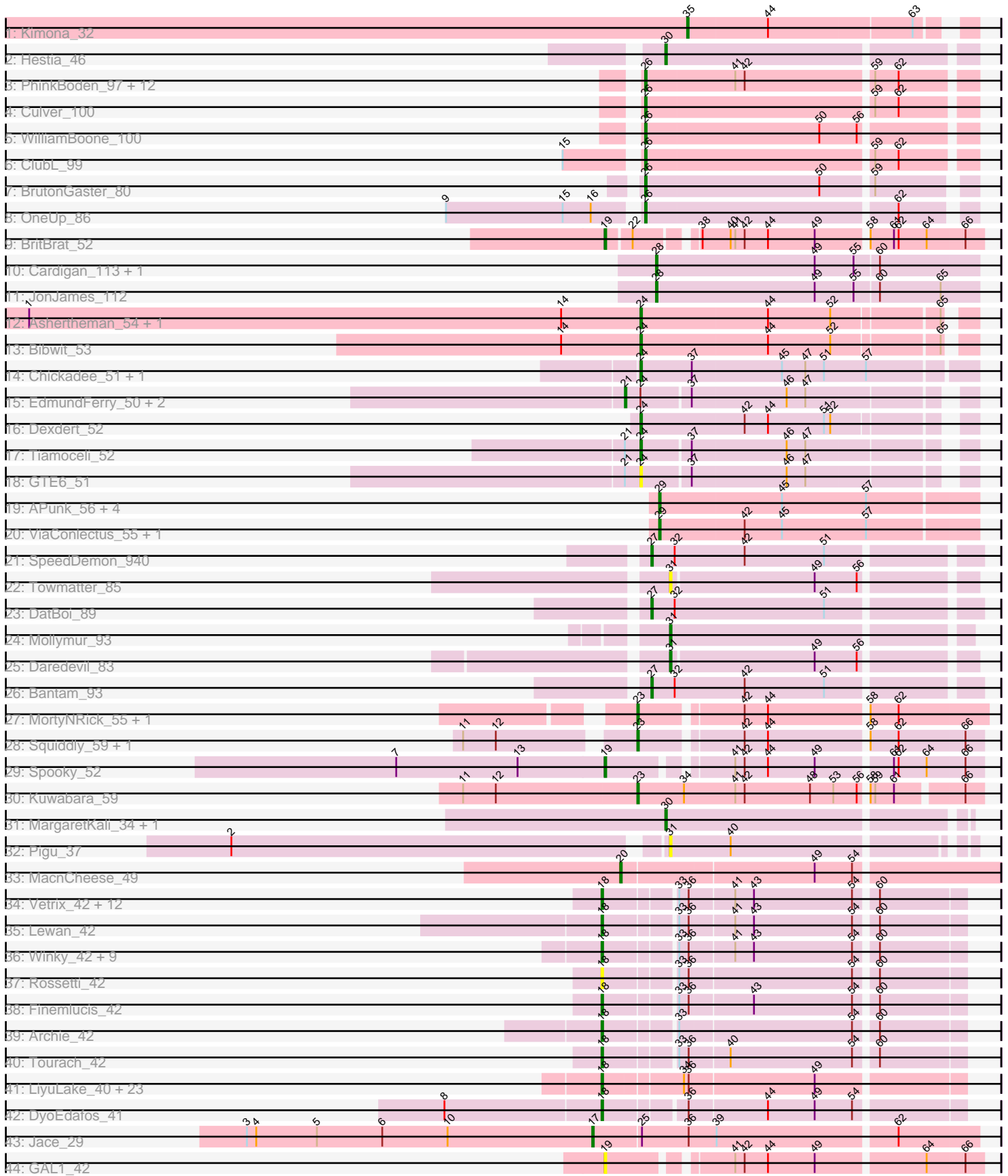


Pham 224427



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 224427 Report

This analysis was run 03/28/25 on database version 593.

Pham number 224427 has 113 members, 19 are drafts.

Phages represented in each track:

- Track 1 : Kimona\_32
- Track 2 : Hestia\_46
- Track 3 : PhinkBoden\_97, Dusty\_95, Cucurbita\_99, Toniann\_100, Abscondus\_97, Smoothie\_99, Geeche\_97, Engineer\_99, Lozinak\_98, Miskis\_92, Bachita\_100, Aphelion\_99, Norvs\_100
- Track 4 : Culver\_100
- Track 5 : WilliamBoone\_100
- Track 6 : ClubL\_99
- Track 7 : BrutonGaster\_80
- Track 8 : OneUp\_86
- Track 9 : BritBrat\_52
- Track 10 : Cardigan\_113, Yvonnetastic\_109
- Track 11 : JonJames\_112
- Track 12 : Ashertheman\_54, Gaea\_53
- Track 13 : Bibwit\_53
- Track 14 : Chickadee\_51, Kwekel\_51
- Track 15 : EdmundFerry\_50, Twonlo\_49, RoadKill\_49
- Track 16 : Dextert\_52
- Track 17 : Tiamoceli\_52
- Track 18 : GTE6\_51
- Track 19 : APunk\_56, Sampson\_55, Abblin\_55, Scioto\_56, Natkenzie\_55
- Track 20 : ViaConlectus\_55, Tardus\_57
- Track 21 : SpeedDemon\_940
- Track 22 : Towmatter\_85
- Track 23 : DatBoi\_89
- Track 24 : Mollymur\_93
- Track 25 : Daredevil\_83
- Track 26 : Bantam\_93
- Track 27 : MortyNRick\_55, BearBQ\_57
- Track 28 : Squiddly\_59, Malisha\_63
- Track 29 : Spooky\_52
- Track 30 : Kuwabara\_59
- Track 31 : MargaretKali\_34, Kumotta\_34
- Track 32 : Pigu\_37
- Track 33 : MacnCheese\_49
- Track 34 : Vatrix\_42, Nicholasp3\_42, GuuelaD\_42, Kahlid\_42, Crossroads\_42, Loadrie\_42, Gabriela\_42, Rumpelstiltskin\_42, Gardann\_42, Wilder\_42,

MkaliMitinis3\_42, Wigglewiggle\_42, Zakai\_42

- Track 35 : Lewan\_42
- Track 36 : Winky\_42, Breezona\_42, Itos\_41, BobsGarage\_42, Netyap\_42, BigCheese\_42, Faith1\_42, Miley16\_42, LilDestine\_42, DrSeegs\_42
- Track 37 : Rossetti\_42
- Track 38 : Finemlucis\_42
- Track 39 : Archie\_42
- Track 40 : Tourach\_42
- Track 41 : LiyuLake\_40, Lolly9\_40, MsGreen\_40, Jobypre\_40, Ellson\_40, Kingsolomon\_40, MiniLon\_40, Krypton555\_40, Whirlwind\_41, Lumos\_40, Samty\_40, Clautastrophe\_40, Bellis\_40, Red305\_40, Finnry\_40, Snenia\_40, TriFive\_40, MiniMac\_40, DuncansLeg\_40, KirDoubleO7\_38, BourbonZero\_39, Jubie\_40, Nicholas\_40, Moostard\_40
- Track 42 : DyoEdafos\_41
- Track 43 : Jace\_29
- Track 44 : GAL1\_42

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

The start number called the most often in the published annotations is 18, it was called in 45 of the 94 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Archie\_42, Bellis\_40, BigCheese\_42, BobsGarage\_42, BourbonZero\_39, Breezona\_42, Clautastrophe\_40, Crossroads\_42, DrSeegs\_42, DuncansLeg\_40, DyoEdafos\_41, Ellson\_40, Faith1\_42, Finemlucis\_42, Finnry\_40, Gabriela\_42, Gardann\_42, GuuelaD\_42, Itos\_41, Jobypre\_40, Jubie\_40, Kahlid\_42, Kingsolomon\_40, KirDoubleO7\_38, Krypton555\_40, Lewan\_42, LilDestine\_42, LiyuLake\_40, Loadrie\_42, Lolly9\_40, Lumos\_40, Miley16\_42, MiniLon\_40, MiniMac\_40, MkaliMitinis3\_42, Moostard\_40, MsGreen\_40, Netyap\_42, Nicholas\_40, Nicholasp3\_42, Red305\_40, Rossetti\_42, Rumpelstiltskin\_42, Samty\_40, Snenia\_40, Tourach\_42, TriFive\_40, Vatrix\_42, Whirlwind\_41, Wigglewiggle\_42, Wilder\_42, Winky\_42, Zakai\_42,

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

- 

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

- APunk\_56, Abblin\_55, Abscondus\_97, Aphelion\_99, Ashertheman\_54, Bachita\_100, Bantam\_93, BearBQ\_57, Bibwit\_53, BritBrat\_52, BrutonGaster\_80, Cardigan\_113, Chickadee\_51, ClubL\_99, Cucurbita\_99, Culver\_100, Daredevil\_83, DatBoi\_89, Dextert\_52, Dusty\_95, EdmundFerry\_50, Engineer\_99, GAL1\_42, GTE6\_51, Gaea\_53, Geeche\_97, Hestia\_46, Jace\_29, JonJames\_112, Kimona\_32, Kumotta\_34, Kuwabara\_59, Kwekel\_51, Lozinak\_98, MacnCheese\_49, Malisha\_63, MargaretKali\_34, Miskis\_92, Mollymur\_93, MortyNRick\_55, Natkenzie\_55, Norvs\_100, OneUp\_86, PhinkBoden\_97, Pigu\_37, RoadKill\_49, Sampson\_55, Scioto\_56, Smoothie\_99, SpeedDemon\_940, Spooky\_52, Squiddly\_59, Tardus\_57, Tiamoceli\_52, Toniann\_100, Towmatter\_85, Twonlo\_49, ViaConlectus\_55, WilliamBoone\_100, Yvonnestic\_109,

## Summary by start number:

### Start 17:

- Found in 1 of 113 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jace\_29 (singleton),

### Start 18:

- Found in 53 of 113 ( 46.9% ) of genes in pham
- Manual Annotations of this start: 45 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Archie\_42 (L2), Bellis\_40 (L3), BigCheese\_42 (L2), BobsGarage\_42 (L2), BourbonZero\_39 (L3), Breezona\_42 (L2), Clautastrophe\_40 (L3), Crossroads\_42 (L2), DrSeegs\_42 (L2), DuncansLeg\_40 (L3), DyoEdafos\_41 (L4), Ellson\_40 (L3), Faith1\_42 (L2), Finemlucis\_42 (L2), Finnry\_40 (L3), Gabriela\_42 (L2), Gardann\_42 (L2), GuuelaD\_42 (L2), Itos\_41 (L2), Jobypre\_40 (L3), Jubie\_40 (L3), Kahlid\_42 (L2), Kingsolomon\_40 (L3), KirDoubleO7\_38 (L3), Krypton555\_40 (L3), Lewan\_42 (L2), LilDestine\_42 (L2), LiyuLake\_40 (L3), Loadrie\_42 (L2), Lolly9\_40 (L3), Lumos\_40 (L3), Miley16\_42 (L2), MiniLon\_40 (L3), MiniMac\_40 (L3), MkaliMitinis3\_42 (L2), Moostard\_40 (L3), MsGreen\_40 (L3), Netyap\_42 (L2), Nicholas\_40 (L3), Nicholasp3\_42 (L2), Red305\_40 (L3), Rossetti\_42 (L2), Rumpelstiltskin\_42 (L2), Samty\_40 (L3), Snenia\_40 (L3), Tourach\_42 (L2), TriFive\_40 (L3), Vetrix\_42 (L2), Whirlwind\_41 (L3), Wigglewobble\_42 (L2), Wilder\_42 (L2), Winky\_42 (L2), Zakai\_42 (L2),

### Start 19:

- Found in 3 of 113 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BritBrat\_52 (CY2), GAL1\_42 (singleton), Spooky\_52 (DN2),

### Start 20:

- Found in 1 of 113 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MacnCheese\_49 (K3),

### Start 21:

- Found in 5 of 113 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 3 of 94
- Called 60.0% of time when present
- Phage (with cluster) where this start called: EdmundFerry\_50 (DE3), RoadKill\_49 (DE3), Twonlo\_49 (DE3),

### Start 23:

- Found in 5 of 113 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 4 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BearBQ\_57 (DN), Kuwabara\_59 (DN4), Malisha\_63 (DN), MortyNRick\_55 (DN), Squiddly\_59 (DN2),

Start 24:

- Found in 11 of 113 ( 9.7% ) of genes in pham
- Manual Annotations of this start: 7 of 94
- Called 72.7% of time when present
- Phage (with cluster) where this start called: Ashertheman\_54 (DE1), Bibwit\_53 (DE1), Chickadee\_51 (DE3), Dextert\_52 (DE3), GTE6\_51 (DE3), Gaea\_53 (DE1), Kwekel\_51 (DE3), Tiamoceli\_52 (DE3),

Start 26:

- Found in 18 of 113 ( 15.9% ) of genes in pham
- Manual Annotations of this start: 16 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abscondus\_97 (CQ1), Aphelion\_99 (CQ1), Bachita\_100 (CQ1), BrutonGaster\_80 (CQ2), ClubL\_99 (CQ1), Cucurbita\_99 (CQ1), Culver\_100 (CQ1), Dusty\_95 (CQ1), Engineer\_99 (CQ1), Geeche\_97 (CQ1), Lozinak\_98 (CQ1), Miskis\_92 (CQ1), Norvs\_100 (CQ1), OneUp\_86 (CQ2), PhinkBoden\_97 (CQ1), Smoothie\_99 (CQ1), Toniann\_100 (CQ1), WilliamBoone\_100 (CQ1),

Start 27:

- Found in 3 of 113 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 3 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bantam\_93 (DL), DatBoi\_89 (DL), SpeedDemon\_940 (DL),

Start 28:

- Found in 3 of 113 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cardigan\_113 (DD), JonJames\_112 (DD), Yvonnetastic\_109 (DD),

Start 29:

- Found in 7 of 113 ( 6.2% ) of genes in pham
- Manual Annotations of this start: 4 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: APunk\_56 (DE4), Abblin\_55 (DE4), Natkenzie\_55 (DE4), Sampson\_55 (DE4), Scioto\_56 (DE4), Tardus\_57 (DE4), ViaConlectus\_55 (DE4),

Start 30:

- Found in 3 of 113 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 3 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hestia\_46 (AY), Kumotta\_34 (FB), MargaretKali\_34 (FB),

Start 31:

- Found in 4 of 113 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 2 of 94
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Daredevil\_83 (DL), Mollymur\_93 (DL), Pigu\_37 (FB), Towmatter\_85 (DL),

Start 35:

- Found in 1 of 113 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kimona\_32 (A19),

### **Summary by clusters:**

There are 19 clusters represented in this pham: DN, CY2, DL, DE1, DD, DE3, DE4, singleton, FB, K3, DN4, L4, L2, L3, A19, DN2, AY, CQ2, CQ1,

Info for manual annotations of cluster A19:

- Start number 35 was manually annotated 1 time for cluster A19.

Info for manual annotations of cluster AY:

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

Info for manual annotations of cluster CQ1:

- Start number 26 was manually annotated 14 times for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 26 was manually annotated 2 times for cluster CQ2.

Info for manual annotations of cluster CY2:

- Start number 19 was manually annotated 1 time for cluster CY2.

Info for manual annotations of cluster DD:

- Start number 28 was manually annotated 2 times for cluster DD.

Info for manual annotations of cluster DE1:

- Start number 24 was manually annotated 3 times for cluster DE1.

Info for manual annotations of cluster DE3:

- Start number 21 was manually annotated 3 times for cluster DE3.
- Start number 24 was manually annotated 4 times for cluster DE3.

Info for manual annotations of cluster DE4:

- Start number 29 was manually annotated 4 times for cluster DE4.

Info for manual annotations of cluster DL:

- Start number 27 was manually annotated 3 times for cluster DL.
- Start number 31 was manually annotated 2 times for cluster DL.

Info for manual annotations of cluster DN:

- Start number 23 was manually annotated 2 times for cluster DN.

Info for manual annotations of cluster DN2:

- Start number 19 was manually annotated 1 time for cluster DN2.
- Start number 23 was manually annotated 1 time for cluster DN2.

Info for manual annotations of cluster DN4:

- Start number 23 was manually annotated 1 time for cluster DN4.

Info for manual annotations of cluster FB:

- Start number 30 was manually annotated 2 times for cluster FB.

Info for manual annotations of cluster K3:

- Start number 20 was manually annotated 1 time for cluster K3.

Info for manual annotations of cluster L2:

- Start number 18 was manually annotated 27 times for cluster L2.

Info for manual annotations of cluster L3:

- Start number 18 was manually annotated 17 times for cluster L3.

Info for manual annotations of cluster L4:

- Start number 18 was manually annotated 1 time for cluster L4.

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

Gene: APunk\_56 Start: 45016, Stop: 45216, Start Num: 29

Candidate Starts for APunk\_56:

(Start: 29 @45016 has 4 MA's), (45, 45094), (57, 45148),

Gene: Abblin\_55 Start: 45502, Stop: 45702, Start Num: 29

Candidate Starts for Abblin\_55:

(Start: 29 @45502 has 4 MA's), (45, 45580), (57, 45634),

Gene: Abscondus\_97 Start: 58989, Stop: 59189, Start Num: 26

Candidate Starts for Abscondus\_97:

(Start: 26 @58989 has 16 MA's), (41, 59046), (42, 59052), (59, 59130), (62, 59145),

Gene: Aphelion\_99 Start: 60542, Stop: 60742, Start Num: 26

Candidate Starts for Aphelion\_99:

(Start: 26 @60542 has 16 MA's), (41, 60599), (42, 60605), (59, 60683), (62, 60698),

Gene: Archie\_42 Start: 34898, Stop: 35113, Start Num: 18

Candidate Starts for Archie\_42:

(Start: 18 @34898 has 45 MA's), (33, 34940), (54, 35048), (60, 35060),

Gene: Ashertheman\_54 Start: 44467, Stop: 44664, Start Num: 24

Candidate Starts for Ashertheman\_54:

(1, 44074), (14, 44416), (Start: 24 @44467 has 7 MA's), (44, 44548), (52, 44587), (65, 44650),

Gene: Bachita\_100 Start: 60200, Stop: 60400, Start Num: 26

Candidate Starts for Bachita\_100:

(Start: 26 @60200 has 16 MA's), (41, 60257), (42, 60263), (59, 60341), (62, 60356),

Gene: Bantam\_93 Start: 62206, Stop: 62006, Start Num: 27

Candidate Starts for Bantam\_93:

(Start: 27 @62206 has 3 MA's), (32, 62191), (42, 62146), (51, 62095),

Gene: BearBQ\_57 Start: 39707, Stop: 39916, Start Num: 23

Candidate Starts for BearBQ\_57:

(Start: 23 @39707 has 4 MA's), (42, 39767), (44, 39782), (58, 39842), (62, 39860),

Gene: Bellis\_40 Start: 34953, Stop: 35168, Start Num: 18

Candidate Starts for Bellis\_40:

(Start: 18 @34953 has 45 MA's), (34, 34998), (36, 35001), (49, 35079),

Gene: Bibwit\_53 Start: 43981, Stop: 44178, Start Num: 24

Candidate Starts for Bibwit\_53:

(14, 43930), (Start: 24 @43981 has 7 MA's), (44, 44062), (52, 44101), (65, 44164),

Gene: BigCheese\_42 Start: 34694, Stop: 34909, Start Num: 18

Candidate Starts for BigCheese\_42:

(Start: 18 @34694 has 45 MA's), (33, 34736), (36, 34742), (41, 34769), (43, 34781), (54, 34844), (60, 34856),

Gene: BobsGarage\_42 Start: 34694, Stop: 34909, Start Num: 18

Candidate Starts for BobsGarage\_42:

(Start: 18 @34694 has 45 MA's), (33, 34736), (36, 34742), (41, 34769), (43, 34781), (54, 34844), (60, 34856),

Gene: BourbonZero\_39 Start: 34932, Stop: 35150, Start Num: 18

Candidate Starts for BourbonZero\_39:

(Start: 18 @34932 has 45 MA's), (34, 34980), (36, 34983), (49, 35061),

Gene: Breezona\_42 Start: 34694, Stop: 34909, Start Num: 18

Candidate Starts for Breezona\_42:

(Start: 18 @34694 has 45 MA's), (33, 34736), (36, 34742), (41, 34769), (43, 34781), (54, 34844), (60, 34856),

Gene: BritBrat\_52 Start: 37915, Stop: 38136, Start Num: 19

Candidate Starts for BritBrat\_52:

(Start: 19 @37915 has 2 MA's), (22, 37930), (38, 37963), (40, 37981), (41, 37984), (42, 37990), (44, 38005), (49, 38035), (58, 38065), (61, 38080), (62, 38083), (64, 38101), (66, 38125),

Gene: BrutonGaster\_80 Start: 54552, Stop: 54749, Start Num: 26

Candidate Starts for BrutonGaster\_80:

(Start: 26 @54552 has 16 MA's), (50, 54663), (59, 54693),

Gene: Cardigan\_113 Start: 64662, Stop: 64865, Start Num: 28

Candidate Starts for Cardigan\_113:

(Start: 28 @64662 has 2 MA's), (49, 64764), (55, 64788), (60, 64803),

Gene: Chickadee\_51 Start: 41286, Stop: 41495, Start Num: 24

Candidate Starts for Chickadee\_51:

(Start: 24 @41286 has 7 MA's), (37, 41319), (45, 41376), (47, 41391), (51, 41403), (57, 41430),

Gene: Clautastrophe\_40 Start: 34951, Stop: 35166, Start Num: 18

Candidate Starts for Clautastrophe\_40:

(Start: 18 @34951 has 45 MA's), (34, 34996), (36, 34999), (49, 35077),



Gene: ClubL\_99 Start: 59132, Stop: 59332, Start Num: 26  
Candidate Starts for ClubL\_99:  
(15, 59090), (Start: 26 @59132 has 16 MA's), (59, 59273), (62, 59288),

Gene: Crossroads\_42 Start: 34696, Stop: 34911, Start Num: 18  
Candidate Starts for Crossroads\_42:  
(Start: 18 @34696 has 45 MA's), (33, 34738), (36, 34744), (41, 34771), (43, 34783), (54, 34846), (60, 34858),

Gene: Cucurbita\_99 Start: 60707, Stop: 60907, Start Num: 26  
Candidate Starts for Cucurbita\_99:  
(Start: 26 @60707 has 16 MA's), (41, 60764), (42, 60770), (59, 60848), (62, 60863),

Gene: Culver\_100 Start: 59032, Stop: 59232, Start Num: 26  
Candidate Starts for Culver\_100:  
(Start: 26 @59032 has 16 MA's), (59, 59173), (62, 59188),

Gene: Daredevil\_83 Start: 57872, Stop: 57690, Start Num: 31  
Candidate Starts for Daredevil\_83:  
(Start: 31 @57872 has 2 MA's), (49, 57782), (56, 57755),

Gene: DatBoi\_89 Start: 61354, Stop: 61154, Start Num: 27  
Candidate Starts for DatBoi\_89:  
(Start: 27 @61354 has 3 MA's), (32, 61339), (51, 61243),

Gene: Dextert\_52 Start: 41572, Stop: 41766, Start Num: 24  
Candidate Starts for Dextert\_52:  
(Start: 24 @41572 has 7 MA's), (42, 41638), (44, 41653), (51, 41689), (52, 41692),

Gene: DrSeegs\_42 Start: 34694, Stop: 34909, Start Num: 18  
Candidate Starts for DrSeegs\_42:  
(Start: 18 @34694 has 45 MA's), (33, 34736), (36, 34742), (41, 34769), (43, 34781), (54, 34844), (60, 34856),

Gene: DuncansLeg\_40 Start: 34969, Stop: 35187, Start Num: 18  
Candidate Starts for DuncansLeg\_40:  
(Start: 18 @34969 has 45 MA's), (34, 35017), (36, 35020), (49, 35098),

Gene: Dusty\_95 Start: 59048, Stop: 59248, Start Num: 26  
Candidate Starts for Dusty\_95:  
(Start: 26 @59048 has 16 MA's), (41, 59105), (42, 59111), (59, 59189), (62, 59204),

Gene: DyoEdafos\_41 Start: 33704, Stop: 33919, Start Num: 18  
Candidate Starts for DyoEdafos\_41:  
(8, 33605), (Start: 18 @33704 has 45 MA's), (36, 33752), (44, 33800), (49, 33830), (54, 33854),

Gene: EdmundFerry\_50 Start: 41346, Stop: 41549, Start Num: 21  
Candidate Starts for EdmundFerry\_50:  
(Start: 21 @41346 has 3 MA's), (Start: 24 @41355 has 7 MA's), (37, 41385), (46, 41445), (47, 41457),

Gene: Ellson\_40 Start: 34945, Stop: 35163, Start Num: 18  
Candidate Starts for Ellson\_40:  
(Start: 18 @34945 has 45 MA's), (34, 34993), (36, 34996), (49, 35074),

Gene: Engineer\_99 Start: 60173, Stop: 60373, Start Num: 26

Candidate Starts for Engineer\_99:

(Start: 26 @60173 has 16 MA's), (41, 60230), (42, 60236), (59, 60314), (62, 60329),

Gene: Faith1\_42 Start: 34694, Stop: 34909, Start Num: 18

Candidate Starts for Faith1\_42:

(Start: 18 @34694 has 45 MA's), (33, 34736), (36, 34742), (41, 34769), (43, 34781), (54, 34844), (60, 34856),

Gene: Finemlucis\_42 Start: 34970, Stop: 35185, Start Num: 18

Candidate Starts for Finemlucis\_42:

(Start: 18 @34970 has 45 MA's), (33, 35012), (36, 35018), (43, 35057), (54, 35120), (60, 35132),

Gene: Finnry\_40 Start: 34954, Stop: 35169, Start Num: 18

Candidate Starts for Finnry\_40:

(Start: 18 @34954 has 45 MA's), (34, 34999), (36, 35002), (49, 35080),

Gene: GAL1\_42 Start: 33753, Stop: 33974, Start Num: 19

Candidate Starts for GAL1\_42:

(Start: 19 @33753 has 2 MA's), (41, 33822), (42, 33828), (44, 33843), (49, 33873), (64, 33939), (66, 33963),

Gene: GTE6\_51 Start: 41823, Stop: 42017, Start Num: 24

Candidate Starts for GTE6\_51:

(Start: 21 @41814 has 3 MA's), (Start: 24 @41823 has 7 MA's), (37, 41853), (46, 41913), (47, 41925),

Gene: Gabriela\_42 Start: 34956, Stop: 35171, Start Num: 18

Candidate Starts for Gabriela\_42:

(Start: 18 @34956 has 45 MA's), (33, 34998), (36, 35004), (41, 35031), (43, 35043), (54, 35106), (60, 35118),

Gene: Gaea\_53 Start: 43767, Stop: 43964, Start Num: 24

Candidate Starts for Gaea\_53:

(1, 43374), (14, 43716), (Start: 24 @43767 has 7 MA's), (44, 43848), (52, 43887), (65, 43950),

Gene: Gardann\_42 Start: 34695, Stop: 34910, Start Num: 18

Candidate Starts for Gardann\_42:

(Start: 18 @34695 has 45 MA's), (33, 34737), (36, 34743), (41, 34770), (43, 34782), (54, 34845), (60, 34857),

Gene: Geeche\_97 Start: 59271, Stop: 59471, Start Num: 26

Candidate Starts for Geeche\_97:

(Start: 26 @59271 has 16 MA's), (41, 59328), (42, 59334), (59, 59412), (62, 59427),

Gene: GuuelaD\_42 Start: 34733, Stop: 34948, Start Num: 18

Candidate Starts for GuuelaD\_42:

(Start: 18 @34733 has 45 MA's), (33, 34775), (36, 34781), (41, 34808), (43, 34820), (54, 34883), (60, 34895),

Gene: Hestia\_46 Start: 29789, Stop: 29977, Start Num: 30

Candidate Starts for Hestia\_46:

(Start: 30 @29789 has 3 MA's),

Gene: Itos\_41 Start: 33600, Stop: 33815, Start Num: 18

Candidate Starts for Itos\_41:

(Start: 18 @33600 has 45 MA's), (33, 33642), (36, 33648), (41, 33675), (43, 33687), (54, 33750), (60, 33762),

Gene: Jace\_29 Start: 24871, Stop: 25110, Start Num: 17

Candidate Starts for Jace\_29:

(3, 24649), (4, 24655), (5, 24694), (6, 24736), (10, 24778), (Start: 17 @24871 has 1 MA's), (25, 24901), (36, 24931), (39, 24949), (62, 25060),

Gene: Jobypre\_40 Start: 34951, Stop: 35166, Start Num: 18

Candidate Starts for Jobypre\_40:

(Start: 18 @34951 has 45 MA's), (34, 34996), (36, 34999), (49, 35077),

Gene: JonJames\_112 Start: 65173, Stop: 65376, Start Num: 28

Candidate Starts for JonJames\_112:

(Start: 28 @65173 has 2 MA's), (49, 65275), (55, 65299), (60, 65314), (65, 65353),

Gene: Jubie\_40 Start: 34952, Stop: 35167, Start Num: 18

Candidate Starts for Jubie\_40:

(Start: 18 @34952 has 45 MA's), (34, 34997), (36, 35000), (49, 35078),

Gene: Kahlid\_42 Start: 34700, Stop: 34915, Start Num: 18

Candidate Starts for Kahlid\_42:

(Start: 18 @34700 has 45 MA's), (33, 34742), (36, 34748), (41, 34775), (43, 34787), (54, 34850), (60, 34862),

Gene: Kimona\_32 Start: 25489, Stop: 25322, Start Num: 35

Candidate Starts for Kimona\_32:

(Start: 35 @25489 has 1 MA's), (44, 25438), (63, 25348),

Gene: Kingsolomon\_40 Start: 34951, Stop: 35166, Start Num: 18

Candidate Starts for Kingsolomon\_40:

(Start: 18 @34951 has 45 MA's), (34, 34996), (36, 34999), (49, 35077),

Gene: KirDoubleO7\_38 Start: 34973, Stop: 35191, Start Num: 18

Candidate Starts for KirDoubleO7\_38:

(Start: 18 @34973 has 45 MA's), (34, 35021), (36, 35024), (49, 35102),

Gene: Krypton555\_40 Start: 34868, Stop: 35083, Start Num: 18

Candidate Starts for Krypton555\_40:

(Start: 18 @34868 has 45 MA's), (34, 34913), (36, 34916), (49, 34994),

Gene: Kumotta\_34 Start: 26417, Stop: 26599, Start Num: 30

Candidate Starts for Kumotta\_34:

(Start: 30 @26417 has 3 MA's),

Gene: Kuwabara\_59 Start: 40035, Stop: 40244, Start Num: 23

Candidate Starts for Kuwabara\_59:

(11, 39924), (12, 39945), (Start: 23 @40035 has 4 MA's), (34, 40065), (41, 40098), (42, 40104), (48, 40146), (53, 40161), (56, 40176), (58, 40179), (59, 40182), (61, 40194), (66, 40233),

Gene: Kwekel\_51 Start: 41247, Stop: 41456, Start Num: 24  
Candidate Starts for Kwekel\_51:  
(Start: 24 @41247 has 7 MA's), (37, 41280), (45, 41337), (47, 41352), (51, 41364), (57, 41391),

Gene: Lewan\_42 Start: 34687, Stop: 34902, Start Num: 18  
Candidate Starts for Lewan\_42:  
(Start: 18 @34687 has 45 MA's), (33, 34729), (36, 34735), (41, 34762), (43, 34774), (54, 34837), (60, 34849),

Gene: LilDestine\_42 Start: 34692, Stop: 34907, Start Num: 18  
Candidate Starts for LilDestine\_42:  
(Start: 18 @34692 has 45 MA's), (33, 34734), (36, 34740), (41, 34767), (43, 34779), (54, 34842), (60, 34854),

Gene: LiyuLake\_40 Start: 34935, Stop: 35153, Start Num: 18  
Candidate Starts for LiyuLake\_40:  
(Start: 18 @34935 has 45 MA's), (34, 34983), (36, 34986), (49, 35064),

Gene: Loadrie\_42 Start: 34726, Stop: 34941, Start Num: 18  
Candidate Starts for Loadrie\_42:  
(Start: 18 @34726 has 45 MA's), (33, 34768), (36, 34774), (41, 34801), (43, 34813), (54, 34876), (60, 34888),

Gene: Lolly9\_40 Start: 34759, Stop: 34977, Start Num: 18  
Candidate Starts for Lolly9\_40:  
(Start: 18 @34759 has 45 MA's), (34, 34807), (36, 34810), (49, 34888),

Gene: Lozinak\_98 Start: 60011, Stop: 60211, Start Num: 26  
Candidate Starts for Lozinak\_98:  
(Start: 26 @60011 has 16 MA's), (41, 60068), (42, 60074), (59, 60152), (62, 60167),

Gene: Lumos\_40 Start: 34948, Stop: 35163, Start Num: 18  
Candidate Starts for Lumos\_40:  
(Start: 18 @34948 has 45 MA's), (34, 34993), (36, 34996), (49, 35074),

Gene: MacnCheese\_49 Start: 37043, Stop: 37276, Start Num: 20  
Candidate Starts for MacnCheese\_49:  
(Start: 20 @37043 has 1 MA's), (49, 37163), (54, 37187),

Gene: Malisha\_63 Start: 40533, Stop: 40739, Start Num: 23  
Candidate Starts for Malisha\_63:  
(11, 40434), (12, 40455), (Start: 23 @40533 has 4 MA's), (42, 40593), (44, 40608), (58, 40668), (62, 40686), (66, 40728),

Gene: MargaretKali\_34 Start: 26052, Stop: 26234, Start Num: 30  
Candidate Starts for MargaretKali\_34:  
(Start: 30 @26052 has 3 MA's),

Gene: Miley16\_42 Start: 34694, Stop: 34909, Start Num: 18  
Candidate Starts for Miley16\_42:  
(Start: 18 @34694 has 45 MA's), (33, 34736), (36, 34742), (41, 34769), (43, 34781), (54, 34844), (60, 34856),

Gene: MiniLon\_40 Start: 34760, Stop: 34978, Start Num: 18  
Candidate Starts for MiniLon\_40:  
(Start: 18 @34760 has 45 MA's), (34, 34808), (36, 34811), (49, 34889),

Gene: MiniMac\_40 Start: 34757, Stop: 34975, Start Num: 18  
Candidate Starts for MiniMac\_40:  
(Start: 18 @34757 has 45 MA's), (34, 34805), (36, 34808), (49, 34886),

Gene: Miskis\_92 Start: 58711, Stop: 58911, Start Num: 26  
Candidate Starts for Miskis\_92:  
(Start: 26 @58711 has 16 MA's), (41, 58768), (42, 58774), (59, 58852), (62, 58867),

Gene: MkaliMitinis3\_42 Start: 34696, Stop: 34911, Start Num: 18  
Candidate Starts for MkaliMitinis3\_42:  
(Start: 18 @34696 has 45 MA's), (33, 34738), (36, 34744), (41, 34771), (43, 34783), (54, 34846), (60, 34858),

Gene: Mollymur\_93 Start: 63027, Stop: 62845, Start Num: 31  
Candidate Starts for Mollymur\_93:  
(Start: 31 @63027 has 2 MA's),

Gene: Moostard\_40 Start: 34953, Stop: 35168, Start Num: 18  
Candidate Starts for Moostard\_40:  
(Start: 18 @34953 has 45 MA's), (34, 34998), (36, 35001), (49, 35079),

Gene: MortyNRick\_55 Start: 39746, Stop: 39955, Start Num: 23  
Candidate Starts for MortyNRick\_55:  
(Start: 23 @39746 has 4 MA's), (42, 39806), (44, 39821), (58, 39881), (62, 39899),

Gene: MsGreen\_40 Start: 34951, Stop: 35166, Start Num: 18  
Candidate Starts for MsGreen\_40:  
(Start: 18 @34951 has 45 MA's), (34, 34996), (36, 34999), (49, 35077),

Gene: Natkenzie\_55 Start: 45502, Stop: 45702, Start Num: 29  
Candidate Starts for Natkenzie\_55:  
(Start: 29 @45502 has 4 MA's), (45, 45580), (57, 45634),

Gene: Netyap\_42 Start: 34694, Stop: 34909, Start Num: 18  
Candidate Starts for Netyap\_42:  
(Start: 18 @34694 has 45 MA's), (33, 34736), (36, 34742), (41, 34769), (43, 34781), (54, 34844), (60, 34856),

Gene: Nicholas\_40 Start: 34951, Stop: 35166, Start Num: 18  
Candidate Starts for Nicholas\_40:  
(Start: 18 @34951 has 45 MA's), (34, 34996), (36, 34999), (49, 35077),

Gene: Nicholasp3\_42 Start: 34695, Stop: 34910, Start Num: 18  
Candidate Starts for Nicholasp3\_42:  
(Start: 18 @34695 has 45 MA's), (33, 34737), (36, 34743), (41, 34770), (43, 34782), (54, 34845), (60, 34857),

Gene: Norvs\_100 Start: 60040, Stop: 60240, Start Num: 26  
Candidate Starts for Norvs\_100:

(Start: 26 @60040 has 16 MA's), (41, 60097), (42, 60103), (59, 60181), (62, 60196),

Gene: OneUp\_86 Start: 56418, Stop: 56615, Start Num: 26

Candidate Starts for OneUp\_86:

(9, 56301), (15, 56376), (16, 56394), (Start: 26 @56418 has 16 MA's), (62, 56574),

Gene: PhinkBoden\_97 Start: 59801, Stop: 60001, Start Num: 26

Candidate Starts for PhinkBoden\_97:

(Start: 26 @59801 has 16 MA's), (41, 59858), (42, 59864), (59, 59942), (62, 59957),

Gene: Pigu\_37 Start: 25613, Stop: 25792, Start Num: 31

Candidate Starts for Pigu\_37:

(2, 25346), (Start: 31 @25613 has 2 MA's), (40, 25652),

Gene: Red305\_40 Start: 34951, Stop: 35166, Start Num: 18

Candidate Starts for Red305\_40:

(Start: 18 @34951 has 45 MA's), (34, 34996), (36, 34999), (49, 35077),

Gene: RoadKill\_49 Start: 40844, Stop: 41047, Start Num: 21

Candidate Starts for RoadKill\_49:

(Start: 21 @40844 has 3 MA's), (Start: 24 @40853 has 7 MA's), (37, 40883), (46, 40943), (47, 40955),

Gene: Rossetti\_42 Start: 34961, Stop: 35176, Start Num: 18

Candidate Starts for Rossetti\_42:

(Start: 18 @34961 has 45 MA's), (33, 35003), (36, 35009), (54, 35111), (60, 35123),

Gene: Rumpelstiltskin\_42 Start: 34961, Stop: 35173, Start Num: 18

Candidate Starts for Rumpelstiltskin\_42:

(Start: 18 @34961 has 45 MA's), (33, 35003), (36, 35009), (41, 35036), (43, 35048), (54, 35111), (60, 35123),

Gene: Sampson\_55 Start: 45447, Stop: 45647, Start Num: 29

Candidate Starts for Sampson\_55:

(Start: 29 @45447 has 4 MA's), (45, 45525), (57, 45579),

Gene: Samty\_40 Start: 34952, Stop: 35167, Start Num: 18

Candidate Starts for Samty\_40:

(Start: 18 @34952 has 45 MA's), (34, 34997), (36, 35000), (49, 35078),

Gene: Scioto\_56 Start: 45503, Stop: 45703, Start Num: 29

Candidate Starts for Scioto\_56:

(Start: 29 @45503 has 4 MA's), (45, 45581), (57, 45635),

Gene: Smoothie\_99 Start: 60011, Stop: 60211, Start Num: 26

Candidate Starts for Smoothie\_99:

(Start: 26 @60011 has 16 MA's), (41, 60068), (42, 60074), (59, 60152), (62, 60167),

Gene: Snenia\_40 Start: 34952, Stop: 35167, Start Num: 18

Candidate Starts for Snenia\_40:

(Start: 18 @34952 has 45 MA's), (34, 34997), (36, 35000), (49, 35078),

Gene: SpeedDemon\_940 Start: 64127, Stop: 63927, Start Num: 27

Candidate Starts for SpeedDemon\_940:

(Start: 27 @64127 has 3 MA's), (32, 64112), (42, 64067), (51, 64016),

Gene: Spooky\_52 Start: 37230, Stop: 37451, Start Num: 19

Candidate Starts for Spooky\_52:

(7, 37110), (13, 37188), (Start: 19 @37230 has 2 MA's), (41, 37299), (42, 37305), (44, 37320), (49, 37350), (61, 37395), (62, 37398), (64, 37416), (66, 37440),

Gene: Squiddly\_59 Start: 40046, Stop: 40252, Start Num: 23

Candidate Starts for Squiddly\_59:

(11, 39947), (12, 39968), (Start: 23 @40046 has 4 MA's), (42, 40106), (44, 40121), (58, 40181), (62, 40199), (66, 40241),

Gene: Tardus\_57 Start: 45204, Stop: 45404, Start Num: 29

Candidate Starts for Tardus\_57:

(Start: 29 @45204 has 4 MA's), (42, 45258), (45, 45282), (57, 45336),

Gene: Tiamoceli\_52 Start: 42144, Stop: 42338, Start Num: 24

Candidate Starts for Tiamoceli\_52:

(Start: 21 @42135 has 3 MA's), (Start: 24 @42144 has 7 MA's), (37, 42174), (46, 42234), (47, 42246),

Gene: Toniann\_100 Start: 59980, Stop: 60180, Start Num: 26

Candidate Starts for Toniann\_100:

(Start: 26 @59980 has 16 MA's), (41, 60037), (42, 60043), (59, 60121), (62, 60136),

Gene: Tourach\_42 Start: 34709, Stop: 34924, Start Num: 18

Candidate Starts for Tourach\_42:

(Start: 18 @34709 has 45 MA's), (33, 34751), (36, 34757), (40, 34781), (54, 34859), (60, 34871),

Gene: Towmatter\_85 Start: 57951, Stop: 57769, Start Num: 31

Candidate Starts for Towmatter\_85:

(Start: 31 @57951 has 2 MA's), (49, 57861), (56, 57834),

Gene: TriFive\_40 Start: 34951, Stop: 35166, Start Num: 18

Candidate Starts for TriFive\_40:

(Start: 18 @34951 has 45 MA's), (34, 34996), (36, 34999), (49, 35077),

Gene: Twonlo\_49 Start: 40765, Stop: 40968, Start Num: 21

Candidate Starts for Twonlo\_49:

(Start: 21 @40765 has 3 MA's), (Start: 24 @40774 has 7 MA's), (37, 40804), (46, 40864), (47, 40876),

Gene: Vetrix\_42 Start: 34701, Stop: 34916, Start Num: 18

Candidate Starts for Vetrix\_42:

(Start: 18 @34701 has 45 MA's), (33, 34743), (36, 34749), (41, 34776), (43, 34788), (54, 34851), (60, 34863),

Gene: ViaConlectus\_55 Start: 44156, Stop: 44356, Start Num: 29

Candidate Starts for ViaConlectus\_55:

(Start: 29 @44156 has 4 MA's), (42, 44210), (45, 44234), (57, 44288),

Gene: Whirlwind\_41 Start: 34710, Stop: 34925, Start Num: 18

Candidate Starts for Whirlwind\_41:

(Start: 18 @34710 has 45 MA's), (34, 34755), (36, 34758), (49, 34836),

Gene: Wigglewiggle\_42 Start: 34727, Stop: 34942, Start Num: 18

Candidate Starts for Wigglewiggle\_42:

(Start: 18 @34727 has 45 MA's), (33, 34769), (36, 34775), (41, 34802), (43, 34814), (54, 34877), (60, 34889),

Gene: Wilder\_42 Start: 34700, Stop: 34915, Start Num: 18

Candidate Starts for Wilder\_42:

(Start: 18 @34700 has 45 MA's), (33, 34742), (36, 34748), (41, 34775), (43, 34787), (54, 34850), (60, 34862),

Gene: WilliamBoone\_100 Start: 58743, Stop: 58943, Start Num: 26

Candidate Starts for WilliamBoone\_100:

(Start: 26 @58743 has 16 MA's), (50, 58854), (56, 58878),

Gene: Winky\_42 Start: 34694, Stop: 34909, Start Num: 18

Candidate Starts for Winky\_42:

(Start: 18 @34694 has 45 MA's), (33, 34736), (36, 34742), (41, 34769), (43, 34781), (54, 34844), (60, 34856),

Gene: Yvonnetastic\_109 Start: 62358, Stop: 62561, Start Num: 28

Candidate Starts for Yvonnetastic\_109:

(Start: 28 @62358 has 2 MA's), (49, 62460), (55, 62484), (60, 62499),

Gene: Zakai\_42 Start: 34952, Stop: 35167, Start Num: 18

Candidate Starts for Zakai\_42:

(Start: 18 @34952 has 45 MA's), (33, 34994), (36, 35000), (41, 35027), (43, 35039), (54, 35102), (60, 35114),