



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 161695 Report

This analysis was run 04/28/24 on database version 559.

Pham number 161695 has 131 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Nergal\_43
- Track 2 : Padfoot\_46, Llorens\_46, BEEST\_46, Dalmuri\_46, CaseJules\_47, Jeckyll\_46, Rosmarinus\_46, CREW\_46, Boiiii\_46, Joy99\_46, Asayake\_46, Blizzard\_46, BGlluviae\_46, Adephagia\_46, Homura\_46, Inky\_46, JAWS\_46, Spock\_46, Capricorn\_46, Hyperbowlee\_46, ShiaSurprise\_47, Durfee\_46, Piatt\_46, Belladonna\_46, Jarvi\_46, Twitch\_46, Peel\_46
- Track 3 : ActinUp\_46, Jayhawk\_47, Ramen\_46, BarrelRoll\_46, AlishaPH\_46, Geraldini\_48, TruffulaTree\_46, Apocalypse\_49, CheetoDust\_45, Atiba\_46, Veliki\_46, Beezoo\_48, Rapunzel97\_46, Zavala\_47, Angelica\_46, Mynx\_47, Pokerus\_45, Padpat\_47, Zabiza\_42, HedwigODU\_46, MeaningOfLife\_47, Ganymede\_47, QuincyRose\_45, YoureAdopted\_45, Tachez\_46, Emerson\_47, Slimphazie\_46
- Track 4 : Topper\_46, Lunahalos\_46
- Track 5 : Efra2\_48
- Track 6 : Devera\_50, Illumine\_49, Dole\_49
- Track 7 : Tiri\_47
- Track 8 : Validus\_50
- Track 9 : Nutello\_41, LilPharaoh\_41, SgtBeansprout\_41, Amelie\_41, Biglebops\_41, Nikao\_44, Enkosi\_43, Mdavu\_42
- Track 10 : Megsy\_48, BaghaKamala\_45, LindNT\_45, Urkel\_47, TreyKay\_47, Prithvi\_47, SamuelLPlaqson\_47, TiniBug\_47, DrHayes\_47
- Track 11 : Oscar\_50, LeMond\_50, Scarlett\_50, KiSi\_50
- Track 12 : LaterM\_47, Ageofdapage\_48, Stinson\_47
- Track 13 : Bella96\_47
- Track 14 : Chris\_48
- Track 15 : Adonis\_46
- Track 16 : Nibb\_48
- Track 17 : Yunkel11\_48, Guanica15\_48
- Track 18 : Shaobing\_48, Niklas\_48, Peanam\_48
- Track 19 : Anaya\_48
- Track 20 : Deby\_46, Sulley\_46
- Track 21 : Curiosium\_48
- Track 22 : MarkPhew\_49
- Track 23 : Murucutumbu\_47
- Track 24 : TaiwanKao\_48
- Track 25 : CrimD\_46
- Track 26 : Pixie\_48, ShedlockHolmes\_49, TBond007\_48
- Track 27 : Keshu\_50

- Track 28 : TribbleTrouble\_46
- Track 29 : Unicorn\_48, PhelpsODU\_48
- Track 30 : Hammy\_48, DarthP\_48
- Track 31 : Sunflower1121\_52, Shadow1\_51
- Track 32 : Krueger\_52
- Track 33 : Ekdilam\_45
- Track 34 : Tierra\_49
- Track 35 : Ellie\_44
- Track 36 : SirPhilip\_48
- Track 37 : Syra333\_51, Ximenita\_52
- Track 38 : Yuna\_52
- Track 39 : Phrank\_49
- Track 40 : Amohnition\_48
- Track 41 : Amgine\_46
- Track 42 : TClif\_51
- Track 43 : Cain\_49, Bryler\_49
- Track 44 : Fefferhead\_46
- Track 45 : Marshawn\_49

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

The start number called the most often in the published annotations is 10, it was called in 82 of the 125 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ActinUp\_46, Adephagia\_46, Adonis\_46, Ageofdapage\_48, AlishaPH\_46, Anaya\_48, Angelica\_46, Apocalypse\_49, Asayake\_46, Atiba\_46, BEEST\_46, BGlluviae\_46, BaghaKamala\_45, BarrelRoll\_46, Beezoo\_48, Bella96\_47, Belladonna\_46, Blizzard\_46, Boiiii\_46, CREW\_46, Capricorn\_46, CaseJules\_47, CheetoDust\_45, Chris\_48, CrimD\_46, Dalmuri\_46, Deby\_46, Devera\_50, Dole\_49, DrHayes\_47, Durfee\_46, Emerson\_47, Ganymede\_47, Geraldini\_48, HedwigODU\_46, Homura\_46, Hyperbowlee\_46, Illumine\_49, Inky\_46, JAWS\_46, Jarvi\_46, Jayhawk\_47, Jeckyll\_46, Joy99\_46, KiSi\_50, LaterM\_47, LeMond\_50, LindNT\_45, Llorens\_46, Lunahalos\_46, MarkPhew\_49, MeaningOfLife\_47, Megsy\_48, Murucutumbu\_47, Mynx\_47, Nibb\_48, Oscar\_50, Padfoot\_46, Padpat\_47, Peel\_46, Piatt\_46, Pokerus\_45, Prithvi\_47, QuincyRose\_45, Ramen\_46, Rapunzel97\_46, Rosmarinus\_46, SamuelLPlaqson\_47, Scarlett\_50, ShiaSurprise\_47, Slimphazie\_46, Spock\_46, Stinson\_47, Sulley\_46, Tachez\_46, TaiwanKao\_48, TiniBug\_47, Tiri\_47, Topper\_46, TreyKay\_47, TruffulaTree\_46, Twitch\_46, Urkel\_47, Veliki\_46, YoureAdopted\_45, Zabiza\_42, Zavala\_47,

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

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

- Amelie\_41, Amgine\_46, Amohnition\_48, Binglebops\_41, Bryler\_49, Cain\_49, Curiosium\_48, DarthP\_48, Efra2\_48, Ekdilam\_45, Ellie\_44, Enkosi\_43, Fefferhead\_46, Guanica15\_48, Hammy\_48, Keshu\_50, Krueger\_52, LilPharaoh\_41, Marshawn\_49, Mdavu\_42, Nergal\_43, Nikao\_44, Niklas\_48, Nutello\_41, Peanam\_48, PhelpsODU\_48, Phrank\_49, Pixie\_48, SgtBeansprout\_41, Shadow1\_51,

Shaobing\_48, ShedlockHolmes\_49, SirPhilip\_48, Sunflower1121\_52, Syra333\_51, TBond007\_48, TClif\_51, Tierra\_49, TripleTrouble\_46, Unicorn\_48, Validus\_50, Ximenita\_52, Yuna\_52, Yunkel11\_48,

### Summary by start number:

#### Start 9:

- Found in 1 of 131 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Marshawn\_49 (K6),

#### Start 10:

- Found in 87 of 131 ( 66.4% ) of genes in pham
- Manual Annotations of this start: 82 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ActinUp\_46 (K1), Adephegia\_46 (K1), Adonis\_46 (K1), Ageofdapage\_48 (K1), AlishaPH\_46 (K1), Anaya\_48 (K1), Angelica\_46 (K1), Apocalypse\_49 (K1), Asayake\_46 (K1), Atiba\_46 (K1), BEEST\_46 (K1), BGIluviae\_46 (K1), BaghaKamala\_45 (K1), BarrelRoll\_46 (K1), Beezoo\_48 (K1), Bella96\_47 (K1), Belladonna\_46 (K1), Blizzard\_46 (K1), Boiii\_46 (K1), CREW\_46 (K1), Capricorn\_46 (K1), CaseJules\_47 (K1), CheetoDust\_45 (K1), Chris\_48 (K1), CrimD\_46 (K1), Dalmuri\_46 (K1), Deby\_46 (K1), Devera\_50 (K1), Dole\_49 (K1), DrHayes\_47 (K1), Durfee\_46 (K1), Emerson\_47 (K1), Ganymede\_47 (K1), Geraldini\_48 (K1), HedwigODU\_46 (K1), Homura\_46 (K1), Hyperbowlee\_46 (K1), Illumine\_49 (K1), Inky\_46 (K1), JAWS\_46 (K1), Jarvi\_46 (K1), Jayhawk\_47 (K1), Jeckyll\_46 (K1), Joy99\_46 (K1), KiSi\_50 (K1), LaterM\_47 (K1), LeMond\_50 (K1), LindNT\_45 (K1), Llorens\_46 (K1), Lunahalos\_46 (K1), MarkPhew\_49 (K1), MeaningOfLife\_47 (K1), Megsy\_48 (K1), Murucutumbu\_47 (K1), Mynx\_47 (K1), Nibb\_48 (K1), Oscar\_50 (K1), Padfoot\_46 (K1), Padpat\_47 (K1), Peel\_46 (K1), Piatt\_46 (K1), Pokerus\_45 (K1), Prithvi\_47 (K1), QuincyRose\_45 (K1), Ramen\_46 (K1), Rapunzel97\_46 (K1), Rosmarinus\_46 (K1), SamuelLPlagson\_47 (K1), Scarlett\_50 (K1), ShiaSurprise\_47 (K1), Slimphazie\_46 (K1), Spock\_46 (K1), Stinson\_47 (K1), Sulley\_46 (K1), Tachez\_46 (K1), TaiwanKao\_48 (K1), TiniBug\_47 (K1), Tiri\_47 (K1), Topper\_46 (K1), TreyKay\_47 (K1), TruffulaTree\_46 (K1), Twitch\_46 (K1), Urkel\_47 (K1), Veliki\_46 (K1), YoureAdopted\_45 (K1), Zabiza\_42 (K1), Zavala\_47 (K1),

#### Start 11:

- Found in 1 of 131 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Yuna\_52 (K6),

#### Start 12:

- Found in 98 of 131 ( 74.8% ) of genes in pham
- Manual Annotations of this start: 20 of 125
- Called 20.4% of time when present
- Phage (with cluster) where this start called: Amgine\_46 (K6), Amohnition\_48 (K6), Bryler\_49 (K6), Cain\_49 (K6), Curiosium\_48 (K1), DarthP\_48 (K6), Ekdilam\_45 (K6), Ellie\_44 (K6), Fefferhead\_46 (K6), Hammy\_48 (K6), Krueger\_52 (K6), PhelpsODU\_48 (K6), Phrank\_49 (K6), Shadow1\_51 (K6), SirPhilip\_48 (K6), Sunflower1121\_52 (K6), Syra333\_51 (K6), Tierra\_49 (K6), Unicorn\_48 (K6),

Ximenita\_52 (K6),

Start 13:

- Found in 1 of 131 ( 0.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TClif\_51 (K6),

Start 14:

- Found in 3 of 131 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 3 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Efra2\_48 (K1), Guanica15\_48 (K1), Yunkel11\_48 (K1),

Start 17:

- Found in 19 of 131 ( 14.5% ) of genes in pham
- Manual Annotations of this start: 18 of 125
- Called 94.7% of time when present
- Phage (with cluster) where this start called: Amelie\_41 (K1), Binglebops\_41 (K1), Enkosi\_43 (K1), Keshu\_50 (K3), LilPharaoh\_41 (K1), Mdavu\_42 (K1), Nergal\_43 (AG), Nikao\_44 (K1), Niklas\_48 (K1), Nutello\_41 (K1), Peanam\_48 (K1), Pixie\_48 (K3), SgtBeansprout\_41 (K1), Shaobing\_48 (K1), ShedlockHolmes\_49 (K3), TBond007\_48 (K3), TribbleTrouble\_46 (K3), Validus\_50 (K1),

### **Summary by clusters:**

There are 4 clusters represented in this pham: K3, K1, K6, AG,

Info for manual annotations of cluster AG:

- Start number 17 was manually annotated 1 time for cluster AG.

Info for manual annotations of cluster K1:

- Start number 10 was manually annotated 82 times for cluster K1.
- Start number 12 was manually annotated 1 time for cluster K1.
- Start number 14 was manually annotated 3 times for cluster K1.
- Start number 17 was manually annotated 12 times for cluster K1.

Info for manual annotations of cluster K3:

- Start number 17 was manually annotated 5 times for cluster K3.

Info for manual annotations of cluster K6:

- Start number 9 was manually annotated 1 time for cluster K6.
- Start number 11 was manually annotated 1 time for cluster K6.
- Start number 12 was manually annotated 19 times for cluster K6.

### **Gene Information:**

Gene: ActinUp\_46 Start: 35666, Stop: 36016, Start Num: 10

Candidate Starts for ActinUp\_46:

(5, 35555), (Start: 10 @35666 has 82 MA's), (Start: 12 @35672 has 20 MA's), (18, 35702), (27, 35783), (42, 35942), (53, 35999),

Gene: Adephagia\_46 Start: 35663, Stop: 36013, Start Num: 10

Candidate Starts for Adephagia\_46:

(5, 35552), (Start: 10 @35663 has 82 MA's), (Start: 12 @35669 has 20 MA's), (42, 35939), (53, 35996),

Gene: Adonis\_46 Start: 35961, Stop: 36311, Start Num: 10

Candidate Starts for Adonis\_46:

(Start: 10 @35961 has 82 MA's), (18, 35997), (27, 36078), (42, 36237), (53, 36294),

Gene: Ageofdapage\_48 Start: 36661, Stop: 37002, Start Num: 10

Candidate Starts for Ageofdapage\_48:

(Start: 10 @36661 has 82 MA's), (Start: 12 @36667 has 20 MA's), (27, 36778), (43, 36940), (53, 36985),

Gene: AlishaPH\_46 Start: 35936, Stop: 36286, Start Num: 10

Candidate Starts for AlishaPH\_46:

(5, 35825), (Start: 10 @35936 has 82 MA's), (Start: 12 @35942 has 20 MA's), (18, 35972), (27, 36053), (42, 36212), (53, 36269),

Gene: Amelie\_41 Start: 35256, Stop: 35561, Start Num: 17

Candidate Starts for Amelie\_41:

(Start: 17 @35256 has 18 MA's), (27, 35343), (35, 35424), (38, 35460), (44, 35508),

Gene: Amgine\_46 Start: 36691, Stop: 37038, Start Num: 12

Candidate Starts for Amgine\_46:

(Start: 12 @36691 has 20 MA's), (45, 36970), (51, 37003), (53, 37021),

Gene: Amohndition\_48 Start: 36704, Stop: 37051, Start Num: 12

Candidate Starts for Amohndition\_48:

(Start: 12 @36704 has 20 MA's), (43, 36974), (49, 37010), (53, 37034),

Gene: Anaya\_48 Start: 36273, Stop: 36620, Start Num: 10

Candidate Starts for Anaya\_48:

(Start: 10 @36273 has 82 MA's), (18, 36309), (27, 36390), (44, 36555), (53, 36603),

Gene: Angelica\_46 Start: 35893, Stop: 36243, Start Num: 10

Candidate Starts for Angelica\_46:

(5, 35782), (Start: 10 @35893 has 82 MA's), (Start: 12 @35899 has 20 MA's), (18, 35929), (27, 36010), (42, 36169), (53, 36226),

Gene: Apocalypse\_49 Start: 36678, Stop: 37022, Start Num: 10

Candidate Starts for Apocalypse\_49:

(5, 36567), (Start: 10 @36678 has 82 MA's), (Start: 12 @36684 has 20 MA's), (18, 36714), (27, 36795), (42, 36954), (53, 37005),

Gene: Asayake\_46 Start: 35978, Stop: 36328, Start Num: 10

Candidate Starts for Asayake\_46:

(5, 35867), (Start: 10 @35978 has 82 MA's), (Start: 12 @35984 has 20 MA's), (42, 36254), (53, 36311),

Gene: Atiba\_46 Start: 35626, Stop: 35976, Start Num: 10

Candidate Starts for Atiba\_46:

(5, 35515), (Start: 10 @35626 has 82 MA's), (Start: 12 @35632 has 20 MA's), (18, 35662), (27, 35743), (42, 35902), (53, 35959),

Gene: BEEST\_46 Start: 35978, Stop: 36328, Start Num: 10

Candidate Starts for BEEST\_46:

(5, 35867), (Start: 10 @35978 has 82 MA's), (Start: 12 @35984 has 20 MA's), (42, 36254), (53, 36311),

Gene: BGlluviae\_46 Start: 35781, Stop: 36131, Start Num: 10

Candidate Starts for BGlluviae\_46:

(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: BaghaKamala\_45 Start: 35101, Stop: 35451, Start Num: 10

Candidate Starts for BaghaKamala\_45:

(Start: 10 @35101 has 82 MA's), (Start: 12 @35107 has 20 MA's), (27, 35218), (42, 35377), (53, 35434),

Gene: BarrelRoll\_46 Start: 35649, Stop: 35999, Start Num: 10

Candidate Starts for BarrelRoll\_46:

(5, 35538), (Start: 10 @35649 has 82 MA's), (Start: 12 @35655 has 20 MA's), (18, 35685), (27, 35766), (42, 35925), (53, 35982),

Gene: Beezoo\_48 Start: 36624, Stop: 36974, Start Num: 10

Candidate Starts for Beezoo\_48:

(5, 36513), (Start: 10 @36624 has 82 MA's), (Start: 12 @36630 has 20 MA's), (18, 36660), (27, 36741), (42, 36900), (53, 36957),

Gene: Bella96\_47 Start: 36515, Stop: 36841, Start Num: 10

Candidate Starts for Bella96\_47:

(Start: 10 @36515 has 82 MA's), (Start: 12 @36521 has 20 MA's), (27, 36623), (41, 36776), (53, 36824),

Gene: Belladonna\_46 Start: 35781, Stop: 36131, Start Num: 10

Candidate Starts for Belladonna\_46:

(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: Binglebops\_41 Start: 35256, Stop: 35561, Start Num: 17

Candidate Starts for Binglebops\_41:

(Start: 17 @35256 has 18 MA's), (27, 35343), (35, 35424), (38, 35460), (44, 35508),

Gene: Blizzard\_46 Start: 35978, Stop: 36328, Start Num: 10

Candidate Starts for Blizzard\_46:

(5, 35867), (Start: 10 @35978 has 82 MA's), (Start: 12 @35984 has 20 MA's), (42, 36254), (53, 36311),

Gene: Boiiii\_46 Start: 35980, Stop: 36330, Start Num: 10

Candidate Starts for Boiiii\_46:

(5, 35869), (Start: 10 @35980 has 82 MA's), (Start: 12 @35986 has 20 MA's), (42, 36256), (53, 36313),

Gene: Bryler\_49 Start: 35565, Stop: 35858, Start Num: 12  
Candidate Starts for Bryler\_49:  
(Start: 12 @35565 has 20 MA's), (19, 35601), (50, 35820), (53, 35841),

Gene: CREW\_46 Start: 35781, Stop: 36131, Start Num: 10  
Candidate Starts for CREW\_46:  
(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: Cain\_49 Start: 35553, Stop: 35846, Start Num: 12  
Candidate Starts for Cain\_49:  
(Start: 12 @35553 has 20 MA's), (19, 35589), (50, 35808), (53, 35829),

Gene: Capricorn\_46 Start: 35781, Stop: 36131, Start Num: 10  
Candidate Starts for Capricorn\_46:  
(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: CaseJules\_47 Start: 35978, Stop: 36328, Start Num: 10  
Candidate Starts for CaseJules\_47:  
(5, 35867), (Start: 10 @35978 has 82 MA's), (Start: 12 @35984 has 20 MA's), (42, 36254), (53, 36311),

Gene: CheetoDust\_45 Start: 35150, Stop: 35500, Start Num: 10  
Candidate Starts for CheetoDust\_45:  
(5, 35039), (Start: 10 @35150 has 82 MA's), (Start: 12 @35156 has 20 MA's), (18, 35186), (27, 35267), (42, 35426), (53, 35483),

Gene: Chris\_48 Start: 36479, Stop: 36811, Start Num: 10  
Candidate Starts for Chris\_48:  
(1, 36260), (Start: 10 @36479 has 82 MA's), (15, 36497), (24, 36557), (26, 36602),

Gene: CrimD\_46 Start: 35904, Stop: 36242, Start Num: 10  
Candidate Starts for CrimD\_46:  
(3, 35781), (5, 35793), (Start: 10 @35904 has 82 MA's), (Start: 12 @35910 has 20 MA's), (27, 36021), (53, 36225),

Gene: Curiosium\_48 Start: 34631, Stop: 34975, Start Num: 12  
Candidate Starts for Curiosium\_48:  
(5, 34490), (Start: 12 @34631 has 20 MA's), (Start: 17 @34661 has 18 MA's), (25, 34718), (27, 34748), (38, 34865), (53, 34958),

Gene: Dalmuri\_46 Start: 35781, Stop: 36131, Start Num: 10  
Candidate Starts for Dalmuri\_46:  
(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: DarthP\_48 Start: 36588, Stop: 36935, Start Num: 12  
Candidate Starts for DarthP\_48:  
(Start: 12 @36588 has 20 MA's), (16, 36606), (43, 36858), (49, 36894), (53, 36918),

Gene: Deby\_46 Start: 35909, Stop: 36259, Start Num: 10

Candidate Starts for Deby\_46:

(5, 35798), (7, 35864), (Start: 10 @35909 has 82 MA's), (Start: 12 @35915 has 20 MA's), (18, 35945), (27, 36026), (42, 36185), (53, 36242),

Gene: Devera\_50 Start: 36442, Stop: 36789, Start Num: 10

Candidate Starts for Devera\_50:

(Start: 10 @36442 has 82 MA's), (Start: 12 @36448 has 20 MA's), (27, 36559), (42, 36718), (43, 36721), (53, 36772),

Gene: Dole\_49 Start: 36444, Stop: 36791, Start Num: 10

Candidate Starts for Dole\_49:

(Start: 10 @36444 has 82 MA's), (Start: 12 @36450 has 20 MA's), (27, 36561), (42, 36720), (43, 36723), (53, 36774),

Gene: DrHayes\_47 Start: 36560, Stop: 36904, Start Num: 10

Candidate Starts for DrHayes\_47:

(Start: 10 @36560 has 82 MA's), (Start: 12 @36566 has 20 MA's), (27, 36677), (42, 36836), (53, 36887),

Gene: Durfee\_46 Start: 35978, Stop: 36328, Start Num: 10

Candidate Starts for Durfee\_46:

(5, 35867), (Start: 10 @35978 has 82 MA's), (Start: 12 @35984 has 20 MA's), (42, 36254), (53, 36311),

Gene: Efra2\_48 Start: 35532, Stop: 35858, Start Num: 14

Candidate Starts for Efra2\_48:

(Start: 14 @35532 has 3 MA's), (27, 35640), (34, 35715), (53, 35841),

Gene: Ekdilam\_45 Start: 36153, Stop: 36479, Start Num: 12

Candidate Starts for Ekdilam\_45:

(Start: 12 @36153 has 20 MA's), (28, 36264), (36, 36354), (43, 36423), (49, 36438), (53, 36462),

Gene: Ellie\_44 Start: 35879, Stop: 36226, Start Num: 12

Candidate Starts for Ellie\_44:

(Start: 12 @35879 has 20 MA's), (45, 36158), (53, 36209),

Gene: Emerson\_47 Start: 35657, Stop: 36007, Start Num: 10

Candidate Starts for Emerson\_47:

(5, 35546), (Start: 10 @35657 has 82 MA's), (Start: 12 @35663 has 20 MA's), (18, 35693), (27, 35774), (42, 35933), (53, 35990),

Gene: Enkosi\_43 Start: 37869, Stop: 38174, Start Num: 17

Candidate Starts for Enkosi\_43:

(Start: 17 @37869 has 18 MA's), (27, 37956), (35, 38037), (38, 38073), (44, 38121),

Gene: Fefferhead\_46 Start: 35830, Stop: 36177, Start Num: 12

Candidate Starts for Fefferhead\_46:

(Start: 12 @35830 has 20 MA's), (22, 35878), (31, 35974), (45, 36109), (51, 36142), (53, 36160),

Gene: Ganymede\_47 Start: 36096, Stop: 36446, Start Num: 10

Candidate Starts for Ganymede\_47:

(5, 35985), (Start: 10 @36096 has 82 MA's), (Start: 12 @36102 has 20 MA's), (18, 36132), (27, 36213), (42, 36372), (53, 36429),

Gene: Geraldini\_48 Start: 36713, Stop: 37063, Start Num: 10

Candidate Starts for Geraldini\_48:

(5, 36602), (Start: 10 @36713 has 82 MA's), (Start: 12 @36719 has 20 MA's), (18, 36749), (27, 36830), (42, 36989), (53, 37046),

Gene: Guanica15\_48 Start: 35489, Stop: 35815, Start Num: 14

Candidate Starts for Guanica15\_48:

(Start: 14 @35489 has 3 MA's), (27, 35597), (53, 35798),

Gene: Hammy\_48 Start: 36576, Stop: 36923, Start Num: 12

Candidate Starts for Hammy\_48:

(Start: 12 @36576 has 20 MA's), (16, 36594), (43, 36846), (49, 36882), (53, 36906),

Gene: HedwigODU\_46 Start: 35666, Stop: 36016, Start Num: 10

Candidate Starts for HedwigODU\_46:

(5, 35555), (Start: 10 @35666 has 82 MA's), (Start: 12 @35672 has 20 MA's), (18, 35702), (27, 35783), (42, 35942), (53, 35999),

Gene: Homura\_46 Start: 35781, Stop: 36131, Start Num: 10

Candidate Starts for Homura\_46:

(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: Hyperbowlee\_46 Start: 35978, Stop: 36328, Start Num: 10

Candidate Starts for Hyperbowlee\_46:

(5, 35867), (Start: 10 @35978 has 82 MA's), (Start: 12 @35984 has 20 MA's), (42, 36254), (53, 36311),

Gene: Illumine\_49 Start: 36444, Stop: 36791, Start Num: 10

Candidate Starts for Illumine\_49:

(Start: 10 @36444 has 82 MA's), (Start: 12 @36450 has 20 MA's), (27, 36561), (42, 36720), (43, 36723), (53, 36774),

Gene: Inky\_46 Start: 35781, Stop: 36131, Start Num: 10

Candidate Starts for Inky\_46:

(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: JAWS\_46 Start: 35655, Stop: 36005, Start Num: 10

Candidate Starts for JAWS\_46:

(5, 35544), (Start: 10 @35655 has 82 MA's), (Start: 12 @35661 has 20 MA's), (42, 35931), (53, 35988),

Gene: Jarvi\_46 Start: 35781, Stop: 36131, Start Num: 10

Candidate Starts for Jarvi\_46:

(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: Jayhawk\_47 Start: 35664, Stop: 36014, Start Num: 10

Candidate Starts for Jayhawk\_47:

(5, 35553), (Start: 10 @35664 has 82 MA's), (Start: 12 @35670 has 20 MA's), (18, 35700), (27, 35781), (42, 35940), (53, 35997),

Gene: Jeckyll\_46 Start: 35781, Stop: 36131, Start Num: 10

Candidate Starts for Jeckyll\_46:

(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: Joy99\_46 Start: 35710, Stop: 36060, Start Num: 10

Candidate Starts for Joy99\_46:

(5, 35599), (Start: 10 @35710 has 82 MA's), (Start: 12 @35716 has 20 MA's), (42, 35986), (53, 36043),

Gene: Keshu\_50 Start: 36370, Stop: 36747, Start Num: 17

Candidate Starts for Keshu\_50:

(Start: 17 @36370 has 18 MA's), (18, 36376), (21, 36394), (27, 36457), (52, 36673), (54, 36709), (55, 36730),

Gene: KiSi\_50 Start: 36878, Stop: 37192, Start Num: 10

Candidate Starts for KiSi\_50:

(1, 36665), (Start: 10 @36878 has 82 MA's), (40, 37133), (49, 37160),

Gene: Krueger\_52 Start: 36559, Stop: 36852, Start Num: 12

Candidate Starts for Krueger\_52:

(Start: 12 @36559 has 20 MA's), (33, 36724), (38, 36784), (50, 36814), (53, 36835),

Gene: LaterM\_47 Start: 36558, Stop: 36899, Start Num: 10

Candidate Starts for LaterM\_47:

(Start: 10 @36558 has 82 MA's), (Start: 12 @36564 has 20 MA's), (27, 36675), (43, 36837), (53, 36882),

Gene: LeMond\_50 Start: 36862, Stop: 37176, Start Num: 10

Candidate Starts for LeMond\_50:

(1, 36649), (Start: 10 @36862 has 82 MA's), (40, 37117), (49, 37144),

Gene: LilPharaoh\_41 Start: 34984, Stop: 35289, Start Num: 17

Candidate Starts for LilPharaoh\_41:

(Start: 17 @34984 has 18 MA's), (27, 35071), (35, 35152), (38, 35188), (44, 35236),

Gene: LindNT\_45 Start: 35871, Stop: 36221, Start Num: 10

Candidate Starts for LindNT\_45:

(Start: 10 @35871 has 82 MA's), (Start: 12 @35877 has 20 MA's), (27, 35988), (42, 36147), (53, 36204),

Gene: Llorens\_46 Start: 35781, Stop: 36131, Start Num: 10

Candidate Starts for Llorens\_46:

(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057), (53, 36114),

Gene: Lunahalos\_46 Start: 35781, Stop: 36131, Start Num: 10

Candidate Starts for Lunahalos\_46:

(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057),

Gene: MarkPhew\_49 Start: 36307, Stop: 36639, Start Num: 10

Candidate Starts for MarkPhew\_49:

(1, 36091), (Start: 10 @36307 has 82 MA's), (15, 36325),

Gene: Marshawn\_49 Start: 36704, Stop: 36964, Start Num: 9

Candidate Starts for Marshawn\_49:

(Start: 9 @36704 has 1 MA's), (27, 36812),

Gene: Mdavu\_42 Start: 35245, Stop: 35550, Start Num: 17

Candidate Starts for Mdavu\_42:

(Start: 17 @35245 has 18 MA's), (27, 35332), (35, 35413), (38, 35449), (44, 35497),

Gene: MeaningOfLife\_47 Start: 36590, Stop: 36940, Start Num: 10

Candidate Starts for MeaningOfLife\_47:

(5, 36479), (Start: 10 @36590 has 82 MA's), (Start: 12 @36596 has 20 MA's), (18, 36626), (27, 36707), (42, 36866), (53, 36923),

Gene: Megsy\_48 Start: 35930, Stop: 36280, Start Num: 10

Candidate Starts for Megsy\_48:

(Start: 10 @35930 has 82 MA's), (Start: 12 @35936 has 20 MA's), (27, 36047), (42, 36206), (53, 36263),

Gene: Murucutumbu\_47 Start: 36651, Stop: 36992, Start Num: 10

Candidate Starts for Murucutumbu\_47:

(Start: 10 @36651 has 82 MA's), (Start: 12 @36657 has 20 MA's), (27, 36768), (43, 36930), (47, 36945), (53, 36975),

Gene: Mynx\_47 Start: 35982, Stop: 36332, Start Num: 10

Candidate Starts for Mynx\_47:

(5, 35871), (Start: 10 @35982 has 82 MA's), (Start: 12 @35988 has 20 MA's), (18, 36018), (27, 36099), (42, 36258), (53, 36315),

Gene: Nergal\_43 Start: 34330, Stop: 34641, Start Num: 17

Candidate Starts for Nergal\_43:

(Start: 17 @34330 has 18 MA's), (23, 34366), (30, 34450), (39, 34546), (53, 34624),

Gene: Nibb\_48 Start: 36019, Stop: 36333, Start Num: 10

Candidate Starts for Nibb\_48:

(1, 35803), (8, 35989), (Start: 10 @36019 has 82 MA's),

Gene: Nikao\_44 Start: 37869, Stop: 38174, Start Num: 17

Candidate Starts for Nikao\_44:

(Start: 17 @37869 has 18 MA's), (27, 37956), (35, 38037), (38, 38073), (44, 38121),

Gene: Niklas\_48 Start: 36438, Stop: 36749, Start Num: 17

Candidate Starts for Niklas\_48:

(Start: 17 @36438 has 18 MA's), (27, 36525), (35, 36606), (53, 36732),

Gene: Nutello\_41 Start: 35256, Stop: 35561, Start Num: 17

Candidate Starts for Nutello\_41:

(Start: 17 @35256 has 18 MA's), (27, 35343), (35, 35424), (38, 35460), (44, 35508),

Gene: Oscar\_50 Start: 36764, Stop: 37078, Start Num: 10

Candidate Starts for Oscar\_50:

(1, 36551), (Start: 10 @36764 has 82 MA's), (40, 37019), (49, 37046),

Gene: Padfoot\_46 Start: 35978, Stop: 36328, Start Num: 10

Candidate Starts for Padfoot\_46:

(5, 35867), (Start: 10 @35978 has 82 MA's), (Start: 12 @35984 has 20 MA's), (42, 36254), (53, 36311),

Gene: Padpat\_47 Start: 35657, Stop: 36007, Start Num: 10

Candidate Starts for Padpat\_47:

(5, 35546), (Start: 10 @35657 has 82 MA's), (Start: 12 @35663 has 20 MA's), (18, 35693), (27, 35774), (42, 35933), (53, 35990),

Gene: Peanam\_48 Start: 36396, Stop: 36707, Start Num: 17

Candidate Starts for Peanam\_48:

(Start: 17 @36396 has 18 MA's), (27, 36483), (35, 36564), (53, 36690),

Gene: Peel\_46 Start: 35783, Stop: 36133, Start Num: 10

Candidate Starts for Peel\_46:

(5, 35672), (Start: 10 @35783 has 82 MA's), (Start: 12 @35789 has 20 MA's), (42, 36059), (53, 36116),

Gene: PhelpsODU\_48 Start: 35586, Stop: 35879, Start Num: 12

Candidate Starts for PhelpsODU\_48:

(Start: 12 @35586 has 20 MA's), (19, 35622), (28, 35697), (38, 35811), (39, 35820), (51, 35844), (53, 35862),

Gene: Phrank\_49 Start: 35543, Stop: 35836, Start Num: 12

Candidate Starts for Phrank\_49:

(Start: 12 @35543 has 20 MA's), (19, 35579), (28, 35654), (38, 35768), (50, 35798), (53, 35819),

Gene: Piatt\_46 Start: 35978, Stop: 36328, Start Num: 10

Candidate Starts for Piatt\_46:

(5, 35867), (Start: 10 @35978 has 82 MA's), (Start: 12 @35984 has 20 MA's), (42, 36254), (53, 36311),

Gene: Pixie\_48 Start: 35823, Stop: 36200, Start Num: 17

Candidate Starts for Pixie\_48:

(Start: 17 @35823 has 18 MA's), (18, 35829), (27, 35910), (52, 36126), (54, 36162), (55, 36183),

Gene: Pokerus\_45 Start: 35704, Stop: 36054, Start Num: 10

Candidate Starts for Pokerus\_45:

(5, 35593), (Start: 10 @35704 has 82 MA's), (Start: 12 @35710 has 20 MA's), (18, 35740), (27, 35821), (42, 35980), (53, 36037),

Gene: Prithvi\_47 Start: 35871, Stop: 36221, Start Num: 10

Candidate Starts for Prithvi\_47:

(Start: 10 @35871 has 82 MA's), (Start: 12 @35877 has 20 MA's), (27, 35988), (42, 36147), (53, 36204),

Gene: QuincyRose\_45 Start: 36096, Stop: 36446, Start Num: 10

Candidate Starts for QuincyRose\_45:

(5, 35985), (Start: 10 @36096 has 82 MA's), (Start: 12 @36102 has 20 MA's), (18, 36132), (27, 36213), (42, 36372), (53, 36429),

Gene: Ramen\_46 Start: 35668, Stop: 36018, Start Num: 10

Candidate Starts for Ramen\_46:

(5, 35557), (Start: 10 @35668 has 82 MA's), (Start: 12 @35674 has 20 MA's), (18, 35704), (27, 35785), (42, 35944), (53, 36001),

Gene: Rapunzel97\_46 Start: 35664, Stop: 36014, Start Num: 10

Candidate Starts for Rapunzel97\_46:

(5, 35553), (Start: 10 @35664 has 82 MA's), (Start: 12 @35670 has 20 MA's), (18, 35700), (27, 35781), (42, 35940), (53, 35997),

Gene: Rosmarinus\_46 Start: 35769, Stop: 36119, Start Num: 10

Candidate Starts for Rosmarinus\_46:

(5, 35658), (Start: 10 @35769 has 82 MA's), (Start: 12 @35775 has 20 MA's), (42, 36045), (53, 36102),

Gene: SamuelLPlaqson\_47 Start: 36560, Stop: 36904, Start Num: 10

Candidate Starts for SamuelLPlaqson\_47:

(Start: 10 @36560 has 82 MA's), (Start: 12 @36566 has 20 MA's), (27, 36677), (42, 36836), (53, 36887),

Gene: Scarlett\_50 Start: 36756, Stop: 37070, Start Num: 10

Candidate Starts for Scarlett\_50:

(1, 36543), (Start: 10 @36756 has 82 MA's), (40, 37011), (49, 37038),

Gene: SgtBeansprout\_41 Start: 35256, Stop: 35561, Start Num: 17

Candidate Starts for SgtBeansprout\_41:

(Start: 17 @35256 has 18 MA's), (27, 35343), (35, 35424), (38, 35460), (44, 35508),

Gene: Shadow1\_51 Start: 36704, Stop: 36997, Start Num: 12

Candidate Starts for Shadow1\_51:

(Start: 12 @36704 has 20 MA's), (39, 36938), (53, 36980),

Gene: Shaobing\_48 Start: 36413, Stop: 36724, Start Num: 17

Candidate Starts for Shaobing\_48:

(Start: 17 @36413 has 18 MA's), (27, 36500), (35, 36581), (53, 36707),

Gene: ShedlockHolmes\_49 Start: 36348, Stop: 36725, Start Num: 17

Candidate Starts for ShedlockHolmes\_49:

(Start: 17 @36348 has 18 MA's), (18, 36354), (27, 36435), (52, 36651), (54, 36687), (55, 36708),

Gene: ShiaSurprise\_47 Start: 35978, Stop: 36328, Start Num: 10

Candidate Starts for ShiaSurprise\_47:

(5, 35867), (Start: 10 @35978 has 82 MA's), (Start: 12 @35984 has 20 MA's), (42, 36254), (53, 36311),

Gene: SirPhilip\_48 Start: 36922, Stop: 37266, Start Num: 12

Candidate Starts for SirPhilip\_48:

(4, 36778), (Start: 12 @36922 has 20 MA's), (32, 37069), (37, 37129), (50, 37228), (53, 37249),

Gene: Slimphazie\_46 Start: 35664, Stop: 36014, Start Num: 10

Candidate Starts for Slimphazie\_46:

(5, 35553), (Start: 10 @35664 has 82 MA's), (Start: 12 @35670 has 20 MA's), (18, 35700), (27, 35781), (42, 35940), (53, 35997),

Gene: Spock\_46 Start: 35782, Stop: 36132, Start Num: 10

Candidate Starts for Spock\_46:

(5, 35671), (Start: 10 @35782 has 82 MA's), (Start: 12 @35788 has 20 MA's), (42, 36058), (53, 36115),

Gene: Stinson\_47 Start: 36171, Stop: 36512, Start Num: 10

Candidate Starts for Stinson\_47:

(Start: 10 @36171 has 82 MA's), (Start: 12 @36177 has 20 MA's), (27, 36288), (43, 36450), (53, 36495),

Gene: Sulley\_46 Start: 35908, Stop: 36258, Start Num: 10

Candidate Starts for Sulley\_46:

(5, 35797), (7, 35863), (Start: 10 @35908 has 82 MA's), (Start: 12 @35914 has 20 MA's), (18, 35944), (27, 36025), (42, 36184), (53, 36241),

Gene: Sunflower1121\_52 Start: 36805, Stop: 37098, Start Num: 12

Candidate Starts for Sunflower1121\_52:

(Start: 12 @36805 has 20 MA's), (39, 37039), (53, 37081),

Gene: Syra333\_51 Start: 36472, Stop: 36762, Start Num: 12

Candidate Starts for Syra333\_51:

(Start: 12 @36472 has 20 MA's), (38, 36697), (53, 36745),

Gene: TBond007\_48 Start: 35822, Stop: 36199, Start Num: 17

Candidate Starts for TBond007\_48:

(Start: 17 @35822 has 18 MA's), (18, 35828), (27, 35909), (52, 36125), (54, 36161), (55, 36182),

Gene: TClif\_51 Start: 36845, Stop: 37159, Start Num: 13

Candidate Starts for TClif\_51:

(13, 36845), (27, 36953), (50, 37121),

Gene: Tachez\_46 Start: 35626, Stop: 35976, Start Num: 10

Candidate Starts for Tachez\_46:

(5, 35515), (Start: 10 @35626 has 82 MA's), (Start: 12 @35632 has 20 MA's), (18, 35662), (27, 35743), (42, 35902), (53, 35959),

Gene: TaiwanKao\_48 Start: 35927, Stop: 36277, Start Num: 10

Candidate Starts for TaiwanKao\_48:

(5, 35792), (Start: 10 @35927 has 82 MA's), (Start: 12 @35933 has 20 MA's), (27, 36044), (42, 36203), (53, 36260),

Gene: Tierra\_49 Start: 36354, Stop: 36647, Start Num: 12

Candidate Starts for Tierra\_49:

(Start: 12 @36354 has 20 MA's), (19, 36390), (28, 36465), (38, 36579), (53, 36630),

Gene: TiniBug\_47 Start: 36556, Stop: 36900, Start Num: 10

Candidate Starts for TiniBug\_47:

(Start: 10 @36556 has 82 MA's), (Start: 12 @36562 has 20 MA's), (27, 36673), (42, 36832), (53, 36883),

Gene: Tiri\_47 Start: 35956, Stop: 36306, Start Num: 10

Candidate Starts for Tiri\_47:

(5, 35845), (Start: 10 @35956 has 82 MA's), (Start: 12 @35962 has 20 MA's), (27, 36073), (42, 36232), (53, 36289),

Gene: Topper\_46 Start: 35781, Stop: 36131, Start Num: 10

Candidate Starts for Topper\_46:

(5, 35670), (Start: 10 @35781 has 82 MA's), (Start: 12 @35787 has 20 MA's), (42, 36057),

Gene: TreyKay\_47 Start: 35871, Stop: 36221, Start Num: 10

Candidate Starts for TreyKay\_47:

(Start: 10 @35871 has 82 MA's), (Start: 12 @35877 has 20 MA's), (27, 35988), (42, 36147), (53, 36204),

Gene: TribbleTrouble\_46 Start: 35713, Stop: 36090, Start Num: 17

Candidate Starts for TribbleTrouble\_46:

(Start: 17 @35713 has 18 MA's), (18, 35719), (29, 35812), (37, 35911), (46, 35986), (52, 36016), (53, 36022), (55, 36073),

Gene: TruffulaTree\_46 Start: 35660, Stop: 36010, Start Num: 10

Candidate Starts for TruffulaTree\_46:

(5, 35549), (Start: 10 @35660 has 82 MA's), (Start: 12 @35666 has 20 MA's), (18, 35696), (27, 35777), (42, 35936), (53, 35993),

Gene: Twitch\_46 Start: 35783, Stop: 36133, Start Num: 10

Candidate Starts for Twitch\_46:

(5, 35672), (Start: 10 @35783 has 82 MA's), (Start: 12 @35789 has 20 MA's), (42, 36059), (53, 36116),

Gene: Unicorn\_48 Start: 35586, Stop: 35879, Start Num: 12

Candidate Starts for Unicorn\_48:

(Start: 12 @35586 has 20 MA's), (19, 35622), (28, 35697), (38, 35811), (39, 35820), (51, 35844), (53, 35862),

Gene: Urkel\_47 Start: 36560, Stop: 36904, Start Num: 10

Candidate Starts for Urkel\_47:

(Start: 10 @36560 has 82 MA's), (Start: 12 @36566 has 20 MA's), (27, 36677), (42, 36836), (53, 36887),

Gene: Validus\_50 Start: 36462, Stop: 36773, Start Num: 17

Candidate Starts for Validus\_50:

(Start: 17 @36462 has 18 MA's), (20, 36480), (27, 36549), (35, 36630), (53, 36756),

Gene: Veliki\_46 Start: 35700, Stop: 36050, Start Num: 10

Candidate Starts for Veliki\_46:

(5, 35589), (Start: 10 @35700 has 82 MA's), (Start: 12 @35706 has 20 MA's), (18, 35736), (27, 35817), (42, 35976), (53, 36033),

Gene: Ximenita\_52 Start: 36658, Stop: 36951, Start Num: 12

Candidate Starts for Ximenita\_52:

(Start: 12 @36658 has 20 MA's), (38, 36883), (53, 36934),

Gene: YoureAdopted\_45 Start: 35865, Stop: 36215, Start Num: 10

Candidate Starts for YoureAdopted\_45:

(5, 35754), (Start: 10 @35865 has 82 MA's), (Start: 12 @35871 has 20 MA's), (18, 35901), (27, 35982), (42, 36141), (53, 36198),

Gene: Yuna\_52 Start: 37415, Stop: 37738, Start Num: 11

Candidate Starts for Yuna\_52:

(2, 37256), (6, 37292), (Start: 11 @37415 has 1 MA's), (27, 37526), (48, 37697), (50, 37703),

Gene: Yunkel11\_48 Start: 35488, Stop: 35814, Start Num: 14

Candidate Starts for Yunkel11\_48:

(Start: 14 @35488 has 3 MA's), (27, 35596), (53, 35797),

Gene: Zabiza\_42 Start: 31971, Stop: 32321, Start Num: 10

Candidate Starts for Zabiza\_42:

(5, 31860), (Start: 10 @31971 has 82 MA's), (Start: 12 @31977 has 20 MA's), (18, 32007), (27, 32088), (42, 32247), (53, 32304),

Gene: Zavala\_47 Start: 35942, Stop: 36292, Start Num: 10

Candidate Starts for Zavala\_47:

(5, 35831), (Start: 10 @35942 has 82 MA's), (Start: 12 @35948 has 20 MA's), (18, 35978), (27, 36059), (42, 36218), (53, 36275),