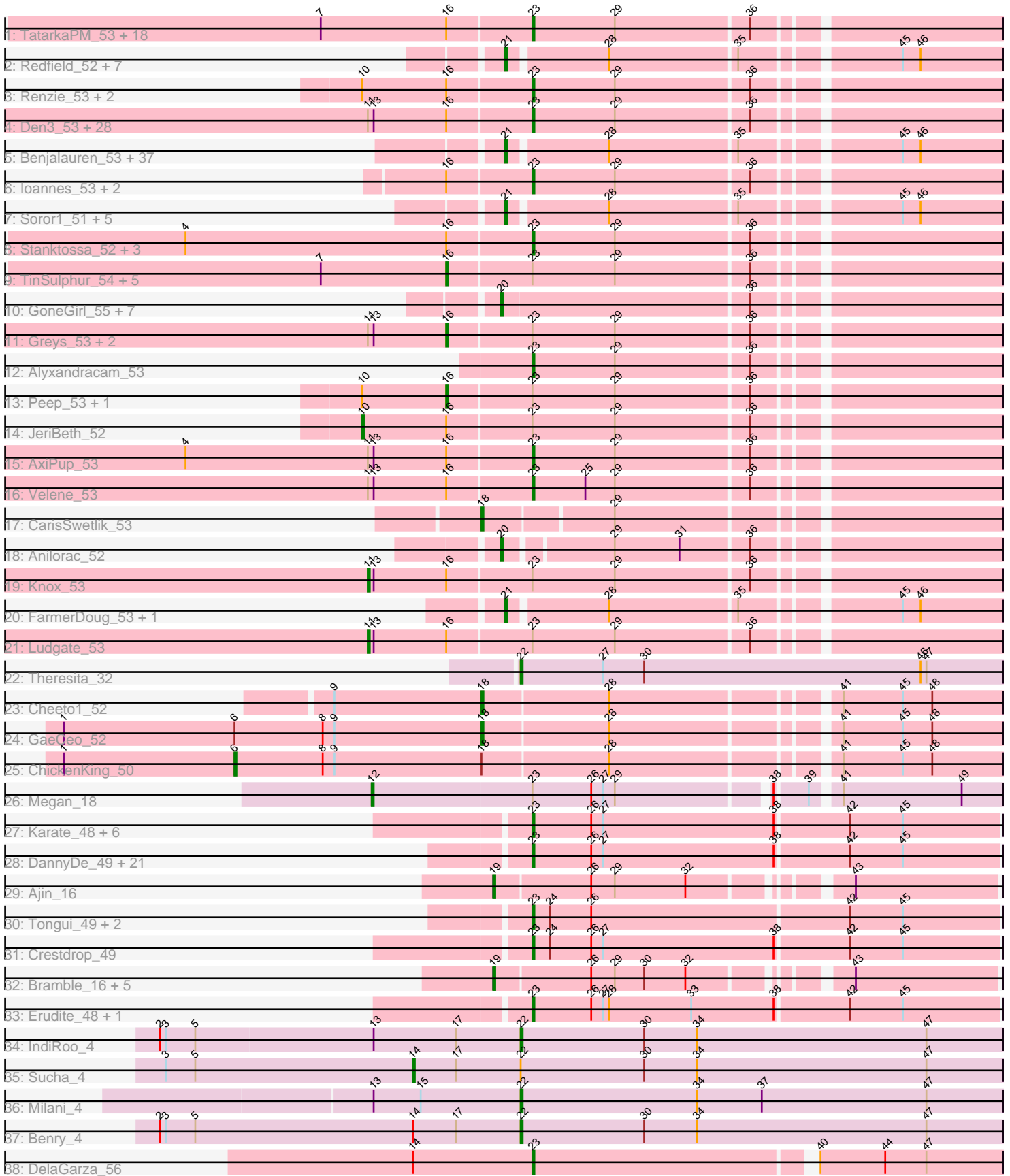


Pham 308113



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 308113 Report

This analysis was run 06/27/26 on database version 652.

Pham number 308113 has 191 members, 12 are drafts.

Phages represented in each track:

- Track 1 : TatarkaPM\_53, Byron23\_54, SolidSnake\_55, BeautPeep30\_53, Phireproof\_53, PhredFlintston\_53, Rappheph\_53, Inventa\_53, Phriends\_53, Delphidian\_53, Merida02\_55, Pherferi\_53, ParleG\_53, Phiderman\_53, MrWorldwide\_53, Kurt1\_53, NickSell\_53, OldNelly\_54, Martin\_54
- Track 2 : Redfield\_52, Balsa\_51, Hamlet\_52, Etna\_52, Raccoon\_52, PhillyPhantom\_52, Peppino\_52, BeeBee8\_53
- Track 3 : Renzie\_53, Dave\_53, Antoinette\_53
- Track 4 : Den3\_53, Raptor\_53, Kouch\_53, BonesMcCoy\_53, Exploradora\_52, Strathdee\_53, Blage\_53, Vispistious\_53, BigRedClifford\_53, CoraRita\_52, Convict\_53, Symere\_52, Papafritta\_52, HungryHenry\_52, WildNOOut\_53, Sedgewig\_52, HanSolo\_52, Ilzat\_52, Thorongil\_53, Clancy\_52, Janus167\_52, GoingMerry\_54, Thompsone\_53, Lovelyunicorn\_53, Teagan\_53, StirfryIV\_52, Gargoyle\_53, ShaiHulud\_53, Gubbabump\_52
- Track 5 : Benjalauen\_53, Klimt\_53, Erla\_52, Aubergine\_52, Garey24\_53, Bonino\_52, KellyGreen\_54, Chamuel\_52, Asta\_52, Nattles\_52, SonOfLevi\_53, ManRay\_52, Gershwin\_52, TeddyBear\_52, Winzigespinne\_52, SJay\_53, Espinosa\_52, Baines\_52, Calix\_52, Rog141\_52, RosieMae\_52, Gelo\_52, KannH\_52, Pocket\_52, Oats\_52, Zada\_54, AranulaLuti\_52, Christoph\_52, AlexAdler\_53, Nagem\_53, Etta\_52, JasperRussell\_52, Kale\_52, HankSprout\_53, Tenda\_52, Jerbirus\_54, Duocatuli\_52, Chako\_52
- Track 6 : Ioannes\_53, Robinson\_53, StingRay\_52
- Track 7 : Soror1\_51, Leafus\_52, KingJulien\_51, Stormbreaker8\_51, Endor\_55, Schnapsidee\_52
- Track 8 : Stanktossa\_52, Dothraki\_53, Figueroism\_53, MaeLinda\_53
- Track 9 : TinSulphur\_54, MillyPhilly\_53, SoilGremlin\_54, Shee\_53, Riyhil\_53, Bandik\_53
- Track 10 : GoneGirl\_55, McGalleon\_54, Agente005\_53, Acosta\_55, GardenB\_54, HavenFinLeoSun\_55, Jenos\_55, JasonD\_54
- Track 11 : Greys\_53, Oxtober96\_54, PuppyEggo\_53
- Track 12 : Alyxandracam\_53
- Track 13 : Peep\_53, Superfresh\_53
- Track 14 : JeriBeth\_52
- Track 15 : AxiPup\_53
- Track 16 : Velene\_53
- Track 17 : CarisSwetlik\_53
- Track 18 : Anilorac\_52
- Track 19 : Knox\_53

- Track 20 : FarmerDoug\_53, MonChoix\_50
- Track 21 : Ludgate\_53
- Track 22 : Theresita\_32
- Track 23 : Cheeto1\_52
- Track 24 : GaeCeo\_52
- Track 25 : ChickenKing\_50
- Track 26 : Megan\_18
- Track 27 : Karate\_48, MortySmith\_47, JingleBells\_49, Tedro\_49, SilentWarrior\_49, Haunter\_49, Hager\_50
- Track 28 : DannyDe\_49, Snakehole\_49, AnnaSerena\_49, Pharpay\_49, NarutoRun\_49, JDawG\_48, Cybele\_49, Hiddenleaf\_49, Gilda\_49, Tiggy93\_49, CoolCookie\_49, Anakin\_49, Neptune\_49, Rachella\_49, Krampus\_49, FreddieHg\_49, OhDear\_49, Aesir\_48, Annapurna\_49, Chivey\_49, PhunaPhoke\_49, Artiphact\_49
- Track 29 : Ajin\_16
- Track 30 : Tongui\_49, FountainFog\_48, Rie18\_49
- Track 31 : Crestdrop\_49
- Track 32 : Bramble\_16, LordBart\_16, TinyMiny\_16, RikSengupta\_16, Sparcetus\_16, Kors\_16
- Track 33 : Erudite\_48, Dauntless\_48
- Track 34 : IndiRoo\_4
- Track 35 : Sucha\_4
- Track 36 : Milani\_4
- Track 37 : Benry\_4
- Track 38 : DelaGarza\_56

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

The start number called the most often in the published annotations is 23, it was called in 90 of the 179 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aesir\_48, Alyxandracam\_53, Anakin\_49, AnnaSerena\_49, Annapurna\_49, Antoinette\_53, Artiphact\_49, AxiPup\_53, BeautPeep30\_53, BigRedClifford\_53, Blage\_53, BonesMcCoy\_53, Byron23\_54, Chivey\_49, Clancy\_52, Convict\_53, CoolCookie\_49, CoraRita\_52, Crestdrop\_49, Cybele\_49, DannyDe\_49, Dauntless\_48, Dave\_53, DelaGarza\_56, Delphidian\_53, Den3\_53, Dothraki\_53, Erudite\_48, Exploradora\_52, Figueroism\_53, FountainFog\_48, FreddieHg\_49, Gargoyle\_53, Gilda\_49, GoingMerry\_54, Gubbabump\_52, Hager\_50, HanSolo\_52, Haunter\_49, Hiddenleaf\_49, HungryHenry\_52, Ilzat\_52, Inventa\_53, Ioannes\_53, JDawG\_48, Janus167\_52, JingleBells\_49, Karate\_48, Kouch\_53, Krampus\_49, Kurt1\_53, Lovelyunicorn\_53, MaeLinda\_53, Martin\_54, Merida02\_55, MortySmith\_47, MrWorldwide\_53, NarutoRun\_49, Neptune\_49, NickSell\_53, OhDear\_49, OldNelly\_54, Papafritta\_52, ParleG\_53, Pharpay\_49, Pherferi\_53, Phiderman\_53, Phireproof\_53, PhredFlintston\_53, Phriends\_53, PhunaPhoke\_49, Rachella\_49, Rappheph\_53, Raptor\_53, Renzie\_53, Rie18\_49, Robinson\_53, Sedgewig\_52, ShaiHulud\_53, SilentWarrior\_49, Snakehole\_49, SolidSnake\_55, Stanktossa\_52, StingRay\_52, StirfryIV\_52, Strathdee\_53, Symere\_52, TatarkaPM\_53, Teagan\_53, Tedro\_49, Thompsone\_53, Thorongil\_53, Tiggy93\_49, Tongui\_49, Velene\_53, Vispitious\_53, WildNOut\_53,

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

- Bandik\_53, Greys\_53, JeriBeth\_52, Knox\_53, Ludgate\_53, Megan\_18, MillyPhilly\_53, Oxtobor96\_54, Peep\_53, PuppyEggo\_53, Riyhil\_53, Shee\_53, SoilGremlin\_54, Superfresh\_53, TinSulphur\_54,

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

- Acosta\_55, Agente005\_53, Ajin\_16, AlexAdler\_53, Anilorac\_52, AranulaLuti\_52, Asta\_52, Aubergine\_52, Baines\_52, Balsa\_51, BeeBee8\_53, Benjalauren\_53, Benry\_4, Bonino\_52, Bramble\_16, Calix\_52, CarisSwetlik\_53, Chako\_52, Chamuel\_52, Cheeto1\_52, ChickenKing\_50, Christoph\_52, Duocatuli\_52, Endor\_55, Erla\_52, Espinosa\_52, Etna\_52, Etta\_52, FarmerDoug\_53, GaeCeo\_52, GardenB\_54, Garey24\_53, Gelo\_52, Gershwin\_52, GoneGirl\_55, Hamlet\_52, HankSprout\_53, HavenFinLeoSun\_55, IndiRoo\_4, JasonD\_54, JasperRussell\_52, Jenos\_55, Jerbirus\_54, Kale\_52, KannH\_52, KellyGreen\_54, KingJulien\_51, Klimt\_53, Kors\_16, Leafus\_52, LordBart\_16, ManRay\_52, McGalleon\_54, Milani\_4, MonChoix\_50, Nagem\_53, Nattles\_52, Oats\_52, Peppino\_52, PhillyPhantom\_52, Pocket\_52, Raccoon\_52, Redfield\_52, RikSengupta\_16, Rog141\_52, RosieMae\_52, SJay\_53, Schnapsidee\_52, SonOfLevi\_53, Soror1\_51, Sparcetus\_16, Stormbreaker8\_51, Sucha\_4, TeddyBear\_52, Tenda\_52, Theresita\_32, TinyMiny\_16, Winzigespinne\_52, Zada\_54,

### Summary by start number:

Start 6:

- Found in 2 of 191 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 179
- Called 50.0% of time when present
- Phage (with cluster) where this start called: ChickenKing\_50 (EA9),

Start 10:

- Found in 6 of 191 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 1 of 179
- Called 16.7% of time when present
- Phage (with cluster) where this start called: JeriBeth\_52 (EA1),

Start 11:

- Found in 36 of 191 ( 18.8% ) of genes in pham
- Manual Annotations of this start: 2 of 179
- Called 5.6% of time when present
- Phage (with cluster) where this start called: Knox\_53 (EA1), Ludgate\_53 (EA1),

Start 12:

- Found in 1 of 191 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 179
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Megan\_18 (EC),

Start 14:

- Found in 3 of 191 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 179
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Sucha\_4 (EJ),

Start 16:

- Found in 74 of 191 ( 38.7% ) of genes in pham
- Manual Annotations of this start: 11 of 179
- Called 14.9% of time when present
- Phage (with cluster) where this start called: Bandik\_53 (EA1), Greys\_53 (EA1), MillyPhilly\_53 (EA1), Oxtober96\_54 (EA1), Peep\_53 (EA1), PuppyEggo\_53 (EA1), Riyhil\_53 (EA1), Shee\_53 (EA1), SoilGremlin\_54 (EA1), Superfresh\_53 (EA1), TinSulphur\_54 (EA1),

Start 18:

- Found in 4 of 191 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 3 of 179
- Called 75.0% of time when present
- Phage (with cluster) where this start called: CarisSwetlik\_53 (EA1), Cheeto1\_52 (EA9), GaeCeo\_52 (EA9),

Start 19:

- Found in 7 of 191 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 7 of 179
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ajin\_16 (EF), Bramble\_16 (EF), Kors\_16 (EF), LordBart\_16 (EF), RikSengupta\_16 (EF), Sparcetus\_16 (EF), TinyMiny\_16 (EF),

Start 20:

- Found in 9 of 191 ( 4.7% ) of genes in pham
- Manual Annotations of this start: 7 of 179
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acosta\_55 (EA1), Agente005\_53 (EA1), Anilorac\_52 (EA1), GardenB\_54 (EA1), GoneGirl\_55 (EA1), HavenFinLeoSun\_55 (EA1), JasonD\_54 (EA1), Jenos\_55 (EA1), McGalleon\_54 (EA1),

Start 21:

- Found in 54 of 191 ( 28.3% ) of genes in pham
- Manual Annotations of this start: 51 of 179
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AlexAdler\_53 (EA1), AranulaLuti\_52 (EA1), Asta\_52 (EA1), Aubergine\_52 (EA1), Baines\_52 (EA1), Balsa\_51 (EA1), BeeBee8\_53 (EA1), Benjalauen\_53 (EA1), Bonino\_52 (EA1), Calix\_52 (EA1), Chako\_52 (EA1), Chamuel\_52 (EA1), Christoph\_52 (EA1), Duocatuli\_52 (EA1), Endor\_55 (EA1), Erla\_52 (EA1), Espinosa\_52 (EA1), Etna\_52 (EA1), Etta\_52 (EA1), FarmerDoug\_53 (EA1), Garey24\_53 (EA1), Gelo\_52 (EA1), Gershwin\_52 (EA1), Hamlet\_52 (EA1), HankSprout\_53 (EA1), JasperRussell\_52 (EA1), Jerbirus\_54 (EA1), Kale\_52 (EA1), KannH\_52 (EA1), KellyGreen\_54 (EA1), KingJulien\_51 (EA1), Klimt\_53 (EA1), Leafus\_52 (EA1), ManRay\_52 (EA1), MonChoix\_50 (EA1), Nagem\_53 (EA1), Nattles\_52 (EA1), Oats\_52 (EA1), Peppino\_52 (EA1), PhillyPhantom\_52 (EA1), Pocket\_52 (EA1), Raccoon\_52 (EA1), Redfield\_52 (EA1), Rog141\_52 (EA1), RosieMae\_52 (EA1), SJay\_53 (EA1), Schnapsidee\_52 (EA1), SonOfLevi\_53 (EA1), Soror1\_51 (EA1), Stormbreaker8\_51 (EA1), TeddyBear\_52 (EA1), Tenda\_52 (EA1), Winzigespinne\_52 (EA1), Zada\_54 (EA1),

Start 22:

- Found in 5 of 191 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 4 of 179

- Called 80.0% of time when present
- Phage (with cluster) where this start called: Benry\_4 (EJ), IndiRoo\_4 (EJ), Milani\_4 (EJ), Theresita\_32 (EA7),

#### Start 23:

- Found in 112 of 191 ( 58.6% ) of genes in pham
- Manual Annotations of this start: 90 of 179
- Called 86.6% of time when present
- Phage (with cluster) where this start called: Aesir\_48 (EF), Alyxandracam\_53 (EA1), Anakin\_49 (EF), AnnaSerena\_49 (EF), Annapurna\_49 (EF), Antoinette\_53 (EA1), Artiphact\_49 (EF), AxiPup\_53 (EA1), BeautPeep30\_53 (EA1), BigRedClifford\_53 (EA1), Blage\_53 (EA1), BonesMcCoy\_53 (EA1), Byron23\_54 (EA1), Chivey\_49 (EF), Clancy\_52 (EA1), Convict\_53 (EA1), CoolCookie\_49 (EF), CoraRita\_52 (EA1), Crestdrop\_49 (EF), Cybele\_49 (EF), DannyDe\_49 (EF), Dauntless\_48 (EF), Dave\_53 (EA1), DelaGarza\_56 (GF), Delphidian\_53 (EA1), Den3\_53 (EA1), Dothraki\_53 (EA1), Erudite\_48 (EF), Exploradora\_52 (EA1), Figueroism\_53 (EA1), FountainFog\_48 (EF), FreddieHg\_49 (EF), Gargoyle\_53 (EA1), Gilda\_49 (EF), GoingMerry\_54 (EA1), Gubbabump\_52 (EA1), Hager\_50 (EF), HanSolo\_52 (EA1), Haunter\_49 (EF), Hiddenleaf\_49 (EF), HungryHenry\_52 (EA1), Ilzat\_52 (EA1), Inventa\_53 (EA1), Ioannes\_53 (EA1), JDawG\_48 (EF), Janus167\_52 (EA1), JingleBells\_49 (EF), Karate\_48 (EF), Kouch\_53 (EA1), Krampus\_49 (EF), Kurt1\_53 (EA1), Lovelyunicorn\_53 (EA1), MaeLinda\_53 (EA1), Martin\_54 (EA1), Merida02\_55 (EA1), MortySmith\_47 (EF), MrWorldwide\_53 (EA1), NarutoRun\_49 (EF), Neptune\_49 (EF), NickSell\_53 (EA1), OhDear\_49 (EF), OldNelly\_54 (EA1), Papafritta\_52 (EA1), ParleG\_53 (EA1), Pharpay\_49 (EF), Pherferi\_53 (EA1), Phiderman\_53 (EA1), Phireproof\_53 (EA1), PhredFlintston\_53 (EA1), Phriends\_53 (EA1), PhunaPhoke\_49 (EF), Rachella\_49 (EF), Rapheph\_53 (EA1), Raptor\_53 (EA1), Renzie\_53 (EA1), Rie18\_49 (EF), Robinson\_53 (EA1), Sedgewig\_52 (EA1), ShaiHulud\_53 (EA1), SilentWarrior\_49 (EF), Snakehole\_49 (EF), SolidSnake\_55 (EA1), Stanktossa\_52 (EA1), StingRay\_52 (EA1), StirfryIV\_52 (EA1), Strathdee\_53 (EA1), Symere\_52 (EA1), TatarkaPM\_53 (EA1), Teagan\_53 (EA1), Tedro\_49 (EF), Thompsone\_53 (EA1), Thorongil\_53 (EA1), Tiggy93\_49 (EF), Tongui\_49 (EF), Velene\_53 (EA1), Vispistious\_53 (EA1), WildNOut\_53 (EA1),

#### Summary by clusters:

There are 7 clusters represented in this pham: EJ, EF, EC, EA9, GF, EA1, EA7,

#### Info for manual annotations of cluster EA1:

- Start number 10 was manually annotated 1 time for cluster EA1.
- Start number 11 was manually annotated 2 times for cluster EA1.
- Start number 16 was manually annotated 11 times for cluster EA1.
- Start number 18 was manually annotated 1 time for cluster EA1.
- Start number 20 was manually annotated 7 times for cluster EA1.
- Start number 21 was manually annotated 51 times for cluster EA1.
- Start number 23 was manually annotated 58 times for cluster EA1.

#### Info for manual annotations of cluster EA7:

- Start number 22 was manually annotated 1 time for cluster EA7.

#### Info for manual annotations of cluster EA9:

- Start number 6 was manually annotated 1 time for cluster EA9.
- Start number 18 was manually annotated 2 times for cluster EA9.

Info for manual annotations of cluster EC:

- Start number 12 was manually annotated 1 time for cluster EC.

Info for manual annotations of cluster EF:

- Start number 19 was manually annotated 7 times for cluster EF.
- Start number 23 was manually annotated 31 times for cluster EF.

Info for manual annotations of cluster EJ:

- Start number 14 was manually annotated 1 time for cluster EJ.
- Start number 22 was manually annotated 3 times for cluster EJ.

Info for manual annotations of cluster GF:

- Start number 23 was manually annotated 1 time for cluster GF.

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

Gene: Acosta\_55 Start: 37463, Stop: 37224, Start Num: 20

Candidate Starts for Acosta\_55:

(Start: 20 @37463 has 7 MA's), (36, 37340),

Gene: Aesir\_48 Start: 35323, Stop: 35556, Start Num: 23

Candidate Starts for Aesir\_48:

(Start: 23 @35323 has 90 MA's), (26, 35353), (27, 35359), (38, 35446), (42, 35482), (45, 35509),

Gene: Agente005\_53 Start: 37359, Stop: 37120, Start Num: 20

Candidate Starts for Agente005\_53:

(Start: 20 @37359 has 7 MA's), (36, 37236),

Gene: Ajin\_16 Start: 8002, Stop: 8235, Start Num: 19

Candidate Starts for Ajin\_16:

(Start: 19 @8002 has 7 MA's), (26, 8050), (29, 8062), (32, 8098), (43, 8164),

Gene: AlexAdler\_53 Start: 37305, Stop: 37072, Start Num: 21

Candidate Starts for AlexAdler\_53:

(Start: 21 @37305 has 51 MA's), (28, 37257), (35, 37194), (45, 37122), (46, 37113),

Gene: Alyxandracam\_53 Start: 37301, Stop: 37077, Start Num: 23

Candidate Starts for Alyxandracam\_53:

(Start: 23 @37301 has 90 MA's), (29, 37259), (36, 37193),

Gene: Anakin\_49 Start: 35682, Stop: 35915, Start Num: 23

Candidate Starts for Anakin\_49:

(Start: 23 @35682 has 90 MA's), (26, 35712), (27, 35718), (38, 35805), (42, 35841), (45, 35868),

Gene: Anilorac\_52 Start: 37312, Stop: 37079, Start Num: 20

Candidate Starts for Anilorac\_52:

(Start: 20 @37312 has 7 MA's), (29, 37261), (31, 37228), (36, 37195),

Gene: AnnaSerena\_49 Start: 35716, Stop: 35949, Start Num: 23

Candidate Starts for AnnaSerena\_49:

(Start: 23 @35716 has 90 MA's), (26, 35746), (27, 35752), (38, 35839), (42, 35875), (45, 35902),

Gene: Annapurna\_49 Start: 34952, Stop: 35185, Start Num: 23

Candidate Starts for Annapurna\_49:

(Start: 23 @34952 has 90 MA's), (26, 34982), (27, 34988), (38, 35075), (42, 35111), (45, 35138),

Gene: Antoinette\_53 Start: 37292, Stop: 37068, Start Num: 23

Candidate Starts for Antoinette\_53:

(Start: 10 @37376 has 1 MA's), (Start: 16 @37334 has 11 MA's), (Start: 23 @37292 has 90 MA's), (29, 37250), (36, 37184),

Gene: AranulaLuti\_52 Start: 37017, Stop: 36784, Start Num: 21

Candidate Starts for AranulaLuti\_52:

(Start: 21 @37017 has 51 MA's), (28, 36969), (35, 36906), (45, 36834), (46, 36825),

Gene: Artiphact\_49 Start: 35706, Stop: 35939, Start Num: 23

Candidate Starts for Artiphact\_49:

(Start: 23 @35706 has 90 MA's), (26, 35736), (27, 35742), (38, 35829), (42, 35865), (45, 35892),

Gene: Asta\_52 Start: 37027, Stop: 36794, Start Num: 21

Candidate Starts for Asta\_52:

(Start: 21 @37027 has 51 MA's), (28, 36979), (35, 36916), (45, 36844), (46, 36835),

Gene: Aubergine\_52 Start: 37027, Stop: 36794, Start Num: 21

Candidate Starts for Aubergine\_52:

(Start: 21 @37027 has 51 MA's), (28, 36979), (35, 36916), (45, 36844), (46, 36835),

Gene: AxiPup\_53 Start: 37271, Stop: 37047, Start Num: 23

Candidate Starts for AxiPup\_53:

(4, 37445), (Start: 11 @37352 has 2 MA's), (13, 37349), (Start: 16 @37313 has 11 MA's), (Start: 23 @37271 has 90 MA's), (29, 37229), (36, 37163),

Gene: Baines\_52 Start: 37020, Stop: 36787, Start Num: 21

Candidate Starts for Baines\_52:

(Start: 21 @37020 has 51 MA's), (28, 36972), (35, 36909), (45, 36837), (46, 36828),

Gene: Balsa\_51 Start: 37115, Stop: 36882, Start Num: 21

Candidate Starts for Balsa\_51:

(Start: 21 @37115 has 51 MA's), (28, 37067), (35, 37004), (45, 36932), (46, 36923),

Gene: Bandik\_53 Start: 37339, Stop: 37073, Start Num: 16

Candidate Starts for Bandik\_53:

(7, 37402), (Start: 16 @37339 has 11 MA's), (Start: 23 @37297 has 90 MA's), (29, 37255), (36, 37189),

Gene: BeautPeep30\_53 Start: 37303, Stop: 37079, Start Num: 23

Candidate Starts for BeautPeep30\_53:

(7, 37408), (Start: 16 @37345 has 11 MA's), (Start: 23 @37303 has 90 MA's), (29, 37261), (36, 37195),

Gene: BeeBee8\_53 Start: 37294, Stop: 37061, Start Num: 21

Candidate Starts for BeeBee8\_53:

(Start: 21 @37294 has 51 MA's), (28, 37246), (35, 37183), (45, 37111), (46, 37102),

Gene: Benjalauren\_53 Start: 37033, Stop: 36800, Start Num: 21

Candidate Starts for Benjalauren\_53:

(Start: 21 @37033 has 51 MA's), (28, 36985), (35, 36922), (45, 36850), (46, 36841),

Gene: Benry\_4 Start: 2527, Stop: 2282, Start Num: 22

Candidate Starts for Benry\_4:

(2, 2710), (3, 2707), (5, 2692), (Start: 14 @2581 has 1 MA's), (17, 2560), (Start: 22 @2527 has 4 MA's), (30, 2464), (34, 2437), (47, 2320),

Gene: BigRedClifford\_53 Start: 37298, Stop: 37074, Start Num: 23

Candidate Starts for BigRedClifford\_53:

(Start: 11 @37379 has 2 MA's), (13, 37376), (Start: 16 @37340 has 11 MA's), (Start: 23 @37298 has 90 MA's), (29, 37256), (36, 37190),

Gene: Blage\_53 Start: 37298, Stop: 37074, Start Num: 23

Candidate Starts for Blage\_53:

(Start: 11 @37379 has 2 MA's), (13, 37376), (Start: 16 @37340 has 11 MA's), (Start: 23 @37298 has 90 MA's), (29, 37256), (36, 37190),

Gene: BonesMcCoy\_53 Start: 37298, Stop: 37074, Start Num: 23

Candidate Starts for BonesMcCoy\_53:

(Start: 11 @37379 has 2 MA's), (13, 37376), (Start: 16 @37340 has 11 MA's), (Start: 23 @37298 has 90 MA's), (29, 37256), (36, 37190),

Gene: Bonino\_52 Start: 37006, Stop: 36773, Start Num: 21

Candidate Starts for Bonino\_52:

(Start: 21 @37006 has 51 MA's), (28, 36958), (35, 36895), (45, 36823), (46, 36814),

Gene: Bramble\_16 Start: 7969, Stop: 8202, Start Num: 19

Candidate Starts for Bramble\_16:

(Start: 19 @7969 has 7 MA's), (26, 8017), (29, 8029), (30, 8044), (32, 8065), (43, 8131),

Gene: Byron23\_54 Start: 37300, Stop: 37076, Start Num: 23

Candidate Starts for Byron23\_54:

(7, 37405), (Start: 16 @37342 has 11 MA's), (Start: 23 @37300 has 90 MA's), (29, 37258), (36, 37192),

Gene: Calix\_52 Start: 37013, Stop: 36780, Start Num: 21

Candidate Starts for Calix\_52:

(Start: 21 @37013 has 51 MA's), (28, 36965), (35, 36902), (45, 36830), (46, 36821),

Gene: CarisSwetlik\_53 Start: 37410, Stop: 37165, Start Num: 18

Candidate Starts for CarisSwetlik\_53:

(Start: 18 @37410 has 3 MA's), (29, 37347),

Gene: Chako\_52 Start: 37017, Stop: 36784, Start Num: 21

Candidate Starts for Chako\_52:

(Start: 21 @37017 has 51 MA's), (28, 36969), (35, 36906), (45, 36834), (46, 36825),

Gene: Chamuel\_52 Start: 37039, Stop: 36806, Start Num: 21

Candidate Starts for Chamuel\_52:

(Start: 21 @37039 has 51 MA's), (28, 36991), (35, 36928), (45, 36856), (46, 36847),

Gene: Cheeto1\_52 Start: 36491, Stop: 36243, Start Num: 18

Candidate Starts for Cheeto1\_52:

(9, 36566), (Start: 18 @36491 has 3 MA's), (28, 36428), (41, 36323), (45, 36293), (48, 36278),

Gene: ChickenKing\_50 Start: 36510, Stop: 36136, Start Num: 6

Candidate Starts for ChickenKing\_50:

(1, 36597), (Start: 6 @36510 has 1 MA's), (8, 36465), (9, 36459), (Start: 18 @36384 has 3 MA's), (28, 36321), (41, 36216), (45, 36186), (48, 36171),

Gene: Chivey\_49 Start: 34913, Stop: 35146, Start Num: 23

Candidate Starts for Chivey\_49:

(Start: 23 @34913 has 90 MA's), (26, 34943), (27, 34949), (38, 35036), (42, 35072), (45, 35099),

Gene: Christoph\_52 Start: 37026, Stop: 36793, Start Num: 21

Candidate Starts for Christoph\_52:

(Start: 21 @37026 has 51 MA's), (28, 36978), (35, 36915), (45, 36843), (46, 36834),

Gene: Clancy\_52 Start: 37049, Stop: 36825, Start Num: 23

Candidate Starts for Clancy\_52:

(Start: 11 @37130 has 2 MA's), (13, 37127), (Start: 16 @37091 has 11 MA's), (Start: 23 @37049 has 90 MA's), (29, 37007), (36, 36941),

Gene: Convict\_53 Start: 37298, Stop: 37074, Start Num: 23

Candidate Starts for Convict\_53:

(Start: 11 @37379 has 2 MA's), (13, 37376), (Start: 16 @37340 has 11 MA's), (Start: 23 @37298 has 90 MA's), (29, 37256), (36, 37190),

Gene: CoolCookie\_49 Start: 35709, Stop: 35942, Start Num: 23

Candidate Starts for CoolCookie\_49:

(Start: 23 @35709 has 90 MA's), (26, 35739), (27, 35745), (38, 35832), (42, 35868), (45, 35895),

Gene: CoraRita\_52 Start: 37019, Stop: 36795, Start Num: 23

Candidate Starts for CoraRita\_52:

(Start: 11 @37100 has 2 MA's), (13, 37097), (Start: 16 @37061 has 11 MA's), (Start: 23 @37019 has 90 MA's), (29, 36977), (36, 36911),

Gene: Crestdrop\_49 Start: 34931, Stop: 35164, Start Num: 23

Candidate Starts for Crestdrop\_49:

(Start: 23 @34931 has 90 MA's), (24, 34940), (26, 34961), (27, 34967), (38, 35054), (42, 35090), (45, 35117),

Gene: Cybele\_49 Start: 35682, Stop: 35915, Start Num: 23

Candidate Starts for Cybele\_49:

(Start: 23 @35682 has 90 MA's), (26, 35712), (27, 35718), (38, 35805), (42, 35841), (45, 35868),

Gene: DannyDe\_49 Start: 34907, Stop: 35140, Start Num: 23

Candidate Starts for DannyDe\_49:

(Start: 23 @34907 has 90 MA's), (26, 34937), (27, 34943), (38, 35030), (42, 35066), (45, 35093),

Gene: Dauntless\_48 Start: 35258, Stop: 35491, Start Num: 23

Candidate Starts for Dauntless\_48:

(Start: 23 @35258 has 90 MA's), (26, 35288), (27, 35294), (28, 35297), (33, 35339), (38, 35381), (42, 35417), (45, 35444),

Gene: Dave\_53 Start: 37292, Stop: 37068, Start Num: 23

Candidate Starts for Dave\_53:

(Start: 10 @37376 has 1 MA's), (Start: 16 @37334 has 11 MA's), (Start: 23 @37292 has 90 MA's), (29, 37250), (36, 37184),

Gene: DelaGarza\_56 Start: 32254, Stop: 32481, Start Num: 23

Candidate Starts for DelaGarza\_56:

(Start: 14 @32194 has 1 MA's), (Start: 23 @32254 has 90 MA's), (40, 32389), (44, 32422), (47, 32443),

Gene: Delphidian\_53 Start: 37326, Stop: 37102, Start Num: 23

Candidate Starts for Delphidian\_53:

(7, 37431), (Start: 16 @37368 has 11 MA's), (Start: 23 @37326 has 90 MA's), (29, 37284), (36, 37218),

Gene: Den3\_53 Start: 37303, Stop: 37079, Start Num: 23

Candidate Starts for Den3\_53:

(Start: 11 @37384 has 2 MA's), (13, 37381), (Start: 16 @37345 has 11 MA's), (Start: 23 @37303 has 90 MA's), (29, 37261), (36, 37195),

Gene: Dothraki\_53 Start: 37300, Stop: 37076, Start Num: 23

Candidate Starts for Dothraki\_53:

(4, 37474), (Start: 16 @37342 has 11 MA's), (Start: 23 @37300 has 90 MA's), (29, 37258), (36, 37192),

Gene: Duocatuli\_52 Start: 37017, Stop: 36784, Start Num: 21

Candidate Starts for Duocatuli\_52:

(Start: 21 @37017 has 51 MA's), (28, 36969), (35, 36906), (45, 36834), (46, 36825),

Gene: Endor\_55 Start: 37862, Stop: 37629, Start Num: 21

Candidate Starts for Endor\_55:

(Start: 21 @37862 has 51 MA's), (28, 37814), (35, 37751), (45, 37679), (46, 37670),

Gene: Erla\_52 Start: 37010, Stop: 36777, Start Num: 21

Candidate Starts for Erla\_52:

(Start: 21 @37010 has 51 MA's), (28, 36962), (35, 36899), (45, 36827), (46, 36818),

Gene: Erudite\_48 Start: 35258, Stop: 35491, Start Num: 23

Candidate Starts for Erudite\_48:

(Start: 23 @35258 has 90 MA's), (26, 35288), (27, 35294), (28, 35297), (33, 35339), (38, 35381), (42, 35417), (45, 35444),

Gene: Espinosa\_52 Start: 37025, Stop: 36792, Start Num: 21

Candidate Starts for Espinosa\_52:

(Start: 21 @37025 has 51 MA's), (28, 36977), (35, 36914), (45, 36842), (46, 36833),

Gene: Etna\_52 Start: 37162, Stop: 36929, Start Num: 21

Candidate Starts for Etna\_52:

(Start: 21 @37162 has 51 MA's), (28, 37114), (35, 37051), (45, 36979), (46, 36970),

Gene: Etta\_52 Start: 37014, Stop: 36781, Start Num: 21

Candidate Starts for Etta\_52:

(Start: 21 @37014 has 51 MA's), (28, 36966), (35, 36903), (45, 36831), (46, 36822),

Gene: Exploradora\_52 Start: 37004, Stop: 36780, Start Num: 23

Candidate Starts for Exploradora\_52:

(Start: 11 @37085 has 2 MA's), (13, 37082), (Start: 16 @37046 has 11 MA's), (Start: 23 @37004 has 90 MA's), (29, 36962), (36, 36896),

Gene: FarmerDoug\_53 Start: 37391, Stop: 37158, Start Num: 21

Candidate Starts for FarmerDoug\_53:

(Start: 21 @37391 has 51 MA's), (28, 37343), (35, 37280), (45, 37208), (46, 37199),

Gene: Figueroism\_53 Start: 37293, Stop: 37069, Start Num: 23

Candidate Starts for Figueroism\_53:

(4, 37467), (Start: 16 @37335 has 11 MA's), (Start: 23 @37293 has 90 MA's), (29, 37251), (36, 37185),

Gene: FountainFog\_48 Start: 34943, Stop: 35176, Start Num: 23

Candidate Starts for FountainFog\_48:

(Start: 23 @34943 has 90 MA's), (24, 34952), (26, 34973), (42, 35102), (45, 35129),

Gene: FreddieHg\_49 Start: 34923, Stop: 35156, Start Num: 23

Candidate Starts for FreddieHg\_49:

(Start: 23 @34923 has 90 MA's), (26, 34953), (27, 34959), (38, 35046), (42, 35082), (45, 35109),

Gene: GaeCeo\_52 Start: 36617, Stop: 36369, Start Num: 18

Candidate Starts for GaeCeo\_52:

(1, 36830), (Start: 6 @36743 has 1 MA's), (8, 36698), (9, 36692), (Start: 18 @36617 has 3 MA's), (28, 36554), (41, 36449), (45, 36419), (48, 36404),

Gene: GardenB\_54 Start: 37643, Stop: 37404, Start Num: 20

Candidate Starts for GardenB\_54:

(Start: 20 @37643 has 7 MA's), (36, 37520),

Gene: Garey24\_53 Start: 36993, Stop: 36760, Start Num: 21

Candidate Starts for Garey24\_53:

(Start: 21 @36993 has 51 MA's), (28, 36945), (35, 36882), (45, 36810), (46, 36801),

Gene: Gargoyle\_53 Start: 37303, Stop: 37079, Start Num: 23

Candidate Starts for Gargoyle\_53:

(Start: 11 @37384 has 2 MA's), (13, 37381), (Start: 16 @37345 has 11 MA's), (Start: 23 @37303 has 90 MA's), (29, 37261), (36, 37195),

Gene: Gelo\_52 Start: 37020, Stop: 36787, Start Num: 21

Candidate Starts for Gelo\_52:

(Start: 21 @37020 has 51 MA's), (28, 36972), (35, 36909), (45, 36837), (46, 36828),

Gene: Gershwin\_52 Start: 37027, Stop: 36794, Start Num: 21

Candidate Starts for Gershwin\_52:

(Start: 21 @37027 has 51 MA's), (28, 36979), (35, 36916), (45, 36844), (46, 36835),

Gene: Gilda\_49 Start: 35703, Stop: 35936, Start Num: 23

Candidate Starts for Gilda\_49:

(Start: 23 @35703 has 90 MA's), (26, 35733), (27, 35739), (38, 35826), (42, 35862), (45, 35889),

Gene: GoingMerry\_54 Start: 37281, Stop: 37057, Start Num: 23

Candidate Starts for GoingMerry\_54:

(Start: 11 @37362 has 2 MA's), (13, 37359), (Start: 16 @37323 has 11 MA's), (Start: 23 @37281 has 90 MA's), (29, 37239), (36, 37173),

Gene: GoneGirl\_55 Start: 37630, Stop: 37391, Start Num: 20

Candidate Starts for GoneGirl\_55:

(Start: 20 @37630 has 7 MA's), (36, 37507),

Gene: Greys\_53 Start: 37341, Stop: 37075, Start Num: 16

Candidate Starts for Greys\_53:

(Start: 11 @37380 has 2 MA's), (13, 37377), (Start: 16 @37341 has 11 MA's), (Start: 23 @37299 has 90 MA's), (29, 37257), (36, 37191),

Gene: Gubbabump\_52 Start: 36994, Stop: 36770, Start Num: 23

Candidate Starts for Gubbabump\_52:

(Start: 11 @37075 has 2 MA's), (13, 37072), (Start: 16 @37036 has 11 MA's), (Start: 23 @36994 has 90 MA's), (29, 36952), (36, 36886),

Gene: Hager\_50 Start: 35123, Stop: 35356, Start Num: 23

Candidate Starts for Hager\_50:

(Start: 23 @35123 has 90 MA's), (26, 35153), (27, 35159), (38, 35246), (42, 35282), (45, 35309),

Gene: Hamlet\_52 Start: 37107, Stop: 36874, Start Num: 21

Candidate Starts for Hamlet\_52:

(Start: 21 @37107 has 51 MA's), (28, 37059), (35, 36996), (45, 36924), (46, 36915),

Gene: HanSolo\_52 Start: 37004, Stop: 36780, Start Num: 23

Candidate Starts for HanSolo\_52:

(Start: 11 @37085 has 2 MA's), (13, 37082), (Start: 16 @37046 has 11 MA's), (Start: 23 @37004 has 90 MA's), (29, 36962), (36, 36896),

Gene: HankSprout\_53 Start: 36894, Stop: 36661, Start Num: 21

Candidate Starts for HankSprout\_53:

(Start: 21 @36894 has 51 MA's), (28, 36846), (35, 36783), (45, 36711), (46, 36702),

Gene: Haunter\_49 Start: 35085, Stop: 35318, Start Num: 23

Candidate Starts for Haunter\_49:

(Start: 23 @35085 has 90 MA's), (26, 35115), (27, 35121), (38, 35208), (42, 35244), (45, 35271),

Gene: HavenFinLeoSun\_55 Start: 37409, Stop: 37170, Start Num: 20

Candidate Starts for HavenFinLeoSun\_55:

(Start: 20 @37409 has 7 MA's), (36, 37286),

Gene: Hiddenleaf\_49 Start: 34913, Stop: 35146, Start Num: 23

Candidate Starts for Hiddenleaf\_49:

(Start: 23 @34913 has 90 MA's), (26, 34943), (27, 34949), (38, 35036), (42, 35072), (45, 35099),

Gene: HungryHenry\_52 Start: 37009, Stop: 36785, Start Num: 23

Candidate Starts for HungryHenry\_52:

(Start: 11 @37090 has 2 MA's), (13, 37087), (Start: 16 @37051 has 11 MA's), (Start: 23 @37009 has 90 MA's), (29, 36967), (36, 36901),

Gene: Ilzat\_52 Start: 37020, Stop: 36796, Start Num: 23

Candidate Starts for Ilzat\_52:

(Start: 11 @37101 has 2 MA's), (13, 37098), (Start: 16 @37062 has 11 MA's), (Start: 23 @37020 has 90 MA's), (29, 36978), (36, 36912),

Gene: IndiRoo\_4 Start: 2526, Stop: 2281, Start Num: 22

Candidate Starts for IndiRoo\_4:

(2, 2709), (3, 2706), (5, 2691), (13, 2601), (17, 2559), (Start: 22 @2526 has 4 MA's), (30, 2463), (34, 2436), (47, 2319),

Gene: Inventa\_53 Start: 37297, Stop: 37073, Start Num: 23

Candidate Starts for Inventa\_53:

(7, 37402), (Start: 16 @37339 has 11 MA's), (Start: 23 @37297 has 90 MA's), (29, 37255), (36, 37189),

Gene: loannes\_53 Start: 37301, Stop: 37077, Start Num: 23

Candidate Starts for loannes\_53:

(Start: 16 @37343 has 11 MA's), (Start: 23 @37301 has 90 MA's), (29, 37259), (36, 37193),

Gene: JDawG\_48 Start: 35318, Stop: 35551, Start Num: 23

Candidate Starts for JDawG\_48:

(Start: 23 @35318 has 90 MA's), (26, 35348), (27, 35354), (38, 35441), (42, 35477), (45, 35504),

Gene: Janus167\_52 Start: 37031, Stop: 36807, Start Num: 23

Candidate Starts for Janus167\_52:

(Start: 11 @37112 has 2 MA's), (13, 37109), (Start: 16 @37073 has 11 MA's), (Start: 23 @37031 has 90 MA's), (29, 36989), (36, 36923),

Gene: JasonD\_54 Start: 37244, Stop: 37005, Start Num: 20

Candidate Starts for JasonD\_54:

(Start: 20 @37244 has 7 MA's), (36, 37121),

Gene: JasperRussell\_52 Start: 37017, Stop: 36784, Start Num: 21

Candidate Starts for JasperRussell\_52:

(Start: 21 @37017 has 51 MA's), (28, 36969), (35, 36906), (45, 36834), (46, 36825),

Gene: Jenos\_55 Start: 37977, Stop: 37738, Start Num: 20

Candidate Starts for Jenos\_55:

(Start: 20 @37977 has 7 MA's), (36, 37854),

Gene: Jerbirus\_54 Start: 37017, Stop: 36784, Start Num: 21

Candidate Starts for Jerbirus\_54:

(Start: 21 @37017 has 51 MA's), (28, 36969), (35, 36906), (45, 36834), (46, 36825),

Gene: JeriBeth\_52 Start: 36951, Stop: 36643, Start Num: 10

Candidate Starts for JeriBeth\_52:

(Start: 10 @36951 has 1 MA's), (Start: 16 @36909 has 11 MA's), (Start: 23 @36867 has 90 MA's), (29, 36825), (36, 36759),

Gene: JingleBells\_49 Start: 35048, Stop: 35281, Start Num: 23

Candidate Starts for JingleBells\_49:

(Start: 23 @35048 has 90 MA's), (26, 35078), (27, 35084), (38, 35171), (42, 35207), (45, 35234),

Gene: Kale\_52 Start: 37029, Stop: 36796, Start Num: 21

Candidate Starts for Kale\_52:

(Start: 21 @37029 has 51 MA's), (28, 36981), (35, 36918), (45, 36846), (46, 36837),

Gene: KannH\_52 Start: 37017, Stop: 36784, Start Num: 21

Candidate Starts for KannH\_52:

(Start: 21 @37017 has 51 MA's), (28, 36969), (35, 36906), (45, 36834), (46, 36825),

Gene: Karate\_48 Start: 35703, Stop: 35936, Start Num: 23

Candidate Starts for Karate\_48:

(Start: 23 @35703 has 90 MA's), (26, 35733), (27, 35739), (38, 35826), (42, 35862), (45, 35889),

Gene: KellyGreen\_54 Start: 37011, Stop: 36778, Start Num: 21

Candidate Starts for KellyGreen\_54:

(Start: 21 @37011 has 51 MA's), (28, 36963), (35, 36900), (45, 36828), (46, 36819),

Gene: KingJulien\_51 Start: 36998, Stop: 36765, Start Num: 21

Candidate Starts for KingJulien\_51:

(Start: 21 @36998 has 51 MA's), (28, 36950), (35, 36887), (45, 36815), (46, 36806),

Gene: Klimt\_53 Start: 37045, Stop: 36812, Start Num: 21

Candidate Starts for Klimt\_53:

(Start: 21 @37045 has 51 MA's), (28, 36997), (35, 36934), (45, 36862), (46, 36853),

Gene: Knox\_53 Start: 37379, Stop: 37074, Start Num: 11

Candidate Starts for Knox\_53:

(Start: 11 @37379 has 2 MA's), (13, 37376), (Start: 16 @37340 has 11 MA's), (Start: 23 @37298 has 90 MA's), (29, 37256), (36, 37190),

Gene: Kors\_16 Start: 8032, Stop: 8265, Start Num: 19

Candidate Starts for Kors\_16:

(Start: 19 @8032 has 7 MA's), (26, 8080), (29, 8092), (30, 8107), (32, 8128), (43, 8194),

Gene: Kouch\_53 Start: 37004, Stop: 36780, Start Num: 23

Candidate Starts for Kouch\_53:

(Start: 11 @37085 has 2 MA's), (13, 37082), (Start: 16 @37046 has 11 MA's), (Start: 23 @37004 has 90 MA's), (29, 36962), (36, 36896),

Gene: Krampus\_49 Start: 35717, Stop: 35950, Start Num: 23

Candidate Starts for Krampus\_49:

(Start: 23 @35717 has 90 MA's), (26, 35747), (27, 35753), (38, 35840), (42, 35876), (45, 35903),

Gene: Kurt1\_53 Start: 37297, Stop: 37073, Start Num: 23

Candidate Starts for Kurt1\_53:

(7, 37402), (Start: 16 @37339 has 11 MA's), (Start: 23 @37297 has 90 MA's), (29, 37255), (36, 37189),

Gene: Leafus\_52 Start: 37262, Stop: 37029, Start Num: 21

Candidate Starts for Leafus\_52:

(Start: 21 @37262 has 51 MA's), (28, 37214), (35, 37151), (45, 37079), (46, 37070),

Gene: LordBart\_16 Start: 8005, Stop: 8238, Start Num: 19

Candidate Starts for LordBart\_16:

(Start: 19 @8005 has 7 MA's), (26, 8053), (29, 8065), (30, 8080), (32, 8101), (43, 8167),

Gene: Lovelyunicorn\_53 Start: 37299, Stop: 37075, Start Num: 23

Candidate Starts for Lovelyunicorn\_53:

(Start: 11 @37380 has 2 MA's), (13, 37377), (Start: 16 @37341 has 11 MA's), (Start: 23 @37299 has 90 MA's), (29, 37257), (36, 37191),

Gene: Ludgate\_53 Start: 37381, Stop: 37076, Start Num: 11

Candidate Starts for Ludgate\_53:

(Start: 11 @37381 has 2 MA's), (13, 37378), (Start: 16 @37342 has 11 MA's), (Start: 23 @37300 has 90 MA's), (29, 37258), (36, 37192),

Gene: MaeLinda\_53 Start: 37301, Stop: 37077, Start Num: 23

Candidate Starts for MaeLinda\_53:

(4, 37475), (Start: 16 @37343 has 11 MA's), (Start: 23 @37301 has 90 MA's), (29, 37259), (36, 37193),

Gene: ManRay\_52 Start: 37027, Stop: 36794, Start Num: 21

Candidate Starts for ManRay\_52:

(Start: 21 @37027 has 51 MA's), (28, 36979), (35, 36916), (45, 36844), (46, 36835),

Gene: Martin\_54 Start: 37306, Stop: 37082, Start Num: 23

Candidate Starts for Martin\_54:

(7, 37411), (Start: 16 @37348 has 11 MA's), (Start: 23 @37306 has 90 MA's), (29, 37264), (36, 37198),

Gene: McGalleon\_54 Start: 38115, Stop: 37876, Start Num: 20

Candidate Starts for McGalleon\_54:

(Start: 20 @38115 has 7 MA's), (36, 37992),

Gene: Megan\_18 Start: 12368, Stop: 12670, Start Num: 12

Candidate Starts for Megan\_18:

(Start: 12 @12368 has 1 MA's), (Start: 23 @12449 has 90 MA's), (26, 12479), (27, 12485), (29, 12491), (38, 12563), (39, 12578), (41, 12590), (49, 12650),

Gene: Merida02\_55 Start: 37326, Stop: 37102, Start Num: 23

Candidate Starts for Merida02\_55:

(7, 37431), (Start: 16 @37368 has 11 MA's), (Start: 23 @37326 has 90 MA's), (29, 37284), (36, 37218),

Gene: Milani\_4 Start: 2526, Stop: 2281, Start Num: 22

Candidate Starts for Milani\_4:

(13, 2601), (15, 2577), (Start: 22 @2526 has 4 MA's), (34, 2436), (37, 2403), (47, 2319),

Gene: MillyPhilly\_53 Start: 37336, Stop: 37070, Start Num: 16

Candidate Starts for MillyPhilly\_53:

(7, 37399), (Start: 16 @37336 has 11 MA's), (Start: 23 @37294 has 90 MA's), (29, 37252), (36, 37186),

Gene: MonChoix\_50 Start: 36925, Stop: 36692, Start Num: 21

Candidate Starts for MonChoix\_50:

(Start: 21 @36925 has 51 MA's), (28, 36877), (35, 36814), (45, 36742), (46, 36733),

Gene: MortySmith\_47 Start: 34735, Stop: 34968, Start Num: 23

Candidate Starts for MortySmith\_47:

(Start: 23 @34735 has 90 MA's), (26, 34765), (27, 34771), (38, 34858), (42, 34894), (45, 34921),

Gene: MrWorldwide\_53 Start: 37304, Stop: 37080, Start Num: 23

Candidate Starts for MrWorldwide\_53:

(7, 37409), (Start: 16 @37346 has 11 MA's), (Start: 23 @37304 has 90 MA's), (29, 37262), (36, 37196),

Gene: Nagem\_53 Start: 37310, Stop: 37077, Start Num: 21

Candidate Starts for Nagem\_53:

(Start: 21 @37310 has 51 MA's), (28, 37262), (35, 37199), (45, 37127), (46, 37118),

Gene: NarutoRun\_49 Start: 35682, Stop: 35915, Start Num: 23

Candidate Starts for NarutoRun\_49:

(Start: 23 @35682 has 90 MA's), (26, 35712), (27, 35718), (38, 35805), (42, 35841), (45, 35868),

Gene: Nattles\_52 Start: 37014, Stop: 36781, Start Num: 21

Candidate Starts for Nattles\_52:

(Start: 21 @37014 has 51 MA's), (28, 36966), (35, 36903), (45, 36831), (46, 36822),

Gene: Neptune\_49 Start: 35682, Stop: 35915, Start Num: 23

Candidate Starts for Neptune\_49:

(Start: 23 @35682 has 90 MA's), (26, 35712), (27, 35718), (38, 35805), (42, 35841), (45, 35868),

Gene: NickSell\_53 Start: 37307, Stop: 37083, Start Num: 23

Candidate Starts for NickSell\_53:

(7, 37412), (Start: 16 @37349 has 11 MA's), (Start: 23 @37307 has 90 MA's), (29, 37265), (36, 37199),

Gene: Oats\_52 Start: 37027, Stop: 36794, Start Num: 21

Candidate Starts for Oats\_52:

(Start: 21 @37027 has 51 MA's), (28, 36979), (35, 36916), (45, 36844), (46, 36835),

Gene: OhDear\_49 Start: 35680, Stop: 35913, Start Num: 23

Candidate Starts for OhDear\_49:

(Start: 23 @35680 has 90 MA's), (26, 35710), (27, 35716), (38, 35803), (42, 35839), (45, 35866),

Gene: OldNelly\_54 Start: 37329, Stop: 37105, Start Num: 23

Candidate Starts for OldNelly\_54:

(7, 37434), (Start: 16 @37371 has 11 MA's), (Start: 23 @37329 has 90 MA's), (29, 37287), (36, 37221),

Gene: Oxtober96\_54 Start: 37341, Stop: 37075, Start Num: 16

Candidate Starts for Oxtober96\_54:

(Start: 11 @37380 has 2 MA's), (13, 37377), (Start: 16 @37341 has 11 MA's), (Start: 23 @37299 has 90 MA's), (29, 37257), (36, 37191),

Gene: Papafritta\_52 Start: 37055, Stop: 36831, Start Num: 23

Candidate Starts for Papafritta\_52:

(Start: 11 @37136 has 2 MA's), (13, 37133), (Start: 16 @37097 has 11 MA's), (Start: 23 @37055 has 90 MA's), (29, 37013), (36, 36947),

Gene: ParleG\_53 Start: 37304, Stop: 37080, Start Num: 23

Candidate Starts for ParleG\_53:

(7, 37409), (Start: 16 @37346 has 11 MA's), (Start: 23 @37304 has 90 MA's), (29, 37262), (36, 37196),

Gene: Peep\_53 Start: 37331, Stop: 37065, Start Num: 16

Candidate Starts for Peep\_53:

(Start: 10 @37373 has 1 MA's), (Start: 16 @37331 has 11 MA's), (Start: 23 @37289 has 90 MA's), (29, 37247), (36, 37181),

Gene: Peppino\_52 Start: 37101, Stop: 36868, Start Num: 21

Candidate Starts for Peppino\_52:

(Start: 21 @37101 has 51 MA's), (28, 37053), (35, 36990), (45, 36918), (46, 36909),

Gene: Pharpay\_49 Start: 35727, Stop: 35960, Start Num: 23  
Candidate Starts for Pharpay\_49:  
(Start: 23 @35727 has 90 MA's), (26, 35757), (27, 35763), (38, 35850), (42, 35886), (45, 35913),

Gene: Pherferi\_53 Start: 37297, Stop: 37073, Start Num: 23  
Candidate Starts for Pherferi\_53:  
(7, 37402), (Start: 16 @37339 has 11 MA's), (Start: 23 @37297 has 90 MA's), (29, 37255), (36, 37189),

Gene: Phiderman\_53 Start: 37294, Stop: 37070, Start Num: 23  
Candidate Starts for Phiderman\_53:  
(7, 37399), (Start: 16 @37336 has 11 MA's), (Start: 23 @37294 has 90 MA's), (29, 37252), (36, 37186),

Gene: PhillyPhantom\_52 Start: 37097, Stop: 36864, Start Num: 21  
Candidate Starts for PhillyPhantom\_52:  
(Start: 21 @37097 has 51 MA's), (28, 37049), (35, 36986), (45, 36914), (46, 36905),

Gene: Phireproof\_53 Start: 37303, Stop: 37079, Start Num: 23  
Candidate Starts for Phireproof\_53:  
(7, 37408), (Start: 16 @37345 has 11 MA's), (Start: 23 @37303 has 90 MA's), (29, 37261), (36, 37195),

Gene: PhredFlintston\_53 Start: 37297, Stop: 37073, Start Num: 23  
Candidate Starts for PhredFlintston\_53:  
(7, 37402), (Start: 16 @37339 has 11 MA's), (Start: 23 @37297 has 90 MA's), (29, 37255), (36, 37189),

Gene: Phriends\_53 Start: 37329, Stop: 37105, Start Num: 23  
Candidate Starts for Phriends\_53:  
(7, 37434), (Start: 16 @37371 has 11 MA's), (Start: 23 @37329 has 90 MA's), (29, 37287), (36, 37221),

Gene: PhunaPhoke\_49 Start: 35697, Stop: 35930, Start Num: 23  
Candidate Starts for PhunaPhoke\_49:  
(Start: 23 @35697 has 90 MA's), (26, 35727), (27, 35733), (38, 35820), (42, 35856), (45, 35883),

Gene: Pocket\_52 Start: 37054, Stop: 36821, Start Num: 21  
Candidate Starts for Pocket\_52:  
(Start: 21 @37054 has 51 MA's), (28, 37006), (35, 36943), (45, 36871), (46, 36862),

Gene: PuppyEggo\_53 Start: 37346, Stop: 37080, Start Num: 16  
Candidate Starts for PuppyEggo\_53:  
(Start: 11 @37385 has 2 MA's), (13, 37382), (Start: 16 @37346 has 11 MA's), (Start: 23 @37304 has 90 MA's), (29, 37262), (36, 37196),

Gene: Raccoon\_52 Start: 37064, Stop: 36831, Start Num: 21  
Candidate Starts for Raccoon\_52:  
(Start: 21 @37064 has 51 MA's), (28, 37016), (35, 36953), (45, 36881), (46, 36872),

Gene: Rachella\_49 Start: 35708, Stop: 35941, Start Num: 23  
Candidate Starts for Rachella\_49:  
(Start: 23 @35708 has 90 MA's), (26, 35738), (27, 35744), (38, 35831), (42, 35867), (45, 35894),

Gene: Rapheph\_53 Start: 37297, Stop: 37073, Start Num: 23  
Candidate Starts for Rapheph\_53:  
(7, 37402), (Start: 16 @37339 has 11 MA's), (Start: 23 @37297 has 90 MA's), (29, 37255), (36, 37189),

Gene: Raptor\_53 Start: 37301, Stop: 37077, Start Num: 23  
Candidate Starts for Raptor\_53:  
(Start: 11 @37382 has 2 MA's), (13, 37379), (Start: 16 @37343 has 11 MA's), (Start: 23 @37301 has 90 MA's), (29, 37259), (36, 37193),

Gene: Redfield\_52 Start: 37109, Stop: 36876, Start Num: 21  
Candidate Starts for Redfield\_52:  
(Start: 21 @37109 has 51 MA's), (28, 37061), (35, 36998), (45, 36926), (46, 36917),

Gene: Renzie\_53 Start: 37292, Stop: 37068, Start Num: 23  
Candidate Starts for Renzie\_53:  
(Start: 10 @37376 has 1 MA's), (Start: 16 @37334 has 11 MA's), (Start: 23 @37292 has 90 MA's), (29, 37250), (36, 37184),

Gene: Rie18\_49 Start: 35208, Stop: 35441, Start Num: 23  
Candidate Starts for Rie18\_49:  
(Start: 23 @35208 has 90 MA's), (24, 35217), (26, 35238), (42, 35367), (45, 35394),

Gene: RikSengupta\_16 Start: 8084, Stop: 8317, Start Num: 19  
Candidate Starts for RikSengupta\_16:  
(Start: 19 @8084 has 7 MA's), (26, 8132), (29, 8144), (30, 8159), (32, 8180), (43, 8246),

Gene: Riyhil\_53 Start: 37349, Stop: 37083, Start Num: 16  
Candidate Starts for Riyhil\_53:  
(7, 37412), (Start: 16 @37349 has 11 MA's), (Start: 23 @37307 has 90 MA's), (29, 37265), (36, 37199),

Gene: Robinson\_53 Start: 37295, Stop: 37071, Start Num: 23  
Candidate Starts for Robinson\_53:  
(Start: 16 @37337 has 11 MA's), (Start: 23 @37295 has 90 MA's), (29, 37253), (36, 37187),

Gene: Rog141\_52 Start: 37017, Stop: 36784, Start Num: 21  
Candidate Starts for Rog141\_52:  
(Start: 21 @37017 has 51 MA's), (28, 36969), (35, 36906), (45, 36834), (46, 36825),

Gene: RosieMae\_52 Start: 37072, Stop: 36839, Start Num: 21  
Candidate Starts for RosieMae\_52:  
(Start: 21 @37072 has 51 MA's), (28, 37024), (35, 36961), (45, 36889), (46, 36880),

Gene: SJay\_53 Start: 37311, Stop: 37078, Start Num: 21  
Candidate Starts for SJay\_53:  
(Start: 21 @37311 has 51 MA's), (28, 37263), (35, 37200), (45, 37128), (46, 37119),

Gene: Schnapsidee\_52 Start: 37138, Stop: 36905, Start Num: 21  
Candidate Starts for Schnapsidee\_52:  
(Start: 21 @37138 has 51 MA's), (28, 37090), (35, 37027), (45, 36955), (46, 36946),

Gene: Sedgewig\_52 Start: 37002, Stop: 36778, Start Num: 23  
Candidate Starts for Sedgewig\_52:  
(Start: 11 @37083 has 2 MA's), (13, 37080), (Start: 16 @37044 has 11 MA's), (Start: 23 @37002 has 90 MA's), (29, 36960), (36, 36894),

Gene: ShaiHulud\_53 Start: 37313, Stop: 37089, Start Num: 23  
Candidate Starts for ShaiHulud\_53:

(Start: 11 @37394 has 2 MA's), (13, 37391), (Start: 16 @37355 has 11 MA's), (Start: 23 @37313 has 90 MA's), (29, 37271), (36, 37205),

Gene: Shee\_53 Start: 37336, Stop: 37070, Start Num: 16

Candidate Starts for Shee\_53:

(7, 37399), (Start: 16 @37336 has 11 MA's), (Start: 23 @37294 has 90 MA's), (29, 37252), (36, 37186),

Gene: SilentWarrior\_49 Start: 34916, Stop: 35149, Start Num: 23

Candidate Starts for SilentWarrior\_49:

(Start: 23 @34916 has 90 MA's), (26, 34946), (27, 34952), (38, 35039), (42, 35075), (45, 35102),

Gene: Snakehole\_49 Start: 34891, Stop: 35124, Start Num: 23

Candidate Starts for Snakehole\_49:

(Start: 23 @34891 has 90 MA's), (26, 34921), (27, 34927), (38, 35014), (42, 35050), (45, 35077),

Gene: SoilGremlin\_54 Start: 37368, Stop: 37102, Start Num: 16

Candidate Starts for SoilGremlin\_54:

(7, 37431), (Start: 16 @37368 has 11 MA's), (Start: 23 @37326 has 90 MA's), (29, 37284), (36, 37218),

Gene: SolidSnake\_55 Start: 37329, Stop: 37105, Start Num: 23

Candidate Starts for SolidSnake\_55:

(7, 37434), (Start: 16 @37371 has 11 MA's), (Start: 23 @37329 has 90 MA's), (29, 37287), (36, 37221),

Gene: SonOfLevi\_53 Start: 37045, Stop: 36812, Start Num: 21

Candidate Starts for SonOfLevi\_53:

(Start: 21 @37045 has 51 MA's), (28, 36997), (35, 36934), (45, 36862), (46, 36853),

Gene: Soror1\_51 Start: 37013, Stop: 36780, Start Num: 21

Candidate Starts for Soror1\_51:

(Start: 21 @37013 has 51 MA's), (28, 36965), (35, 36902), (45, 36830), (46, 36821),

Gene: Sparcetus\_16 Start: 7963, Stop: 8196, Start Num: 19

Candidate Starts for Sparcetus\_16:

(Start: 19 @7963 has 7 MA's), (26, 8011), (29, 8023), (30, 8038), (32, 8059), (43, 8125),

Gene: Stanktossa\_52 Start: 37297, Stop: 37073, Start Num: 23

Candidate Starts for Stanktossa\_52:

(4, 37471), (Start: 16 @37339 has 11 MA's), (Start: 23 @37297 has 90 MA's), (29, 37255), (36, 37189),

Gene: StingRay\_52 Start: 37018, Stop: 36794, Start Num: 23

Candidate Starts for StingRay\_52:

(Start: 16 @37060 has 11 MA's), (Start: 23 @37018 has 90 MA's), (29, 36976), (36, 36910),

Gene: StirfryIV\_52 Start: 37013, Stop: 36789, Start Num: 23

Candidate Starts for StirfryIV\_52:

(Start: 11 @37094 has 2 MA's), (13, 37091), (Start: 16 @37055 has 11 MA's), (Start: 23 @37013 has 90 MA's), (29, 36971), (36, 36905),

Gene: Stormbreaker8\_51 Start: 36999, Stop: 36766, Start Num: 21

Candidate Starts for Stormbreaker8\_51:

(Start: 21 @36999 has 51 MA's), (28, 36951), (35, 36888), (45, 36816), (46, 36807),

Gene: Strathdee\_53 Start: 37303, Stop: 37079, Start Num: 23

Candidate Starts for Strathdee\_53:

(Start: 11 @37384 has 2 MA's), (13, 37381), (Start: 16 @37345 has 11 MA's), (Start: 23 @37303 has 90 MA's), (29, 37261), (36, 37195),

Gene: Sucha\_4 Start: 2581, Stop: 2282, Start Num: 14

Candidate Starts for Sucha\_4:

(3, 2707), (5, 2692), (Start: 14 @2581 has 1 MA's), (17, 2560), (Start: 22 @2527 has 4 MA's), (30, 2464), (34, 2437), (47, 2320),

Gene: Superfresh\_53 Start: 37334, Stop: 37068, Start Num: 16

Candidate Starts for Superfresh\_53:

(Start: 10 @37376 has 1 MA's), (Start: 16 @37334 has 11 MA's), (Start: 23 @37292 has 90 MA's), (29, 37250), (36, 37184),

Gene: Symere\_52 Start: 37012, Stop: 36788, Start Num: 23

Candidate Starts for Symere\_52:

(Start: 11 @37093 has 2 MA's), (13, 37090), (Start: 16 @37054 has 11 MA's), (Start: 23 @37012 has 90 MA's), (29, 36970), (36, 36904),

Gene: TatarkaPM\_53 Start: 37307, Stop: 37083, Start Num: 23

Candidate Starts for TatarkaPM\_53:

(7, 37412), (Start: 16 @37349 has 11 MA's), (Start: 23 @37307 has 90 MA's), (29, 37265), (36, 37199),

Gene: Teagan\_53 Start: 37294, Stop: 37070, Start Num: 23

Candidate Starts for Teagan\_53:

(Start: 11 @37375 has 2 MA's), (13, 37372), (Start: 16 @37336 has 11 MA's), (Start: 23 @37294 has 90 MA's), (29, 37252), (36, 37186),

Gene: TeddyBear\_52 Start: 37027, Stop: 36794, Start Num: 21

Candidate Starts for TeddyBear\_52:

(Start: 21 @37027 has 51 MA's), (28, 36979), (35, 36916), (45, 36844), (46, 36835),

Gene: Tedro\_49 Start: 35141, Stop: 35374, Start Num: 23

Candidate Starts for Tedro\_49:

(Start: 23 @35141 has 90 MA's), (26, 35171), (27, 35177), (38, 35264), (42, 35300), (45, 35327),

Gene: Tenda\_52 Start: 37025, Stop: 36792, Start Num: 21

Candidate Starts for Tenda\_52:

(Start: 21 @37025 has 51 MA's), (28, 36977), (35, 36914), (45, 36842), (46, 36833),

Gene: Theresita\_32 Start: 22955, Stop: 22710, Start Num: 22

Candidate Starts for Theresita\_32:

(Start: 22 @22955 has 4 MA's), (27, 22913), (30, 22892), (46, 22751), (47, 22748),

Gene: Thompsone\_53 Start: 37301, Stop: 37077, Start Num: 23

Candidate Starts for Thompsone\_53:

(Start: 11 @37382 has 2 MA's), (13, 37379), (Start: 16 @37343 has 11 MA's), (Start: 23 @37301 has 90 MA's), (29, 37259), (36, 37193),

Gene: Thorongil\_53 Start: 36818, Stop: 36594, Start Num: 23

Candidate Starts for Thorongil\_53:

(Start: 11 @36899 has 2 MA's), (13, 36896), (Start: 16 @36860 has 11 MA's), (Start: 23 @36818 has 90 MA's), (29, 36776), (36, 36710),

Gene: Tiggy93\_49 Start: 35708, Stop: 35941, Start Num: 23

Candidate Starts for Tiggy93\_49:

(Start: 23 @35708 has 90 MA's), (26, 35738), (27, 35744), (38, 35831), (42, 35867), (45, 35894),

Gene: TinSulphur\_54 Start: 37345, Stop: 37079, Start Num: 16

Candidate Starts for TinSulphur\_54:

(7, 37408), (Start: 16 @37345 has 11 MA's), (Start: 23 @37303 has 90 MA's), (29, 37261), (36, 37195),

Gene: TinyMiny\_16 Start: 7982, Stop: 8215, Start Num: 19

Candidate Starts for TinyMiny\_16:

(Start: 19 @7982 has 7 MA's), (26, 8030), (29, 8042), (30, 8057), (32, 8078), (43, 8144),

Gene: Tongui\_49 Start: 35268, Stop: 35501, Start Num: 23

Candidate Starts for Tongui\_49:

(Start: 23 @35268 has 90 MA's), (24, 35277), (26, 35298), (42, 35427), (45, 35454),

Gene: Velene\_53 Start: 37299, Stop: 37075, Start Num: 23

Candidate Starts for Velene\_53:

(Start: 11 @37380 has 2 MA's), (13, 37377), (Start: 16 @37341 has 11 MA's), (Start: 23 @37299 has 90 MA's), (25, 37272), (29, 37257), (36, 37191),

Gene: Vispistious\_53 Start: 37304, Stop: 37080, Start Num: 23

Candidate Starts for Vispistious\_53:

(Start: 11 @37385 has 2 MA's), (13, 37382), (Start: 16 @37346 has 11 MA's), (Start: 23 @37304 has 90 MA's), (29, 37262), (36, 37196),

Gene: WildNOut\_53 Start: 37297, Stop: 37073, Start Num: 23

Candidate Starts for WildNOut\_53:

(Start: 11 @37378 has 2 MA's), (13, 37375), (Start: 16 @37339 has 11 MA's), (Start: 23 @37297 has 90 MA's), (29, 37255), (36, 37189),

Gene: Winzigespinne\_52 Start: 37013, Stop: 36780, Start Num: 21

Candidate Starts for Winzigespinne\_52:

(Start: 21 @37013 has 51 MA's), (28, 36965), (35, 36902), (45, 36830), (46, 36821),

Gene: Zada\_54 Start: 37287, Stop: 37054, Start Num: 21

Candidate Starts for Zada\_54:

(Start: 21 @37287 has 51 MA's), (28, 37239), (35, 37176), (45, 37104), (46, 37095),