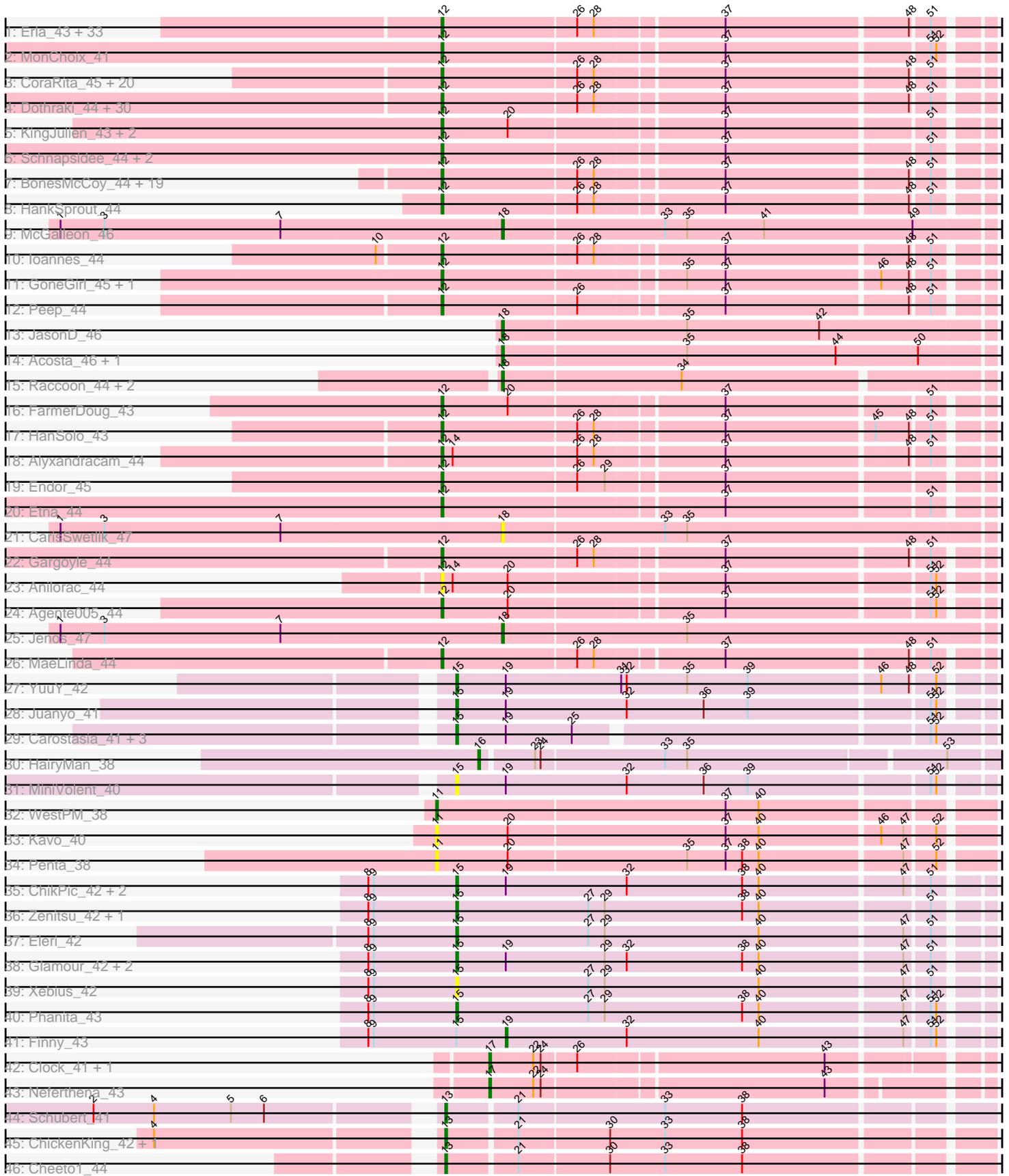


Pham 289134



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 289134 Report

This analysis was run 03/28/26 on database version 641.

Pham number 289134 has 166 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Erla\_43, StingRay\_43, Raptor\_44, Aubergine\_43, Garey24\_44, KellyGreen\_45, Renzie\_44, Winzigespinne\_43, ManRay\_43, Papafritta\_43, TeddyBear\_43, Baines\_43, Pocket\_43, Dave\_44, Bonino\_43, Klimt\_44, Chamuel\_43, Asta\_43, Nattles\_43, SonOfLevi\_44, Gershwin\_43, Superfresh\_44, Espinosa\_43, Riyhil\_44, Calix\_43, Christoph\_43, RosieMae\_43, Oats\_43, Antoinette\_44, Gelo\_43, Etta\_43, Kale\_43, Tenda\_43, Gubbabump\_43
- Track 2 : MonChoix\_41
- Track 3 : CoraRita\_45, Kouch\_44, Greys\_44, Jerbirus\_45, Thorongil\_44, StirfryIV\_43, Benjalauen\_44, Duocatuli\_43, Exploradora\_43, Rog141\_43, AranulaLuti\_43, Ilzat\_43, KannH\_43, JeriBeth\_45, Clancy\_43, Symere\_43, HungryHenry\_43, Sedgewig\_43, Janus167\_43, Chako\_43, JasperRussell\_43
- Track 4 : Dothraki\_44, NickSell\_44, Martin\_45, Kurt1\_44, Bandik\_44, TatarkaPM\_44, MillyPhilly\_44, SJay\_44, BeautPeep30\_44, SoilGremlin\_45, Inventa\_44, SolidSnake\_46, Rapphep\_44, Robinson\_44, ParleG\_44, OldNelly\_45, Stanktossa\_44, Phireproof\_44, Delphidian\_44, Merida02\_46, Zada\_45, Phiderman\_44, MrWorldwide\_44, AlexAdler\_44, Nagem\_44, Phriends\_44, Byron23\_45, Pherferi\_44, Shee\_44, PhredFlintston\_44, TinSulphur\_45
- Track 5 : KingJulien\_43, Stormbreaker8\_43, Soror1\_43
- Track 6 : Schnapsidee\_44, Redfield\_44, BeeBee8\_45
- Track 7 : BonesMcCoy\_44, Ludgate\_44, Strathdee\_44, Vispistious\_44, BigRedClifford\_44, Thompsone\_44, Oxtober96\_45, Convict\_44, WildNOut\_44, Blage\_44, Knox\_44, AxiPup\_44, Teagan\_44, Figueroism\_44, PuppyEggo\_44, GoingMerry\_45, Lovelyunicorn\_44, Den3\_44, ShaiHulud\_44, Velene\_44
- Track 8 : HankSprout\_44
- Track 9 : McGalleon\_46
- Track 10 : Ioannes\_44
- Track 11 : GoneGirl\_45, GardenB\_44
- Track 12 : Peep\_44
- Track 13 : JasonD\_46
- Track 14 : Acosta\_46, HavenFinLeoSun\_46
- Track 15 : Raccoon\_44, Hamlet\_44, Leafus\_44
- Track 16 : FarmerDoug\_43
- Track 17 : HanSolo\_43
- Track 18 : Alyxandracam\_44
- Track 19 : Endor\_45
- Track 20 : Etna\_44
- Track 21 : CarisSwetlik\_47

- Track 22 : Gargoyle\_44
- Track 23 : Anilorac\_44
- Track 24 : Agente005\_44
- Track 25 : Jenos\_47
- Track 26 : MaeLinda\_44
- Track 27 : YuuY\_42
- Track 28 : Juanyo\_41
- Track 29 : Carostasia\_41, Nucci\_41, Mandalorian\_41, Quartz\_42
- Track 30 : HairyMan\_38
- Track 31 : MiniVolent\_40
- Track 32 : WestPM\_38
- Track 33 : Kavo\_40
- Track 34 : Penta\_38
- Track 35 : ChikPic\_42, Shamu\_43, Saratos\_42
- Track 36 : Zenitsu\_42, MCubed\_42
- Track 37 : Eleri\_42
- Track 38 : Glamour\_42, ColaCorta\_42, Andromedas\_42
- Track 39 : Xebius\_42
- Track 40 : Phanita\_43
- Track 41 : Finny\_43
- Track 42 : Clock\_41, Nebulous\_40
- Track 43 : Neferthena\_43
- Track 44 : Schubert\_41
- Track 45 : ChickenKing\_42, GaeCeo\_44
- Track 46 : Cheeto1\_44

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

The start number called the most often in the published annotations is 12, it was called in 117 of the 150 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Agente005\_44, AlexAdler\_44, Alyxandracam\_44, Anilorac\_44, Antoinette\_44, AranulaLuti\_43, Asta\_43, Aubergine\_43, AxiPup\_44, Baines\_43, Bandik\_44, BeautPeep30\_44, BeeBee8\_45, Benjalauren\_44, BigRedClifford\_44, Blage\_44, BonesMcCoy\_44, Bonino\_43, Byron23\_45, Calix\_43, Chako\_43, Chamuel\_43, Christoph\_43, Clancy\_43, Convict\_44, CoraRita\_45, Dave\_44, Delphidian\_44, Den3\_44, Dothraki\_44, Duocatuli\_43, Endor\_45, Erla\_43, Espinosa\_43, Etna\_44, Etta\_43, Exploradora\_43, FarmerDoug\_43, Figueroism\_44, GardenB\_44, Garey24\_44, Gargoyle\_44, Gelo\_43, Gershwin\_43, GoingMerry\_45, GoneGirl\_45, Greys\_44, Gubbabump\_43, HanSolo\_43, HankSprout\_44, HungryHenry\_43, Ilzat\_43, Inventa\_44, Ioannes\_44, Janus167\_43, JasperRussell\_43, Jerbirus\_45, JeriBeth\_45, Kale\_43, KannH\_43, KellyGreen\_45, KingJulien\_43, Klimt\_44, Knox\_44, Kouch\_44, Kurt1\_44, Lovelyunicorn\_44, Ludgate\_44, MaeLinda\_44, ManRay\_43, Martin\_45, Merida02\_46, MillyPhilly\_44, MonChoix\_41, MrWorldwide\_44, Nagem\_44, Nattles\_43, NickSell\_44, Oats\_43, OldNelly\_45, Oxtober96\_45, Papafritta\_43, ParleG\_44, Peep\_44, Pherferi\_44, Phiderman\_44, Phireproof\_44, PhredFlintston\_44, Phriends\_44, Pocket\_43, PuppyEggo\_44, Rappheph\_44, Raptor\_44, Redfield\_44, Renzie\_44, Riyhil\_44, Robinson\_44, Rog141\_43, RosieMae\_43, SJay\_44, Schnapsidee\_44, Sedgewig\_43,

ShaiHulud\_44, Shee\_44, SoilGremlin\_45, SolidSnake\_46, SonOfLevi\_44, Soror1\_43, Stanktossa\_44, StingRay\_43, StirfryIV\_43, Stormbreaker8\_43, Strathdee\_44, Superfresh\_44, Symere\_43, TatarKaPM\_44, Teagan\_44, TeddyBear\_43, Tenda\_43, Thompsone\_44, Thorongil\_44, TinSulphur\_45, Velene\_44, Vispitious\_44, WildNOut\_44, Winzigespinne\_43, Zada\_45,

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

- 

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

- Acosta\_46, Andromedas\_42, CarisSwetlik\_47, Carostasia\_41, Cheeto1\_44, ChickenKing\_42, ChikPic\_42, Clock\_41, ColaCorta\_42, Eleri\_42, Finny\_43, GaeCeo\_44, Glamour\_42, HairyMan\_38, Hamlet\_44, HavenFinLeoSun\_46, JasonD\_46, Jenos\_47, Juanyo\_41, Kavo\_40, Leafus\_44, MCubed\_42, Mandalorian\_41, McGalleon\_46, MiniVolent\_40, Nebulous\_40, Neferthena\_43, Nucci\_41, Penta\_38, Phanita\_43, Quartz\_42, Raccoon\_44, Saratos\_42, Schubert\_41, Shamu\_43, WestPM\_38, Xebius\_42, YuuY\_42, Zenitsu\_42,

### Summary by start number:

Start 11:

- Found in 3 of 166 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 150
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kavo\_40 (EA11), Penta\_38 (EA11), WestPM\_38 (EA11),

Start 12:

- Found in 127 of 166 ( 76.5% ) of genes in pham
- Manual Annotations of this start: 117 of 150
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Agente005\_44 (EA1), AlexAdler\_44 (EA1), Alyxandracam\_44 (EA1), Anilorac\_44 (EA1), Antoinette\_44 (EA1), AranulaLuti\_43 (EA1), Asta\_43 (EA1), Aubergine\_43 (EA1), AxiPup\_44 (EA1), Baines\_43 (EA1), Bandik\_44 (EA1), BeautPeep30\_44 (EA1), BeeBee8\_45 (EA1), Benjalauen\_44 (EA1), BigRedClifford\_44 (EA1), Blage\_44 (EA1), BonesMcCoy\_44 (EA1), Bonino\_43 (EA1), Byron23\_45 (EA1), Calix\_43 (EA1), Chako\_43 (EA1), Chamuel\_43 (EA1), Christoph\_43 (EA1), Clancy\_43 (EA1), Convict\_44 (EA1), CoraRita\_45 (EA1), Dave\_44 (EA1), Delphidian\_44 (EA1), Den3\_44 (EA1), Dothraki\_44 (EA1), Duocatuli\_43 (EA1), Endor\_45 (EA1), Erla\_43 (EA1), Espinosa\_43 (EA1), Etna\_44 (EA1), Etta\_43 (EA1), Exploradora\_43 (EA1), FarmerDoug\_43 (EA1), Figueroism\_44 (EA1), GardenB\_44 (EA1), Garey24\_44 (EA1), Gargoyle\_44 (EA1), Gelo\_43 (EA1), Gershwin\_43 (EA1), GoingMerry\_45 (EA1), GoneGirl\_45 (EA1), Greys\_44 (EA1), Gubbabump\_43 (EA1), HanSolo\_43 (EA1), HankSprout\_44 (EA1), HungryHenry\_43 (EA1), Ilzat\_43 (EA1), Inventa\_44 (EA1), Ioannes\_44 (EA1), Janus167\_43 (EA1), JasperRussell\_43 (EA1), Jerbirus\_45 (EA1), JeriBeth\_45 (EA1), Kale\_43 (EA1), KannH\_43 (EA1), KellyGreen\_45 (EA1), KingJulien\_43 (EA1), Klimt\_44 (EA1), Knox\_44 (EA1), Kouch\_44 (EA1), Kurt1\_44 (EA1), Lovelyunicorn\_44 (EA1), Ludgate\_44 (EA1), MaeLinda\_44 (EA1), ManRay\_43 (EA1), Martin\_45 (EA1), Merida02\_46 (EA1), MillyPhilly\_44 (EA1), MonChoix\_41 (EA1), MrWorldwide\_44 (EA1), Nagem\_44 (EA1), Nattles\_43 (EA1), NickSell\_44 (EA1), Oats\_43 (EA1), OldNelly\_45 (EA1), Oxtober96\_45 (EA1), Papafritta\_43 (EA1), ParleG\_44 (EA1), Peep\_44 (EA1), Pherferi\_44 (EA1), Phiderman\_44 (EA1),

Phireproof\_44 (EA1), PhredFlintston\_44 (EA1), Phriends\_44 (EA1), Pocket\_43 (EA1), PuppyEggo\_44 (EA1), Rapheph\_44 (EA1), Raptor\_44 (EA1), Redfield\_44 (EA1), Renzie\_44 (EA1), Riyhil\_44 (EA1), Robinson\_44 (EA1), Rog141\_43 (EA1), RosieMae\_43 (EA1), SJay\_44 (EA1), Schnapsidee\_44 (EA1), Sedgewig\_43 (EA1), ShaiHulud\_44 (EA1), Shee\_44 (EA1), SoilGremlin\_45 (EA1), SolidSnake\_46 (EA1), SonOfLevi\_44 (EA1), Soror1\_43 (EA1), Stanktossa\_44 (EA1), StingRay\_43 (EA1), StirfryIV\_43 (EA1), Stormbreaker8\_43 (EA1), Strathdee\_44 (EA1), Superfresh\_44 (EA1), Symere\_43 (EA1), TatarkaPM\_44 (EA1), Teagan\_44 (EA1), TeddyBear\_43 (EA1), Tenda\_43 (EA1), Thompsone\_44 (EA1), Thorongil\_44 (EA1), TinSulphur\_45 (EA1), Velene\_44 (EA1), Vispistious\_44 (EA1), WildNOut\_44 (EA1), Winzigespinne\_43 (EA1), Zada\_45 (EA1),

Start 13:

- Found in 4 of 166 ( 2.4% ) of genes in pham
- Manual Annotations of this start: 4 of 150
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cheeto1\_44 (EA9), ChickenKing\_42 (EA9), GaeCeo\_44 (EA9), Schubert\_41 (EA8),

Start 15:

- Found in 19 of 166 ( 11.4% ) of genes in pham
- Manual Annotations of this start: 16 of 150
- Called 94.7% of time when present
- Phage (with cluster) where this start called: Andromedas\_42 (EA2), Carostasia\_41 (EA10), ChikPic\_42 (EA2), ColaCorta\_42 (EA2), Eleri\_42 (EA2), Glamour\_42 (EA2), Juanyo\_41 (EA10), MCubed\_42 (EA2), Mandalorian\_41 (EA10), MiniVolent\_40 (EA10), Nucci\_41 (EA10), Phanita\_43 (EA2), Quartz\_42 (EA10), Saratos\_42 (EA2), Shamu\_43 (EA2), Xebius\_42 (EA2), YuyuY\_42 (EA10), Zenitsu\_42 (EA2),

Start 16:

- Found in 1 of 166 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 150
- Called 100.0% of time when present
- Phage (with cluster) where this start called: HairyMan\_38 (EA10),

Start 17:

- Found in 3 of 166 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 3 of 150
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Clock\_41 (EA5), Nebulous\_40 (EA5), Neferthema\_43 (EA5),

Start 18:

- Found in 9 of 166 ( 5.4% ) of genes in pham
- Manual Annotations of this start: 7 of 150
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acosta\_46 (EA1), CarisSwetlik\_47 (EA1), Hamlet\_44 (EA1), HavenFinLeoSun\_46 (EA1), JasonD\_46 (EA1), Jenos\_47 (EA1), Leafus\_44 (EA1), McGalleon\_46 (EA1), Raccoon\_44 (EA1),

Start 19:

- Found in 14 of 166 ( 8.4% ) of genes in pham
- Manual Annotations of this start: 1 of 150

- Called 7.1% of time when present
- Phage (with cluster) where this start called: Finny\_43 (EA2),

### **Summary by clusters:**

There are 7 clusters represented in this pham: EA11, EA10, EA9, EA8, EA1, EA2, EA5,

Info for manual annotations of cluster EA1:

- Start number 12 was manually annotated 117 times for cluster EA1.
- Start number 18 was manually annotated 7 times for cluster EA1.

Info for manual annotations of cluster EA10:

- Start number 15 was manually annotated 6 times for cluster EA10.
- Start number 16 was manually annotated 1 time for cluster EA10.

Info for manual annotations of cluster EA11:

- Start number 11 was manually annotated 1 time for cluster EA11.

Info for manual annotations of cluster EA2:

- Start number 15 was manually annotated 10 times for cluster EA2.
- Start number 19 was manually annotated 1 time for cluster EA2.

Info for manual annotations of cluster EA5:

- Start number 17 was manually annotated 3 times for cluster EA5.

Info for manual annotations of cluster EA8:

- Start number 13 was manually annotated 1 time for cluster EA8.

Info for manual annotations of cluster EA9:

- Start number 13 was manually annotated 3 times for cluster EA9.

### **Gene Information:**

Gene: Acosta\_46 Start: 32413, Stop: 32150, Start Num: 18

Candidate Starts for Acosta\_46:

(Start: 18 @32413 has 7 MA's), (35, 32314), (44, 32233), (50, 32188),

Gene: Agente005\_44 Start: 32146, Stop: 31868, Start Num: 12

Candidate Starts for Agente005\_44:

(Start: 12 @32146 has 117 MA's), (20, 32110), (37, 31999), (51, 31894), (52, 31891),

Gene: AlexAdler\_44 Start: 32273, Stop: 31995, Start Num: 12

Candidate Starts for AlexAdler\_44:

(Start: 12 @32273 has 117 MA's), (26, 32201), (28, 32192), (37, 32126), (48, 32030), (51, 32021),

Gene: Alyxandracam\_44 Start: 32283, Stop: 32005, Start Num: 12

Candidate Starts for Alyxandracam\_44:

(Start: 12 @32283 has 117 MA's), (14, 32277), (26, 32211), (28, 32202), (37, 32136), (48, 32040), (51, 32031),

Gene: Andromedas\_42 Start: 31517, Stop: 31239, Start Num: 15  
Candidate Starts for Andromedas\_42:  
(8, 31565), (9, 31562), (Start: 15 @31517 has 16 MA's), (Start: 19 @31490 has 1 MA's), (29, 31436),  
(32, 31424), (38, 31361), (40, 31352), (47, 31277), (51, 31265),

Gene: Anilorac\_44 Start: 32091, Stop: 31813, Start Num: 12  
Candidate Starts for Anilorac\_44:  
(Start: 12 @32091 has 117 MA's), (14, 32085), (20, 32055), (37, 31944), (51, 31839), (52, 31836),

Gene: Antoinette\_44 Start: 32273, Stop: 31995, Start Num: 12  
Candidate Starts for Antoinette\_44:  
(Start: 12 @32273 has 117 MA's), (26, 32201), (28, 32192), (37, 32126), (48, 32030), (51, 32021),

Gene: AranulaLuti\_43 Start: 31967, Stop: 31689, Start Num: 12  
Candidate Starts for AranulaLuti\_43:  
(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: Asta\_43 Start: 31980, Stop: 31702, Start Num: 12  
Candidate Starts for Asta\_43:  
(Start: 12 @31980 has 117 MA's), (26, 31908), (28, 31899), (37, 31833), (48, 31737), (51, 31728),

Gene: Aubergine\_43 Start: 31980, Stop: 31702, Start Num: 12  
Candidate Starts for Aubergine\_43:  
(Start: 12 @31980 has 117 MA's), (26, 31908), (28, 31899), (37, 31833), (48, 31737), (51, 31728),

Gene: AxiPup\_44 Start: 32252, Stop: 31974, Start Num: 12  
Candidate Starts for AxiPup\_44:  
(Start: 12 @32252 has 117 MA's), (26, 32180), (28, 32171), (37, 32105), (48, 32009), (51, 32000),

Gene: Baines\_43 Start: 31973, Stop: 31695, Start Num: 12  
Candidate Starts for Baines\_43:  
(Start: 12 @31973 has 117 MA's), (26, 31901), (28, 31892), (37, 31826), (48, 31730), (51, 31721),

Gene: Bandik\_44 Start: 32278, Stop: 32000, Start Num: 12  
Candidate Starts for Bandik\_44:  
(Start: 12 @32278 has 117 MA's), (26, 32206), (28, 32197), (37, 32131), (48, 32035), (51, 32026),

Gene: BeautPeep30\_44 Start: 32284, Stop: 32006, Start Num: 12  
Candidate Starts for BeautPeep30\_44:  
(Start: 12 @32284 has 117 MA's), (26, 32212), (28, 32203), (37, 32137), (48, 32041), (51, 32032),

Gene: BeeBee8\_45 Start: 32304, Stop: 32026, Start Num: 12  
Candidate Starts for BeeBee8\_45:  
(Start: 12 @32304 has 117 MA's), (37, 32157), (51, 32052),

Gene: Benjalauren\_44 Start: 31983, Stop: 31705, Start Num: 12  
Candidate Starts for Benjalauren\_44:  
(Start: 12 @31983 has 117 MA's), (26, 31911), (28, 31902), (37, 31836), (48, 31740), (51, 31731),

Gene: BigRedClifford\_44 Start: 32282, Stop: 32004, Start Num: 12  
Candidate Starts for BigRedClifford\_44:  
(Start: 12 @32282 has 117 MA's), (26, 32210), (28, 32201), (37, 32135), (48, 32039), (51, 32030),

Gene: Blage\_44 Start: 32282, Stop: 32004, Start Num: 12  
Candidate Starts for Blage\_44:  
(Start: 12 @32282 has 117 MA's), (26, 32210), (28, 32201), (37, 32135), (48, 32039), (51, 32030),

Gene: BonesMcCoy\_44 Start: 32282, Stop: 32004, Start Num: 12  
Candidate Starts for BonesMcCoy\_44:  
(Start: 12 @32282 has 117 MA's), (26, 32210), (28, 32201), (37, 32135), (48, 32039), (51, 32030),

Gene: Bonino\_43 Start: 31959, Stop: 31681, Start Num: 12  
Candidate Starts for Bonino\_43:  
(Start: 12 @31959 has 117 MA's), (26, 31887), (28, 31878), (37, 31812), (48, 31716), (51, 31707),

Gene: Byron23\_45 Start: 32281, Stop: 32003, Start Num: 12  
Candidate Starts for Byron23\_45:  
(Start: 12 @32281 has 117 MA's), (26, 32209), (28, 32200), (37, 32134), (48, 32038), (51, 32029),

Gene: Calix\_43 Start: 31966, Stop: 31688, Start Num: 12  
Candidate Starts for Calix\_43:  
(Start: 12 @31966 has 117 MA's), (26, 31894), (28, 31885), (37, 31819), (48, 31723), (51, 31714),

Gene: CarisSwetlik\_47 Start: 32697, Stop: 32434, Start Num: 18  
Candidate Starts for CarisSwetlik\_47:  
(1, 32937), (3, 32913), (7, 32817), (Start: 18 @32697 has 7 MA's), (33, 32610), (35, 32598),

Gene: Carostasia\_41 Start: 31061, Stop: 30786, Start Num: 15  
Candidate Starts for Carostasia\_41:  
(Start: 15 @31061 has 16 MA's), (Start: 19 @31034 has 1 MA's), (25, 30998), (51, 30818), (52, 30815),

Gene: Chako\_43 Start: 31967, Stop: 31689, Start Num: 12  
Candidate Starts for Chako\_43:  
(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: Chamuel\_43 Start: 31992, Stop: 31714, Start Num: 12  
Candidate Starts for Chamuel\_43:  
(Start: 12 @31992 has 117 MA's), (26, 31920), (28, 31911), (37, 31845), (48, 31749), (51, 31740),

Gene: Cheeto1\_44 Start: 31744, Stop: 31463, Start Num: 13  
Candidate Starts for Cheeto1\_44:  
(Start: 13 @31744 has 4 MA's), (21, 31708), (30, 31660), (33, 31630), (38, 31588),

Gene: ChickenKing\_42 Start: 31637, Stop: 31356, Start Num: 13  
Candidate Starts for ChickenKing\_42:  
(4, 31778), (Start: 13 @31637 has 4 MA's), (21, 31601), (30, 31553), (33, 31523), (38, 31481),

Gene: ChikPic\_42 Start: 31371, Stop: 31093, Start Num: 15  
Candidate Starts for ChikPic\_42:  
(8, 31419), (9, 31416), (Start: 15 @31371 has 16 MA's), (Start: 19 @31344 has 1 MA's), (32, 31278),  
(38, 31215), (40, 31206), (47, 31131), (51, 31119),

Gene: Christoph\_43 Start: 31979, Stop: 31701, Start Num: 12  
Candidate Starts for Christoph\_43:  
(Start: 12 @31979 has 117 MA's), (26, 31907), (28, 31898), (37, 31832), (48, 31736), (51, 31727),

Gene: Clancy\_43 Start: 32012, Stop: 31734, Start Num: 12  
Candidate Starts for Clancy\_43:  
(Start: 12 @32012 has 117 MA's), (26, 31940), (28, 31931), (37, 31865), (48, 31769), (51, 31760),

Gene: Clock\_41 Start: 32201, Stop: 31950, Start Num: 17  
Candidate Starts for Clock\_41:  
(Start: 17 @32201 has 3 MA's), (22, 32177), (24, 32174), (26, 32156), (43, 32027),

Gene: ColaCorta\_42 Start: 31517, Stop: 31239, Start Num: 15  
Candidate Starts for ColaCorta\_42:  
(8, 31565), (9, 31562), (Start: 15 @31517 has 16 MA's), (Start: 19 @31490 has 1 MA's), (29, 31436),  
(32, 31424), (38, 31361), (40, 31352), (47, 31277), (51, 31265),

Gene: Convict\_44 Start: 32282, Stop: 32004, Start Num: 12  
Candidate Starts for Convict\_44:  
(Start: 12 @32282 has 117 MA's), (26, 32210), (28, 32201), (37, 32135), (48, 32039), (51, 32030),

Gene: CoraRita\_45 Start: 31982, Stop: 31704, Start Num: 12  
Candidate Starts for CoraRita\_45:  
(Start: 12 @31982 has 117 MA's), (26, 31910), (28, 31901), (37, 31835), (48, 31739), (51, 31730),

Gene: Dave\_44 Start: 32273, Stop: 31995, Start Num: 12  
Candidate Starts for Dave\_44:  
(Start: 12 @32273 has 117 MA's), (26, 32201), (28, 32192), (37, 32126), (48, 32030), (51, 32021),

Gene: Delphidian\_44 Start: 32281, Stop: 32003, Start Num: 12  
Candidate Starts for Delphidian\_44:  
(Start: 12 @32281 has 117 MA's), (26, 32209), (28, 32200), (37, 32134), (48, 32038), (51, 32029),

Gene: Den3\_44 Start: 32287, Stop: 32009, Start Num: 12  
Candidate Starts for Den3\_44:  
(Start: 12 @32287 has 117 MA's), (26, 32215), (28, 32206), (37, 32140), (48, 32044), (51, 32035),

Gene: Dothraki\_44 Start: 32281, Stop: 32003, Start Num: 12  
Candidate Starts for Dothraki\_44:  
(Start: 12 @32281 has 117 MA's), (26, 32209), (28, 32200), (37, 32134), (48, 32038), (51, 32029),

Gene: Duocatuli\_43 Start: 31967, Stop: 31689, Start Num: 12  
Candidate Starts for Duocatuli\_43:  
(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: Eleri\_42 Start: 31361, Stop: 31083, Start Num: 15  
Candidate Starts for Eleri\_42:  
(8, 31409), (9, 31406), (Start: 15 @31361 has 16 MA's), (27, 31289), (29, 31280), (40, 31196), (47, 31121), (51, 31109),

Gene: Endor\_45 Start: 32376, Stop: 32098, Start Num: 12  
Candidate Starts for Endor\_45:  
(Start: 12 @32376 has 117 MA's), (26, 32304), (29, 32289), (37, 32229),

Gene: Erla\_43 Start: 31963, Stop: 31685, Start Num: 12  
Candidate Starts for Erla\_43:  
(Start: 12 @31963 has 117 MA's), (26, 31891), (28, 31882), (37, 31816), (48, 31720), (51, 31711),

Gene: Espinosa\_43 Start: 31978, Stop: 31700, Start Num: 12  
Candidate Starts for Espinosa\_43:  
(Start: 12 @31978 has 117 MA's), (26, 31906), (28, 31897), (37, 31831), (48, 31735), (51, 31726),

Gene: Etna\_44 Start: 32180, Stop: 31902, Start Num: 12  
Candidate Starts for Etna\_44:  
(Start: 12 @32180 has 117 MA's), (37, 32033), (51, 31928),

Gene: Etta\_43 Start: 31967, Stop: 31689, Start Num: 12  
Candidate Starts for Etta\_43:  
(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: Exploradora\_43 Start: 31967, Stop: 31689, Start Num: 12  
Candidate Starts for Exploradora\_43:  
(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: FarmerDoug\_43 Start: 31886, Stop: 31608, Start Num: 12  
Candidate Starts for FarmerDoug\_43:  
(Start: 12 @31886 has 117 MA's), (20, 31850), (37, 31739), (51, 31634),

Gene: Figueroism\_44 Start: 32272, Stop: 31994, Start Num: 12  
Candidate Starts for Figueroism\_44:  
(Start: 12 @32272 has 117 MA's), (26, 32200), (28, 32191), (37, 32125), (48, 32029), (51, 32020),

Gene: Finny\_43 Start: 31328, Stop: 31077, Start Num: 19  
Candidate Starts for Finny\_43:  
(8, 31403), (9, 31400), (Start: 15 @31355 has 16 MA's), (Start: 19 @31328 has 1 MA's), (32, 31262),  
(40, 31190), (47, 31115), (51, 31103), (52, 31100),

Gene: GaeCeo\_44 Start: 31870, Stop: 31589, Start Num: 13  
Candidate Starts for GaeCeo\_44:  
(4, 32011), (Start: 13 @31870 has 4 MA's), (21, 31834), (30, 31786), (33, 31756), (38, 31714),

Gene: GardenB\_44 Start: 32121, Stop: 31843, Start Num: 12  
Candidate Starts for GardenB\_44:  
(Start: 12 @32121 has 117 MA's), (35, 31995), (37, 31974), (46, 31893), (48, 31878), (51, 31869),

Gene: Garey24\_44 Start: 31946, Stop: 31668, Start Num: 12  
Candidate Starts for Garey24\_44:  
(Start: 12 @31946 has 117 MA's), (26, 31874), (28, 31865), (37, 31799), (48, 31703), (51, 31694),

Gene: Gargoyle\_44 Start: 32287, Stop: 32009, Start Num: 12  
Candidate Starts for Gargoyle\_44:  
(Start: 12 @32287 has 117 MA's), (26, 32215), (28, 32206), (37, 32140), (48, 32044), (51, 32035),

Gene: Gelo\_43 Start: 31973, Stop: 31695, Start Num: 12  
Candidate Starts for Gelo\_43:  
(Start: 12 @31973 has 117 MA's), (26, 31901), (28, 31892), (37, 31826), (48, 31730), (51, 31721),

Gene: Gershwin\_43 Start: 31980, Stop: 31702, Start Num: 12  
Candidate Starts for Gershwin\_43:  
(Start: 12 @31980 has 117 MA's), (26, 31908), (28, 31899), (37, 31833), (48, 31737), (51, 31728),

Gene: Glamour\_42 Start: 31509, Stop: 31231, Start Num: 15

Candidate Starts for Glamour\_42:

(8, 31557), (9, 31554), (Start: 15 @31509 has 16 MA's), (Start: 19 @31482 has 1 MA's), (29, 31428), (32, 31416), (38, 31353), (40, 31344), (47, 31269), (51, 31257),

Gene: GoingMerry\_45 Start: 32265, Stop: 31987, Start Num: 12

Candidate Starts for GoingMerry\_45:

(Start: 12 @32265 has 117 MA's), (26, 32193), (28, 32184), (37, 32118), (48, 32022), (51, 32013),

Gene: GoneGirl\_45 Start: 32114, Stop: 31836, Start Num: 12

Candidate Starts for GoneGirl\_45:

(Start: 12 @32114 has 117 MA's), (35, 31988), (37, 31967), (46, 31886), (48, 31871), (51, 31862),

Gene: Greys\_44 Start: 32280, Stop: 32002, Start Num: 12

Candidate Starts for Greys\_44:

(Start: 12 @32280 has 117 MA's), (26, 32208), (28, 32199), (37, 32133), (48, 32037), (51, 32028),

Gene: Gubbabump\_43 Start: 31960, Stop: 31682, Start Num: 12

Candidate Starts for Gubbabump\_43:

(Start: 12 @31960 has 117 MA's), (26, 31888), (28, 31879), (37, 31813), (48, 31717), (51, 31708),

Gene: HairyMan\_38 Start: 30605, Stop: 30336, Start Num: 16

Candidate Starts for HairyMan\_38:

(Start: 16 @30605 has 1 MA's), (23, 30578), (24, 30575), (33, 30509), (35, 30497), (53, 30362),

Gene: Hamlet\_44 Start: 32123, Stop: 31866, Start Num: 18

Candidate Starts for Hamlet\_44:

(Start: 18 @32123 has 7 MA's), (34, 32027),

Gene: HanSolo\_43 Start: 31967, Stop: 31689, Start Num: 12

Candidate Starts for HanSolo\_43:

(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (45, 31742), (48, 31724), (51, 31715),

Gene: HankSprout\_44 Start: 31847, Stop: 31569, Start Num: 12

Candidate Starts for HankSprout\_44:

(Start: 12 @31847 has 117 MA's), (26, 31775), (28, 31766), (37, 31700), (48, 31604), (51, 31595),

Gene: HavenFinLeoSun\_46 Start: 32360, Stop: 32097, Start Num: 18

Candidate Starts for HavenFinLeoSun\_46:

(Start: 18 @32360 has 7 MA's), (35, 32261), (44, 32180), (50, 32135),

Gene: HungryHenry\_43 Start: 31972, Stop: 31694, Start Num: 12

Candidate Starts for HungryHenry\_43:

(Start: 12 @31972 has 117 MA's), (26, 31900), (28, 31891), (37, 31825), (48, 31729), (51, 31720),

Gene: Ilzat\_43 Start: 31983, Stop: 31705, Start Num: 12

Candidate Starts for Ilzat\_43:

(Start: 12 @31983 has 117 MA's), (26, 31911), (28, 31902), (37, 31836), (48, 31740), (51, 31731),

Gene: Inventa\_44 Start: 32278, Stop: 32000, Start Num: 12

Candidate Starts for Inventa\_44:

(Start: 12 @32278 has 117 MA's), (26, 32206), (28, 32197), (37, 32131), (48, 32035), (51, 32026),

Gene: loannes\_44 Start: 32282, Stop: 32004, Start Num: 12

Candidate Starts for loannes\_44:

(10, 32315), (Start: 12 @32282 has 117 MA's), (26, 32210), (28, 32201), (37, 32135), (48, 32039), (51, 32030),

Gene: Janus167\_43 Start: 31967, Stop: 31689, Start Num: 12

Candidate Starts for Janus167\_43:

(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: JasonD\_46 Start: 32341, Stop: 32078, Start Num: 18

Candidate Starts for JasonD\_46:

(Start: 18 @32341 has 7 MA's), (35, 32242), (42, 32170),

Gene: JasperRussell\_43 Start: 31967, Stop: 31689, Start Num: 12

Candidate Starts for JasperRussell\_43:

(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: Jenos\_47 Start: 32980, Stop: 32717, Start Num: 18

Candidate Starts for Jenos\_47:

(1, 33220), (3, 33196), (7, 33100), (Start: 18 @32980 has 7 MA's), (35, 32881),

Gene: Jerbirus\_45 Start: 31967, Stop: 31689, Start Num: 12

Candidate Starts for Jerbirus\_45:

(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: JeriBeth\_45 Start: 31830, Stop: 31552, Start Num: 12

Candidate Starts for JeriBeth\_45:

(Start: 12 @31830 has 117 MA's), (26, 31758), (28, 31749), (37, 31683), (48, 31587), (51, 31578),

Gene: Juanyo\_41 Start: 30992, Stop: 30714, Start Num: 15

Candidate Starts for Juanyo\_41:

(Start: 15 @30992 has 16 MA's), (Start: 19 @30965 has 1 MA's), (32, 30899), (36, 30857), (39, 30833), (51, 30740), (52, 30737),

Gene: Kale\_43 Start: 31982, Stop: 31704, Start Num: 12

Candidate Starts for Kale\_43:

(Start: 12 @31982 has 117 MA's), (26, 31910), (28, 31901), (37, 31835), (48, 31739), (51, 31730),

Gene: KannH\_43 Start: 31967, Stop: 31689, Start Num: 12

Candidate Starts for KannH\_43:

(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: Kavo\_40 Start: 29602, Stop: 29312, Start Num: 11

Candidate Starts for Kavo\_40:

(Start: 11 @29602 has 1 MA's), (20, 29563), (37, 29446), (40, 29428), (46, 29365), (47, 29353), (52, 29338),

Gene: KellyGreen\_45 Start: 31964, Stop: 31686, Start Num: 12

Candidate Starts for KellyGreen\_45:

(Start: 12 @31964 has 117 MA's), (26, 31892), (28, 31883), (37, 31817), (48, 31721), (51, 31712),

Gene: KingJulien\_43 Start: 32016, Stop: 31738, Start Num: 12  
Candidate Starts for KingJulien\_43:  
(Start: 12 @32016 has 117 MA's), (20, 31980), (37, 31869), (51, 31764),

Gene: Klimt\_44 Start: 31998, Stop: 31720, Start Num: 12  
Candidate Starts for Klimt\_44:  
(Start: 12 @31998 has 117 MA's), (26, 31926), (28, 31917), (37, 31851), (48, 31755), (51, 31746),

Gene: Knox\_44 Start: 32282, Stop: 32004, Start Num: 12  
Candidate Starts for Knox\_44:  
(Start: 12 @32282 has 117 MA's), (26, 32210), (28, 32201), (37, 32135), (48, 32039), (51, 32030),

Gene: Kouch\_44 Start: 31967, Stop: 31689, Start Num: 12  
Candidate Starts for Kouch\_44:  
(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: Kurt1\_44 Start: 32278, Stop: 32000, Start Num: 12  
Candidate Starts for Kurt1\_44:  
(Start: 12 @32278 has 117 MA's), (26, 32206), (28, 32197), (37, 32131), (48, 32035), (51, 32026),

Gene: Leafus\_44 Start: 32277, Stop: 32020, Start Num: 18  
Candidate Starts for Leafus\_44:  
(Start: 18 @32277 has 7 MA's), (34, 32181),

Gene: Lovelyunicorn\_44 Start: 32283, Stop: 32005, Start Num: 12  
Candidate Starts for Lovelyunicorn\_44:  
(Start: 12 @32283 has 117 MA's), (26, 32211), (28, 32202), (37, 32136), (48, 32040), (51, 32031),

Gene: Ludgate\_44 Start: 32281, Stop: 32003, Start Num: 12  
Candidate Starts for Ludgate\_44:  
(Start: 12 @32281 has 117 MA's), (26, 32209), (28, 32200), (37, 32134), (48, 32038), (51, 32029),

Gene: MCubed\_42 Start: 31386, Stop: 31108, Start Num: 15  
Candidate Starts for MCubed\_42:  
(8, 31434), (9, 31431), (Start: 15 @31386 has 16 MA's), (27, 31314), (29, 31305), (38, 31230), (40, 31221), (51, 31134),

Gene: MaeLinda\_44 Start: 32282, Stop: 32004, Start Num: 12  
Candidate Starts for MaeLinda\_44:  
(Start: 12 @32282 has 117 MA's), (26, 32210), (28, 32201), (37, 32135), (48, 32039), (51, 32030),

Gene: ManRay\_43 Start: 31980, Stop: 31702, Start Num: 12  
Candidate Starts for ManRay\_43:  
(Start: 12 @31980 has 117 MA's), (26, 31908), (28, 31899), (37, 31833), (48, 31737), (51, 31728),

Gene: Mandalorian\_41 Start: 31071, Stop: 30796, Start Num: 15  
Candidate Starts for Mandalorian\_41:  
(Start: 15 @31071 has 16 MA's), (Start: 19 @31044 has 1 MA's), (25, 31008), (51, 30828), (52, 30825),

Gene: Martin\_45 Start: 32287, Stop: 32009, Start Num: 12  
Candidate Starts for Martin\_45:  
(Start: 12 @32287 has 117 MA's), (26, 32215), (28, 32206), (37, 32140), (48, 32044), (51, 32035),

Gene: McGalleon\_46 Start: 33191, Stop: 32928, Start Num: 18

Candidate Starts for McGalleon\_46:

(1, 33431), (3, 33407), (7, 33311), (Start: 18 @33191 has 7 MA's), (33, 33104), (35, 33092), (41, 33050), (49, 32969),

Gene: Merida02\_46 Start: 32281, Stop: 32003, Start Num: 12

Candidate Starts for Merida02\_46:

(Start: 12 @32281 has 117 MA's), (26, 32209), (28, 32200), (37, 32134), (48, 32038), (51, 32029),

Gene: MillyPhilly\_44 Start: 32275, Stop: 31997, Start Num: 12

Candidate Starts for MillyPhilly\_44:

(Start: 12 @32275 has 117 MA's), (26, 32203), (28, 32194), (37, 32128), (48, 32032), (51, 32023),

Gene: MiniVolent\_40 Start: 30954, Stop: 30676, Start Num: 15

Candidate Starts for MiniVolent\_40:

(Start: 15 @30954 has 16 MA's), (Start: 19 @30927 has 1 MA's), (32, 30861), (36, 30819), (39, 30795), (51, 30702), (52, 30699),

Gene: MonChoix\_41 Start: 31728, Stop: 31450, Start Num: 12

Candidate Starts for MonChoix\_41:

(Start: 12 @31728 has 117 MA's), (37, 31581), (51, 31476), (52, 31473),

Gene: MrWorldwide\_44 Start: 32285, Stop: 32007, Start Num: 12

Candidate Starts for MrWorldwide\_44:

(Start: 12 @32285 has 117 MA's), (26, 32213), (28, 32204), (37, 32138), (48, 32042), (51, 32033),

Gene: Nagem\_44 Start: 32278, Stop: 32000, Start Num: 12

Candidate Starts for Nagem\_44:

(Start: 12 @32278 has 117 MA's), (26, 32206), (28, 32197), (37, 32131), (48, 32035), (51, 32026),

Gene: Nattles\_43 Start: 31967, Stop: 31689, Start Num: 12

Candidate Starts for Nattles\_43:

(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: Nebulous\_40 Start: 32382, Stop: 32131, Start Num: 17

Candidate Starts for Nebulous\_40:

(Start: 17 @32382 has 3 MA's), (22, 32358), (24, 32355), (26, 32337), (43, 32208),

Gene: Neferthema\_43 Start: 31723, Stop: 31472, Start Num: 17

Candidate Starts for Neferthema\_43:

(Start: 17 @31723 has 3 MA's), (22, 31699), (24, 31696), (43, 31549),

Gene: NickSell\_44 Start: 32288, Stop: 32010, Start Num: 12

Candidate Starts for NickSell\_44:

(Start: 12 @32288 has 117 MA's), (26, 32216), (28, 32207), (37, 32141), (48, 32045), (51, 32036),

Gene: Nucci\_41 Start: 31054, Stop: 30779, Start Num: 15

Candidate Starts for Nucci\_41:

(Start: 15 @31054 has 16 MA's), (Start: 19 @31027 has 1 MA's), (25, 30991), (51, 30811), (52, 30808),

Gene: Oats\_43 Start: 31980, Stop: 31702, Start Num: 12

Candidate Starts for Oats\_43:

(Start: 12 @31980 has 117 MA's), (26, 31908), (28, 31899), (37, 31833), (48, 31737), (51, 31728),

Gene: OldNelly\_45 Start: 32284, Stop: 32006, Start Num: 12  
Candidate Starts for OldNelly\_45:  
(Start: 12 @32284 has 117 MA's), (26, 32212), (28, 32203), (37, 32137), (48, 32041), (51, 32032),

Gene: Oxtober96\_45 Start: 32283, Stop: 32005, Start Num: 12  
Candidate Starts for Oxtober96\_45:  
(Start: 12 @32283 has 117 MA's), (26, 32211), (28, 32202), (37, 32136), (48, 32040), (51, 32031),

Gene: Papafritta\_43 Start: 31988, Stop: 31710, Start Num: 12  
Candidate Starts for Papafritta\_43:  
(Start: 12 @31988 has 117 MA's), (26, 31916), (28, 31907), (37, 31841), (48, 31745), (51, 31736),

Gene: ParleG\_44 Start: 32285, Stop: 32007, Start Num: 12  
Candidate Starts for ParleG\_44:  
(Start: 12 @32285 has 117 MA's), (26, 32213), (28, 32204), (37, 32138), (48, 32042), (51, 32033),

Gene: Peep\_44 Start: 32270, Stop: 31992, Start Num: 12  
Candidate Starts for Peep\_44:  
(Start: 12 @32270 has 117 MA's), (26, 32198), (37, 32123), (48, 32027), (51, 32018),

Gene: Penta\_38 Start: 29461, Stop: 29171, Start Num: 11  
Candidate Starts for Penta\_38:  
(Start: 11 @29461 has 1 MA's), (20, 29422), (35, 29326), (37, 29305), (38, 29296), (40, 29287), (47, 29212), (52, 29197),

Gene: Phanita\_43 Start: 31298, Stop: 31020, Start Num: 15  
Candidate Starts for Phanita\_43:  
(8, 31346), (9, 31343), (Start: 15 @31298 has 16 MA's), (27, 31226), (29, 31217), (38, 31142), (40, 31133), (47, 31058), (51, 31046), (52, 31043),

Gene: Pherferi\_44 Start: 32278, Stop: 32000, Start Num: 12  
Candidate Starts for Pherferi\_44:  
(Start: 12 @32278 has 117 MA's), (26, 32206), (28, 32197), (37, 32131), (48, 32035), (51, 32026),

Gene: Phiderman\_44 Start: 32275, Stop: 31997, Start Num: 12  
Candidate Starts for Phiderman\_44:  
(Start: 12 @32275 has 117 MA's), (26, 32203), (28, 32194), (37, 32128), (48, 32032), (51, 32023),

Gene: Phireproof\_44 Start: 32284, Stop: 32006, Start Num: 12  
Candidate Starts for Phireproof\_44:  
(Start: 12 @32284 has 117 MA's), (26, 32212), (28, 32203), (37, 32137), (48, 32041), (51, 32032),

Gene: PhredFlintston\_44 Start: 32278, Stop: 32000, Start Num: 12  
Candidate Starts for PhredFlintston\_44:  
(Start: 12 @32278 has 117 MA's), (26, 32206), (28, 32197), (37, 32131), (48, 32035), (51, 32026),

Gene: Phriends\_44 Start: 32284, Stop: 32006, Start Num: 12  
Candidate Starts for Phriends\_44:  
(Start: 12 @32284 has 117 MA's), (26, 32212), (28, 32203), (37, 32137), (48, 32041), (51, 32032),

Gene: Pocket\_43 Start: 32007, Stop: 31729, Start Num: 12  
Candidate Starts for Pocket\_43:

(Start: 12 @32007 has 117 MA's), (26, 31935), (28, 31926), (37, 31860), (48, 31764), (51, 31755),

Gene: PuppyEggo\_44 Start: 32285, Stop: 32007, Start Num: 12

Candidate Starts for PuppyEggo\_44:

(Start: 12 @32285 has 117 MA's), (26, 32213), (28, 32204), (37, 32138), (48, 32042), (51, 32033),

Gene: Quartz\_42 Start: 31184, Stop: 30909, Start Num: 15

Candidate Starts for Quartz\_42:

(Start: 15 @31184 has 16 MA's), (Start: 19 @31157 has 1 MA's), (25, 31121), (51, 30941), (52, 30938),

Gene: Raccoon\_44 Start: 32080, Stop: 31823, Start Num: 18

Candidate Starts for Raccoon\_44:

(Start: 18 @32080 has 7 MA's), (34, 31984),

Gene: Rapheph\_44 Start: 32278, Stop: 32000, Start Num: 12

Candidate Starts for Rapheph\_44:

(Start: 12 @32278 has 117 MA's), (26, 32206), (28, 32197), (37, 32131), (48, 32035), (51, 32026),

Gene: Raptor\_44 Start: 32285, Stop: 32007, Start Num: 12

Candidate Starts for Raptor\_44:

(Start: 12 @32285 has 117 MA's), (26, 32213), (28, 32204), (37, 32138), (48, 32042), (51, 32033),

Gene: Redfield\_44 Start: 32133, Stop: 31855, Start Num: 12

Candidate Starts for Redfield\_44:

(Start: 12 @32133 has 117 MA's), (37, 31986), (51, 31881),

Gene: Renzie\_44 Start: 32273, Stop: 31995, Start Num: 12

Candidate Starts for Renzie\_44:

(Start: 12 @32273 has 117 MA's), (26, 32201), (28, 32192), (37, 32126), (48, 32030), (51, 32021),

Gene: Riyhil\_44 Start: 32288, Stop: 32010, Start Num: 12

Candidate Starts for Riyhil\_44:

(Start: 12 @32288 has 117 MA's), (26, 32216), (28, 32207), (37, 32141), (48, 32045), (51, 32036),

Gene: Robinson\_44 Start: 32276, Stop: 31998, Start Num: 12

Candidate Starts for Robinson\_44:

(Start: 12 @32276 has 117 MA's), (26, 32204), (28, 32195), (37, 32129), (48, 32033), (51, 32024),

Gene: Rog141\_43 Start: 31967, Stop: 31689, Start Num: 12

Candidate Starts for Rog141\_43:

(Start: 12 @31967 has 117 MA's), (26, 31895), (28, 31886), (37, 31820), (48, 31724), (51, 31715),

Gene: RosieMae\_43 Start: 32025, Stop: 31747, Start Num: 12

Candidate Starts for RosieMae\_43:

(Start: 12 @32025 has 117 MA's), (26, 31953), (28, 31944), (37, 31878), (48, 31782), (51, 31773),

Gene: SJay\_44 Start: 32279, Stop: 32001, Start Num: 12

Candidate Starts for SJay\_44:

(Start: 12 @32279 has 117 MA's), (26, 32207), (28, 32198), (37, 32132), (48, 32036), (51, 32027),

Gene: Saratos\_42 Start: 31346, Stop: 31068, Start Num: 15

Candidate Starts for Saratos\_42:

(8, 31394), (9, 31391), (Start: 15 @31346 has 16 MA's), (Start: 19 @31319 has 1 MA's), (32, 31253), (38, 31190), (40, 31181), (47, 31106), (51, 31094),

Gene: Schnapsidee\_44 Start: 32140, Stop: 31862, Start Num: 12

Candidate Starts for Schnapsidee\_44:

(Start: 12 @32140 has 117 MA's), (37, 31993), (51, 31888),

Gene: Schubert\_41 Start: 30985, Stop: 30704, Start Num: 13

Candidate Starts for Schubert\_41:

(2, 31159), (4, 31126), (5, 31084), (6, 31066), (Start: 13 @30985 has 4 MA's), (21, 30949), (33, 30871), (38, 30829),

Gene: Sedgewig\_43 Start: 31965, Stop: 31687, Start Num: 12

Candidate Starts for Sedgewig\_43:

(Start: 12 @31965 has 117 MA's), (26, 31893), (28, 31884), (37, 31818), (48, 31722), (51, 31713),

Gene: ShaiHulud\_44 Start: 32294, Stop: 32016, Start Num: 12

Candidate Starts for ShaiHulud\_44:

(Start: 12 @32294 has 117 MA's), (26, 32222), (28, 32213), (37, 32147), (48, 32051), (51, 32042),

Gene: Shamu\_43 Start: 31525, Stop: 31247, Start Num: 15

Candidate Starts for Shamu\_43:

(8, 31573), (9, 31570), (Start: 15 @31525 has 16 MA's), (Start: 19 @31498 has 1 MA's), (32, 31432), (38, 31369), (40, 31360), (47, 31285), (51, 31273),

Gene: Shee\_44 Start: 32275, Stop: 31997, Start Num: 12

Candidate Starts for Shee\_44:

(Start: 12 @32275 has 117 MA's), (26, 32203), (28, 32194), (37, 32128), (48, 32032), (51, 32023),

Gene: SoilGremlin\_45 Start: 32281, Stop: 32003, Start Num: 12

Candidate Starts for SoilGremlin\_45:

(Start: 12 @32281 has 117 MA's), (26, 32209), (28, 32200), (37, 32134), (48, 32038), (51, 32029),

Gene: SolidSnake\_46 Start: 32284, Stop: 32006, Start Num: 12

Candidate Starts for SolidSnake\_46:

(Start: 12 @32284 has 117 MA's), (26, 32212), (28, 32203), (37, 32137), (48, 32041), (51, 32032),

Gene: SonOfLevi\_44 Start: 31998, Stop: 31720, Start Num: 12

Candidate Starts for SonOfLevi\_44:

(Start: 12 @31998 has 117 MA's), (26, 31926), (28, 31917), (37, 31851), (48, 31755), (51, 31746),

Gene: Soror1\_43 Start: 32031, Stop: 31753, Start Num: 12

Candidate Starts for Soror1\_43:

(Start: 12 @32031 has 117 MA's), (20, 31995), (37, 31884), (51, 31779),

Gene: Stanktossa\_44 Start: 32278, Stop: 32000, Start Num: 12

Candidate Starts for Stanktossa\_44:

(Start: 12 @32278 has 117 MA's), (26, 32206), (28, 32197), (37, 32131), (48, 32035), (51, 32026),

Gene: StingRay\_43 Start: 31983, Stop: 31705, Start Num: 12

Candidate Starts for StingRay\_43:

(Start: 12 @31983 has 117 MA's), (26, 31911), (28, 31902), (37, 31836), (48, 31740), (51, 31731),

Gene: StirfryIV\_43 Start: 31976, Stop: 31698, Start Num: 12  
Candidate Starts for StirfryIV\_43:  
(Start: 12 @31976 has 117 MA's), (26, 31904), (28, 31895), (37, 31829), (48, 31733), (51, 31724),

Gene: Stormbreaker8\_43 Start: 32016, Stop: 31738, Start Num: 12  
Candidate Starts for Stormbreaker8\_43:  
(Start: 12 @32016 has 117 MA's), (20, 31980), (37, 31869), (51, 31764),

Gene: Strathdee\_44 Start: 32284, Stop: 32006, Start Num: 12  
Candidate Starts for Strathdee\_44:  
(Start: 12 @32284 has 117 MA's), (26, 32212), (28, 32203), (37, 32137), (48, 32041), (51, 32032),

Gene: Superfresh\_44 Start: 32273, Stop: 31995, Start Num: 12  
Candidate Starts for Superfresh\_44:  
(Start: 12 @32273 has 117 MA's), (26, 32201), (28, 32192), (37, 32126), (48, 32030), (51, 32021),

Gene: Symere\_43 Start: 31975, Stop: 31697, Start Num: 12  
Candidate Starts for Symere\_43:  
(Start: 12 @31975 has 117 MA's), (26, 31903), (28, 31894), (37, 31828), (48, 31732), (51, 31723),

Gene: TatarkaPM\_44 Start: 32288, Stop: 32010, Start Num: 12  
Candidate Starts for TatarkaPM\_44:  
(Start: 12 @32288 has 117 MA's), (26, 32216), (28, 32207), (37, 32141), (48, 32045), (51, 32036),

Gene: Teagan\_44 Start: 32278, Stop: 32000, Start Num: 12  
Candidate Starts for Teagan\_44:  
(Start: 12 @32278 has 117 MA's), (26, 32206), (28, 32197), (37, 32131), (48, 32035), (51, 32026),

Gene: TeddyBear\_43 Start: 31980, Stop: 31702, Start Num: 12  
Candidate Starts for TeddyBear\_43:  
(Start: 12 @31980 has 117 MA's), (26, 31908), (28, 31899), (37, 31833), (48, 31737), (51, 31728),

Gene: Tenda\_43 Start: 31978, Stop: 31700, Start Num: 12  
Candidate Starts for Tenda\_43:  
(Start: 12 @31978 has 117 MA's), (26, 31906), (28, 31897), (37, 31831), (48, 31735), (51, 31726),

Gene: Thompsone\_44 Start: 32285, Stop: 32007, Start Num: 12  
Candidate Starts for Thompsone\_44:  
(Start: 12 @32285 has 117 MA's), (26, 32213), (28, 32204), (37, 32138), (48, 32042), (51, 32033),

Gene: Thorongil\_44 Start: 31799, Stop: 31521, Start Num: 12  
Candidate Starts for Thorongil\_44:  
(Start: 12 @31799 has 117 MA's), (26, 31727), (28, 31718), (37, 31652), (48, 31556), (51, 31547),

Gene: TinSulphur\_45 Start: 32284, Stop: 32006, Start Num: 12  
Candidate Starts for TinSulphur\_45:  
(Start: 12 @32284 has 117 MA's), (26, 32212), (28, 32203), (37, 32137), (48, 32041), (51, 32032),

Gene: Velene\_44 Start: 32283, Stop: 32005, Start Num: 12  
Candidate Starts for Velene\_44:  
(Start: 12 @32283 has 117 MA's), (26, 32211), (28, 32202), (37, 32136), (48, 32040), (51, 32031),

Gene: Vispistious\_44 Start: 32285, Stop: 32007, Start Num: 12

Candidate Starts for Vispistious\_44:

(Start: 12 @32285 has 117 MA's), (26, 32213), (28, 32204), (37, 32138), (48, 32042), (51, 32033),

Gene: WestPM\_38 Start: 29624, Stop: 29334, Start Num: 11

Candidate Starts for WestPM\_38:

(Start: 11 @29624 has 1 MA's), (37, 29468), (40, 29450),

Gene: WildNOut\_44 Start: 32281, Stop: 32003, Start Num: 12

Candidate Starts for WildNOut\_44:

(Start: 12 @32281 has 117 MA's), (26, 32209), (28, 32200), (37, 32134), (48, 32038), (51, 32029),

Gene: Winzigespinne\_43 Start: 31966, Stop: 31688, Start Num: 12

Candidate Starts for Winzigespinne\_43:

(Start: 12 @31966 has 117 MA's), (26, 31894), (28, 31885), (37, 31819), (48, 31723), (51, 31714),

Gene: Xebius\_42 Start: 31349, Stop: 31071, Start Num: 15

Candidate Starts for Xebius\_42:

(8, 31397), (9, 31394), (Start: 15 @31349 has 16 MA's), (27, 31277), (29, 31268), (40, 31184), (47, 31109), (51, 31097),

Gene: YuuY\_42 Start: 31651, Stop: 31373, Start Num: 15

Candidate Starts for YuuY\_42:

(Start: 15 @31651 has 16 MA's), (Start: 19 @31624 has 1 MA's), (31, 31561), (32, 31558), (35, 31525), (39, 31492), (46, 31423), (48, 31408), (52, 31396),

Gene: Zada\_45 Start: 32254, Stop: 31976, Start Num: 12

Candidate Starts for Zada\_45:

(Start: 12 @32254 has 117 MA's), (26, 32182), (28, 32173), (37, 32107), (48, 32011), (51, 32002),

Gene: Zenitsu\_42 Start: 31391, Stop: 31113, Start Num: 15

Candidate Starts for Zenitsu\_42:

(8, 31439), (9, 31436), (Start: 15 @31391 has 16 MA's), (27, 31319), (29, 31310), (38, 31235), (40, 31226), (51, 31139),