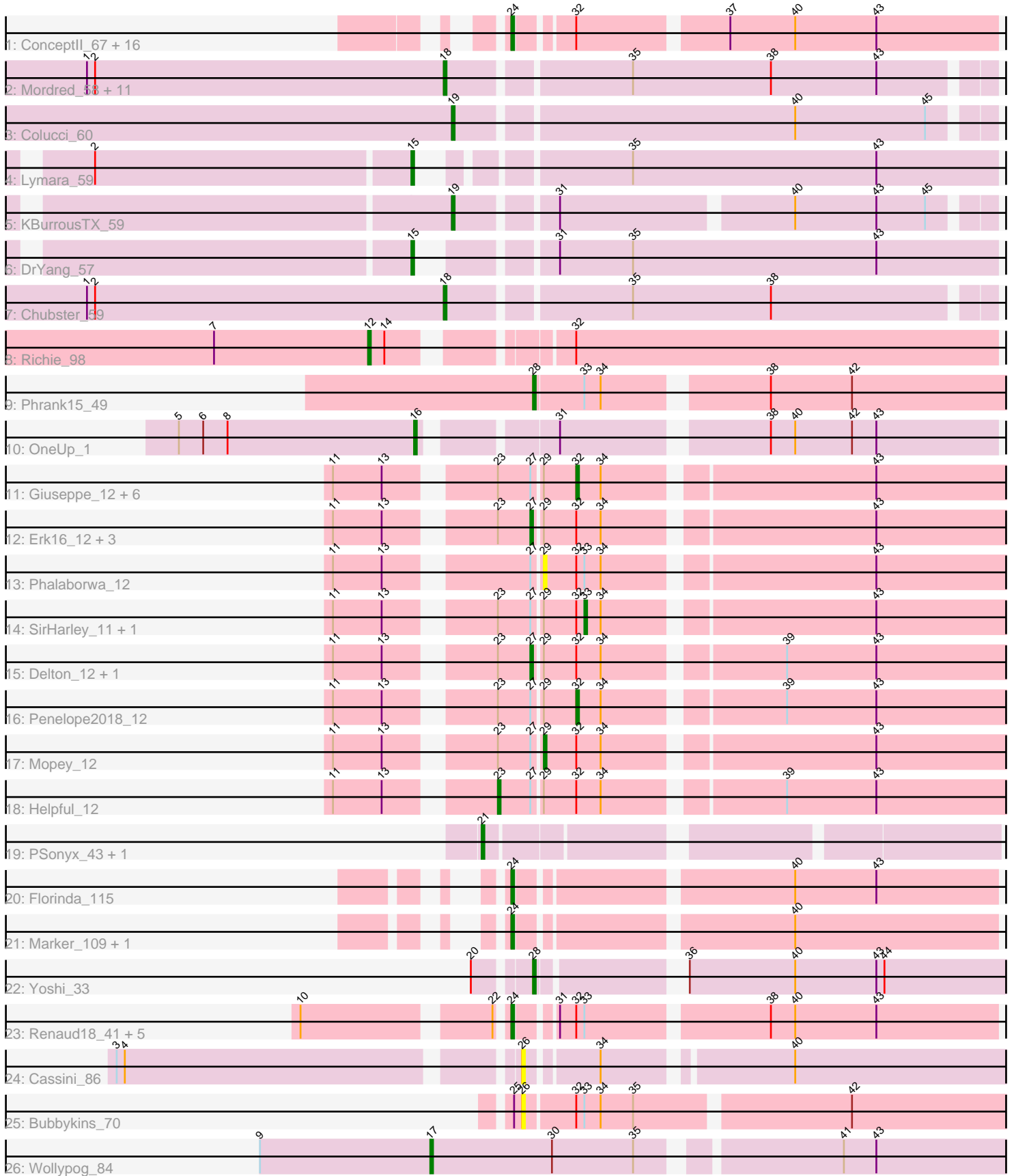


Pham 308543



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 308543 Report

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

Pham number 308543 has 71 members, 6 are drafts.

Phages represented in each track:

- Track 1 : ConceptII\_67, BPBiabs31\_66, DD5\_63, Bethlehem\_63, Fenn\_68, Naira\_67, Marco3\_69, Ruotula\_69, Ringer\_66, Magnito\_64, Pari\_67, PattyP\_66, Petruccio\_65, MrGordo\_66, Lockley\_62, Nerujay\_67, GMonster\_61
- Track 2 : Mordred\_58, JayCookie\_59, PrincessTrina\_58, Chipper1996\_580, Linus\_58, HumptyDumpty\_58, MoyaNatalis\_58, Kabreeze\_58, Chocolat\_58, Scavito\_58, JaNo\_58, Tophat\_58
- Track 3 : Colucci\_60
- Track 4 : Lymara\_59
- Track 5 : KBurrousTX\_59
- Track 6 : DrYang\_57
- Track 7 : Chubster\_59
- Track 8 : Richie\_98
- Track 9 : Phrank15\_49
- Track 10 : OneUp\_1
- Track 11 : Giuseppe\_12, PLOT\_12, Adjutor\_12, Nova\_12, Visconti\_12, Chill\_12, WaldoWhy\_12
- Track 12 : Erk16\_12, PBI1\_12, KandZ\_12, Butterscotch\_12
- Track 13 : Phalaborwa\_12
- Track 14 : SirHarley\_11, Gumball\_11
- Track 15 : Delton\_12, Troll4\_12
- Track 16 : Penelope2018\_12
- Track 17 : Mopey\_12
- Track 18 : Helpful\_12
- Track 19 : PSonyx\_43, Taotie\_41
- Track 20 : Florinda\_115
- Track 21 : Marker\_109, Cornucopia\_104
- Track 22 : Yoshi\_33
- Track 23 : Renaud18\_41, Blarby\_49, Estave1\_38, Taj\_40, DeadP\_41, Wee\_41
- Track 24 : Cassini\_86
- Track 25 : Bubbykins\_70
- Track 26 : Wollypog\_84

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

The start number called the most often in the published annotations is 24, it was called in 25 of the 65 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- BPBiebs31\_66, Bethlehem\_63, Blarby\_49, Conceptll\_67, Cornucopia\_104, DD5\_63, DeadP\_41, Estave1\_38, Fenn\_68, Florinda\_115, GMonster\_61, Lockley\_62, Magnito\_64, Marco3\_69, Marker\_109, MrGordo\_66, Naira\_67, Nerujay\_67, Pari\_67, PattyP\_66, Petruccio\_65, Renaud18\_41, Ringer\_66, Ruotula\_69, Taj\_40, Wee\_41,

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

- 

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

- Adjutor\_12, Bubbykins\_70, Butterscotch\_12, Cassini\_86, Chill\_12, Chipper1996\_580, Chocolat\_58, Chubster\_59, Colucci\_60, Delton\_12, DrYang\_57, Erk16\_12, Giuseppe\_12, Gumball\_11, Helpful\_12, HumptyDumpty\_58, JaNo\_58, JayCookie\_59, KBurrousTX\_59, Kabreeze\_58, KandZ\_12, Linus\_58, Lymara\_59, Mopey\_12, Mordred\_58, MoyaNatalis\_58, Nova\_12, OneUp\_1, PBI1\_12, PLOT\_12, PSonyx\_43, Penelope2018\_12, Phalaborwa\_12, Phrank15\_49, PrincessTrina\_58, Richie\_98, Scavito\_58, SirHarley\_11, Taotie\_41, Tophat\_58, Troll4\_12, Visconti\_12, WaldoWhy\_12, Wollypog\_84, Yoshi\_33,

### Summary by start number:

Start 12:

- Found in 1 of 71 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Richie\_98 (AY),

Start 15:

- Found in 2 of 71 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 2 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DrYang\_57 (AR), Lymara\_59 (AR),

Start 16:

- Found in 1 of 71 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: OneUp\_1 (CQ2),

Start 17:

- Found in 1 of 71 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Wollypog\_84 (singleton),

Start 18:

- Found in 13 of 71 ( 18.3% ) of genes in pham
- Manual Annotations of this start: 12 of 65
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Chipper1996\_580 (AR), Chocolat\_58 (AR), Chubster\_59 (AR), HumptyDumpty\_58 (AR), JaNo\_58 (AR), JayCookie\_59 (AR), Kabreeze\_58 (AR), Linus\_58 (AR), Mordred\_58 (AR), MoyaNatalis\_58 (AR), PrincessTrina\_58 (AR), Scavito\_58 (AR), Tophat\_58 (AR),

#### Start 19:

- Found in 2 of 71 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 2 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Colucci\_60 (AR), KBurroustX\_59 (AR),

#### Start 21:

- Found in 2 of 71 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: PSonyx\_43 (EQ), Taotie\_41 (EQ),

#### Start 23:

- Found in 18 of 71 ( 25.4% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 5.6% of time when present
- Phage (with cluster) where this start called: Helpful\_12 (D1),

#### Start 24:

- Found in 26 of 71 ( 36.6% ) of genes in pham
- Manual Annotations of this start: 25 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BPBiebs31\_66 (A1), Bethlehem\_63 (A1), Blarby\_49 (F), ConceptII\_67 (A1), Cornucopia\_104 (F1), DD5\_63 (A1), DeadP\_41 (F1), Estave1\_38 (F1), Fenn\_68 (A1), Florinda\_115 (F1), GMonster\_61 (A1), Lockley\_62 (A1), Magnito\_64 (A1), Marco3\_69 (A1), Marker\_109 (F1), MrGordo\_66 (A1), Naira\_67 (A1), Nerujay\_67 (A1), Pari\_67 (A1), PattyP\_66 (A1), Petruccio\_65 (A1), Renaud18\_41 (F4), Ringer\_66 (A1), Ruotula\_69 (A1), Taj\_40 (F1), Wee\_41 (F1),

#### Start 26:

- Found in 2 of 71 ( 2.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bubbykins\_70 (UNK), Cassini\_86 (FN),

#### Start 27:

- Found in 19 of 71 ( 26.8% ) of genes in pham
- Manual Annotations of this start: 6 of 65
- Called 31.6% of time when present
- Phage (with cluster) where this start called: Butterscotch\_12 (D1), Delton\_12 (D1), Erk16\_12 (D1), KandZ\_12 (D1), PBI1\_12 (D1), Troll4\_12 (D1),

#### Start 28:

- Found in 2 of 71 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 2 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Phrank15\_49 (AY), Yoshi\_33 (F2),

Start 29:

- Found in 19 of 71 ( 26.8% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 10.5% of time when present
- Phage (with cluster) where this start called: Mopey\_12 (D1), Phalaborwa\_12 (D1),

Start 32:

- Found in 44 of 71 ( 62.0% ) of genes in pham
- Manual Annotations of this start: 8 of 65
- Called 18.2% of time when present
- Phage (with cluster) where this start called: Adjutor\_12 (D1), Chill\_12 (D1), Giuseppe\_12 (D1), Nova\_12 (D1), PLOT\_12 (D1), Penelope2018\_12 (D1), Visconti\_12 (D1), WaldoWhy\_12 (D1),

Start 33:

- Found in 11 of 71 ( 15.5% ) of genes in pham
- Manual Annotations of this start: 2 of 65
- Called 18.2% of time when present
- Phage (with cluster) where this start called: Gumball\_11 (D1), SirHarley\_11 (D1),

**Summary by clusters:**

There are 13 clusters represented in this pham: F1, F2, F4, F, singleton, A1, AR, AY, CQ2, UNK, EQ, FN, D1,

Info for manual annotations of cluster A1:

- Start number 24 was manually annotated 17 times for cluster A1.

Info for manual annotations of cluster AR:

- Start number 15 was manually annotated 2 times for cluster AR.
- Start number 18 was manually annotated 12 times for cluster AR.
- Start number 19 was manually annotated 2 times for cluster AR.

Info for manual annotations of cluster AY:

- Start number 12 was manually annotated 1 time for cluster AY.
- Start number 28 was manually annotated 1 time for cluster AY.

Info for manual annotations of cluster CQ2:

- Start number 16 was manually annotated 1 time for cluster CQ2.

Info for manual annotations of cluster D1:

- Start number 23 was manually annotated 1 time for cluster D1.
- Start number 27 was manually annotated 6 times for cluster D1.
- Start number 29 was manually annotated 1 time for cluster D1.
- Start number 32 was manually annotated 8 times for cluster D1.
- Start number 33 was manually annotated 2 times for cluster D1.

Info for manual annotations of cluster EQ:

- Start number 21 was manually annotated 1 time for cluster EQ.

Info for manual annotations of cluster F1:

- Start number 24 was manually annotated 7 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 28 was manually annotated 1 time for cluster F2.

Info for manual annotations of cluster F4:

- Start number 24 was manually annotated 1 time for cluster F4.

### **Gene Information:**

Gene: Adjutor\_12 Start: 8570, Stop: 8734, Start Num: 32

Candidate Starts for Adjutor\_12:

(11, 8492), (13, 8510), (Start: 23 @8543 has 1 MA's), (Start: 27 @8555 has 6 MA's), (Start: 29 @8558 has 1 MA's), (Start: 32 @8570 has 8 MA's), (34, 8579), (43, 8672),

Gene: BPBiebs31\_66 Start: 42808, Stop: 42638, Start Num: 24

Candidate Starts for BPBiebs31\_66:

(Start: 24 @42808 has 25 MA's), (Start: 32 @42790 has 8 MA's), (37, 42739), (40, 42715), (43, 42685),

Gene: Bethlehem\_63 Start: 43484, Stop: 43314, Start Num: 24

Candidate Starts for Bethlehem\_63:

(Start: 24 @43484 has 25 MA's), (Start: 32 @43466 has 8 MA's), (37, 43415), (40, 43391), (43, 43361),

Gene: Blarby\_49 Start: 31815, Stop: 31648, Start Num: 24

Candidate Starts for Blarby\_49:

(10, 31881), (22, 31818), (Start: 24 @31815 has 25 MA's), (31, 31803), (Start: 32 @31797 has 8 MA's), (Start: 33 @31794 has 2 MA's), (38, 31731), (40, 31722), (43, 31692),

Gene: Bubbykins\_70 Start: 48691, Stop: 48876, Start Num: 26

Candidate Starts for Bubbykins\_70:

(25, 48688), (26, 48691), (Start: 32 @48709 has 8 MA's), (Start: 33 @48712 has 2 MA's), (34, 48718), (35, 48730), (42, 48805),

Gene: Butterscotch\_12 Start: 8615, Stop: 8794, Start Num: 27

Candidate Starts for Butterscotch\_12:

(11, 8552), (13, 8570), (Start: 23 @8603 has 1 MA's), (Start: 27 @8615 has 6 MA's), (Start: 29 @8618 has 1 MA's), (Start: 32 @8630 has 8 MA's), (34, 8639), (43, 8732),

Gene: Cassini\_86 Start: 48915, Stop: 49079, Start Num: 26

Candidate Starts for Cassini\_86:

(3, 48777), (4, 48780), (26, 48915), (34, 48939), (40, 49002),

Gene: Chill\_12 Start: 8633, Stop: 8797, Start Num: 32

Candidate Starts for Chill\_12:

(11, 8555), (13, 8573), (Start: 23 @8606 has 1 MA's), (Start: 27 @8618 has 6 MA's), (Start: 29 @8621 has 1 MA's), (Start: 32 @8633 has 8 MA's), (34, 8642), (43, 8735),

Gene: Chipper1996\_580 Start: 42767, Stop: 42958, Start Num: 18

Candidate Starts for Chipper1996\_580:

(1, 42635), (2, 42638), (Start: 18 @42767 has 12 MA's), (35, 42830), (38, 42881), (43, 42920),

Gene: Chocolat\_58 Start: 42637, Stop: 42828, Start Num: 18

Candidate Starts for Chocolat\_58:

(1, 42505), (2, 42508), (Start: 18 @42637 has 12 MA's), (35, 42700), (38, 42751), (43, 42790),

Gene: Chubster\_59 Start: 42789, Stop: 42980, Start Num: 18

Candidate Starts for Chubster\_59:

(1, 42657), (2, 42660), (Start: 18 @42789 has 12 MA's), (35, 42852), (38, 42903),

Gene: Colucci\_60 Start: 42919, Stop: 43107, Start Num: 19

Candidate Starts for Colucci\_60:

(Start: 19 @42919 has 2 MA's), (40, 43039), (45, 43087),

Gene: ConceptII\_67 Start: 43443, Stop: 43276, Start Num: 24

Candidate Starts for ConceptII\_67:

(Start: 24 @43443 has 25 MA's), (Start: 32 @43425 has 8 MA's), (37, 43374), (40, 43350), (43, 43320),

Gene: Cornucopia\_104 Start: 54556, Stop: 54723, Start Num: 24

Candidate Starts for Cornucopia\_104:

(Start: 24 @54556 has 25 MA's), (40, 54649),

Gene: DD5\_63 Start: 42996, Stop: 42829, Start Num: 24

Candidate Starts for DD5\_63:

(Start: 24 @42996 has 25 MA's), (Start: 32 @42978 has 8 MA's), (37, 42927), (40, 42903), (43, 42873),

Gene: DeadP\_41 Start: 31512, Stop: 31345, Start Num: 24

Candidate Starts for DeadP\_41:

(10, 31578), (22, 31515), (Start: 24 @31512 has 25 MA's), (31, 31500), (Start: 32 @31494 has 8 MA's), (Start: 33 @31491 has 2 MA's), (38, 31428), (40, 31419), (43, 31389),

Gene: Delton\_12 Start: 8624, Stop: 8803, Start Num: 27

Candidate Starts for Delton\_12:

(11, 8561), (13, 8579), (Start: 23 @8612 has 1 MA's), (Start: 27 @8624 has 6 MA's), (Start: 29 @8627 has 1 MA's), (Start: 32 @8639 has 8 MA's), (34, 8648), (39, 8708), (43, 8741),

Gene: DrYang\_57 Start: 44041, Stop: 44238, Start Num: 15

Candidate Starts for DrYang\_57:

(Start: 15 @44041 has 2 MA's), (31, 44077), (35, 44104), (43, 44194),

Gene: Erk16\_12 Start: 8618, Stop: 8797, Start Num: 27

Candidate Starts for Erk16\_12:

(11, 8555), (13, 8573), (Start: 23 @8606 has 1 MA's), (Start: 27 @8618 has 6 MA's), (Start: 29 @8621 has 1 MA's), (Start: 32 @8633 has 8 MA's), (34, 8642), (43, 8735),

Gene: Estave1\_38 Start: 30815, Stop: 30648, Start Num: 24

Candidate Starts for Estave1\_38:

(10, 30881), (22, 30818), (Start: 24 @30815 has 25 MA's), (31, 30803), (Start: 32 @30797 has 8 MA's), (Start: 33 @30794 has 2 MA's), (38, 30731), (40, 30722), (43, 30692),

Gene: Fenn\_68 Start: 43955, Stop: 43788, Start Num: 24

Candidate Starts for Fenn\_68:

(Start: 24 @43955 has 25 MA's), (Start: 32 @43937 has 8 MA's), (37, 43886), (40, 43862), (43, 43832),

Gene: Florinda\_115 Start: 58161, Stop: 58328, Start Num: 24

Candidate Starts for Florinda\_115:

(Start: 24 @58161 has 25 MA's), (40, 58254), (43, 58284),

Gene: GMonster\_61 Start: 41666, Stop: 41496, Start Num: 24

Candidate Starts for GMonster\_61:

(Start: 24 @41666 has 25 MA's), (Start: 32 @41648 has 8 MA's), (37, 41597), (40, 41573), (43, 41543),

Gene: Giuseppe\_12 Start: 8622, Stop: 8786, Start Num: 32

Candidate Starts for Giuseppe\_12:

(11, 8544), (13, 8562), (Start: 23 @8595 has 1 MA's), (Start: 27 @8607 has 6 MA's), (Start: 29 @8610 has 1 MA's), (Start: 32 @8622 has 8 MA's), (34, 8631), (43, 8724),

Gene: Gumball\_11 Start: 8580, Stop: 8741, Start Num: 33

Candidate Starts for Gumball\_11:

(11, 8499), (13, 8517), (Start: 23 @8550 has 1 MA's), (Start: 27 @8562 has 6 MA's), (Start: 29 @8565 has 1 MA's), (Start: 32 @8577 has 8 MA's), (Start: 33 @8580 has 2 MA's), (34, 8586), (43, 8679),

Gene: Helpful\_12 Start: 8603, Stop: 8794, Start Num: 23

Candidate Starts for Helpful\_12:

(11, 8552), (13, 8570), (Start: 23 @8603 has 1 MA's), (Start: 27 @8615 has 6 MA's), (Start: 29 @8618 has 1 MA's), (Start: 32 @8630 has 8 MA's), (34, 8639), (39, 8699), (43, 8732),

Gene: HumptyDumpty\_58 Start: 42765, Stop: 42956, Start Num: 18

Candidate Starts for HumptyDumpty\_58:

(1, 42633), (2, 42636), (Start: 18 @42765 has 12 MA's), (35, 42828), (38, 42879), (43, 42918),

Gene: JaNo\_58 Start: 42771, Stop: 42962, Start Num: 18

Candidate Starts for JaNo\_58:

(1, 42639), (2, 42642), (Start: 18 @42771 has 12 MA's), (35, 42834), (38, 42885), (43, 42924),

Gene: JayCookie\_59 Start: 43048, Stop: 43239, Start Num: 18

Candidate Starts for JayCookie\_59:

(1, 42916), (2, 42919), (Start: 18 @43048 has 12 MA's), (35, 43111), (38, 43162), (43, 43201),

Gene: KBurrousTX\_59 Start: 44136, Stop: 44318, Start Num: 19

Candidate Starts for KBurrousTX\_59:

(Start: 19 @44136 has 2 MA's), (31, 44169), (40, 44250), (43, 44280), (45, 44298),

Gene: Kabreeze\_58 Start: 42655, Stop: 42846, Start Num: 18

Candidate Starts for Kabreeze\_58:

(1, 42523), (2, 42526), (Start: 18 @42655 has 12 MA's), (35, 42718), (38, 42769), (43, 42808),

Gene: KandZ\_12 Start: 8712, Stop: 8891, Start Num: 27

Candidate Starts for KandZ\_12:

(11, 8649), (13, 8667), (Start: 23 @8700 has 1 MA's), (Start: 27 @8712 has 6 MA's), (Start: 29 @8715 has 1 MA's), (Start: 32 @8727 has 8 MA's), (34, 8736), (43, 8829),

Gene: Linus\_58 Start: 42778, Stop: 42969, Start Num: 18

Candidate Starts for Linus\_58:

(1, 42646), (2, 42649), (Start: 18 @42778 has 12 MA's), (35, 42841), (38, 42892), (43, 42931),

Gene: Lockley\_62 Start: 42158, Stop: 41991, Start Num: 24  
Candidate Starts for Lockley\_62:  
(Start: 24 @42158 has 25 MA's), (Start: 32 @42140 has 8 MA's), (37, 42089), (40, 42065), (43, 42035),

Gene: Lymara\_59 Start: 42891, Stop: 43085, Start Num: 15  
Candidate Starts for Lymara\_59:  
(2, 42777), (Start: 15 @42891 has 2 MA's), (35, 42951), (43, 43041),

Gene: Magnito\_64 Start: 42276, Stop: 42106, Start Num: 24  
Candidate Starts for Magnito\_64:  
(Start: 24 @42276 has 25 MA's), (Start: 32 @42258 has 8 MA's), (37, 42207), (40, 42183), (43, 42153),

Gene: Marco3\_69 Start: 44585, Stop: 44418, Start Num: 24  
Candidate Starts for Marco3\_69:  
(Start: 24 @44585 has 25 MA's), (Start: 32 @44567 has 8 MA's), (37, 44516), (40, 44492), (43, 44462),

Gene: Marker\_109 Start: 57954, Stop: 58121, Start Num: 24  
Candidate Starts for Marker\_109:  
(Start: 24 @57954 has 25 MA's), (40, 58047),

Gene: Mopey\_12 Start: 8618, Stop: 8794, Start Num: 29  
Candidate Starts for Mopey\_12:  
(11, 8552), (13, 8570), (Start: 23 @8603 has 1 MA's), (Start: 27 @8615 has 6 MA's), (Start: 29 @8618 has 1 MA's), (Start: 32 @8630 has 8 MA's), (34, 8639), (43, 8732),

Gene: Mordred\_58 Start: 42765, Stop: 42956, Start Num: 18  
Candidate Starts for Mordred\_58:  
(1, 42633), (2, 42636), (Start: 18 @42765 has 12 MA's), (35, 42828), (38, 42879), (43, 42918),

Gene: MoyaNatalis\_58 Start: 42624, Stop: 42815, Start Num: 18  
Candidate Starts for MoyaNatalis\_58:  
(1, 42492), (2, 42495), (Start: 18 @42624 has 12 MA's), (35, 42687), (38, 42738), (43, 42777),

Gene: MrGordo\_66 Start: 42620, Stop: 42450, Start Num: 24  
Candidate Starts for MrGordo\_66:  
(Start: 24 @42620 has 25 MA's), (Start: 32 @42602 has 8 MA's), (37, 42551), (40, 42527), (43, 42497),

Gene: Naira\_67 Start: 44011, Stop: 43844, Start Num: 24  
Candidate Starts for Naira\_67:  
(Start: 24 @44011 has 25 MA's), (Start: 32 @43993 has 8 MA's), (37, 43942), (40, 43918), (43, 43888),

Gene: Nerujay\_67 Start: 43590, Stop: 43423, Start Num: 24  
Candidate Starts for Nerujay\_67:  
(Start: 24 @43590 has 25 MA's), (Start: 32 @43572 has 8 MA's), (37, 43521), (40, 43497), (43, 43467),

Gene: Nova\_12 Start: 9054, Stop: 9218, Start Num: 32  
Candidate Starts for Nova\_12:  
(11, 8976), (13, 8994), (Start: 23 @9027 has 1 MA's), (Start: 27 @9039 has 6 MA's), (Start: 29 @9042 has 1 MA's), (Start: 32 @9054 has 8 MA's), (34, 9063), (43, 9156),

Gene: OneUp\_1 Start: 311, Stop: 117, Start Num: 16  
Candidate Starts for OneUp\_1:

(5, 398), (6, 389), (8, 380), (Start: 16 @311 has 1 MA's), (31, 269), (38, 200), (40, 191), (42, 170), (43, 161),

Gene: PBI1\_12 Start: 8546, Stop: 8725, Start Num: 27

Candidate Starts for PBI1\_12:

(11, 8483), (13, 8501), (Start: 23 @8534 has 1 MA's), (Start: 27 @8546 has 6 MA's), (Start: 29 @8549 has 1 MA's), (Start: 32 @8561 has 8 MA's), (34, 8570), (43, 8663),

Gene: PLOT\_12 Start: 8633, Stop: 8797, Start Num: 32

Candidate Starts for PLOT\_12:

(11, 8555), (13, 8573), (Start: 23 @8606 has 1 MA's), (Start: 27 @8618 has 6 MA's), (Start: 29 @8621 has 1 MA's), (Start: 32 @8633 has 8 MA's), (34, 8642), (43, 8735),

Gene: PSonyx\_43 Start: 33068, Stop: 32871, Start Num: 21

Candidate Starts for PSonyx\_43:

(Start: 21 @33068 has 1 MA's),

Gene: Pari\_67 Start: 41794, Stop: 41624, Start Num: 24

Candidate Starts for Pari\_67:

(Start: 24 @41794 has 25 MA's), (Start: 32 @41776 has 8 MA's), (37, 41725), (40, 41701), (43, 41671),

Gene: PattyP\_66 Start: 43305, Stop: 43135, Start Num: 24

Candidate Starts for PattyP\_66:

(Start: 24 @43305 has 25 MA's), (Start: 32 @43287 has 8 MA's), (37, 43236), (40, 43212), (43, 43182),

Gene: Penelope2018\_12 Start: 8630, Stop: 8794, Start Num: 32

Candidate Starts for Penelope2018\_12:

(11, 8552), (13, 8570), (Start: 23 @8603 has 1 MA's), (Start: 27 @8615 has 6 MA's), (Start: 29 @8618 has 1 MA's), (Start: 32 @8630 has 8 MA's), (34, 8639), (39, 8699), (43, 8732),

Gene: Petruccio\_65 Start: 41908, Stop: 41741, Start Num: 24

Candidate Starts for Petruccio\_65:

(Start: 24 @41908 has 25 MA's), (Start: 32 @41890 has 8 MA's), (37, 41839), (40, 41815), (43, 41785),

Gene: Phalaborwa\_12 Start: 8660, Stop: 8836, Start Num: 29

Candidate Starts for Phalaborwa\_12:

(11, 8594), (13, 8612), (Start: 27 @8657 has 6 MA's), (Start: 29 @8660 has 1 MA's), (Start: 32 @8672 has 8 MA's), (Start: 33 @8675 has 2 MA's), (34, 8681), (43, 8774),

Gene: Phrank15\_49 Start: 30399, Stop: 30593, Start Num: 28

Candidate Starts for Phrank15\_49:

(Start: 28 @30399 has 2 MA's), (Start: 33 @30417 has 2 MA's), (34, 30423), (38, 30477), (42, 30507),

Gene: PrincessTrina\_58 Start: 42801, Stop: 42992, Start Num: 18

Candidate Starts for PrincessTrina\_58:

(1, 42669), (2, 42672), (Start: 18 @42801 has 12 MA's), (35, 42864), (38, 42915), (43, 42954),

Gene: Renaud18\_41 Start: 31591, Stop: 31424, Start Num: 24

Candidate Starts for Renaud18\_41:

(10, 31657), (22, 31594), (Start: 24 @31591 has 25 MA's), (31, 31579), (Start: 32 @31573 has 8 MA's), (Start: 33 @31570 has 2 MA's), (38, 31507), (40, 31498), (43, 31468),

Gene: Richie\_98 Start: 53224, Stop: 53439, Start Num: 12

Candidate Starts for Richie\_98:

(7, 53167), (Start: 12 @53224 has 1 MA's), (14, 53230), (Start: 32 @53284 has 8 MA's),

Gene: Ringer\_66 Start: 44050, Stop: 43880, Start Num: 24

Candidate Starts for Ringer\_66:

(Start: 24 @44050 has 25 MA's), (Start: 32 @44032 has 8 MA's), (37, 43981), (40, 43957), (43, 43927),

Gene: Ruotula\_69 Start: 44545, Stop: 44378, Start Num: 24

Candidate Starts for Ruotula\_69:

(Start: 24 @44545 has 25 MA's), (Start: 32 @44527 has 8 MA's), (37, 44476), (40, 44452), (43, 44422),

Gene: Scavito\_58 Start: 42662, Stop: 42853, Start Num: 18

Candidate Starts for Scavito\_58:

(1, 42530), (2, 42533), (Start: 18 @42662 has 12 MA's), (35, 42725), (38, 42776), (43, 42815),

Gene: SirHarley\_11 Start: 8562, Stop: 8723, Start Num: 33

Candidate Starts for SirHarley\_11:

(11, 8481), (13, 8499), (Start: 23 @8532 has 1 MA's), (Start: 27 @8544 has 6 MA's), (Start: 29 @8547 has 1 MA's), (Start: 32 @8559 has 8 MA's), (Start: 33 @8562 has 2 MA's), (34, 8568), (43, 8661),

Gene: Taj\_40 Start: 31514, Stop: 31347, Start Num: 24

Candidate Starts for Taj\_40:

(10, 31580), (22, 31517), (Start: 24 @31514 has 25 MA's), (31, 31502), (Start: 32 @31496 has 8 MA's), (Start: 33 @31493 has 2 MA's), (38, 31430), (40, 31421), (43, 31391),

Gene: Taotie\_41 Start: 30659, Stop: 30462, Start Num: 21

Candidate Starts for Taotie\_41:

(Start: 21 @30659 has 1 MA's),

Gene: Tophat\_58 Start: 42767, Stop: 42958, Start Num: 18

Candidate Starts for Tophat\_58:

(1, 42635), (2, 42638), (Start: 18 @42767 has 12 MA's), (35, 42830), (38, 42881), (43, 42920),

Gene: Troll4\_12 Start: 8616, Stop: 8795, Start Num: 27

Candidate Starts for Troll4\_12:

(11, 8553), (13, 8571), (Start: 23 @8604 has 1 MA's), (Start: 27 @8616 has 6 MA's), (Start: 29 @8619 has 1 MA's), (Start: 32 @8631 has 8 MA's), (34, 8640), (39, 8700), (43, 8733),

Gene: Visconti\_12 Start: 8640, Stop: 8804, Start Num: 32

Candidate Starts for Visconti\_12:

(11, 8562), (13, 8580), (Start: 23 @8613 has 1 MA's), (Start: 27 @8625 has 6 MA's), (Start: 29 @8628 has 1 MA's), (Start: 32 @8640 has 8 MA's), (34, 8649), (43, 8742),

Gene: WaldoWhy\_12 Start: 8633, Stop: 8797, Start Num: 32

Candidate Starts for WaldoWhy\_12:

(11, 8555), (13, 8573), (Start: 23 @8606 has 1 MA's), (Start: 27 @8618 has 6 MA's), (Start: 29 @8621 has 1 MA's), (Start: 32 @8633 has 8 MA's), (34, 8642), (43, 8735),

Gene: Wee\_41 Start: 32088, Stop: 31921, Start Num: 24

Candidate Starts for Wee\_41:

(10, 32154), (22, 32091), (Start: 24 @32088 has 25 MA's), (31, 32076), (Start: 32 @32070 has 8 MA's), (Start: 33 @32067 has 2 MA's), (38, 32004), (40, 31995), (43, 31965),

Gene: Wollypog\_84 Start: 57219, Stop: 57422, Start Num: 17

Candidate Starts for Wollypog\_84:

(9, 57156), (Start: 17 @57219 has 1 MA's), (30, 57264), (35, 57294), (41, 57360), (43, 57372),

Gene: Yoshi\_33 Start: 24948, Stop: 25109, Start Num: 28

Candidate Starts for Yoshi\_33:

(20, 24930), (Start: 28 @24948 has 2 MA's), (36, 24993), (40, 25032), (43, 25062), (44, 25065),