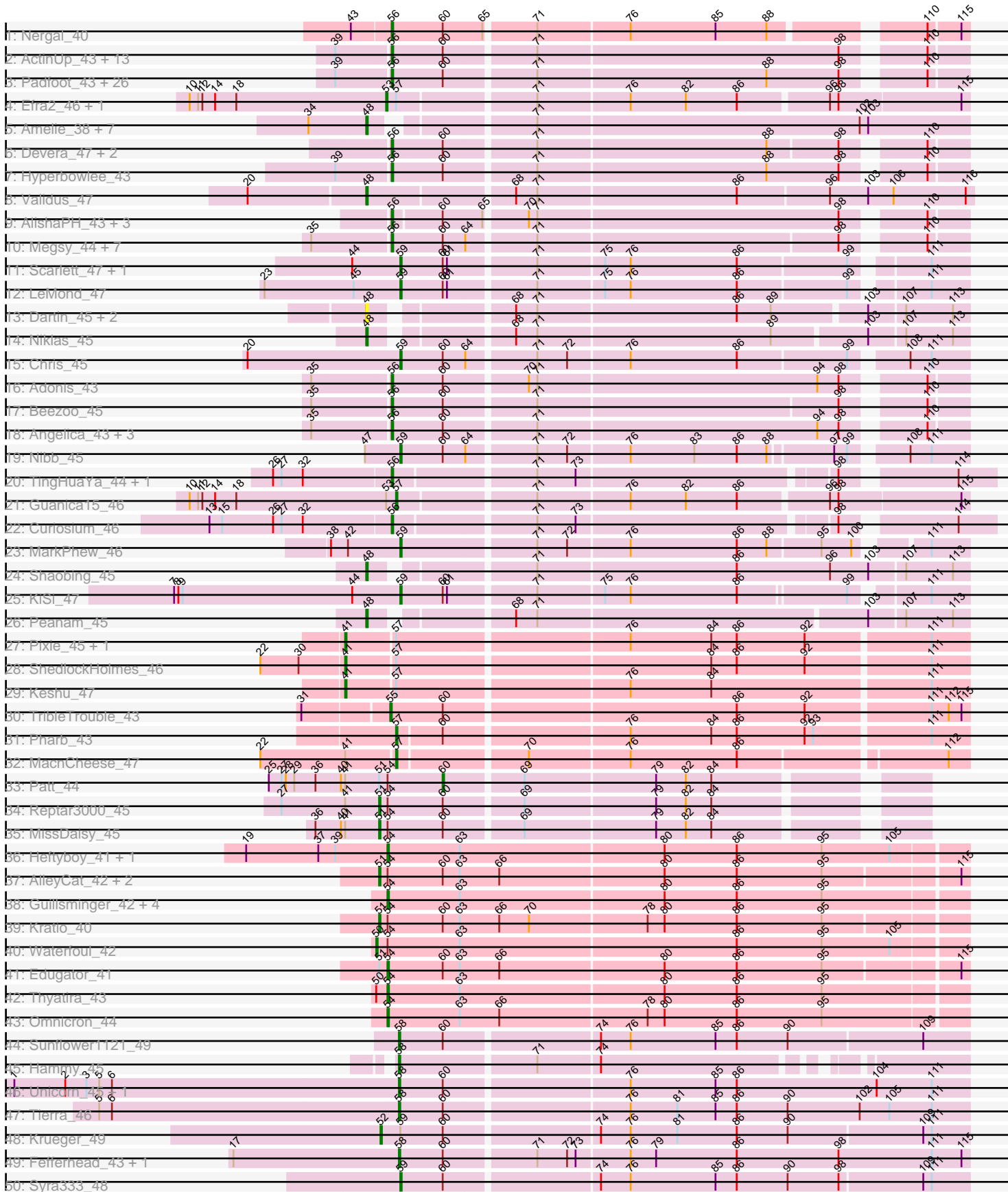
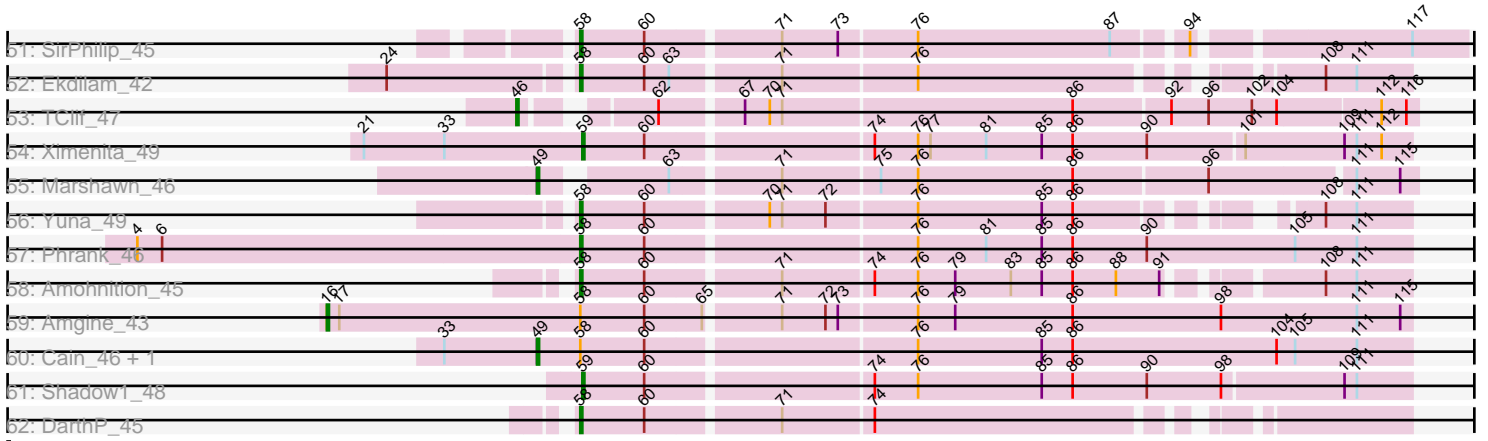


Pham 193813



Pham 193813



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 193813 Report

This analysis was run 11/02/24 on database version 579.

Pham number 193813 has 139 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Nergal\_40
- Track 2 : ActinUp\_43, Jayhawk\_44, BarrelRoll\_43, Ramen\_43, Adephagia\_43, TruffulaTree\_43, Slimphazie\_43, Veliki\_43, Padpat\_44, Rapunzel97\_43, HedwigODU\_43, Tachez\_43, Atiba\_43, Emerson\_44
- Track 3 : Padfoot\_43, Topper\_43, Llorens\_43, BGIlluviae\_43, Dalmuri\_43, CaseJules\_44, Jeckyll\_43, Rosmarinus\_43, CREW\_43, Boiiii\_43, Joy99\_43, Asayake\_43, Blizzard\_43, Belladonna\_43, BEEST\_43, Homura\_43, Inky\_43, Spock\_43, JAWS\_43, Lunahalos\_43, Capricorn\_43, ShiaSurprise\_44, Durfee\_43, Piatt\_43, Jarvi\_43, Peel\_43, Twitch\_43
- Track 4 : Efra2\_46, Yunkel11\_46
- Track 5 : Amelie\_38, Binglebops\_38, Nikao\_41, Torres\_41, SgtBeansprout\_38, Nutello\_38, Mdavu\_39, Enkosi\_41
- Track 6 : Devera\_47, Illumine\_46, Dole\_46
- Track 7 : Hyperbowlee\_43
- Track 8 : Validus\_47
- Track 9 : AlishaPH\_43, Geraldini\_45, BaghaKamala\_42, Pokerus\_42
- Track 10 : Megsy\_44, LindNT\_43, Zavala\_44, Mynx\_44, TreyKay\_44, CrimD\_43, Prithvi\_44, TaiwanKao\_45
- Track 11 : Scarlett\_47, Oscar\_47
- Track 12 : LeMond\_47
- Track 13 : Dartin\_45, McMater\_45, Richo\_45
- Track 14 : Niklas\_45
- Track 15 : Chris\_45
- Track 16 : Adonis\_43
- Track 17 : Beezoo\_45
- Track 18 : Angelica\_43, Anaya\_45, Deby\_43, Sulley\_43
- Track 19 : Nibb\_45
- Track 20 : TingHuaYa\_44, LastHope\_46
- Track 21 : Guanica15\_46
- Track 22 : Curiosium\_46
- Track 23 : MarkPhew\_46
- Track 24 : Shaobing\_45
- Track 25 : KiSi\_47
- Track 26 : Peanam\_45
- Track 27 : Pixie\_45, TBond007\_45
- Track 28 : ShedlockHolmes\_46
- Track 29 : Keshu\_47

- Track 30 : TribbleTrouble\_43
- Track 31 : Pharb\_43
- Track 32 : MacnCheese\_47
- Track 33 : Patt\_44
- Track 34 : Reptar3000\_45
- Track 35 : MissDaisy\_45
- Track 36 : Heftyboy\_41, SoSeph\_41
- Track 37 : AlleyCat\_42, Larva\_42, Dadosky\_42
- Track 38 : Guillsminger\_42, Gengar\_41, OkiRoe\_41, Paola\_41, Miryou\_43
- Track 39 : Kratio\_40
- Track 40 : Waterfoul\_42
- Track 41 : Edugator\_41
- Track 42 : Thyatira\_43
- Track 43 : Omnicron\_44
- Track 44 : Sunflower1121\_49
- Track 45 : Hammy\_45
- Track 46 : Unicorn\_45, PhelpsODU\_45
- Track 47 : Tierra\_46
- Track 48 : Krueger\_49
- Track 49 : Fefferhead\_43, Ellie\_41
- Track 50 : Syra333\_48
- Track 51 : SirPhilip\_45
- Track 52 : Ekdilam\_42
- Track 53 : TClif\_47
- Track 54 : Ximenita\_49
- Track 55 : Marshawn\_46
- Track 56 : Yuna\_49
- Track 57 : Phrank\_46
- Track 58 : Amohnition\_45
- Track 59 : Amgine\_43
- Track 60 : Cain\_46, Bryler\_46
- Track 61 : Shadow1\_48
- Track 62 : DarthP\_45

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

The start number called the most often in the published annotations is 56, it was called in 65 of the 133 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ActinUp\_43, Adephegia\_43, Adonis\_43, AlishaPH\_43, Anaya\_45, Angelica\_43, Asayake\_43, Atiba\_43, BEEST\_43, BGlluviae\_43, BaghaKamala\_42, BarrelRoll\_43, Beezoo\_45, Belladonna\_43, Blizzard\_43, Boiiii\_43, CREW\_43, Capricorn\_43, CaseJules\_44, CrimD\_43, Curiosium\_46, Dalmuri\_43, Deby\_43, Devera\_47, Dole\_46, Durfee\_43, Emerson\_44, Geraldini\_45, HedwigODU\_43, Homura\_43, Hyperbowlee\_43, Illumine\_46, Inky\_43, JAWS\_43, Jarvi\_43, Jayhawk\_44, Jeckyll\_43, Joy99\_43, LastHope\_46, LindNT\_43, Llorens\_43, Lunahalos\_43, Megsy\_44, Mynx\_44, Nergal\_40, Padfoot\_43, Padpat\_44, Peel\_43, Piatt\_43, Pokerus\_42, Prithvi\_44, Ramen\_43, Rapunzel97\_43, Rosmarinus\_43, ShiaSurprise\_44, Slimphazie\_43, Spock\_43, Sulley\_43, Tachez\_43, TaiwanKao\_45,

TingHuaYa\_44, Topper\_43, TreyKay\_44, TruffulaTree\_43, Twitch\_43, Veliki\_43, Zavala\_44,

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

- 

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

- AlleyCat\_42, Amelie\_38, Amgine\_43, Amohnition\_45, Biglebops\_38, Bryler\_46, Cain\_46, Chris\_45, Dadosky\_42, DarthP\_45, Dartin\_45, Edugator\_41, Efra2\_46, Ekdilam\_42, Ellie\_41, Enkosi\_41, Fefferhead\_43, Gengar\_41, Guanica15\_46, Guillsminger\_42, Hammy\_45, Heftyboy\_41, Keshu\_47, KiSi\_47, Kratio\_40, Krueger\_49, Larva\_42, LeMond\_47, MacnCheese\_47, MarkPheW\_46, Marshawn\_46, McMater\_45, Mdavu\_39, Miryou\_43, MissDaisy\_45, Nibb\_45, Nikao\_41, Niklas\_45, Nutello\_38, OkiRoe\_41, Omnicron\_44, Oscar\_47, Paola\_41, Patt\_44, Peanam\_45, Pharb\_43, PhelpsODU\_45, Phrank\_46, Pixie\_45, Reptar3000\_45, Richo\_45, Scarlett\_47, SgtBeansprout\_38, Shadow1\_48, Shaobing\_45, ShedlockHolmes\_46, SirPhilip\_45, SoSeph\_41, Sunflower1121\_49, Syra333\_48, TBond007\_45, TClif\_47, Thyatira\_43, Tierra\_46, Torres\_41, TribbleTrouble\_43, Unicorn\_45, Validus\_47, Waterfoul\_42, Ximenita\_49, Yuna\_49, Yunkel11\_46,

### Summary by start number:

Start 16:

- Found in 1 of 139 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 133
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amgine\_43 (K6),

Start 41:

- Found in 8 of 139 ( 5.8% ) of genes in pham
- Manual Annotations of this start: 4 of 133
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Keshu\_47 (K3), Pixie\_45 (K3), ShedlockHolmes\_46 (K3), TBond007\_45 (K3),

Start 46:

- Found in 1 of 139 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 133
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TClif\_47 (K6),

Start 48:

- Found in 15 of 139 ( 10.8% ) of genes in pham
- Manual Annotations of this start: 11 of 133
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amelie\_38 (K1), Biglebops\_38 (K1), Dartin\_45 (K1), Enkosi\_41 (K1), McMater\_45 (K1), Mdavu\_39 (K1), Nikao\_41 (K1), Niklas\_45 (K1), Nutello\_38 (K1), Peanam\_45 (K1), Richo\_45 (K1), SgtBeansprout\_38 (K1), Shaobing\_45 (K1), Torres\_41 (K1), Validus\_47 (K1),

Start 49:

- Found in 3 of 139 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 3 of 133

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bryler\_46 (K6), Cain\_46 (K6), Marshawn\_46 (K6),

#### Start 50:

- Found in 2 of 139 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 133
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Waterfoul\_42 (K5),

#### Start 51:

- Found in 8 of 139 ( 5.8% ) of genes in pham
- Manual Annotations of this start: 6 of 133
- Called 75.0% of time when present
- Phage (with cluster) where this start called: AlleyCat\_42 (K5), Dadosky\_42 (K5), Kratio\_40 (K5), Larva\_42 (K5), MissDaisy\_45 (K4), Reptar3000\_45 (K4),

#### Start 52:

- Found in 1 of 139 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 133
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Krueger\_49 (K6),

#### Start 53:

- Found in 3 of 139 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 133
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Efra2\_46 (K1), Yunkel11\_46 (K1),

#### Start 54:

- Found in 18 of 139 ( 12.9% ) of genes in pham
- Manual Annotations of this start: 10 of 133
- Called 55.6% of time when present
- Phage (with cluster) where this start called: Edugator\_41 (K5), Gengar\_41 (K5), Guillsminger\_42 (K5), Heftyboy\_41 (K5), Miryou\_43 (K5), OkiRoe\_41 (K5), Omnicron\_44 (K5), Paola\_41 (K5), SoSeph\_41 (K5), Thyatira\_43 (K5),

#### Start 55:

- Found in 1 of 139 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 133
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TripleTrouble\_43 (K3),

#### Start 56:

- Found in 67 of 139 ( 48.2% ) of genes in pham
- Manual Annotations of this start: 65 of 133
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ActinUp\_43 (K1), Adephegia\_43 (K1), Adonis\_43 (K1), AlishaPH\_43 (K1), Anaya\_45 (K1), Angelica\_43 (K1), Asayake\_43 (K1), Atiba\_43 (K1), BEEST\_43 (K1), BGlluviae\_43 (K1), BaghaKamala\_42 (K1), BarrelRoll\_43 (K1), Beezoo\_45 (K1), Belladonna\_43 (K1), Blizzard\_43 (K1), Boiiii\_43 (K1), CREW\_43 (K1), Capricorn\_43 (K1), CaseJules\_44 (K1), CrimD\_43 (K1), Curiosium\_46 (K1), Dalmuri\_43 (K1), Deby\_43 (K1), Devera\_47 (K1), Dole\_46 (K1),

Durfee\_43 (K1), Emerson\_44 (K1), Geraldini\_45 (K1), HedwigODU\_43 (K1), Homura\_43 (K1), Hyperbowlee\_43 (K1), Illumine\_46 (K1), Inky\_43 (K1), JAWS\_43 (K1), Jarvi\_43 (K1), Jayhawk\_44 (K1), Jeckyll\_43 (K1), Joy99\_43 (K1), LastHope\_46 (K1), LindNT\_43 (K1), Llorens\_43 (K1), Lunahalos\_43 (K1), Megsy\_44 (K1), Mynx\_44 (K1), Nergal\_40 (AG), Padfoot\_43 (K1), Padpat\_44 (K1), Peel\_43 (K1), Piatt\_43 (K1), Pokerus\_42 (K1), Prithvi\_44 (K1), Ramen\_43 (K1), Rapunzel97\_43 (K1), Rosmarinus\_43 (K1), ShiaSurprise\_44 (K1), Slimphazie\_43 (K1), Spock\_43 (K1), Sulley\_43 (K1), Tachez\_43 (K1), TaiwanKao\_45 (K1), TingHuaYa\_44 (K1), Topper\_43 (K1), TreyKay\_44 (K1), TruffulaTree\_43 (K1), Twitch\_43 (K1), Veliki\_43 (K1), Zavala\_44 (K1),

Start 57:

- Found in 9 of 139 ( 6.5% ) of genes in pham
- Manual Annotations of this start: 3 of 133
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Guanica15\_46 (K1), MacnCheese\_47 (K3), Pharb\_43 (K3),

Start 58:

- Found in 16 of 139 ( 11.5% ) of genes in pham
- Manual Annotations of this start: 13 of 133
- Called 81.2% of time when present
- Phage (with cluster) where this start called: Amohnition\_45 (K6), DARTH\_P\_45 (K6), Ekdilam\_42 (K6), Ellie\_41 (K6), Fefferhead\_43 (K6), Hammy\_45 (K6), PhelpsODU\_45 (K6), Phrank\_46 (K6), SirPhilip\_45 (K6), Sunflower1121\_49 (K6), Tierra\_46 (K6), Unicorn\_45 (K6), Yuna\_49 (K6),

Start 59:

- Found in 11 of 139 ( 7.9% ) of genes in pham
- Manual Annotations of this start: 10 of 133
- Called 90.9% of time when present
- Phage (with cluster) where this start called: Chris\_45 (K1), KiSi\_47 (K1), LeMond\_47 (K1), MarkPhew\_46 (K1), Nibb\_45 (K1), Oscar\_47 (K1), Scarlett\_47 (K1), Shadow1\_48 (K6), Syra333\_48 (K6), Ximenita\_49 (K6),

Start 60:

- Found in 99 of 139 ( 71.2% ) of genes in pham
- Manual Annotations of this start: 1 of 133
- Called 1.0% of time when present
- Phage (with cluster) where this start called: Patt\_44 (K4),

### Summary by clusters:

There are 6 clusters represented in this pham: AG, K3, K1, K6, K5, K4,

Info for manual annotations of cluster AG:

- Start number 56 was manually annotated 1 time for cluster AG.

Info for manual annotations of cluster K1:

- Start number 48 was manually annotated 11 times for cluster K1.
- Start number 53 was manually annotated 2 times for cluster K1.
- Start number 56 was manually annotated 64 times for cluster K1.
- Start number 57 was manually annotated 1 time for cluster K1.

- Start number 59 was manually annotated 7 times for cluster K1.

Info for manual annotations of cluster K3:

- Start number 41 was manually annotated 4 times for cluster K3.
- Start number 55 was manually annotated 1 time for cluster K3.
- Start number 57 was manually annotated 2 times for cluster K3.

Info for manual annotations of cluster K4:

- Start number 51 was manually annotated 2 times for cluster K4.
- Start number 60 was manually annotated 1 time for cluster K4.

Info for manual annotations of cluster K5:

- Start number 50 was manually annotated 1 time for cluster K5.
- Start number 51 was manually annotated 4 times for cluster K5.
- Start number 54 was manually annotated 10 times for cluster K5.

Info for manual annotations of cluster K6:

- Start number 16 was manually annotated 1 time for cluster K6.
- Start number 46 was manually annotated 1 time for cluster K6.
- Start number 49 was manually annotated 3 times for cluster K6.
- Start number 52 was manually annotated 1 time for cluster K6.
- Start number 58 was manually annotated 13 times for cluster K6.
- Start number 59 was manually annotated 3 times for cluster K6.

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

Gene: ActinUp\_43 Start: 34981, Stop: 34601, Start Num: 56

Candidate Starts for ActinUp\_43:

(39, 35017), (Start: 56 @34981 has 65 MA's), (Start: 60 @34945 has 1 MA's), (71, 34885), (98, 34675), (110, 34627),

Gene: Adephagia\_43 Start: 34978, Stop: 34598, Start Num: 56

Candidate Starts for Adephagia\_43:

(39, 35014), (Start: 56 @34978 has 65 MA's), (Start: 60 @34942 has 1 MA's), (71, 34882), (98, 34672), (110, 34624),

Gene: Adonis\_43 Start: 35277, Stop: 34897, Start Num: 56

Candidate Starts for Adonis\_43:

(35, 35328), (Start: 56 @35277 has 65 MA's), (Start: 60 @35241 has 1 MA's), (70, 35187), (71, 35181), (94, 34986), (98, 34971), (110, 34923),

Gene: AlishaPH\_43 Start: 35250, Stop: 34873, Start Num: 56

Candidate Starts for AlishaPH\_43:

(Start: 56 @35250 has 65 MA's), (Start: 60 @35217 has 1 MA's), (65, 35190), (70, 35163), (71, 35157), (98, 34947), (110, 34899),

Gene: AlleyCat\_42 Start: 34384, Stop: 33980, Start Num: 51

Candidate Starts for AlleyCat\_42:

(Start: 51 @34384 has 6 MA's), (Start: 54 @34378 has 10 MA's), (Start: 60 @34339 has 1 MA's), (63, 34327), (66, 34300), (80, 34186), (86, 34135), (95, 34075), (115, 33985),



Gene: Amelie\_38 Start: 34527, Stop: 34129, Start Num: 48

Candidate Starts for Amelie\_38:

(34, 34566), (Start: 48 @34527 has 11 MA's), (71, 34431), (102, 34206), (103, 34200),

Gene: Amgine\_43 Start: 36096, Stop: 35581, Start Num: 16

Candidate Starts for Amgine\_43:

(Start: 16 @36096 has 1 MA's), (17, 36090), (Start: 58 @35973 has 13 MA's), (Start: 60 @35943 has 1 MA's), (65, 35916), (71, 35883), (72, 35862), (73, 35856), (76, 35820), (79, 35802), (86, 35745), (98, 35673), (111, 35607), (115, 35586),

Gene: Amohnition\_45 Start: 36010, Stop: 35639, Start Num: 58

Candidate Starts for Amohnition\_45:

(Start: 58 @36010 has 13 MA's), (Start: 60 @35980 has 1 MA's), (71, 35920), (74, 35878), (76, 35857), (79, 35839), (83, 35812), (85, 35797), (86, 35782), (88, 35761), (91, 35740), (108, 35680), (111, 35665),

Gene: Anaya\_45 Start: 35589, Stop: 35209, Start Num: 56

Candidate Starts for Anaya\_45:

(35, 35640), (Start: 56 @35589 has 65 MA's), (Start: 60 @35553 has 1 MA's), (71, 35493), (94, 35298), (98, 35283), (110, 35235),

Gene: Angelica\_43 Start: 35209, Stop: 34829, Start Num: 56

Candidate Starts for Angelica\_43:

(35, 35260), (Start: 56 @35209 has 65 MA's), (Start: 60 @35173 has 1 MA's), (71, 35113), (94, 34918), (98, 34903), (110, 34855),

Gene: Asayake\_43 Start: 35293, Stop: 34913, Start Num: 56

Candidate Starts for Asayake\_43:

(39, 35329), (Start: 56 @35293 has 65 MA's), (Start: 60 @35257 has 1 MA's), (71, 35197), (88, 35038), (98, 34987), (110, 34939),

Gene: Atiba\_43 Start: 34941, Stop: 34561, Start Num: 56

Candidate Starts for Atiba\_43:

(39, 34977), (Start: 56 @34941 has 65 MA's), (Start: 60 @34905 has 1 MA's), (71, 34845), (98, 34635), (110, 34587),

Gene: BEEST\_43 Start: 35293, Stop: 34913, Start Num: 56

Candidate Starts for BEEST\_43:

(39, 35329), (Start: 56 @35293 has 65 MA's), (Start: 60 @35257 has 1 MA's), (71, 35197), (88, 35038), (98, 34987), (110, 34939),

Gene: BGlluviae\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for BGlluviae\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: BaghaKamala\_42 Start: 34415, Stop: 34038, Start Num: 56

Candidate Starts for BaghaKamala\_42:

(Start: 56 @34415 has 65 MA's), (Start: 60 @34382 has 1 MA's), (65, 34355), (70, 34328), (71, 34322), (98, 34112), (110, 34064),

Gene: BarrelRoll\_43 Start: 34964, Stop: 34584, Start Num: 56

Candidate Starts for BarrelRoll\_43:

(39, 35000), (Start: 56 @34964 has 65 MA's), (Start: 60 @34928 has 1 MA's), (71, 34868), (98, 34658), (110, 34610),

Gene: Beezoo\_45 Start: 35940, Stop: 35563, Start Num: 56

Candidate Starts for Beezoo\_45:

(35, 35991), (Start: 56 @35940 has 65 MA's), (Start: 60 @35904 has 1 MA's), (71, 35844), (98, 35637), (110, 35589),

Gene: Belladonna\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Belladonna\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: Biglebops\_38 Start: 34527, Stop: 34129, Start Num: 48

Candidate Starts for Biglebops\_38:

(34, 34566), (Start: 48 @34527 has 11 MA's), (71, 34431), (102, 34206), (103, 34200),

Gene: Blizzard\_43 Start: 35293, Stop: 34913, Start Num: 56

Candidate Starts for Blizzard\_43:

(39, 35329), (Start: 56 @35293 has 65 MA's), (Start: 60 @35257 has 1 MA's), (71, 35197), (88, 35038), (98, 34987), (110, 34939),

Gene: Boiiii\_43 Start: 35295, Stop: 34915, Start Num: 56

Candidate Starts for Boiiii\_43:

(39, 35331), (Start: 56 @35295 has 65 MA's), (Start: 60 @35259 has 1 MA's), (71, 35199), (88, 35040), (98, 34989), (110, 34941),

Gene: Bryler\_46 Start: 34876, Stop: 34463, Start Num: 49

Candidate Starts for Bryler\_46:

(33, 34921), (Start: 49 @34876 has 3 MA's), (Start: 58 @34855 has 13 MA's), (Start: 60 @34825 has 1 MA's), (76, 34702), (85, 34642), (86, 34627), (104, 34528), (105, 34519), (111, 34489),

Gene: CREW\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for CREW\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: Cain\_46 Start: 34864, Stop: 34451, Start Num: 49

Candidate Starts for Cain\_46:

(33, 34909), (Start: 49 @34864 has 3 MA's), (Start: 58 @34843 has 13 MA's), (Start: 60 @34813 has 1 MA's), (76, 34690), (85, 34630), (86, 34615), (104, 34516), (105, 34507), (111, 34477),

Gene: Capricorn\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Capricorn\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: CaseJules\_44 Start: 35293, Stop: 34913, Start Num: 56

Candidate Starts for CaseJules\_44:

(39, 35329), (Start: 56 @35293 has 65 MA's), (Start: 60 @35257 has 1 MA's), (71, 35197), (88, 35038), (98, 34987), (110, 34939),

Gene: Chris\_45 Start: 35677, Stop: 35300, Start Num: 59

Candidate Starts for Chris\_45:

(20, 35785), (Start: 59 @35677 has 10 MA's), (Start: 60 @35647 has 1 MA's), (64, 35632), (71, 35587), (72, 35566), (76, 35524), (86, 35449), (99, 35374), (108, 35341), (111, 35326),

Gene: CrimD\_43 Start: 35221, Stop: 34844, Start Num: 56

Candidate Starts for CrimD\_43:

(35, 35272), (Start: 56 @35221 has 65 MA's), (Start: 60 @35185 has 1 MA's), (64, 35170), (71, 35125), (98, 34918), (110, 34870),

Gene: Curiosium\_46 Start: 34128, Stop: 33742, Start Num: 56

Candidate Starts for Curiosium\_46:

(13, 34254), (15, 34245), (26, 34209), (27, 34203), (32, 34188), (Start: 56 @34128 has 65 MA's), (71, 34035), (73, 34008), (98, 33837), (114, 33768),

Gene: Dadosky\_42 Start: 34386, Stop: 33982, Start Num: 51

Candidate Starts for Dadosky\_42:

(Start: 51 @34386 has 6 MA's), (Start: 54 @34380 has 10 MA's), (Start: 60 @34341 has 1 MA's), (63, 34329), (66, 34302), (80, 34188), (86, 34137), (95, 34077), (115, 33987),

Gene: Dalmuri\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Dalmuri\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: DarthP\_45 Start: 35904, Stop: 35545, Start Num: 58

Candidate Starts for DarthP\_45:

(Start: 58 @35904 has 13 MA's), (Start: 60 @35874 has 1 MA's), (71, 35814), (74, 35772),

Gene: Dartin\_45 Start: 35648, Stop: 35256, Start Num: 48

Candidate Starts for Dartin\_45:

(Start: 48 @35648 has 11 MA's), (68, 35564), (71, 35549), (86, 35411), (89, 35387), (103, 35324), (107, 35300), (113, 35267),

Gene: Deby\_43 Start: 35225, Stop: 34845, Start Num: 56

Candidate Starts for Deby\_43:

(35, 35276), (Start: 56 @35225 has 65 MA's), (Start: 60 @35189 has 1 MA's), (71, 35129), (94, 34934), (98, 34919), (110, 34871),

Gene: Devera\_47 Start: 35759, Stop: 35382, Start Num: 56

Candidate Starts for Devera\_47:

(Start: 56 @35759 has 65 MA's), (Start: 60 @35723 has 1 MA's), (71, 35663), (88, 35504), (98, 35456), (110, 35408),

Gene: Dole\_46 Start: 35761, Stop: 35384, Start Num: 56

Candidate Starts for Dole\_46:

(Start: 56 @35761 has 65 MA's), (Start: 60 @35725 has 1 MA's), (71, 35665), (88, 35506), (98, 35458), (110, 35410),

Gene: Durfee\_43 Start: 35293, Stop: 34913, Start Num: 56

Candidate Starts for Durfee\_43:

(39, 35329), (Start: 56 @35293 has 65 MA's), (Start: 60 @35257 has 1 MA's), (71, 35197), (88, 35038), (98, 34987), (110, 34939),

Gene: Edugator\_41 Start: 34805, Stop: 34407, Start Num: 54

Candidate Starts for Edugator\_41:

(Start: 51 @34811 has 6 MA's), (Start: 54 @34805 has 10 MA's), (Start: 60 @34766 has 1 MA's), (63, 34754), (66, 34727), (80, 34613), (86, 34562), (95, 34502), (115, 34412),

Gene: Efra2\_46 Start: 35018, Stop: 34629, Start Num: 53

Candidate Starts for Efra2\_46:

(10, 35156), (11, 35150), (12, 35147), (14, 35138), (18, 35123), (Start: 53 @35018 has 2 MA's), (Start: 57 @35012 has 3 MA's), (71, 34922), (76, 34859), (82, 34820), (86, 34784), (96, 34724), (98, 34718), (115, 34634),

Gene: Ekdilam\_42 Start: 35465, Stop: 35106, Start Num: 58

Candidate Starts for Ekdilam\_42:

(24, 35549), (Start: 58 @35465 has 13 MA's), (Start: 60 @35435 has 1 MA's), (63, 35423), (71, 35375), (76, 35312), (108, 35147), (111, 35132),

Gene: Ellie\_41 Start: 35161, Stop: 34769, Start Num: 58

Candidate Starts for Ellie\_41:

(17, 35278), (Start: 58 @35161 has 13 MA's), (Start: 60 @35131 has 1 MA's), (71, 35071), (72, 35050), (73, 35044), (76, 35008), (79, 34990), (86, 34933), (98, 34861), (111, 34795), (115, 34774),

Gene: Emerson\_44 Start: 34972, Stop: 34592, Start Num: 56

Candidate Starts for Emerson\_44:

(39, 35008), (Start: 56 @34972 has 65 MA's), (Start: 60 @34936 has 1 MA's), (71, 34876), (98, 34666), (110, 34618),

Gene: Enkosi\_41 Start: 37140, Stop: 36742, Start Num: 48

Candidate Starts for Enkosi\_41:

(34, 37179), (Start: 48 @37140 has 11 MA's), (71, 37044), (102, 36819), (103, 36813),

Gene: Fefferhead\_43 Start: 35112, Stop: 34720, Start Num: 58

Candidate Starts for Fefferhead\_43:

(17, 35229), (Start: 58 @35112 has 13 MA's), (Start: 60 @35082 has 1 MA's), (71, 35022), (72, 35001), (73, 34995), (76, 34959), (79, 34941), (86, 34884), (98, 34812), (111, 34746), (115, 34725),

Gene: Gengar\_41 Start: 34347, Stop: 33946, Start Num: 54

Candidate Starts for Gengar\_41:

(Start: 54 @34347 has 10 MA's), (63, 34296), (80, 34155), (86, 34104), (95, 34044),

Gene: Geraldini\_45 Start: 36027, Stop: 35650, Start Num: 56

Candidate Starts for Geraldini\_45:

(Start: 56 @36027 has 65 MA's), (Start: 60 @35994 has 1 MA's), (65, 35967), (70, 35940), (71, 35934), (98, 35724), (110, 35676),

Gene: Guanica15\_46 Start: 34969, Stop: 34586, Start Num: 57

Candidate Starts for Guanica15\_46:

(10, 35113), (11, 35107), (12, 35104), (14, 35095), (18, 35080), (Start: 53 @34975 has 2 MA's), (Start: 57 @34969 has 3 MA's), (71, 34879), (76, 34816), (82, 34777), (86, 34741), (96, 34681), (98, 34675), (115, 34591),

Gene: Guillsminger\_42 Start: 34318, Stop: 33917, Start Num: 54

Candidate Starts for Guillsminger\_42:

(Start: 54 @34318 has 10 MA's), (63, 34267), (80, 34126), (86, 34075), (95, 34015),

Gene: Hammy\_45 Start: 35892, Stop: 35533, Start Num: 58

Candidate Starts for Hammy\_45:

(Start: 58 @35892 has 13 MA's), (71, 35802), (74, 35760),

Gene: HedwigODU\_43 Start: 34981, Stop: 34601, Start Num: 56

Candidate Starts for HedwigODU\_43:

(39, 35017), (Start: 56 @34981 has 65 MA's), (Start: 60 @34945 has 1 MA's), (71, 34885), (98, 34675), (110, 34627),

Gene: Heftyboy\_41 Start: 34467, Stop: 34066, Start Num: 54

Candidate Starts for Heftyboy\_41:

(19, 34566), (37, 34515), (39, 34503), (Start: 54 @34467 has 10 MA's), (63, 34416), (80, 34275), (86, 34224), (95, 34164), (105, 34116),

Gene: Homura\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Homura\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: Hyperbowlee\_43 Start: 35293, Stop: 34913, Start Num: 56

Candidate Starts for Hyperbowlee\_43:

(39, 35329), (Start: 56 @35293 has 65 MA's), (Start: 60 @35257 has 1 MA's), (71, 35197), (88, 35038), (98, 34987), (110, 34939),

Gene: Illumine\_46 Start: 35761, Stop: 35384, Start Num: 56

Candidate Starts for Illumine\_46:

(Start: 56 @35761 has 65 MA's), (Start: 60 @35725 has 1 MA's), (71, 35665), (88, 35506), (98, 35458), (110, 35410),

Gene: Inky\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Inky\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: JAWS\_43 Start: 34970, Stop: 34590, Start Num: 56

Candidate Starts for JAWS\_43:

(39, 35006), (Start: 56 @34970 has 65 MA's), (Start: 60 @34934 has 1 MA's), (71, 34874), (88, 34715), (98, 34664), (110, 34616),

Gene: Jarvi\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Jarvi\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: Jayhawk\_44 Start: 34979, Stop: 34599, Start Num: 56

Candidate Starts for Jayhawk\_44:

(39, 35015), (Start: 56 @34979 has 65 MA's), (Start: 60 @34943 has 1 MA's), (71, 34883), (98, 34673), (110, 34625),

Gene: Jeckyll\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Jeckyll\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: Joy99\_43 Start: 35025, Stop: 34645, Start Num: 56

Candidate Starts for Joy99\_43:

(39, 35061), (Start: 56 @35025 has 65 MA's), (Start: 60 @34989 has 1 MA's), (71, 34929), (88, 34770), (98, 34719), (110, 34671),

Gene: Keshu\_47 Start: 35704, Stop: 35282, Start Num: 41

Candidate Starts for Keshu\_47:

(Start: 41 @35704 has 4 MA's), (Start: 57 @35671 has 3 MA's), (76, 35515), (84, 35458), (111, 35308),

Gene: KiSi\_47 Start: 36100, Stop: 35729, Start Num: 59

Candidate Starts for KiSi\_47:

(7, 36259), (8, 36256), (9, 36253), (44, 36133), (Start: 59 @36100 has 10 MA's), (Start: 60 @36070 has 1 MA's), (61, 36067), (71, 36010), (75, 35965), (76, 35947), (86, 35872), (99, 35800), (111, 35755),

Gene: Kratio\_40 Start: 34085, Stop: 33681, Start Num: 51

Candidate Starts for Kratio\_40:

(Start: 51 @34085 has 6 MA's), (Start: 54 @34079 has 10 MA's), (Start: 60 @34040 has 1 MA's), (63, 34028), (66, 34001), (70, 33980), (78, 33899), (80, 33887), (86, 33836), (95, 33776),

Gene: Krueger\_49 Start: 35862, Stop: 35461, Start Num: 52

Candidate Starts for Krueger\_49:

(Start: 52 @35862 has 1 MA's), (Start: 59 @35850 has 10 MA's), (Start: 60 @35820 has 1 MA's), (74, 35718), (76, 35697), (81, 35664), (86, 35622), (90, 35586), (109, 35493), (111, 35487),

Gene: Larva\_42 Start: 34253, Stop: 33849, Start Num: 51

Candidate Starts for Larva\_42:

(Start: 51 @34253 has 6 MA's), (Start: 54 @34247 has 10 MA's), (Start: 60 @34208 has 1 MA's), (63, 34196), (66, 34169), (80, 34055), (86, 34004), (95, 33944), (115, 33854),

Gene: LastHope\_46 Start: 34433, Stop: 34047, Start Num: 56

Candidate Starts for LastHope\_46:

(26, 34514), (27, 34508), (32, 34493), (Start: 56 @34433 has 65 MA's), (71, 34340), (73, 34313), (98, 34142), (114, 34073),

Gene: LeMond\_47 Start: 36084, Stop: 35710, Start Num: 59

Candidate Starts for LeMond\_47:

(23, 36180), (45, 36117), (Start: 59 @36084 has 10 MA's), (Start: 60 @36054 has 1 MA's), (61, 36051), (71, 35994), (75, 35949), (76, 35931), (86, 35856), (99, 35781), (111, 35736),

Gene: LindNT\_43 Start: 35164, Stop: 34787, Start Num: 56

Candidate Starts for LindNT\_43:

(35, 35215), (Start: 56 @35164 has 65 MA's), (Start: 60 @35128 has 1 MA's), (64, 35113), (71, 35068), (98, 34861), (110, 34813),

Gene: Llorens\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Llorens\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: Lunahalos\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Lunahalos\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: MacnCheese\_47 Start: 36557, Stop: 36177, Start Num: 57

Candidate Starts for MacnCheese\_47:

(22, 36650), (Start: 41 @36590 has 4 MA's), (Start: 57 @36557 has 3 MA's), (70, 36473), (76, 36404), (86, 36329), (112, 36191),

Gene: MarkPhew\_46 Start: 35518, Stop: 35147, Start Num: 59

Candidate Starts for MarkPhew\_46:

(38, 35566), (42, 35554), (Start: 59 @35518 has 10 MA's), (71, 35428), (72, 35407), (76, 35365), (86, 35290), (88, 35269), (95, 35233), (100, 35212), (111, 35173),

Gene: Marshawn\_46 Start: 35965, Stop: 35570, Start Num: 49

Candidate Starts for Marshawn\_46:

(Start: 49 @35965 has 3 MA's), (63, 35914), (71, 35866), (75, 35821), (76, 35803), (86, 35728), (96, 35665), (111, 35599), (115, 35578),

Gene: McMater\_45 Start: 35648, Stop: 35256, Start Num: 48

Candidate Starts for McMater\_45:

(Start: 48 @35648 has 11 MA's), (68, 35564), (71, 35549), (86, 35411), (89, 35387), (103, 35324), (107, 35300), (113, 35267),

Gene: Mdavu\_39 Start: 34516, Stop: 34118, Start Num: 48

Candidate Starts for Mdavu\_39:

(34, 34555), (Start: 48 @34516 has 11 MA's), (71, 34420), (102, 34195), (103, 34189),

Gene: Megsy\_44 Start: 35223, Stop: 34846, Start Num: 56

Candidate Starts for Megsy\_44:

(35, 35274), (Start: 56 @35223 has 65 MA's), (Start: 60 @35187 has 1 MA's), (64, 35172), (71, 35127), (98, 34920), (110, 34872),

Gene: Miryou\_43 Start: 36650, Stop: 36249, Start Num: 54

Candidate Starts for Miryou\_43:

(Start: 54 @36650 has 10 MA's), (63, 36599), (80, 36458), (86, 36407), (95, 36347),

Gene: MissDaisy\_45 Start: 35425, Stop: 35069, Start Num: 51

Candidate Starts for MissDaisy\_45:

(36, 35470), (40, 35452), (Start: 41 @35449 has 4 MA's), (Start: 51 @35425 has 6 MA's), (Start: 54 @35419 has 10 MA's), (Start: 60 @35380 has 1 MA's), (69, 35329), (79, 35239), (82, 35218), (84, 35200),

Gene: Mynx\_44 Start: 35298, Stop: 34921, Start Num: 56

Candidate Starts for Mynx\_44:

(35, 35349), (Start: 56 @35298 has 65 MA's), (Start: 60 @35262 has 1 MA's), (64, 35247), (71, 35202), (98, 34995), (110, 34947),

Gene: Nergal\_40 Start: 33595, Stop: 33221, Start Num: 56

Candidate Starts for Nergal\_40:

(43, 33622), (Start: 56 @33595 has 65 MA's), (Start: 60 @33559 has 1 MA's), (65, 33532), (71, 33499), (76, 33436), (85, 33376), (88, 33340), (110, 33247), (115, 33226),

Gene: Nibb\_45 Start: 35241, Stop: 34867, Start Num: 59

Candidate Starts for Nibb\_45:

(47, 35265), (Start: 59 @35241 has 10 MA's), (Start: 60 @35211 has 1 MA's), (64, 35196), (71, 35151), (72, 35130), (76, 35088), (83, 35043), (86, 35013), (88, 34992), (97, 34950), (99, 34941), (108, 34908), (111, 34893),

Gene: Nikao\_41 Start: 37140, Stop: 36742, Start Num: 48

Candidate Starts for Nikao\_41:

(34, 37179), (Start: 48 @37140 has 11 MA's), (71, 37044), (102, 36819), (103, 36813),

Gene: Niklas\_45 Start: 35707, Stop: 35315, Start Num: 48

Candidate Starts for Niklas\_45:

(Start: 48 @35707 has 11 MA's), (68, 35623), (71, 35608), (89, 35446), (103, 35383), (107, 35359), (113, 35326),

Gene: Nutello\_38 Start: 34527, Stop: 34129, Start Num: 48

Candidate Starts for Nutello\_38:

(34, 34566), (Start: 48 @34527 has 11 MA's), (71, 34431), (102, 34206), (103, 34200),

Gene: OkiRoe\_41 Start: 34320, Stop: 33919, Start Num: 54

Candidate Starts for OkiRoe\_41:

(Start: 54 @34320 has 10 MA's), (63, 34269), (80, 34128), (86, 34077), (95, 34017),

Gene: Omnicron\_44 Start: 33930, Stop: 33529, Start Num: 54

Candidate Starts for Omnicron\_44:

(Start: 54 @33930 has 10 MA's), (63, 33879), (66, 33852), (78, 33750), (80, 33738), (86, 33687), (95, 33627),

Gene: Oscar\_47 Start: 35987, Stop: 35613, Start Num: 59

Candidate Starts for Oscar\_47:

(44, 36020), (Start: 59 @35987 has 10 MA's), (Start: 60 @35957 has 1 MA's), (61, 35954), (71, 35897), (75, 35852), (76, 35834), (86, 35759), (99, 35684), (111, 35639),

Gene: Padfoot\_43 Start: 35293, Stop: 34913, Start Num: 56

Candidate Starts for Padfoot\_43:

(39, 35329), (Start: 56 @35293 has 65 MA's), (Start: 60 @35257 has 1 MA's), (71, 35197), (88, 35038), (98, 34987), (110, 34939),

Gene: Padpat\_44 Start: 34972, Stop: 34592, Start Num: 56

Candidate Starts for Padpat\_44:

(39, 35008), (Start: 56 @34972 has 65 MA's), (Start: 60 @34936 has 1 MA's), (71, 34876), (98, 34666), (110, 34618),

Gene: Paola\_41 Start: 34318, Stop: 33917, Start Num: 54

Candidate Starts for Paola\_41:

(Start: 54 @34318 has 10 MA's), (63, 34267), (80, 34126), (86, 34075), (95, 34015),

Gene: Patt\_44 Start: 35104, Stop: 34793, Start Num: 60

Candidate Starts for Patt\_44:



(25, 35227), (27, 35218), (28, 35215), (29, 35209), (36, 35194), (40, 35176), (Start: 41 @35173 has 4 MA's), (Start: 51 @35149 has 6 MA's), (Start: 54 @35143 has 10 MA's), (Start: 60 @35104 has 1 MA's), (69, 35053), (79, 34963), (82, 34942), (84, 34924),

Gene: Peanam\_45 Start: 35664, Stop: 35272, Start Num: 48

Candidate Starts for Peanam\_45:

(Start: 48 @35664 has 11 MA's), (68, 35580), (71, 35565), (103, 35340), (107, 35316), (113, 35283),

Gene: Peel\_43 Start: 35098, Stop: 34718, Start Num: 56

Candidate Starts for Peel\_43:

(39, 35134), (Start: 56 @35098 has 65 MA's), (Start: 60 @35062 has 1 MA's), (71, 35002), (88, 34843), (98, 34792), (110, 34744),

Gene: Pharb\_43 Start: 34363, Stop: 33977, Start Num: 57

Candidate Starts for Pharb\_43:

(Start: 57 @34363 has 3 MA's), (Start: 60 @34333 has 1 MA's), (76, 34210), (84, 34153), (86, 34135), (92, 34087), (93, 34081), (111, 34003),

Gene: PhelpsODU\_45 Start: 34877, Stop: 34485, Start Num: 58

Candidate Starts for PhelpsODU\_45:

(1, 35147), (2, 35111), (3, 35096), (5, 35087), (6, 35078), (Start: 58 @34877 has 13 MA's), (Start: 60 @34847 has 1 MA's), (76, 34724), (85, 34664), (86, 34649), (104, 34550), (111, 34511),

Gene: Phrank\_46 Start: 34834, Stop: 34442, Start Num: 58

Candidate Starts for Phrank\_46:

(4, 35047), (6, 35035), (Start: 58 @34834 has 13 MA's), (Start: 60 @34804 has 1 MA's), (76, 34681), (81, 34648), (85, 34621), (86, 34606), (90, 34570), (105, 34498), (111, 34468),

Gene: Piatt\_43 Start: 35293, Stop: 34913, Start Num: 56

Candidate Starts for Piatt\_43:

(39, 35329), (Start: 56 @35293 has 65 MA's), (Start: 60 @35257 has 1 MA's), (71, 35197), (88, 35038), (98, 34987), (110, 34939),

Gene: Pixie\_45 Start: 35157, Stop: 34735, Start Num: 41

Candidate Starts for Pixie\_45:

(Start: 41 @35157 has 4 MA's), (Start: 57 @35124 has 3 MA's), (76, 34968), (84, 34911), (86, 34893), (92, 34845), (111, 34761),

Gene: Pokerus\_42 Start: 35018, Stop: 34638, Start Num: 56

Candidate Starts for Pokerus\_42:

(Start: 56 @35018 has 65 MA's), (Start: 60 @34985 has 1 MA's), (65, 34958), (70, 34931), (71, 34925), (98, 34712), (110, 34664),

Gene: Prithvi\_44 Start: 35164, Stop: 34787, Start Num: 56

Candidate Starts for Prithvi\_44:

(35, 35215), (Start: 56 @35164 has 65 MA's), (Start: 60 @35128 has 1 MA's), (64, 35113), (71, 35068), (98, 34861), (110, 34813),

Gene: Ramen\_43 Start: 34983, Stop: 34603, Start Num: 56

Candidate Starts for Ramen\_43:

(39, 35019), (Start: 56 @34983 has 65 MA's), (Start: 60 @34947 has 1 MA's), (71, 34887), (98, 34677), (110, 34629),

Gene: Rapunzel97\_43 Start: 34979, Stop: 34599, Start Num: 56  
Candidate Starts for Rapunzel97\_43:  
(39, 35015), (Start: 56 @34979 has 65 MA's), (Start: 60 @34943 has 1 MA's), (71, 34883), (98, 34673), (110, 34625),

Gene: Reptar3000\_45 Start: 35140, Stop: 34784, Start Num: 51  
Candidate Starts for Reptar3000\_45:  
(27, 35209), (Start: 41 @35164 has 4 MA's), (Start: 51 @35140 has 6 MA's), (Start: 54 @35134 has 10 MA's), (Start: 60 @35095 has 1 MA's), (69, 35044), (79, 34954), (82, 34933), (84, 34915),

Gene: Richo\_45 Start: 35648, Stop: 35256, Start Num: 48  
Candidate Starts for Richo\_45:  
(Start: 48 @35648 has 11 MA's), (68, 35564), (71, 35549), (86, 35411), (89, 35387), (103, 35324), (107, 35300), (113, 35267),

Gene: Rosmarinus\_43 Start: 35084, Stop: 34704, Start Num: 56  
Candidate Starts for Rosmarinus\_43:  
(39, 35120), (Start: 56 @35084 has 65 MA's), (Start: 60 @35048 has 1 MA's), (71, 34988), (88, 34829), (98, 34778), (110, 34730),

Gene: Scarlett\_47 Start: 35979, Stop: 35605, Start Num: 59  
Candidate Starts for Scarlett\_47:  
(44, 36012), (Start: 59 @35979 has 10 MA's), (Start: 60 @35949 has 1 MA's), (61, 35946), (71, 35889), (75, 35844), (76, 35826), (86, 35751), (99, 35676), (111, 35631),

Gene: SgtBeansprout\_38 Start: 34527, Stop: 34063, Start Num: 48  
Candidate Starts for SgtBeansprout\_38:  
(34, 34566), (Start: 48 @34527 has 11 MA's), (71, 34431), (102, 34206), (103, 34200),

Gene: Shadow1\_48 Start: 35996, Stop: 35607, Start Num: 59  
Candidate Starts for Shadow1\_48:  
(Start: 59 @35996 has 10 MA's), (Start: 60 @35966 has 1 MA's), (74, 35864), (76, 35843), (85, 35783), (86, 35768), (90, 35732), (98, 35696), (109, 35639), (111, 35633),

Gene: Shaobing\_45 Start: 35682, Stop: 35284, Start Num: 48  
Candidate Starts for Shaobing\_45:  
(Start: 48 @35682 has 11 MA's), (71, 35583), (86, 35445), (96, 35379), (103, 35352), (107, 35328), (113, 35295),

Gene: ShedlockHolmes\_46 Start: 35683, Stop: 35261, Start Num: 41  
Candidate Starts for ShedlockHolmes\_46:  
(22, 35740), (30, 35713), (Start: 41 @35683 has 4 MA's), (Start: 57 @35650 has 3 MA's), (84, 35437), (86, 35419), (92, 35371), (111, 35287),

Gene: ShiaSurprise\_44 Start: 35293, Stop: 34913, Start Num: 56  
Candidate Starts for ShiaSurprise\_44:  
(39, 35329), (Start: 56 @35293 has 65 MA's), (Start: 60 @35257 has 1 MA's), (71, 35197), (88, 35038), (98, 34987), (110, 34939),

Gene: SirPhilip\_45 Start: 36219, Stop: 35824, Start Num: 58  
Candidate Starts for SirPhilip\_45:  
(Start: 58 @36219 has 13 MA's), (Start: 60 @36189 has 1 MA's), (71, 36129), (73, 36102), (76, 36066), (87, 35973), (94, 35943), (117, 35850),

Gene: Slimphazie\_43 Start: 34979, Stop: 34599, Start Num: 56

Candidate Starts for Slimphazie\_43:

(39, 35015), (Start: 56 @34979 has 65 MA's), (Start: 60 @34943 has 1 MA's), (71, 34883), (98, 34673), (110, 34625),

Gene: SoSeph\_41 Start: 34467, Stop: 34066, Start Num: 54

Candidate Starts for SoSeph\_41:

(19, 34566), (37, 34515), (39, 34503), (Start: 54 @34467 has 10 MA's), (63, 34416), (80, 34275), (86, 34224), (95, 34164), (105, 34116),

Gene: Spock\_43 Start: 35097, Stop: 34717, Start Num: 56

Candidate Starts for Spock\_43:

(39, 35133), (Start: 56 @35097 has 65 MA's), (Start: 60 @35061 has 1 MA's), (71, 35001), (88, 34842), (98, 34791), (110, 34743),

Gene: Sulley\_43 Start: 35224, Stop: 34844, Start Num: 56

Candidate Starts for Sulley\_43:

(35, 35275), (Start: 56 @35224 has 65 MA's), (Start: 60 @35188 has 1 MA's), (71, 35128), (94, 34933), (98, 34918), (110, 34870),

Gene: Sunflower1121\_49 Start: 36097, Stop: 35708, Start Num: 58

Candidate Starts for Sunflower1121\_49:

(Start: 58 @36097 has 13 MA's), (Start: 60 @36067 has 1 MA's), (74, 35965), (76, 35944), (85, 35884), (86, 35869), (90, 35833), (109, 35740),

Gene: Syra333\_48 Start: 35764, Stop: 35375, Start Num: 59

Candidate Starts for Syra333\_48:

(Start: 59 @35764 has 10 MA's), (Start: 60 @35734 has 1 MA's), (74, 35632), (76, 35611), (85, 35551), (86, 35536), (90, 35500), (98, 35464), (109, 35407), (111, 35401),

Gene: TBond007\_45 Start: 35156, Stop: 34734, Start Num: 41

Candidate Starts for TBond007\_45:

(Start: 41 @35156 has 4 MA's), (Start: 57 @35123 has 3 MA's), (76, 34967), (84, 34910), (86, 34892), (92, 34844), (111, 34760),

Gene: TClif\_47 Start: 36099, Stop: 35698, Start Num: 46

Candidate Starts for TClif\_47:

(Start: 46 @36099 has 1 MA's), (62, 36051), (67, 36015), (70, 36003), (71, 35997), (86, 35859), (92, 35814), (96, 35796), (102, 35775), (104, 35763), (112, 35715), (116, 35703),

Gene: Tachez\_43 Start: 34941, Stop: 34561, Start Num: 56

Candidate Starts for Tachez\_43:

(39, 34977), (Start: 56 @34941 has 65 MA's), (Start: 60 @34905 has 1 MA's), (71, 34845), (98, 34635), (110, 34587),

Gene: TaiwanKao\_45 Start: 35220, Stop: 34843, Start Num: 56

Candidate Starts for TaiwanKao\_45:

(35, 35271), (Start: 56 @35220 has 65 MA's), (Start: 60 @35184 has 1 MA's), (64, 35169), (71, 35124), (98, 34917), (110, 34869),

Gene: Thyatira\_43 Start: 36667, Stop: 36266, Start Num: 54

Candidate Starts for Thyatira\_43:

(Start: 50 @36673 has 1 MA's), (Start: 54 @36667 has 10 MA's), (63, 36616), (80, 36475), (86, 36424), (95, 36364),

Gene: Tierra\_46 Start: 35645, Stop: 35253, Start Num: 58

Candidate Starts for Tierra\_46:

(5, 35855), (6, 35846), (Start: 58 @35645 has 13 MA's), (Start: 60 @35615 has 1 MA's), (76, 35492), (81, 35459), (85, 35432), (86, 35417), (90, 35381), (102, 35330), (105, 35309), (111, 35279),

Gene: TingHuaYa\_44 Start: 34216, Stop: 33830, Start Num: 56

Candidate Starts for TingHuaYa\_44:

(26, 34297), (27, 34291), (32, 34276), (Start: 56 @34216 has 65 MA's), (71, 34123), (73, 34096), (98, 33925), (114, 33856),

Gene: Topper\_43 Start: 35096, Stop: 34716, Start Num: 56

Candidate Starts for Topper\_43:

(39, 35132), (Start: 56 @35096 has 65 MA's), (Start: 60 @35060 has 1 MA's), (71, 35000), (88, 34841), (98, 34790), (110, 34742),

Gene: Torres\_41 Start: 37141, Stop: 36743, Start Num: 48

Candidate Starts for Torres\_41:

(34, 37180), (Start: 48 @37141 has 11 MA's), (71, 37045), (102, 36820), (103, 36814),

Gene: TreyKay\_44 Start: 35164, Stop: 34787, Start Num: 56

Candidate Starts for TreyKay\_44:

(35, 35215), (Start: 56 @35164 has 65 MA's), (Start: 60 @35128 has 1 MA's), (64, 35113), (71, 35068), (98, 34861), (110, 34813),

Gene: TribbleTrouble\_43 Start: 35018, Stop: 34626, Start Num: 55

Candidate Starts for TribbleTrouble\_43:

(31, 35075), (Start: 55 @35018 has 1 MA's), (Start: 60 @34982 has 1 MA's), (86, 34784), (92, 34736), (111, 34652), (112, 34640), (115, 34631),

Gene: TruffulaTree\_43 Start: 34975, Stop: 34595, Start Num: 56

Candidate Starts for TruffulaTree\_43:

(39, 35011), (Start: 56 @34975 has 65 MA's), (Start: 60 @34939 has 1 MA's), (71, 34879), (98, 34669), (110, 34621),

Gene: Twitch\_43 Start: 35098, Stop: 34718, Start Num: 56

Candidate Starts for Twitch\_43:

(39, 35134), (Start: 56 @35098 has 65 MA's), (Start: 60 @35062 has 1 MA's), (71, 35002), (88, 34843), (98, 34792), (110, 34744),

Gene: Unicorn\_45 Start: 34877, Stop: 34485, Start Num: 58

Candidate Starts for Unicorn\_45:

(1, 35147), (2, 35111), (3, 35096), (5, 35087), (6, 35078), (Start: 58 @34877 has 13 MA's), (Start: 60 @34847 has 1 MA's), (76, 34724), (85, 34664), (86, 34649), (104, 34550), (111, 34511),

Gene: Validus\_47 Start: 35733, Stop: 35320, Start Num: 48

Candidate Starts for Validus\_47:

(20, 35814), (Start: 48 @35733 has 11 MA's), (68, 35637), (71, 35622), (86, 35484), (96, 35421), (103, 35394), (106, 35376), (116, 35325),

Gene: Veliki\_43 Start: 35015, Stop: 34635, Start Num: 56

Candidate Starts for Veliki\_43:

(39, 35051), (Start: 56 @35015 has 65 MA's), (Start: 60 @34979 has 1 MA's), (71, 34919), (98, 34709), (110, 34661),

Gene: Waterfoul\_42 Start: 34567, Stop: 34160, Start Num: 50

Candidate Starts for Waterfoul\_42:

(Start: 50 @34567 has 1 MA's), (Start: 54 @34561 has 10 MA's), (63, 34510), (86, 34318), (95, 34258), (105, 34210),

Gene: Ximenita\_49 Start: 35950, Stop: 35561, Start Num: 59

Candidate Starts for Ximenita\_49:

(21, 36055), (33, 36016), (Start: 59 @35950 has 10 MA's), (Start: 60 @35920 has 1 MA's), (74, 35818), (76, 35797), (77, 35791), (81, 35764), (85, 35737), (86, 35722), (90, 35686), (101, 35641), (109, 35593), (111, 35587), (112, 35575),

Gene: Yuna\_49 Start: 36719, Stop: 36363, Start Num: 58

Candidate Starts for Yuna\_49:

(Start: 58 @36719 has 13 MA's), (Start: 60 @36689 has 1 MA's), (70, 36635), (71, 36629), (72, 36608), (76, 36566), (85, 36506), (86, 36491), (108, 36404), (111, 36389),

Gene: Yunkel11\_46 Start: 34974, Stop: 34585, Start Num: 53

Candidate Starts for Yunkel11\_46:

(10, 35112), (11, 35106), (12, 35103), (14, 35094), (18, 35079), (Start: 53 @34974 has 2 MA's), (Start: 57 @34968 has 3 MA's), (71, 34878), (76, 34815), (82, 34776), (86, 34740), (96, 34680), (98, 34674), (115, 34590),

Gene: Zavala\_44 Start: 35258, Stop: 34881, Start Num: 56

Candidate Starts for Zavala\_44:

(35, 35309), (Start: 56 @35258 has 65 MA's), (Start: 60 @35222 has 1 MA's), (64, 35207), (71, 35162), (98, 34955), (110, 34907),