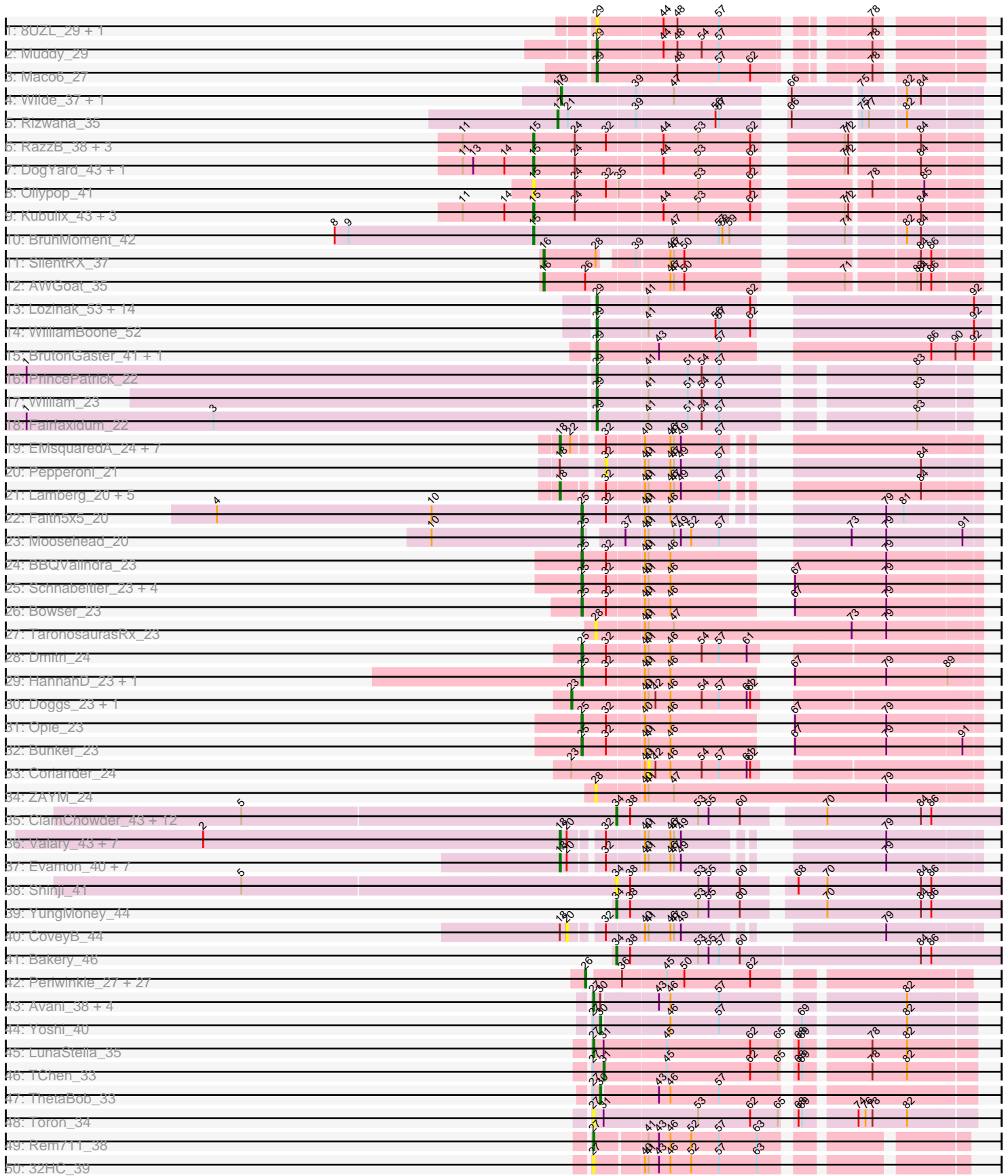
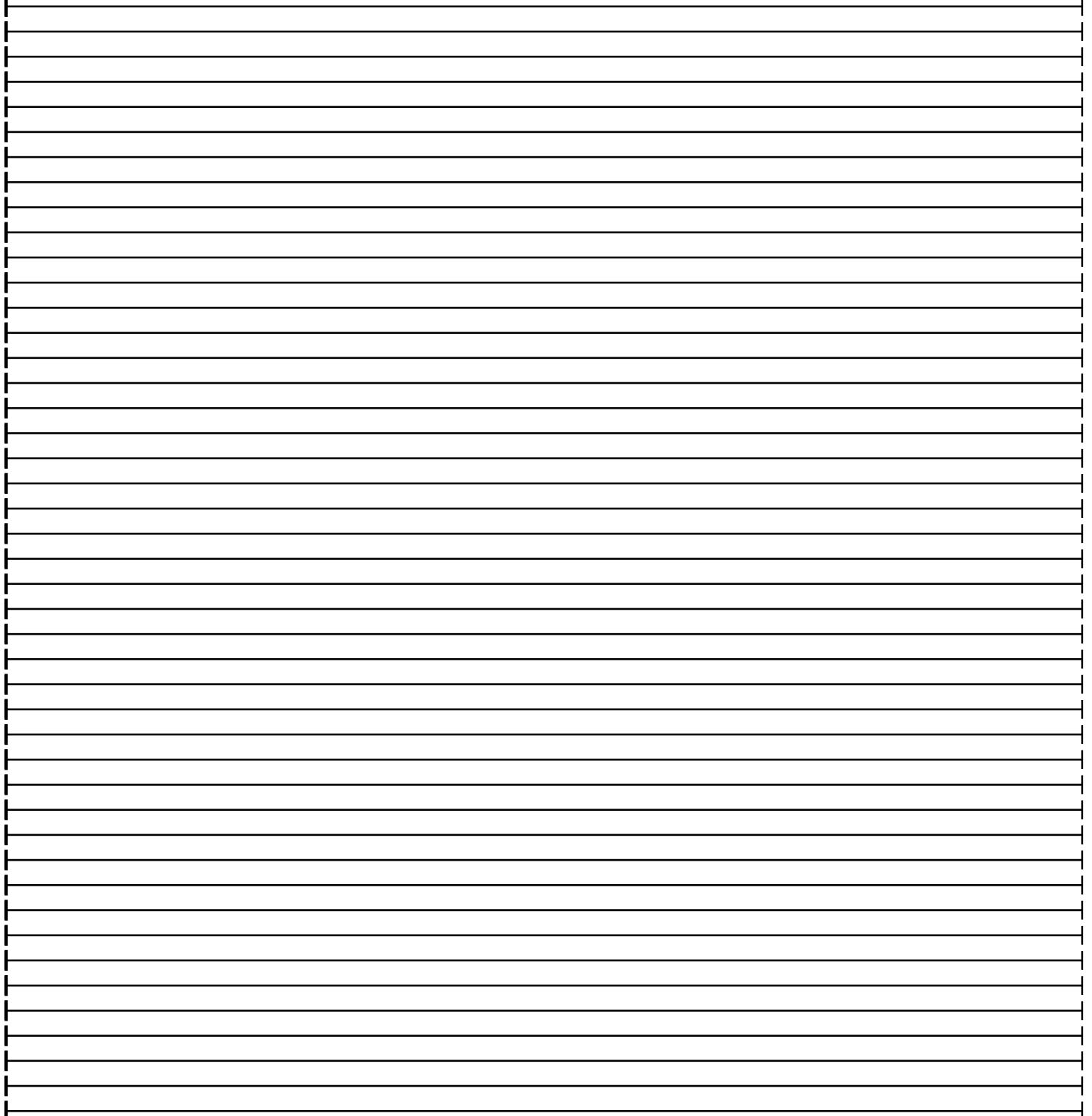
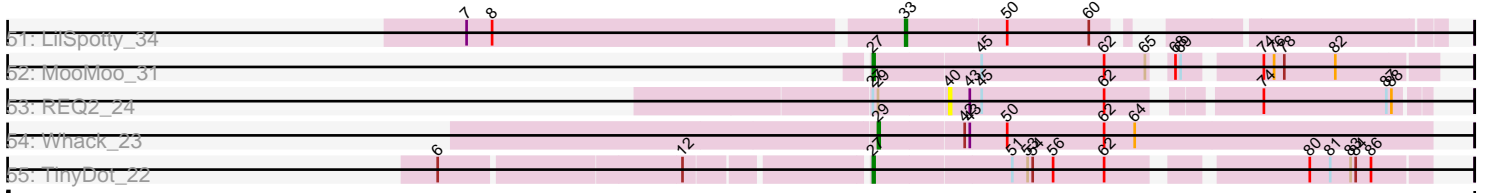


Pham 215907



# Pham 215907



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 215907 Report

This analysis was run 02/22/25 on database version 588.

Pham number 215907 has 154 members, 29 are drafts.

Phages represented in each track:

- Track 1 : 8UZL\_29, FF47\_29
- Track 2 : Muddy\_29
- Track 3 : Maco6\_27
- Track 4 : Wilde\_37, Tank\_37
- Track 5 : Rizwana\_35
- Track 6 : RazzB\_38, Forrestell\_39, NyleyClemson\_41, MellowYellow\_42
- Track 7 : DogYard\_43, Odyssey395\_47
- Track 8 : Ollypop\_41
- Track 9 : Kubulix\_43, Pureglobe5\_46, Beagle\_46, Pointis\_44
- Track 10 : BruhMoment\_42
- Track 11 : SilentRX\_37
- Track 12 : AWGoat\_35
- Track 13 : Lozinak\_53, ClubL\_52, Geeche\_51, Engineer\_54, Miskis\_54, Abscondus\_51, Bachita\_54, Norvs\_53, Dusty\_50, PhinkBoden\_52, Cucurbita\_54, Culver\_52, Smoothie\_54, Toniann\_52, Aphelion\_52
- Track 14 : WilliamBoone\_52
- Track 15 : BrutonGaster\_41, OneUp\_46
- Track 16 : PrincePatrick\_22
- Track 17 : William\_23
- Track 18 : Fairfaxidum\_22
- Track 19 : EMSquaredA\_24, Pollux\_24, Marteena\_24, BritBrat\_24, Lilas\_24, Bradissa\_24, EnalisNailo\_24, Floral\_24
- Track 20 : Pepperoni\_21
- Track 21 : Lamberg\_20, Lton\_20, Nettuno\_20, Matteo\_20, EdnaMode\_20, Pickett\_20
- Track 22 : Faith5x5\_20
- Track 23 : Moosehead\_20
- Track 24 : BBQValindra\_23
- Track 25 : Schnabeltier\_23, Angelique\_25, BackstagePass\_23, Eyes\_23, MagicMan\_23
- Track 26 : Bowser\_23
- Track 27 : TaronosaurusRx\_23
- Track 28 : Dmitri\_24
- Track 29 : HannahD\_23, GEazy\_23
- Track 30 : Doggs\_23, RayTheFireFly\_24
- Track 31 : Opie\_23
- Track 32 : Bunker\_23

- Track 33 : Coriander\_24
- Track 34 : ZAYM\_24
- Track 35 : ClamChowder\_43, Phlop\_40, Fugax\_44, Egi03\_43, Togo\_40, Mutzi\_40, Fireball\_42, Barb\_43, PullumCavea\_40, PinkCoffee\_43, SmokingBunny\_41, Nubi\_41, TillyBobJoe\_41
- Track 36 : Valary\_43, KimmyK\_42, Wizard\_40, Arri\_44, Gezellig\_42, VanDeWege\_44, RogerDodger\_44, CherryCola\_44
- Track 37 : Evamon\_40, Salvador\_40, Portcullis\_42, Halo3\_41, Twister6\_43, Danyall\_43, Savbucketdawg\_41, Jambalaya\_41
- Track 38 : Shinji\_41
- Track 39 : YungMoney\_44
- Track 40 : CoveyB\_44
- Track 41 : Bakery\_46
- Track 42 : Periwinkle\_27, ShawBrad\_25, Phistory\_26, Kamaru\_25, Malisha\_26, Horus\_25, Phabuloso\_24, Getalong\_26, Lutum\_25, CheeseTouch\_25, Frickyeah\_24, BearBQ\_24, Kenna\_24, Crater\_23, Birdsong\_24, Holliday\_25, Apricot\_24, Budski\_25, BENtherdunthat\_25, LitninMcQueen\_24, Asapag\_25, Leroy\_25, Squiddly\_27, MortyNRick\_24, Kuwabara\_24, BotCity\_26, Spooky\_25, Whitney\_26
- Track 43 : Avani\_38, Jabbawokkie\_41, Che9d\_38, Zapner\_40, Demsculpinboyz\_39
- Track 44 : Yoshi\_40
- Track 45 : LunaStella\_35
- Track 46 : TChen\_33
- Track 47 : ThetaBob\_33
- Track 48 : Toron\_34
- Track 49 : Rem711\_38
- Track 50 : 32HC\_39
- Track 51 : LilSpotty\_34
- Track 52 : MooMoo\_31
- Track 53 : REQ2\_24
- Track 54 : Whack\_23
- Track 55 : TinyDot\_22

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

The start number called the most often in the published annotations is 18, it was called in 28 of the 125 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Arri\_44, Bradissa\_24, BritBrat\_24, CherryCola\_44, Danyall\_43, EMSquaredA\_24, EdnaMode\_20, EnalisNailo\_24, Evamon\_40, Floral\_24, Gezellig\_42, Halo3\_41, Jambalaya\_41, KimmyK\_42, Lamberg\_20, Lilas\_24, Lton\_20, Marteena\_24, Matteo\_20, Nettuno\_20, Pickett\_20, Pollux\_24, Portcullis\_42, RogerDodger\_44, Salvador\_40, Savbucketdawg\_41, Twister6\_43, Valary\_43, VanDeWege\_44, Wizard\_40,

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

- CoveyB\_44, Pepperoni\_21,

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

- 32HC\_39, 8UZL\_29, AWGoat\_35, Abscondus\_51, Angelique\_25, Aphelion\_52, Apricot\_24, Asapag\_25, Avani\_38, BBQValindra\_23, BENtherdunthat\_25, Bachita\_54, BackstagePass\_23, Bakery\_46, Barb\_43, Beagle\_46, BearBQ\_24, Birdsong\_24, BotCity\_26, Bowser\_23, BruhMoment\_42, BrutonGaster\_41, Budski\_25, Bunker\_23, Che9d\_38, CheeseTouch\_25, ClamChowder\_43, ClubL\_52, Coriander\_24, Crater\_23, Cucurbita\_54, Culver\_52, Demsculpinboyz\_39, Dmitri\_24, DogYard\_43, Doggs\_23, Dusty\_50, Egi03\_43, Engineer\_54, Eyes\_23, FF47\_29, Fairfaxidum\_22, Faith5x5\_20, Fireball\_42, Forrestell\_39, Frickyeah\_24, Fugax\_44, GEazy\_23, Geeche\_51, Getalong\_26, HannahD\_23, Holliday\_25, Horus\_25, Jabbarwokie\_41, Kamaru\_25, Kenna\_24, Kubulix\_43, Kuwabara\_24, Leroy\_25, LilSpotty\_34, LitninMcQueen\_24, Lozinak\_53, LunaStella\_35, Lutum\_25, Maco6\_27, MagicMan\_23, Malisha\_26, MellowYellow\_42, Miskis\_54, MooMoo\_31, Moosehead\_20, MortyNRick\_24, Muddy\_29, Mutzi\_40, Norvs\_53, Nubi\_41, NyleyClemson\_41, Odyssey395\_47, Ollypop\_41, OneUp\_46, Opie\_23, Periwinkle\_27, Phabuloso\_24, PhinkBoden\_52, Phistory\_26, Phlop\_40, PinkCoffee\_43, Pointis\_44, PrincePatrick\_22, PullumCavea\_40, Pureglobe5\_46, REQ2\_24, RayTheFireFly\_24, RazzB\_38, Rem711\_38, Rizwana\_35, Schnabeltier\_23, ShawBrad\_25, Shinji\_41, SilentRX\_37, SmokingBunny\_41, Smoothie\_54, Spooky\_25, Squiddly\_27, TChen\_33, Tank\_37, TaronosaurusRx\_23, ThetaBob\_33, TillyBobJoe\_41, TinyDot\_22, Togo\_40, Toniann\_52, Toron\_34, Whack\_23, Whitney\_26, Wilde\_37, WilliamBoone\_52, William\_23, Yoshi\_40, YungMoney\_44, ZAYM\_24, Zapner\_40,

### Summary by start number:

#### Start 15:

- Found in 12 of 154 ( 7.8% ) of genes in pham
- Manual Annotations of this start: 6 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Beagle\_46 (AP2), BruhMoment\_42 (AP3), DogYard\_43 (AP2), Forrestell\_39 (AP2), Kubulix\_43 (AP2), MellowYellow\_42 (AP2), NyleyClemson\_41 (AP2), Odyssey395\_47 (AP2), Ollypop\_41 (AP2), Pointis\_44 (AP2), Pureglobe5\_46 (AP2), RazzB\_38 (AP2),

#### Start 16:

- Found in 2 of 154 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 2 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AWGoat\_35 (AP4), SilentRX\_37 (AP4),

#### Start 17:

- Found in 3 of 154 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 125
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Rizwana\_35 (AP1),

#### Start 18:

- Found in 32 of 154 ( 20.8% ) of genes in pham
- Manual Annotations of this start: 28 of 125
- Called 93.8% of time when present
- Phage (with cluster) where this start called: Arri\_44 (DC1), Bradissa\_24 (CY1), BritBrat\_24 (CY2), CherryCola\_44 (DC1), Danyall\_43 (DC1), EMSquaredA\_24 (CY1), EdnaMode\_20 (CZ2), EnalisNailo\_24 (CY1), Evamon\_40 (DC1), Floral\_24 (CY1),

Gezellig\_42 (DC1), Halo3\_41 (DC1), Jambalaya\_41 (DC1), KimmyK\_42 (DC1), Lamberg\_20 (CZ2), Lilas\_24 (CY1), Lton\_20 (CZ), Marteena\_24 (CY1), Matteo\_20 (CZ2), Nettuno\_20 (CZ2), Pickett\_20 (CZ2), Pollux\_24 (CY1), Portcullis\_42 (DC1), RogerDodger\_44 (DC1), Salvador\_40 (DC1), Savbucketdawg\_41 (DC1), Twister6\_43 (DC1), Valary\_43 (DC1), VanDeWege\_44 (DC1), Wizard\_40 (DC1),

Start 19:

- Found in 2 of 154 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 2 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Tank\_37 (AP1), Wilde\_37 (AP1),

Start 20:

- Found in 17 of 154 ( 11.0% ) of genes in pham
- No Manual Annotations of this start.
- Called 5.9% of time when present
- Phage (with cluster) where this start called: CoveyB\_44 (DC1),

Start 23:

- Found in 3 of 154 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 2 of 125
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Doggs\_23 (DB), RayTheFireFly\_24 (DB),

Start 25:

- Found in 14 of 154 ( 9.1% ) of genes in pham
- Manual Annotations of this start: 13 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Angelique\_25 (CY1), BBQValindra\_23 (DB), BackstagePass\_23 (DB), Bowser\_23 (DB), Bunker\_23 (DB), Dmitri\_24 (DB), Eyes\_23 (DB), Faith5x5\_20 (CZ6), GEazy\_23 (DB), HannahD\_23 (DB), MagicMan\_23 (DB), Moosehead\_20 (CZ6), Opie\_23 (DB), Schnabeltier\_23 (DB),

Start 26:

- Found in 29 of 154 ( 18.8% ) of genes in pham
- Manual Annotations of this start: 24 of 125
- Called 96.6% of time when present
- Phage (with cluster) where this start called: Apricot\_24 (DN3), Asapag\_25 (DN1), BENTherdunthat\_25 (DN1), BearBQ\_24 (DN), Birdsong\_24 (DN), BotCity\_26 (DN), Budski\_25 (DN), CheeseTouch\_25 (DN1), Crater\_23 (DN3), Frickyeh\_24 (DN1), Getalong\_26 (DN1), Holliday\_25 (DN1), Horus\_25 (DN1), Kamaru\_25 (DN1), Kenna\_24 (DN1), Kuwabara\_24 (DN4), Leroy\_25 (DN1), LitninMcQueen\_24 (DN1), Lutum\_25 (DN1), Malisha\_26 (DN), MortyNRick\_24 (DN), Periwinkle\_27 (DN1), Phabuloso\_24 (DN1), Phistory\_26 (DN1), ShawBrad\_25 (DN1), Spooky\_25 (DN2), Squiddly\_27 (DN2), Whitney\_26 (DN1),

Start 27:

- Found in 15 of 154 ( 9.7% ) of genes in pham
- Manual Annotations of this start: 9 of 125
- Called 73.3% of time when present
- Phage (with cluster) where this start called: 32HC\_39 (Z), Avani\_38 (F2), Che9d\_38 (F2), Demsculpinboyz\_39 (F2), Jabbawokkie\_41 (F2), LunaStella\_35 (F4),

MooMoo\_31 (singleton), Rem711\_38 (Z), TinyDot\_22 (singleton), Toron\_34 (F6), Zapner\_40 (F2),

Start 28:

- Found in 3 of 154 ( 1.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 66.7% of time when present
- Phage (with cluster) where this start called: TaronosaurusRx\_23 (DB), ZAYM\_24 (DB),

Start 29:

- Found in 27 of 154 ( 17.5% ) of genes in pham
- Manual Annotations of this start: 20 of 125
- Called 96.3% of time when present
- Phage (with cluster) where this start called: 8UZL\_29 (AB), Abscondus\_51 (CQ1), Aphelion\_52 (CQ1), Bachita\_54 (CQ1), BrutonGaster\_41 (CQ2), ClubL\_52 (CQ1), Cucurbita\_54 (CQ1), Culver\_52 (CQ1), Dusty\_50 (CQ1), Engineer\_54 (CQ1), FF47\_29 (AB), Fairfaxidum\_22 (CV), Geeche\_51 (CQ1), Lozinak\_53 (CQ1), Maco6\_27 (AB), Miskis\_54 (CQ1), Muddy\_29 (AB), Norvs\_53 (CQ1), OneUp\_46 (CQ2), PhinkBoden\_52 (CQ1), PrincePatrick\_22 (CV), Smoothie\_54 (CQ1), Toniann\_52 (CQ1), Whack\_23 (singleton), WilliamBoone\_52 (CQ1), William\_23 (CV),

Start 30:

- Found in 7 of 154 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 2 of 125
- Called 28.6% of time when present
- Phage (with cluster) where this start called: ThetaBob\_33 (F4), Yoshi\_40 (F2),

Start 31:

- Found in 3 of 154 ( 1.9% ) of genes in pham
- Manual Annotations of this start: 1 of 125
- Called 33.3% of time when present
- Phage (with cluster) where this start called: TChen\_33 (F4),

Start 32:

- Found in 50 of 154 ( 32.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 2.0% of time when present
- Phage (with cluster) where this start called: Pepperoni\_21 (CZ),

Start 33:

- Found in 1 of 154 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LilSpotty\_34 (singleton),

Start 34:

- Found in 16 of 154 ( 10.4% ) of genes in pham
- Manual Annotations of this start: 14 of 125
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bakery\_46 (DC1), Barb\_43 (DC1), ClamChowder\_43 (DC1), Egi03\_43 (DC1), Fireball\_42 (DC1), Fugax\_44 (DC1), Mutzi\_40 (DC1), Nubi\_41 (DC1), Phlop\_40 (DC1), PinkCoffee\_43 (DC1),

PullumCavea\_40 (DC1), Shinji\_41 (DC1), SmokingBunny\_41 (DC1), TillyBobJoe\_41 (DC1), Togo\_40 (DC1), YungMoney\_44 (DC1),

Start 40:

- Found in 53 of 154 ( 34.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 1.9% of time when present
- Phage (with cluster) where this start called: REQ2\_24 (singleton),

Start 41:

- Found in 63 of 154 ( 40.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 1.6% of time when present
- Phage (with cluster) where this start called: Coriander\_24 (DB),

### **Summary by clusters:**

There are 25 clusters represented in this pham: DN, singleton, CZ2, AP3, AP1, CZ6, AP4, DN4, AP2, DN1, DN3, DN2, CQ2, CQ1, CY2, CY1, AB, DB, CZ, Z, CV, DC1, F2, F4, F6,

Info for manual annotations of cluster AB:

- Start number 29 was manually annotated 2 times for cluster AB.

Info for manual annotations of cluster AP1:

- Start number 17 was manually annotated 1 time for cluster AP1.
- Start number 19 was manually annotated 2 times for cluster AP1.

Info for manual annotations of cluster AP2:

- Start number 15 was manually annotated 5 times for cluster AP2.

Info for manual annotations of cluster AP3:

- Start number 15 was manually annotated 1 time for cluster AP3.

Info for manual annotations of cluster AP4:

- Start number 16 was manually annotated 2 times for cluster AP4.

Info for manual annotations of cluster CQ1:

- Start number 29 was manually annotated 12 times for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 29 was manually annotated 2 times for cluster CQ2.

Info for manual annotations of cluster CV:

- Start number 29 was manually annotated 3 times for cluster CV.

Info for manual annotations of cluster CY1:

- Start number 18 was manually annotated 7 times for cluster CY1.
- Start number 25 was manually annotated 1 time for cluster CY1.

Info for manual annotations of cluster CY2:

- Start number 18 was manually annotated 1 time for cluster CY2.



Info for manual annotations of cluster CZ:

- Start number 18 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ2:

- Start number 18 was manually annotated 5 times for cluster CZ2.

Info for manual annotations of cluster CZ6:

- Start number 25 was manually annotated 2 times for cluster CZ6.

Info for manual annotations of cluster DB:

- Start number 23 was manually annotated 2 times for cluster DB.
- Start number 25 was manually annotated 10 times for cluster DB.

Info for manual annotations of cluster DC1:

- Start number 18 was manually annotated 14 times for cluster DC1.
- Start number 34 was manually annotated 14 times for cluster DC1.

Info for manual annotations of cluster DN:

- Start number 26 was manually annotated 4 times for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 26 was manually annotated 15 times for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 26 was manually annotated 2 times for cluster DN2.

Info for manual annotations of cluster DN3:

- Start number 26 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DN4:

- Start number 26 was manually annotated 1 time for cluster DN4.

Info for manual annotations of cluster F2:

- Start number 27 was manually annotated 5 times for cluster F2.
- Start number 30 was manually annotated 1 time for cluster F2.

Info for manual annotations of cluster F4:

- Start number 27 was manually annotated 1 time for cluster F4.
- Start number 30 was manually annotated 1 time for cluster F4.
- Start number 31 was manually annotated 1 time for cluster F4.

Info for manual annotations of cluster Z:

- Start number 27 was manually annotated 1 time for cluster Z.

### **Gene Information:**

Gene: 32HC\_39 Start: 30201, Stop: 30482, Start Num: 27

Candidate Starts for 32HC\_39:

(Start: 27 @30201 has 9 MA's), (40, 30240), (41, 30243), (43, 30252), (46, 30261), (52, 30279), (57, 30303), (63, 30336),

Gene: 8UZL\_29 Start: 24298, Stop: 24582, Start Num: 29

Candidate Starts for 8UZL\_29:

(Start: 29 @24298 has 20 MA's), (44, 24352), (48, 24364), (57, 24400), (78, 24502),

Gene: AWGoat\_35 Start: 33444, Stop: 33779, Start Num: 16

Candidate Starts for AWGoat\_35:

(Start: 16 @33444 has 2 MA's), (Start: 26 @33480 has 24 MA's), (46, 33549), (47, 33552), (50, 33561), (71, 33675), (83, 33729), (84, 33732), (86, 33741),

Gene: Abscondus\_51 Start: 33043, Stop: 33345, Start Num: 29

Candidate Starts for Abscondus\_51:

(Start: 29 @33043 has 20 MA's), (41, 33085), (62, 33172), (92, 33331),

Gene: Angelique\_25 Start: 21914, Stop: 22216, Start Num: 25

Candidate Starts for Angelique\_25:

(Start: 25 @21914 has 13 MA's), (32, 21935), (40, 21965), (41, 21968), (46, 21986), (67, 22061), (79, 22139),

Gene: Aphelion\_52 Start: 33312, Stop: 33614, Start Num: 29

Candidate Starts for Aphelion\_52:

(Start: 29 @33312 has 20 MA's), (41, 33354), (62, 33441), (92, 33600),

Gene: Apricot\_24 Start: 20126, Stop: 20425, Start Num: 26

Candidate Starts for Apricot\_24:

(Start: 26 @20126 has 24 MA's), (36, 20150), (45, 20186), (50, 20201), (62, 20258),

Gene: Arri\_44 Start: 35477, Stop: 35776, Start Num: 18

Candidate Starts for Arri\_44:

(2, 35168), (Start: 18 @35477 has 28 MA's), (20, 35483), (32, 35507), (40, 35537), (41, 35540), (46, 35558), (47, 35561), (49, 35567), (79, 35699),

Gene: Asapag\_25 Start: 20568, Stop: 20867, Start Num: 26

Candidate Starts for Asapag\_25:

(Start: 26 @20568 has 24 MA's), (36, 20592), (45, 20628), (50, 20643), (62, 20700),

Gene: Avani\_38 Start: 28254, Stop: 28553, Start Num: 27

Candidate Starts for Avani\_38:

(Start: 27 @28254 has 9 MA's), (Start: 30 @28260 has 2 MA's), (43, 28305), (46, 28314), (57, 28356), (82, 28497),

Gene: BBQValindra\_23 Start: 20531, Stop: 20833, Start Num: 25

Candidate Starts for BBQValindra\_23:

(Start: 25 @20531 has 13 MA's), (32, 20552), (40, 20582), (41, 20585), (46, 20603), (79, 20756),

Gene: BENtherdunthat\_25 Start: 20565, Stop: 20864, Start Num: 26

Candidate Starts for BENtherdunthat\_25:

(Start: 26 @20565 has 24 MA's), (36, 20589), (45, 20625), (50, 20640), (62, 20697),

Gene: Bachita\_54 Start: 33745, Stop: 34047, Start Num: 29

Candidate Starts for Bachita\_54:

(Start: 29 @33745 has 20 MA's), (41, 33787), (62, 33874), (92, 34033),

Gene: BackstagePass\_23 Start: 20663, Stop: 20965, Start Num: 25  
Candidate Starts for BackstagePass\_23:  
(Start: 25 @20663 has 13 MA's), (32, 20684), (40, 20714), (41, 20717), (46, 20735), (67, 20810), (79, 20888),

Gene: Bakery\_46 Start: 36522, Stop: 36848, Start Num: 34  
Candidate Starts for Bakery\_46:  
(Start: 34 @36522 has 14 MA's), (38, 36534), (53, 36591), (55, 36600), (57, 36609), (60, 36627), (84, 36780), (86, 36789),

Gene: Barb\_43 Start: 35506, Stop: 35820, Start Num: 34  
Candidate Starts for Barb\_43:  
(5, 35185), (Start: 34 @35506 has 14 MA's), (38, 35518), (53, 35575), (55, 35584), (60, 35611), (70, 35671), (84, 35752), (86, 35761),

Gene: Beagle\_46 Start: 34747, Stop: 35091, Start Num: 15  
Candidate Starts for Beagle\_46:  
(11, 34687), (14, 34723), (Start: 15 @34747 has 6 MA's), (24, 34783), (44, 34855), (53, 34885), (62, 34930), (71, 34987), (72, 34990), (84, 35044),

Gene: BearBQ\_24 Start: 21405, Stop: 21704, Start Num: 26  
Candidate Starts for BearBQ\_24:  
(Start: 26 @21405 has 24 MA's), (36, 21429), (45, 21465), (50, 21480), (62, 21537),

Gene: Birdsong\_24 Start: 20298, Stop: 20597, Start Num: 26  
Candidate Starts for Birdsong\_24:  
(Start: 26 @20298 has 24 MA's), (36, 20322), (45, 20358), (50, 20373), (62, 20430),

Gene: BotCity\_26 Start: 20566, Stop: 20865, Start Num: 26  
Candidate Starts for BotCity\_26:  
(Start: 26 @20566 has 24 MA's), (36, 20590), (45, 20626), (50, 20641), (62, 20698),

Gene: Bowser\_23 Start: 20442, Stop: 20744, Start Num: 25  
Candidate Starts for Bowser\_23:  
(Start: 25 @20442 has 13 MA's), (32, 20463), (40, 20493), (41, 20496), (46, 20514), (67, 20589), (79, 20667),

Gene: Bradissa\_24 Start: 21187, Stop: 21486, Start Num: 18  
Candidate Starts for Bradissa\_24:  
(Start: 18 @21187 has 28 MA's), (22, 21196), (32, 21217), (40, 21247), (46, 21268), (47, 21271), (49, 21277), (57, 21310),

Gene: BritBrat\_24 Start: 21040, Stop: 21339, Start Num: 18  
Candidate Starts for BritBrat\_24:  
(Start: 18 @21040 has 28 MA's), (22, 21049), (32, 21070), (40, 21100), (46, 21121), (47, 21124), (49, 21130), (57, 21163),

Gene: BruhMoment\_42 Start: 36111, Stop: 36455, Start Num: 15  
Candidate Starts for BruhMoment\_42:  
(8, 35940), (9, 35952), (Start: 15 @36111 has 6 MA's), (47, 36228), (57, 36267), (58, 36270), (59, 36276), (71, 36351), (82, 36396), (84, 36408),

Gene: BrutonGaster\_41 Start: 30429, Stop: 30731, Start Num: 29

Candidate Starts for BrutonGaster\_41:

(Start: 29 @30429 has 20 MA's), (43, 30480), (57, 30531), (86, 30681), (90, 30702), (92, 30717),

Gene: Budski\_25 Start: 20673, Stop: 20972, Start Num: 26

Candidate Starts for Budski\_25:

(Start: 26 @20673 has 24 MA's), (36, 20697), (45, 20733), (50, 20748), (62, 20805),

Gene: Bunker\_23 Start: 20642, Stop: 20944, Start Num: 25

Candidate Starts for Bunker\_23:

(Start: 25 @20642 has 13 MA's), (32, 20663), (40, 20693), (41, 20696), (46, 20714), (67, 20789), (79, 20867), (91, 20930),

Gene: Che9d\_38 Start: 28263, Stop: 28562, Start Num: 27

Candidate Starts for Che9d\_38:

(Start: 27 @28263 has 9 MA's), (Start: 30 @28269 has 2 MA's), (43, 28314), (46, 28323), (57, 28365), (82, 28506),

Gene: CheeseTouch\_25 Start: 20559, Stop: 20858, Start Num: 26

Candidate Starts for CheeseTouch\_25:

(Start: 26 @20559 has 24 MA's), (36, 20583), (45, 20619), (50, 20634), (62, 20691),

Gene: CherryCola\_44 Start: 36250, Stop: 36549, Start Num: 18

Candidate Starts for CherryCola\_44:

(2, 35941), (Start: 18 @36250 has 28 MA's), (20, 36256), (32, 36280), (40, 36310), (41, 36313), (46, 36331), (47, 36334), (49, 36340), (79, 36472),

Gene: ClamChowder\_43 Start: 35506, Stop: 35820, Start Num: 34

Candidate Starts for ClamChowder\_43:

(5, 35185), (Start: 34 @35506 has 14 MA's), (38, 35518), (53, 35575), (55, 35584), (60, 35611), (70, 35671), (84, 35752), (86, 35761),

Gene: ClubL\_52 Start: 33234, Stop: 33536, Start Num: 29

Candidate Starts for ClubL\_52:

(Start: 29 @33234 has 20 MA's), (41, 33276), (62, 33363), (92, 33522),

Gene: Coriander\_24 Start: 21644, Stop: 21895, Start Num: 41

Candidate Starts for Coriander\_24:

(Start: 23 @21581 has 2 MA's), (40, 21641), (41, 21644), (42, 21650), (46, 21662), (54, 21689), (57, 21704), (61, 21728), (62, 21731),

Gene: CoveyB\_44 Start: 35301, Stop: 35594, Start Num: 20

Candidate Starts for CoveyB\_44:

(Start: 18 @35295 has 28 MA's), (20, 35301), (32, 35325), (40, 35355), (41, 35358), (46, 35376), (47, 35379), (49, 35385), (79, 35517),

Gene: Crater\_23 Start: 20126, Stop: 20425, Start Num: 26

Candidate Starts for Crater\_23:

(Start: 26 @20126 has 24 MA's), (36, 20150), (45, 20186), (50, 20201), (62, 20258),

Gene: Cucurbita\_54 Start: 34604, Stop: 34906, Start Num: 29

Candidate Starts for Cucurbita\_54:

(Start: 29 @34604 has 20 MA's), (41, 34646), (62, 34733), (92, 34892),

Gene: Culver\_52 Start: 33043, Stop: 33345, Start Num: 29  
Candidate Starts for Culver\_52:  
(Start: 29 @33043 has 20 MA's), (41, 33085), (62, 33172), (92, 33331),

Gene: Danyall\_43 Start: 35297, Stop: 35596, Start Num: 18  
Candidate Starts for Danyall\_43:  
(Start: 18 @35297 has 28 MA's), (20, 35303), (32, 35327), (40, 35357), (41, 35360), (46, 35378), (47, 35381), (49, 35387), (79, 35519),

Gene: Demsculpinboyz\_39 Start: 28196, Stop: 28495, Start Num: 27  
Candidate Starts for Demsculpinboyz\_39:  
(Start: 27 @28196 has 9 MA's), (Start: 30 @28202 has 2 MA's), (43, 28247), (46, 28256), (57, 28298), (82, 28439),

Gene: Dmitri\_24 Start: 21645, Stop: 21950, Start Num: 25  
Candidate Starts for Dmitri\_24:  
(Start: 25 @21645 has 13 MA's), (32, 21666), (40, 21696), (41, 21699), (46, 21717), (54, 21744), (57, 21759), (61, 21783),

Gene: DogYard\_43 Start: 34641, Stop: 34985, Start Num: 15  
Candidate Starts for DogYard\_43:  
(11, 34581), (13, 34590), (14, 34617), (Start: 15 @34641 has 6 MA's), (24, 34677), (44, 34749), (53, 34779), (62, 34824), (71, 34881), (72, 34884), (84, 34938),

Gene: Doggs\_23 Start: 21280, Stop: 21594, Start Num: 23  
Candidate Starts for Doggs\_23:  
(Start: 23 @21280 has 2 MA's), (40, 21340), (41, 21343), (42, 21349), (46, 21361), (54, 21388), (57, 21403), (61, 21427), (62, 21430),

Gene: Dusty\_50 Start: 33043, Stop: 33345, Start Num: 29  
Candidate Starts for Dusty\_50:  
(Start: 29 @33043 has 20 MA's), (41, 33085), (62, 33172), (92, 33331),

Gene: EMSquaredA\_24 Start: 21040, Stop: 21339, Start Num: 18  
Candidate Starts for EMSquaredA\_24:  
(Start: 18 @21040 has 28 MA's), (22, 21049), (32, 21070), (40, 21100), (46, 21121), (47, 21124), (49, 21130), (57, 21163),

Gene: EdnaMode\_20 Start: 17846, Stop: 18145, Start Num: 18  
Candidate Starts for EdnaMode\_20:  
(Start: 18 @17846 has 28 MA's), (32, 17876), (40, 17906), (41, 17909), (46, 17927), (47, 17930), (49, 17936), (57, 17969), (84, 18098),

Gene: Egi03\_43 Start: 34987, Stop: 35301, Start Num: 34  
Candidate Starts for Egi03\_43:  
(5, 34666), (Start: 34 @34987 has 14 MA's), (38, 34999), (53, 35056), (55, 35065), (60, 35092), (70, 35152), (84, 35233), (86, 35242),

Gene: EnalisNailo\_24 Start: 21189, Stop: 21488, Start Num: 18  
Candidate Starts for EnalisNailo\_24:  
(Start: 18 @21189 has 28 MA's), (22, 21198), (32, 21219), (40, 21249), (46, 21270), (47, 21273), (49, 21279), (57, 21312),

Gene: Engineer\_54 Start: 33718, Stop: 34020, Start Num: 29  
Candidate Starts for Engineer\_54:  
(Start: 29 @33718 has 20 MA's), (41, 33760), (62, 33847), (92, 34006),

Gene: Evamon\_40 Start: 35316, Stop: 35615, Start Num: 18  
Candidate Starts for Evamon\_40:  
(Start: 18 @35316 has 28 MA's), (20, 35322), (32, 35346), (40, 35376), (41, 35379), (46, 35397), (47, 35400), (49, 35406), (79, 35538),

Gene: Eyes\_23 Start: 20535, Stop: 20837, Start Num: 25  
Candidate Starts for Eyes\_23:  
(Start: 25 @20535 has 13 MA's), (32, 20556), (40, 20586), (41, 20589), (46, 20607), (67, 20682), (79, 20760),

Gene: FF47\_29 Start: 24225, Stop: 24509, Start Num: 29  
Candidate Starts for FF47\_29:  
(Start: 29 @24225 has 20 MA's), (44, 24279), (48, 24291), (57, 24327), (78, 24429),

Gene: Fairfaxidum\_22 Start: 20690, Stop: 20986, Start Num: 29  
Candidate Starts for Fairfaxidum\_22:  
(1, 20201), (3, 20363), (Start: 29 @20690 has 20 MA's), (41, 20732), (51, 20765), (54, 20777), (57, 20792), (83, 20942),

Gene: Faith5x5\_20 Start: 17794, Stop: 18084, Start Num: 25  
Candidate Starts for Faith5x5\_20:  
(4, 17479), (10, 17665), (Start: 25 @17794 has 13 MA's), (32, 17815), (40, 17845), (41, 17848), (46, 17866), (79, 18007), (81, 18022),

Gene: Fireball\_42 Start: 35451, Stop: 35765, Start Num: 34  
Candidate Starts for Fireball\_42:  
(5, 35130), (Start: 34 @35451 has 14 MA's), (38, 35463), (53, 35520), (55, 35529), (60, 35556), (70, 35616), (84, 35697), (86, 35706),

Gene: Floral\_24 Start: 21040, Stop: 21339, Start Num: 18  
Candidate Starts for Floral\_24:  
(Start: 18 @21040 has 28 MA's), (22, 21049), (32, 21070), (40, 21100), (46, 21121), (47, 21124), (49, 21130), (57, 21163),

Gene: Forrestell\_39 Start: 33116, Stop: 33460, Start Num: 15  
Candidate Starts for Forrestell\_39:  
(11, 33056), (Start: 15 @33116 has 6 MA's), (24, 33152), (32, 33179), (44, 33224), (53, 33254), (62, 33299), (71, 33356), (72, 33359), (84, 33413),

Gene: Frickyeah\_24 Start: 20331, Stop: 20630, Start Num: 26  
Candidate Starts for Frickyeah\_24:  
(Start: 26 @20331 has 24 MA's), (36, 20355), (45, 20391), (50, 20406), (62, 20463),

Gene: Fugax\_44 Start: 35498, Stop: 35812, Start Num: 34  
Candidate Starts for Fugax\_44:  
(5, 35177), (Start: 34 @35498 has 14 MA's), (38, 35510), (53, 35567), (55, 35576), (60, 35603), (70, 35663), (84, 35744), (86, 35753),

Gene: GEazy\_23 Start: 20550, Stop: 20852, Start Num: 25

Candidate Starts for GEazy\_23:

(Start: 25 @20550 has 13 MA's), (32, 20571), (40, 20601), (41, 20604), (46, 20622), (67, 20697), (79, 20775), (89, 20826),

Gene: Geeche\_51 Start: 33134, Stop: 33436, Start Num: 29

Candidate Starts for Geeche\_51:

(Start: 29 @33134 has 20 MA's), (41, 33176), (62, 33263), (92, 33422),

Gene: Getalong\_26 Start: 21368, Stop: 21667, Start Num: 26

Candidate Starts for Getalong\_26:

(Start: 26 @21368 has 24 MA's), (36, 21392), (45, 21428), (50, 21443), (62, 21500),

Gene: Gezellig\_42 Start: 35448, Stop: 35747, Start Num: 18

Candidate Starts for Gezellig\_42:

(2, 35139), (Start: 18 @35448 has 28 MA's), (20, 35454), (32, 35478), (40, 35508), (41, 35511), (46, 35529), (47, 35532), (49, 35538), (79, 35670),

Gene: Halo3\_41 Start: 35741, Stop: 36040, Start Num: 18

Candidate Starts for Halo3\_41:

(Start: 18 @35741 has 28 MA's), (20, 35747), (32, 35771), (40, 35801), (41, 35804), (46, 35822), (47, 35825), (49, 35831), (79, 35963),

Gene: HannahD\_23 Start: 20550, Stop: 20852, Start Num: 25

Candidate Starts for HannahD\_23:

(Start: 25 @20550 has 13 MA's), (32, 20571), (40, 20601), (41, 20604), (46, 20622), (67, 20697), (79, 20775), (89, 20826),

Gene: Holliday\_25 Start: 20673, Stop: 20972, Start Num: 26

Candidate Starts for Holliday\_25:

(Start: 26 @20673 has 24 MA's), (36, 20697), (45, 20733), (50, 20748), (62, 20805),

Gene: Horus\_25 Start: 20590, Stop: 20889, Start Num: 26

Candidate Starts for Horus\_25:

(Start: 26 @20590 has 24 MA's), (36, 20614), (45, 20650), (50, 20665), (62, 20722),

Gene: Jabbawokkie\_41 Start: 29644, Stop: 29943, Start Num: 27

Candidate Starts for Jabbawokkie\_41:

(Start: 27 @29644 has 9 MA's), (Start: 30 @29650 has 2 MA's), (43, 29695), (46, 29704), (57, 29746), (82, 29887),

Gene: Jambalaya\_41 Start: 35095, Stop: 35394, Start Num: 18

Candidate Starts for Jambalaya\_41:

(Start: 18 @35095 has 28 MA's), (20, 35101), (32, 35125), (40, 35155), (41, 35158), (46, 35176), (47, 35179), (49, 35185), (79, 35317),

Gene: Kamaru\_25 Start: 20673, Stop: 20972, Start Num: 26

Candidate Starts for Kamaru\_25:

(Start: 26 @20673 has 24 MA's), (36, 20697), (45, 20733), (50, 20748), (62, 20805),

Gene: Kenna\_24 Start: 20566, Stop: 20865, Start Num: 26

Candidate Starts for Kenna\_24:

(Start: 26 @20566 has 24 MA's), (36, 20590), (45, 20626), (50, 20641), (62, 20698),

Gene: KimmyK\_42 Start: 36030, Stop: 36329, Start Num: 18

Candidate Starts for KimmyK\_42:

(2, 35721), (Start: 18 @36030 has 28 MA's), (20, 36036), (32, 36060), (40, 36090), (41, 36093), (46, 36111), (47, 36114), (49, 36120), (79, 36252),

Gene: Kubulix\_43 Start: 34589, Stop: 34933, Start Num: 15

Candidate Starts for Kubulix\_43:

(11, 34529), (14, 34565), (Start: 15 @34589 has 6 MA's), (24, 34625), (44, 34697), (53, 34727), (62, 34772), (71, 34829), (72, 34832), (84, 34886),

Gene: Kuwabara\_24 Start: 19992, Stop: 20291, Start Num: 26

Candidate Starts for Kuwabara\_24:

(Start: 26 @19992 has 24 MA's), (36, 20016), (45, 20052), (50, 20067), (62, 20124),

Gene: Lamberg\_20 Start: 17846, Stop: 18145, Start Num: 18

Candidate Starts for Lamberg\_20:

(Start: 18 @17846 has 28 MA's), (32, 17876), (40, 17906), (41, 17909), (46, 17927), (47, 17930), (49, 17936), (57, 17969), (84, 18098),

Gene: Leroy\_25 Start: 20591, Stop: 20890, Start Num: 26

Candidate Starts for Leroy\_25:

(Start: 26 @20591 has 24 MA's), (36, 20615), (45, 20651), (50, 20666), (62, 20723),

Gene: LilSpotty\_34 Start: 26327, Stop: 26599, Start Num: 33

Candidate Starts for LilSpotty\_34:

(7, 26078), (8, 26093), (Start: 33 @26327 has 1 MA's), (50, 26384), (60, 26432),

Gene: Lilas\_24 Start: 21189, Stop: 21488, Start Num: 18

Candidate Starts for Lilas\_24:

(Start: 18 @21189 has 28 MA's), (22, 21198), (32, 21219), (40, 21249), (46, 21270), (47, 21273), (49, 21279), (57, 21312),

Gene: LitninMcQueen\_24 Start: 20322, Stop: 20621, Start Num: 26

Candidate Starts for LitninMcQueen\_24:

(Start: 26 @20322 has 24 MA's), (36, 20346), (45, 20382), (50, 20397), (62, 20454),

Gene: Lozinak\_53 Start: 33773, Stop: 34075, Start Num: 29

Candidate Starts for Lozinak\_53:

(Start: 29 @33773 has 20 MA's), (41, 33815), (62, 33902), (92, 34061),

Gene: Lton\_20 Start: 17875, Stop: 18174, Start Num: 18

Candidate Starts for Lton\_20:

(Start: 18 @17875 has 28 MA's), (32, 17905), (40, 17935), (41, 17938), (46, 17956), (47, 17959), (49, 17965), (57, 17998), (84, 18127),

Gene: LunaStella\_35 Start: 29537, Stop: 29839, Start Num: 27

Candidate Starts for LunaStella\_35:

(Start: 27 @29537 has 9 MA's), (Start: 31 @29546 has 1 MA's), (45, 29597), (62, 29669), (65, 29693), (68, 29699), (69, 29702), (78, 29753), (82, 29783),

Gene: Lutum\_25 Start: 20566, Stop: 20865, Start Num: 26

Candidate Starts for Lutum\_25:

(Start: 26 @20566 has 24 MA's), (36, 20590), (45, 20626), (50, 20641), (62, 20698),



Gene: Maco6\_27 Start: 23562, Stop: 23846, Start Num: 29

Candidate Starts for Maco6\_27:

(Start: 29 @23562 has 20 MA's), (48, 23628), (57, 23664), (62, 23691), (78, 23766),

Gene: MagicMan\_23 Start: 20856, Stop: 21158, Start Num: 25

Candidate Starts for MagicMan\_23:

(Start: 25 @20856 has 13 MA's), (32, 20877), (40, 20907), (41, 20910), (46, 20928), (67, 21003), (79, 21081),

Gene: Malisha\_26 Start: 22451, Stop: 22750, Start Num: 26

Candidate Starts for Malisha\_26:

(Start: 26 @22451 has 24 MA's), (36, 22475), (45, 22511), (50, 22526), (62, 22583),

Gene: Marteena\_24 Start: 21040, Stop: 21339, Start Num: 18

Candidate Starts for Marteena\_24:

(Start: 18 @21040 has 28 MA's), (22, 21049), (32, 21070), (40, 21100), (46, 21121), (47, 21124), (49, 21130), (57, 21163),

Gene: Matteo\_20 Start: 17783, Stop: 18082, Start Num: 18

Candidate Starts for Matteo\_20:

(Start: 18 @17783 has 28 MA's), (32, 17813), (40, 17843), (41, 17846), (46, 17864), (47, 17867), (49, 17873), (57, 17906), (84, 18035),

Gene: MellowYellow\_42 Start: 33482, Stop: 33826, Start Num: 15

Candidate Starts for MellowYellow\_42:

(11, 33422), (Start: 15 @33482 has 6 MA's), (24, 33518), (32, 33545), (44, 33590), (53, 33620), (62, 33665), (71, 33722), (72, 33725), (84, 33779),

Gene: Miskis\_54 Start: 33078, Stop: 33380, Start Num: 29

Candidate Starts for Miskis\_54:

(Start: 29 @33078 has 20 MA's), (41, 33120), (62, 33207), (92, 33366),

Gene: MooMoo\_31 Start: 28084, Stop: 28386, Start Num: 27

Candidate Starts for MooMoo\_31:

(Start: 27 @28084 has 9 MA's), (45, 28144), (62, 28216), (65, 28240), (68, 28246), (69, 28249), (74, 28288), (76, 28294), (78, 28300), (82, 28330),

Gene: Moosehead\_20 Start: 17802, Stop: 18092, Start Num: 25

Candidate Starts for Moosehead\_20:

(10, 17673), (Start: 25 @17802 has 13 MA's), (37, 17826), (40, 17841), (41, 17844), (47, 17865), (49, 17871), (52, 17880), (57, 17904), (73, 17985), (79, 18015), (91, 18078),

Gene: MortyNRick\_24 Start: 20298, Stop: 20597, Start Num: 26

Candidate Starts for MortyNRick\_24:

(Start: 26 @20298 has 24 MA's), (36, 20322), (45, 20358), (50, 20373), (62, 20430),

Gene: Muddy\_29 Start: 24506, Stop: 24790, Start Num: 29

Candidate Starts for Muddy\_29:

(Start: 29 @24506 has 20 MA's), (44, 24560), (48, 24572), (54, 24593), (57, 24608), (78, 24710),

Gene: Mutzi\_40 Start: 36186, Stop: 36500, Start Num: 34

Candidate Starts for Mutzi\_40:

(5, 35865), (Start: 34 @36186 has 14 MA's), (38, 36198), (53, 36255), (55, 36264), (60, 36291), (70, 36351), (84, 36432), (86, 36441),

Gene: Nettuno\_20 Start: 17849, Stop: 18148, Start Num: 18

Candidate Starts for Nettuno\_20:

(Start: 18 @17849 has 28 MA's), (32, 17879), (40, 17909), (41, 17912), (46, 17930), (47, 17933), (49, 17939), (57, 17972), (84, 18101),

Gene: Norvs\_53 Start: 33317, Stop: 33619, Start Num: 29

Candidate Starts for Norvs\_53:

(Start: 29 @33317 has 20 MA's), (41, 33359), (62, 33446), (92, 33605),

Gene: Nubi\_41 Start: 35331, Stop: 35645, Start Num: 34

Candidate Starts for Nubi\_41:

(5, 35010), (Start: 34 @35331 has 14 MA's), (38, 35343), (53, 35400), (55, 35409), (60, 35436), (70, 35496), (84, 35577), (86, 35586),

Gene: NyleyClemson\_41 Start: 33097, Stop: 33441, Start Num: 15

Candidate Starts for NyleyClemson\_41:

(11, 33037), (Start: 15 @33097 has 6 MA's), (24, 33133), (32, 33160), (44, 33205), (53, 33235), (62, 33280), (71, 33337), (72, 33340), (84, 33394),

Gene: Odyssey395\_47 Start: 34766, Stop: 35110, Start Num: 15

Candidate Starts for Odyssey395\_47:

(11, 34706), (13, 34715), (14, 34742), (Start: 15 @34766 has 6 MA's), (24, 34802), (44, 34874), (53, 34904), (62, 34949), (71, 35006), (72, 35009), (84, 35063),

Gene: Ollypop\_41 Start: 34857, Stop: 35201, Start Num: 15

Candidate Starts for Ollypop\_41:

(Start: 15 @34857 has 6 MA's), (24, 34893), (32, 34920), (35, 34929), (53, 34995), (62, 35040), (78, 35115), (85, 35157),

Gene: OneUp\_46 Start: 30753, Stop: 31055, Start Num: 29

Candidate Starts for OneUp\_46:

(Start: 29 @30753 has 20 MA's), (43, 30804), (57, 30855), (86, 31005), (90, 31026), (92, 31041),

Gene: Opie\_23 Start: 20880, Stop: 21182, Start Num: 25

Candidate Starts for Opie\_23:

(Start: 25 @20880 has 13 MA's), (32, 20901), (40, 20931), (46, 20952), (67, 21027), (79, 21105),

Gene: Pepperoni\_21 Start: 18688, Stop: 18957, Start Num: 32

Candidate Starts for Pepperoni\_21:

(Start: 18 @18655 has 28 MA's), (32, 18688), (40, 18718), (41, 18721), (46, 18739), (47, 18742), (49, 18748), (57, 18781), (84, 18910),

Gene: Periwinkle\_27 Start: 21035, Stop: 21334, Start Num: 26

Candidate Starts for Periwinkle\_27:

(Start: 26 @21035 has 24 MA's), (36, 21059), (45, 21095), (50, 21110), (62, 21167),

Gene: Phabuloso\_24 Start: 20322, Stop: 20621, Start Num: 26

Candidate Starts for Phabuloso\_24:

(Start: 26 @20322 has 24 MA's), (36, 20346), (45, 20382), (50, 20397), (62, 20454),

Gene: PhinkBoden\_52 Start: 33698, Stop: 34000, Start Num: 29  
Candidate Starts for PhinkBoden\_52:  
(Start: 29 @33698 has 20 MA's), (41, 33740), (62, 33827), (92, 33986),

Gene: Phistory\_26 Start: 21356, Stop: 21655, Start Num: 26  
Candidate Starts for Phistory\_26:  
(Start: 26 @21356 has 24 MA's), (36, 21380), (45, 21416), (50, 21431), (62, 21488),

Gene: Phlop\_40 Start: 35412, Stop: 35726, Start Num: 34  
Candidate Starts for Phlop\_40:  
(5, 35091), (Start: 34 @35412 has 14 MA's), (38, 35424), (53, 35481), (55, 35490), (60, 35517), (70, 35577), (84, 35658), (86, 35667),

Gene: Pickett\_20 Start: 17776, Stop: 18072, Start Num: 18  
Candidate Starts for Pickett\_20:  
(Start: 18 @17776 has 28 MA's), (32, 17803), (40, 17833), (41, 17836), (46, 17854), (47, 17857), (49, 17863), (57, 17896), (84, 18025),

Gene: PinkCoffee\_43 Start: 35515, Stop: 35829, Start Num: 34  
Candidate Starts for PinkCoffee\_43:  
(5, 35194), (Start: 34 @35515 has 14 MA's), (38, 35527), (53, 35584), (55, 35593), (60, 35620), (70, 35680), (84, 35761), (86, 35770),

Gene: Pointis\_44 Start: 34764, Stop: 35108, Start Num: 15  
Candidate Starts for Pointis\_44:  
(11, 34704), (14, 34740), (Start: 15 @34764 has 6 MA's), (24, 34800), (44, 34872), (53, 34902), (62, 34947), (71, 35004), (72, 35007), (84, 35061),

Gene: Pollux\_24 Start: 21040, Stop: 21339, Start Num: 18  
Candidate Starts for Pollux\_24:  
(Start: 18 @21040 has 28 MA's), (22, 21049), (32, 21070), (40, 21100), (46, 21121), (47, 21124), (49, 21130), (57, 21163),

Gene: Portcullis\_42 Start: 34816, Stop: 35115, Start Num: 18  
Candidate Starts for Portcullis\_42:  
(Start: 18 @34816 has 28 MA's), (20, 34822), (32, 34846), (40, 34876), (41, 34879), (46, 34897), (47, 34900), (49, 34906), (79, 35038),

Gene: PrincePatrick\_22 Start: 20686, Stop: 20982, Start Num: 29  
Candidate Starts for PrincePatrick\_22:  
(1, 20197), (Start: 29 @20686 has 20 MA's), (41, 20728), (51, 20761), (54, 20773), (57, 20788), (83, 20938),

Gene: PullumCavea\_40 Start: 35412, Stop: 35726, Start Num: 34  
Candidate Starts for PullumCavea\_40:  
(5, 35091), (Start: 34 @35412 has 14 MA's), (38, 35424), (53, 35481), (55, 35490), (60, 35517), (70, 35577), (84, 35658), (86, 35667),

Gene: Pureglobe5\_46 Start: 34947, Stop: 35291, Start Num: 15  
Candidate Starts for Pureglobe5\_46:  
(11, 34887), (14, 34923), (Start: 15 @34947 has 6 MA's), (24, 34983), (44, 35055), (53, 35085), (62, 35130), (71, 35187), (72, 35190), (84, 35244),

Gene: REQ2\_24 Start: 22071, Stop: 22325, Start Num: 40

Candidate Starts for REQ2\_24:

(Start: 27 @22029 has 9 MA's), (Start: 29 @22032 has 20 MA's), (40, 22071), (43, 22083), (45, 22089), (62, 22161), (74, 22233), (87, 22305), (88, 22308),

Gene: RayTheFireFly\_24 Start: 21613, Stop: 21927, Start Num: 23

Candidate Starts for RayTheFireFly\_24:

(Start: 23 @21613 has 2 MA's), (40, 21673), (41, 21676), (42, 21682), (46, 21694), (54, 21721), (57, 21736), (61, 21760), (62, 21763),

Gene: RazzB\_38 Start: 33228, Stop: 33572, Start Num: 15

Candidate Starts for RazzB\_38:

(11, 33168), (Start: 15 @33228 has 6 MA's), (24, 33264), (32, 33291), (44, 33336), (53, 33366), (62, 33411), (71, 33468), (72, 33471), (84, 33525),

Gene: Rem711\_38 Start: 30182, Stop: 30463, Start Num: 27

Candidate Starts for Rem711\_38:

(Start: 27 @30182 has 9 MA's), (41, 30224), (43, 30233), (46, 30242), (52, 30260), (57, 30284), (63, 30317),

Gene: Rizwana\_35 Start: 34988, Stop: 35311, Start Num: 17

Candidate Starts for Rizwana\_35:

(Start: 17 @34988 has 1 MA's), (21, 34997), (39, 35054), (56, 35120), (57, 35123), (66, 35162), (75, 35216), (77, 35222), (82, 35252),

Gene: RogerDodger\_44 Start: 35645, Stop: 35944, Start Num: 18

Candidate Starts for RogerDodger\_44:

(2, 35336), (Start: 18 @35645 has 28 MA's), (20, 35651), (32, 35675), (40, 35705), (41, 35708), (46, 35726), (47, 35729), (49, 35735), (79, 35867),

Gene: Salvador\_40 Start: 35314, Stop: 35613, Start Num: 18

Candidate Starts for Salvador\_40:

(Start: 18 @35314 has 28 MA's), (20, 35320), (32, 35344), (40, 35374), (41, 35377), (46, 35395), (47, 35398), (49, 35404), (79, 35536),

Gene: Savbucketdawg\_41 Start: 35095, Stop: 35394, Start Num: 18

Candidate Starts for Savbucketdawg\_41:

(Start: 18 @35095 has 28 MA's), (20, 35101), (32, 35125), (40, 35155), (41, 35158), (46, 35176), (47, 35179), (49, 35185), (79, 35317),

Gene: Schnabeltier\_23 Start: 20857, Stop: 21159, Start Num: 25

Candidate Starts for Schnabeltier\_23:

(Start: 25 @20857 has 13 MA's), (32, 20878), (40, 20908), (41, 20911), (46, 20929), (67, 21004), (79, 21082),

Gene: ShawBrad\_25 Start: 20578, Stop: 20877, Start Num: 26

Candidate Starts for ShawBrad\_25:

(Start: 26 @20578 has 24 MA's), (36, 20602), (45, 20638), (50, 20653), (62, 20710),

Gene: Shinji\_41 Start: 34768, Stop: 35082, Start Num: 34

Candidate Starts for Shinji\_41:

(5, 34447), (Start: 34 @34768 has 14 MA's), (38, 34780), (53, 34837), (55, 34846), (60, 34873), (68, 34909), (70, 34933), (84, 35014), (86, 35023),

Gene: SilentRX\_37 Start: 34506, Stop: 34829, Start Num: 16

Candidate Starts for SilentRX\_37:

(Start: 16 @34506 has 2 MA's), (28, 34551), (39, 34572), (46, 34599), (47, 34602), (50, 34611), (84, 34782), (86, 34791),

Gene: SmokingBunny\_41 Start: 35317, Stop: 35631, Start Num: 34

Candidate Starts for SmokingBunny\_41:

(5, 34996), (Start: 34 @35317 has 14 MA's), (38, 35329), (53, 35386), (55, 35395), (60, 35422), (70, 35482), (84, 35563), (86, 35572),

Gene: Smoothie\_54 Start: 33773, Stop: 34075, Start Num: 29

Candidate Starts for Smoothie\_54:

(Start: 29 @33773 has 20 MA's), (41, 33815), (62, 33902), (92, 34061),

Gene: Spooky\_25 Start: 20660, Stop: 20959, Start Num: 26

Candidate Starts for Spooky\_25:

(Start: 26 @20660 has 24 MA's), (36, 20684), (45, 20720), (50, 20735), (62, 20792),

Gene: Squiddly\_27 Start: 22072, Stop: 22371, Start Num: 26

Candidate Starts for Squiddly\_27:

(Start: 26 @22072 has 24 MA's), (36, 22096), (45, 22132), (50, 22147), (62, 22204),

Gene: TChen\_33 Start: 29547, Stop: 29840, Start Num: 31

Candidate Starts for TChen\_33:

(Start: 27 @29538 has 9 MA's), (Start: 31 @29547 has 1 MA's), (45, 29598), (62, 29670), (65, 29694), (68, 29700), (69, 29703), (78, 29754), (82, 29784),

Gene: Tank\_37 Start: 35024, Stop: 35344, Start Num: 19

Candidate Starts for Tank\_37:

(Start: 17 @35021 has 1 MA's), (Start: 19 @35024 has 2 MA's), (39, 35087), (47, 35117), (66, 35195), (75, 35249), (82, 35285), (84, 35297),

Gene: TaronosaurusRx\_23 Start: 20865, Stop: 21188, Start Num: 28

Candidate Starts for TaronosaurusRx\_23:

(28, 20865), (40, 20904), (41, 20907), (47, 20928), (73, 21081), (79, 21111),

Gene: ThetaBob\_33 Start: 28494, Stop: 28787, Start Num: 30

Candidate Starts for ThetaBob\_33:

(Start: 27 @28488 has 9 MA's), (Start: 30 @28494 has 2 MA's), (43, 28539), (46, 28548), (57, 28590),

Gene: TillyBobJoe\_41 Start: 35121, Stop: 35435, Start Num: 34

Candidate Starts for TillyBobJoe\_41:

(5, 34800), (Start: 34 @35121 has 14 MA's), (38, 35133), (53, 35190), (55, 35199), (60, 35226), (70, 35286), (84, 35367), (86, 35376),

Gene: TinyDot\_22 Start: 18288, Stop: 18587, Start Num: 27

Candidate Starts for TinyDot\_22:

(6, 18057), (12, 18192), (Start: 27 @18288 has 9 MA's), (51, 18366), (53, 18375), (54, 18378), (56, 18390), (62, 18420), (80, 18519), (81, 18531), (83, 18543), (84, 18546), (86, 18555),

Gene: Togo\_40 Start: 35317, Stop: 35631, Start Num: 34

Candidate Starts for Togo\_40:

(5, 34996), (Start: 34 @35317 has 14 MA's), (38, 35329), (53, 35386), (55, 35395), (60, 35422), (70, 35482), (84, 35563), (86, 35572),

Gene: Toniann\_52 Start: 33260, Stop: 33562, Start Num: 29

Candidate Starts for Toniann\_52:

(Start: 29 @33260 has 20 MA's), (41, 33302), (62, 33389), (92, 33548),

Gene: Toron\_34 Start: 29381, Stop: 29683, Start Num: 27

Candidate Starts for Toron\_34:

(Start: 27 @29381 has 9 MA's), (Start: 31 @29390 has 1 MA's), (53, 29468), (62, 29513), (65, 29537), (68, 29543), (69, 29546), (74, 29585), (76, 29591), (78, 29597), (82, 29627),

Gene: Twister6\_43 Start: 35208, Stop: 35507, Start Num: 18

Candidate Starts for Twister6\_43:

(Start: 18 @35208 has 28 MA's), (20, 35214), (32, 35238), (40, 35268), (41, 35271), (46, 35289), (47, 35292), (49, 35298), (79, 35430),

Gene: Valary\_43 Start: 36250, Stop: 36549, Start Num: 18

Candidate Starts for Valary\_43:

(2, 35941), (Start: 18 @36250 has 28 MA's), (20, 36256), (32, 36280), (40, 36310), (41, 36313), (46, 36331), (47, 36334), (49, 36340), (79, 36472),

Gene: VanDeWege\_44 Start: 35542, Stop: 35841, Start Num: 18

Candidate Starts for VanDeWege\_44:

(2, 35233), (Start: 18 @35542 has 28 MA's), (20, 35548), (32, 35572), (40, 35602), (41, 35605), (46, 35623), (47, 35626), (49, 35632), (79, 35764),

Gene: Whack\_23 Start: 20889, Stop: 21209, Start Num: 29

Candidate Starts for Whack\_23:

(Start: 29 @20889 has 20 MA's), (42, 20937), (43, 20940), (50, 20961), (62, 21018), (64, 21036),

Gene: Whitney\_26 Start: 21477, Stop: 21776, Start Num: 26

Candidate Starts for Whitney\_26:

(Start: 26 @21477 has 24 MA's), (36, 21501), (45, 21537), (50, 21552), (62, 21609),

Gene: Wilde\_37 Start: 34866, Stop: 35186, Start Num: 19

Candidate Starts for Wilde\_37:

(Start: 17 @34863 has 1 MA's), (Start: 19 @34866 has 2 MA's), (39, 34929), (47, 34959), (66, 35037), (75, 35091), (82, 35127), (84, 35139),

Gene: William\_23 Start: 20433, Stop: 20729, Start Num: 29

Candidate Starts for William\_23:

(Start: 29 @20433 has 20 MA's), (41, 20475), (51, 20508), (54, 20520), (57, 20535), (83, 20685),

Gene: WilliamBoone\_52 Start: 32612, Stop: 32914, Start Num: 29

Candidate Starts for WilliamBoone\_52:

(Start: 29 @32612 has 20 MA's), (41, 32654), (56, 32711), (57, 32714), (62, 32741), (92, 32900),

Gene: Wizard\_40 Start: 35448, Stop: 35747, Start Num: 18

Candidate Starts for Wizard\_40:

(2, 35139), (Start: 18 @35448 has 28 MA's), (20, 35454), (32, 35478), (40, 35508), (41, 35511), (46, 35529), (47, 35532), (49, 35538), (79, 35670),

Gene: Yoshi\_40 Start: 28571, Stop: 28864, Start Num: 30

Candidate Starts for Yoshi\_40:

(Start: 27 @28565 has 9 MA's), (Start: 30 @28571 has 2 MA's), (46, 28625), (57, 28667), (69, 28727), (82, 28808),

Gene: YungMoney\_44 Start: 37760, Stop: 38074, Start Num: 34

Candidate Starts for YungMoney\_44:

(Start: 34 @37760 has 14 MA's), (38, 37772), (53, 37829), (55, 37838), (60, 37865), (70, 37925), (84, 38006), (86, 38015),

Gene: ZAYM\_24 Start: 21334, Stop: 21657, Start Num: 28

Candidate Starts for ZAYM\_24:

(28, 21334), (40, 21373), (41, 21376), (47, 21397), (79, 21580),

Gene: Zapner\_40 Start: 29645, Stop: 29944, Start Num: 27

Candidate Starts for Zapner\_40:

(Start: 27 @29645 has 9 MA's), (Start: 30 @29651 has 2 MA's), (43, 29696), (46, 29705), (57, 29747), (82, 29888),