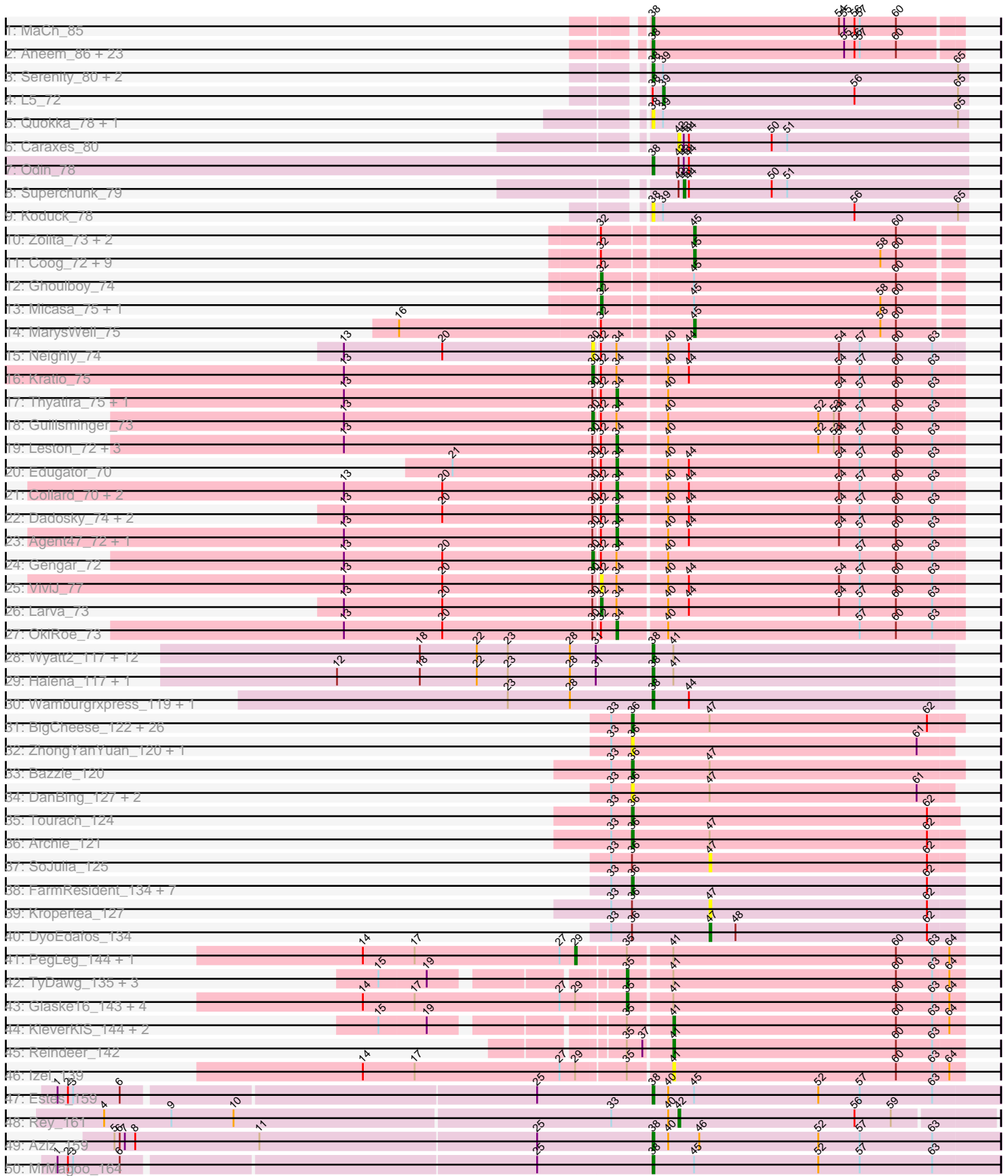
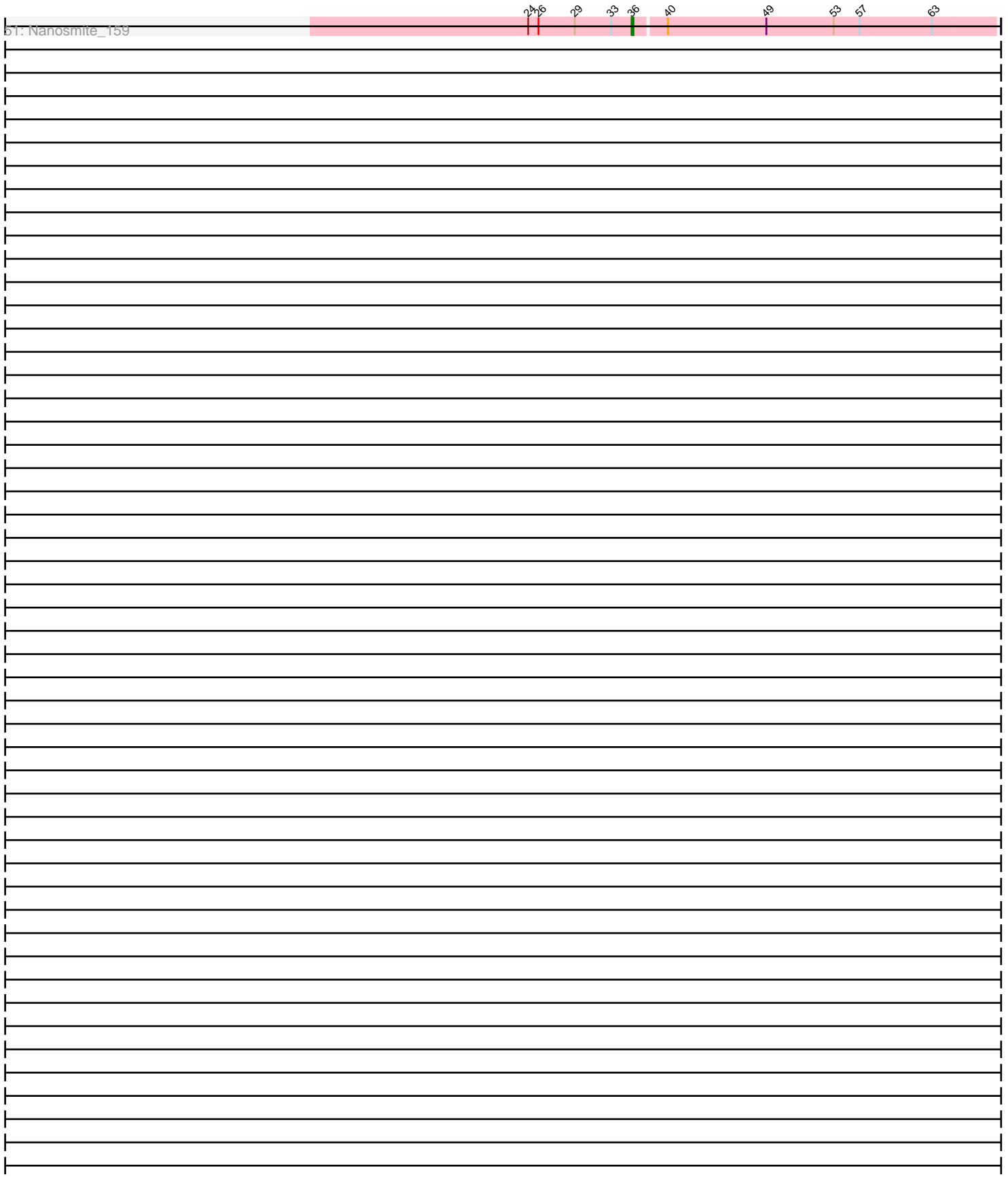


Pham 214047



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Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. If this default region is judged to be packed too tightly with annotated starts, the track will be further scaled to only show that region of the ORF with annotated starts. This action will be indicated by adding "Zoomed" to the title. For starts, yellow indicates the location of called starts comprised solely of Glimmer/GeneMark auto-annotations, green indicates the location of called starts with at least 1 manual gene annotation.

## Pham 214047 Report

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

Pham number 214047 has 158 members, 28 are drafts.

Phages represented in each track:

- Track 1 : MaCh\_85
- Track 2 : Aneem\_86, Jabith\_84, TinyTimmy\_83, Bud\_80, Munch\_85, Joselito\_84, Sham4\_81, Et2Brutus\_84, Mabel\_85, Lucivia\_86, Bachome\_83, Salz\_80, Insomnia\_84, Ebony\_85, Mulciber\_83, Orange\_85, Gilberta\_82, Bowtie\_82, Hutc2\_81, Flaverint\_86, Fibonacci\_84, Petersenfast\_79, Snape\_85, Timothy\_85
- Track 3 : Serenity\_80, Jsquared\_80, TipsytheTRex\_76
- Track 4 : L5\_72
- Track 5 : Quokka\_78, Bradman\_79
- Track 6 : Caraxes\_80
- Track 7 : Odin\_78
- Track 8 : Superchunk\_79
- Track 9 : Koduck\_78
- Track 10 : Zolita\_73, SydNat\_74, Bluefalcon\_70
- Track 11 : Coog\_72, Bonamassa\_75, Theia\_74, Midas2\_72, Swirley\_75, Dublin\_75, HuhtaEnerson15\_73, Cuco\_74, LittleCherry\_74, Twigg\_73
- Track 12 : Ghouboy\_74
- Track 13 : Micasa\_75, Tarynearal\_74
- Track 14 : MarysWell\_75
- Track 15 : Neighly\_74
- Track 16 : Kratio\_75
- Track 17 : Thyatira\_75, Waterfoul\_74
- Track 18 : Guillsminger\_73
- Track 19 : Leston\_72, Feyre\_75, Miryou\_76, Paola\_72
- Track 20 : Edugator\_70
- Track 21 : Collard\_70, SoSeph\_73, Heftyboy\_73
- Track 22 : Dadosky\_74, Psycho\_72, AlleyCat\_74
- Track 23 : Agent47\_72, InvictusManeo\_70
- Track 24 : Gengar\_72
- Track 25 : ViviJ\_77
- Track 26 : Larva\_73
- Track 27 : OkiRoe\_73
- Track 28 : Wyatt2\_117, Appletree2\_116, Acquire49\_117, Rose5\_118, Zaria\_121, UPIE\_116, LeBron\_116, OhShagHennessy\_109, AvadaKedavra\_117, Tyson\_118, Calm\_124, CicholasNage\_111, Poochiewood\_116
- Track 29 : Halena\_117, MAckerman\_118
- Track 30 : Wamburgrxpress\_119, JoeDirt\_120

- Track 31 : BigCheese\_122, Kahlid\_122, Crossroads\_125, Soap141\_123, LilDestine\_119, DrSeegs\_121, Netyap\_121, Gardann\_122, Finemlucis\_121, Wigglewiggles\_123, Loadrie\_124, Breezona\_123, Miley16\_123, Wilder\_123, MkaliMitinis3\_125, Winky\_123, Gabriela\_122, Itos\_123, Sarshaun\_124, BobsGarage\_122, GuuelaD\_120, Zakai\_125, Lewan\_125, Faith1\_121, Nicholasp3\_123, Underpass\_112, Vetrix\_122
- Track 32 : ZhongYanYuan\_120, Baoshan\_120
- Track 33 : Bazzle\_120
- Track 34 : DanBing\_127, DHan\_125, Claus\_121
- Track 35 : Tourach\_124
- Track 36 : Archie\_121
- Track 37 : SoJulia\_125
- Track 38 : FarmResident\_134, Quby\_133, Chaser\_131, PYPDinur\_133, Douzhi\_131, Sheng711\_134, BrainDrainer\_131, Douge\_133
- Track 39 : Kropertea\_127
- Track 40 : DyoEdafos\_134
- Track 41 : PegLeg\_144, Bongo\_139
- Track 42 : TyDawg\_135, Bricole\_143, Auspice\_142, IPhane7\_139
- Track 43 : Glaske16\_143, Dulcita\_141, LilhomieP\_141, Skinny\_147, Diminimus\_141
- Track 44 : KleverKiS\_144, SlimJimmy\_139, FreakyGoo\_139
- Track 45 : Reindeer\_142
- Track 46 : Izel\_139
- Track 47 : Estes\_159
- Track 48 : Rey\_161
- Track 49 : Aziz\_159
- Track 50 : MrMagoo\_164
- Track 51 : Nanosmite\_159

***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 47 of the 130 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acquire49\_117, Aneem\_86, Appletree2\_116, AvadaKedavra\_117, Aziz\_159, Bachome\_83, Bowtie\_82, Bradman\_79, Bud\_80, Calm\_124, CicholasNage\_111, Ebony\_85, Estes\_159, Et2Brutus\_84, Fibonacci\_84, Flaverint\_86, Gilberta\_82, Halena\_117, Hutc2\_81, Insomnia\_84, Jabith\_84, JoeDirt\_120, Joselito\_84, Jsquared\_80, Koduck\_78, LeBron\_116, Lucivia\_86, MAckerman\_118, MaCh\_85, Mabel\_85, MrMagoo\_164, Mulciber\_83, Munch\_85, Odin\_78, OhShagHennessy\_109, Orange\_85, Petersenfast\_79, Pochiewood\_116, Quokka\_78, Rose5\_118, Salz\_80, Serenity\_80, Sham4\_81, Snape\_85, Timothy\_85, TinyTimmy\_83, TipsytheTRex\_76, Tyson\_118, UPIE\_116, Wamburgxpress\_119, Wyatt2\_117, Zaria\_121,

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

- L5\_72,

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

- Agent47\_72, AlleyCat\_74, Archie\_121, Auspice\_142, Baoshan\_120, Bazzle\_120, BigCheese\_122, Bluefalcon\_70, BobsGarage\_122, Bonamassa\_75, Bongo\_139, BrainDrainer\_131, Breezona\_123, Bricole\_143, Caraxes\_80, Chaser\_131, Claus\_121, Collard\_70, Coog\_72, Crossroads\_125, Cuco\_74, DHan\_125, Dadosky\_74, DanBing\_127, Diminimus\_141, Douge\_133, Douzhi\_131, DrSeegs\_121, Dublin\_75, Dulcita\_141, DyoEdafos\_134, Edugator\_70, Faith1\_121, FarmResident\_134, Feyre\_75, Finemlucis\_121, FreakyGoo\_139, Gabriela\_122, Gardann\_122, Gengar\_72, Ghoulboy\_74, Glaske16\_143, Guillsminger\_73, GuuelaD\_120, Heftyboy\_73, HuhtaEnerson15\_73, IPhone7\_139, InvictusManeo\_70, Itos\_123, Izel\_139, Kahlid\_122, KleverKiS\_144, Kratio\_75, Kropertea\_127, Larva\_73, Leston\_72, Lewan\_125, LilDestine\_119, LilhomieP\_141, LittleCherry\_74, Loadrie\_124, MarysWell\_75, Micasa\_75, Midas2\_72, Miley16\_123, Miryou\_76, MkaliMitinis3\_125, Nanosmite\_159, Neighly\_74, Netyap\_121, Nicholasp3\_123, OkiRoe\_73, PYPDinur\_133, Paola\_72, PegLeg\_144, Psycho\_72, Quby\_133, Reindeer\_142, Rey\_161, Sarshaun\_124, Sheng711\_134, Skinny\_147, SlimJimmy\_139, SoJulia\_125, SoSeph\_73, Soap141\_123, Superchunk\_79, Swirley\_75, SydNat\_74, Tarynearal\_74, Theia\_74, Thyatira\_75, Tourach\_124, Twigg\_73, TyDawg\_135, Underpass\_112, Vetrrix\_122, ViviJ\_77, Waterfoul\_74, Wigglewiggles\_123, Wilder\_123, Winky\_123, Zakai\_125, ZhongYanYuan\_120, Zolita\_73,

### Summary by start number:

#### Start 29:

- Found in 9 of 158 ( 5.7% ) of genes in pham
- Manual Annotations of this start: 2 of 130
- Called 22.2% of time when present
- Phage (with cluster) where this start called: Bongo\_139 (M1), PegLeg\_144 (M1),

#### Start 30:

- Found in 22 of 158 ( 13.9% ) of genes in pham
- Manual Annotations of this start: 3 of 130
- Called 18.2% of time when present
- Phage (with cluster) where this start called: Gengar\_72 (K5), Guillsminger\_73 (K5), Kratio\_75 (K5), Neighly\_74 (K3),

#### Start 32:

- Found in 39 of 158 ( 24.7% ) of genes in pham
- Manual Annotations of this start: 4 of 130
- Called 12.8% of time when present
- Phage (with cluster) where this start called: Ghoulboy\_74 (A5), Larva\_73 (K5), Micasa\_75 (A5), Tarynearal\_74 (A5), ViviJ\_77 (K5),

#### Start 34:

- Found in 22 of 158 ( 13.9% ) of genes in pham
- Manual Annotations of this start: 16 of 130
- Called 72.7% of time when present
- Phage (with cluster) where this start called: Agent47\_72 (K5), AlleyCat\_74 (K5), Collard\_70 (K5), Dadosky\_74 (K5), Edugator\_70 (K5), Feyre\_75 (K5), Heftyboy\_73 (K5), InvictusManeo\_70 (K5), Leston\_72 (K5), Miryou\_76 (K5), OkiRoe\_73 (K5), Paola\_72 (K5), Psycho\_72 (K5), SoSeph\_73 (K5), Thyatira\_75 (K5), Waterfoul\_74 (K5),

Start 35:

- Found in 16 of 158 ( 10.1% ) of genes in pham
- Manual Annotations of this start: 9 of 130
- Called 56.2% of time when present
- Phage (with cluster) where this start called: Auspice\_142 (M1), Bricole\_143 (M1), Diminimus\_141 (M1), Dulcita\_141 (M1), Glaske16\_143 (M1), IPhane7\_139 (M1), LilhomieP\_141 (M1), Skinny\_147 (M1), TyDawg\_135 (M1),

Start 36:

- Found in 47 of 158 ( 29.7% ) of genes in pham
- Manual Annotations of this start: 30 of 130
- Called 93.6% of time when present
- Phage (with cluster) where this start called: Archie\_121 (L2), Baoshan\_120 (L2), Bazzle\_120 (L2), BigCheese\_122 (L2), BobsGarage\_122 (L2), BrainDrainer\_131 (L4), Breezona\_123 (L2), Chaser\_131 (L4), Claus\_121 (L2), Crossroads\_125 (L2), DHan\_125 (L2), DanBing\_127 (L2), Douge\_133 (L4), Douzhi\_131 (L4), DrSeegs\_121 (L2), Faith1\_121 (L2), FarmResident\_134 (L4), Finemlucis\_121 (L2), Gabriela\_122 (L2), Gardann\_122 (L2), GuuelaD\_120 (L2), Itos\_123 (L2), Kahlid\_122 (L2), Lewan\_125 (L2), LilDestine\_119 (L2), Loadrie\_124 (L2), Miley16\_123 (L2), MkaliMinitis3\_125 (L2), Nanosmite\_159 (M3), Netyap\_121 (L2), Nicholasp3\_123 (L2), PYPDinur\_133 (L4), Quby\_133 (L4), Sarshaun\_124 (L2), Sheng711\_134 (L4), Soap141\_123 (L2), Tourach\_124 (L2), Underpass\_112 (L2), Vetrix\_122 (L2), Wigglewiggles\_123 (L2), Wilder\_123 (L2), Winky\_123 (L2), Zakai\_125 (L2), ZhongYanYuan\_120 (L2),

Start 38:

- Found in 53 of 158 ( 33.5% ) of genes in pham
- Manual Annotations of this start: 47 of 130
- Called 98.1% of time when present
- Phage (with cluster) where this start called: Acquire49\_117 (L1), Aneem\_86 (A11), Appletree2\_116 (L1), AvadaKedavra\_117 (L1), Aziz\_159 (M2), Bachome\_83 (A11), Bowtie\_82 (A11), Bradman\_79 (A2), Bud\_80 (A11), Calm\_124 (L1), CicholasNage\_111 (L1), Ebony\_85 (A11), Estes\_159 (M2), Et2Brutus\_84 (A11), Fibonacci\_84 (A11), Flaverint\_86 (A11), Gilberta\_82 (A11), Halena\_117 (L1), Hutc2\_81 (A11), Insomnia\_84 (A11), Jabith\_84 (A11), JoeDirt\_120 (L1), Joselito\_84 (A11), Jsquared\_80 (A2), Koduck\_78 (A2), LeBron\_116 (L1), Lucivia\_86 (A11), MAckerman\_118 (L1), MaCh\_85 (A11), Mabel\_85 (A11), MrMagoo\_164 (M2), Mulciber\_83 (A11), Munch\_85 (A11), Odin\_78 (A2), OhShagHennessy\_109 (L1), Orange\_85 (A11), Petersenfast\_79 (A11), Poochiewood\_116 (L1), Quokka\_78 (A2), Rose5\_118 (L1), Salz\_80 (A11), Serenity\_80 (A2), Sham4\_81 (A11), Snape\_85 (A11), Timothy\_85 (A11), TinyTimmy\_83 (A11), TipsytheTRex\_76 (A2), Tyson\_118 (L1), UPIE\_116 (L1), Wamburggrxpress\_119 (L1), Wyatt2\_117 (L1), Zaria\_121 (L1),

Start 39:

- Found in 7 of 158 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 1 of 130
- Called 14.3% of time when present
- Phage (with cluster) where this start called: L5\_72 (A2),

Start 41:

- Found in 31 of 158 ( 19.6% ) of genes in pham
- Manual Annotations of this start: 2 of 130
- Called 16.1% of time when present

- Phage (with cluster) where this start called: FreakyGoo\_139 (M1), Izel\_139 (M1), KleverKiS\_144 (M1), Reindeer\_142 (M1), SlimJimmy\_139 (M1),

Start 42:

- Found in 4 of 158 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 1 of 130
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Caraxes\_80 (A2), Rey\_161 (M2),

Start 43:

- Found in 3 of 158 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 130
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Superchunk\_79 (A2),

Start 45:

- Found in 19 of 158 ( 12.0% ) of genes in pham
- Manual Annotations of this start: 13 of 130
- Called 73.7% of time when present
- Phage (with cluster) where this start called: Bluefalcon\_70 (A5), Bonamassa\_75 (A5), Coog\_72 (A5), Cuco\_74 (A5), Dublin\_75 (A5), HuhtaEnerson15\_73 (A5), LittleCherry\_74 (A5), MarysWell\_75 (A5), Midas2\_72 (A5), Swirley\_75 (A5), SydNat\_74 (A5), Theia\_74 (A5), Twigg\_73 (A5), Zolita\_73 (A5),

Start 47:

- Found in 35 of 158 ( 22.2% ) of genes in pham
- Manual Annotations of this start: 1 of 130
- Called 8.6% of time when present
- Phage (with cluster) where this start called: DyoEdafos\_134 (L4), Kropertea\_127 (L4), SoJulia\_125 (L2),

### **Summary by clusters:**

There are 11 clusters represented in this pham: M1, A11, M3, L1, K3, L4, A2, L2, K5, M2, A5,

Info for manual annotations of cluster A11:

- Start number 38 was manually annotated 24 times for cluster A11.

Info for manual annotations of cluster A2:

- Start number 38 was manually annotated 4 times for cluster A2.
- Start number 39 was manually annotated 1 time for cluster A2.
- Start number 43 was manually annotated 1 time for cluster A2.

Info for manual annotations of cluster A5:

- Start number 32 was manually annotated 3 times for cluster A5.
- Start number 45 was manually annotated 13 times for cluster A5.

Info for manual annotations of cluster K5:

- Start number 30 was manually annotated 3 times for cluster K5.
- Start number 32 was manually annotated 1 time for cluster K5.
- Start number 34 was manually annotated 16 times for cluster K5.

Info for manual annotations of cluster L1:

- Start number 38 was manually annotated 16 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 36 was manually annotated 27 times for cluster L2.

Info for manual annotations of cluster L4:

- Start number 36 was manually annotated 2 times for cluster L4.
- Start number 47 was manually annotated 1 time for cluster L4.

Info for manual annotations of cluster M1:

- Start number 29 was manually annotated 2 times for cluster M1.
- Start number 35 was manually annotated 9 times for cluster M1.
- Start number 41 was manually annotated 2 times for cluster M1.

Info for manual annotations of cluster M2:

- Start number 38 was manually annotated 3 times for cluster M2.
- Start number 42 was manually annotated 1 time for cluster M2.

Info for manual annotations of cluster M3:

- Start number 36 was manually annotated 1 time for cluster M3.

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

Gene: Acquire49\_117 Start: 64194, Stop: 64021, Start Num: 38

Candidate Starts for Acquire49\_117:

(18, 64329), (22, 64296), (23, 64278), (28, 64242), (31, 64227), (Start: 38 @64194 has 47 MA's), (Start: 41 @64182 has 2 MA's),

Gene: Agent47\_72 Start: 48966, Stop: 49163, Start Num: 34

Candidate Starts for Agent47\_72:

(13, 48810), (Start: 30 @48954 has 3 MA's), (Start: 32 @48957 has 4 MA's), (Start: 34 @48966 has 16 MA's), (40, 48993), (44, 49005), (54, 49092), (57, 49104), (60, 49125), (63, 49146),

Gene: AlleyCat\_74 Start: 49309, Stop: 49506, Start Num: 34

Candidate Starts for AlleyCat\_74:

(13, 49153), (20, 49210), (Start: 30 @49297 has 3 MA's), (Start: 32 @49300 has 4 MA's), (Start: 34 @49309 has 16 MA's), (40, 49336), (44, 49348), (54, 49435), (57, 49447), (60, 49468), (63, 49489),

Gene: Aneem\_86 Start: 47024, Stop: 46848, Start Num: 38

Candidate Starts for Aneem\_86:

(Start: 38 @47024 has 47 MA's), (55, 46913), (56, 46907), (57, 46904), (60, 46883),

Gene: Appletree2\_116 Start: 64235, Stop: 64062, Start Num: 38

Candidate Starts for Appletree2\_116:

(18, 64370), (22, 64337), (23, 64319), (28, 64283), (31, 64268), (Start: 38 @64235 has 47 MA's), (Start: 41 @64223 has 2 MA's),

Gene: Archie\_121 Start: 66124, Stop: 65933, Start Num: 36

Candidate Starts for Archie\_121:



(33, 66136), (Start: 36 @66124 has 30 MA's), (Start: 47 @66079 has 1 MA's), (62, 65953),

Gene: Auspice\_142 Start: 72970, Stop: 72779, Start Num: 35

Candidate Starts for Auspice\_142:

(15, 73093), (19, 73066), (Start: 35 @72970 has 9 MA's), (Start: 41 @72946 has 2 MA's), (60, 72817), (63, 72796), (64, 72787),

Gene: AvadaKedavra\_117 Start: 64308, Stop: 64135, Start Num: 38

Candidate Starts for AvadaKedavra\_117:

(18, 64443), (22, 64410), (23, 64392), (28, 64356), (31, 64341), (Start: 38 @64308 has 47 MA's), (Start: 41 @64296 has 2 MA's),

Gene: Aziz\_159 Start: 76111, Stop: 75911, Start Num: 38

Candidate Starts for Aziz\_159:

(5, 76420), (6, 76417), (7, 76414), (8, 76408), (11, 76336), (25, 76177), (Start: 38 @76111 has 47 MA's), (40, 76102), (46, 76084), (52, 76015), (57, 75991), (63, 75949),

Gene: Bachome\_83 Start: 45904, Stop: 45728, Start Num: 38

Candidate Starts for Bachome\_83:

(Start: 38 @45904 has 47 MA's), (55, 45793), (56, 45787), (57, 45784), (60, 45763),

Gene: Baoshan\_120 Start: 66333, Stop: 66148, Start Num: 36

Candidate Starts for Baoshan\_120:

(33, 66345), (Start: 36 @66333 has 30 MA's), (61, 66168),

Gene: Bazzle\_120 Start: 66711, Stop: 66520, Start Num: 36

Candidate Starts for Bazzle\_120:

(33, 66723), (Start: 36 @66711 has 30 MA's), (Start: 47 @66666 has 1 MA's),

Gene: BigCheese\_122 Start: 66602, Stop: 66411, Start Num: 36

Candidate Starts for BigCheese\_122:

(33, 66614), (Start: 36 @66602 has 30 MA's), (Start: 47 @66557 has 1 MA's), (62, 66431),

Gene: Bluefalcon\_70 Start: 44916, Stop: 44764, Start Num: 45

Candidate Starts for Bluefalcon\_70:

(Start: 32 @44964 has 4 MA's), (Start: 45 @44916 has 13 MA's), (60, 44799),

Gene: BobsGarage\_122 Start: 66602, Stop: 66411, Start Num: 36

Candidate Starts for BobsGarage\_122:

(33, 66614), (Start: 36 @66602 has 30 MA's), (Start: 47 @66557 has 1 MA's), (62, 66431),

Gene: Bonamassa\_75 Start: 45303, Stop: 45151, Start Num: 45

Candidate Starts for Bonamassa\_75:

(Start: 32 @45351 has 4 MA's), (Start: 45 @45303 has 13 MA's), (58, 45195), (60, 45186),

Gene: Bongo\_139 Start: 72617, Stop: 72399, Start Num: 29

Candidate Starts for Bongo\_139:

(14, 72740), (17, 72710), (27, 72626), (Start: 29 @72617 has 2 MA's), (Start: 35 @72590 has 9 MA's), (Start: 41 @72566 has 2 MA's), (60, 72437), (63, 72416), (64, 72407),

Gene: Bowtie\_82 Start: 45631, Stop: 45455, Start Num: 38

Candidate Starts for Bowtie\_82:

(Start: 38 @45631 has 47 MA's), (55, 45520), (56, 45514), (57, 45511), (60, 45490),

Gene: Bradman\_79 Start: 45301, Stop: 45119, Start Num: 38  
Candidate Starts for Bradman\_79:  
(Start: 38 @45301 has 47 MA's), (Start: 39 @45295 has 1 MA's), (65, 45124),

Gene: BrainDrainer\_131 Start: 67883, Stop: 67692, Start Num: 36  
Candidate Starts for BrainDrainer\_131:  
(33, 67895), (Start: 36 @67883 has 30 MA's), (62, 67712),

Gene: Breezona\_123 Start: 66937, Stop: 66746, Start Num: 36  
Candidate Starts for Breezona\_123:  
(33, 66949), (Start: 36 @66937 has 30 MA's), (Start: 47 @66892 has 1 MA's), (62, 66766),

Gene: Bricole\_143 Start: 72735, Stop: 72544, Start Num: 35  
Candidate Starts for Bricole\_143:  
(15, 72858), (19, 72831), (Start: 35 @72735 has 9 MA's), (Start: 41 @72711 has 2 MA's), (60, 72582),  
(63, 72561), (64, 72552),

Gene: Bud\_80 Start: 45461, Stop: 45285, Start Num: 38  
Candidate Starts for Bud\_80:  
(Start: 38 @45461 has 47 MA's), (55, 45350), (56, 45344), (57, 45341), (60, 45320),

Gene: Calm\_124 Start: 65409, Stop: 65236, Start Num: 38  
Candidate Starts for Calm\_124:  
(18, 65544), (22, 65511), (23, 65493), (28, 65457), (31, 65442), (Start: 38 @65409 has 47 MA's),  
(Start: 41 @65397 has 2 MA's),

Gene: Caraxes\_80 Start: 45566, Stop: 45399, Start Num: 42  
Candidate Starts for Caraxes\_80:  
(Start: 42 @45566 has 1 MA's), (Start: 43 @45563 has 1 MA's), (44, 45560), (50, 45512), (51, 45503),

Gene: Chaser\_131 Start: 67928, Stop: 67737, Start Num: 36  
Candidate Starts for Chaser\_131:  
(33, 67940), (Start: 36 @67928 has 30 MA's), (62, 67757),

Gene: CicholasNage\_111 Start: 64539, Stop: 64366, Start Num: 38  
Candidate Starts for CicholasNage\_111:  
(18, 64674), (22, 64641), (23, 64623), (28, 64587), (31, 64572), (Start: 38 @64539 has 47 MA's),  
(Start: 41 @64527 has 2 MA's),

Gene: Claus\_121 Start: 66246, Stop: 66061, Start Num: 36  
Candidate Starts for Claus\_121:  
(33, 66258), (Start: 36 @66246 has 30 MA's), (Start: 47 @66201 has 1 MA's), (61, 66081),

Gene: Collard\_70 Start: 48927, Stop: 49124, Start Num: 34  
Candidate Starts for Collard\_70:  
(13, 48771), (20, 48828), (Start: 30 @48915 has 3 MA's), (Start: 32 @48918 has 4 MA's), (Start: 34 @48927 has 16 MA's), (40, 48954), (44, 48966), (54, 49053), (57, 49065), (60, 49086), (63, 49107),

Gene: Coog\_72 Start: 45118, Stop: 44966, Start Num: 45  
Candidate Starts for Coog\_72:  
(Start: 32 @45166 has 4 MA's), (Start: 45 @45118 has 13 MA's), (58, 45010), (60, 45001),

Gene: Crossroads\_125 Start: 66699, Stop: 66508, Start Num: 36  
Candidate Starts for Crossroads\_125:  
(33, 66711), (Start: 36 @66699 has 30 MA's), (Start: 47 @66654 has 1 MA's), (62, 66528),

Gene: Cuco\_74 Start: 44978, Stop: 44826, Start Num: 45  
Candidate Starts for Cuco\_74:  
(Start: 32 @45026 has 4 MA's), (Start: 45 @44978 has 13 MA's), (58, 44870), (60, 44861),

Gene: DHan\_125 Start: 66912, Stop: 66727, Start Num: 36  
Candidate Starts for DHan\_125:  
(33, 66924), (Start: 36 @66912 has 30 MA's), (Start: 47 @66867 has 1 MA's), (61, 66747),

Gene: Dadosky\_74 Start: 49311, Stop: 49508, Start Num: 34  
Candidate Starts for Dadosky\_74:  
(13, 49155), (20, 49212), (Start: 30 @49299 has 3 MA's), (Start: 32 @49302 has 4 MA's), (Start: 34 @49311 has 16 MA's), (40, 49338), (44, 49350), (54, 49437), (57, 49449), (60, 49470), (63, 49491),

Gene: DanBing\_127 Start: 67279, Stop: 67094, Start Num: 36  
Candidate Starts for DanBing\_127:  
(33, 67291), (Start: 36 @67279 has 30 MA's), (Start: 47 @67234 has 1 MA's), (61, 67114),

Gene: Diminimus\_141 Start: 72406, Stop: 72215, Start Num: 35  
Candidate Starts for Diminimus\_141:  
(14, 72556), (17, 72526), (27, 72442), (Start: 29 @72433 has 2 MA's), (Start: 35 @72406 has 9 MA's), (Start: 41 @72382 has 2 MA's), (60, 72253), (63, 72232), (64, 72223),

Gene: Douge\_133 Start: 68622, Stop: 68431, Start Num: 36  
Candidate Starts for Douge\_133:  
(33, 68634), (Start: 36 @68622 has 30 MA's), (62, 68451),

Gene: Douzhi\_131 Start: 68055, Stop: 67864, Start Num: 36  
Candidate Starts for Douzhi\_131:  
(33, 68067), (Start: 36 @68055 has 30 MA's), (62, 67884),

Gene: DrSeegs\_121 Start: 66937, Stop: 66746, Start Num: 36  
Candidate Starts for DrSeegs\_121:  
(33, 66949), (Start: 36 @66937 has 30 MA's), (Start: 47 @66892 has 1 MA's), (62, 66766),

Gene: Dublin\_75 Start: 45250, Stop: 45098, Start Num: 45  
Candidate Starts for Dublin\_75:  
(Start: 32 @45298 has 4 MA's), (Start: 45 @45250 has 13 MA's), (58, 45142), (60, 45133),

Gene: Dulcita\_141 Start: 72407, Stop: 72216, Start Num: 35  
Candidate Starts for Dulcita\_141:  
(14, 72557), (17, 72527), (27, 72443), (Start: 29 @72434 has 2 MA's), (Start: 35 @72407 has 9 MA's), (Start: 41 @72383 has 2 MA's), (60, 72254), (63, 72233), (64, 72224),

Gene: DyoEdafos\_134 Start: 67841, Stop: 67695, Start Num: 47  
Candidate Starts for DyoEdafos\_134:  
(33, 67898), (Start: 36 @67886 has 30 MA's), (Start: 47 @67841 has 1 MA's), (48, 67826), (62, 67715),

Gene: Ebony\_85 Start: 46595, Stop: 46419, Start Num: 38  
Candidate Starts for Ebony\_85:

(Start: 38 @46595 has 47 MA's), (55, 46484), (56, 46478), (57, 46475), (60, 46454),

Gene: Edugator\_70 Start: 50481, Stop: 50678, Start Num: 34

Candidate Starts for Edugator\_70:

(21, 50388), (Start: 30 @50469 has 3 MA's), (Start: 32 @50472 has 4 MA's), (Start: 34 @50481 has 16 MA's), (40, 50508), (44, 50520), (54, 50607), (57, 50619), (60, 50640), (63, 50661),

Gene: Estes\_159 Start: 76117, Stop: 75917, Start Num: 38

Candidate Starts for Estes\_159:

(1, 76450), (2, 76444), (3, 76441), (6, 76414), (25, 76183), (Start: 38 @76117 has 47 MA's), (40, 76108), (Start: 45 @76093 has 13 MA's), (52, 76021), (57, 75997), (63, 75955),

Gene: Et2Brutus\_84 Start: 46558, Stop: 46382, Start Num: 38

Candidate Starts for Et2Brutus\_84:

(Start: 38 @46558 has 47 MA's), (55, 46447), (56, 46441), (57, 46438), (60, 46417),

Gene: Faith1\_121 Start: 66245, Stop: 66054, Start Num: 36

Candidate Starts for Faith1\_121:

(33, 66257), (Start: 36 @66245 has 30 MA's), (Start: 47 @66200 has 1 MA's), (62, 66074),

Gene: FarmResident\_134 Start: 67754, Stop: 67563, Start Num: 36

Candidate Starts for FarmResident\_134:

(33, 67766), (Start: 36 @67754 has 30 MA's), (62, 67583),

Gene: Feyre\_75 Start: 52727, Stop: 52924, Start Num: 34

Candidate Starts for Feyre\_75:

(13, 52571), (Start: 30 @52715 has 3 MA's), (Start: 32 @52718 has 4 MA's), (Start: 34 @52727 has 16 MA's), (40, 52754), (52, 52841), (53, 52850), (54, 52853), (57, 52865), (60, 52886), (63, 52907),

Gene: Fibonacci\_84 Start: 46564, Stop: 46388, Start Num: 38

Candidate Starts for Fibonacci\_84:

(Start: 38 @46564 has 47 MA's), (55, 46453), (56, 46447), (57, 46444), (60, 46423),

Gene: Finemlucis\_121 Start: 67273, Stop: 67082, Start Num: 36

Candidate Starts for Finemlucis\_121:

(33, 67285), (Start: 36 @67273 has 30 MA's), (Start: 47 @67228 has 1 MA's), (62, 67102),

Gene: Flaverint\_86 Start: 47022, Stop: 46846, Start Num: 38

Candidate Starts for Flaverint\_86:

(Start: 38 @47022 has 47 MA's), (55, 46911), (56, 46905), (57, 46902), (60, 46881),

Gene: FreakyGoo\_139 Start: 72863, Stop: 72696, Start Num: 41

Candidate Starts for FreakyGoo\_139:

(15, 73010), (19, 72983), (Start: 35 @72887 has 9 MA's), (Start: 41 @72863 has 2 MA's), (60, 72734), (63, 72713), (64, 72704),

Gene: Gabriela\_122 Start: 65490, Stop: 65299, Start Num: 36

Candidate Starts for Gabriela\_122:

(33, 65502), (Start: 36 @65490 has 30 MA's), (Start: 47 @65445 has 1 MA's), (62, 65319),

Gene: Gardann\_122 Start: 66167, Stop: 65976, Start Num: 36

Candidate Starts for Gardann\_122:

(33, 66179), (Start: 36 @66167 has 30 MA's), (Start: 47 @66122 has 1 MA's), (62, 65996),

Gene: Gengar\_72 Start: 50725, Stop: 50934, Start Num: 30

Candidate Starts for Gengar\_72:

(13, 50581), (20, 50638), (Start: 30 @50725 has 3 MA's), (Start: 32 @50728 has 4 MA's), (Start: 34 @50737 has 16 MA's), (40, 50764), (57, 50875), (60, 50896), (63, 50917),

Gene: Ghouboy\_74 Start: 45239, Stop: 45039, Start Num: 32

Candidate Starts for Ghouboy\_74:

(Start: 32 @45239 has 4 MA's), (Start: 45 @45191 has 13 MA's), (60, 45074),

Gene: Gilberta\_82 Start: 45898, Stop: 45722, Start Num: 38

Candidate Starts for Gilberta\_82:

(Start: 38 @45898 has 47 MA's), (55, 45787), (56, 45781), (57, 45778), (60, 45757),

Gene: Glaske16\_143 Start: 73525, Stop: 73334, Start Num: 35

Candidate Starts for Glaske16\_143:

(14, 73675), (17, 73645), (27, 73561), (Start: 29 @73552 has 2 MA's), (Start: 35 @73525 has 9 MA's), (Start: 41 @73501 has 2 MA's), (60, 73372), (63, 73351), (64, 73342),

Gene: Guillsminger\_73 Start: 50646, Stop: 50855, Start Num: 30

Candidate Starts for Guillsminger\_73:

(13, 50502), (Start: 30 @50646 has 3 MA's), (Start: 32 @50649 has 4 MA's), (Start: 34 @50658 has 16 MA's), (40, 50685), (52, 50772), (53, 50781), (54, 50784), (57, 50796), (60, 50817), (63, 50838),

Gene: GuuelaD\_120 Start: 66427, Stop: 66236, Start Num: 36

Candidate Starts for GuuelaD\_120:

(33, 66439), (Start: 36 @66427 has 30 MA's), (Start: 47 @66382 has 1 MA's), (62, 66256),

Gene: Halena\_117 Start: 64182, Stop: 64009, Start Num: 38

Candidate Starts for Halena\_117:

(12, 64365), (18, 64317), (22, 64284), (23, 64266), (28, 64230), (31, 64215), (Start: 38 @64182 has 47 MA's), (Start: 41 @64170 has 2 MA's),

Gene: Heftyboy\_73 Start: 51006, Stop: 51203, Start Num: 34

Candidate Starts for Heftyboy\_73:

(13, 50850), (20, 50907), (Start: 30 @50994 has 3 MA's), (Start: 32 @50997 has 4 MA's), (Start: 34 @51006 has 16 MA's), (40, 51033), (44, 51045), (54, 51132), (57, 51144), (60, 51165), (63, 51186),

Gene: HuhtaEnerson15\_73 Start: 44956, Stop: 44804, Start Num: 45

Candidate Starts for HuhtaEnerson15\_73:

(Start: 32 @45004 has 4 MA's), (Start: 45 @44956 has 13 MA's), (58, 44848), (60, 44839),

Gene: Hutc2\_81 Start: 45448, Stop: 45272, Start Num: 38

Candidate Starts for Hutc2\_81:

(Start: 38 @45448 has 47 MA's), (55, 45337), (56, 45331), (57, 45328), (60, 45307),

Gene: IPhone7\_139 Start: 72586, Stop: 72395, Start Num: 35

Candidate Starts for IPhone7\_139:

(15, 72709), (19, 72682), (Start: 35 @72586 has 9 MA's), (Start: 41 @72562 has 2 MA's), (60, 72433), (63, 72412), (64, 72403),

Gene: Insomnia\_84 Start: 46742, Stop: 46566, Start Num: 38

Candidate Starts for Insomnia\_84:

(Start: 38 @46742 has 47 MA's), (55, 46631), (56, 46625), (57, 46622), (60, 46601),

Gene: InvictusManeo\_70 Start: 48970, Stop: 49167, Start Num: 34

Candidate Starts for InvictusManeo\_70:

(13, 48814), (Start: 30 @48958 has 3 MA's), (Start: 32 @48961 has 4 MA's), (Start: 34 @48970 has 16 MA's), (40, 48997), (44, 49009), (54, 49096), (57, 49108), (60, 49129), (63, 49150),

Gene: Itos\_123 Start: 65151, Stop: 64960, Start Num: 36

Candidate Starts for Itos\_123:

(33, 65163), (Start: 36 @65151 has 30 MA's), (Start: 47 @65106 has 1 MA's), (62, 64980),

Gene: Izel\_139 Start: 72382, Stop: 72215, Start Num: 41

Candidate Starts for Izel\_139:

(14, 72556), (17, 72526), (27, 72442), (Start: 29 @72433 has 2 MA's), (Start: 35 @72406 has 9 MA's), (Start: 41 @72382 has 2 MA's), (60, 72253), (63, 72232), (64, 72223),

Gene: Jabith\_84 Start: 46756, Stop: 46580, Start Num: 38

Candidate Starts for Jabith\_84:

(Start: 38 @46756 has 47 MA's), (55, 46645), (56, 46639), (57, 46636), (60, 46615),

Gene: JoeDirt\_120 Start: 65537, Stop: 65364, Start Num: 38

Candidate Starts for JoeDirt\_120:

(23, 65621), (28, 65585), (Start: 38 @65537 has 47 MA's), (44, 65516),

Gene: Joselito\_84 Start: 46776, Stop: 46600, Start Num: 38

Candidate Starts for Joselito\_84:

(Start: 38 @46776 has 47 MA's), (55, 46665), (56, 46659), (57, 46656), (60, 46635),

Gene: Jsquared\_80 Start: 45434, Stop: 45252, Start Num: 38

Candidate Starts for Jsquared\_80:

(Start: 38 @45434 has 47 MA's), (Start: 39 @45428 has 1 MA's), (65, 45257),

Gene: Kahlid\_122 Start: 66452, Stop: 66261, Start Num: 36

Candidate Starts for Kahlid\_122:

(33, 66464), (Start: 36 @66452 has 30 MA's), (Start: 47 @66407 has 1 MA's), (62, 66281),

Gene: KleverKiS\_144 Start: 73619, Stop: 73452, Start Num: 41

Candidate Starts for KleverKiS\_144:

(15, 73766), (19, 73739), (Start: 35 @73643 has 9 MA's), (Start: 41 @73619 has 2 MA's), (60, 73490), (63, 73469), (64, 73460),

Gene: Koduck\_78 Start: 45209, Stop: 45027, Start Num: 38

Candidate Starts for Koduck\_78:

(Start: 38 @45209 has 47 MA's), (Start: 39 @45203 has 1 MA's), (56, 45092), (65, 45032),

Gene: Kratio\_75 Start: 50516, Stop: 50725, Start Num: 30

Candidate Starts for Kratio\_75:

(13, 50372), (Start: 30 @50516 has 3 MA's), (Start: 32 @50519 has 4 MA's), (Start: 34 @50528 has 16 MA's), (40, 50555), (44, 50567), (54, 50654), (57, 50666), (60, 50687), (63, 50708),

Gene: Kropertea\_127 Start: 67473, Stop: 67327, Start Num: 47

Candidate Starts for Kropertea\_127:

(33, 67530), (Start: 36 @67518 has 30 MA's), (Start: 47 @67473 has 1 MA's), (62, 67347),

Gene: L5\_72 Start: 45356, Stop: 45180, Start Num: 39

Candidate Starts for L5\_72:

(Start: 38 @45362 has 47 MA's), (Start: 39 @45356 has 1 MA's), (56, 45245), (65, 45185),

Gene: Larva\_73 Start: 50174, Stop: 50380, Start Num: 32

Candidate Starts for Larva\_73:

(13, 50027), (20, 50084), (Start: 30 @50171 has 3 MA's), (Start: 32 @50174 has 4 MA's), (Start: 34 @50183 has 16 MA's), (40, 50210), (44, 50222), (54, 50309), (57, 50321), (60, 50342), (63, 50363),

Gene: LeBron\_116 Start: 63798, Stop: 63625, Start Num: 38

Candidate Starts for LeBron\_116:

(18, 63933), (22, 63900), (23, 63882), (28, 63846), (31, 63831), (Start: 38 @63798 has 47 MA's), (Start: 41 @63786 has 2 MA's),

Gene: Leston\_72 Start: 50775, Stop: 50972, Start Num: 34

Candidate Starts for Leston\_72:

(13, 50619), (Start: 30 @50763 has 3 MA's), (Start: 32 @50766 has 4 MA's), (Start: 34 @50775 has 16 MA's), (40, 50802), (52, 50889), (53, 50898), (54, 50901), (57, 50913), (60, 50934), (63, 50955),

Gene: Lewan\_125 Start: 67228, Stop: 67037, Start Num: 36

Candidate Starts for Lewan\_125:

(33, 67240), (Start: 36 @67228 has 30 MA's), (Start: 47 @67183 has 1 MA's), (62, 67057),

Gene: LilDestine\_119 Start: 65622, Stop: 65431, Start Num: 36

Candidate Starts for LilDestine\_119:

(33, 65634), (Start: 36 @65622 has 30 MA's), (Start: 47 @65577 has 1 MA's), (62, 65451),

Gene: LilhomieP\_141 Start: 73436, Stop: 73245, Start Num: 35

Candidate Starts for LilhomieP\_141:

(14, 73586), (17, 73556), (27, 73472), (Start: 29 @73463 has 2 MA's), (Start: 35 @73436 has 9 MA's), (Start: 41 @73412 has 2 MA's), (60, 73283), (63, 73262), (64, 73253),

Gene: LittleCherry\_74 Start: 44826, Stop: 44674, Start Num: 45

Candidate Starts for LittleCherry\_74:

(Start: 32 @44874 has 4 MA's), (Start: 45 @44826 has 13 MA's), (58, 44718), (60, 44709),

Gene: Loadrie\_124 Start: 67260, Stop: 67069, Start Num: 36

Candidate Starts for Loadrie\_124:

(33, 67272), (Start: 36 @67260 has 30 MA's), (Start: 47 @67215 has 1 MA's), (62, 67089),

Gene: Lucivia\_86 Start: 47055, Stop: 46879, Start Num: 38

Candidate Starts for Lucivia\_86:

(Start: 38 @47055 has 47 MA's), (55, 46944), (56, 46938), (57, 46935), (60, 46914),

Gene: MAckerman\_118 Start: 64175, Stop: 64002, Start Num: 38

Candidate Starts for MAckerman\_118:

(12, 64358), (18, 64310), (22, 64277), (23, 64259), (28, 64223), (31, 64208), (Start: 38 @64175 has 47 MA's), (Start: 41 @64163 has 2 MA's),

Gene: MaCh\_85 Start: 47019, Stop: 46843, Start Num: 38

Candidate Starts for MaCh\_85:

(Start: 38 @47019 has 47 MA's), (54, 46911), (55, 46908), (56, 46902), (57, 46899), (60, 46878),

Gene: Mabel\_85 Start: 47020, Stop: 46844, Start Num: 38

Candidate Starts for Mabel\_85:

(Start: 38 @47020 has 47 MA's), (55, 46909), (56, 46903), (57, 46900), (60, 46879),

Gene: MarysWell\_75 Start: 45493, Stop: 45341, Start Num: 45

Candidate Starts for MarysWell\_75:

(16, 45655), (Start: 32 @45541 has 4 MA's), (Start: 45 @45493 has 13 MA's), (58, 45385), (60, 45376),

Gene: Micasa\_75 Start: 45263, Stop: 45063, Start Num: 32

Candidate Starts for Micasa\_75:

(Start: 32 @45263 has 4 MA's), (Start: 45 @45215 has 13 MA's), (58, 45107), (60, 45098),

Gene: Midas2\_72 Start: 45118, Stop: 44966, Start Num: 45

Candidate Starts for Midas2\_72:

(Start: 32 @45166 has 4 MA's), (Start: 45 @45118 has 13 MA's), (58, 45010), (60, 45001),

Gene: Miley16\_123 Start: 66937, Stop: 66746, Start Num: 36

Candidate Starts for Miley16\_123:

(33, 66949), (Start: 36 @66937 has 30 MA's), (Start: 47 @66892 has 1 MA's), (62, 66766),

Gene: Miryou\_76 Start: 53394, Stop: 53591, Start Num: 34

Candidate Starts for Miryou\_76:

(13, 53238), (Start: 30 @53382 has 3 MA's), (Start: 32 @53385 has 4 MA's), (Start: 34 @53394 has 16 MA's), (40, 53421), (52, 53508), (53, 53517), (54, 53520), (57, 53532), (60, 53553), (63, 53574),

Gene: MkaliMitinis3\_125 Start: 66564, Stop: 66373, Start Num: 36

Candidate Starts for MkaliMitinis3\_125:

(33, 66576), (Start: 36 @66564 has 30 MA's), (Start: 47 @66519 has 1 MA's), (62, 66393),

Gene: MrMagoo\_164 Start: 76795, Stop: 76595, Start Num: 38

Candidate Starts for MrMagoo\_164:

(1, 77128), (2, 77122), (3, 77119), (6, 77092), (25, 76861), (Start: 38 @76795 has 47 MA's), (Start: 45 @76771 has 13 MA's), (52, 76699), (57, 76675), (63, 76633),

Gene: Mulciber\_83 Start: 46561, Stop: 46385, Start Num: 38

Candidate Starts for Mulciber\_83:

(Start: 38 @46561 has 47 MA's), (55, 46450), (56, 46444), (57, 46441), (60, 46420),

Gene: Munch\_85 Start: 47024, Stop: 46848, Start Num: 38

Candidate Starts for Munch\_85:

(Start: 38 @47024 has 47 MA's), (55, 46913), (56, 46907), (57, 46904), (60, 46883),

Gene: Nanosmite\_159 Start: 75860, Stop: 75654, Start Num: 36

Candidate Starts for Nanosmite\_159:

(24, 75920), (26, 75914), (Start: 29 @75893 has 2 MA's), (33, 75872), (Start: 36 @75860 has 30 MA's), (40, 75842), (49, 75785), (53, 75746), (57, 75731), (63, 75689),

Gene: Neighly\_74 Start: 50170, Stop: 50379, Start Num: 30

Candidate Starts for Neighly\_74:

(13, 50026), (20, 50083), (Start: 30 @50170 has 3 MA's), (Start: 32 @50173 has 4 MA's), (Start: 34 @50182 has 16 MA's), (40, 50209), (44, 50221), (54, 50308), (57, 50320), (60, 50341), (63, 50362),



Gene: Netyap\_121 Start: 66651, Stop: 66460, Start Num: 36

Candidate Starts for Netyap\_121:

(33, 66663), (Start: 36 @66651 has 30 MA's), (Start: 47 @66606 has 1 MA's), (62, 66480),

Gene: Nicholasp3\_123 Start: 66167, Stop: 65976, Start Num: 36

Candidate Starts for Nicholasp3\_123:

(33, 66179), (Start: 36 @66167 has 30 MA's), (Start: 47 @66122 has 1 MA's), (62, 65996),

Gene: Odin\_78 Start: 45907, Stop: 45725, Start Num: 38

Candidate Starts for Odin\_78:

(Start: 38 @45907 has 47 MA's), (Start: 42 @45892 has 1 MA's), (Start: 43 @45889 has 1 MA's), (44, 45886),

Gene: OhShagHennessy\_109 Start: 62960, Stop: 62787, Start Num: 38

Candidate Starts for OhShagHennessy\_109:

(18, 63095), (22, 63062), (23, 63044), (28, 63008), (31, 62993), (Start: 38 @62960 has 47 MA's), (Start: 41 @62948 has 2 MA's),

Gene: OkiRoe\_73 Start: 51079, Stop: 51276, Start Num: 34

Candidate Starts for OkiRoe\_73:

(13, 50923), (20, 50980), (Start: 30 @51067 has 3 MA's), (Start: 32 @51070 has 4 MA's), (Start: 34 @51079 has 16 MA's), (40, 51106), (57, 51217), (60, 51238), (63, 51259),

Gene: Orange\_85 Start: 46574, Stop: 46398, Start Num: 38

Candidate Starts for Orange\_85:

(Start: 38 @46574 has 47 MA's), (55, 46463), (56, 46457), (57, 46454), (60, 46433),

Gene: PYPDinur\_133 Start: 68388, Stop: 68197, Start Num: 36

Candidate Starts for PYPDinur\_133:

(33, 68400), (Start: 36 @68388 has 30 MA's), (62, 68217),

Gene: Paola\_72 Start: 50658, Stop: 50855, Start Num: 34

Candidate Starts for Paola\_72:

(13, 50502), (Start: 30 @50646 has 3 MA's), (Start: 32 @50649 has 4 MA's), (Start: 34 @50658 has 16 MA's), (40, 50685), (52, 50772), (53, 50781), (54, 50784), (57, 50796), (60, 50817), (63, 50838),

Gene: PegLeg\_144 Start: 73347, Stop: 73129, Start Num: 29

Candidate Starts for PegLeg\_144:

(14, 73470), (17, 73440), (27, 73356), (Start: 29 @73347 has 2 MA's), (Start: 35 @73320 has 9 MA's), (Start: 41 @73296 has 2 MA's), (60, 73167), (63, 73146), (64, 73137),

Gene: Petersenfast\_79 Start: 45455, Stop: 45279, Start Num: 38

Candidate Starts for Petersenfast\_79:

(Start: 38 @45455 has 47 MA's), (55, 45344), (56, 45338), (57, 45335), (60, 45314),

Gene: Pochiewood\_116 Start: 65631, Stop: 65458, Start Num: 38

Candidate Starts for Pochiewood\_116:

(18, 65766), (22, 65733), (23, 65715), (28, 65679), (31, 65664), (Start: 38 @65631 has 47 MA's), (Start: 41 @65619 has 2 MA's),

Gene: Psycho\_72 Start: 49308, Stop: 49505, Start Num: 34

Candidate Starts for Psycho\_72:

(13, 49152), (20, 49209), (Start: 30 @49296 has 3 MA's), (Start: 32 @49299 has 4 MA's), (Start: 34 @49308 has 16 MA's), (40, 49335), (44, 49347), (54, 49434), (57, 49446), (60, 49467), (63, 49488),

Gene: Quby\_133 Start: 67900, Stop: 67709, Start Num: 36

Candidate Starts for Quby\_133:

(33, 67912), (Start: 36 @67900 has 30 MA's), (62, 67729),

Gene: Quokka\_78 Start: 45302, Stop: 45120, Start Num: 38

Candidate Starts for Quokka\_78:

(Start: 38 @45302 has 47 MA's), (Start: 39 @45296 has 1 MA's), (65, 45125),

Gene: Reindeer\_142 Start: 74200, Stop: 74033, Start Num: 41

Candidate Starts for Reindeer\_142:

(Start: 35 @74224 has 9 MA's), (37, 74215), (Start: 41 @74200 has 2 MA's), (60, 74071), (63, 74050),

Gene: Rey\_161 Start: 75634, Stop: 75455, Start Num: 42

Candidate Starts for Rey\_161:

(4, 75964), (9, 75925), (10, 75889), (33, 75673), (40, 75640), (Start: 42 @75634 has 1 MA's), (56, 75532), (59, 75511),

Gene: Rose5\_118 Start: 64472, Stop: 64299, Start Num: 38

Candidate Starts for Rose5\_118:

(18, 64607), (22, 64574), (23, 64556), (28, 64520), (31, 64505), (Start: 38 @64472 has 47 MA's), (Start: 41 @64460 has 2 MA's),

Gene: Salz\_80 Start: 45370, Stop: 45194, Start Num: 38

Candidate Starts for Salz\_80:

(Start: 38 @45370 has 47 MA's), (55, 45259), (56, 45253), (57, 45250), (60, 45229),

Gene: Sarshaun\_124 Start: 67434, Stop: 67243, Start Num: 36

Candidate Starts for Sarshaun\_124:

(33, 67446), (Start: 36 @67434 has 30 MA's), (Start: 47 @67389 has 1 MA's), (62, 67263),

Gene: Serenity\_80 Start: 45494, Stop: 45312, Start Num: 38

Candidate Starts for Serenity\_80:

(Start: 38 @45494 has 47 MA's), (Start: 39 @45488 has 1 MA's), (65, 45317),

Gene: Sham4\_81 Start: 45456, Stop: 45280, Start Num: 38

Candidate Starts for Sham4\_81:

(Start: 38 @45456 has 47 MA's), (55, 45345), (56, 45339), (57, 45336), (60, 45315),

Gene: Sheng711\_134 Start: 67843, Stop: 67652, Start Num: 36

Candidate Starts for Sheng711\_134:

(33, 67855), (Start: 36 @67843 has 30 MA's), (62, 67672),

Gene: Skinny\_147 Start: 74437, Stop: 74246, Start Num: 35

Candidate Starts for Skinny\_147:

(14, 74587), (17, 74557), (27, 74473), (Start: 29 @74464 has 2 MA's), (Start: 35 @74437 has 9 MA's), (Start: 41 @74413 has 2 MA's), (60, 74284), (63, 74263), (64, 74254),

Gene: SlimJimmy\_139 Start: 73122, Stop: 72955, Start Num: 41

Candidate Starts for SlimJimmy\_139:

(15, 73269), (19, 73242), (Start: 35 @73146 has 9 MA's), (Start: 41 @73122 has 2 MA's), (60, 72993), (63, 72972), (64, 72963),

Gene: Snape\_85 Start: 46563, Stop: 46387, Start Num: 38

Candidate Starts for Snape\_85:

(Start: 38 @46563 has 47 MA's), (55, 46452), (56, 46446), (57, 46443), (60, 46422),

Gene: SoJulia\_125 Start: 68133, Stop: 67987, Start Num: 47

Candidate Starts for SoJulia\_125:

(33, 68190), (Start: 36 @68178 has 30 MA's), (Start: 47 @68133 has 1 MA's), (62, 68007),

Gene: SoSeph\_73 Start: 51006, Stop: 51203, Start Num: 34

Candidate Starts for SoSeph\_73:

(13, 50850), (20, 50907), (Start: 30 @50994 has 3 MA's), (Start: 32 @50997 has 4 MA's), (Start: 34 @51006 has 16 MA's), (40, 51033), (44, 51045), (54, 51132), (57, 51144), (60, 51165), (63, 51186),

Gene: Soap141\_123 Start: 67434, Stop: 67243, Start Num: 36

Candidate Starts for Soap141\_123:

(33, 67446), (Start: 36 @67434 has 30 MA's), (Start: 47 @67389 has 1 MA's), (62, 67263),

Gene: Superchunk\_79 Start: 45563, Stop: 45399, Start Num: 43

Candidate Starts for Superchunk\_79:

(Start: 42 @45566 has 1 MA's), (Start: 43 @45563 has 1 MA's), (44, 45560), (50, 45512), (51, 45503),

Gene: Swirley\_75 Start: 45159, Stop: 45007, Start Num: 45

Candidate Starts for Swirley\_75:

(Start: 32 @45207 has 4 MA's), (Start: 45 @45159 has 13 MA's), (58, 45051), (60, 45042),

Gene: SydNat\_74 Start: 45200, Stop: 45048, Start Num: 45

Candidate Starts for SydNat\_74:

(Start: 32 @45248 has 4 MA's), (Start: 45 @45200 has 13 MA's), (60, 45083),

Gene: Tarynearal\_74 Start: 45043, Stop: 44843, Start Num: 32

Candidate Starts for Tarynearal\_74:

(Start: 32 @45043 has 4 MA's), (Start: 45 @44995 has 13 MA's), (58, 44887), (60, 44878),

Gene: Theia\_74 Start: 45480, Stop: 45328, Start Num: 45

Candidate Starts for Theia\_74:

(Start: 32 @45528 has 4 MA's), (Start: 45 @45480 has 13 MA's), (58, 45372), (60, 45363),

Gene: Thyatira\_75 Start: 53010, Stop: 53207, Start Num: 34

Candidate Starts for Thyatira\_75:

(13, 52854), (Start: 30 @52998 has 3 MA's), (Start: 32 @53001 has 4 MA's), (Start: 34 @53010 has 16 MA's), (40, 53037), (54, 53136), (57, 53148), (60, 53169), (63, 53190),

Gene: Timothy\_85 Start: 46540, Stop: 46364, Start Num: 38

Candidate Starts for Timothy\_85:

(Start: 38 @46540 has 47 MA's), (55, 46429), (56, 46423), (57, 46420), (60, 46399),

Gene: TinyTimmy\_83 Start: 46269, Stop: 46093, Start Num: 38

Candidate Starts for TinyTimmy\_83:

(Start: 38 @46269 has 47 MA's), (55, 46158), (56, 46152), (57, 46149), (60, 46128),

Gene: TipsytheTRex\_76 Start: 45496, Stop: 45314, Start Num: 38  
Candidate Starts for TipsytheTRex\_76:  
(Start: 38 @45496 has 47 MA's), (Start: 39 @45490 has 1 MA's), (65, 45319),

Gene: Tourach\_124 Start: 67787, Stop: 67599, Start Num: 36  
Candidate Starts for Tourach\_124:  
(33, 67799), (Start: 36 @67787 has 30 MA's), (62, 67616),

Gene: Twigg\_73 Start: 45240, Stop: 45088, Start Num: 45  
Candidate Starts for Twigg\_73:  
(Start: 32 @45288 has 4 MA's), (Start: 45 @45240 has 13 MA's), (58, 45132), (60, 45123),

Gene: TyDawg\_135 Start: 72589, Stop: 72398, Start Num: 35  
Candidate Starts for TyDawg\_135:  
(15, 72712), (19, 72685), (Start: 35 @72589 has 9 MA's), (Start: 41 @72565 has 2 MA's), (60, 72436),  
(63, 72415), (64, 72406),

Gene: Tyson\_118 Start: 64902, Stop: 64729, Start Num: 38  
Candidate Starts for Tyson\_118:  
(18, 65037), (22, 65004), (23, 64986), (28, 64950), (31, 64935), (Start: 38 @64902 has 47 MA's),  
(Start: 41 @64890 has 2 MA's),

Gene: UPIE\_116 Start: 64139, Stop: 63966, Start Num: 38  
Candidate Starts for UPIE\_116:  
(18, 64274), (22, 64241), (23, 64223), (28, 64187), (31, 64172), (Start: 38 @64139 has 47 MA's),  
(Start: 41 @64127 has 2 MA's),

Gene: Underpass\_112 Start: 61207, Stop: 61016, Start Num: 36  
Candidate Starts for Underpass\_112:  
(33, 61219), (Start: 36 @61207 has 30 MA's), (Start: 47 @61162 has 1 MA's), (62, 61036),

Gene: Vetrix\_122 Start: 67077, Stop: 66886, Start Num: 36  
Candidate Starts for Vetrix\_122:  
(33, 67089), (Start: 36 @67077 has 30 MA's), (Start: 47 @67032 has 1 MA's), (62, 66906),

Gene: ViviJ\_77 Start: 51006, Stop: 51212, Start Num: 32  
Candidate Starts for ViviJ\_77:  
(13, 50859), (20, 50916), (Start: 30 @51003 has 3 MA's), (Start: 32 @51006 has 4 MA's), (Start: 34 @51015 has 16 MA's), (40, 51042), (44, 51054), (54, 51141), (57, 51153), (60, 51174), (63, 51195),

Gene: Wamburgexpress\_119 Start: 64929, Stop: 64756, Start Num: 38  
Candidate Starts for Wamburgexpress\_119:  
(23, 65013), (28, 64977), (Start: 38 @64929 has 47 MA's), (44, 64908),

Gene: Waterfoul\_74 Start: 51080, Stop: 51277, Start Num: 34  
Candidate Starts for Waterfoul\_74:  
(13, 50924), (Start: 30 @51068 has 3 MA's), (Start: 32 @51071 has 4 MA's), (Start: 34 @51080 has 16 MA's), (40, 51107), (54, 51206), (57, 51218), (60, 51239), (63, 51260),

Gene: Wigglewigggle\_123 Start: 66673, Stop: 66482, Start Num: 36  
Candidate Starts for Wigglewigggle\_123:  
(33, 66685), (Start: 36 @66673 has 30 MA's), (Start: 47 @66628 has 1 MA's), (62, 66502),

Gene: Wilder\_123 Start: 66306, Stop: 66115, Start Num: 36

Candidate Starts for Wilder\_123:

(33, 66318), (Start: 36 @66306 has 30 MA's), (Start: 47 @66261 has 1 MA's), (62, 66135),

Gene: Winky\_123 Start: 66938, Stop: 66747, Start Num: 36

Candidate Starts for Winky\_123:

(33, 66950), (Start: 36 @66938 has 30 MA's), (Start: 47 @66893 has 1 MA's), (62, 66767),

Gene: Wyatt2\_117 Start: 64565, Stop: 64392, Start Num: 38

Candidate Starts for Wyatt2\_117:

(18, 64700), (22, 64667), (23, 64649), (28, 64613), (31, 64598), (Start: 38 @64565 has 47 MA's),  
(Start: 41 @64553 has 2 MA's),

Gene: Zakai\_125 Start: 66648, Stop: 66457, Start Num: 36

Candidate Starts for Zakai\_125:

(33, 66660), (Start: 36 @66648 has 30 MA's), (Start: 47 @66603 has 1 MA's), (62, 66477),

Gene: Zaria\_121 Start: 64874, Stop: 64701, Start Num: 38

Candidate Starts for Zaria\_121:

(18, 65009), (22, 64976), (23, 64958), (28, 64922), (31, 64907), (Start: 38 @64874 has 47 MA's),  
(Start: 41 @64862 has 2 MA's),

Gene: ZhongYanYuan\_120 Start: 66032, Stop: 65847, Start Num: 36

Candidate Starts for ZhongYanYuan\_120:

(33, 66044), (Start: 36 @66032 has 30 MA's), (61, 65867),

Gene: Zolita\_73 Start: 45183, Stop: 45031, Start Num: 45

Candidate Starts for Zolita\_73:

(Start: 32 @45231 has 4 MA's), (Start: 45 @45183 has 13 MA's), (60, 45066),