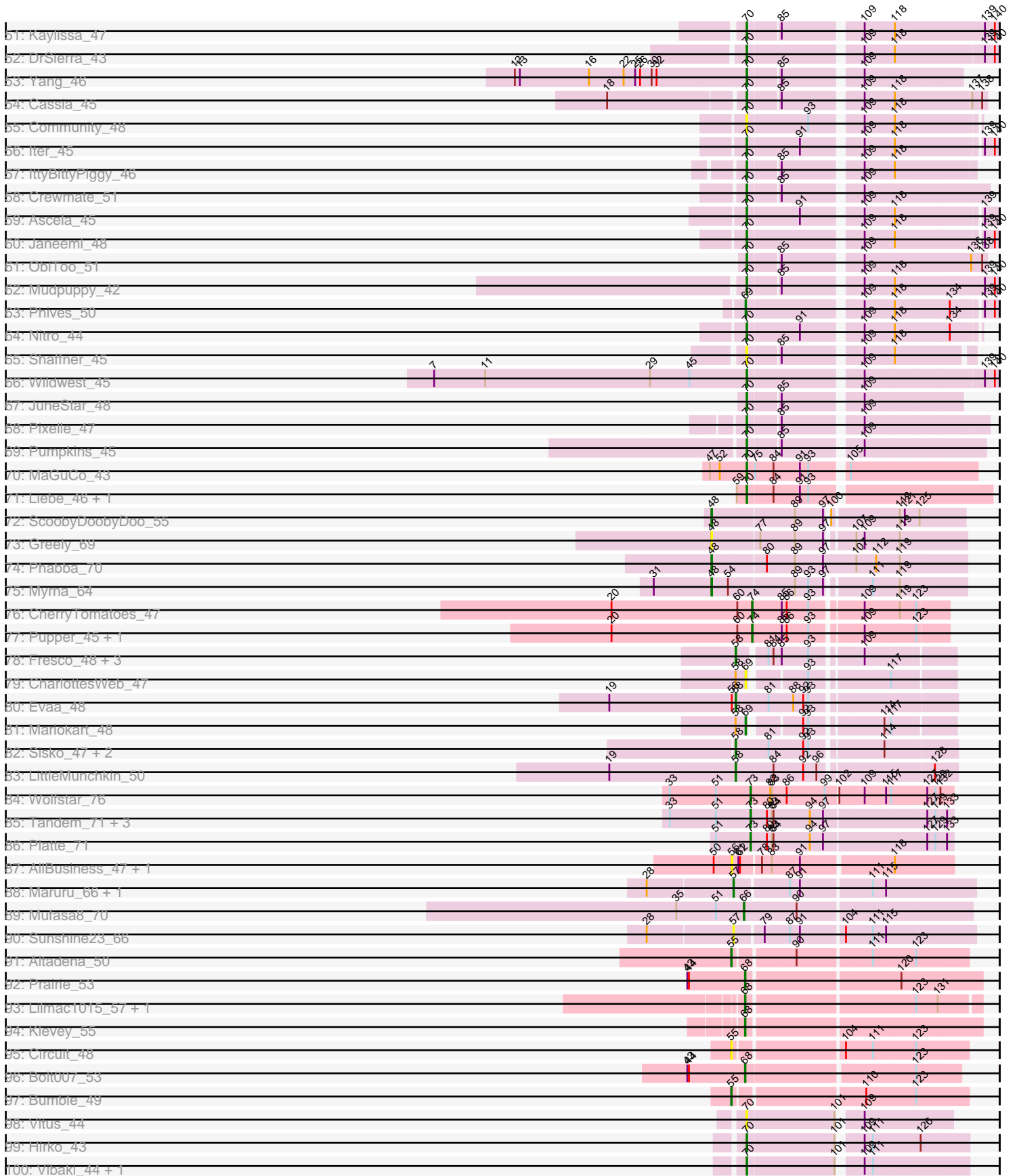


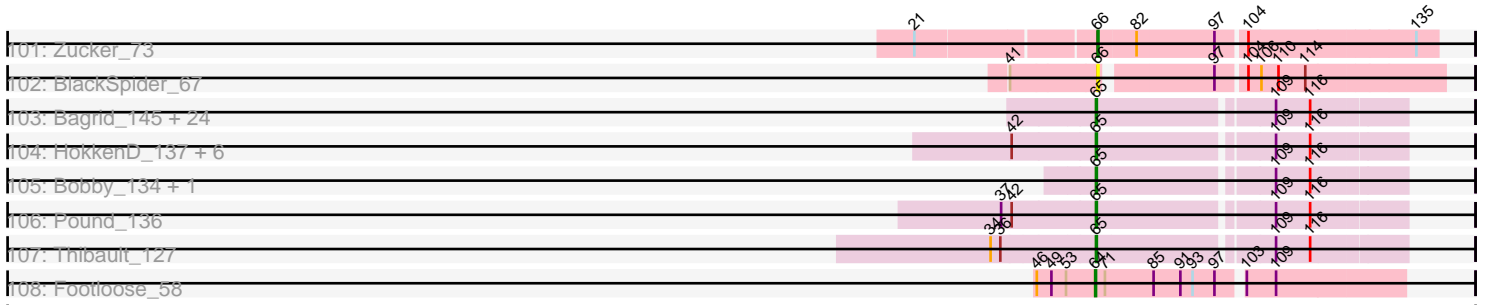
# Zoomed Pham 224313



# Zoomed Pham 224313



# Zoomed Pham 224313



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 224313 Report

This analysis was run 03/28/25 on database version 593.

Pham number 224313 has 191 members, 54 are drafts.

Phages represented in each track:

- Track 1 : StAugustine\_140
- Track 2 : Causa\_146
- Track 3 : Ruchi\_30
- Track 4 : Pelletreau\_33, KendraB23\_34, Westrich\_33, Gravel\_33, Toad24\_31
- Track 5 : WileyE\_32, Chickaboom\_31
- Track 6 : Vulpecula\_30
- Track 7 : TaylorSipht\_30
- Track 8 : Orcanus\_30
- Track 9 : Abidatro\_30
- Track 10 : Eesa\_29
- Track 11 : Brynnie\_30
- Track 12 : Jamun\_29
- Track 13 : Basilisk\_31
- Track 14 : Zhuangyuan\_36
- Track 15 : Cygnet\_35
- Track 16 : LittleTokyo\_33
- Track 17 : PhluffyCoco\_31, Atlantica\_31, RedFox\_31, HamCheese\_30, Camara\_31, Rattail\_31, Juno112\_30, DanHam62\_31
- Track 18 : Andrew\_32
- Track 19 : Babushka\_30
- Track 20 : Leona\_30
- Track 21 : Glotell\_33, KHumphrey\_31, AmiCi24\_30
- Track 22 : Renna12\_30
- Track 23 : Hillester\_80, RadFad\_81
- Track 24 : Raphaella\_77, Hestia\_70, AdaS\_72, Faja\_79, YoungHarleezy\_74, BenchScraper\_76, JellyBread\_72, CookieBear\_73
- Track 25 : Aikyam\_75, Gorpy\_74, MaterMagnus\_76, Sakai\_73
- Track 26 : BlueShadow\_78
- Track 27 : Persistence\_70
- Track 28 : Anekin\_78
- Track 29 : Shukran\_73
- Track 30 : Windest\_79, BillyTP\_77, Lawnathon\_76
- Track 31 : Isolde\_74
- Track 32 : SpicyFrank\_78, MidnightRain\_81
- Track 33 : Raqqa\_74
- Track 34 : Globfish\_75, EvePickles\_75, ThayneTheZag\_81
- Track 35 : MUWow\_77

- Track 36 : Tiff81\_72
- Track 37 : Richie\_79
- Track 38 : Seahorse\_84
- Track 39 : Phrank15\_80
- Track 40 : Bhageatrice\_81
- Track 41 : Sashimi\_76
- Track 42 : Auxilium\_74
- Track 43 : AbbyDaisy\_79
- Track 44 : Simpson\_48, Joemato\_46, JohnDoe\_46
- Track 45 : Tutumahutu\_47, Powerpuff\_48, AGrandiflora\_48, Cyan\_46, Lego\_45, YesChef\_46
- Track 46 : Tuck\_49
- Track 47 : Tbone\_46
- Track 48 : Lizalica\_44
- Track 49 : Amyev\_46, Tian\_45
- Track 50 : Warda\_46
- Track 51 : Kaylissa\_47
- Track 52 : DrSierra\_43
- Track 53 : Yang\_46
- Track 54 : Cassia\_45
- Track 55 : Community\_48
- Track 56 : lter\_45
- Track 57 : IttyBittyPiggy\_46
- Track 58 : Crewmate\_51
- Track 59 : Ascela\_45
- Track 60 : Janeemi\_48
- Track 61 : ObiToo\_51
- Track 62 : Mudpuppy\_42
- Track 63 : Phives\_50
- Track 64 : Nitro\_44
- Track 65 : Shaffner\_45
- Track 66 : Wildwest\_45
- Track 67 : JuneStar\_48
- Track 68 : Pixelle\_47
- Track 69 : Pumpkins\_45
- Track 70 : MaGuCo\_43
- Track 71 : Liebe\_46, Maureen\_46
- Track 72 : ScoobyDoobyDoo\_55
- Track 73 : Greely\_69
- Track 74 : Phabba\_70
- Track 75 : Myrna\_64
- Track 76 : CherryTomatoes\_47
- Track 77 : Pupper\_45, SCentae\_45
- Track 78 : Fresco\_48, Axumite\_48, Ligma\_48, Shatter\_48
- Track 79 : CharlottesWeb\_47
- Track 80 : Evaa\_48
- Track 81 : Mariokart\_48
- Track 82 : Sisko\_47, Yago84\_47, AnClar\_48
- Track 83 : LittleMunchkin\_50
- Track 84 : Wolfstar\_76
- Track 85 : Tandem\_71, Pioneer3\_71, Hortus1\_71, OlinDD\_71
- Track 86 : Platte\_71
- Track 87 : AllBusiness\_47, Schism\_52

- Track 88 : Maruru\_66, Sonali\_65
- Track 89 : Mufasa8\_70
- Track 90 : Sunshine23\_66
- Track 91 : Altadena\_50
- Track 92 : Prairie\_53
- Track 93 : Lilmac1015\_57, CalWood4100\_57
- Track 94 : Klevey\_55
- Track 95 : Circuit\_48
- Track 96 : Bolt007\_53
- Track 97 : Bumble\_49
- Track 98 : Vitus\_44
- Track 99 : Hirko\_43
- Track 100 : Vibaki\_44, GoldDust\_45
- Track 101 : Zucker\_73
- Track 102 : BlackSpider\_67
- Track 103 : Bagrid\_145, Kalah2\_135, Optimus\_135, Schatzie\_140, Halley\_146, Duke13\_140, Wanda\_144, ThreeRngTarjay\_139, BAKA\_144, EricMillard\_136, Dove\_130, NihilNomen\_146, JuicyJay\_140, Odette\_148, Constella\_138, DmpstrDiver\_145, Ejimix\_137, Dallas\_145, Minerva\_144, Beem\_146, Hughesyang\_143, Klein\_142, Zelink\_139, Bombitas\_132, Phoebus\_144
- Track 104 : HokkenD\_137, Porcelain\_140, Redno2\_139, MiaZeal\_143, Lucky2013\_136, Yeet\_138, KashFlow\_143
- Track 105 : Bobby\_134, Marleymoo\_127
- Track 106 : Pound\_136
- Track 107 : Thibault\_127
- Track 108 : Footloose\_58

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

The start number called the most often in the published annotations is 65, it was called in 33 of the 137 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- BAKA\_144, Bagrid\_145, Beem\_146, Bobby\_134, Bombitas\_132, Constella\_138, Dallas\_145, DmpstrDiver\_145, Dove\_130, Duke13\_140, Ejimix\_137, EricMillard\_136, Halley\_146, HokkenD\_137, Hughesyang\_143, JuicyJay\_140, Kalah2\_135, KashFlow\_143, Klein\_142, Lucky2013\_136, Marleymoo\_127, MiaZeal\_143, Minerva\_144, NihilNomen\_146, Odette\_148, Optimus\_135, Phoebus\_144, Porcelain\_140, Pound\_136, Redno2\_139, Schatzie\_140, Thibault\_127, ThreeRngTarjay\_139, Wanda\_144, Yeet\_138, Zelink\_139,

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

- 

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

- AGrandiflora\_48, AbbyDaisy\_79, Abidatro\_30, AdaS\_72, Aikyam\_75, AllBusiness\_47, Altadena\_50, AmiCi24\_30, Amyev\_46, AnClar\_48, Andrew\_32, Anekin\_78, Ascela\_45, Atlantica\_31, Auxilium\_74, Axumite\_48, Babushka\_30, Basilisk\_31, BenchScraper\_76, Bhageatrice\_81, BillyTP\_77, BlackSpider\_67, BlueShadow\_78, Bolt007\_53, Brynnie\_30, Bumble\_49, CalWood4100\_57,

Camara\_31, Cassia\_45, Causa\_146, CharlottesWeb\_47, CherryTomatoes\_47, Chickaboom\_31, Circuit\_48, Community\_48, CookieBear\_73, Crewmate\_51, Cyan\_46, Cygnet\_35, DanHam62\_31, DrSierra\_43, Eesa\_29, Evaa\_48, EvePickles\_75, Faja\_79, Footloose\_58, Fresco\_48, Globfish\_75, Glotell\_33, GoldDust\_45, Gorpy\_74, Gravel\_33, Greely\_69, HamCheese\_30, Hestia\_70, Hillester\_80, Hirko\_43, Hortus1\_71, Isolde\_74, Iter\_45, IttyBittyPiggy\_46, Jamun\_29, Janeemi\_48, JellyBread\_72, Joemato\_46, JohnDoe\_46, JuneStar\_48, Juno112\_30, KHumphrey\_31, Kaylissa\_47, KendraB23\_34, Klevey\_55, Lawnathon\_76, Lego\_45, Leona\_30, Liebe\_46, Ligma\_48, Lilmac1015\_57, LittleMunchkin\_50, LittleTokyo\_33, Lizalica\_44, MUWow\_77, MaGuCo\_43, Mariokart\_48, Maruru\_66, MaterMagnus\_76, Maureen\_46, MidnightRain\_81, Mudpuppy\_42, Mufasa8\_70, Myrna\_64, Nitro\_44, ObiToo\_51, OlinDD\_71, Orcanus\_30, Pelletreau\_33, Persistence\_70, Phabba\_70, Phives\_50, PhluffyCoco\_31, Phrank15\_80, Pioneer3\_71, Pixelle\_47, Platte\_71, Powerpuff\_48, Prairie\_53, Pumpkins\_45, Pupper\_45, RadFad\_81, Raphaella\_77, Raqqa\_74, Rattail\_31, RedFox\_31, Renna12\_30, Richie\_79, Ruchi\_30, SCentae\_45, Sakai\_73, Sashimi\_76, Schism\_52, ScoobyDoobyDoo\_55, Seahorse\_84, Shaffner\_45, Shatter\_48, Shukran\_73, Simpson\_48, Sisko\_47, Sonali\_65, SpicyFrank\_78, StAugustine\_140, Sunshine23\_66, Tandem\_71, TaylorSipht\_30, Tbone\_46, ThayneTheZag\_81, Tian\_45, Tiff81\_72, Toad24\_31, Tuck\_49, Tutumahutu\_47, Vibaki\_44, Vitus\_44, Vulpecula\_30, Warda\_46, Westrich\_33, Wildwest\_45, WileyE\_32, Windest\_79, Wolfstar\_76, Yago84\_47, Yang\_46, YesChef\_46, YoungHarleezy\_74, Zhuangyuan\_36, Zucker\_73,

### Summary by start number:

#### Start 48:

- Found in 4 of 191 ( 2.1% ) of genes in pham
- Manual Annotations of this start: 3 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Greely\_69 (C2), Myrna\_64 (C2), Phabba\_70 (C2), ScoobyDoobyDoo\_55 (C2),

#### Start 53:

- Found in 3 of 191 ( 1.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Cygnet\_35 (AS2), Zhuangyuan\_36 (AS2),

#### Start 55:

- Found in 3 of 191 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 2 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Altadena\_50 (FH), Bumble\_49 (FH), Circuit\_48 (FH),

#### Start 56:

- Found in 3 of 191 ( 1.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 66.7% of time when present
- Phage (with cluster) where this start called: AllBusiness\_47 (FF), Schism\_52 (FF),

#### Start 57:

- Found in 3 of 191 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Maruru\_66 (FG), Sonali\_65 (FG), Sunshine23\_66 (FG),

#### Start 58:

- Found in 13 of 191 ( 6.8% ) of genes in pham
- Manual Annotations of this start: 9 of 137
- Called 69.2% of time when present
- Phage (with cluster) where this start called: AnClar\_48 (DR), Axumite\_48 (DR), Evaa\_48 (DR), Fresco\_48 (DR), Ligma\_48 (DR), LittleMunchkin\_50 (DR), Shatter\_48 (DR), Sisko\_47 (DR), Yago84\_47 (DR),

#### Start 63:

- Found in 32 of 191 ( 16.8% ) of genes in pham
- Manual Annotations of this start: 16 of 137
- Called 81.2% of time when present
- Phage (with cluster) where this start called: Abidatro\_30 (AS1), Andrew\_32 (AS3), Atlantica\_31 (AS3), Basilisk\_31 (AS1), Brynnie\_30 (AS1), Camara\_31 (AS3), DanHam62\_31 (AS3), Eesa\_29 (AS1), Gravel\_33 (AS1), HamCheese\_30 (AS3), Jamun\_29 (AS1), Juno112\_30 (AS3), KendraB23\_34 (AS1), Leona\_30 (AS3), LittleTokyo\_33 (AS2), Orcanus\_30 (AS1), Pelletreau\_33 (AS1), PhluffyCoco\_31 (AS3), Rattail\_31 (AS3), RedFox\_31 (AS3), Renna12\_30 (AS3), Ruchi\_30 (AS1), TaylorSipt\_30 (AS1), Toad24\_31 (AS1), Vulpecula\_30 (AS1), Westrich\_33 (AS1),

#### Start 64:

- Found in 1 of 191 ( 0.5% ) of genes in pham
- Manual Annotations of this start: 1 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Footloose\_58 (singleton),

#### Start 65:

- Found in 36 of 191 ( 18.8% ) of genes in pham
- Manual Annotations of this start: 33 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BAKA\_144 (J), Bagrid\_145 (J), Beem\_146 (J), Bobby\_134 (J), Bombitas\_132 (J), Constella\_138 (J), Dallas\_145 (J), DmpstrDiver\_145 (J), Dove\_130 (J), Duke13\_140 (J), Ejimix\_137 (J), EricMillard\_136 (J), Halley\_146 (J), HokkenD\_137 (J), Hughesyang\_143 (J), JuicyJay\_140 (J), Kalah2\_135 (J), KashFlow\_143 (J), Klein\_142 (J), Lucky2013\_136 (J), Marleymoo\_127 (J), MiaZeal\_143 (J), Minerva\_144 (J), NihilNomen\_146 (J), Odette\_148 (J), Optimus\_135 (J), Phoebus\_144 (J), Porcelain\_140 (J), Pound\_136 (J), Redno2\_139 (J), Schatzie\_140 (J), Thibault\_127 (J), ThreeRngTarjay\_139 (J), Wanda\_144 (J), Yeet\_138 (J), Zelink\_139 (J),

#### Start 66:

- Found in 40 of 191 ( 20.9% ) of genes in pham
- Manual Annotations of this start: 21 of 137
- Called 97.5% of time when present
- Phage (with cluster) where this start called: AbbyDaisy\_79 (AY), AdaS\_72 (AY), Aikyam\_75 (AY), Anekin\_78 (AY), Auxilium\_74 (AY), BenchScraper\_76 (AY), Bhageatrice\_81 (AY), BillyTP\_77 (AY), BlackSpider\_67 (FN), BlueShadow\_78 (AY),



CookieBear\_73 (AY), EvePickles\_75 (AY), Faja\_79 (AY), Globfish\_75 (AY), Gorpy\_74 (AY), Hestia\_70 (AY), Hillester\_80 (AY), Isolde\_74 (AY), JellyBread\_72 (AY), Lawnathon\_76 (AY), MUWow\_77 (AY), MaterMagnus\_76 (AY), MidnightRain\_81 (AY), Mufasa8\_70 (FG), Persistence\_70 (AY), Phrank15\_80 (AY), RadFad\_81 (AY), Raphaella\_77 (AY), Richie\_79 (AY), Sakai\_73 (AY), Sashimi\_76 (AY), Seahorse\_84 (AY), Shukran\_73 (AY), SpicyFrank\_78 (AY), ThayneTheZag\_81 (AY), Tiff81\_72 (AY), Windest\_79 (AY), YoungHarleazy\_74 (AY), Zucker\_73 (FN),

Start 67:

- Found in 2 of 191 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Causa\_146 (AI), StAugustine\_140 (AI),

Start 68:

- Found in 5 of 191 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 4 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bolt007\_53 (FH), CalWood4100\_57 (FH), Klevey\_55 (FH), Lilmac1015\_57 (FH), Prairie\_53 (FH),

Start 69:

- Found in 3 of 191 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 2 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CharlottesWeb\_47 (DR), Mariokart\_48 (DR), Phives\_50 (AZ1),

Start 70:

- Found in 40 of 191 ( 20.9% ) of genes in pham
- Manual Annotations of this start: 33 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AGrandiflora\_48 (AZ1), Amyev\_46 (AZ1), Ascela\_45 (AZ1), Cassia\_45 (AZ1), Community\_48 (AZ1), Crewmate\_51 (AZ1), Cyan\_46 (AZ1), DrSierra\_43 (AZ1), GoldDust\_45 (FL), Hirko\_43 (FL), Iter\_45 (AZ1), IttyBittyPiggy\_46 (AZ1), Janeemi\_48 (AZ1), Joemato\_46 (AZ1), JohnDoe\_46 (AZ1), JuneStar\_48 (AZ1), Kaylissa\_47 (AZ1), Lego\_45 (AZ1), Liebe\_46 (AZ2), Lizalica\_44 (AZ1), MaGuCo\_43 (AZ2), Maureen\_46 (AZ2), Mudpuppy\_42 (AZ1), Nitro\_44 (AZ1), ObiToo\_51 (AZ1), Pixelle\_47 (AZ1), Powerpuff\_48 (AZ1), Pumpkins\_45 (AZ1), Shaffner\_45 (AZ1), Simpson\_48 (AZ1), Tbone\_46 (AZ1), Tian\_45 (AZ1), Tuck\_49 (AZ1), Tutumahutu\_47 (AZ1), Vibaki\_44 (FL), Vitus\_44 (FL), Warda\_46 (AZ1), Wildwest\_45 (AZ1), Yang\_46 (AZ1), YesChef\_46 (AZ1),

Start 73:

- Found in 6 of 191 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 6 of 137
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hortus1\_71 (ED1), OlinDD\_71 (ED1), Pioneer3\_71 (ED1), Platte\_71 (ED1), Tandem\_71 (ED1), Wolfstar\_76 (ED),

Start 74:

- Found in 3 of 191 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 3 of 137

- Called 100.0% of time when present
- Phage (with cluster) where this start called: CherryTomatoes\_47 (DO), Pupper\_45 (DO), SCentae\_45 (DO),

Start 76:

- Found in 12 of 191 ( 6.3% ) of genes in pham
- Manual Annotations of this start: 1 of 137
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Chickaboom\_31 (AS1), Raqqa\_74 (AY), WileyE\_32 (AS1),

Start 77:

- Found in 12 of 191 ( 6.3% ) of genes in pham
- Manual Annotations of this start: 1 of 137
- Called 25.0% of time when present
- Phage (with cluster) where this start called: AmiCi24\_30 (AS3), Glotell\_33 (AS3), KHumphrey\_31 (AS3),

Start 78:

- Found in 5 of 191 ( 2.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Babushka\_30 (AS3),

### **Summary by clusters:**

There are 19 clusters represented in this pham: AS3, AS2, AS1, DO, AI, FL, ED, J, singleton, FH, ED1, FF, C2, AY, AZ1, AZ2, DR, FN, FG,

Info for manual annotations of cluster AI:

- Start number 67 was manually annotated 1 time for cluster AI.

Info for manual annotations of cluster AS1:

- Start number 63 was manually annotated 9 times for cluster AS1.
- Start number 76 was manually annotated 1 time for cluster AS1.

Info for manual annotations of cluster AS2:

- Start number 63 was manually annotated 1 time for cluster AS2.

Info for manual annotations of cluster AS3:

- Start number 63 was manually annotated 6 times for cluster AS3.
- Start number 77 was manually annotated 1 time for cluster AS3.

Info for manual annotations of cluster AY:

- Start number 66 was manually annotated 19 times for cluster AY.

Info for manual annotations of cluster AZ1:

- Start number 69 was manually annotated 1 time for cluster AZ1.
- Start number 70 was manually annotated 28 times for cluster AZ1.

Info for manual annotations of cluster AZ2:

- Start number 70 was manually annotated 3 times for cluster AZ2.

Info for manual annotations of cluster C2:

- Start number 48 was manually annotated 3 times for cluster C2.

Info for manual annotations of cluster DO:

- Start number 74 was manually annotated 3 times for cluster DO.

Info for manual annotations of cluster DR:

- Start number 58 was manually annotated 9 times for cluster DR.
- Start number 69 was manually annotated 1 time for cluster DR.

Info for manual annotations of cluster ED:

- Start number 73 was manually annotated 1 time for cluster ED.

Info for manual annotations of cluster ED1:

- Start number 73 was manually annotated 5 times for cluster ED1.

Info for manual annotations of cluster FG:

- Start number 57 was manually annotated 1 time for cluster FG.
- Start number 66 was manually annotated 1 time for cluster FG.

Info for manual annotations of cluster FH:

- Start number 55 was manually annotated 2 times for cluster FH.
- Start number 68 was manually annotated 4 times for cluster FH.

Info for manual annotations of cluster FL:

- Start number 70 was manually annotated 2 times for cluster FL.

Info for manual annotations of cluster FN:

- Start number 66 was manually annotated 1 time for cluster FN.

Info for manual annotations of cluster J:

- Start number 65 was manually annotated 33 times for cluster J.

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

Gene: AGrandiflora\_48 Start: 33790, Stop: 34203, Start Num: 70

Candidate Starts for AGrandiflora\_48:

(Start: 70 @33790 has 33 MA's), (85, 33844), (109, 33970), (118, 34024), (139, 34177), (140, 34195),

Gene: AbbyDaisy\_79 Start: 44094, Stop: 44489, Start Num: 66

Candidate Starts for AbbyDaisy\_79:

(Start: 66 @44094 has 21 MA's), (Start: 76 @44118 has 1 MA's), (82, 44139), (104, 44265), (135, 44463),

Gene: Abidatro\_30 Start: 21728, Stop: 21387, Start Num: 63

Candidate Starts for Abidatro\_30:

(Start: 63 @21728 has 16 MA's), (Start: 76 @21707 has 1 MA's), (113, 21497), (131, 21401),

Gene: AdaS\_72 Start: 39804, Stop: 40205, Start Num: 66

Candidate Starts for AdaS\_72:

(Start: 66 @39804 has 21 MA's), (104, 39972), (114, 40041),

Gene: Aikyam\_75 Start: 40510, Stop: 40911, Start Num: 66

Candidate Starts for Aikyam\_75:

(17, 40264), (Start: 66 @40510 has 21 MA's), (104, 40678), (114, 40747),

Gene: AllBusiness\_47 Start: 35006, Stop: 35380, Start Num: 56

Candidate Starts for AllBusiness\_47:

(50, 34973), (56, 35006), (61, 35018), (62, 35021), (78, 35054), (83, 35072), (91, 35120), (118, 35279),

Gene: Altadena\_50 Start: 34978, Stop: 35370, Start Num: 55

Candidate Starts for Altadena\_50:

(Start: 55 @34978 has 2 MA's), (90, 35077), (111, 35206), (123, 35281),

Gene: AmiCi24\_30 Start: 21190, Stop: 20867, Start Num: 77

Candidate Starts for AmiCi24\_30:

(Start: 63 @21208 has 16 MA's), (Start: 77 @21190 has 1 MA's),

Gene: Amyev\_46 Start: 34828, Stop: 35223, Start Num: 70

Candidate Starts for Amyev\_46:

(6, 34264), (9, 34336), (10, 34345), (12, 34423), (27, 34654), (39, 34726), (Start: 70 @34828 has 33 MA's), (85, 34882), (109, 35008),

Gene: AnClar\_48 Start: 43435, Stop: 43061, Start Num: 58

Candidate Starts for AnClar\_48:

(Start: 58 @43435 has 9 MA's), (81, 43375), (92, 43312), (93, 43303), (114, 43183),

Gene: Andrew\_32 Start: 21174, Stop: 20812, Start Num: 63

Candidate Starts for Andrew\_32:

(Start: 63 @21174 has 16 MA's), (91, 21087), (112, 20958), (122, 20892),

Gene: Anekin\_78 Start: 43082, Stop: 43483, Start Num: 66

Candidate Starts for Anekin\_78:

(17, 42836), (Start: 66 @43082 has 21 MA's), (104, 43250), (114, 43319),

Gene: Ascela\_45 Start: 33111, Stop: 33515, Start Num: 70

Candidate Starts for Ascela\_45:

(Start: 70 @33111 has 33 MA's), (91, 33198), (109, 33291), (118, 33345), (139, 33489),

Gene: Atlantica\_31 Start: 21209, Stop: 20868, Start Num: 63

Candidate Starts for Atlantica\_31:

(Start: 63 @21209 has 16 MA's), (Start: 77 @21191 has 1 MA's),

Gene: Auxilium\_74 Start: 40053, Stop: 40418, Start Num: 66

Candidate Starts for Auxilium\_74:

(Start: 66 @40053 has 21 MA's), (87, 40116), (93, 40149), (104, 40209), (113, 40272),

Gene: Axumite\_48 Start: 41091, Stop: 40741, Start Num: 58

Candidate Starts for Axumite\_48:

(Start: 58 @41091 has 9 MA's), (81, 41046), (84, 41037), (85, 41022), (93, 40974), (109, 40893),

Gene: BAKA\_144 Start: 76097, Stop: 76450, Start Num: 65

Candidate Starts for BAKA\_144:

(Start: 65 @76097 has 33 MA's), (109, 76298), (116, 76340),

Gene: Babushka\_30 Start: 21102, Stop: 20782, Start Num: 78

Candidate Starts for Babushka\_30:

(Start: 63 @21123 has 16 MA's), (78, 21102),

Gene: Bagrid\_145 Start: 76792, Stop: 77145, Start Num: 65

Candidate Starts for Bagrid\_145:

(Start: 65 @76792 has 33 MA's), (109, 76993), (116, 77035),

Gene: Basilisk\_31 Start: 22679, Stop: 22335, Start Num: 63

Candidate Starts for Basilisk\_31:

(Start: 63 @22679 has 16 MA's), (Start: 76 @22658 has 1 MA's), (78, 22652), (83, 22634), (91, 22586),

Gene: Beem\_146 Start: 77695, Stop: 78048, Start Num: 65

Candidate Starts for Beem\_146:

(Start: 65 @77695 has 33 MA's), (109, 77896), (116, 77938),

Gene: BenchScraper\_76 Start: 41215, Stop: 41616, Start Num: 66

Candidate Starts for BenchScraper\_76:

(Start: 66 @41215 has 21 MA's), (104, 41383), (114, 41452),

Gene: Bhageatrice\_81 Start: 44894, Stop: 45259, Start Num: 66

Candidate Starts for Bhageatrice\_81:

(Start: 66 @44894 has 21 MA's), (87, 44957), (93, 44990), (104, 45050), (113, 45113),

Gene: BillyTP\_77 Start: 43046, Stop: 43435, Start Num: 66

Candidate Starts for BillyTP\_77:

(Start: 66 @43046 has 21 MA's), (97, 43169), (104, 43202), (106, 43217), (114, 43271),

Gene: BlackSpider\_67 Start: 39612, Stop: 40001, Start Num: 66

Candidate Starts for BlackSpider\_67:

(41, 39510), (Start: 66 @39612 has 21 MA's), (97, 39735), (104, 39768), (106, 39783), (110, 39804), (114, 39837),

Gene: BlueShadow\_78 Start: 42358, Stop: 42759, Start Num: 66

Candidate Starts for BlueShadow\_78:

(Start: 66 @42358 has 21 MA's), (104, 42526), (114, 42595),

Gene: Bobby\_134 Start: 77532, Stop: 77885, Start Num: 65

Candidate Starts for Bobby\_134:

(Start: 65 @77532 has 33 MA's), (109, 77733), (116, 77775),

Gene: Bolt007\_53 Start: 38007, Stop: 38369, Start Num: 68

Candidate Starts for Bolt007\_53:

(43, 37902), (44, 37905), (Start: 68 @38007 has 4 MA's), (123, 38295),

Gene: Bombitas\_132 Start: 75106, Stop: 75459, Start Num: 65

Candidate Starts for Bombitas\_132:

(Start: 65 @75106 has 33 MA's), (109, 75307), (116, 75349),

Gene: Brynnie\_30 Start: 22557, Stop: 22213, Start Num: 63

Candidate Starts for Brynnie\_30:

(Start: 63 @22557 has 16 MA's), (Start: 76 @22536 has 1 MA's), (104, 22389), (131, 22230),

Gene: Bumble\_49 Start: 35709, Stop: 36101, Start Num: 55

Candidate Starts for Bumble\_49:

(Start: 55 @35709 has 2 MA's), (110, 35925), (123, 36012),

Gene: CalWood4100\_57 Start: 38014, Stop: 38406, Start Num: 68

Candidate Starts for CalWood4100\_57:

(Start: 68 @38014 has 4 MA's), (123, 38299), (131, 38335),

Gene: Camara\_31 Start: 21210, Stop: 20869, Start Num: 63

Candidate Starts for Camara\_31:

(Start: 63 @21210 has 16 MA's), (Start: 77 @21192 has 1 MA's),

Gene: Cassia\_45 Start: 33045, Stop: 33434, Start Num: 70

Candidate Starts for Cassia\_45:

(18, 32820), (Start: 70 @33045 has 33 MA's), (85, 33099), (109, 33225), (118, 33279), (137, 33408), (138, 33426),

Gene: Causa\_146 Start: 83302, Stop: 82940, Start Num: 67

Candidate Starts for Causa\_146:

(Start: 58 @83317 has 9 MA's), (Start: 67 @83302 has 1 MA's), (72, 83293), (Start: 76 @83278 has 1 MA's), (87, 83221), (89, 83212),

Gene: CharlottesWeb\_47 Start: 40439, Stop: 40119, Start Num: 69

Candidate Starts for CharlottesWeb\_47:

(Start: 58 @40457 has 9 MA's), (Start: 69 @40439 has 2 MA's), (93, 40352), (117, 40223),

Gene: CherryTomatoes\_47 Start: 15930, Stop: 16262, Start Num: 74

Candidate Starts for CherryTomatoes\_47:

(20, 15675), (60, 15903), (Start: 74 @15930 has 3 MA's), (85, 15984), (86, 15993), (93, 16032), (109, 16116), (119, 16179), (123, 16206),

Gene: Chickaboom\_31 Start: 21673, Stop: 21350, Start Num: 76

Candidate Starts for Chickaboom\_31:

(Start: 63 @21694 has 16 MA's), (Start: 76 @21673 has 1 MA's), (91, 21601), (119, 21430), (131, 21367),

Gene: Circuit\_48 Start: 36342, Stop: 36734, Start Num: 55

Candidate Starts for Circuit\_48:

(Start: 55 @36342 has 2 MA's), (104, 36522), (111, 36570), (123, 36645),

Gene: Community\_48 Start: 35107, Stop: 35478, Start Num: 70

Candidate Starts for Community\_48:

(Start: 70 @35107 has 33 MA's), (93, 35209), (109, 35287), (118, 35341),

Gene: Constella\_138 Start: 76348, Stop: 76701, Start Num: 65

Candidate Starts for Constella\_138:

(Start: 65 @76348 has 33 MA's), (109, 76549), (116, 76591),

Gene: CookieBear\_73 Start: 41689, Stop: 42090, Start Num: 66

Candidate Starts for CookieBear\_73:

(Start: 66 @41689 has 21 MA's), (104, 41857), (114, 41926),

Gene: Crewmate\_51 Start: 33740, Stop: 34135, Start Num: 70

Candidate Starts for Crewmate\_51:

(Start: 70 @33740 has 33 MA's), (85, 33794), (109, 33920),

Gene: Cyan\_46 Start: 33389, Stop: 33802, Start Num: 70

Candidate Starts for Cyan\_46:

(Start: 70 @33389 has 33 MA's), (85, 33443), (109, 33569), (118, 33623), (139, 33776), (140, 33794),

Gene: Cygnet\_35 Start: 22555, Stop: 22169, Start Num: 53

Candidate Starts for Cygnet\_35:

(53, 22555), (130, 22207),

Gene: Dallas\_145 Start: 77162, Stop: 77515, Start Num: 65

Candidate Starts for Dallas\_145:

(Start: 65 @77162 has 33 MA's), (109, 77363), (116, 77405),

Gene: DanHam62\_31 Start: 21209, Stop: 20868, Start Num: 63

Candidate Starts for DanHam62\_31:

(Start: 63 @21209 has 16 MA's), (Start: 77 @21191 has 1 MA's),

Gene: DmpstrDiver\_145 Start: 77081, Stop: 77434, Start Num: 65

Candidate Starts for DmpstrDiver\_145:

(Start: 65 @77081 has 33 MA's), (109, 77282), (116, 77324),

Gene: Dove\_130 Start: 72680, Stop: 73033, Start Num: 65

Candidate Starts for Dove\_130:

(Start: 65 @72680 has 33 MA's), (109, 72881), (116, 72923),

Gene: DrSierra\_43 Start: 31383, Stop: 31799, Start Num: 70

Candidate Starts for DrSierra\_43:

(Start: 70 @31383 has 33 MA's), (109, 31566), (118, 31620), (139, 31773), (140, 31791),

Gene: Duke13\_140 Start: 74382, Stop: 74735, Start Num: 65

Candidate Starts for Duke13\_140:

(Start: 65 @74382 has 33 MA's), (109, 74583), (116, 74625),

Gene: Eesa\_29 Start: 22456, Stop: 22103, Start Num: 63

Candidate Starts for Eesa\_29:

(Start: 63 @22456 has 16 MA's), (91, 22357), (131, 22120),

Gene: Ejimix\_137 Start: 77230, Stop: 77583, Start Num: 65

Candidate Starts for Ejimix\_137:

(Start: 65 @77230 has 33 MA's), (109, 77431), (116, 77473),

Gene: EricMillard\_136 Start: 75734, Stop: 76087, Start Num: 65

Candidate Starts for EricMillard\_136:

(Start: 65 @75734 has 33 MA's), (109, 75935), (116, 75977),

Gene: Evaa\_48 Start: 41735, Stop: 41361, Start Num: 58

Candidate Starts for Evaa\_48:

(19, 41960), (56, 41741), (Start: 58 @41735 has 9 MA's), (81, 41675), (88, 41630), (92, 41612), (93, 41603),

Gene: EvePickles\_75 Start: 42959, Stop: 43348, Start Num: 66  
Candidate Starts for EvePickles\_75:  
(Start: 66 @42959 has 21 MA's), (97, 43082), (104, 43115), (106, 43130), (114, 43184),

Gene: Faja\_79 Start: 43731, Stop: 44132, Start Num: 66  
Candidate Starts for Faja\_79:  
(Start: 66 @43731 has 21 MA's), (104, 43899), (114, 43968),

Gene: Footloose\_58 Start: 33452, Stop: 33814, Start Num: 64  
Candidate Starts for Footloose\_58:  
(46, 33380), (49, 33398), (53, 33416), (Start: 64 @33452 has 1 MA's), (71, 33464), (85, 33524), (91, 33557), (93, 33572), (97, 33599), (103, 33623), (109, 33659),

Gene: Fresco\_48 Start: 41091, Stop: 40741, Start Num: 58  
Candidate Starts for Fresco\_48:  
(Start: 58 @41091 has 9 MA's), (81, 41046), (84, 41037), (85, 41022), (93, 40974), (109, 40893),

Gene: Globfish\_75 Start: 41426, Stop: 41815, Start Num: 66  
Candidate Starts for Globfish\_75:  
(Start: 66 @41426 has 21 MA's), (97, 41549), (104, 41582), (106, 41597), (114, 41651),

Gene: Glotell\_33 Start: 21348, Stop: 21025, Start Num: 77  
Candidate Starts for Glotell\_33:  
(Start: 63 @21366 has 16 MA's), (Start: 77 @21348 has 1 MA's),

Gene: GoldDust\_45 Start: 35305, Stop: 35673, Start Num: 70  
Candidate Starts for GoldDust\_45:  
(Start: 70 @35305 has 33 MA's), (101, 35458), (109, 35491), (111, 35506),

Gene: Gorpy\_74 Start: 42930, Stop: 43331, Start Num: 66  
Candidate Starts for Gorpy\_74:  
(17, 42684), (Start: 66 @42930 has 21 MA's), (104, 43098), (114, 43167),

Gene: Gravel\_33 Start: 22425, Stop: 22072, Start Num: 63  
Candidate Starts for Gravel\_33:  
(Start: 63 @22425 has 16 MA's), (91, 22326), (131, 22089),

Gene: Greely\_69 Start: 25152, Stop: 25580, Start Num: 48  
Candidate Starts for Greely\_69:  
(Start: 48 @25152 has 3 MA's), (Start: 77 @25233 has 1 MA's), (89, 25296), (97, 25347), (107, 25386), (109, 25401), (119, 25464),

Gene: Halley\_146 Start: 77546, Stop: 77899, Start Num: 65  
Candidate Starts for Halley\_146:  
(Start: 65 @77546 has 33 MA's), (109, 77747), (116, 77789),

Gene: HamCheese\_30 Start: 21194, Stop: 20853, Start Num: 63  
Candidate Starts for HamCheese\_30:  
(Start: 63 @21194 has 16 MA's), (Start: 77 @21176 has 1 MA's),

Gene: Hestia\_70 Start: 39954, Stop: 40355, Start Num: 66  
Candidate Starts for Hestia\_70:



(Start: 66 @39954 has 21 MA's), (104, 40122), (114, 40191),

Gene: Hillester\_80 Start: 42975, Stop: 43364, Start Num: 66

Candidate Starts for Hillester\_80:

(1, 41406), (2, 41541), (3, 41652), (4, 41688), (5, 41751), (8, 42429), (15, 42645), (Start: 66 @42975 has 21 MA's), (97, 43098), (104, 43131), (106, 43146), (114, 43200), (131, 43290),

Gene: Hirko\_43 Start: 34532, Stop: 34897, Start Num: 70

Candidate Starts for Hirko\_43:

(Start: 70 @34532 has 33 MA's), (101, 34685), (109, 34718), (111, 34733), (126, 34814),

Gene: HokkenD\_137 Start: 76705, Stop: 77058, Start Num: 65

Candidate Starts for HokkenD\_137:

(42, 76603), (Start: 65 @76705 has 33 MA's), (109, 76906), (116, 76948),

Gene: Hortus1\_71 Start: 44930, Stop: 44580, Start Num: 73

Candidate Starts for Hortus1\_71:

(33, 45071), (51, 44987), (Start: 73 @44930 has 6 MA's), (80, 44903), (83, 44894), (84, 44891), (94, 44828), (97, 44804), (127, 44627), (129, 44612), (133, 44591),

Gene: Hughesyang\_143 Start: 77316, Stop: 77669, Start Num: 65

Candidate Starts for Hughesyang\_143:

(Start: 65 @77316 has 33 MA's), (109, 77517), (116, 77559),

Gene: Isolde\_74 Start: 41800, Stop: 42201, Start Num: 66

Candidate Starts for Isolde\_74:

(38, 41689), (Start: 66 @41800 has 21 MA's), (104, 41968), (114, 42037),

Gene: Iter\_45 Start: 33105, Stop: 33509, Start Num: 70

Candidate Starts for Iter\_45:

(Start: 70 @33105 has 33 MA's), (91, 33192), (109, 33285), (118, 33339), (139, 33483), (140, 33501),

Gene: IttyBittyPiggy\_46 Start: 32844, Stop: 33215, Start Num: 70

Candidate Starts for IttyBittyPiggy\_46:

(Start: 70 @32844 has 33 MA's), (85, 32898), (109, 33024), (118, 33078),

Gene: Jamun\_29 Start: 21575, Stop: 21234, Start Num: 63

Candidate Starts for Jamun\_29:

(Start: 63 @21575 has 16 MA's), (91, 21482), (119, 21311), (130, 21251), (131, 21248),

Gene: Janeemi\_48 Start: 35112, Stop: 35516, Start Num: 70

Candidate Starts for Janeemi\_48:

(Start: 70 @35112 has 33 MA's), (109, 35292), (118, 35346), (139, 35490), (140, 35508),

Gene: JellyBread\_72 Start: 41945, Stop: 42346, Start Num: 66

Candidate Starts for JellyBread\_72:

(Start: 66 @41945 has 21 MA's), (104, 42113), (114, 42182),

Gene: Joemato\_46 Start: 33415, Stop: 33828, Start Num: 70

Candidate Starts for Joemato\_46:

(14, 33085), (Start: 70 @33415 has 33 MA's), (85, 33469), (109, 33595), (118, 33649), (139, 33802), (140, 33820),

Gene: JohnDoe\_46 Start: 33411, Stop: 33824, Start Num: 70  
Candidate Starts for JohnDoe\_46:  
(14, 33081), (Start: 70 @33411 has 33 MA's), (85, 33465), (109, 33591), (118, 33645), (139, 33798),  
(140, 33816),

Gene: JuicyJay\_140 Start: 78831, Stop: 79184, Start Num: 65  
Candidate Starts for JuicyJay\_140:  
(Start: 65 @78831 has 33 MA's), (109, 79032), (116, 79074),

Gene: JuneStar\_48 Start: 35661, Stop: 36011, Start Num: 70  
Candidate Starts for JuneStar\_48:  
(Start: 70 @35661 has 33 MA's), (85, 35715), (109, 35841),

Gene: Juno112\_30 Start: 21210, Stop: 20869, Start Num: 63  
Candidate Starts for Juno112\_30:  
(Start: 63 @21210 has 16 MA's), (Start: 77 @21192 has 1 MA's),

Gene: KHumphrey\_31 Start: 21190, Stop: 20867, Start Num: 77  
Candidate Starts for KHumphrey\_31:  
(Start: 63 @21208 has 16 MA's), (Start: 77 @21190 has 1 MA's),

Gene: Kalah2\_135 Start: 76437, Stop: 76790, Start Num: 65  
Candidate Starts for Kalah2\_135:  
(Start: 65 @76437 has 33 MA's), (109, 76638), (116, 76680),

Gene: KashFlow\_143 Start: 75737, Stop: 76090, Start Num: 65  
Candidate Starts for KashFlow\_143:  
(42, 75635), (Start: 65 @75737 has 33 MA's), (109, 75938), (116, 75980),

Gene: Kaylissa\_47 Start: 33807, Stop: 34220, Start Num: 70  
Candidate Starts for Kaylissa\_47:  
(Start: 70 @33807 has 33 MA's), (85, 33861), (109, 33987), (118, 34041), (139, 34194), (140, 34212),

Gene: KendraB23\_34 Start: 22613, Stop: 22260, Start Num: 63  
Candidate Starts for KendraB23\_34:  
(Start: 63 @22613 has 16 MA's), (91, 22514), (131, 22277),

Gene: Klein\_142 Start: 75039, Stop: 75392, Start Num: 65  
Candidate Starts for Klein\_142:  
(Start: 65 @75039 has 33 MA's), (109, 75240), (116, 75282),

Gene: Klevey\_55 Start: 37550, Stop: 37951, Start Num: 68  
Candidate Starts for Klevey\_55:  
(Start: 68 @37550 has 4 MA's),

Gene: Lawnathon\_76 Start: 42050, Stop: 42439, Start Num: 66  
Candidate Starts for Lawnathon\_76:  
(Start: 66 @42050 has 21 MA's), (97, 42173), (104, 42206), (106, 42221), (114, 42275),

Gene: Lego\_45 Start: 33126, Stop: 33539, Start Num: 70  
Candidate Starts for Lego\_45:  
(Start: 70 @33126 has 33 MA's), (85, 33180), (109, 33306), (118, 33360), (139, 33513), (140, 33531),

Gene: Leona\_30 Start: 21281, Stop: 20940, Start Num: 63

Candidate Starts for Leona\_30:

(Start: 63 @21281 has 16 MA's), (95, 21173), (98, 21152),

Gene: Liebe\_46 Start: 34755, Stop: 35162, Start Num: 70

Candidate Starts for Liebe\_46:

(59, 34737), (Start: 70 @34755 has 33 MA's), (84, 34800), (91, 34845), (93, 34860),

Gene: Ligma\_48 Start: 41091, Stop: 40741, Start Num: 58

Candidate Starts for Ligma\_48:

(Start: 58 @41091 has 9 MA's), (81, 41046), (84, 41037), (85, 41022), (93, 40974), (109, 40893),

Gene: Lilmac1015\_57 Start: 38014, Stop: 38406, Start Num: 68

Candidate Starts for Lilmac1015\_57:

(Start: 68 @38014 has 4 MA's), (123, 38299), (131, 38335),

Gene: LittleMunchkin\_50 Start: 44298, Stop: 43924, Start Num: 58

Candidate Starts for LittleMunchkin\_50:

(19, 44523), (Start: 58 @44298 has 9 MA's), (84, 44229), (92, 44175), (96, 44151), (128, 43965),

Gene: LittleTokyo\_33 Start: 21980, Stop: 21597, Start Num: 63

Candidate Starts for LittleTokyo\_33:

(Start: 63 @21980 has 16 MA's), (112, 21776),

Gene: Lizalica\_44 Start: 32567, Stop: 32941, Start Num: 70

Candidate Starts for Lizalica\_44:

(Start: 70 @32567 has 33 MA's), (93, 32672), (109, 32750), (118, 32804),

Gene: Lucky2013\_136 Start: 72791, Stop: 73144, Start Num: 65

Candidate Starts for Lucky2013\_136:

(42, 72689), (Start: 65 @72791 has 33 MA's), (109, 72992), (116, 73034),

Gene: MUWow\_77 Start: 43655, Stop: 44044, Start Num: 66

Candidate Starts for MUWow\_77:

(17, 43409), (Start: 66 @43655 has 21 MA's), (97, 43778), (104, 43811), (106, 43826), (114, 43880),

Gene: MaGuCo\_43 Start: 33237, Stop: 33617, Start Num: 70

Candidate Starts for MaGuCo\_43:

(47, 33171), (52, 33189), (Start: 70 @33237 has 33 MA's), (75, 33249), (84, 33282), (91, 33327), (93, 33342), (105, 33396),

Gene: Mariokart\_48 Start: 41216, Stop: 40896, Start Num: 69

Candidate Starts for Mariokart\_48:

(Start: 58 @41234 has 9 MA's), (Start: 69 @41216 has 2 MA's), (92, 41138), (93, 41129), (114, 41012), (117, 41000),

Gene: Marleymoo\_127 Start: 73278, Stop: 73631, Start Num: 65

Candidate Starts for Marleymoo\_127:

(Start: 65 @73278 has 33 MA's), (109, 73479), (116, 73521),

Gene: Maruru\_66 Start: 44640, Stop: 45053, Start Num: 57

Candidate Starts for Maruru\_66:

(28, 44490), (Start: 57 @44640 has 1 MA's), (87, 44730), (91, 44748), (111, 44871), (115, 44895),

Gene: MaterMagnus\_76 Start: 42682, Stop: 43083, Start Num: 66  
Candidate Starts for MaterMagnus\_76:  
(17, 42436), (Start: 66 @42682 has 21 MA's), (104, 42850), (114, 42919),

Gene: Maureen\_46 Start: 34755, Stop: 35162, Start Num: 70  
Candidate Starts for Maureen\_46:  
(59, 34737), (Start: 70 @34755 has 33 MA's), (84, 34800), (91, 34845), (93, 34860),

Gene: MiaZeal\_143 Start: 73930, Stop: 74283, Start Num: 65  
Candidate Starts for MiaZeal\_143:  
(42, 73828), (Start: 65 @73930 has 33 MA's), (109, 74131), (116, 74173),

Gene: MidnightRain\_81 Start: 43270, Stop: 43659, Start Num: 66  
Candidate Starts for MidnightRain\_81:  
(Start: 66 @43270 has 21 MA's), (97, 43393), (104, 43426), (106, 43441), (114, 43495),

Gene: Minerva\_144 Start: 76488, Stop: 76841, Start Num: 65  
Candidate Starts for Minerva\_144:  
(Start: 65 @76488 has 33 MA's), (109, 76689), (116, 76731),

Gene: Mudpuppy\_42 Start: 33064, Stop: 33480, Start Num: 70  
Candidate Starts for Mudpuppy\_42:  
(Start: 70 @33064 has 33 MA's), (85, 33118), (109, 33244), (118, 33298), (139, 33454), (140, 33472),

Gene: Mufasa8\_70 Start: 44952, Stop: 45344, Start Num: 66  
Candidate Starts for Mufasa8\_70:  
(35, 44829), (51, 44901), (Start: 66 @44952 has 21 MA's), (90, 45045),

Gene: Myrna\_64 Start: 24516, Stop: 24944, Start Num: 48  
Candidate Starts for Myrna\_64:  
(31, 24411), (Start: 48 @24516 has 3 MA's), (54, 24546), (89, 24660), (93, 24684), (97, 24711), (111, 24780), (119, 24828),

Gene: NihilNomen\_146 Start: 76776, Stop: 77129, Start Num: 65  
Candidate Starts for NihilNomen\_146:  
(Start: 65 @76776 has 33 MA's), (109, 76977), (116, 77019),

Gene: Nitro\_44 Start: 33699, Stop: 34070, Start Num: 70  
Candidate Starts for Nitro\_44:  
(Start: 70 @33699 has 33 MA's), (91, 33786), (109, 33879), (118, 33933), (134, 34026),

Gene: ObiToo\_51 Start: 34185, Stop: 34577, Start Num: 70  
Candidate Starts for ObiToo\_51:  
(Start: 70 @34185 has 33 MA's), (85, 34239), (109, 34365), (136, 34551), (138, 34569),

Gene: Odette\_148 Start: 78919, Stop: 79272, Start Num: 65  
Candidate Starts for Odette\_148:  
(Start: 65 @78919 has 33 MA's), (109, 79120), (116, 79162),

Gene: OlinDD\_71 Start: 44929, Stop: 44579, Start Num: 73  
Candidate Starts for OlinDD\_71:

(33, 45070), (51, 44986), (Start: 73 @44929 has 6 MA's), (80, 44902), (83, 44893), (84, 44890), (94, 44827), (97, 44803), (127, 44626), (129, 44611), (133, 44590),

Gene: Optimus\_135 Start: 74056, Stop: 74409, Start Num: 65  
Candidate Starts for Optimus\_135:  
(Start: 65 @74056 has 33 MA's), (109, 74257), (116, 74299),

Gene: Orcanus\_30 Start: 22223, Stop: 21873, Start Num: 63  
Candidate Starts for Orcanus\_30:  
(Start: 63 @22223 has 16 MA's), (91, 22124), (131, 21890),

Gene: Pelletreau\_33 Start: 22425, Stop: 22072, Start Num: 63  
Candidate Starts for Pelletreau\_33:  
(Start: 63 @22425 has 16 MA's), (91, 22326), (131, 22089),

Gene: Persistence\_70 Start: 40343, Stop: 40708, Start Num: 66  
Candidate Starts for Persistence\_70:  
(Start: 66 @40343 has 21 MA's), (83, 40376), (85, 40391), (93, 40439), (104, 40499), (113, 40562),

Gene: Phabba\_70 Start: 24981, Stop: 25430, Start Num: 48  
Candidate Starts for Phabba\_70:  
(Start: 48 @24981 has 3 MA's), (80, 25074), (89, 25125), (97, 25176), (107, 25236), (112, 25272), (119, 25314),

Gene: Phives\_50 Start: 35604, Stop: 36011, Start Num: 69  
Candidate Starts for Phives\_50:  
(Start: 69 @35604 has 2 MA's), (109, 35787), (118, 35841), (134, 35934), (139, 35985), (140, 36003),

Gene: PhluffyCoco\_31 Start: 21194, Stop: 20853, Start Num: 63  
Candidate Starts for PhluffyCoco\_31:  
(Start: 63 @21194 has 16 MA's), (Start: 77 @21176 has 1 MA's),

Gene: Phoebus\_144 Start: 78670, Stop: 79023, Start Num: 65  
Candidate Starts for Phoebus\_144:  
(Start: 65 @78670 has 33 MA's), (109, 78871), (116, 78913),

Gene: Phrank15\_80 Start: 42781, Stop: 43146, Start Num: 66  
Candidate Starts for Phrank15\_80:  
(41, 42679), (Start: 66 @42781 has 21 MA's), (83, 42814), (90, 42856), (93, 42877), (104, 42937), (113, 43000),

Gene: Pioneer3\_71 Start: 44751, Stop: 44401, Start Num: 73  
Candidate Starts for Pioneer3\_71:  
(33, 44892), (51, 44808), (Start: 73 @44751 has 6 MA's), (80, 44724), (83, 44715), (84, 44712), (94, 44649), (97, 44625), (127, 44448), (129, 44433), (133, 44412),

Gene: Pixelle\_47 Start: 35172, Stop: 35567, Start Num: 70  
Candidate Starts for Pixelle\_47:  
(Start: 70 @35172 has 33 MA's), (85, 35226), (109, 35352),

Gene: Platte\_71 Start: 44704, Stop: 44354, Start Num: 73  
Candidate Starts for Platte\_71:

(51, 44761), (Start: 73 @44704 has 6 MA's), (80, 44677), (83, 44668), (84, 44665), (94, 44602), (97, 44578), (127, 44401), (129, 44386), (133, 44365),

Gene: Porcelain\_140 Start: 73737, Stop: 74090, Start Num: 65

Candidate Starts for Porcelain\_140:

(42, 73635), (Start: 65 @73737 has 33 MA's), (109, 73938), (116, 73980),

Gene: Pound\_136 Start: 76489, Stop: 76842, Start Num: 65

Candidate Starts for Pound\_136:

(37, 76375), (42, 76387), (Start: 65 @76489 has 33 MA's), (109, 76690), (116, 76732),

Gene: Powerpuff\_48 Start: 34514, Stop: 34927, Start Num: 70

Candidate Starts for Powerpuff\_48:

(Start: 70 @34514 has 33 MA's), (85, 34568), (109, 34694), (118, 34748), (139, 34901), (140, 34919),

Gene: Prairie\_53 Start: 36909, Stop: 37310, Start Num: 68

Candidate Starts for Prairie\_53:

(43, 36807), (44, 36810), (Start: 68 @36909 has 4 MA's), (120, 37170),

Gene: Pumpkins\_45 Start: 33566, Stop: 33961, Start Num: 70

Candidate Starts for Pumpkins\_45:

(Start: 70 @33566 has 33 MA's), (85, 33620), (109, 33749),

Gene: Pupper\_45 Start: 15769, Stop: 16101, Start Num: 74

Candidate Starts for Pupper\_45:

(20, 15514), (60, 15742), (Start: 74 @15769 has 3 MA's), (85, 15823), (86, 15832), (93, 15871), (109, 15955), (123, 16045),

Gene: RadFad\_81 Start: 42975, Stop: 43364, Start Num: 66

Candidate Starts for RadFad\_81:

(1, 41406), (2, 41541), (3, 41652), (4, 41688), (5, 41751), (8, 42429), (15, 42645), (Start: 66 @42975 has 21 MA's), (97, 43098), (104, 43131), (106, 43146), (114, 43200), (131, 43290),

Gene: Raphaella\_77 Start: 41746, Stop: 42147, Start Num: 66

Candidate Starts for Raphaella\_77:

(Start: 66 @41746 has 21 MA's), (104, 41914), (114, 41983),

Gene: Raqqa\_74 Start: 42460, Stop: 42840, Start Num: 76

Candidate Starts for Raqqa\_74:

(Start: 66 @42436 has 21 MA's), (Start: 76 @42460 has 1 MA's), (82, 42481), (97, 42574), (104, 42607), (119, 42703),

Gene: Rattail\_31 Start: 21290, Stop: 20949, Start Num: 63

Candidate Starts for Rattail\_31:

(Start: 63 @21290 has 16 MA's), (Start: 77 @21272 has 1 MA's),

Gene: RedFox\_31 Start: 21207, Stop: 20866, Start Num: 63

Candidate Starts for RedFox\_31:

(Start: 63 @21207 has 16 MA's), (Start: 77 @21189 has 1 MA's),

Gene: Redno2\_139 Start: 74778, Stop: 75131, Start Num: 65

Candidate Starts for Redno2\_139:

(42, 74676), (Start: 65 @74778 has 33 MA's), (109, 74979), (116, 75021),

Gene: Renna12\_30 Start: 21228, Stop: 20887, Start Num: 63

Candidate Starts for Renna12\_30:

(Start: 63 @21228 has 16 MA's), (78, 21207),

Gene: Richie\_79 Start: 43614, Stop: 44015, Start Num: 66

Candidate Starts for Richie\_79:

(17, 43368), (Start: 66 @43614 has 21 MA's), (104, 43782), (114, 43851),

Gene: Ruchi\_30 Start: 22625, Stop: 22281, Start Num: 63

Candidate Starts for Ruchi\_30:

(Start: 63 @22625 has 16 MA's), (Start: 76 @22604 has 1 MA's), (83, 22580), (91, 22532), (131, 22298),

Gene: SCentae\_45 Start: 15768, Stop: 16100, Start Num: 74

Candidate Starts for SCentae\_45:

(20, 15513), (60, 15741), (Start: 74 @15768 has 3 MA's), (85, 15822), (86, 15831), (93, 15870), (109, 15954), (123, 16044),

Gene: Sakai\_73 Start: 41641, Stop: 42042, Start Num: 66

Candidate Starts for Sakai\_73:

(17, 41395), (Start: 66 @41641 has 21 MA's), (104, 41809), (114, 41878),

Gene: Sashimi\_76 Start: 42326, Stop: 42715, Start Num: 66

Candidate Starts for Sashimi\_76:

(Start: 66 @42326 has 21 MA's), (97, 42449), (114, 42551), (131, 42641),

Gene: Schatzie\_140 Start: 77338, Stop: 77691, Start Num: 65

Candidate Starts for Schatzie\_140:

(Start: 65 @77338 has 33 MA's), (109, 77539), (116, 77581),

Gene: Schism\_52 Start: 34715, Stop: 35089, Start Num: 56

Candidate Starts for Schism\_52:

(50, 34682), (56, 34715), (61, 34727), (62, 34730), (78, 34763), (83, 34781), (91, 34829), (118, 34988),

Gene: ScoobyDoobyDoo\_55 Start: 19568, Stop: 19993, Start Num: 48

Candidate Starts for ScoobyDoobyDoo\_55:

(Start: 48 @19568 has 3 MA's), (89, 19712), (97, 19763), (100, 19766), (119, 19880), (121, 19889), (125, 19913),

Gene: Seahorse\_84 Start: 47304, Stop: 47699, Start Num: 66

Candidate Starts for Seahorse\_84:

(Start: 66 @47304 has 21 MA's), (82, 47349), (104, 47475), (119, 47571), (135, 47673),

Gene: Shaffner\_45 Start: 33571, Stop: 33933, Start Num: 70

Candidate Starts for Shaffner\_45:

(Start: 70 @33571 has 33 MA's), (85, 33625), (109, 33751), (118, 33805),

Gene: Shatter\_48 Start: 41091, Stop: 40741, Start Num: 58

Candidate Starts for Shatter\_48:

(Start: 58 @41091 has 9 MA's), (81, 41046), (84, 41037), (85, 41022), (93, 40974), (109, 40893),

Gene: Shukran\_73 Start: 41223, Stop: 41588, Start Num: 66

Candidate Starts for Shukran\_73:

(23, 41013), (40, 41118), (60, 41211), (Start: 66 @41223 has 21 MA's), (83, 41256), (93, 41319), (104, 41379),

Gene: Simpson\_48 Start: 33419, Stop: 33832, Start Num: 70

Candidate Starts for Simpson\_48:

(14, 33089), (Start: 70 @33419 has 33 MA's), (85, 33473), (109, 33599), (118, 33653), (139, 33806), (140, 33824),

Gene: Sisko\_47 Start: 41439, Stop: 41065, Start Num: 58

Candidate Starts for Sisko\_47:

(Start: 58 @41439 has 9 MA's), (81, 41379), (92, 41316), (93, 41307), (114, 41187),

Gene: Sonali\_65 Start: 45108, Stop: 45521, Start Num: 57

Candidate Starts for Sonali\_65:

(28, 44958), (Start: 57 @45108 has 1 MA's), (87, 45198), (91, 45216), (111, 45339), (115, 45363),

Gene: SpicyFrank\_78 Start: 42043, Stop: 42432, Start Num: 66

Candidate Starts for SpicyFrank\_78:

(Start: 66 @42043 has 21 MA's), (97, 42166), (104, 42199), (106, 42214), (114, 42268),

Gene: StAugustine\_140 Start: 84499, Stop: 84137, Start Num: 67

Candidate Starts for StAugustine\_140:

(Start: 58 @84514 has 9 MA's), (Start: 67 @84499 has 1 MA's), (72, 84490), (Start: 76 @84475 has 1 MA's), (87, 84418), (89, 84409), (124, 84211),

Gene: Sunshine23\_66 Start: 44762, Stop: 45172, Start Num: 57

Candidate Starts for Sunshine23\_66:

(28, 44612), (Start: 57 @44762 has 1 MA's), (79, 44810), (87, 44852), (91, 44870), (104, 44945), (111, 44993), (115, 45017),

Gene: Tandem\_71 Start: 44831, Stop: 44481, Start Num: 73

Candidate Starts for Tandem\_71:

(33, 44972), (51, 44888), (Start: 73 @44831 has 6 MA's), (80, 44804), (83, 44795), (84, 44792), (94, 44729), (97, 44705), (127, 44528), (129, 44513), (133, 44492),

Gene: TaylorSipht\_30 Start: 21627, Stop: 21286, Start Num: 63

Candidate Starts for TaylorSipht\_30:

(Start: 63 @21627 has 16 MA's), (Start: 76 @21606 has 1 MA's), (91, 21534), (119, 21363), (130, 21303),

Gene: Tbone\_46 Start: 33975, Stop: 34388, Start Num: 70

Candidate Starts for Tbone\_46:

(29, 33801), (45, 33873), (Start: 70 @33975 has 33 MA's), (85, 34029), (109, 34155), (118, 34209), (139, 34362), (140, 34380),

Gene: ThayneTheZag\_81 Start: 42670, Stop: 43059, Start Num: 66

Candidate Starts for ThayneTheZag\_81:

(Start: 66 @42670 has 21 MA's), (97, 42793), (104, 42826), (106, 42841), (114, 42895),

Gene: Thibault\_127 Start: 73673, Stop: 74026, Start Num: 65

Candidate Starts for Thibault\_127:

(34, 73550), (36, 73562), (Start: 65 @73673 has 33 MA's), (109, 73874), (116, 73916),



Gene: ThreeRngTarjay\_139 Start: 77261, Stop: 77614, Start Num: 65

Candidate Starts for ThreeRngTarjay\_139:

(Start: 65 @77261 has 33 MA's), (109, 77462), (116, 77504),

Gene: Tian\_45 Start: 34828, Stop: 35223, Start Num: 70

Candidate Starts for Tian\_45:

(6, 34264), (9, 34336), (10, 34345), (12, 34423), (27, 34654), (39, 34726), (Start: 70 @34828 has 33 MA's), (85, 34882), (109, 35008),

Gene: Tiff81\_72 Start: 40921, Stop: 41316, Start Num: 66

Candidate Starts for Tiff81\_72:

(Start: 66 @40921 has 21 MA's), (82, 40966), (104, 41092), (119, 41188), (135, 41290),

Gene: Toad24\_31 Start: 22672, Stop: 22322, Start Num: 63

Candidate Starts for Toad24\_31:

(Start: 63 @22672 has 16 MA's), (91, 22573), (131, 22339),

Gene: Tuck\_49 Start: 35489, Stop: 35893, Start Num: 70

Candidate Starts for Tuck\_49:

(Start: 70 @35489 has 33 MA's), (109, 35669), (118, 35723), (134, 35816), (139, 35867), (140, 35885),

Gene: Tutumahutu\_47 Start: 33397, Stop: 33810, Start Num: 70

Candidate Starts for Tutumahutu\_47:

(Start: 70 @33397 has 33 MA's), (85, 33451), (109, 33577), (118, 33631), (139, 33784), (140, 33802),

Gene: Vibaki\_44 Start: 34927, Stop: 35295, Start Num: 70

Candidate Starts for Vibaki\_44:

(Start: 70 @34927 has 33 MA's), (101, 35080), (109, 35113), (111, 35128),

Gene: Vitus\_44 Start: 33911, Stop: 34246, Start Num: 70

Candidate Starts for Vitus\_44:

(Start: 70 @33911 has 33 MA's), (101, 34061), (109, 34094),

Gene: Vulpecula\_30 Start: 22301, Stop: 21957, Start Num: 63

Candidate Starts for Vulpecula\_30:

(Start: 63 @22301 has 16 MA's), (Start: 76 @22280 has 1 MA's), (83, 22256), (91, 22208),

Gene: Wanda\_144 Start: 74968, Stop: 75321, Start Num: 65

Candidate Starts for Wanda\_144:

(Start: 65 @74968 has 33 MA's), (109, 75169), (116, 75211),

Gene: Warda\_46 Start: 33470, Stop: 33874, Start Num: 70

Candidate Starts for Warda\_46:

(Start: 70 @33470 has 33 MA's), (85, 33524), (109, 33650), (118, 33704), (139, 33848),

Gene: Westrich\_33 Start: 22349, Stop: 21999, Start Num: 63

Candidate Starts for Westrich\_33:

(Start: 63 @22349 has 16 MA's), (91, 22250), (131, 22016),

Gene: Wildwest\_45 Start: 33392, Stop: 33811, Start Num: 70

Candidate Starts for Wildwest\_45:

(7, 32825), (11, 32918), (29, 33218), (45, 33290), (Start: 70 @33392 has 33 MA's), (109, 33578), (139, 33785), (140, 33803),

Gene: WileyE\_32 Start: 21673, Stop: 21350, Start Num: 76

Candidate Starts for WileyE\_32:

(Start: 63 @21694 has 16 MA's), (Start: 76 @21673 has 1 MA's), (91, 21601), (119, 21430), (131, 21367),

Gene: Windest\_79 Start: 41108, Stop: 41497, Start Num: 66

Candidate Starts for Windest\_79:

(Start: 66 @41108 has 21 MA's), (97, 41231), (104, 41264), (106, 41279), (114, 41333),

Gene: Wolfstar\_76 Start: 46237, Stop: 45881, Start Num: 73

Candidate Starts for Wolfstar\_76:

(33, 46384), (51, 46300), (Start: 73 @46237 has 6 MA's), (82, 46201), (83, 46198), (86, 46171), (99, 46102), (102, 46081), (109, 46036), (115, 45997), (117, 45988), (127, 45928), (129, 45913), (132, 45904),

Gene: Yago84\_47 Start: 41514, Stop: 41140, Start Num: 58

Candidate Starts for Yago84\_47:

(Start: 58 @41514 has 9 MA's), (81, 41454), (92, 41391), (93, 41382), (114, 41262),

Gene: Yang\_46 Start: 33276, Stop: 33626, Start Num: 70

Candidate Starts for Yang\_46:

(12, 32868), (13, 32877), (16, 33003), (22, 33066), (25, 33087), (26, 33096), (30, 33114), (32, 33123), (Start: 70 @33276 has 33 MA's), (85, 33330), (109, 33456),

Gene: Yeet\_138 Start: 76734, Stop: 77087, Start Num: 65

Candidate Starts for Yeet\_138:

(42, 76632), (Start: 65 @76734 has 33 MA's), (109, 76935), (116, 76977),

Gene: YesChef\_46 Start: 33373, Stop: 33786, Start Num: 70

Candidate Starts for YesChef\_46:

(Start: 70 @33373 has 33 MA's), (85, 33427), (109, 33553), (118, 33607), (139, 33760), (140, 33778),

Gene: YoungHarleezy\_74 Start: 42016, Stop: 42417, Start Num: 66

Candidate Starts for YoungHarleezy\_74:

(Start: 66 @42016 has 21 MA's), (104, 42184), (114, 42253),

Gene: Zelink\_139 Start: 77780, Stop: 78133, Start Num: 65

Candidate Starts for Zelink\_139:

(Start: 65 @77780 has 33 MA's), (109, 77981), (116, 78023),

Gene: Zhuangyuan\_36 Start: 22960, Stop: 22577, Start Num: 53

Candidate Starts for Zhuangyuan\_36:

(24, 23122), (53, 22960), (108, 22747), (130, 22615),

Gene: Zucker\_73 Start: 43088, Stop: 43483, Start Num: 66

Candidate Starts for Zucker\_73:

(21, 42881), (Start: 66 @43088 has 21 MA's), (82, 43133), (97, 43226), (104, 43259), (135, 43457),