



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 187965 Report

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

Pham number 187965 has 133 members, 5 are drafts.

Phages represented in each track:

- Track 1 : TatarkaPM\_56, Renzie\_56, Superfresh\_56, Den3\_56, Ioannes\_56, SJay\_56, Benjalauen\_56, BonesMcCoy\_56, PhredFlintston\_56, AranulaLuti\_55, Thompsone\_56, TinSulphur\_57, Erla\_55, Inventa\_56, Dothraki\_56, Stanktossa\_55, Aubergine\_55, Garey24\_56, Bonino\_55, Chamuel\_55, Thorongil\_56, Asta\_55, SonOfLevi\_56, Nattles\_55, ParleG\_56, ManRay\_55, Blage\_56, Winzigespinne\_55, TeddyBear\_55, Gershwin\_55, Peep\_56, BeautPeep30\_56, BigRedClifford\_56, Vispistious\_56, Duocatuli\_55, JeriBeth\_57, AxiPup\_56, Velene\_56, Oxtober96\_57, Gelo\_55, Baines\_55, MillyPhilly\_56, Convict\_56, Espinosa\_55, Greys\_56, Dave\_56, HungryHenry\_55, Papafritta\_55, Calix\_55, Robinson\_56, Rog141\_55, WildNOut\_56, HanSolo\_55, Rapheph\_56, Sedgewig\_55, Ilzat\_55, Knox\_56, Phireproof\_56, Klimt\_56, KannH\_55, Strathdee\_56, Janus167\_55, Clancy\_55, Oats\_55, Lovelyunicorn\_56, Pocket\_55, Teagan\_56, Byron23\_57, Pherferi\_56, Zada\_57, Gargoyle\_56, Christoph\_55, Phiderman\_56, MrWorldwide\_56, AlexAdler\_56, HankSprout\_56, Nagem\_56, Etta\_55, Shee\_56, PuppyEggo\_56, ShaiHulud\_57, JasperRussell\_55, Raptor\_56, Gubbabump\_55, MaeLinda\_56, StingRay\_55, Riyhil\_56, NickSell\_56, Tenda\_55, Martin\_57, Jerbirus\_57, Kurt1\_56, Ludgate\_56, Kale\_55, Chako\_55, Bandik\_56
- Track 2 : Redfield\_55, KingJulien\_55, Raccoon\_55, Balsa\_54, Stormbreaker8\_54, Hamlet\_55, Figueroism\_56, Peppino\_55, BeeBee8\_56
- Track 3 : JasonD\_60
- Track 4 : Leafus\_55, Agente005\_55, Etna\_55, Schnapsidee\_55
- Track 5 : StirfryIV\_55
- Track 6 : Alyxandracam\_56
- Track 7 : MonChoix\_53
- Track 8 : YuuY\_54
- Track 9 : Juanyo\_54
- Track 10 : Quartz\_54, Carostasia\_53, Mandalorian\_53
- Track 11 : Nucci\_53
- Track 12 : Tinyman4\_49, Schimmels22\_49, HerculesXL\_50
- Track 13 : WestPM\_48
- Track 14 : Clock\_50, Nebulous\_49
- Track 15 : Alakazam\_30
- Track 16 : Jemerald\_51, Juicer\_51
- Track 17 : ChickenKing\_52, GaeCeo\_54
- Track 18 : Cheeto1\_53
- Track 19 : Triscuit\_71, Huwbert\_72

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

The start number called the most often in the published annotations is 13, it was called in 94 of the 128 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AlexAdler\_56, AranulaLuti\_55, Asta\_55, Aubergine\_55, AxiPup\_56, Baines\_55, Bandik\_56, BeautPeep30\_56, Benjalauren\_56, BigRedClifford\_56, Blage\_56, BonesMcCoy\_56, Bonino\_55, Byron23\_57, Calix\_55, Chako\_55, Chamuel\_55, Christoph\_55, Clancy\_55, Convict\_56, Dave\_56, Den3\_56, Dothraki\_56, Duocatuli\_55, Erla\_55, Espinosa\_55, Etta\_55, Garey24\_56, Gargoyle\_56, Gelo\_55, Gershwin\_55, Greys\_56, Gubbabump\_55, HanSolo\_55, HankSprout\_56, HungryHenry\_55, Ilzat\_55, Inventa\_56, Ioannes\_56, Janus167\_55, JasperRussell\_55, Jerbirus\_57, JeriBeth\_57, Kale\_55, KannH\_55, Klimt\_56, Knox\_56, Kurt1\_56, Lovelyunicorn\_56, Ludgate\_56, MaeLinda\_56, ManRay\_55, Martin\_57, MillyPhilly\_56, MrWorldwide\_56, Nagem\_56, Nattles\_55, NickSell\_56, Oats\_55, Oxtober96\_57, Papafritta\_55, ParleG\_56, Peep\_56, Pherferi\_56, Phiderman\_56, Phireproof\_56, PhredFlintston\_56, Pocket\_55, PuppyEggo\_56, Rappheph\_56, Raptor\_56, Renzie\_56, Riyhil\_56, Robinson\_56, Rog141\_55, SJay\_56, Sedgewig\_55, ShaiHulud\_57, Shee\_56, SonOfLevi\_56, Stanktossa\_55, StingRay\_55, StirfryIV\_55, Strathdee\_56, Superfresh\_56, TatarkaPM\_56, Teagan\_56, TeddyBear\_55, Tenda\_55, Thompsone\_56, Thorongil\_56, TinSulphur\_57, Velene\_56, Vispistious\_56, WildNOut\_56, Winzigespinne\_55, Zada\_57,

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:

- Agente005\_55, Alakazam\_30, Alyxandracam\_56, Balsa\_54, BeeBee8\_56, Carostasia\_53, Cheeto1\_53, ChickenKing\_52, Clock\_50, Etna\_55, Figueroism\_56, GaeCeo\_54, Hamlet\_55, HerculesXL\_50, Huwburt\_72, JasonD\_60, Jemerald\_51, Juanyo\_54, Juicer\_51, KingJulien\_55, Leafus\_55, Mandalorian\_53, MonChoix\_53, Nebulous\_49, Nucci\_53, Peppino\_55, Quartz\_54, Raccoon\_55, Redfield\_55, Schimmels22\_49, Schnapsidee\_55, Stormbreaker8\_54, Tinyman4\_49, Triscuit\_71, WestPM\_48, Yuyu\_54,

### **Summary by start number:**

Start 10:

- Found in 15 of 133 ( 11.3% ) of genes in pham
- Manual Annotations of this start: 13 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Agente005\_55 (EA1), Balsa\_54 (EA1), BeeBee8\_56 (EA1), Etna\_55 (EA1), Figueroism\_56 (EA1), Hamlet\_55 (EA1), JasonD\_60 (EA1), KingJulien\_55 (EA1), Leafus\_55 (EA1), MonChoix\_53 (EA1), Peppino\_55 (EA1), Raccoon\_55 (EA1), Redfield\_55 (EA1), Schnapsidee\_55 (EA1), Stormbreaker8\_54 (EA1),

Start 13:

- Found in 97 of 133 ( 72.9% ) of genes in pham
- Manual Annotations of this start: 94 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AlexAdler\_56 (EA1), AranulaLuti\_55 (EA1), Asta\_55 (EA1), Aubergine\_55 (EA1), AxiPup\_56 (EA1), Baines\_55 (EA1), Bandik\_56 (EA1), BeautPeep30\_56 (EA1), Benjalauren\_56 (EA1), BigRedClifford\_56 (EA1), Blage\_56 (EA1), BonesMcCoy\_56 (EA1), Bonino\_55 (EA1), Byron23\_57 (EA1), Calix\_55 (EA1), Chako\_55 (EA1), Chamuel\_55 (EA1), Christoph\_55 (EA1), Clancy\_55 (EA1), Convict\_56 (EA1), Dave\_56 (EA1), Den3\_56 (EA1), Dothraki\_56 (EA1), Duocatuli\_55 (EA1), Erla\_55 (EA1), Espinosa\_55 (EA1), Etta\_55 (EA1), Garey24\_56 (EA1), Gargoyle\_56 (EA1), Gelo\_55 (EA1), Gershwin\_55 (EA1), Greys\_56 (EA1), Gubbabump\_55 (EA1), HanSolo\_55 (EA1), HankSprout\_56 (EA1), HungryHenry\_55 (EA1), Ilzat\_55 (EA1), Inventa\_56 (EA1), Ioannes\_56 (EA1), Janus167\_55 (EA1), JasperRussell\_55 (EA1), Jerbirus\_57 (EA1), JeriBeth\_57 (EA1), Kale\_55 (EA1), KannH\_55 (EA1), Klimt\_56 (EA1), Knox\_56 (EA1), Kurt1\_56 (EA1), Lovelyunicorn\_56 (EA1), Ludgate\_56 (EA1), MaeLinda\_56 (EA1), ManRay\_55 (EA1), Martin\_57 (EA1), MillyPhilly\_56 (EA1), MrWorldwide\_56 (EA1), Nagem\_56 (EA1), Nattles\_55 (EA1), NickSell\_56 (EA1), Oats\_55 (EA1), Oxtober96\_57 (EA1), Papafritta\_55 (EA1), ParleG\_56 (EA1), Peep\_56 (EA1), Pherferi\_56 (EA1), Phiderman\_56 (EA1), Phireproof\_56 (EA1), PhredFlintston\_56 (EA1), Pocket\_55 (EA1), PuppyEggo\_56 (EA1), Rappheph\_56 (EA1), Raptor\_56 (EA1), Renzie\_56 (EA1), Riyhil\_56 (EA1), Robinson\_56 (EA1), Rog141\_55 (EA1), SJay\_56 (EA1), Sedgewig\_55 (EA1), ShaiHulud\_57 (EA1), Shee\_56 (EA1), SonOfLevi\_56 (EA1), Stanktossa\_55 (EA1), StingRay\_55 (EA1), StirfryIV\_55 (EA1), Strathdee\_56 (EA1), Superfresh\_56 (EA1), TatarkaPM\_56 (EA1), Teagan\_56 (EA1), TeddyBear\_55 (EA1), Tenda\_55 (EA1), Thompsone\_56 (EA1), Thorongil\_56 (EA1), TinSulphur\_57 (EA1), Velene\_56 (EA1), Vispistious\_56 (EA1), WildNOut\_56 (EA1), Winzigespinne\_55 (EA1), Zada\_57 (EA1),

#### Start 14:

- Found in 2 of 133 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 2 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Huwbert\_72 (GG), Triscuit\_71 (GG),

#### Start 15:

- Found in 6 of 133 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 6 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Carostasia\_53 (EA10), Juanyo\_54 (EA10), Mandalorian\_53 (EA10), Nucci\_53 (EA10), Quartz\_54 (EA10), YuuY\_54 (EA10),

#### Start 16:

- Found in 1 of 133 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alyxandracam\_56 (EA1),

#### Start 17:

- Found in 2 of 133 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 2 of 128
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Jemerald\_51 (EA6), Juicer\_51 (EA6),

Start 18:

- Found in 6 of 133 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 6 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alakazam\_30 (EA5), Cheeto1\_53 (EA9), ChickenKing\_52 (EA9), Clock\_50 (EA5), GaeCeo\_54 (EA9), Nebulous\_49 (EA5),

Start 19:

- Found in 4 of 133 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 4 of 128
- Called 100.0% of time when present
- Phage (with cluster) where this start called: HerculesXL\_50 (EA11), Schimmels22\_49 (EA11), Tinyman4\_49 (EA11), WestPM\_48 (EA11),

### **Summary by clusters:**

There are 7 clusters represented in this pham: EA9, EA11, EA10, GG, EA1, EA5, EA6,

Info for manual annotations of cluster EA1:

- Start number 10 was manually annotated 13 times for cluster EA1.
- Start number 13 was manually annotated 94 times for cluster EA1.
- Start number 16 was manually annotated 1 time for cluster EA1.

Info for manual annotations of cluster EA10:

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

Info for manual annotations of cluster EA11:

- Start number 19 was manually annotated 4 times for cluster EA11.

Info for manual annotations of cluster EA5:

- Start number 18 was manually annotated 3 times for cluster EA5.

Info for manual annotations of cluster EA6:

- Start number 17 was manually annotated 2 times for cluster EA6.

Info for manual annotations of cluster EA9:

- Start number 18 was manually annotated 3 times for cluster EA9.

Info for manual annotations of cluster GG:

- Start number 14 was manually annotated 2 times for cluster GG.

### **Gene Information:**

Gene: Agente005\_55 Start: 38139, Stop: 37906, Start Num: 10

Candidate Starts for Agente005\_55:

(Start: 10 @38139 has 13 MA's),

Gene: Alakazam\_30 Start: 21175, Stop: 21011, Start Num: 18

Candidate Starts for Alakazam\_30:  
(Start: 18 @21175 has 6 MA's),

Gene: AlexAdler\_56 Start: 38319, Stop: 38125, Start Num: 13  
Candidate Starts for AlexAdler\_56:  
(Start: 13 @38319 has 94 MA's), (23, 38256), (26, 38139),

Gene: Alyxandracam\_56 Start: 38281, Stop: 38099, Start Num: 16  
Candidate Starts for Alyxandracam\_56:  
(Start: 16 @38281 has 1 MA's), (23, 38227), (26, 38110),

Gene: AranulaLuti\_55 Start: 38037, Stop: 37843, Start Num: 13  
Candidate Starts for AranulaLuti\_55:  
(Start: 13 @38037 has 94 MA's), (23, 37974), (26, 37857),

Gene: Asta\_55 Start: 38041, Stop: 37847, Start Num: 13  
Candidate Starts for Asta\_55:  
(Start: 13 @38041 has 94 MA's), (23, 37978), (26, 37861),

Gene: Aubergine\_55 Start: 38041, Stop: 37847, Start Num: 13  
Candidate Starts for Aubergine\_55:  
(Start: 13 @38041 has 94 MA's), (23, 37978), (26, 37861),

Gene: AxiPup\_56 Start: 38256, Stop: 38062, Start Num: 13  
Candidate Starts for AxiPup\_56:  
(Start: 13 @38256 has 94 MA's), (23, 38193), (26, 38076),

Gene: Baines\_55 Start: 38041, Stop: 37847, Start Num: 13  
Candidate Starts for Baines\_55:  
(Start: 13 @38041 has 94 MA's), (23, 37978), (26, 37861),

Gene: Balsa\_54 Start: 38170, Stop: 37931, Start Num: 10  
Candidate Starts for Balsa\_54:  
(Start: 10 @38170 has 13 MA's), (23, 38059),

Gene: Bandik\_56 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for Bandik\_56:  
(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),

Gene: BeautPeep30\_56 Start: 38294, Stop: 38100, Start Num: 13  
Candidate Starts for BeautPeep30\_56:  
(Start: 13 @38294 has 94 MA's), (23, 38231), (26, 38114),

Gene: BeeBee8\_56 Start: 38344, Stop: 38105, Start Num: 10  
Candidate Starts for BeeBee8\_56:  
(Start: 10 @38344 has 13 MA's), (23, 38233),

Gene: Benjalauren\_56 Start: 38047, Stop: 37853, Start Num: 13  
Candidate Starts for Benjalauren\_56:  
(Start: 13 @38047 has 94 MA's), (23, 37984), (26, 37867),

Gene: BigRedClifford\_56 Start: 38283, Stop: 38089, Start Num: 13  
Candidate Starts for BigRedClifford\_56:

(Start: 13 @38283 has 94 MA's), (23, 38220), (26, 38103),

Gene: Blage\_56 Start: 38283, Stop: 38089, Start Num: 13

Candidate Starts for Blage\_56:

(Start: 13 @38283 has 94 MA's), (23, 38220), (26, 38103),

Gene: BonesMcCoy\_56 Start: 38283, Stop: 38089, Start Num: 13

Candidate Starts for BonesMcCoy\_56:

(Start: 13 @38283 has 94 MA's), (23, 38220), (26, 38103),

Gene: Bonino\_55 Start: 38020, Stop: 37826, Start Num: 13

Candidate Starts for Bonino\_55:

(Start: 13 @38020 has 94 MA's), (23, 37957), (26, 37840),

Gene: Byron23\_57 Start: 38291, Stop: 38097, Start Num: 13

Candidate Starts for Byron23\_57:

(Start: 13 @38291 has 94 MA's), (23, 38228), (26, 38111),

Gene: Calix\_55 Start: 38027, Stop: 37833, Start Num: 13

Candidate Starts for Calix\_55:

(Start: 13 @38027 has 94 MA's), (23, 37964), (26, 37847),

Gene: Carostasia\_53 Start: 36317, Stop: 36105, Start Num: 15

Candidate Starts for Carostasia\_53:

(Start: 15 @36317 has 6 MA's), (20, 36290), (21, 36269),

Gene: Chako\_55 Start: 38037, Stop: 37843, Start Num: 13

Candidate Starts for Chako\_55:

(Start: 13 @38037 has 94 MA's), (23, 37974), (26, 37857),

Gene: Chamuel\_55 Start: 38053, Stop: 37859, Start Num: 13

Candidate Starts for Chamuel\_55:

(Start: 13 @38053 has 94 MA's), (23, 37990), (26, 37873),

Gene: Cheeto1\_53 Start: 36803, Stop: 36609, Start Num: 18

Candidate Starts for Cheeto1\_53:

(12, 36839), (Start: 18 @36803 has 6 MA's), (26, 36641),

Gene: ChickenKing\_52 Start: 37132, Stop: 36938, Start Num: 18

Candidate Starts for ChickenKing\_52:

(Start: 18 @37132 has 6 MA's), (25, 37000), (26, 36970),

Gene: Christoph\_55 Start: 38040, Stop: 37846, Start Num: 13

Candidate Starts for Christoph\_55:

(Start: 13 @38040 has 94 MA's), (23, 37977), (26, 37860),

Gene: Clancy\_55 Start: 38040, Stop: 37846, Start Num: 13

Candidate Starts for Clancy\_55:

(Start: 13 @38040 has 94 MA's), (23, 37977), (26, 37860),

Gene: Clock\_50 Start: 37239, Stop: 37066, Start Num: 18

Candidate Starts for Clock\_50:

(Start: 18 @37239 has 6 MA's),

Gene: Convict\_56 Start: 38283, Stop: 38089, Start Num: 13  
Candidate Starts for Convict\_56:  
(Start: 13 @38283 has 94 MA's), (23, 38220), (26, 38103),

Gene: Dave\_56 Start: 38344, Stop: 38150, Start Num: 13  
Candidate Starts for Dave\_56:  
(Start: 13 @38344 has 94 MA's), (23, 38281), (26, 38164),

Gene: Den3\_56 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for Den3\_56:  
(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),

Gene: Dothraki\_56 Start: 38291, Stop: 38097, Start Num: 13  
Candidate Starts for Dothraki\_56:  
(Start: 13 @38291 has 94 MA's), (23, 38228), (26, 38111),

Gene: Duocatuli\_55 Start: 38037, Stop: 37843, Start Num: 13  
Candidate Starts for Duocatuli\_55:  
(Start: 13 @38037 has 94 MA's), (23, 37974), (26, 37857),

Gene: Erla\_55 Start: 38024, Stop: 37830, Start Num: 13  
Candidate Starts for Erla\_55:  
(Start: 13 @38024 has 94 MA's), (23, 37961), (26, 37844),

Gene: Espinosa\_55 Start: 38039, Stop: 37845, Start Num: 13  
Candidate Starts for Espinosa\_55:  
(Start: 13 @38039 has 94 MA's), (23, 37976), (26, 37859),

Gene: Etna\_55 Start: 38217, Stop: 37984, Start Num: 10  
Candidate Starts for Etna\_55:  
(Start: 10 @38217 has 13 MA's),

Gene: Etta\_55 Start: 38028, Stop: 37834, Start Num: 13  
Candidate Starts for Etta\_55:  
(Start: 13 @38028 has 94 MA's), (23, 37965), (26, 37848),

Gene: Figueroism\_56 Start: 38333, Stop: 38091, Start Num: 10  
Candidate Starts for Figueroism\_56:  
(Start: 10 @38333 has 13 MA's), (23, 38222),

Gene: GaeCeo\_54 Start: 37365, Stop: 37171, Start Num: 18  
Candidate Starts for GaeCeo\_54:  
(Start: 18 @37365 has 6 MA's), (25, 37233), (26, 37203),

Gene: Garey24\_56 Start: 38007, Stop: 37813, Start Num: 13  
Candidate Starts for Garey24\_56:  
(Start: 13 @38007 has 94 MA's), (23, 37944), (26, 37827),

Gene: Gargoyle\_56 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for Gargoyle\_56:  
(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),



Gene: Gelo\_55 Start: 38034, Stop: 37840, Start Num: 13  
Candidate Starts for Gelo\_55:  
(Start: 13 @38034 has 94 MA's), (23, 37971), (26, 37854),

Gene: Gershwin\_55 Start: 38041, Stop: 37847, Start Num: 13  
Candidate Starts for Gershwin\_55:  
(Start: 13 @38041 has 94 MA's), (23, 37978), (26, 37861),

Gene: Greys\_56 Start: 38284, Stop: 38090, Start Num: 13  
Candidate Starts for Greys\_56:  
(Start: 13 @38284 has 94 MA's), (23, 38221), (26, 38104),

Gene: Gubbabump\_55 Start: 37979, Stop: 37785, Start Num: 13  
Candidate Starts for Gubbabump\_55:  
(Start: 13 @37979 has 94 MA's), (23, 37916), (26, 37799),

Gene: Hamlet\_55 Start: 38263, Stop: 38024, Start Num: 10  
Candidate Starts for Hamlet\_55:  
(Start: 10 @38263 has 13 MA's), (23, 38152),

Gene: HanSolo\_55 Start: 37989, Stop: 37795, Start Num: 13  
Candidate Starts for HanSolo\_55:  
(Start: 13 @37989 has 94 MA's), (23, 37926), (26, 37809),

Gene: HankSprout\_56 Start: 37908, Stop: 37714, Start Num: 13  
Candidate Starts for HankSprout\_56:  
(Start: 13 @37908 has 94 MA's), (23, 37845), (26, 37728),

Gene: HerculesXL\_50 Start: 34968, Stop: 34792, Start Num: 19  
Candidate Starts for HerculesXL\_50:  
(Start: 19 @34968 has 4 MA's),

Gene: HungryHenry\_55 Start: 38001, Stop: 37807, Start Num: 13  
Candidate Starts for HungryHenry\_55:  
(Start: 13 @38001 has 94 MA's), (23, 37938), (26, 37821),

Gene: Huwbert\_72 Start: 46643, Stop: 46828, Start Num: 14  
Candidate Starts for Huwbert\_72:  
(Start: 14 @46643 has 2 MA's), (22, 46691),

Gene: Ilzat\_55 Start: 38011, Stop: 37817, Start Num: 13  
Candidate Starts for Ilzat\_55:  
(Start: 13 @38011 has 94 MA's), (23, 37948), (26, 37831),

Gene: Inventa\_56 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for Inventa\_56:  
(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),

Gene: Ioannes\_56 Start: 38366, Stop: 38172, Start Num: 13  
Candidate Starts for Ioannes\_56:  
(Start: 13 @38366 has 94 MA's), (23, 38303), (26, 38186),

Gene: Janus167\_55 Start: 38016, Stop: 37822, Start Num: 13

Candidate Starts for Janus167\_55:  
(Start: 13 @38016 has 94 MA's), (23, 37953), (26, 37836),

Gene: JasonD\_60 Start: 38752, Stop: 38525, Start Num: 10  
Candidate Starts for JasonD\_60:  
(1, 39028), (2, 38956), (4, 38929), (6, 38857), (8, 38812), (Start: 10 @38752 has 13 MA's),

Gene: JasperRussell\_55 Start: 38037, Stop: 37843, Start Num: 13  
Candidate Starts for JasperRussell\_55:  
(Start: 13 @38037 has 94 MA's), (23, 37974), (26, 37857),

Gene: Jemerald\_51 Start: 36354, Stop: 36169, Start Num: 17  
Candidate Starts for Jemerald\_51:  
(Start: 17 @36354 has 2 MA's),

Gene: Jerbirus\_57 Start: 38031, Stop: 37837, Start Num: 13  
Candidate Starts for Jerbirus\_57:  
(Start: 13 @38031 has 94 MA's), (23, 37968), (26, 37851),

Gene: JeriBeth\_57 Start: 37919, Stop: 37725, Start Num: 13  
Candidate Starts for JeriBeth\_57:  
(Start: 13 @37919 has 94 MA's), (23, 37856), (26, 37739),

Gene: Juanyo\_54 Start: 36796, Stop: 36596, Start Num: 15  
Candidate Starts for Juanyo\_54:  
(11, 36826), (Start: 15 @36796 has 6 MA's), (20, 36769), (21, 36748),

Gene: Juicer\_51 Start: 36354, Stop: 36169, Start Num: 17  
Candidate Starts for Juicer\_51:  
(Start: 17 @36354 has 2 MA's),

Gene: Kale\_55 Start: 38043, Stop: 37849, Start Num: 13  
Candidate Starts for Kale\_55:  
(Start: 13 @38043 has 94 MA's), (23, 37980), (26, 37863),

Gene: KannH\_55 Start: 38037, Stop: 37843, Start Num: 13  
Candidate Starts for KannH\_55:  
(Start: 13 @38037 has 94 MA's), (23, 37974), (26, 37857),

Gene: KingJulien\_55 Start: 38058, Stop: 37822, Start Num: 10  
Candidate Starts for KingJulien\_55:  
(Start: 10 @38058 has 13 MA's), (23, 37950),

Gene: Klimt\_56 Start: 38059, Stop: 37865, Start Num: 13  
Candidate Starts for Klimt\_56:  
(Start: 13 @38059 has 94 MA's), (23, 37996), (26, 37879),

Gene: Knox\_56 Start: 38283, Stop: 38089, Start Num: 13  
Candidate Starts for Knox\_56:  
(Start: 13 @38283 has 94 MA's), (23, 38220), (26, 38103),

Gene: Kurt1\_56 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for Kurt1\_56:

(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),

Gene: Leafus\_55 Start: 38320, Stop: 38087, Start Num: 10

Candidate Starts for Leafus\_55:

(Start: 10 @38320 has 13 MA's),

Gene: Lovelyunicorn\_56 Start: 38284, Stop: 38090, Start Num: 13

Candidate Starts for Lovelyunicorn\_56:

(Start: 13 @38284 has 94 MA's), (23, 38221), (26, 38104),

Gene: Ludgate\_56 Start: 38285, Stop: 38091, Start Num: 13

Candidate Starts for Ludgate\_56:

(Start: 13 @38285 has 94 MA's), (23, 38222), (26, 38105),

Gene: MaeLinda\_56 Start: 38295, Stop: 38098, Start Num: 13

Candidate Starts for MaeLinda\_56:

(Start: 13 @38295 has 94 MA's), (23, 38232), (26, 38112),

Gene: ManRay\_55 Start: 38041, Stop: 37847, Start Num: 13

Candidate Starts for ManRay\_55:

(Start: 13 @38041 has 94 MA's), (23, 37978), (26, 37861),

Gene: Mandalorian\_53 Start: 36328, Stop: 36116, Start Num: 15

Candidate Starts for Mandalorian\_53:

(Start: 15 @36328 has 6 MA's), (20, 36301), (21, 36280),

Gene: Martin\_57 Start: 38297, Stop: 38103, Start Num: 13

Candidate Starts for Martin\_57:

(Start: 13 @38297 has 94 MA's), (23, 38234), (26, 38117),

Gene: MillyPhilly\_56 Start: 38285, Stop: 38091, Start Num: 13

Candidate Starts for MillyPhilly\_56:

(Start: 13 @38285 has 94 MA's), (23, 38222), (26, 38105),

Gene: MonChoix\_53 Start: 37979, Stop: 37737, Start Num: 10

Candidate Starts for MonChoix\_53:

(Start: 10 @37979 has 13 MA's), (23, 37868), (24, 37796),

Gene: MrWorldwide\_56 Start: 38295, Stop: 38101, Start Num: 13

Candidate Starts for MrWorldwide\_56:

(Start: 13 @38295 has 94 MA's), (23, 38232), (26, 38115),

Gene: Nagem\_56 Start: 38331, Stop: 38137, Start Num: 13

Candidate Starts for Nagem\_56:

(Start: 13 @38331 has 94 MA's), (23, 38268), (26, 38151),

Gene: Nattles\_55 Start: 38028, Stop: 37834, Start Num: 13

Candidate Starts for Nattles\_55:

(Start: 13 @38028 has 94 MA's), (23, 37965), (26, 37848),

Gene: Nebulous\_49 Start: 37420, Stop: 37247, Start Num: 18

Candidate Starts for Nebulous\_49:

(Start: 18 @37420 has 6 MA's),

Gene: NickSell\_56 Start: 38298, Stop: 38104, Start Num: 13  
Candidate Starts for NickSell\_56:  
(Start: 13 @38298 has 94 MA's), (23, 38235), (26, 38118),

Gene: Nucci\_53 Start: 36289, Stop: 36077, Start Num: 15  
Candidate Starts for Nucci\_53:  
(3, 36526), (5, 36508), (7, 36412), (Start: 15 @36289 has 6 MA's),

Gene: Oats\_55 Start: 38041, Stop: 37847, Start Num: 13  
Candidate Starts for Oats\_55:  
(Start: 13 @38041 has 94 MA's), (23, 37978), (26, 37861),

Gene: Oxtober96\_57 Start: 38284, Stop: 38090, Start Num: 13  
Candidate Starts for Oxtober96\_57:  
(Start: 13 @38284 has 94 MA's), (23, 38221), (26, 38104),

Gene: Papafritta\_55 Start: 38046, Stop: 37852, Start Num: 13  
Candidate Starts for Papafritta\_55:  
(Start: 13 @38046 has 94 MA's), (23, 37983), (26, 37866),

Gene: ParleG\_56 Start: 38295, Stop: 38101, Start Num: 13  
Candidate Starts for ParleG\_56:  
(Start: 13 @38295 has 94 MA's), (23, 38232), (26, 38115),

Gene: Peep\_56 Start: 38341, Stop: 38147, Start Num: 13  
Candidate Starts for Peep\_56:  
(Start: 13 @38341 has 94 MA's), (23, 38278), (26, 38161),

Gene: Peppino\_55 Start: 38156, Stop: 37917, Start Num: 10  
Candidate Starts for Peppino\_55:  
(Start: 10 @38156 has 13 MA's), (23, 38045),

Gene: Pherferi\_56 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for Pherferi\_56:  
(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),

Gene: Phiderman\_56 Start: 38285, Stop: 38091, Start Num: 13  
Candidate Starts for Phiderman\_56:  
(Start: 13 @38285 has 94 MA's), (23, 38222), (26, 38105),

Gene: Phireproof\_56 Start: 38294, Stop: 38100, Start Num: 13  
Candidate Starts for Phireproof\_56:  
(Start: 13 @38294 has 94 MA's), (23, 38231), (26, 38114),

Gene: PhredFlintston\_56 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for PhredFlintston\_56:  
(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),

Gene: Pocket\_55 Start: 38068, Stop: 37874, Start Num: 13  
Candidate Starts for Pocket\_55:  
(Start: 13 @38068 has 94 MA's), (23, 38005), (26, 37888),

Gene: PuppyEggo\_56 Start: 38289, Stop: 38095, Start Num: 13  
Candidate Starts for PuppyEggo\_56:  
(Start: 13 @38289 has 94 MA's), (23, 38226), (26, 38109),

Gene: Quartz\_54 Start: 36441, Stop: 36229, Start Num: 15  
Candidate Starts for Quartz\_54:  
(Start: 15 @36441 has 6 MA's), (20, 36414), (21, 36393),

Gene: Raccoon\_55 Start: 38127, Stop: 37888, Start Num: 10  
Candidate Starts for Raccoon\_55:  
(Start: 10 @38127 has 13 MA's), (23, 38016),

Gene: Rapheph\_56 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for Rapheph\_56:  
(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),

Gene: Raptor\_56 Start: 38286, Stop: 38092, Start Num: 13  
Candidate Starts for Raptor\_56:  
(Start: 13 @38286 has 94 MA's), (23, 38223), (26, 38106),

Gene: Redfield\_55 Start: 38166, Stop: 37930, Start Num: 10  
Candidate Starts for Redfield\_55:  
(Start: 10 @38166 has 13 MA's), (23, 38058),

Gene: Renzie\_56 Start: 38344, Stop: 38150, Start Num: 13  
Candidate Starts for Renzie\_56:  
(Start: 13 @38344 has 94 MA's), (23, 38281), (26, 38164),

Gene: Riyhil\_56 Start: 38298, Stop: 38104, Start Num: 13  
Candidate Starts for Riyhil\_56:  
(Start: 13 @38298 has 94 MA's), (23, 38235), (26, 38118),

Gene: Robinson\_56 Start: 38360, Stop: 38166, Start Num: 13  
Candidate Starts for Robinson\_56:  
(Start: 13 @38360 has 94 MA's), (23, 38297), (26, 38180),

Gene: Rog141\_55 Start: 38031, Stop: 37837, Start Num: 13  
Candidate Starts for Rog141\_55:  
(Start: 13 @38031 has 94 MA's), (23, 37968), (26, 37851),

Gene: SJay\_56 Start: 38332, Stop: 38138, Start Num: 13  
Candidate Starts for SJay\_56:  
(Start: 13 @38332 has 94 MA's), (23, 38269), (26, 38152),

Gene: Schimmels22\_49 Start: 35268, Stop: 35092, Start Num: 19  
Candidate Starts for Schimmels22\_49:  
(Start: 19 @35268 has 4 MA's),

Gene: Schnapsidee\_55 Start: 38192, Stop: 37962, Start Num: 10  
Candidate Starts for Schnapsidee\_55:  
(Start: 10 @38192 has 13 MA's),

Gene: Sedgewig\_55 Start: 37993, Stop: 37799, Start Num: 13

Candidate Starts for Sedgewig\_55:  
(Start: 13 @37993 has 94 MA's), (23, 37930), (26, 37813),

Gene: ShaiHulud\_57 Start: 38298, Stop: 38104, Start Num: 13  
Candidate Starts for ShaiHulud\_57:  
(Start: 13 @38298 has 94 MA's), (23, 38235), (26, 38118),

Gene: Shee\_56 Start: 38285, Stop: 38091, Start Num: 13  
Candidate Starts for Shee\_56:  
(Start: 13 @38285 has 94 MA's), (23, 38222), (26, 38105),

Gene: SonOfLevi\_56 Start: 38059, Stop: 37865, Start Num: 13  
Candidate Starts for SonOfLevi\_56:  
(Start: 13 @38059 has 94 MA's), (23, 37996), (26, 37879),

Gene: Stanktossa\_55 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for Stanktossa\_55:  
(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),

Gene: StingRay\_55 Start: 38083, Stop: 37889, Start Num: 13  
Candidate Starts for StingRay\_55:  
(Start: 13 @38083 has 94 MA's), (23, 38020), (26, 37903),

Gene: StirfryIV\_55 Start: 38004, Stop: 37810, Start Num: 13  
Candidate Starts for StirfryIV\_55:  
(Start: 13 @38004 has 94 MA's), (23, 37941), (26, 37824),

Gene: Stormbreaker8\_54 Start: 38059, Stop: 37823, Start Num: 10  
Candidate Starts for Stormbreaker8\_54:  
(Start: 10 @38059 has 13 MA's), (23, 37951),

Gene: Strathdee\_56 Start: 38288, Stop: 38094, Start Num: 13  
Candidate Starts for Strathdee\_56:  
(Start: 13 @38288 has 94 MA's), (23, 38225), (26, 38108),

Gene: Superfresh\_56 Start: 38344, Stop: 38150, Start Num: 13  
Candidate Starts for Superfresh\_56:  
(Start: 13 @38344 has 94 MA's), (23, 38281), (26, 38164),

Gene: TatarkaPM\_56 Start: 38298, Stop: 38104, Start Num: 13  
Candidate Starts for TatarkaPM\_56:  
(Start: 13 @38298 has 94 MA's), (23, 38235), (26, 38118),

Gene: Teagan\_56 Start: 38279, Stop: 38085, Start Num: 13  
Candidate Starts for Teagan\_56:  
(Start: 13 @38279 has 94 MA's), (23, 38216), (26, 38099),

Gene: TeddyBear\_55 Start: 38041, Stop: 37847, Start Num: 13  
Candidate Starts for TeddyBear\_55:  
(Start: 13 @38041 has 94 MA's), (23, 37978), (26, 37861),

Gene: Tenda\_55 Start: 38039, Stop: 37845, Start Num: 13  
Candidate Starts for Tenda\_55:

(Start: 13 @38039 has 94 MA's), (23, 37976), (26, 37859),

Gene: Thompsone\_56 Start: 38286, Stop: 38092, Start Num: 13

Candidate Starts for Thompsone\_56:

(Start: 13 @38286 has 94 MA's), (23, 38223), (26, 38106),

Gene: Thorongil\_56 Start: 37803, Stop: 37609, Start Num: 13

Candidate Starts for Thorongil\_56:

(Start: 13 @37803 has 94 MA's), (23, 37740), (26, 37623),

Gene: TinSulphur\_57 Start: 38294, Stop: 38100, Start Num: 13

Candidate Starts for TinSulphur\_57:

(Start: 13 @38294 has 94 MA's), (23, 38231), (26, 38114),

Gene: Tinyman4\_49 Start: 34964, Stop: 34788, Start Num: 19

Candidate Starts for Tinyman4\_49:

(Start: 19 @34964 has 4 MA's),

Gene: Triscuit\_71 Start: 46600, Stop: 46785, Start Num: 14

Candidate Starts for Triscuit\_71:

(Start: 14 @46600 has 2 MA's), (22, 46648),

Gene: Velene\_56 Start: 38284, Stop: 38090, Start Num: 13

Candidate Starts for Velene\_56:

(Start: 13 @38284 has 94 MA's), (23, 38221), (26, 38104),

Gene: Vispitious\_56 Start: 38289, Stop: 38095, Start Num: 13

Candidate Starts for Vispitious\_56:

(Start: 13 @38289 has 94 MA's), (23, 38226), (26, 38109),

Gene: WestPM\_48 Start: 35040, Stop: 34864, Start Num: 19

Candidate Starts for WestPM\_48:

(8, 35175), (Start: 19 @35040 has 4 MA's),

Gene: WildNOut\_56 Start: 38282, Stop: 38088, Start Num: 13

Candidate Starts for WildNOut\_56:

(Start: 13 @38282 has 94 MA's), (23, 38219), (26, 38102),

Gene: Winzigespinne\_55 Start: 38027, Stop: 37833, Start Num: 13

Candidate Starts for Winzigespinne\_55:

(Start: 13 @38027 has 94 MA's), (23, 37964), (26, 37847),

Gene: YuuY\_54 Start: 36860, Stop: 36654, Start Num: 15

Candidate Starts for YuuY\_54:

(9, 36941), (Start: 15 @36860 has 6 MA's), (20, 36833),

Gene: Zada\_57 Start: 38301, Stop: 38107, Start Num: 13

Candidate Starts for Zada\_57:

(Start: 13 @38301 has 94 MA's), (23, 38238), (26, 38121),