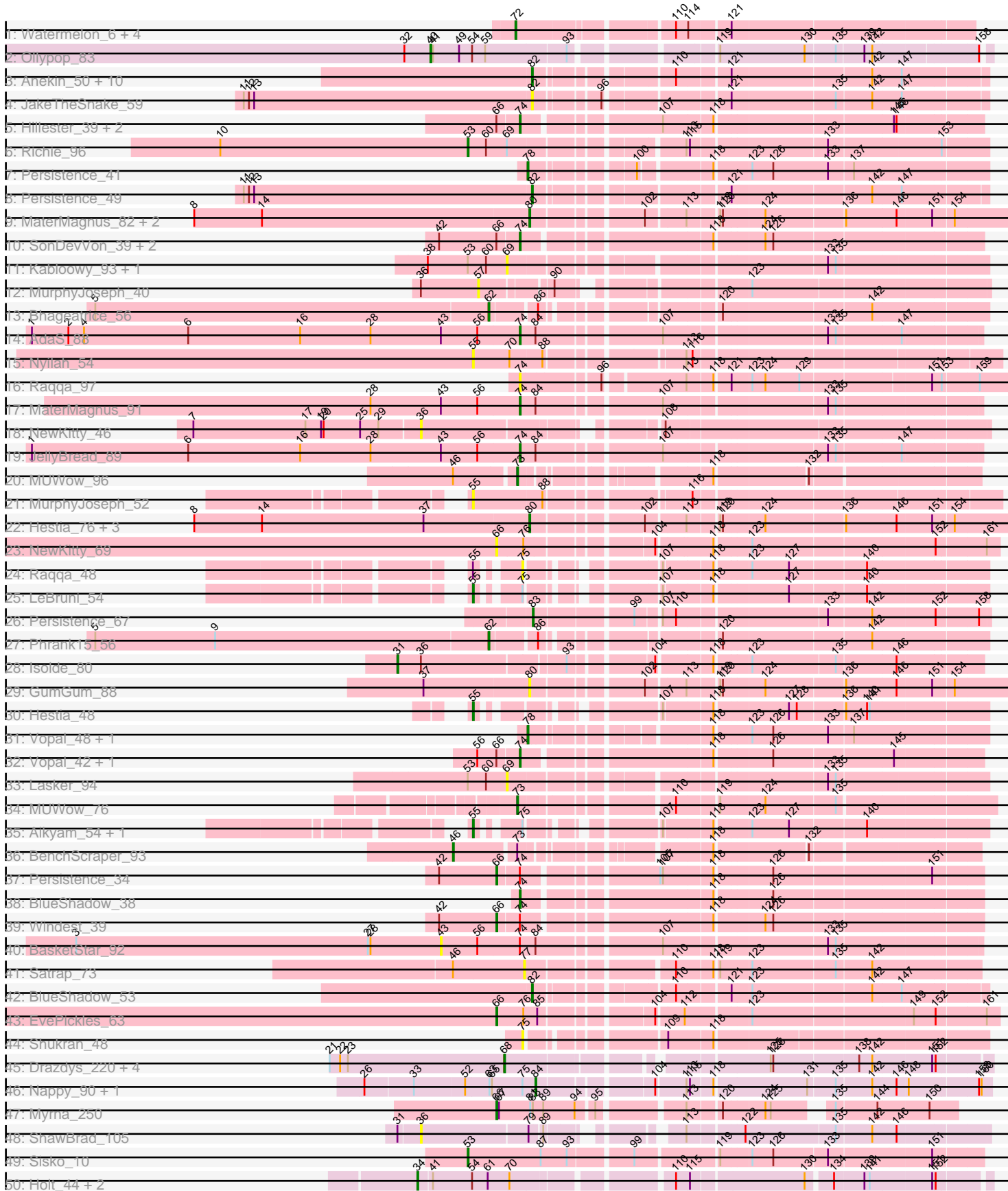
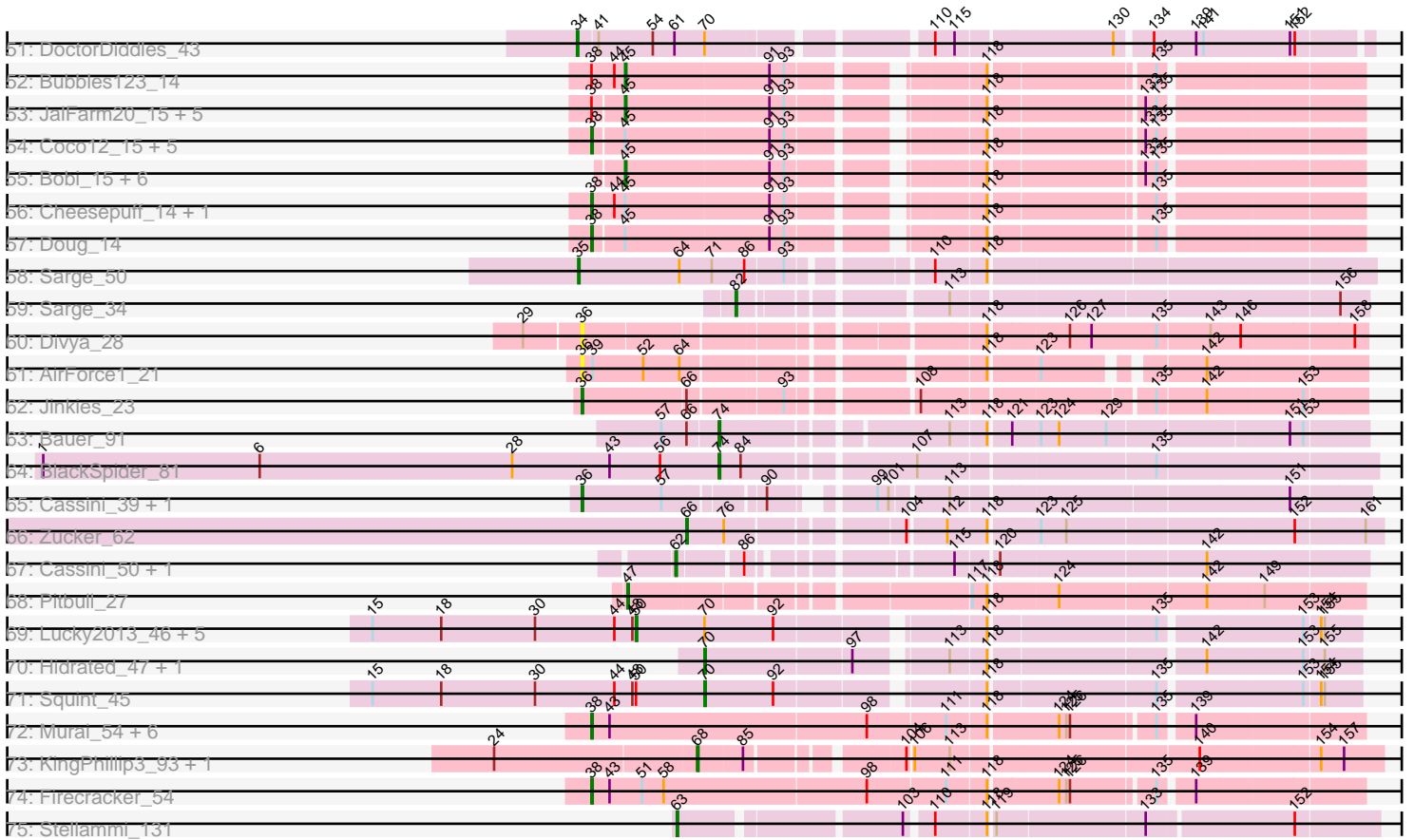


Pham 299916



Pham 299916



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 299916 Report

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

Pham number 299916 has 141 members, 32 are drafts.

Phages represented in each track:

- Track 1 : Watermelon\_6, Trouble\_4, Tripl3t\_5, Peterson\_6, Alsfro\_7
- Track 2 : Ollypop\_83
- Track 3 : Anekin\_50, BillyTP\_55, Faja\_54, RadFad\_57, BenchScraper\_52, Raqqa\_45, Vopal\_56, Crescenzo\_53, Hillester\_57, BasketStar\_55, MidnightRain\_57
- Track 4 : JakeTheSnake\_59
- Track 5 : Hillester\_39, RadFad\_39, Cassini\_30
- Track 6 : Richie\_96
- Track 7 : Persistence\_41
- Track 8 : Persistence\_49
- Track 9 : MaterMagnus\_82, BlueShadow\_80, Aikyam\_81
- Track 10 : SonDevVon\_39, Phrank15\_38, MUWow\_38
- Track 11 : Kabloowy\_93, JakeTheSnake\_97
- Track 12 : MurphyJoseph\_40
- Track 13 : Bhageatrice\_56
- Track 14 : AdaS\_88
- Track 15 : Nyilah\_54
- Track 16 : Raqqa\_97
- Track 17 : MaterMagnus\_91
- Track 18 : NewKitty\_46
- Track 19 : JellyBread\_89
- Track 20 : MUWow\_96
- Track 21 : MurphyJoseph\_52
- Track 22 : Hestia\_76, BillyTP\_83, Lawnathon\_84, MurphyJoseph\_79
- Track 23 : NewKitty\_69
- Track 24 : Raqqa\_48
- Track 25 : LeBruni\_54
- Track 26 : Persistence\_67
- Track 27 : Phrank15\_56
- Track 28 : Isolde\_80
- Track 29 : GumGum\_88
- Track 30 : Hestia\_48
- Track 31 : Vopal\_48, Tiff81\_42
- Track 32 : Vopal\_42, BillyTP\_41
- Track 33 : Lasker\_94
- Track 34 : MUWow\_76
- Track 35 : Aikyam\_54, MaterMagnus\_56
- Track 36 : BenchScraper\_93

- Track 37 : Persistence\_34
- Track 38 : BlueShadow\_38
- Track 39 : Windest\_39
- Track 40 : BasketStar\_92
- Track 41 : Satrap\_73
- Track 42 : BlueShadow\_53
- Track 43 : EvePickles\_63
- Track 44 : Shukran\_48
- Track 45 : Drazdys\_220, ShiaLabeouf\_219, Nappy\_223, Ading\_223, Jemmno\_221
- Track 46 : Nappy\_90, Cane17\_77
- Track 47 : Myrna\_250
- Track 48 : ShawBrad\_105
- Track 49 : Sisko\_10
- Track 50 : Holt\_44, Sunshine924\_65, Flabslab\_17
- Track 51 : DoctorDiddles\_43
- Track 52 : Bubbles123\_14
- Track 53 : JalFarm20\_15, Alexphander\_15, Polka14\_14, DaWorst\_15, OwlsT2W\_15, Phasih\_14
- Track 54 : Coco12\_15, Job42\_15, Minnie\_14, BuzzLyseyear\_15, SuperGrey\_14, Violac\_14
- Track 55 : Bobi\_15, Wee\_14, Sandalphon\_14, Rialto\_15, Phatniss\_14, Firehouse51\_14, Moonbeam\_14
- Track 56 : Cheesepuff\_14, Latretium\_14
- Track 57 : Doug\_14
- Track 58 : Sarge\_50
- Track 59 : Sarge\_34
- Track 60 : Divya\_28
- Track 61 : AirForce1\_21
- Track 62 : Jinkies\_23
- Track 63 : Bauer\_91
- Track 64 : BlackSpider\_81
- Track 65 : Cassini\_39, MidnightRain\_47
- Track 66 : Zucker\_62
- Track 67 : Cassini\_50, SpicyFrank\_59
- Track 68 : Pitbull\_27
- Track 69 : Lucky2013\_46, Courthouse\_46, MiaZeal\_46, Ariel\_46, Porcelain\_45, Superphikiman\_46
- Track 70 : Hidrated\_47, Bobby\_46
- Track 71 : Squint\_45
- Track 72 : Murai\_54, Corndog\_56, Smooch\_56, YungJamal\_57, Ashwin\_55, Vorrs\_53, Mori\_53
- Track 73 : KingPhillip3\_93, Bora\_94
- Track 74 : Firecracker\_54
- Track 75 : Stellammi\_131

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

The start number called the most often in the published annotations is 38, it was called in 17 of the 109 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Ashwin\_55, BuzzLyseyear\_15, CheesePuff\_14, Coco12\_15, Corndog\_56, Doug\_14, Firecracker\_54, Job42\_15, Latretium\_14, Minnie\_14, Mori\_53, Murai\_54, Smooch\_56, SuperGrey\_14, Violac\_14, Vorrrps\_53, YungJamal\_57,

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

- Alexphander\_15, Bubbles123\_14, DaWorst\_15, JakeTheSnake\_97, JalFarm20\_15, Kabloowy\_93, OwlsT2W\_15, Phasih\_14, Polka14\_14,

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

- AdaS\_88, Ading\_223, Aikyam\_54, Aikyam\_81, AirForce1\_21, Alsfro\_7, Anekin\_50, Ariel\_46, BasketStar\_55, BasketStar\_92, Bauer\_91, BenchScraper\_52, BenchScraper\_93, Bhageatrice\_56, BillyTP\_41, BillyTP\_55, BillyTP\_83, BlackSpider\_81, BlueShadow\_38, BlueShadow\_53, BlueShadow\_80, Bobby\_46, Bobi\_15, Bora\_94, Cane17\_77, Cassini\_30, Cassini\_39, Cassini\_50, Courthouse\_46, Crescenzo\_53, Divya\_28, DoctorDiddles\_43, Drazdys\_220, EvePickles\_63, Faja\_54, Firehouse51\_14, Flabslab\_17, GumGum\_88, Hestia\_48, Hestia\_76, Hidrated\_47, Hillester\_39, Hillester\_57, Holt\_44, Isolde\_80, JakeTheSnake\_59, JellyBread\_89, Jemmno\_221, Jinkies\_23, KingPhillip3\_93, Lasker\_94, Lawnathon\_84, LeBruni\_54, Lucky2013\_46, MUWow\_38, MUWow\_76, MUWow\_96, MaterMagnus\_56, MaterMagnus\_82, MaterMagnus\_91, MiaZeal\_46, MidnightRain\_47, MidnightRain\_57, Moonbeam\_14, MurphyJoseph\_40, MurphyJoseph\_52, MurphyJoseph\_79, Myrna\_250, Nappy\_223, Nappy\_90, NewKitty\_46, NewKitty\_69, Nyilah\_54, Ollypop\_83, Persistence\_34, Persistence\_41, Persistence\_49, Persistence\_67, Peterson\_6, Phatniss\_14, Phrank15\_38, Phrank15\_56, Pitbull\_27, Porcelain\_45, RadFad\_39, RadFad\_57, Raqqa\_45, Raqqa\_48, Raqqa\_97, Rialto\_15, Richie\_96, Sandalphon\_14, Sarge\_34, Sarge\_50, Satrap\_73, ShawBrad\_105, ShiaLabeouf\_219, Shukran\_48, Sisko\_10, SonDevVon\_39, SpicyFrank\_59, Squint\_45, Stellammi\_131, Sunshine924\_65, Superphikiman\_46, Tiff81\_42, Tripl3t\_5, Trouble\_4, Vopal\_42, Vopal\_48, Vopal\_56, Watermelon\_6, Wee\_14, Windest\_39, Zucker\_62,

### Summary by start number:

Start 31:

- Found in 2 of 141 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 109
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Isolde\_80 (AY),

Start 34:

- Found in 4 of 141 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 4 of 109
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DoctorDiddles\_43 (E), Flabslab\_17 (C1), Holt\_44 (E), Sunshine924\_65 (A1),

Start 35:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 109
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sarge\_50 (FB),

Start 36:

- Found in 9 of 141 ( 6.4% ) of genes in pham
- Manual Annotations of this start: 2 of 109
- Called 77.8% of time when present
- Phage (with cluster) where this start called: AirForce1\_21 (FL), Cassini\_39 (FN), Divya\_28 (FL), Jinkies\_23 (FL), MidnightRain\_47 (AY), NewKitty\_46 (AY), ShawBrad\_105 (DN1),

Start 38:

- Found in 26 of 141 ( 18.4% ) of genes in pham
- Manual Annotations of this start: 17 of 109
- Called 65.4% of time when present
- Phage (with cluster) where this start called: Ashwin\_55 (O), BuzzLyseyear\_15 (F1), Cheesepuff\_14 (F1), Coco12\_15 (F1), Corndog\_56 (O), Doug\_14 (F1), Firecracker\_54 (O), Job42\_15 (F1), Latretium\_14 (F1), Minnie\_14 (F1), Mori\_53 (O), Murai\_54 (O), Smooch\_56 (O), SuperGrey\_14 (F1), Violac\_14 (F1), Vorrps\_53 (O), YungJamal\_57 (O),

Start 40:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 109
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ollypop\_83 (AP2),

Start 43:

- Found in 13 of 141 ( 9.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 7.7% of time when present
- Phage (with cluster) where this start called: BasketStar\_92 (AY),

Start 45:

- Found in 23 of 141 ( 16.3% ) of genes in pham
- Manual Annotations of this start: 14 of 109
- Called 60.9% of time when present
- Phage (with cluster) where this start called: Alexphander\_15 (F1), Bobi\_15 (F1), Bubbles123\_14 (F1), DaWorst\_15 (F1), Firehouse51\_14 (F1), JalFarm20\_15 (F1), Moonbeam\_14 (F1), OwlsT2W\_15 (F1), Phasih\_14 (F1), Phatniss\_14 (F1), Polka14\_14 (F1), Rialto\_15 (F1), Sandalphon\_14 (F1), Wee\_14 (F1),

Start 46:

- Found in 3 of 141 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 1 of 109
- Called 33.3% of time when present
- Phage (with cluster) where this start called: BenchScraper\_93 (AY),

Start 47:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 109
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Pitbull\_27 (FQ),

Start 50:

- Found in 7 of 141 ( 5.0% ) of genes in pham

- Manual Annotations of this start: 6 of 109
- Called 85.7% of time when present
- Phage (with cluster) where this start called: Ariel\_46 (J), Courthouse\_46 (J), Lucky2013\_46 (J), MiaZeal\_46 (J), Porcelain\_45 (J), Superphikiman\_46 (J),

Start 53:

- Found in 5 of 141 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 2 of 109
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Richie\_96 (AY), Sisko\_10 (DR),

Start 55:

- Found in 7 of 141 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 3 of 109
- Called 85.7% of time when present
- Phage (with cluster) where this start called: Aikyam\_54 (AY), Hestia\_48 (AY), LeBruni\_54 (AY), MaterMagnus\_56 (AY), MurphyJoseph\_52 (AY), Nyilah\_54 (AY),

Start 57:

- Found in 4 of 141 ( 2.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 25.0% of time when present
- Phage (with cluster) where this start called: MurphyJoseph\_40 (AY),

Start 62:

- Found in 4 of 141 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 3 of 109
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bhageatrice\_56 (AY), Cassini\_50 (FN), Phrank15\_56 (AY), SpicyFrank\_59 (AY),

Start 63:

- Found in 3 of 141 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 1 of 109
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Stellammi\_131 (UNK),

Start 66:

- Found in 16 of 141 ( 11.3% ) of genes in pham
- Manual Annotations of this start: 5 of 109
- Called 37.5% of time when present
- Phage (with cluster) where this start called: EvePickles\_63 (AY), Myrna\_250 (C2), NewKitty\_69 (AY), Persistence\_34 (AY), Windest\_39 (AY), Zucker\_62 (FN),

Start 68:

- Found in 7 of 141 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 6 of 109
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ading\_223 (C1), Bora\_94 (O), Drazdys\_220 (C1), Jemmno\_221 (C1), KingPhillip3\_93 (O), Nappy\_223 (C1), ShiaLabeouf\_219 (C1),

Start 69:

- Found in 4 of 141 ( 2.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 75.0% of time when present
- Phage (with cluster) where this start called: JakeTheSnake\_97 (AY), Kabloowy\_93 (AY), Lasker\_94 (AY),

#### Start 70:

- Found in 14 of 141 ( 9.9% ) of genes in pham
- Manual Annotations of this start: 2 of 109
- Called 21.4% of time when present
- Phage (with cluster) where this start called: Bobby\_46 (J), Hidrated\_47 (J), Squint\_45 (J),

#### Start 72:

- Found in 5 of 141 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 5 of 109
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alsfro\_7 (A1), Peterson\_6 (A1), Tripl3t\_5 (A1), Trouble\_4 (A1), Watermelon\_6 (A1),

#### Start 73:

- Found in 3 of 141 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 2 of 109
- Called 66.7% of time when present
- Phage (with cluster) where this start called: MUWow\_76 (AY), MUWow\_96 (AY),

#### Start 74:

- Found in 18 of 141 ( 12.8% ) of genes in pham
- Manual Annotations of this start: 11 of 109
- Called 83.3% of time when present
- Phage (with cluster) where this start called: AdaS\_88 (AY), Bauer\_91 (FN), BillyTP\_41 (AY), BlackSpider\_81 (FN), BlueShadow\_38 (AY), Cassini\_30 (FN), Hillester\_39 (AY), JellyBread\_89 (AY), MUWow\_38 (AY), MaterMagnus\_91 (AY), Phrank15\_38 (AY), RadFad\_39 (AY), Raqqa\_97 (AY), SonDevVon\_39 (AY), Vopal\_42 (AY),

#### Start 75:

- Found in 7 of 141 ( 5.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 28.6% of time when present
- Phage (with cluster) where this start called: Raqqa\_48 (AY), Shukran\_48 (AY),

#### Start 77:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Satrap\_73 (AY),

#### Start 78:

- Found in 3 of 141 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 2 of 109
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Persistence\_41 (AY), Tiff81\_42 (AY), Vopal\_48 (AY),

#### Start 80:

- Found in 8 of 141 ( 5.7% ) of genes in pham
- Manual Annotations of this start: 5 of 109
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aikyam\_81 (AY), BillyTP\_83 (AY), BlueShadow\_80 (AY), GumGum\_88 (AY), Hestia\_76 (AY), Lawnathon\_84 (AY), MaterMagnus\_82 (AY), MurphyJoseph\_79 (AY),

#### Start 82:

- Found in 15 of 141 ( 10.6% ) of genes in pham
- Manual Annotations of this start: 11 of 109
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Anekin\_50 (AY), BasketStar\_55 (AY), BenchScraper\_52 (AY), BillyTP\_55 (AY), BlueShadow\_53 (AY), Crescenzo\_53 (AY), Faja\_54 (AY), Hillester\_57 (AY), JakeTheSnake\_59 (AY), MidnightRain\_57 (AY), Persistence\_49 (AY), RadFad\_57 (AY), Raqqa\_45 (AY), Sarge\_34 (FB), Vopal\_56 (AY),

#### Start 83:

- Found in 2 of 141 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 109
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Persistence\_67 (AY),

#### Start 84:

- Found in 7 of 141 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 2 of 109
- Called 28.6% of time when present
- Phage (with cluster) where this start called: Cane17\_77 (C1), Nappy\_90 (C1),

### Summary by clusters:

There are 16 clusters represented in this pham: F1, E, FQ, AP2, FL, J, O, A1, FB, DN1, AY, C2, C1, UNK, DR, FN,

#### Info for manual annotations of cluster A1:

- Start number 34 was manually annotated 1 time for cluster A1.
- Start number 72 was manually annotated 5 times for cluster A1.

#### Info for manual annotations of cluster AP2:

- Start number 40 was manually annotated 1 time for cluster AP2.

#### Info for manual annotations of cluster AY:

- Start number 31 was manually annotated 1 time for cluster AY.
- Start number 36 was manually annotated 1 time for cluster AY.
- Start number 46 was manually annotated 1 time for cluster AY.
- Start number 53 was manually annotated 1 time for cluster AY.
- Start number 55 was manually annotated 3 times for cluster AY.
- Start number 62 was manually annotated 3 times for cluster AY.
- Start number 66 was manually annotated 3 times for cluster AY.

- Start number 73 was manually annotated 2 times for cluster AY.
- Start number 74 was manually annotated 9 times for cluster AY.
- Start number 78 was manually annotated 2 times for cluster AY.
- Start number 80 was manually annotated 5 times for cluster AY.
- Start number 82 was manually annotated 10 times for cluster AY.
- Start number 83 was manually annotated 1 time for cluster AY.

Info for manual annotations of cluster C1:

- Start number 34 was manually annotated 1 time for cluster C1.
- Start number 68 was manually annotated 5 times for cluster C1.
- Start number 84 was manually annotated 2 times for cluster C1.

Info for manual annotations of cluster C2:

- Start number 66 was manually annotated 1 time for cluster C2.

Info for manual annotations of cluster DR:

- Start number 53 was manually annotated 1 time for cluster DR.

Info for manual annotations of cluster E:

- Start number 34 was manually annotated 2 times for cluster E.

Info for manual annotations of cluster F1:

- Start number 38 was manually annotated 9 times for cluster F1.
- Start number 45 was manually annotated 14 times for cluster F1.

Info for manual annotations of cluster FB:

- Start number 35 was manually annotated 1 time for cluster FB.
- Start number 82 was manually annotated 1 time for cluster FB.

Info for manual annotations of cluster FL:

- Start number 36 was manually annotated 1 time for cluster FL.

Info for manual annotations of cluster FN:

- Start number 66 was manually annotated 1 time for cluster FN.
- Start number 74 was manually annotated 2 times for cluster FN.

Info for manual annotations of cluster FQ:

- Start number 47 was manually annotated 1 time for cluster FQ.

Info for manual annotations of cluster J:

- Start number 50 was manually annotated 6 times for cluster J.
- Start number 70 was manually annotated 2 times for cluster J.

Info for manual annotations of cluster O:

- Start number 38 was manually annotated 8 times for cluster O.
- Start number 68 was manually annotated 1 time for cluster O.

Info for manual annotations of cluster UNK:

- Start number 63 was manually annotated 1 time for cluster UNK.

### **Gene Information:**

Gene: AdaS\_88 Start: 48513, Stop: 48998, Start Num: 74

Candidate Starts for AdaS\_88:

(1, 47952), (2, 47994), (4, 48012), (6, 48132), (16, 48261), (28, 48342), (43, 48423), (56, 48465), (Start: 74 @48513 has 11 MA's), (Start: 84 @48531 has 2 MA's), (107, 48660), (133, 48834), (135, 48843), (147, 48915),

Gene: Ading\_223 Start: 126625, Stop: 127119, Start Num: 68

Candidate Starts for Ading\_223:

(21, 126424), (22, 126436), (23, 126445), (Start: 68 @126625 has 6 MA's), (125, 126883), (126, 126886), (138, 126979), (142, 126994), (151, 127060), (152, 127063),

Gene: Aikyam\_54 Start: 31109, Stop: 31600, Start Num: 55

Candidate Starts for Aikyam\_54:

(Start: 55 @31109 has 3 MA's), (75, 31145), (107, 31256), (118, 31307), (123, 31343), (127, 31385), (140, 31469),

Gene: Aikyam\_81 Start: 44887, Stop: 45402, Start Num: 80

Candidate Starts for Aikyam\_81:

(8, 44503), (14, 44581), (Start: 80 @44887 has 5 MA's), (102, 44995), (113, 45037), (119, 45067), (120, 45070), (124, 45115), (136, 45202), (146, 45259), (151, 45298), (154, 45319),

Gene: AirForce1\_21 Start: 17126, Stop: 16560, Start Num: 36

Candidate Starts for AirForce1\_21:

(Start: 36 @17126 has 2 MA's), (39, 17117), (52, 17075), (64, 17045), (118, 16829), (123, 16793), (142, 16682),

Gene: Alexphander\_15 Start: 9340, Stop: 9879, Start Num: 45

Candidate Starts for Alexphander\_15:

(Start: 38 @9319 has 17 MA's), (Start: 45 @9340 has 14 MA's), (91, 9457), (93, 9469), (118, 9601), (133, 9715), (135, 9724),

Gene: Alsfro\_7 Start: 2250, Stop: 2729, Start Num: 72

Candidate Starts for Alsfro\_7:

(Start: 72 @2250 has 5 MA's), (110, 2409), (114, 2421), (121, 2463),

Gene: Anekin\_50 Start: 31927, Stop: 32388, Start Num: 82

Candidate Starts for Anekin\_50:

(Start: 82 @31927 has 11 MA's), (110, 32059), (121, 32113), (142, 32266), (147, 32299),

Gene: Ariel\_46 Start: 36674, Stop: 37219, Start Num: 50

Candidate Starts for Ariel\_46:

(15, 36455), (18, 36512), (30, 36590), (44, 36656), (48, 36671), (Start: 50 @36674 has 6 MA's), (Start: 70 @36731 has 2 MA's), (92, 36788), (118, 36938), (135, 37067), (153, 37175), (154, 37187), (155, 37190),

Gene: Ashwin\_55 Start: 26608, Stop: 27207, Start Num: 38

Candidate Starts for Ashwin\_55:

(Start: 38 @26608 has 17 MA's), (43, 26623), (98, 26833), (111, 26896), (118, 26926), (124, 26980), (125, 26986), (126, 26989), (135, 27052), (139, 27076),

Gene: BasketStar\_92 Start: 50831, Stop: 51406, Start Num: 43

Candidate Starts for BasketStar\_92:

(3, 50411), (27, 50747), (28, 50750), (43, 50831), (56, 50873), (Start: 74 @50921 has 11 MA's), (Start: 84 @50939 has 2 MA's), (107, 51068), (133, 51242), (135, 51251),

Gene: BasketStar\_55 Start: 32988, Stop: 33449, Start Num: 82

Candidate Starts for BasketStar\_55:

(Start: 82 @32988 has 11 MA's), (110, 33120), (121, 33174), (142, 33327), (147, 33360),

Gene: Bauer\_91 Start: 48793, Stop: 49275, Start Num: 74

Candidate Starts for Bauer\_91:

(57, 48748), (Start: 66 @48769 has 5 MA's), (Start: 74 @48793 has 11 MA's), (113, 48958), (118, 48985), (121, 49000), (123, 49021), (124, 49036), (129, 49075), (151, 49216), (153, 49225),

Gene: BenchScraper\_52 Start: 31813, Stop: 32274, Start Num: 82

Candidate Starts for BenchScraper\_52:

(Start: 82 @31813 has 11 MA's), (110, 31945), (121, 31999), (142, 32152), (147, 32185),

Gene: BenchScraper\_93 Start: 49693, Stop: 50208, Start Num: 46

Candidate Starts for BenchScraper\_93:

(Start: 46 @49693 has 1 MA's), (Start: 73 @49759 has 2 MA's), (118, 49933), (132, 50029),

Gene: Bhageatrice\_56 Start: 34427, Stop: 34927, Start Num: 62

Candidate Starts for Bhageatrice\_56:

(5, 33977), (Start: 62 @34427 has 3 MA's), (86, 34475), (120, 34640), (142, 34802),

Gene: BillyTP\_55 Start: 33684, Stop: 34145, Start Num: 82

Candidate Starts for BillyTP\_55:

(Start: 82 @33684 has 11 MA's), (110, 33816), (121, 33870), (142, 34023), (147, 34056),

Gene: BillyTP\_83 Start: 47477, Stop: 47989, Start Num: 80

Candidate Starts for BillyTP\_83:

(8, 47093), (14, 47171), (37, 47357), (Start: 80 @47477 has 5 MA's), (102, 47585), (113, 47627), (119, 47657), (120, 47660), (124, 47705), (136, 47792), (146, 47849), (151, 47888), (154, 47909),

Gene: BillyTP\_41 Start: 27467, Stop: 27946, Start Num: 74

Candidate Starts for BillyTP\_41:

(56, 27422), (Start: 66 @27443 has 5 MA's), (Start: 74 @27467 has 11 MA's), (118, 27659), (126, 27719), (145, 27851),

Gene: BlackSpider\_81 Start: 48788, Stop: 49288, Start Num: 74

Candidate Starts for BlackSpider\_81:

(1, 48227), (6, 48407), (28, 48617), (43, 48698), (56, 48740), (Start: 74 @48788 has 11 MA's), (Start: 84 @48806 has 2 MA's), (107, 48935), (135, 49118),

Gene: BlueShadow\_80 Start: 46732, Stop: 47244, Start Num: 80

Candidate Starts for BlueShadow\_80:

(8, 46348), (14, 46426), (Start: 80 @46732 has 5 MA's), (102, 46840), (113, 46882), (119, 46912), (120, 46915), (124, 46960), (136, 47047), (146, 47104), (151, 47143), (154, 47164),

Gene: BlueShadow\_38 Start: 26032, Stop: 26511, Start Num: 74

Candidate Starts for BlueShadow\_38:

(Start: 74 @26032 has 11 MA's), (118, 26224), (126, 26284),

Gene: BlueShadow\_53 Start: 32474, Stop: 32935, Start Num: 82  
Candidate Starts for BlueShadow\_53:  
(Start: 82 @32474 has 11 MA's), (110, 32606), (121, 32660), (123, 32681), (142, 32813), (147, 32846),

Gene: Bobby\_46 Start: 39072, Stop: 39560, Start Num: 70  
Candidate Starts for Bobby\_46:  
(Start: 70 @39072 has 2 MA's), (97, 39189), (113, 39252), (118, 39279), (142, 39441), (153, 39516),  
(155, 39531),

Gene: Bobi\_15 Start: 9361, Stop: 9900, Start Num: 45  
Candidate Starts for Bobi\_15:  
(Start: 45 @9361 has 14 MA's), (91, 9478), (93, 9490), (118, 9622), (133, 9736), (135, 9745),

Gene: Bora\_94 Start: 59313, Stop: 58804, Start Num: 68  
Candidate Starts for Bora\_94:  
(24, 59475), (Start: 68 @59313 has 6 MA's), (85, 59277), (104, 59169), (106, 59166), (113, 59139),  
(140, 58947), (154, 58854), (157, 58836),

Gene: Bubbles123\_14 Start: 9517, Stop: 10056, Start Num: 45  
Candidate Starts for Bubbles123\_14:  
(Start: 38 @9490 has 17 MA's), (44, 9508), (Start: 45 @9517 has 14 MA's), (91, 9634), (93, 9646),  
(118, 9778), (135, 9901),

Gene: BuzzLyseyear\_15 Start: 9319, Stop: 9879, Start Num: 38  
Candidate Starts for BuzzLyseyear\_15:  
(Start: 38 @9319 has 17 MA's), (Start: 45 @9340 has 14 MA's), (91, 9457), (93, 9469), (118, 9601),  
(133, 9715), (135, 9724),

Gene: Cane17\_77 Start: 32003, Stop: 32473, Start Num: 84  
Candidate Starts for Cane17\_77:  
(26, 31814), (33, 31868), (52, 31925), (Start: 63 @31952 has 1 MA's), (65, 31955), (75, 31988), (Start:  
84 @32003 has 2 MA's), (104, 32117), (113, 32147), (115, 32150), (118, 32174), (131, 32276), (135,  
32306), (142, 32345), (146, 32372), (148, 32384), (158, 32459), (160, 32462),

Gene: Cassini\_30 Start: 23657, Stop: 24136, Start Num: 74  
Candidate Starts for Cassini\_30:  
(Start: 66 @23633 has 5 MA's), (Start: 74 @23657 has 11 MA's), (107, 23795), (118, 23849), (145,  
24041), (146, 24044),

Gene: Cassini\_39 Start: 27297, Stop: 26728, Start Num: 36  
Candidate Starts for Cassini\_39:  
(Start: 36 @27297 has 2 MA's), (57, 27231), (90, 27159), (99, 27099), (101, 27090), (113, 27048),  
(151, 26787),

Gene: Cassini\_50 Start: 31783, Stop: 32283, Start Num: 62  
Candidate Starts for Cassini\_50:  
(Start: 62 @31783 has 3 MA's), (86, 31831), (115, 31966), (120, 31996), (142, 32158),

Gene: Cheesepuff\_14 Start: 9481, Stop: 10047, Start Num: 38  
Candidate Starts for Cheesepuff\_14:  
(Start: 38 @9481 has 17 MA's), (44, 9499), (Start: 45 @9508 has 14 MA's), (91, 9625), (93, 9637),  
(118, 9769), (135, 9892),

Gene: Coco12\_15 Start: 9318, Stop: 9878, Start Num: 38

Candidate Starts for Coco12\_15:

(Start: 38 @9318 has 17 MA's), (Start: 45 @9339 has 14 MA's), (91, 9456), (93, 9468), (118, 9600), (133, 9714), (135, 9723),

Gene: Corndog\_56 Start: 27158, Stop: 27757, Start Num: 38

Candidate Starts for Corndog\_56:

(Start: 38 @27158 has 17 MA's), (43, 27173), (98, 27383), (111, 27446), (118, 27476), (124, 27530), (125, 27536), (126, 27539), (135, 27602), (139, 27626),

Gene: Courthouse\_46 Start: 37078, Stop: 37623, Start Num: 50

Candidate Starts for Courthouse\_46:

(15, 36859), (18, 36916), (30, 36994), (44, 37060), (48, 37075), (Start: 50 @37078 has 6 MA's), (Start: 70 @37135 has 2 MA's), (92, 37192), (118, 37342), (135, 37471), (153, 37579), (154, 37591), (155, 37594),

Gene: Crescenzo\_53 Start: 32978, Stop: 33439, Start Num: 82

Candidate Starts for Crescenzo\_53:

(Start: 82 @32978 has 11 MA's), (110, 33110), (121, 33164), (142, 33317), (147, 33350),

Gene: DaWorst\_15 Start: 9345, Stop: 9884, Start Num: 45

Candidate Starts for DaWorst\_15:

(Start: 38 @9324 has 17 MA's), (Start: 45 @9345 has 14 MA's), (91, 9462), (93, 9474), (118, 9606), (133, 9720), (135, 9729),

Gene: Divya\_28 Start: 21127, Stop: 20543, Start Num: 36

Candidate Starts for Divya\_28:

(29, 21172), (Start: 36 @21127 has 2 MA's), (118, 20836), (126, 20776), (127, 20758), (135, 20704), (143, 20662), (146, 20638), (158, 20551),

Gene: DoctorDiddles\_43 Start: 34776, Stop: 34189, Start Num: 34

Candidate Starts for DoctorDiddles\_43:

(Start: 34 @34776 has 4 MA's), (41, 34761), (54, 34716), (61, 34698), (Start: 70 @34674 has 2 MA's), (110, 34515), (115, 34500), (130, 34377), (134, 34353), (139, 34320), (141, 34314), (151, 34245), (152, 34242),

Gene: Doug\_14 Start: 9472, Stop: 10032, Start Num: 38

Candidate Starts for Doug\_14:

(Start: 38 @9472 has 17 MA's), (Start: 45 @9493 has 14 MA's), (91, 9610), (93, 9622), (118, 9754), (135, 9877),

Gene: Drazdys\_220 Start: 125724, Stop: 126218, Start Num: 68

Candidate Starts for Drazdys\_220:

(21, 125523), (22, 125535), (23, 125544), (Start: 68 @125724 has 6 MA's), (125, 125982), (126, 125985), (138, 126078), (142, 126093), (151, 126159), (152, 126162),

Gene: EvePickles\_63 Start: 35612, Stop: 36130, Start Num: 66

Candidate Starts for EvePickles\_63:

(Start: 66 @35612 has 5 MA's), (76, 35642), (85, 35657), (104, 35768), (112, 35795), (123, 35861), (149, 36038), (152, 36062), (161, 36116),

Gene: Faja\_54 Start: 33652, Stop: 34113, Start Num: 82

Candidate Starts for Faja\_54:

(Start: 82 @33652 has 11 MA's), (110, 33784), (121, 33838), (142, 33991), (147, 34024),

Gene: Firecracker\_54 Start: 26311, Stop: 26910, Start Num: 38

Candidate Starts for Firecracker\_54:

(Start: 38 @26311 has 17 MA's), (43, 26326), (51, 26353), (58, 26371), (98, 26536), (111, 26599), (118, 26629), (124, 26683), (125, 26689), (126, 26692), (135, 26755), (139, 26779),

Gene: Firehouse51\_14 Start: 9532, Stop: 10071, Start Num: 45

Candidate Starts for Firehouse51\_14:

(Start: 45 @9532 has 14 MA's), (91, 9649), (93, 9661), (118, 9793), (133, 9907), (135, 9916),

Gene: Flabslab\_17 Start: 5449, Stop: 6036, Start Num: 34

Candidate Starts for Flabslab\_17:

(Start: 34 @5449 has 4 MA's), (41, 5464), (54, 5509), (61, 5527), (Start: 70 @5551 has 2 MA's), (110, 5710), (115, 5725), (130, 5848), (134, 5872), (139, 5905), (141, 5911), (151, 5980), (152, 5983),

Gene: GumGum\_88 Start: 47517, Stop: 48029, Start Num: 80

Candidate Starts for GumGum\_88:

(37, 47397), (Start: 80 @47517 has 5 MA's), (102, 47625), (113, 47667), (119, 47697), (120, 47700), (124, 47745), (136, 47832), (146, 47889), (151, 47928), (154, 47949),

Gene: Hestia\_76 Start: 44223, Stop: 44738, Start Num: 80

Candidate Starts for Hestia\_76:

(8, 43839), (14, 43917), (37, 44103), (Start: 80 @44223 has 5 MA's), (102, 44331), (113, 44373), (119, 44403), (120, 44406), (124, 44451), (136, 44538), (146, 44595), (151, 44634), (154, 44655),

Gene: Hestia\_48 Start: 30332, Stop: 30823, Start Num: 55

Candidate Starts for Hestia\_48:

(Start: 55 @30332 has 3 MA's), (107, 30479), (118, 30530), (127, 30608), (128, 30617), (136, 30668), (140, 30692), (141, 30695),

Gene: Hidrated\_47 Start: 40264, Stop: 40752, Start Num: 70

Candidate Starts for Hidrated\_47:

(Start: 70 @40264 has 2 MA's), (97, 40381), (113, 40444), (118, 40471), (142, 40633), (153, 40708), (155, 40723),

Gene: Hillester\_39 Start: 26218, Stop: 26697, Start Num: 74

Candidate Starts for Hillester\_39:

(Start: 66 @26194 has 5 MA's), (Start: 74 @26218 has 11 MA's), (107, 26356), (118, 26410), (145, 26602), (146, 26605),

Gene: Hillester\_57 Start: 33410, Stop: 33871, Start Num: 82

Candidate Starts for Hillester\_57:

(Start: 82 @33410 has 11 MA's), (110, 33542), (121, 33596), (142, 33749), (147, 33782),

Gene: Holt\_44 Start: 34891, Stop: 34304, Start Num: 34

Candidate Starts for Holt\_44:

(Start: 34 @34891 has 4 MA's), (41, 34876), (54, 34831), (61, 34813), (Start: 70 @34789 has 2 MA's), (110, 34630), (115, 34615), (130, 34492), (134, 34468), (139, 34435), (141, 34429), (151, 34360), (152, 34357),

Gene: Isolde\_80 Start: 46237, Stop: 46845, Start Num: 31

Candidate Starts for Isolde\_80:

(Start: 31 @46237 has 1 MA's), (Start: 36 @46264 has 2 MA's), (93, 46420), (104, 46501), (118, 46558), (123, 46594), (135, 46687), (146, 46753),

Gene: JakeTheSnake\_59 Start: 34511, Stop: 34972, Start Num: 82

Candidate Starts for JakeTheSnake\_59:

(11, 34181), (12, 34187), (13, 34193), (Start: 82 @34511 has 11 MA's), (96, 34574), (121, 34697), (135, 34811), (142, 34850), (147, 34883),

Gene: JakeTheSnake\_97 Start: 53567, Stop: 54058, Start Num: 69

Candidate Starts for JakeTheSnake\_97:

(Start: 38 @53477 has 17 MA's), (Start: 53 @53522 has 2 MA's), (60, 53543), (69, 53567), (133, 53885), (135, 53894),

Gene: JalFarm20\_15 Start: 9339, Stop: 9878, Start Num: 45

Candidate Starts for JalFarm20\_15:

(Start: 38 @9318 has 17 MA's), (Start: 45 @9339 has 14 MA's), (91, 9456), (93, 9468), (118, 9600), (133, 9714), (135, 9723),

Gene: JellyBread\_89 Start: 51228, Stop: 51713, Start Num: 74

Candidate Starts for JellyBread\_89:

(1, 50667), (6, 50847), (16, 50976), (28, 51057), (43, 51138), (56, 51180), (Start: 74 @51228 has 11 MA's), (Start: 84 @51246 has 2 MA's), (107, 51375), (133, 51549), (135, 51558), (147, 51630),

Gene: Jemmno\_221 Start: 124633, Stop: 125127, Start Num: 68

Candidate Starts for Jemmno\_221:

(21, 124432), (22, 124444), (23, 124453), (Start: 68 @124633 has 6 MA's), (125, 124891), (126, 124894), (138, 124987), (142, 125002), (151, 125068), (152, 125071),

Gene: Jinkies\_23 Start: 19784, Stop: 19203, Start Num: 36

Candidate Starts for Jinkies\_23:

(Start: 36 @19784 has 2 MA's), (Start: 66 @19700 has 5 MA's), (93, 19628), (108, 19538), (135, 19364), (142, 19325), (153, 19250),

Gene: Job42\_15 Start: 9341, Stop: 9901, Start Num: 38

Candidate Starts for Job42\_15:

(Start: 38 @9341 has 17 MA's), (Start: 45 @9362 has 14 MA's), (91, 9479), (93, 9491), (118, 9623), (133, 9737), (135, 9746),

Gene: Kabloowy\_93 Start: 51714, Stop: 52205, Start Num: 69

Candidate Starts for Kabloowy\_93:

(Start: 38 @51624 has 17 MA's), (Start: 53 @51669 has 2 MA's), (60, 51690), (69, 51714), (133, 52032), (135, 52041),

Gene: KingPhillip3\_93 Start: 59234, Stop: 58725, Start Num: 68

Candidate Starts for KingPhillip3\_93:

(24, 59396), (Start: 68 @59234 has 6 MA's), (85, 59198), (104, 59090), (106, 59087), (113, 59060), (140, 58868), (154, 58775), (157, 58757),

Gene: Lasker\_94 Start: 52381, Stop: 52872, Start Num: 69

Candidate Starts for Lasker\_94:

(Start: 53 @52336 has 2 MA's), (60, 52357), (69, 52381), (133, 52699), (135, 52708),

Gene: Latretium\_14 Start: 9454, Stop: 10020, Start Num: 38

Candidate Starts for Latretium\_14:

(Start: 38 @9454 has 17 MA's), (44, 9472), (Start: 45 @9481 has 14 MA's), (91, 9598), (93, 9610), (118, 9742), (135, 9865),

Gene: Lawnathon\_84 Start: 46589, Stop: 47101, Start Num: 80

Candidate Starts for Lawnathon\_84:

(8, 46205), (14, 46283), (37, 46469), (Start: 80 @46589 has 5 MA's), (102, 46697), (113, 46739), (119, 46769), (120, 46772), (124, 46817), (136, 46904), (146, 46961), (151, 47000), (154, 47021),

Gene: LeBruni\_54 Start: 32055, Stop: 32546, Start Num: 55

Candidate Starts for LeBruni\_54:

(Start: 55 @32055 has 3 MA's), (75, 32091), (107, 32202), (118, 32253), (127, 32331), (140, 32415),

Gene: Lucky2013\_46 Start: 37214, Stop: 37759, Start Num: 50

Candidate Starts for Lucky2013\_46:

(15, 36995), (18, 37052), (30, 37130), (44, 37196), (48, 37211), (Start: 50 @37214 has 6 MA's), (Start: 70 @37271 has 2 MA's), (92, 37328), (118, 37478), (135, 37607), (153, 37715), (154, 37727), (155, 37730),

Gene: MUWow\_96 Start: 53176, Stop: 53625, Start Num: 73

Candidate Starts for MUWow\_96:

(Start: 46 @53110 has 1 MA's), (Start: 73 @53176 has 2 MA's), (118, 53350), (132, 53446),

Gene: MUWow\_76 Start: 40648, Stop: 41133, Start Num: 73

Candidate Starts for MUWow\_76:

(Start: 73 @40648 has 2 MA's), (110, 40795), (119, 40837), (124, 40885), (135, 40963),

Gene: MUWow\_38 Start: 26240, Stop: 26719, Start Num: 74

Candidate Starts for MUWow\_38:

(42, 26150), (Start: 66 @26216 has 5 MA's), (Start: 74 @26240 has 11 MA's), (118, 26432), (124, 26483), (126, 26492),

Gene: MaterMagnus\_82 Start: 47059, Stop: 47574, Start Num: 80

Candidate Starts for MaterMagnus\_82:

(8, 46675), (14, 46753), (Start: 80 @47059 has 5 MA's), (102, 47167), (113, 47209), (119, 47239), (120, 47242), (124, 47287), (136, 47374), (146, 47431), (151, 47470), (154, 47491),

Gene: MaterMagnus\_91 Start: 51277, Stop: 51762, Start Num: 74

Candidate Starts for MaterMagnus\_91:

(28, 51106), (43, 51187), (56, 51229), (Start: 74 @51277 has 11 MA's), (Start: 84 @51295 has 2 MA's), (107, 51424), (133, 51598), (135, 51607),

Gene: MaterMagnus\_56 Start: 33281, Stop: 33772, Start Num: 55

Candidate Starts for MaterMagnus\_56:

(Start: 55 @33281 has 3 MA's), (75, 33317), (107, 33428), (118, 33479), (123, 33515), (127, 33557), (140, 33641),

Gene: MiaZeal\_46 Start: 36889, Stop: 37434, Start Num: 50

Candidate Starts for MiaZeal\_46:

(15, 36670), (18, 36727), (30, 36805), (44, 36871), (48, 36886), (Start: 50 @36889 has 6 MA's), (Start: 70 @36946 has 2 MA's), (92, 37003), (118, 37153), (135, 37282), (153, 37390), (154, 37402), (155, 37405),

Gene: MidnightRain\_47 Start: 30287, Stop: 29718, Start Num: 36  
Candidate Starts for MidnightRain\_47:  
(Start: 36 @30287 has 2 MA's), (57, 30221), (90, 30149), (99, 30089), (101, 30080), (113, 30038),  
(151, 29777),

Gene: MidnightRain\_57 Start: 33591, Stop: 34052, Start Num: 82  
Candidate Starts for MidnightRain\_57:  
(Start: 82 @33591 has 11 MA's), (110, 33723), (121, 33777), (142, 33930), (147, 33963),

Gene: Minnie\_14 Start: 9482, Stop: 10042, Start Num: 38  
Candidate Starts for Minnie\_14:  
(Start: 38 @9482 has 17 MA's), (Start: 45 @9503 has 14 MA's), (91, 9620), (93, 9632), (118, 9764),  
(133, 9878), (135, 9887),

Gene: Moonbeam\_14 Start: 9494, Stop: 10033, Start Num: 45  
Candidate Starts for Moonbeam\_14:  
(Start: 45 @9494 has 14 MA's), (91, 9611), (93, 9623), (118, 9755), (133, 9869), (135, 9878),

Gene: Mori\_53 Start: 26286, Stop: 26885, Start Num: 38  
Candidate Starts for Mori\_53:  
(Start: 38 @26286 has 17 MA's), (43, 26301), (98, 26511), (111, 26574), (118, 26604), (124, 26658),  
(125, 26664), (126, 26667), (135, 26730), (139, 26754),

Gene: Murai\_54 Start: 26476, Stop: 27075, Start Num: 38  
Candidate Starts for Murai\_54:  
(Start: 38 @26476 has 17 MA's), (43, 26491), (98, 26701), (111, 26764), (118, 26794), (124, 26848),  
(125, 26854), (126, 26857), (135, 26920), (139, 26944),

Gene: MurphyJoseph\_40 Start: 27665, Stop: 27162, Start Num: 57  
Candidate Starts for MurphyJoseph\_40:  
(Start: 36 @27731 has 2 MA's), (57, 27665), (90, 27593), (123, 27419),

Gene: MurphyJoseph\_52 Start: 31584, Stop: 32126, Start Num: 55  
Candidate Starts for MurphyJoseph\_52:  
(Start: 55 @31584 has 3 MA's), (88, 31662), (116, 31803),

Gene: MurphyJoseph\_79 Start: 45441, Stop: 45953, Start Num: 80  
Candidate Starts for MurphyJoseph\_79:  
(8, 45057), (14, 45135), (37, 45321), (Start: 80 @45441 has 5 MA's), (102, 45549), (113, 45591), (119,  
45621), (120, 45624), (124, 45669), (136, 45756), (146, 45813), (151, 45852), (154, 45873),

Gene: Myrna\_250 Start: 152417, Stop: 152881, Start Num: 66  
Candidate Starts for Myrna\_250:  
(Start: 66 @152417 has 5 MA's), (67, 152420), (81, 152456), (Start: 83 @152459 has 1 MA's), (89,  
152471), (94, 152507), (95, 152525), (113, 152612), (120, 152645), (124, 152690), (125, 152696),  
(135, 152747), (144, 152792), (150, 152849),

Gene: Nappy\_90 Start: 35968, Stop: 36438, Start Num: 84  
Candidate Starts for Nappy\_90:  
(26, 35779), (33, 35833), (52, 35890), (Start: 63 @35917 has 1 MA's), (65, 35920), (75, 35953), (Start:  
84 @35968 has 2 MA's), (104, 36082), (113, 36112), (115, 36115), (118, 36139), (131, 36241), (135,  
36271), (142, 36310), (146, 36337), (148, 36349), (158, 36424), (160, 36427),

Gene: Nappy\_223 Start: 126433, Stop: 126927, Start Num: 68

Candidate Starts for Nappy\_223:

(21, 126232), (22, 126244), (23, 126253), (Start: 68 @126433 has 6 MA's), (125, 126691), (126, 126694), (138, 126787), (142, 126802), (151, 126868), (152, 126871),

Gene: NewKitty\_46 Start: 29058, Stop: 28480, Start Num: 36

Candidate Starts for NewKitty\_46:

(7, 29316), (17, 29187), (19, 29169), (20, 29166), (25, 29124), (29, 29103), (Start: 36 @29058 has 2 MA's), (108, 28827),

Gene: NewKitty\_69 Start: 35732, Stop: 36250, Start Num: 66

Candidate Starts for NewKitty\_69:

(Start: 66 @35732 has 5 MA's), (76, 35762), (104, 35888), (118, 35945), (123, 35981), (152, 36182), (161, 36236),

Gene: Nyilah\_54 Start: 31262, Stop: 31804, Start Num: 55

Candidate Starts for Nyilah\_54:

(Start: 55 @31262 has 3 MA's), (Start: 70 @31304 has 2 MA's), (88, 31340), (113, 31475), (116, 31481),

Gene: Ollypop\_83 Start: 52100, Stop: 51516, Start Num: 40

Candidate Starts for Ollypop\_83:

(32, 52130), (Start: 40 @52100 has 1 MA's), (41, 52097), (49, 52067), (54, 52052), (59, 52037), (93, 51947), (119, 51806), (130, 51710), (135, 51677), (139, 51647), (142, 51638), (158, 51524),

Gene: OwlsT2W\_15 Start: 9352, Stop: 9891, Start Num: 45

Candidate Starts for OwlsT2W\_15:

(Start: 38 @9331 has 17 MA's), (Start: 45 @9352 has 14 MA's), (91, 9469), (93, 9481), (118, 9613), (133, 9727), (135, 9736),

Gene: Persistence\_41 Start: 28068, Stop: 28532, Start Num: 78

Candidate Starts for Persistence\_41:

(Start: 78 @28068 has 2 MA's), (100, 28164), (118, 28236), (123, 28272), (126, 28296), (133, 28359), (137, 28386),

Gene: Persistence\_49 Start: 31206, Stop: 31667, Start Num: 82

Candidate Starts for Persistence\_49:

(11, 30876), (12, 30882), (13, 30888), (Start: 82 @31206 has 11 MA's), (121, 31392), (142, 31545), (147, 31578),

Gene: Persistence\_67 Start: 37115, Stop: 37588, Start Num: 83

Candidate Starts for Persistence\_67:

(Start: 83 @37115 has 1 MA's), (99, 37217), (107, 37241), (110, 37256), (133, 37415), (142, 37463), (152, 37532), (158, 37577),

Gene: Persistence\_34 Start: 24603, Stop: 25106, Start Num: 66

Candidate Starts for Persistence\_34:

(42, 24537), (Start: 66 @24603 has 5 MA's), (Start: 74 @24627 has 11 MA's), (105, 24762), (107, 24765), (118, 24819), (126, 24879), (151, 25053),

Gene: Peterson\_6 Start: 3021, Stop: 3500, Start Num: 72

Candidate Starts for Peterson\_6:

(Start: 72 @3021 has 5 MA's), (110, 3180), (114, 3192), (121, 3234),

Gene: Phasih\_14 Start: 9525, Stop: 10064, Start Num: 45

Candidate Starts for Phasih\_14:

(Start: 38 @9504 has 17 MA's), (Start: 45 @9525 has 14 MA's), (91, 9642), (93, 9654), (118, 9786), (133, 9900), (135, 9909),

Gene: Phatniss\_14 Start: 9487, Stop: 10026, Start Num: 45

Candidate Starts for Phatniss\_14:

(Start: 45 @9487 has 14 MA's), (91, 9604), (93, 9616), (118, 9748), (133, 9862), (135, 9871),

Gene: Phrank15\_38 Start: 25579, Stop: 26058, Start Num: 74

Candidate Starts for Phrank15\_38:

(42, 25489), (Start: 66 @25555 has 5 MA's), (Start: 74 @25579 has 11 MA's), (118, 25771), (124, 25822), (126, 25831),

Gene: Phrank15\_56 Start: 32976, Stop: 33476, Start Num: 62

Candidate Starts for Phrank15\_56:

(5, 32526), (9, 32664), (Start: 62 @32976 has 3 MA's), (86, 33024), (120, 33189), (142, 33351),

Gene: Pitbull\_27 Start: 21048, Stop: 21602, Start Num: 47

Candidate Starts for Pitbull\_27:

(Start: 47 @21048 has 1 MA's), (117, 21300), (118, 21312), (124, 21363), (142, 21480), (149, 21525),

Gene: Polka14\_14 Start: 9487, Stop: 10026, Start Num: 45

Candidate Starts for Polka14\_14:

(Start: 38 @9466 has 17 MA's), (Start: 45 @9487 has 14 MA's), (91, 9604), (93, 9616), (118, 9748), (133, 9862), (135, 9871),

Gene: Porcelain\_45 Start: 36889, Stop: 37434, Start Num: 50

Candidate Starts for Porcelain\_45:

(15, 36670), (18, 36727), (30, 36805), (44, 36871), (48, 36886), (Start: 50 @36889 has 6 MA's), (Start: 70 @36946 has 2 MA's), (92, 37003), (118, 37153), (135, 37282), (153, 37390), (154, 37402), (155, 37405),

Gene: RadFad\_57 Start: 33410, Stop: 33871, Start Num: 82

Candidate Starts for RadFad\_57:

(Start: 82 @33410 has 11 MA's), (110, 33542), (121, 33596), (142, 33749), (147, 33782),

Gene: RadFad\_39 Start: 26218, Stop: 26697, Start Num: 74

Candidate Starts for RadFad\_39:

(Start: 66 @26194 has 5 MA's), (Start: 74 @26218 has 11 MA's), (107, 26356), (118, 26410), (145, 26602), (146, 26605),

Gene: Raqqa\_97 Start: 52473, Stop: 52976, Start Num: 74

Candidate Starts for Raqqa\_97:

(Start: 74 @52473 has 11 MA's), (96, 52554), (113, 52638), (118, 52665), (121, 52680), (123, 52701), (124, 52716), (129, 52755), (151, 52896), (153, 52905), (159, 52944),

Gene: Raqqa\_48 Start: 30332, Stop: 30787, Start Num: 75

Candidate Starts for Raqqa\_48:

(Start: 55 @30296 has 3 MA's), (75, 30332), (107, 30443), (118, 30494), (123, 30530), (127, 30572), (140, 30656),

Gene: Raqqa\_45 Start: 29275, Stop: 29736, Start Num: 82  
Candidate Starts for Raqqa\_45:  
(Start: 82 @29275 has 11 MA's), (110, 29407), (121, 29461), (142, 29614), (147, 29647),

Gene: Rialto\_15 Start: 9346, Stop: 9885, Start Num: 45  
Candidate Starts for Rialto\_15:  
(Start: 45 @9346 has 14 MA's), (91, 9463), (93, 9475), (118, 9607), (133, 9721), (135, 9730),

Gene: Richie\_96 Start: 52435, Stop: 52971, Start Num: 53  
Candidate Starts for Richie\_96:  
(10, 52150), (Start: 53 @52435 has 2 MA's), (60, 52456), (69, 52480), (113, 52651), (115, 52654),  
(133, 52798), (153, 52921),

Gene: Sandalphon\_14 Start: 9504, Stop: 10043, Start Num: 45  
Candidate Starts for Sandalphon\_14:  
(Start: 45 @9504 has 14 MA's), (91, 9621), (93, 9633), (118, 9765), (133, 9879), (135, 9888),

Gene: Sarge\_50 Start: 29604, Stop: 30206, Start Num: 35  
Candidate Starts for Sarge\_50:  
(Start: 35 @29604 has 1 MA's), (64, 29688), (71, 29715), (86, 29742), (93, 29772), (110, 29868), (118,  
29907),

Gene: Sarge\_34 Start: 24292, Stop: 24756, Start Num: 82  
Candidate Starts for Sarge\_34:  
(Start: 82 @24292 has 11 MA's), (113, 24436), (156, 24733),

Gene: Satrap\_73 Start: 38750, Stop: 39217, Start Num: 77  
Candidate Starts for Satrap\_73:  
(Start: 46 @38669 has 1 MA's), (77, 38750), (110, 38894), (118, 38933), (119, 38936), (123, 38969),  
(135, 39062), (142, 39101),

Gene: ShawBrad\_105 Start: 53519, Stop: 54079, Start Num: 36  
Candidate Starts for ShawBrad\_105:  
(Start: 31 @53495 has 1 MA's), (Start: 36 @53519 has 2 MA's), (79, 53639), (89, 53651), (113, 53759),  
(122, 53816), (135, 53915), (142, 53954), (146, 53981),

Gene: ShiaLabeouf\_219 Start: 124687, Stop: 125181, Start Num: 68  
Candidate Starts for ShiaLabeouf\_219:  
(21, 124486), (22, 124498), (23, 124507), (Start: 68 @124687 has 6 MA's), (125, 124945), (126,  
124948), (138, 125041), (142, 125056), (151, 125122), (152, 125125),

Gene: Shukran\_48 Start: 30453, Stop: 30917, Start Num: 75  
Candidate Starts for Shukran\_48:  
(75, 30453), (109, 30579), (118, 30627),

Gene: Sisko\_10 Start: 10106, Stop: 9555, Start Num: 53  
Candidate Starts for Sisko\_10:  
(Start: 53 @10106 has 2 MA's), (87, 10022), (93, 9992), (99, 9926), (119, 9839), (123, 9806), (126,  
9782), (133, 9722), (151, 9608),

Gene: Smooch\_56 Start: 27829, Stop: 28428, Start Num: 38  
Candidate Starts for Smooch\_56:

(Start: 38 @27829 has 17 MA's), (43, 27844), (98, 28054), (111, 28117), (118, 28147), (124, 28201), (125, 28207), (126, 28210), (135, 28273), (139, 28297),

Gene: SonDevVon\_39 Start: 26563, Stop: 27042, Start Num: 74

Candidate Starts for SonDevVon\_39:

(42, 26473), (Start: 66 @26539 has 5 MA's), (Start: 74 @26563 has 11 MA's), (118, 26755), (124, 26806), (126, 26815),

Gene: SpicyFrank\_59 Start: 33886, Stop: 34386, Start Num: 62

Candidate Starts for SpicyFrank\_59:

(Start: 62 @33886 has 3 MA's), (86, 33934), (115, 34069), (120, 34099), (142, 34261),

Gene: Squint\_45 Start: 37065, Stop: 37553, Start Num: 70

Candidate Starts for Squint\_45:

(15, 36789), (18, 36846), (30, 36924), (44, 36990), (48, 37005), (Start: 50 @37008 has 6 MA's), (Start: 70 @37065 has 2 MA's), (92, 37122), (118, 37272), (135, 37401), (153, 37509), (154, 37521), (155, 37524),

Gene: Stellammi\_131 Start: 61866, Stop: 62381, Start Num: 63

Candidate Starts for Stellammi\_131:

(Start: 63 @61866 has 1 MA's), (103, 62028), (110, 62046), (118, 62085), (119, 62088), (133, 62205), (152, 62316),

Gene: Sunshine924\_65 Start: 41214, Stop: 40627, Start Num: 34

Candidate Starts for Sunshine924\_65:

(Start: 34 @41214 has 4 MA's), (41, 41199), (54, 41154), (61, 41136), (Start: 70 @41112 has 2 MA's), (110, 40953), (115, 40938), (130, 40815), (134, 40791), (139, 40758), (141, 40752), (151, 40683), (152, 40680),

Gene: SuperGrey\_14 Start: 9478, Stop: 10038, Start Num: 38

Candidate Starts for SuperGrey\_14:

(Start: 38 @9478 has 17 MA's), (Start: 45 @9499 has 14 MA's), (91, 9616), (93, 9628), (118, 9760), (133, 9874), (135, 9883),

Gene: Superphikiman\_46 Start: 37080, Stop: 37625, Start Num: 50

Candidate Starts for Superphikiman\_46:

(15, 36861), (18, 36918), (30, 36996), (44, 37062), (48, 37077), (Start: 50 @37080 has 6 MA's), (Start: 70 @37137 has 2 MA's), (92, 37194), (118, 37344), (135, 37473), (153, 37581), (154, 37593), (155, 37596),

Gene: Tiff81\_42 Start: 27360, Stop: 27824, Start Num: 78

Candidate Starts for Tiff81\_42:

(Start: 78 @27360 has 2 MA's), (118, 27528), (123, 27564), (126, 27588), (133, 27651), (137, 27678),

Gene: Tripl3t\_5 Start: 2428, Stop: 2907, Start Num: 72

Candidate Starts for Tripl3t\_5:

(Start: 72 @2428 has 5 MA's), (110, 2587), (114, 2599), (121, 2641),

Gene: Trouble\_4 Start: 2065, Stop: 2544, Start Num: 72

Candidate Starts for Trouble\_4:

(Start: 72 @2065 has 5 MA's), (110, 2224), (114, 2236), (121, 2278),

Gene: Violac\_14 Start: 9472, Stop: 10032, Start Num: 38

Candidate Starts for Violac\_14:

(Start: 38 @9472 has 17 MA's), (Start: 45 @9493 has 14 MA's), (91, 9610), (93, 9622), (118, 9754), (133, 9868), (135, 9877),

Gene: Vopal\_48 Start: 32400, Stop: 32864, Start Num: 78

Candidate Starts for Vopal\_48:

(Start: 78 @32400 has 2 MA's), (118, 32568), (123, 32604), (126, 32628), (133, 32691), (137, 32718),

Gene: Vopal\_42 Start: 29036, Stop: 29515, Start Num: 74

Candidate Starts for Vopal\_42:

(56, 28991), (Start: 66 @29012 has 5 MA's), (Start: 74 @29036 has 11 MA's), (118, 29228), (126, 29288), (145, 29420),

Gene: Vopal\_56 Start: 35307, Stop: 35768, Start Num: 82

Candidate Starts for Vopal\_56:

(Start: 82 @35307 has 11 MA's), (110, 35439), (121, 35493), (142, 35646), (147, 35679),

Gene: Vorrps\_53 Start: 26287, Stop: 26886, Start Num: 38

Candidate Starts for Vorrps\_53:

(Start: 38 @26287 has 17 MA's), (43, 26302), (98, 26512), (111, 26575), (118, 26605), (124, 26659), (125, 26665), (126, 26668), (135, 26731), (139, 26755),

Gene: Watermelon\_6 Start: 2607, Stop: 3086, Start Num: 72

Candidate Starts for Watermelon\_6:

(Start: 72 @2607 has 5 MA's), (110, 2766), (114, 2778), (121, 2820),

Gene: Wee\_14 Start: 9531, Stop: 10070, Start Num: 45

Candidate Starts for Wee\_14:

(Start: 45 @9531 has 14 MA's), (91, 9648), (93, 9660), (118, 9792), (133, 9906), (135, 9915),

Gene: Windest\_39 Start: 25032, Stop: 25535, Start Num: 66

Candidate Starts for Windest\_39:

(42, 24966), (Start: 66 @25032 has 5 MA's), (Start: 74 @25056 has 11 MA's), (118, 25248), (124, 25299), (126, 25308),

Gene: YungJamal\_57 Start: 27006, Stop: 27605, Start Num: 38

Candidate Starts for YungJamal\_57:

(Start: 38 @27006 has 17 MA's), (43, 27021), (98, 27231), (111, 27294), (118, 27324), (124, 27378), (125, 27384), (126, 27387), (135, 27450), (139, 27474),

Gene: Zucker\_62 Start: 35518, Stop: 36036, Start Num: 66

Candidate Starts for Zucker\_62:

(Start: 66 @35518 has 5 MA's), (76, 35548), (104, 35674), (112, 35701), (118, 35731), (123, 35767), (125, 35788), (152, 35968), (161, 36022),