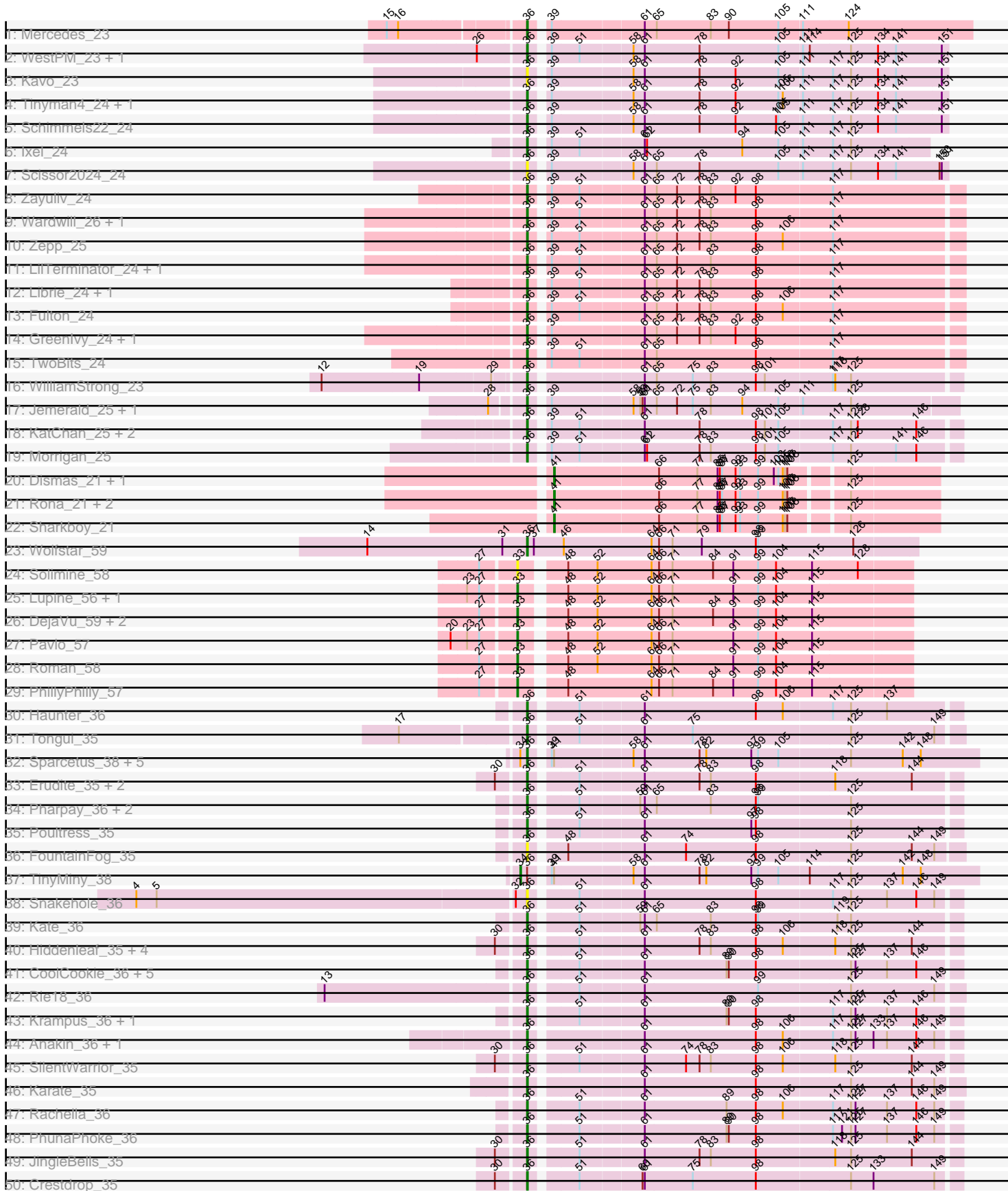
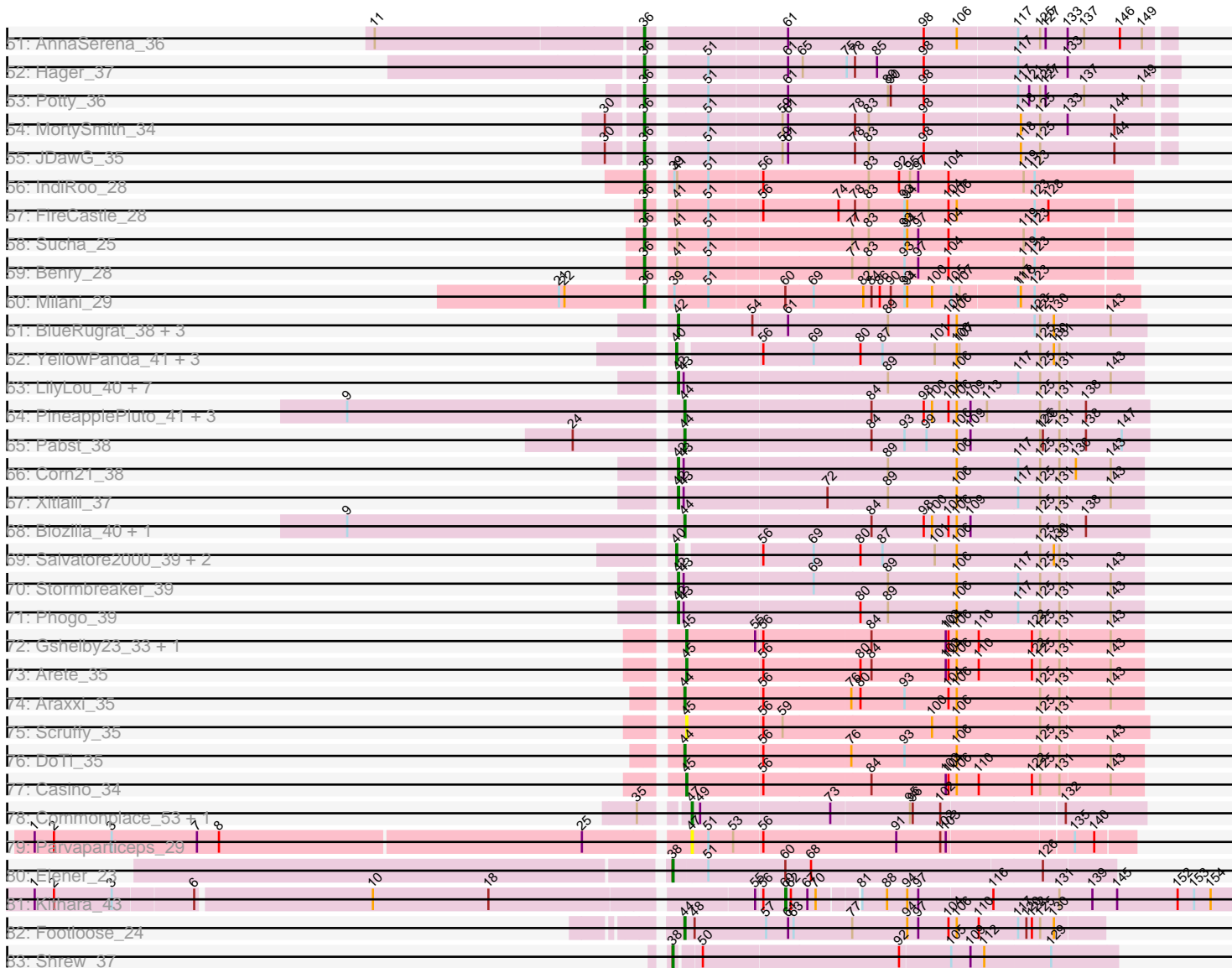


Pham 308235



Pham 308235



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 308235 Report

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

Pham number 308235 has 139 members, 18 are drafts.

Phages represented in each track:

- Track 1 : Mercedes\_23
- Track 2 : WestPM\_23, Penta\_23
- Track 3 : Kavo\_23
- Track 4 : Tinyman4\_24, HerculesXL\_24
- Track 5 : Schimmels22\_24
- Track 6 : Ixel\_24
- Track 7 : Scissor2024\_24
- Track 8 : Zayuliv\_24
- Track 9 : Wardwill\_26, Hasitha\_24
- Track 10 : Zepp\_25
- Track 11 : LilTerminator\_24, QuadZero\_24
- Track 12 : Librie\_24, CaptainRex\_24
- Track 13 : Fulton\_24
- Track 14 : GreenIvy\_24, BaronJohn\_24
- Track 15 : TwoBits\_24
- Track 16 : WilliamStrong\_23
- Track 17 : Jemerald\_25, Juicer\_25
- Track 18 : KatChan\_25, Luna18\_25, Chepli\_25
- Track 19 : Morigan\_25
- Track 20 : Dismas\_21, Kamdara\_21
- Track 21 : Rona\_21, Kieran\_21, ChiliPepper\_21
- Track 22 : Sharkboy\_21
- Track 23 : Wolfstar\_59
- Track 24 : Solimine\_58
- Track 25 : Lupine\_56, Uterion\_60
- Track 26 : DejaVu\_59, Hubbs\_58, Saradis\_58
- Track 27 : Pavlo\_57
- Track 28 : Roman\_58
- Track 29 : PhillyPhilly\_57
- Track 30 : Haunter\_36
- Track 31 : Tongui\_35
- Track 32 : Sparcetus\_38, LordBart\_38, Ajin\_38, Bramble\_38, Kors\_38, RikSengupta\_38
- Track 33 : Erudite\_35, Aesir\_35, Dauntless\_35
- Track 34 : Pharpay\_36, Artiphact\_36, OhDear\_36
- Track 35 : Poultruss\_35
- Track 36 : FountainFog\_35

- Track 37 : TinyMiny\_38
- Track 38 : Snakehole\_36
- Track 39 : Kate\_36
- Track 40 : Hiddenleaf\_35, FreddieHg\_35, Annapurna\_35, DannyDe\_35, Chivey\_35
- Track 41 : CoolCookie\_36, Tedro\_36, Cybele\_36, Gilda\_36, Neptune\_36, Tiggy93\_36
- Track 42 : Rie18\_36
- Track 43 : Krampus\_36, OverHedge\_36
- Track 44 : Anakin\_36, NarutoRun\_36
- Track 45 : SilentWarrior\_35
- Track 46 : Karate\_35
- Track 47 : Rachella\_36
- Track 48 : PhunaPhoke\_36
- Track 49 : JingleBells\_35
- Track 50 : Crestdrop\_35
- Track 51 : AnnaSerena\_36
- Track 52 : Hager\_37
- Track 53 : Potty\_36
- Track 54 : MortySmith\_34
- Track 55 : JDawG\_35
- Track 56 : IndiRoo\_28
- Track 57 : FireCastle\_28
- Track 58 : Sucha\_25
- Track 59 : Benry\_28
- Track 60 : Milani\_29
- Track 61 : BlueRugrat\_38, LesNorah\_39, Conditioner\_38, TownLake\_37
- Track 62 : YellowPanda\_41, JessellCookie\_40, MiamiPanther\_40, TinyTimothy\_38
- Track 63 : LilyLou\_40, ArMaWen\_38, Unphazed\_39, Alex44\_39, DumpQuist\_38, Birdfeeder\_37, SwissCheezer\_38, Dashyla\_38
- Track 64 : PineapplePluto\_41, CrunchyBoi\_41, TicTac\_40, Oatly\_40
- Track 65 : Pabst\_38
- Track 66 : Corn21\_38
- Track 67 : Xitlalli\_37
- Track 68 : Biozilla\_40, HitchHiker\_41
- Track 69 : Salvatore2000\_39, Wesak\_39, Sorvannah\_39
- Track 70 : Stormbreaker\_39
- Track 71 : Phogo\_39
- Track 72 : Gshelby23\_33, Hannabella\_35
- Track 73 : Arete\_35
- Track 74 : Araxxi\_35
- Track 75 : Scruffy\_35
- Track 76 : DoTi\_35
- Track 77 : Casino\_34
- Track 78 : Commonplace\_53, Nonagon\_52
- Track 79 : Parvarticeps\_29
- Track 80 : Elener\_23
- Track 81 : Kithara\_43
- Track 82 : Footloose\_24
- Track 83 : Shrew\_37

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

The start number called the most often in the published annotations is 36, it was called in 72 of the 121 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Aesir\_35, Ajin\_38, Anakin\_36, AnnaSerena\_36, Annapurna\_35, Artiphact\_36, BaronJohn\_24, Benry\_28, Bramble\_38, CaptainRex\_24, Chepli\_25, Chivey\_35, CoolCookie\_36, Crestdrop\_35, Cybele\_36, DannyDe\_35, Dauntless\_35, Erudite\_35, FireCastle\_28, FountainFog\_35, FreddieHg\_35, Fulton\_24, Gilda\_36, GreenIvy\_24, Hager\_37, Hasitha\_24, Haunter\_36, HerculesXL\_24, Hiddenleaf\_35, IndiRoo\_28, Ixel\_24, JDawG\_35, Jemerald\_25, JingleBells\_35, Juicer\_25, Karate\_35, KatChan\_25, Kate\_36, Kavo\_23, Kors\_38, Krampus\_36, Librie\_24, LilTerminator\_24, LordBart\_38, Luna18\_25, Mercedes\_23, Milani\_29, Morrigan\_25, MortySmith\_34, NarutoRun\_36, Neptune\_36, OhDear\_36, OverHedge\_36, Penta\_23, Pharpay\_36, PhunaPhoke\_36, Potty\_36, Poultruss\_35, QuadZero\_24, Rachella\_36, Rie18\_36, RikSengupta\_38, Schimmels22\_24, Scissor2024\_24, SilentWarrior\_35, Snakehole\_36, Sparcetus\_38, Sucha\_25, Tedro\_36, Tiggy93\_36, Tinyman4\_24, Tongui\_35, TwoBits\_24, Wardwill\_26, WestPM\_23, WilliamStrong\_23, Wolfstar\_59, Zayuliv\_24, Zepp\_25,

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

- TinyMiny\_38,

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

- Alex44\_39, ArMaWen\_38, Araxxi\_35, Arete\_35, Biozilla\_40, Birdfeeder\_37, BlueRugrat\_38, Casino\_34, ChiliPepper\_21, Commonplace\_53, Conditioner\_38, Corn21\_38, CrunchyBoi\_41, Dashyla\_38, DejaVu\_59, Dismas\_21, DoTi\_35, DumpQuist\_38, Elener\_23, Footloose\_24, Gshelby23\_33, Hannabella\_35, HitchHiker\_41, Hubbs\_58, JessellCookie\_40, Kamdara\_21, Kieran\_21, Kithara\_43, LesNorah\_39, LilyLou\_40, Lupine\_56, MiamiPanther\_40, Nonagon\_52, Oatly\_40, Pabst\_38, Parvapaticeps\_29, Pavlo\_57, PhillyPhilly\_57, Phogo\_39, PineapplePluto\_41, Roman\_58, Rona\_21, Salvatore2000\_39, Saradis\_58, Scruffy\_35, Sharkboy\_21, Shrew\_37, Solimine\_58, Sorvannah\_39, Stormbreaker\_39, SwissCheezer\_38, TicTac\_40, TinyTimothy\_38, TownLake\_37, Unphazed\_39, Uterion\_60, Wesak\_39, Xitlalli\_37, YellowPanda\_41,

### Summary by start number:

Start 33:

- Found in 9 of 139 ( 6.5% ) of genes in pham
- Manual Annotations of this start: 6 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DejaVu\_59 (ED1), Hubbs\_58 (ED1), Lupine\_56 (ED1), Pavlo\_57 (ED1), PhillyPhilly\_57 (ED1), Roman\_58 (ED1), Saradis\_58 (ED1), Solimine\_58 (ED1), Uterion\_60 (ED1),

Start 34:

- Found in 7 of 139 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 1 of 121
- Called 14.3% of time when present
- Phage (with cluster) where this start called: TinyMiny\_38 (EF),

Start 36:

- Found in 80 of 139 ( 57.6% ) of genes in pham
- Manual Annotations of this start: 72 of 121
- Called 98.8% of time when present
- Phage (with cluster) where this start called: Aesir\_35 (EF), Ajin\_38 (EF), Anakin\_36 (EF), AnnaSerena\_36 (EF), Annapurna\_35 (EF), Artiphact\_36 (EF), BaronJohn\_24 (EA5), Benry\_28 (EJ), Bramble\_38 (EF), CaptainRex\_24 (EA5), Chepli\_25 (EA6), Chivey\_35 (EF), CoolCookie\_36 (EF), Crestdrop\_35 (EF), Cybele\_36 (EF), DannyDe\_35 (EF), Dauntless\_35 (EF), Erudite\_35 (EF), FireCastle\_28 (EJ), FountainFog\_35 (EF), FreddieHg\_35 (EF), Fulton\_24 (EA5), Gilda\_36 (EF), Greenlvy\_24 (EA5), Hager\_37 (EF), Hasitha\_24 (EA5), Haunter\_36 (EF), HerculesXL\_24 (EA11), Hiddenleaf\_35 (EF), IndiRoo\_28 (EJ), Ixel\_24 (EA11), JDawG\_35 (EF), Jemerald\_25 (EA6), JingleBells\_35 (EF), Juicer\_25 (EA6), Karate\_35 (EF), KatChan\_25 (EA6), Kate\_36 (EF), Kavo\_23 (EA11), Kors\_38 (EF), Krampus\_36 (EF), Librie\_24 (EA5), LilTerminator\_24 (EA5), LordBart\_38 (EF), Luna18\_25 (EA6), Mercedes\_23 (EA), Milani\_29 (EJ), Morigan\_25 (EA6), MortySmith\_34 (EF), NarutoRun\_36 (EF), Neptune\_36 (EF), OhDear\_36 (EF), OverHedge\_36 (EF), Penta\_23 (EA11), Pharpay\_36 (EF), PhunaPhoke\_36 (EF), Potty\_36 (EF), Poultruss\_35 (EF), QuadZero\_24 (EA5), Rachella\_36 (EF), Rie18\_36 (EF), RikSengupta\_38 (EF), Schimmels22\_24 (EA11), Scissor2024\_24 (EA11), SilentWarrior\_35 (EF), Snakehole\_36 (EF), Sparcetus\_38 (EF), Sucha\_25 (EJ), Tedro\_36 (EF), Tiggy93\_36 (EF), Tinyman4\_24 (EA11), Tongui\_35 (EF), TwoBits\_24 (EA5), Wardwill\_26 (EA5), WestPM\_23 (EA11), WilliamStrong\_23 (EA6), Wolfstar\_59 (ED), Zayuliv\_24 (EA5), Zepp\_25 (EA5),

#### Start 38:

- Found in 2 of 139 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 2 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Elener\_23 (singleton), Shrew\_37 (singleton),

#### Start 40:

- Found in 7 of 139 ( 5.0% ) of genes in pham
- Manual Annotations of this start: 5 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JessellCookie\_40 (EK1), MiamiPanther\_40 (EK1), Salvatore2000\_39 (EK1), Sorvannah\_39 (EK1), TinyTimothy\_38 (EK1), Wesak\_39 (EK1), YellowPanda\_41 (EK1),

#### Start 41:

- Found in 17 of 139 ( 12.2% ) of genes in pham
- Manual Annotations of this start: 5 of 121
- Called 35.3% of time when present
- Phage (with cluster) where this start called: ChiliPepper\_21 (EB), Dismas\_21 (EB), Kamdara\_21 (EB), Kieran\_21 (EB), Rona\_21 (EB), Sharkboy\_21 (EB),

#### Start 42:

- Found in 16 of 139 ( 11.5% ) of genes in pham
- Manual Annotations of this start: 15 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alex44\_39 (EK1), ArMaWen\_38 (EK1), Birdfeeder\_37 (EK1), BlueRugrat\_38 (EK1), Conditioner\_38 (EK1), Corn21\_38 (EK1), Dashyla\_38 (EK1), DumpQuist\_38 (EK1), LesNorah\_39 (EK1), LilyLou\_40 (EK1),

Phogo\_39 (EK1), Stormbreaker\_39 (EK1), SwissCheezer\_38 (EK1), TownLake\_37 (EK1), Unphazed\_39 (EK1), Xitlalli\_37 (EK1),

Start 44:

- Found in 10 of 139 ( 7.2% ) of genes in pham
- Manual Annotations of this start: 8 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Araxxi\_35 (EM1), Biozilla\_40 (EK1), CrunchyBoi\_41 (EK1), DoTi\_35 (EM1), Footloose\_24 (singleton), HitchHiker\_41 (EK1), Oatly\_40 (EK1), Pabst\_38 (EK1), PineapplePluto\_41 (EK1), TicTac\_40 (EK1),

Start 45:

- Found in 5 of 139 ( 3.6% ) of genes in pham
- Manual Annotations of this start: 4 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arete\_35 (EM1), Casino\_34 (EM1), Gshelby23\_33 (EM1), Hannabella\_35 (EM1), Scruffy\_35 (EM1),

Start 47:

- Found in 3 of 139 ( 2.2% ) of genes in pham
- Manual Annotations of this start: 2 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Commonplace\_53 (JD), Nonagon\_52 (JD), Parvapaticeps\_29 (UNK),

Start 60:

- Found in 6 of 139 ( 4.3% ) of genes in pham
- Manual Annotations of this start: 1 of 121
- Called 16.7% of time when present
- Phage (with cluster) where this start called: Kithara\_43 (singleton),

### **Summary by clusters:**

There are 14 clusters represented in this pham: singleton, EA11, EJ, ED, EF, EA, EB, ED1, EM1, JD, UNK, EA5, EK1, EA6,

Info for manual annotations of cluster EA:

- Start number 36 was manually annotated 1 time for cluster EA.

Info for manual annotations of cluster EA11:

- Start number 36 was manually annotated 5 times for cluster EA11.

Info for manual annotations of cluster EA5:

- Start number 36 was manually annotated 12 times for cluster EA5.

Info for manual annotations of cluster EA6:

- Start number 36 was manually annotated 7 times for cluster EA6.

Info for manual annotations of cluster EB:

- Start number 41 was manually annotated 5 times for cluster EB.

Info for manual annotations of cluster ED:

- Start number 36 was manually annotated 1 time for cluster ED.

Info for manual annotations of cluster ED1:

- Start number 33 was manually annotated 6 times for cluster ED1.

Info for manual annotations of cluster EF:

- Start number 34 was manually annotated 1 time for cluster EF.
- Start number 36 was manually annotated 41 times for cluster EF.

Info for manual annotations of cluster EJ:

- Start number 36 was manually annotated 5 times for cluster EJ.

Info for manual annotations of cluster EK1:

- Start number 40 was manually annotated 5 times for cluster EK1.
- Start number 42 was manually annotated 15 times for cluster EK1.
- Start number 44 was manually annotated 5 times for cluster EK1.

Info for manual annotations of cluster EM1:

- Start number 44 was manually annotated 2 times for cluster EM1.
- Start number 45 was manually annotated 4 times for cluster EM1.

Info for manual annotations of cluster JD:

- Start number 47 was manually annotated 2 times for cluster JD.

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

Gene: Aesir\_35 Start: 23563, Stop: 24108, Start Num: 36

Candidate Starts for Aesir\_35:

(30, 23527), (Start: 36 @23563 has 72 MA's), (51, 23617), (61, 23698), (78, 23770), (83, 23785), (98, 23845), (118, 23947), (144, 24049),

Gene: Ajin\_38 Start: 24167, Stop: 24742, Start Num: 36

Candidate Starts for Ajin\_38:

(Start: 34 @24158 has 1 MA's), (Start: 36 @24167 has 72 MA's), (39, 24185), (Start: 41 @24188 has 5 MA's), (58, 24287), (61, 24302), (78, 24374), (82, 24383), (97, 24443), (99, 24452), (105, 24479), (125, 24572), (142, 24641), (148, 24665),

Gene: Alex44\_39 Start: 39220, Stop: 39714, Start Num: 42

Candidate Starts for Alex44\_39:

(Start: 42 @39220 has 15 MA's), (43, 39226), (89, 39442), (106, 39517), (117, 39583), (125, 39607), (131, 39628), (143, 39679),

Gene: Anakin\_36 Start: 23886, Stop: 24431, Start Num: 36

Candidate Starts for Anakin\_36:

(Start: 36 @23886 has 72 MA's), (61, 24021), (98, 24168), (106, 24204), (117, 24267), (125, 24291), (127, 24297), (133, 24321), (137, 24339), (146, 24378), (149, 24402),

Gene: AnnaSerena\_36 Start: 23921, Stop: 24466, Start Num: 36

Candidate Starts for AnnaSerena\_36:

(11, 23639), (Start: 36 @23921 has 72 MA's), (61, 24056), (98, 24203), (106, 24239), (117, 24302), (125, 24326), (127, 24332), (133, 24356), (137, 24374), (146, 24413), (149, 24437),

Gene: Annapurna\_35 Start: 23025, Stop: 23570, Start Num: 36

Candidate Starts for Annapurna\_35:

(30, 22989), (Start: 36 @23025 has 72 MA's), (51, 23079), (61, 23160), (78, 23232), (83, 23247), (98, 23307), (106, 23343), (118, 23409), (125, 23430), (144, 23511),

Gene: ArMaWen\_38 Start: 38763, Stop: 39257, Start Num: 42

Candidate Starts for ArMaWen\_38:

(Start: 42 @38763 has 15 MA's), (43, 38769), (89, 38985), (106, 39060), (117, 39126), (125, 39150), (131, 39171), (143, 39222),

Gene: Araxxi\_35 Start: 42091, Stop: 42576, Start Num: 44

Candidate Starts for Araxxi\_35:

(Start: 44 @42091 has 8 MA's), (56, 42172), (76, 42265), (80, 42274), (93, 42322), (104, 42370), (106, 42379), (125, 42469), (131, 42490), (143, 42541),

Gene: Arete\_35 Start: 41837, Stop: 42322, Start Num: 45

Candidate Starts for Arete\_35:

(Start: 45 @41837 has 4 MA's), (56, 41918), (80, 42020), (84, 42032), (103, 42113), (104, 42116), (106, 42125), (110, 42149), (122, 42206), (125, 42215), (131, 42236), (143, 42287),

Gene: Artiphact\_36 Start: 23910, Stop: 24455, Start Num: 36

Candidate Starts for Artiphact\_36:

(Start: 36 @23910 has 72 MA's), (51, 23964), (59, 24039), (61, 24045), (65, 24060), (83, 24132), (98, 24192), (99, 24195), (125, 24315),

Gene: BaronJohn\_24 Start: 18263, Stop: 18811, Start Num: 36

Candidate Starts for BaronJohn\_24:

(Start: 36 @18263 has 72 MA's), (39, 18281), (61, 18398), (65, 18413), (72, 18440), (78, 18470), (83, 18485), (92, 18518), (98, 18545), (117, 18644),

Gene: Benry\_28 Start: 20065, Stop: 20565, Start Num: 36

Candidate Starts for Benry\_28:

(Start: 36 @20065 has 72 MA's), (Start: 41 @20086 has 5 MA's), (51, 20119), (77, 20269), (83, 20287), (93, 20326), (97, 20341), (104, 20374), (119, 20455), (123, 20467),

Gene: Biozilla\_40 Start: 39149, Stop: 39640, Start Num: 44

Candidate Starts for Biozilla\_40:

(9, 38798), (Start: 44 @39149 has 8 MA's), (84, 39344), (98, 39401), (100, 39410), (104, 39428), (106, 39437), (109, 39452), (125, 39527), (131, 39548), (138, 39572),

Gene: Birdfeeder\_37 Start: 38976, Stop: 39470, Start Num: 42

Candidate Starts for Birdfeeder\_37:

(Start: 42 @38976 has 15 MA's), (43, 38982), (89, 39198), (106, 39273), (117, 39339), (125, 39363), (131, 39384), (143, 39435),

Gene: BlueRugrat\_38 Start: 39221, Stop: 39718, Start Num: 42

Candidate Starts for BlueRugrat\_38:

(Start: 42 @39221 has 15 MA's), (54, 39302), (61, 39338), (89, 39443), (104, 39509), (106, 39518), (123, 39602), (125, 39608), (130, 39623), (143, 39680),

Gene: Bramble\_38 Start: 24127, Stop: 24702, Start Num: 36

Candidate Starts for Bramble\_38:

(Start: 34 @24118 has 1 MA's), (Start: 36 @24127 has 72 MA's), (39, 24145), (Start: 41 @24148 has 5 MA's), (58, 24247), (61, 24262), (78, 24334), (82, 24343), (97, 24403), (99, 24412), (105, 24439), (125, 24532), (142, 24601), (148, 24625),

Gene: CaptainRex\_24 Start: 17697, Stop: 18245, Start Num: 36

Candidate Starts for CaptainRex\_24:

(Start: 36 @17697 has 72 MA's), (39, 17715), (51, 17751), (61, 17832), (65, 17847), (72, 17874), (78, 17904), (83, 17919), (98, 17979), (117, 18078),

Gene: Casino\_34 Start: 41809, Stop: 42294, Start Num: 45

Candidate Starts for Casino\_34:

(Start: 45 @41809 has 4 MA's), (56, 41890), (84, 42004), (103, 42085), (104, 42088), (106, 42097), (110, 42121), (122, 42178), (125, 42187), (131, 42208), (143, 42259),

Gene: Chepli\_25 Start: 18361, Stop: 18906, Start Num: 36

Candidate Starts for Chepli\_25:

(Start: 36 @18361 has 72 MA's), (39, 18379), (51, 18415), (61, 18496), (78, 18568), (98, 18643), (101, 18655), (105, 18673), (117, 18742), (125, 18766), (128, 18775), (146, 18853),

Gene: ChiliPepper\_21 Start: 19073, Stop: 19561, Start Num: 41

Candidate Starts for ChiliPepper\_21:

(Start: 41 @19073 has 5 MA's), (66, 19208), (77, 19259), (85, 19286), (86, 19289), (87, 19292), (92, 19310), (93, 19316), (99, 19340), (106, 19373), (107, 19376), (108, 19379), (125, 19448),

Gene: Chivey\_35 Start: 22974, Stop: 23519, Start Num: 36

Candidate Starts for Chivey\_35:

(30, 22938), (Start: 36 @22974 has 72 MA's), (51, 23028), (61, 23109), (78, 23181), (83, 23196), (98, 23256), (106, 23292), (118, 23358), (125, 23379), (144, 23460),

Gene: Commonplace\_53 Start: 34624, Stop: 35100, Start Num: 47

Candidate Starts for Commonplace\_53:

(35, 34585), (Start: 47 @34624 has 2 MA's), (49, 34633), (73, 34771), (95, 34855), (96, 34858), (102, 34888), (132, 35014),

Gene: Conditioner\_38 Start: 39294, Stop: 39791, Start Num: 42

Candidate Starts for Conditioner\_38:

(Start: 42 @39294 has 15 MA's), (54, 39375), (61, 39411), (89, 39516), (104, 39582), (106, 39591), (123, 39675), (125, 39681), (130, 39696), (143, 39753),

Gene: CoolCookie\_36 Start: 23916, Stop: 24461, Start Num: 36

Candidate Starts for CoolCookie\_36:

(Start: 36 @23916 has 72 MA's), (51, 23970), (61, 24051), (89, 24159), (90, 24162), (98, 24198), (125, 24321), (127, 24327), (137, 24369), (146, 24408),

Gene: Corn21\_38 Start: 39299, Stop: 39793, Start Num: 42

Candidate Starts for Corn21\_38:

(Start: 42 @39299 has 15 MA's), (43, 39305), (89, 39521), (106, 39596), (117, 39662), (125, 39686), (131, 39707), (136, 39722), (143, 39758),

Gene: Crestdrop\_35 Start: 22888, Stop: 23433, Start Num: 36

Candidate Starts for Crestdrop\_35:

(30, 22852), (Start: 36 @22888 has 72 MA's), (51, 22942), (Start: 60 @23020 has 1 MA's), (61, 23023), (75, 23086), (98, 23170), (125, 23293), (133, 23323), (149, 23404),

Gene: CrunchyBoi\_41 Start: 39004, Stop: 39495, Start Num: 44

Candidate Starts for CrunchyBoi\_41:

(9, 38653), (Start: 44 @39004 has 8 MA's), (84, 39199), (98, 39256), (100, 39265), (104, 39283), (106, 39292), (109, 39307), (113, 39325), (125, 39382), (131, 39403), (138, 39427),

Gene: Cybele\_36 Start: 23886, Stop: 24431, Start Num: 36

Candidate Starts for Cybele\_36:

(Start: 36 @23886 has 72 MA's), (51, 23940), (61, 24021), (89, 24129), (90, 24132), (98, 24168), (125, 24291), (127, 24297), (137, 24339), (146, 24378),

Gene: DannyDe\_35 Start: 22980, Stop: 23525, Start Num: 36

Candidate Starts for DannyDe\_35:

(30, 22944), (Start: 36 @22980 has 72 MA's), (51, 23034), (61, 23115), (78, 23187), (83, 23202), (98, 23262), (106, 23298), (118, 23364), (125, 23385), (144, 23466),

Gene: Dashyla\_38 Start: 38894, Stop: 39388, Start Num: 42

Candidate Starts for Dashyla\_38:

(Start: 42 @38894 has 15 MA's), (43, 38900), (89, 39116), (106, 39191), (117, 39257), (125, 39281), (131, 39302), (143, 39353),

Gene: Dauntless\_35 Start: 23531, Stop: 24076, Start Num: 36

Candidate Starts for Dauntless\_35:

(30, 23495), (Start: 36 @23531 has 72 MA's), (51, 23585), (61, 23666), (78, 23738), (83, 23753), (98, 23813), (118, 23915), (144, 24017),

Gene: DejaVu\_59 Start: 34858, Stop: 35358, Start Num: 33

Candidate Starts for DejaVu\_59:

(27, 34816), (Start: 33 @34858 has 6 MA's), (48, 34906), (52, 34945), (64, 35017), (66, 35026), (71, 35044), (84, 35098), (91, 35125), (99, 35158), (104, 35182), (115, 35230),

Gene: Dismas\_21 Start: 19073, Stop: 19561, Start Num: 41

Candidate Starts for Dismas\_21:

(Start: 41 @19073 has 5 MA's), (66, 19208), (77, 19259), (85, 19286), (86, 19289), (87, 19292), (92, 19310), (93, 19316), (99, 19340), (103, 19361), (105, 19367), (106, 19373), (107, 19376), (108, 19379), (125, 19448),

Gene: DoTi\_35 Start: 42195, Stop: 42680, Start Num: 44

Candidate Starts for DoTi\_35:

(Start: 44 @42195 has 8 MA's), (56, 42276), (76, 42369), (93, 42426), (106, 42483), (125, 42573), (131, 42594), (143, 42645),

Gene: DumpQuist\_38 Start: 38748, Stop: 39242, Start Num: 42

Candidate Starts for DumpQuist\_38:

(Start: 42 @38748 has 15 MA's), (43, 38754), (89, 38970), (106, 39045), (117, 39111), (125, 39135), (131, 39156), (143, 39207),

Gene: Elener\_23 Start: 19989, Stop: 20459, Start Num: 38

Candidate Starts for Elener\_23:

(Start: 38 @19989 has 2 MA's), (51, 20025), (Start: 60 @20109 has 1 MA's), (68, 20136), (126, 20385),

Gene: Erudite\_35 Start: 23531, Stop: 24076, Start Num: 36

Candidate Starts for Erudite\_35:

(30, 23495), (Start: 36 @23531 has 72 MA's), (51, 23585), (61, 23666), (78, 23738), (83, 23753), (98, 23813), (118, 23915), (144, 24017),

Gene: FireCastle\_28 Start: 21644, Stop: 22144, Start Num: 36

Candidate Starts for FireCastle\_28:

(Start: 36 @21644 has 72 MA's), (Start: 41 @21665 has 5 MA's), (51, 21698), (56, 21752), (74, 21833), (78, 21851), (83, 21866), (93, 21905), (94, 21908), (104, 21953), (106, 21962), (123, 22046), (128, 22061),

Gene: Footloose\_24 Start: 17237, Stop: 17686, Start Num: 44

Candidate Starts for Footloose\_24:

(Start: 44 @17237 has 8 MA's), (48, 17246), (57, 17324), (61, 17348), (63, 17354), (77, 17417), (94, 17477), (97, 17489), (104, 17522), (106, 17531), (110, 17555), (117, 17597), (120, 17606), (122, 17612), (125, 17621), (130, 17636),

Gene: FountainFog\_35 Start: 23186, Stop: 23737, Start Num: 36

Candidate Starts for FountainFog\_35:

(Start: 36 @23186 has 72 MA's), (48, 23225), (61, 23321), (74, 23375), (98, 23468), (125, 23591), (144, 23672), (149, 23702),

Gene: FreddieHg\_35 Start: 22990, Stop: 23535, Start Num: 36

Candidate Starts for FreddieHg\_35:

(30, 22954), (Start: 36 @22990 has 72 MA's), (51, 23044), (61, 23125), (78, 23197), (83, 23212), (98, 23272), (106, 23308), (118, 23374), (125, 23395), (144, 23476),

Gene: Fulton\_24 Start: 17679, Stop: 18227, Start Num: 36

Candidate Starts for Fulton\_24:

(Start: 36 @17679 has 72 MA's), (39, 17697), (51, 17733), (61, 17814), (65, 17829), (72, 17856), (78, 17886), (83, 17901), (98, 17961), (106, 17997), (117, 18060),

Gene: Gilda\_36 Start: 23910, Stop: 24455, Start Num: 36

Candidate Starts for Gilda\_36:

(Start: 36 @23910 has 72 MA's), (51, 23964), (61, 24045), (89, 24153), (90, 24156), (98, 24192), (125, 24315), (127, 24321), (137, 24363), (146, 24402),

Gene: Greenlvy\_24 Start: 18265, Stop: 18813, Start Num: 36

Candidate Starts for Greenlvy\_24:

(Start: 36 @18265 has 72 MA's), (39, 18283), (61, 18400), (65, 18415), (72, 18442), (78, 18472), (83, 18487), (92, 18520), (98, 18547), (117, 18646),

Gene: Gshelby23\_33 Start: 41744, Stop: 42229, Start Num: 45

Candidate Starts for Gshelby23\_33:

(Start: 45 @41744 has 4 MA's), (55, 41819), (56, 41825), (84, 41939), (103, 42020), (104, 42023), (106, 42032), (110, 42056), (122, 42113), (125, 42122), (131, 42143), (143, 42194),

Gene: Hager\_37 Start: 23453, Stop: 24001, Start Num: 36

Candidate Starts for Hager\_37:

(Start: 36 @23453 has 72 MA's), (51, 23507), (61, 23588), (65, 23603), (75, 23651), (78, 23660), (85, 23684), (98, 23735), (117, 23834), (133, 23888),

Gene: Hannabella\_35 Start: 41785, Stop: 42270, Start Num: 45

Candidate Starts for Hannabella\_35:

(Start: 45 @41785 has 4 MA's), (55, 41860), (56, 41866), (84, 41980), (103, 42061), (104, 42064), (106, 42073), (110, 42097), (122, 42154), (125, 42163), (131, 42184), (143, 42235),

Gene: Hasitha\_24 Start: 17691, Stop: 18239, Start Num: 36

Candidate Starts for Hasitha\_24:

(Start: 36 @17691 has 72 MA's), (39, 17709), (51, 17745), (61, 17826), (65, 17841), (72, 17868), (78, 17898), (83, 17913), (98, 17973), (117, 18072),

Gene: Haunter\_36 Start: 23302, Stop: 23847, Start Num: 36

Candidate Starts for Haunter\_36:

(Start: 36 @23302 has 72 MA's), (51, 23356), (61, 23437), (98, 23584), (106, 23620), (117, 23683), (125, 23707), (137, 23755),

Gene: HerculesXL\_24 Start: 17785, Stop: 18318, Start Num: 36

Candidate Starts for HerculesXL\_24:

(Start: 36 @17785 has 72 MA's), (39, 17803), (58, 17905), (61, 17920), (78, 17992), (92, 18040), (105, 18097), (106, 18103), (111, 18127), (117, 18166), (125, 18190), (134, 18226), (141, 18250), (151, 18310),

Gene: Hiddenleaf\_35 Start: 22974, Stop: 23519, Start Num: 36

Candidate Starts for Hiddenleaf\_35:

(30, 22938), (Start: 36 @22974 has 72 MA's), (51, 23028), (61, 23109), (78, 23181), (83, 23196), (98, 23256), (106, 23292), (118, 23358), (125, 23379), (144, 23460),

Gene: HitchHiker\_41 Start: 39149, Stop: 39640, Start Num: 44

Candidate Starts for HitchHiker\_41:

(9, 38798), (Start: 44 @39149 has 8 MA's), (84, 39344), (98, 39401), (100, 39410), (104, 39428), (106, 39437), (109, 39452), (125, 39527), (131, 39548), (138, 39572),

Gene: Hubbs\_58 Start: 35070, Stop: 35570, Start Num: 33

Candidate Starts for Hubbs\_58:

(27, 35028), (Start: 33 @35070 has 6 MA's), (48, 35118), (52, 35157), (64, 35229), (66, 35238), (71, 35256), (84, 35310), (91, 35337), (99, 35370), (104, 35394), (115, 35442),

Gene: IndiRoo\_28 Start: 20092, Stop: 20598, Start Num: 36

Candidate Starts for IndiRoo\_28:

(Start: 36 @20092 has 72 MA's), (39, 20110), (Start: 41 @20113 has 5 MA's), (51, 20146), (56, 20200), (83, 20314), (92, 20347), (95, 20359), (97, 20368), (104, 20401), (119, 20482), (123, 20494),

Gene: Ixel\_24 Start: 17641, Stop: 18147, Start Num: 36

Candidate Starts for Ixel\_24:

(Start: 36 @17641 has 72 MA's), (39, 17659), (51, 17695), (61, 17776), (62, 17779), (94, 17905), (105, 17953), (111, 17983), (117, 18022), (125, 18046),

Gene: JDawG\_35 Start: 23558, Stop: 24103, Start Num: 36

Candidate Starts for JDawG\_35:

(30, 23522), (Start: 36 @23558 has 72 MA's), (51, 23612), (59, 23687), (61, 23693), (78, 23765), (83, 23780), (98, 23840), (118, 23942), (125, 23963), (144, 24044),

Gene: Jemerald\_25 Start: 19299, Stop: 19844, Start Num: 36

Candidate Starts for Jemerald\_25:

(28, 19260), (Start: 36 @19299 has 72 MA's), (39, 19317), (58, 19419), (59, 19428), (Start: 60 @19431 has 1 MA's), (61, 19434), (65, 19449), (72, 19476), (75, 19497), (83, 19521), (94, 19563), (105, 19611),

(111, 19641), (125, 19704),

Gene: JessellCookie\_40 Start: 40626, Stop: 41111, Start Num: 40

Candidate Starts for JessellCookie\_40:

(Start: 40 @40626 has 5 MA's), (56, 40707), (69, 40761), (80, 40809), (87, 40833), (101, 40890), (106, 40914), (107, 40917), (125, 41004), (130, 41019), (131, 41025),

Gene: JingleBells\_35 Start: 23095, Stop: 23640, Start Num: 36

Candidate Starts for JingleBells\_35:

(30, 23059), (Start: 36 @23095 has 72 MA's), (51, 23149), (61, 23230), (78, 23302), (83, 23317), (98, 23377), (118, 23479), (125, 23500), (144, 23581),

Gene: Juicer\_25 Start: 19299, Stop: 19844, Start Num: 36

Candidate Starts for Juicer\_25:

(28, 19260), (Start: 36 @19299 has 72 MA's), (39, 19317), (58, 19419), (59, 19428), (Start: 60 @19431 has 1 MA's), (61, 19434), (65, 19449), (72, 19476), (75, 19497), (83, 19521), (94, 19563), (105, 19611), (111, 19641), (125, 19704),

Gene: Kamdara\_21 Start: 19072, Stop: 19560, Start Num: 41

Candidate Starts for Kamdara\_21:

(Start: 41 @19072 has 5 MA's), (66, 19207), (77, 19258), (85, 19285), (86, 19288), (87, 19291), (92, 19309), (93, 19315), (99, 19339), (103, 19360), (105, 19366), (106, 19372), (107, 19375), (108, 19378), (125, 19447),

Gene: Karate\_35 Start: 23905, Stop: 24456, Start Num: 36

Candidate Starts for Karate\_35:

(Start: 36 @23905 has 72 MA's), (61, 24040), (98, 24187), (125, 24310), (144, 24391), (149, 24421),

Gene: KatChan\_25 Start: 18367, Stop: 18912, Start Num: 36

Candidate Starts for KatChan\_25:

(Start: 36 @18367 has 72 MA's), (39, 18385), (51, 18421), (61, 18502), (78, 18574), (98, 18649), (101, 18661), (105, 18679), (117, 18748), (125, 18772), (128, 18781), (146, 18859),

Gene: Kate\_36 Start: 23918, Stop: 24463, Start Num: 36

Candidate Starts for Kate\_36:

(Start: 36 @23918 has 72 MA's), (51, 23972), (59, 24047), (61, 24053), (65, 24068), (83, 24140), (98, 24200), (99, 24203), (119, 24305), (125, 24323),

Gene: Kavo\_23 Start: 17621, Stop: 18154, Start Num: 36

Candidate Starts for Kavo\_23:

(Start: 36 @17621 has 72 MA's), (39, 17639), (58, 17741), (61, 17756), (78, 17828), (92, 17876), (105, 17933), (111, 17963), (117, 18002), (125, 18026), (134, 18062), (141, 18086), (151, 18146),

Gene: Kieran\_21 Start: 19076, Stop: 19564, Start Num: 41

Candidate Starts for Kieran\_21:

(Start: 41 @19076 has 5 MA's), (66, 19211), (77, 19262), (85, 19289), (86, 19292), (87, 19295), (92, 19313), (93, 19319), (99, 19343), (106, 19376), (107, 19379), (108, 19382), (125, 19451),

Gene: Kithara\_43 Start: 36544, Stop: 37053, Start Num: 60

Candidate Starts for Kithara\_43:

(1, 35764), (2, 35785), (3, 35848), (6, 35932), (10, 36118), (18, 36244), (55, 36514), (56, 36520), (Start: 60 @36544 has 1 MA's), (62, 36550), (67, 36568), (70, 36577), (81, 36616), (88, 36643), (94, 36664), (97, 36676), (116, 36754), (131, 36826), (139, 36859), (145, 36886), (152, 36952), (153,

36970), (154, 36988),

Gene: Kors\_38 Start: 24207, Stop: 24782, Start Num: 36

Candidate Starts for Kors\_38:

(Start: 34 @24198 has 1 MA's), (Start: 36 @24207 has 72 MA's), (39, 24225), (Start: 41 @24228 has 5 MA's), (58, 24327), (61, 24342), (78, 24414), (82, 24423), (97, 24483), (99, 24492), (105, 24519), (125, 24612), (142, 24681), (148, 24705),

Gene: Krampus\_36 Start: 23918, Stop: 24463, Start Num: 36

Candidate Starts for Krampus\_36:

(Start: 36 @23918 has 72 MA's), (51, 23972), (61, 24053), (89, 24161), (90, 24164), (98, 24200), (117, 24299), (125, 24323), (127, 24329), (137, 24371), (146, 24410),

Gene: LesNorah\_39 Start: 39618, Stop: 40115, Start Num: 42

Candidate Starts for LesNorah\_39:

(Start: 42 @39618 has 15 MA's), (54, 39699), (61, 39735), (89, 39840), (104, 39906), (106, 39915), (123, 39999), (125, 40005), (130, 40020), (143, 40077),

Gene: Librie\_24 Start: 17697, Stop: 18245, Start Num: 36

Candidate Starts for Librie\_24:

(Start: 36 @17697 has 72 MA's), (39, 17715), (51, 17751), (61, 17832), (65, 17847), (72, 17874), (78, 17904), (83, 17919), (98, 17979), (117, 18078),

Gene: LilTerminator\_24 Start: 17697, Stop: 18245, Start Num: 36

Candidate Starts for LilTerminator\_24:

(Start: 36 @17697 has 72 MA's), (39, 17715), (51, 17751), (61, 17832), (65, 17847), (72, 17874), (83, 17919), (98, 17979), (117, 18078),

Gene: LilyLou\_40 Start: 39212, Stop: 39706, Start Num: 42

Candidate Starts for LilyLou\_40:

(Start: 42 @39212 has 15 MA's), (43, 39218), (89, 39434), (106, 39509), (117, 39575), (125, 39599), (131, 39620), (143, 39671),

Gene: LordBart\_38 Start: 24123, Stop: 24698, Start Num: 36

Candidate Starts for LordBart\_38:

(Start: 34 @24114 has 1 MA's), (Start: 36 @24123 has 72 MA's), (39, 24141), (Start: 41 @24144 has 5 MA's), (58, 24243), (61, 24258), (78, 24330), (82, 24339), (97, 24399), (99, 24408), (105, 24435), (125, 24528), (142, 24597), (148, 24621),

Gene: Luna18\_25 Start: 18367, Stop: 18912, Start Num: 36

Candidate Starts for Luna18\_25:

(Start: 36 @18367 has 72 MA's), (39, 18385), (51, 18421), (61, 18502), (78, 18574), (98, 18649), (101, 18661), (105, 18679), (117, 18748), (125, 18772), (128, 18781), (146, 18859),

Gene: Lupine\_56 Start: 34272, Stop: 34772, Start Num: 33

Candidate Starts for Lupine\_56:

(23, 34215), (27, 34230), (Start: 33 @34272 has 6 MA's), (48, 34320), (52, 34359), (64, 34431), (66, 34440), (71, 34458), (91, 34539), (99, 34572), (104, 34596), (115, 34644),

Gene: Mercedes\_23 Start: 17482, Stop: 18048, Start Num: 36

Candidate Starts for Mercedes\_23:

(15, 17320), (16, 17335), (Start: 36 @17482 has 72 MA's), (39, 17500), (61, 17617), (65, 17632), (83, 17704), (90, 17728), (105, 17794), (111, 17824), (124, 17884),

Gene: MiamiPanther\_40 Start: 40626, Stop: 41111, Start Num: 40

Candidate Starts for MiamiPanther\_40:

(Start: 40 @40626 has 5 MA's), (56, 40707), (69, 40761), (80, 40809), (87, 40833), (101, 40890), (106, 40914), (107, 40917), (125, 41004), (130, 41019), (131, 41025),

Gene: Milani\_29 Start: 20700, Stop: 21209, Start Num: 36

Candidate Starts for Milani\_29:

(21, 20607), (22, 20613), (Start: 36 @20700 has 72 MA's), (39, 20718), (51, 20754), (Start: 60 @20832 has 1 MA's), (69, 20862), (82, 20916), (84, 20925), (86, 20934), (90, 20946), (93, 20961), (94, 20964), (100, 20991), (105, 21012), (107, 21021), (117, 21081), (118, 21084), (123, 21099),

Gene: Morrigan\_25 Start: 19253, Stop: 19798, Start Num: 36

Candidate Starts for Morrigan\_25:

(Start: 36 @19253 has 72 MA's), (39, 19271), (51, 19307), (61, 19388), (62, 19391), (78, 19460), (83, 19475), (98, 19535), (101, 19547), (105, 19565), (117, 19634), (125, 19658), (141, 19718), (146, 19745),

Gene: MortySmith\_34 Start: 22946, Stop: 23491, Start Num: 36

Candidate Starts for MortySmith\_34:

(30, 22910), (Start: 36 @22946 has 72 MA's), (51, 23000), (59, 23075), (61, 23081), (78, 23153), (83, 23168), (98, 23228), (118, 23330), (125, 23351), (133, 23381), (144, 23432),

Gene: NarutoRun\_36 Start: 23886, Stop: 24431, Start Num: 36

Candidate Starts for NarutoRun\_36:

(Start: 36 @23886 has 72 MA's), (61, 24021), (98, 24168), (106, 24204), (117, 24267), (125, 24291), (127, 24297), (133, 24321), (137, 24339), (146, 24378), (149, 24402),

Gene: Neptune\_36 Start: 23886, Stop: 24431, Start Num: 36

Candidate Starts for Neptune\_36:

(Start: 36 @23886 has 72 MA's), (51, 23940), (61, 24021), (89, 24129), (90, 24132), (98, 24168), (125, 24291), (127, 24297), (137, 24339), (146, 24378),

Gene: Nonagon\_52 Start: 34330, Stop: 34806, Start Num: 47

Candidate Starts for Nonagon\_52:

(35, 34291), (Start: 47 @34330 has 2 MA's), (49, 34339), (73, 34477), (95, 34561), (96, 34564), (102, 34594), (132, 34720),

Gene: Oatly\_40 Start: 38709, Stop: 39200, Start Num: 44

Candidate Starts for Oatly\_40:

(9, 38358), (Start: 44 @38709 has 8 MA's), (84, 38904), (98, 38961), (100, 38970), (104, 38988), (106, 38997), (109, 39012), (113, 39030), (125, 39087), (131, 39108), (138, 39132),

Gene: OhDear\_36 Start: 23884, Stop: 24429, Start Num: 36

Candidate Starts for OhDear\_36:

(Start: 36 @23884 has 72 MA's), (51, 23938), (59, 24013), (61, 24019), (65, 24034), (83, 24106), (98, 24166), (99, 24169), (125, 24289),

Gene: OverHedge\_36 Start: 23876, Stop: 24421, Start Num: 36

Candidate Starts for OverHedge\_36:

(Start: 36 @23876 has 72 MA's), (51, 23930), (61, 24011), (89, 24119), (90, 24122), (98, 24158), (117, 24257), (125, 24281), (127, 24287), (137, 24329), (146, 24368),

Gene: Pabst\_38 Start: 38773, Stop: 39264, Start Num: 44

Candidate Starts for Pabst\_38:

(24, 38668), (Start: 44 @38773 has 8 MA's), (84, 38968), (93, 39004), (99, 39028), (106, 39061), (109, 39076), (125, 39151), (126, 39154), (131, 39172), (138, 39196), (147, 39235),

Gene: Parvaparticeps\_29 Start: 19918, Stop: 19454, Start Num: 47

Candidate Starts for Parvaparticeps\_29:

(1, 20614), (2, 20593), (3, 20530), (7, 20437), (8, 20413), (25, 20023), (Start: 47 @19918 has 2 MA's), (51, 19900), (53, 19873), (56, 19843), (91, 19699), (102, 19651), (103, 19645), (135, 19516), (140, 19495),

Gene: Pavlo\_57 Start: 34917, Stop: 35417, Start Num: 33

Candidate Starts for Pavlo\_57:

(20, 34839), (23, 34860), (27, 34875), (Start: 33 @34917 has 6 MA's), (48, 34965), (52, 35004), (64, 35076), (66, 35085), (71, 35103), (91, 35184), (99, 35217), (104, 35241), (115, 35289),

Gene: Penta\_23 Start: 17619, Stop: 18152, Start Num: 36

Candidate Starts for Penta\_23:

(26, 17559), (Start: 36 @17619 has 72 MA's), (39, 17637), (51, 17673), (58, 17739), (61, 17754), (78, 17826), (105, 17931), (111, 17961), (114, 17970), (125, 18024), (134, 18060), (141, 18084), (151, 18144),

Gene: Pharpay\_36 Start: 23931, Stop: 24476, Start Num: 36

Candidate Starts for Pharpay\_36:

(Start: 36 @23931 has 72 MA's), (51, 23985), (59, 24060), (61, 24066), (65, 24081), (83, 24153), (98, 24213), (99, 24216), (125, 24336),

Gene: PhillyPhilly\_57 Start: 34451, Stop: 34951, Start Num: 33

Candidate Starts for PhillyPhilly\_57:

(27, 34409), (Start: 33 @34451 has 6 MA's), (48, 34499), (64, 34610), (66, 34619), (71, 34637), (84, 34691), (91, 34718), (99, 34751), (104, 34775), (115, 34823),

Gene: Phogo\_39 Start: 39040, Stop: 39534, Start Num: 42

Candidate Starts for Phogo\_39:

(Start: 42 @39040 has 15 MA's), (43, 39046), (80, 39232), (89, 39262), (106, 39337), (117, 39403), (125, 39427), (131, 39448), (143, 39499),

Gene: PhunaPhoke\_36 Start: 23904, Stop: 24449, Start Num: 36

Candidate Starts for PhunaPhoke\_36:

(Start: 36 @23904 has 72 MA's), (51, 23958), (61, 24039), (89, 24147), (90, 24150), (98, 24186), (117, 24285), (121, 24297), (125, 24309), (127, 24315), (137, 24357), (146, 24396), (149, 24420),

Gene: PineapplePluto\_41 Start: 39071, Stop: 39562, Start Num: 44

Candidate Starts for PineapplePluto\_41:

(9, 38720), (Start: 44 @39071 has 8 MA's), (84, 39266), (98, 39323), (100, 39332), (104, 39350), (106, 39359), (109, 39374), (113, 39392), (125, 39449), (131, 39470), (138, 39494),

Gene: Potty\_36 Start: 23909, Stop: 24454, Start Num: 36

Candidate Starts for Potty\_36:

(Start: 36 @23909 has 72 MA's), (51, 23963), (61, 24044), (89, 24152), (90, 24155), (98, 24191), (117, 24290), (121, 24302), (125, 24314), (127, 24320), (137, 24362), (149, 24425),

Gene: Poultruss\_35 Start: 24255, Stop: 24800, Start Num: 36

Candidate Starts for Poultruss\_35:

(Start: 36 @24255 has 72 MA's), (51, 24309), (61, 24390), (97, 24531), (98, 24537), (125, 24660),

Gene: QuadZero\_24 Start: 17701, Stop: 18249, Start Num: 36

Candidate Starts for QuadZero\_24:

(Start: 36 @17701 has 72 MA's), (39, 17719), (51, 17755), (61, 17836), (65, 17851), (72, 17878), (83, 17923), (98, 17983), (117, 18082),

Gene: Rachella\_36 Start: 23912, Stop: 24457, Start Num: 36

Candidate Starts for Rachella\_36:

(Start: 36 @23912 has 72 MA's), (51, 23966), (61, 24047), (89, 24155), (98, 24194), (106, 24230), (117, 24293), (125, 24317), (127, 24323), (137, 24365), (146, 24404), (149, 24428),

Gene: Rie18\_36 Start: 23400, Stop: 23948, Start Num: 36

Candidate Starts for Rie18\_36:

(13, 23139), (Start: 36 @23400 has 72 MA's), (51, 23454), (61, 23535), (99, 23685), (125, 23805), (149, 23916),

Gene: RikSengupta\_38 Start: 24244, Stop: 24819, Start Num: 36

Candidate Starts for RikSengupta\_38:

(Start: 34 @24235 has 1 MA's), (Start: 36 @24244 has 72 MA's), (39, 24262), (Start: 41 @24265 has 5 MA's), (58, 24364), (61, 24379), (78, 24451), (82, 24460), (97, 24520), (99, 24529), (105, 24556), (125, 24649), (142, 24718), (148, 24742),

Gene: Roman\_58 Start: 34918, Stop: 35418, Start Num: 33

Candidate Starts for Roman\_58:

(27, 34876), (Start: 33 @34918 has 6 MA's), (48, 34966), (52, 35005), (64, 35077), (66, 35086), (71, 35104), (91, 35185), (99, 35218), (104, 35242), (115, 35290),

Gene: Rona\_21 Start: 19073, Stop: 19561, Start Num: 41

Candidate Starts for Rona\_21:

(Start: 41 @19073 has 5 MA's), (66, 19208), (77, 19259), (85, 19286), (86, 19289), (87, 19292), (92, 19310), (93, 19316), (99, 19340), (106, 19373), (107, 19376), (108, 19379), (125, 19448),

Gene: Salvatore2000\_39 Start: 40626, Stop: 41111, Start Num: 40

Candidate Starts for Salvatore2000\_39:

(Start: 40 @40626 has 5 MA's), (56, 40707), (69, 40761), (80, 40809), (87, 40833), (101, 40890), (106, 40914), (125, 41004), (130, 41019), (131, 41025),

Gene: Saradis\_58 Start: 34510, Stop: 35010, Start Num: 33

Candidate Starts for Saradis\_58:

(27, 34468), (Start: 33 @34510 has 6 MA's), (48, 34558), (52, 34597), (64, 34669), (66, 34678), (71, 34696), (84, 34750), (91, 34777), (99, 34810), (104, 34834), (115, 34882),

Gene: Schimmels22\_24 Start: 18148, Stop: 18681, Start Num: 36

Candidate Starts for Schimmels22\_24:

(Start: 36 @18148 has 72 MA's), (39, 18166), (58, 18268), (61, 18283), (78, 18355), (92, 18403), (104, 18457), (105, 18460), (111, 18490), (117, 18529), (125, 18553), (134, 18589), (141, 18613), (151, 18673),

Gene: Scissor2024\_24 Start: 17784, Stop: 18317, Start Num: 36

Candidate Starts for Scissor2024\_24:

(Start: 36 @17784 has 72 MA's), (39, 17802), (58, 17904), (61, 17919), (65, 17934), (78, 17991), (105, 18096), (111, 18126), (117, 18165), (125, 18189), (134, 18225), (141, 18249), (150, 18306), (151, 18309),

Gene: Scruffy\_35 Start: 42070, Stop: 42561, Start Num: 45

Candidate Starts for Scruffy\_35:

(Start: 45 @42070 has 4 MA's), (56, 42151), (59, 42172), (100, 42331), (106, 42358), (125, 42448), (131, 42469),

Gene: Sharkboy\_21 Start: 19060, Stop: 19548, Start Num: 41

Candidate Starts for Sharkboy\_21:

(Start: 41 @19060 has 5 MA's), (66, 19195), (77, 19246), (85, 19273), (86, 19276), (87, 19279), (92, 19297), (93, 19303), (99, 19327), (106, 19360), (107, 19363), (108, 19366), (125, 19435),

Gene: Shrew\_37 Start: 13878, Stop: 14339, Start Num: 38

Candidate Starts for Shrew\_37:

(Start: 38 @13878 has 2 MA's), (50, 13902), (92, 14112), (105, 14166), (109, 14187), (112, 14202), (129, 14271),

Gene: SilentWarrior\_35 Start: 22987, Stop: 23532, Start Num: 36

Candidate Starts for SilentWarrior\_35:

(30, 22951), (Start: 36 @22987 has 72 MA's), (51, 23041), (61, 23122), (74, 23176), (78, 23194), (83, 23209), (98, 23269), (106, 23305), (118, 23371), (125, 23392), (144, 23473),

Gene: Snakehole\_36 Start: 23089, Stop: 23634, Start Num: 36

Candidate Starts for Snakehole\_36:

(4, 22579), (5, 22606), (32, 23074), (Start: 36 @23089 has 72 MA's), (51, 23143), (61, 23224), (98, 23371), (117, 23470), (125, 23494), (137, 23542), (146, 23581), (149, 23605),

Gene: Solimine\_58 Start: 34924, Stop: 35424, Start Num: 33

Candidate Starts for Solimine\_58:

(27, 34882), (Start: 33 @34924 has 6 MA's), (48, 34972), (52, 35011), (64, 35083), (66, 35092), (71, 35110), (84, 35164), (91, 35191), (99, 35224), (104, 35248), (115, 35296), (128, 35356),

Gene: Sorvannah\_39 Start: 40626, Stop: 41111, Start Num: 40

Candidate Starts for Sorvannah\_39:

(Start: 40 @40626 has 5 MA's), (56, 40707), (69, 40761), (80, 40809), (87, 40833), (101, 40890), (106, 40914), (125, 41004), (130, 41019), (131, 41025),

Gene: Sparcetus\_38 Start: 24123, Stop: 24698, Start Num: 36

Candidate Starts for Sparcetus\_38:

(Start: 34 @24114 has 1 MA's), (Start: 36 @24123 has 72 MA's), (39, 24141), (Start: 41 @24144 has 5 MA's), (58, 24243), (61, 24258), (78, 24330), (82, 24339), (97, 24399), (99, 24408), (105, 24435), (125, 24528), (142, 24597), (148, 24621),

Gene: Stormbreaker\_39 Start: 39128, Stop: 39622, Start Num: 42

Candidate Starts for Stormbreaker\_39:

(Start: 42 @39128 has 15 MA's), (43, 39134), (69, 39272), (89, 39350), (106, 39425), (117, 39491), (125, 39515), (131, 39536), (143, 39587),

Gene: Sucha\_25 Start: 19062, Stop: 19562, Start Num: 36

Candidate Starts for Sucha\_25:

(Start: 36 @19062 has 72 MA's), (Start: 41 @19083 has 5 MA's), (51, 19116), (77, 19266), (83, 19284), (93, 19323), (94, 19326), (97, 19338), (104, 19371), (119, 19452), (123, 19464),

Gene: SwissCheezer\_38 Start: 38780, Stop: 39274, Start Num: 42

Candidate Starts for SwissCheezer\_38:

(Start: 42 @38780 has 15 MA's), (43, 38786), (89, 39002), (106, 39077), (117, 39143), (125, 39167), (131, 39188), (143, 39239),

Gene: Tedro\_36 Start: 23382, Stop: 23927, Start Num: 36

Candidate Starts for Tedro\_36:

(Start: 36 @23382 has 72 MA's), (51, 23436), (61, 23517), (89, 23625), (90, 23628), (98, 23664), (125, 23787), (127, 23793), (137, 23835), (146, 23874),

Gene: TicTac\_40 Start: 39070, Stop: 39561, Start Num: 44

Candidate Starts for TicTac\_40:

(9, 38719), (Start: 44 @39070 has 8 MA's), (84, 39265), (98, 39322), (100, 39331), (104, 39349), (106, 39358), (109, 39373), (113, 39391), (125, 39448), (131, 39469), (138, 39493),

Gene: Tiggy93\_36 Start: 23915, Stop: 24460, Start Num: 36

Candidate Starts for Tiggy93\_36:

(Start: 36 @23915 has 72 MA's), (51, 23969), (61, 24050), (89, 24158), (90, 24161), (98, 24197), (125, 24320), (127, 24326), (137, 24368), (146, 24407),

Gene: TinyMiny\_38 Start: 24133, Stop: 24717, Start Num: 34

Candidate Starts for TinyMiny\_38:

(Start: 34 @24133 has 1 MA's), (Start: 36 @24142 has 72 MA's), (39, 24160), (Start: 41 @24163 has 5 MA's), (58, 24262), (61, 24277), (78, 24349), (82, 24358), (97, 24418), (99, 24427), (105, 24454), (114, 24493), (125, 24547), (142, 24616), (148, 24640),

Gene: TinyTimothy\_38 Start: 40626, Stop: 41111, Start Num: 40

Candidate Starts for TinyTimothy\_38:

(Start: 40 @40626 has 5 MA's), (56, 40707), (69, 40761), (80, 40809), (87, 40833), (101, 40890), (106, 40914), (107, 40917), (125, 41004), (130, 41019), (131, 41025),

Gene: Tinyman4\_24 Start: 17785, Stop: 18318, Start Num: 36

Candidate Starts for Tinyman4\_24:

(Start: 36 @17785 has 72 MA's), (39, 17803), (58, 17905), (61, 17920), (78, 17992), (92, 18040), (105, 18097), (106, 18103), (111, 18127), (117, 18166), (125, 18190), (134, 18226), (141, 18250), (151, 18310),

Gene: Tongui\_35 Start: 23339, Stop: 23887, Start Num: 36

Candidate Starts for Tongui\_35:

(17, 23183), (Start: 36 @23339 has 72 MA's), (51, 23393), (61, 23474), (75, 23537), (125, 23744), (149, 23855),

Gene: TownLake\_37 Start: 38908, Stop: 39405, Start Num: 42

Candidate Starts for TownLake\_37:

(Start: 42 @38908 has 15 MA's), (54, 38989), (61, 39025), (89, 39130), (104, 39196), (106, 39205), (123, 39289), (125, 39295), (130, 39310), (143, 39367),

Gene: TwoBits\_24 Start: 18079, Stop: 18627, Start Num: 36

Candidate Starts for TwoBits\_24:

(Start: 36 @18079 has 72 MA's), (39, 18097), (51, 18133), (61, 18214), (65, 18229), (98, 18361), (117, 18460),

Gene: Unphazed\_39 Start: 39004, Stop: 39498, Start Num: 42

Candidate Starts for Unphazed\_39:

(Start: 42 @39004 has 15 MA's), (43, 39010), (89, 39226), (106, 39301), (117, 39367), (125, 39391), (131, 39412), (143, 39463),

Gene: Uterion\_60 Start: 35019, Stop: 35519, Start Num: 33

Candidate Starts for Uterion\_60:

(23, 34962), (27, 34977), (Start: 33 @35019 has 6 MA's), (48, 35067), (52, 35106), (64, 35178), (66, 35187), (71, 35205), (91, 35286), (99, 35319), (104, 35343), (115, 35391),

Gene: Wardwill\_26 Start: 17859, Stop: 18407, Start Num: 36

Candidate Starts for Wardwill\_26:

(Start: 36 @17859 has 72 MA's), (39, 17877), (51, 17913), (61, 17994), (65, 18009), (72, 18036), (78, 18066), (83, 18081), (98, 18141), (117, 18240),

Gene: Wesak\_39 Start: 40468, Stop: 40953, Start Num: 40

Candidate Starts for Wesak\_39:

(Start: 40 @40468 has 5 MA's), (56, 40549), (69, 40603), (80, 40651), (87, 40675), (101, 40732), (106, 40756), (125, 40846), (130, 40861), (131, 40867),

Gene: WestPM\_23 Start: 17628, Stop: 18161, Start Num: 36

Candidate Starts for WestPM\_23:

(26, 17568), (Start: 36 @17628 has 72 MA's), (39, 17646), (51, 17682), (58, 17748), (61, 17763), (78, 17835), (105, 17940), (111, 17970), (114, 17979), (125, 18033), (134, 18069), (141, 18093), (151, 18153),

Gene: WilliamStrong\_23 Start: 19363, Stop: 19908, Start Num: 36

Candidate Starts for WilliamStrong\_23:

(12, 19108), (19, 19237), (29, 19327), (Start: 36 @19363 has 72 MA's), (61, 19498), (65, 19513), (75, 19561), (83, 19585), (98, 19645), (101, 19657), (117, 19744), (118, 19747), (125, 19768),

Gene: Wolfstar\_59 Start: 35948, Stop: 36460, Start Num: 36

Candidate Starts for Wolfstar\_59:

(14, 35735), (31, 35915), (Start: 36 @35948 has 72 MA's), (37, 35957), (46, 35996), (64, 36113), (66, 36122), (71, 36140), (79, 36179), (98, 36251), (99, 36254), (126, 36380),

Gene: Xitlalli\_37 Start: 39005, Stop: 39499, Start Num: 42

Candidate Starts for Xitlalli\_37:

(Start: 42 @39005 has 15 MA's), (43, 39011), (72, 39164), (89, 39227), (106, 39302), (117, 39368), (125, 39392), (131, 39413), (143, 39464),

Gene: YellowPanda\_41 Start: 40349, Stop: 40834, Start Num: 40

Candidate Starts for YellowPanda\_41:

(Start: 40 @40349 has 5 MA's), (56, 40430), (69, 40484), (80, 40532), (87, 40556), (101, 40613), (106, 40637), (107, 40640), (125, 40727), (130, 40742), (131, 40748),

Gene: Zayuliv\_24 Start: 18287, Stop: 18835, Start Num: 36

Candidate Starts for Zayuliv\_24:

(Start: 36 @18287 has 72 MA's), (39, 18305), (51, 18341), (61, 18422), (65, 18437), (72, 18464), (78, 18494), (83, 18509), (92, 18542), (98, 18569), (117, 18668),

Gene: Zepp\_25 Start: 17685, Stop: 18233, Start Num: 36

Candidate Starts for Zepp\_25:

(Start: 36 @17685 has 72 MA's), (39, 17703), (51, 17739), (61, 17820), (65, 17835), (72, 17862), (78, 17892), (83, 17907), (98, 17967), (106, 18003), (117, 18066),