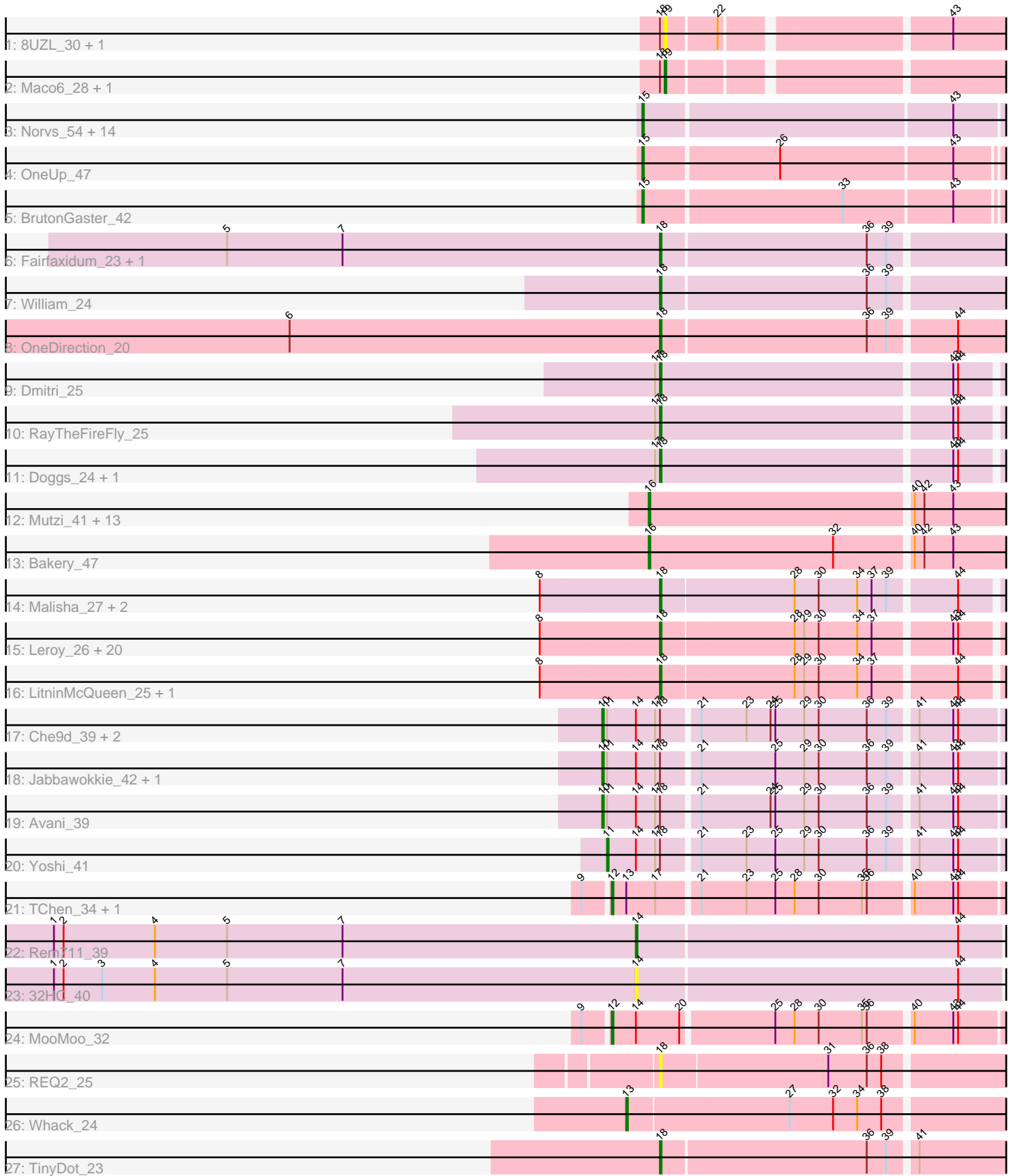


Pham 171382



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 171382 Report

This analysis was run 07/10/24 on database version 566.

Pham number 171382 has 85 members, 11 are drafts.

Phages represented in each track:

- Track 1 : 8UZL\_30, FF47\_30
- Track 2 : Maco6\_28, Muddy\_30
- Track 3 : Norvs\_54, Culver\_53, Dusty\_51, Smoothie\_55, ClubL\_53, WilliamBoone\_53, Cucurbita\_55, Engineer\_55, Miskis\_55, Lozinak\_54, Abscondus\_52, PhinkBoden\_53, Toniann\_53, Aphelion\_53, Bachita\_55
- Track 4 : OneUp\_47
- Track 5 : BrutonGaster\_42
- Track 6 : Fairfaxidum\_23, PrincePatrick\_23
- Track 7 : William\_24
- Track 8 : OneDirection\_20
- Track 9 : Dmitri\_25
- Track 10 : RayTheFireFly\_25
- Track 11 : Doggs\_24, Coriander\_25
- Track 12 : Mutzi\_41, Fireball\_43, Fugax\_45, PullumCavea\_41, YungMoney\_45, ClamChowder\_44, PinkCoffee\_44, Nubi\_42, TillyBobJoe\_42, Togo\_41, Shinji\_42, Phlop\_41, SmokingBunny\_42, Barb\_44
- Track 13 : Bakery\_47
- Track 14 : Malisha\_27, Spooky\_26, Squiddly\_28
- Track 15 : Leroy\_26, Apricot\_25, Budski\_26, Lutum\_26, MortyNRick\_25, Kuwabara\_25, Phabuloso\_25, Phistory\_27, Getalong\_27, BENtherdunthat\_26, Holliday\_26, CheeseTouch\_26, Kamaru\_26, Frickyeah\_25, Birdsong\_25, BearBQ\_25, Kenna\_25, Horus\_26, Asapag\_26, Crater\_24, Whitney\_27
- Track 16 : LitninMcQueen\_25, Periwinkle\_28
- Track 17 : Che9d\_39, ThetaBob\_34, Demsculpinboyz\_40
- Track 18 : Jabbawokkie\_42, Zapner\_41
- Track 19 : Avani\_39
- Track 20 : Yoshi\_41
- Track 21 : TChen\_34, LunaStella\_36
- Track 22 : Rem711\_39
- Track 23 : 32HC\_40
- Track 24 : MooMoo\_32
- Track 25 : REQ2\_25
- Track 26 : Whack\_24
- Track 27 : TinyDot\_23

## **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 32 of the 74 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Apricot\_25, Asapag\_26, BENtherdunthat\_26, BearBQ\_25, Birdsong\_25, Budski\_26, CheeseTouch\_26, Coriander\_25, Crater\_24, Dmitri\_25, Doggs\_24, Fairfaxidum\_23, Frickyeah\_25, Getalong\_27, Holliday\_26, Horus\_26, Kamaru\_26, Kenna\_25, Kuwabara\_25, Leroy\_26, LitninMcQueen\_25, Lutum\_26, Malisha\_27, MortyNRick\_25, OneDirection\_20, Periwinkle\_28, Phabuloso\_25, Phistory\_27, PrincePatrick\_23, REQ2\_25, RayTheFireFly\_25, Spooky\_26, Squiddly\_28, TinyDot\_23, Whitney\_27, William\_24,

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

- 8UZL\_30, Avani\_39, Che9d\_39, Demsculpinboyz\_40, FF47\_30, Jabbawokkie\_42, Maco6\_28, Muddy\_30, ThetaBob\_34, Yoshi\_41, Zapner\_41,

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

- 32HC\_40, Abscondus\_52, Aphelion\_53, Bachita\_55, Bakery\_47, Barb\_44, BrutonGaster\_42, ClamChowder\_44, ClubL\_53, Cucurbita\_55, Culver\_53, Dusty\_51, Engineer\_55, Fireball\_43, Fugax\_45, Lozinak\_54, LunaStella\_36, Miskis\_55, MooMoo\_32, Mutzi\_41, Norvs\_54, Nubi\_42, OneUp\_47, PhinkBoden\_53, Phlop\_41, PinkCoffee\_44, PullumCavea\_41, Rem711\_39, Shinji\_42, SmokingBunny\_42, Smoothie\_55, TChen\_34, TillyBobJoe\_42, Togo\_41, Toniann\_53, Whack\_24, WilliamBoone\_53, YungMoney\_45,

### **Summary by start number:**

Start 10:

- Found in 6 of 85 ( 7.1% ) of genes in pham
- Manual Annotations of this start: 6 of 74
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Avani\_39 (F2), Che9d\_39 (F2), Demsculpinboyz\_40 (F2), Jabbawokkie\_42 (F2), ThetaBob\_34 (F4), Zapner\_41 (F2),

Start 11:

- Found in 7 of 85 ( 8.2% ) of genes in pham
- Manual Annotations of this start: 1 of 74
- Called 14.3% of time when present
- Phage (with cluster) where this start called: Yoshi\_41 (F2),

Start 12:

- Found in 3 of 85 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 3 of 74
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LunaStella\_36 (F4), MooMoo\_32 (singleton), TChen\_34 (F4),

Start 13:

- Found in 3 of 85 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 1 of 74

- Called 33.3% of time when present
- Phage (with cluster) where this start called: Whack\_24 (singleton),

#### Start 14:

- Found in 10 of 85 ( 11.8% ) of genes in pham
- Manual Annotations of this start: 1 of 74
- Called 20.0% of time when present
- Phage (with cluster) where this start called: 32HC\_40 (Z), Rem711\_39 (Z),

#### Start 15:

- Found in 17 of 85 ( 20.0% ) of genes in pham
- Manual Annotations of this start: 14 of 74
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abscondus\_52 (CQ), Aphelion\_53 (CQ1), Bachita\_55 (CQ1), BrutonGaster\_42 (CQ2), ClubL\_53 (CQ1), Cucurbita\_55 (CQ1), Culver\_53 (CQ1), Dusty\_51 (CQ), Engineer\_55 (CQ1), Lozinak\_54 (CQ1), Miskis\_55 (CQ), Norvs\_54 (CQ), OneUp\_47 (CQ2), PhinkBoden\_53 (CQ1), Smoothie\_55 (CQ1), Toniann\_53 (CQ1), WilliamBoone\_53 (CQ1),

#### Start 16:

- Found in 15 of 85 ( 17.6% ) of genes in pham
- Manual Annotations of this start: 14 of 74
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bakery\_47 (DC1), Barb\_44 (DC1), ClamChowder\_44 (DC1), Fireball\_43 (DC1), Fugax\_45 (DC1), Mutzi\_41 (DC1), Nubi\_42 (DC1), Phlop\_41 (DC1), PinkCoffee\_44 (DC1), PullumCavea\_41 (DC1), Shinji\_42 (DC1), SmokingBunny\_42 (DC1), TillyBobJoe\_42 (DC1), Togo\_41 (DC1), YungMoney\_45 (DC1),

#### Start 18:

- Found in 47 of 85 ( 55.3% ) of genes in pham
- Manual Annotations of this start: 32 of 74
- Called 76.6% of time when present
- Phage (with cluster) where this start called: Apricot\_25 (DN3), Asapag\_26 (DN1), BENTherdunthat\_26 (DN1), BearBQ\_25 (DN), Birdsong\_25 (DN), Budski\_26 (DN), CheeseTouch\_26 (DN1), Coriander\_25 (DB), Crater\_24 (DN3), Dmitri\_25 (DB), Doggs\_24 (DB), Fairfaxidum\_23 (CV), Frickyeah\_25 (DN1), Getalong\_27 (DN1), Holliday\_26 (DN1), Horus\_26 (DN1), Kamaru\_26 (DN1), Kenna\_25 (DN1), Kuwabara\_25 (DN4), Leroy\_26 (DN1), LitninMcQueen\_25 (DN1), Lutum\_26 (DN1), Malisha\_27 (DN), MortyNRick\_25 (DN), OneDirection\_20 (CZ6), Periwinkle\_28 (DN1), Phabuloso\_25 (DN1), Phistory\_27 (DN1), PrincePatrick\_23 (CV), REQ2\_25 (singleton), RayTheFireFly\_25 (DB), Spooky\_26 (DN2), Squiddly\_28 (DN2), TinyDot\_23 (singleton), Whitney\_27 (DN1), William\_24 (CV),

#### Start 19:

- Found in 4 of 85 ( 4.7% ) of genes in pham
- Manual Annotations of this start: 2 of 74
- Called 100.0% of time when present
- Phage (with cluster) where this start called: 8UZL\_30 (AB), FF47\_30 (AB), Maco6\_28 (AB), Muddy\_30 (AB),

### Summary by clusters:

There are 17 clusters represented in this pham: DN, singleton, AB, F4, CZ6, DB, F2, CV, DN4, DN1, DN3, DN2, CQ2, CQ1, Z, CQ, DC1,

Info for manual annotations of cluster AB:

- Start number 19 was manually annotated 2 times for cluster AB.

Info for manual annotations of cluster CQ:

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

Info for manual annotations of cluster CQ1:

- Start number 15 was manually annotated 11 times for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 15 was manually annotated 2 times for cluster CQ2.

Info for manual annotations of cluster CV:

- Start number 18 was manually annotated 3 times for cluster CV.

Info for manual annotations of cluster CZ6:

- Start number 18 was manually annotated 1 time for cluster CZ6.

Info for manual annotations of cluster DB:

- Start number 18 was manually annotated 3 times for cluster DB.

Info for manual annotations of cluster DC1:

- Start number 16 was manually annotated 14 times for cluster DC1.

Info for manual annotations of cluster DN:

- Start number 18 was manually annotated 4 times for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 18 was manually annotated 15 times for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 18 was manually annotated 2 times for cluster DN2.

Info for manual annotations of cluster DN3:

- Start number 18 was manually annotated 2 times for cluster DN3.

Info for manual annotations of cluster DN4:

- Start number 18 was manually annotated 1 time for cluster DN4.

Info for manual annotations of cluster F2:

- Start number 10 was manually annotated 5 times for cluster F2.
- Start number 11 was manually annotated 1 time for cluster F2.

Info for manual annotations of cluster F4:

- Start number 10 was manually annotated 1 time for cluster F4.
- Start number 12 was manually annotated 2 times for cluster F4.

Info for manual annotations of cluster Z:

- Start number 14 was manually annotated 1 time for cluster Z.

**Gene Information:**

Gene: 32HC\_40 Start: 30479, Stop: 30703, Start Num: 14

Candidate Starts for 32HC\_40:

(1, 30116), (2, 30122), (3, 30146), (4, 30179), (5, 30224), (7, 30296), (Start: 14 @30479 has 1 MA's), (44, 30677),

Gene: 8UZL\_30 Start: 24582, Stop: 24782, Start Num: 19

Candidate Starts for 8UZL\_30:

(Start: 18 @24579 has 32 MA's), (Start: 19 @24582 has 2 MA's), (22, 24612), (43, 24741),

Gene: Abscondus\_52 Start: 33342, Stop: 33560, Start Num: 15

Candidate Starts for Abscondus\_52:

(Start: 15 @33342 has 14 MA's), (43, 33528),

Gene: Aphelion\_53 Start: 33611, Stop: 33829, Start Num: 15

Candidate Starts for Aphelion\_53:

(Start: 15 @33611 has 14 MA's), (43, 33797),

Gene: Apricot\_25 Start: 20422, Stop: 20625, Start Num: 18

Candidate Starts for Apricot\_25:

(8, 20350), (Start: 18 @20422 has 32 MA's), (28, 20503), (29, 20509), (30, 20518), (34, 20542), (37, 20551), (43, 20596), (44, 20599),

Gene: Asapag\_26 Start: 20864, Stop: 21067, Start Num: 18

Candidate Starts for Asapag\_26:

(8, 20792), (Start: 18 @20864 has 32 MA's), (28, 20945), (29, 20951), (30, 20960), (34, 20984), (37, 20993), (43, 21038), (44, 21041),

Gene: Avani\_39 Start: 28553, Stop: 28789, Start Num: 10

Candidate Starts for Avani\_39:

(Start: 10 @28553 has 6 MA's), (Start: 11 @28556 has 1 MA's), (Start: 14 @28574 has 1 MA's), (17, 28586), (Start: 18 @28589 has 32 MA's), (21, 28610), (24, 28652), (25, 28655), (29, 28673), (30, 28682), (36, 28712), (39, 28724), (41, 28739), (43, 28760), (44, 28763),

Gene: BENtherdunthat\_26 Start: 20861, Stop: 21064, Start Num: 18

Candidate Starts for BENtherdunthat\_26:

(8, 20789), (Start: 18 @20861 has 32 MA's), (28, 20942), (29, 20948), (30, 20957), (34, 20981), (37, 20990), (43, 21035), (44, 21038),

Gene: Bachita\_55 Start: 34044, Stop: 34262, Start Num: 15

Candidate Starts for Bachita\_55:

(Start: 15 @34044 has 14 MA's), (43, 34230),

Gene: Bakery\_47 Start: 36845, Stop: 37081, Start Num: 16

Candidate Starts for Bakery\_47:

(Start: 16 @36845 has 14 MA's), (32, 36959), (40, 37004), (42, 37010), (43, 37028),

Gene: Barb\_44 Start: 35817, Stop: 36053, Start Num: 16

Candidate Starts for Barb\_44:

(Start: 16 @35817 has 14 MA's), (40, 35976), (42, 35982), (43, 36000),

Gene: BearBQ\_25 Start: 21701, Stop: 21904, Start Num: 18

Candidate Starts for BearBQ\_25:

(8, 21629), (Start: 18 @21701 has 32 MA's), (28, 21782), (29, 21788), (30, 21797), (34, 21821), (37, 21830), (43, 21875), (44, 21878),

Gene: Birdsong\_25 Start: 20594, Stop: 20797, Start Num: 18

Candidate Starts for Birdsong\_25:

(8, 20522), (Start: 18 @20594 has 32 MA's), (28, 20675), (29, 20681), (30, 20690), (34, 20714), (37, 20723), (43, 20768), (44, 20771),

Gene: BrutonGaster\_42 Start: 30728, Stop: 30943, Start Num: 15

Candidate Starts for BrutonGaster\_42:

(Start: 15 @30728 has 14 MA's), (33, 30848), (43, 30914),

Gene: Budski\_26 Start: 20969, Stop: 21172, Start Num: 18

Candidate Starts for Budski\_26:

(8, 20897), (Start: 18 @20969 has 32 MA's), (28, 21050), (29, 21056), (30, 21065), (34, 21089), (37, 21098), (43, 21143), (44, 21146),

Gene: Che9d\_39 Start: 28562, Stop: 28798, Start Num: 10

Candidate Starts for Che9d\_39:

(Start: 10 @28562 has 6 MA's), (Start: 11 @28565 has 1 MA's), (Start: 14 @28583 has 1 MA's), (17, 28595), (Start: 18 @28598 has 32 MA's), (21, 28619), (23, 28646), (24, 28661), (25, 28664), (29, 28682), (30, 28691), (36, 28721), (39, 28733), (41, 28748), (43, 28769), (44, 28772),

Gene: CheeseTouch\_26 Start: 20855, Stop: 21058, Start Num: 18

Candidate Starts for CheeseTouch\_26:

(8, 20783), (Start: 18 @20855 has 32 MA's), (28, 20936), (29, 20942), (30, 20951), (34, 20975), (37, 20984), (43, 21029), (44, 21032),

Gene: ClamChowder\_44 Start: 35817, Stop: 36053, Start Num: 16

Candidate Starts for ClamChowder\_44:

(Start: 16 @35817 has 14 MA's), (40, 35976), (42, 35982), (43, 36000),

Gene: ClubL\_53 Start: 33533, Stop: 33751, Start Num: 15

Candidate Starts for ClubL\_53:

(Start: 15 @33533 has 14 MA's), (43, 33719),

Gene: Coriander\_25 Start: 21895, Stop: 22101, Start Num: 18

Candidate Starts for Coriander\_25:

(17, 21892), (Start: 18 @21895 has 32 MA's), (43, 22072), (44, 22075),

Gene: Crater\_24 Start: 20422, Stop: 20625, Start Num: 18

Candidate Starts for Crater\_24:

(8, 20350), (Start: 18 @20422 has 32 MA's), (28, 20503), (29, 20509), (30, 20518), (34, 20542), (37, 20551), (43, 20596), (44, 20599),

Gene: Cucurbita\_55 Start: 34903, Stop: 35121, Start Num: 15

Candidate Starts for Cucurbita\_55:

(Start: 15 @34903 has 14 MA's), (43, 35089),

Gene: Culver\_53 Start: 33342, Stop: 33560, Start Num: 15

Candidate Starts for Culver\_53:  
(Start: 15 @33342 has 14 MA's), (43, 33528),

Gene: Demsculpinboyz\_40 Start: 28495, Stop: 28731, Start Num: 10  
Candidate Starts for Demsculpinboyz\_40:  
(Start: 10 @28495 has 6 MA's), (Start: 11 @28498 has 1 MA's), (Start: 14 @28516 has 1 MA's), (17, 28528), (Start: 18 @28531 has 32 MA's), (21, 28552), (23, 28579), (24, 28594), (25, 28597), (29, 28615), (30, 28624), (36, 28654), (39, 28666), (41, 28681), (43, 28702), (44, 28705),

Gene: Dmitri\_25 Start: 21950, Stop: 22156, Start Num: 18  
Candidate Starts for Dmitri\_25:  
(17, 21947), (Start: 18 @21950 has 32 MA's), (43, 22127), (44, 22130),

Gene: Doggs\_24 Start: 21594, Stop: 21800, Start Num: 18  
Candidate Starts for Doggs\_24:  
(17, 21591), (Start: 18 @21594 has 32 MA's), (43, 21771), (44, 21774),

Gene: Dusty\_51 Start: 33342, Stop: 33560, Start Num: 15  
Candidate Starts for Dusty\_51:  
(Start: 15 @33342 has 14 MA's), (43, 33528),

Gene: Engineer\_55 Start: 34017, Stop: 34235, Start Num: 15  
Candidate Starts for Engineer\_55:  
(Start: 15 @34017 has 14 MA's), (43, 34203),

Gene: FF47\_30 Start: 24509, Stop: 24709, Start Num: 19  
Candidate Starts for FF47\_30:  
(Start: 18 @24506 has 32 MA's), (Start: 19 @24509 has 2 MA's), (22, 24539), (43, 24668),

Gene: Fairfaxidum\_23 Start: 20983, Stop: 21189, Start Num: 18  
Candidate Starts for Fairfaxidum\_23:  
(5, 20713), (7, 20785), (Start: 18 @20983 has 32 MA's), (36, 21109), (39, 21121),

Gene: Fireball\_43 Start: 35762, Stop: 35998, Start Num: 16  
Candidate Starts for Fireball\_43:  
(Start: 16 @35762 has 14 MA's), (40, 35921), (42, 35927), (43, 35945),

Gene: Frickyeah\_25 Start: 20627, Stop: 20830, Start Num: 18  
Candidate Starts for Frickyeah\_25:  
(8, 20555), (Start: 18 @20627 has 32 MA's), (28, 20708), (29, 20714), (30, 20723), (34, 20747), (37, 20756), (43, 20801), (44, 20804),

Gene: Fugax\_45 Start: 35809, Stop: 36045, Start Num: 16  
Candidate Starts for Fugax\_45:  
(Start: 16 @35809 has 14 MA's), (40, 35968), (42, 35974), (43, 35992),

Gene: Getalong\_27 Start: 21664, Stop: 21867, Start Num: 18  
Candidate Starts for Getalong\_27:  
(8, 21592), (Start: 18 @21664 has 32 MA's), (28, 21745), (29, 21751), (30, 21760), (34, 21784), (37, 21793), (43, 21838), (44, 21841),

Gene: Holliday\_26 Start: 20969, Stop: 21172, Start Num: 18  
Candidate Starts for Holliday\_26:



(8, 20897), (Start: 18 @20969 has 32 MA's), (28, 21050), (29, 21056), (30, 21065), (34, 21089), (37, 21098), (43, 21143), (44, 21146),

Gene: Horus\_26 Start: 20886, Stop: 21089, Start Num: 18

Candidate Starts for Horus\_26:

(8, 20814), (Start: 18 @20886 has 32 MA's), (28, 20967), (29, 20973), (30, 20982), (34, 21006), (37, 21015), (43, 21060), (44, 21063),

Gene: Jabbawokkie\_42 Start: 29943, Stop: 30179, Start Num: 10

Candidate Starts for Jabbawokkie\_42:

(Start: 10 @29943 has 6 MA's), (Start: 11 @29946 has 1 MA's), (Start: 14 @29964 has 1 MA's), (17, 29976), (Start: 18 @29979 has 32 MA's), (21, 30000), (25, 30045), (29, 30063), (30, 30072), (36, 30102), (39, 30114), (41, 30129), (43, 30150), (44, 30153),

Gene: Kamaru\_26 Start: 20969, Stop: 21172, Start Num: 18

Candidate Starts for Kamaru\_26:

(8, 20897), (Start: 18 @20969 has 32 MA's), (28, 21050), (29, 21056), (30, 21065), (34, 21089), (37, 21098), (43, 21143), (44, 21146),

Gene: Kenna\_25 Start: 20862, Stop: 21065, Start Num: 18

Candidate Starts for Kenna\_25:

(8, 20790), (Start: 18 @20862 has 32 MA's), (28, 20943), (29, 20949), (30, 20958), (34, 20982), (37, 20991), (43, 21036), (44, 21039),

Gene: Kuwabara\_25 Start: 20288, Stop: 20491, Start Num: 18

Candidate Starts for Kuwabara\_25:

(8, 20216), (Start: 18 @20288 has 32 MA's), (28, 20369), (29, 20375), (30, 20384), (34, 20408), (37, 20417), (43, 20462), (44, 20465),

Gene: Leroy\_26 Start: 20887, Stop: 21090, Start Num: 18

Candidate Starts for Leroy\_26:

(8, 20815), (Start: 18 @20887 has 32 MA's), (28, 20968), (29, 20974), (30, 20983), (34, 21007), (37, 21016), (43, 21061), (44, 21064),

Gene: LitninMcQueen\_25 Start: 20618, Stop: 20821, Start Num: 18

Candidate Starts for LitninMcQueen\_25:

(8, 20546), (Start: 18 @20618 has 32 MA's), (28, 20699), (29, 20705), (30, 20714), (34, 20738), (37, 20747), (44, 20795),

Gene: Lozinak\_54 Start: 34072, Stop: 34290, Start Num: 15

Candidate Starts for Lozinak\_54:

(Start: 15 @34072 has 14 MA's), (43, 34258),

Gene: LunaStella\_36 Start: 29841, Stop: 30074, Start Num: 12

Candidate Starts for LunaStella\_36:

(9, 29826), (Start: 12 @29841 has 3 MA's), (Start: 13 @29850 has 1 MA's), (17, 29868), (21, 29892), (23, 29919), (25, 29937), (28, 29949), (30, 29964), (35, 29991), (36, 29994), (40, 30018), (43, 30042), (44, 30045),

Gene: Lutum\_26 Start: 20862, Stop: 21065, Start Num: 18

Candidate Starts for Lutum\_26:

(8, 20790), (Start: 18 @20862 has 32 MA's), (28, 20943), (29, 20949), (30, 20958), (34, 20982), (37, 20991), (43, 21036), (44, 21039),

Gene: Maco6\_28 Start: 23846, Stop: 24046, Start Num: 19  
Candidate Starts for Maco6\_28:  
(Start: 18 @23843 has 32 MA's), (Start: 19 @23846 has 2 MA's),

Gene: Malisha\_27 Start: 22747, Stop: 22950, Start Num: 18  
Candidate Starts for Malisha\_27:  
(8, 22675), (Start: 18 @22747 has 32 MA's), (28, 22828), (30, 22843), (34, 22867), (37, 22876), (39, 22885), (44, 22924),

Gene: Miskis\_55 Start: 33377, Stop: 33595, Start Num: 15  
Candidate Starts for Miskis\_55:  
(Start: 15 @33377 has 14 MA's), (43, 33563),

Gene: MooMoo\_32 Start: 28388, Stop: 28621, Start Num: 12  
Candidate Starts for MooMoo\_32:  
(9, 28373), (Start: 12 @28388 has 3 MA's), (Start: 14 @28403 has 1 MA's), (20, 28430), (25, 28484), (28, 28496), (30, 28511), (35, 28538), (36, 28541), (40, 28565), (43, 28589), (44, 28592),

Gene: MortyNRick\_25 Start: 20594, Stop: 20797, Start Num: 18  
Candidate Starts for MortyNRick\_25:  
(8, 20522), (Start: 18 @20594 has 32 MA's), (28, 20675), (29, 20681), (30, 20690), (34, 20714), (37, 20723), (43, 20768), (44, 20771),

Gene: Muddy\_30 Start: 24790, Stop: 24990, Start Num: 19  
Candidate Starts for Muddy\_30:  
(Start: 18 @24787 has 32 MA's), (Start: 19 @24790 has 2 MA's),

Gene: Mutzi\_41 Start: 36497, Stop: 36733, Start Num: 16  
Candidate Starts for Mutzi\_41:  
(Start: 16 @36497 has 14 MA's), (40, 36656), (42, 36662), (43, 36680),

Gene: Norvs\_54 Start: 33616, Stop: 33834, Start Num: 15  
Candidate Starts for Norvs\_54:  
(Start: 15 @33616 has 14 MA's), (43, 33802),

Gene: Nubi\_42 Start: 35642, Stop: 35878, Start Num: 16  
Candidate Starts for Nubi\_42:  
(Start: 16 @35642 has 14 MA's), (40, 35801), (42, 35807), (43, 35825),

Gene: OneDirection\_20 Start: 18105, Stop: 18311, Start Num: 18  
Candidate Starts for OneDirection\_20:  
(6, 17874), (Start: 18 @18105 has 32 MA's), (36, 18231), (39, 18243), (44, 18282),

Gene: OneUp\_47 Start: 31052, Stop: 31267, Start Num: 15  
Candidate Starts for OneUp\_47:  
(Start: 15 @31052 has 14 MA's), (26, 31133), (43, 31238),

Gene: Periwinkle\_28 Start: 21331, Stop: 21534, Start Num: 18  
Candidate Starts for Periwinkle\_28:  
(8, 21259), (Start: 18 @21331 has 32 MA's), (28, 21412), (29, 21418), (30, 21427), (34, 21451), (37, 21460), (44, 21508),

Gene: Phabuloso\_25 Start: 20618, Stop: 20821, Start Num: 18  
Candidate Starts for Phabuloso\_25:  
(8, 20546), (Start: 18 @20618 has 32 MA's), (28, 20699), (29, 20705), (30, 20714), (34, 20738), (37, 20747), (43, 20792), (44, 20795),

Gene: PhinkBoden\_53 Start: 33997, Stop: 34215, Start Num: 15  
Candidate Starts for PhinkBoden\_53:  
(Start: 15 @33997 has 14 MA's), (43, 34183),

Gene: Phistory\_27 Start: 21652, Stop: 21855, Start Num: 18  
Candidate Starts for Phistory\_27:  
(8, 21580), (Start: 18 @21652 has 32 MA's), (28, 21733), (29, 21739), (30, 21748), (34, 21772), (37, 21781), (43, 21826), (44, 21829),

Gene: Phlop\_41 Start: 35723, Stop: 35959, Start Num: 16  
Candidate Starts for Phlop\_41:  
(Start: 16 @35723 has 14 MA's), (40, 35882), (42, 35888), (43, 35906),

Gene: PinkCoffee\_44 Start: 35826, Stop: 36062, Start Num: 16  
Candidate Starts for PinkCoffee\_44:  
(Start: 16 @35826 has 14 MA's), (40, 35985), (42, 35991), (43, 36009),

Gene: PrincePatrick\_23 Start: 20979, Stop: 21185, Start Num: 18  
Candidate Starts for PrincePatrick\_23:  
(5, 20709), (7, 20781), (Start: 18 @20979 has 32 MA's), (36, 21105), (39, 21117),

Gene: PullumCavea\_41 Start: 35723, Stop: 35959, Start Num: 16  
Candidate Starts for PullumCavea\_41:  
(Start: 16 @35723 has 14 MA's), (40, 35882), (42, 35888), (43, 35906),

Gene: REQ2\_25 Start: 22322, Stop: 22531, Start Num: 18  
Candidate Starts for REQ2\_25:  
(Start: 18 @22322 has 32 MA's), (31, 22424), (36, 22448), (38, 22457),

Gene: RayTheFireFly\_25 Start: 21927, Stop: 22133, Start Num: 18  
Candidate Starts for RayTheFireFly\_25:  
(17, 21924), (Start: 18 @21927 has 32 MA's), (43, 22104), (44, 22107),

Gene: Rem711\_39 Start: 30460, Stop: 30684, Start Num: 14  
Candidate Starts for Rem711\_39:  
(1, 30097), (2, 30103), (4, 30160), (5, 30205), (7, 30277), (Start: 14 @30460 has 1 MA's), (44, 30658),

Gene: Shinji\_42 Start: 35079, Stop: 35315, Start Num: 16  
Candidate Starts for Shinji\_42:  
(Start: 16 @35079 has 14 MA's), (40, 35238), (42, 35244), (43, 35262),

Gene: SmokingBunny\_42 Start: 35628, Stop: 35864, Start Num: 16  
Candidate Starts for SmokingBunny\_42:  
(Start: 16 @35628 has 14 MA's), (40, 35787), (42, 35793), (43, 35811),

Gene: Smoothie\_55 Start: 34072, Stop: 34290, Start Num: 15  
Candidate Starts for Smoothie\_55:  
(Start: 15 @34072 has 14 MA's), (43, 34258),

Gene: Spooky\_26 Start: 20956, Stop: 21159, Start Num: 18

Candidate Starts for Spooky\_26:

(8, 20884), (Start: 18 @20956 has 32 MA's), (28, 21037), (30, 21052), (34, 21076), (37, 21085), (39, 21094), (44, 21133),

Gene: Squiddly\_28 Start: 22368, Stop: 22571, Start Num: 18

Candidate Starts for Squiddly\_28:

(8, 22296), (Start: 18 @22368 has 32 MA's), (28, 22449), (30, 22464), (34, 22488), (37, 22497), (39, 22506), (44, 22545),

Gene: TChen\_34 Start: 29842, Stop: 30075, Start Num: 12

Candidate Starts for TChen\_34:

(9, 29827), (Start: 12 @29842 has 3 MA's), (Start: 13 @29851 has 1 MA's), (17, 29869), (21, 29893), (23, 29920), (25, 29938), (28, 29950), (30, 29965), (35, 29992), (36, 29995), (40, 30019), (43, 30043), (44, 30046),

Gene: ThetaBob\_34 Start: 28787, Stop: 29023, Start Num: 10

Candidate Starts for ThetaBob\_34:

(Start: 10 @28787 has 6 MA's), (Start: 11 @28790 has 1 MA's), (Start: 14 @28808 has 1 MA's), (17, 28820), (Start: 18 @28823 has 32 MA's), (21, 28844), (23, 28871), (24, 28886), (25, 28889), (29, 28907), (30, 28916), (36, 28946), (39, 28958), (41, 28973), (43, 28994), (44, 28997),

Gene: TillyBobJoe\_42 Start: 35432, Stop: 35668, Start Num: 16

Candidate Starts for TillyBobJoe\_42:

(Start: 16 @35432 has 14 MA's), (40, 35591), (42, 35597), (43, 35615),

Gene: TinyDot\_23 Start: 18584, Stop: 18790, Start Num: 18

Candidate Starts for TinyDot\_23:

(Start: 18 @18584 has 32 MA's), (36, 18710), (39, 18722), (41, 18737),

Gene: Togo\_41 Start: 35628, Stop: 35864, Start Num: 16

Candidate Starts for Togo\_41:

(Start: 16 @35628 has 14 MA's), (40, 35787), (42, 35793), (43, 35811),

Gene: Toniann\_53 Start: 33559, Stop: 33777, Start Num: 15

Candidate Starts for Toniann\_53:

(Start: 15 @33559 has 14 MA's), (43, 33745),

Gene: Whack\_24 Start: 21206, Stop: 21436, Start Num: 13

Candidate Starts for Whack\_24:

(Start: 13 @21206 has 1 MA's), (27, 21305), (32, 21332), (34, 21347), (38, 21362),

Gene: Whitney\_27 Start: 21773, Stop: 21976, Start Num: 18

Candidate Starts for Whitney\_27:

(8, 21701), (Start: 18 @21773 has 32 MA's), (28, 21854), (29, 21860), (30, 21869), (34, 21893), (37, 21902), (43, 21947), (44, 21950),

Gene: William\_24 Start: 20726, Stop: 20932, Start Num: 18

Candidate Starts for William\_24:

(Start: 18 @20726 has 32 MA's), (36, 20852), (39, 20864),

Gene: WilliamBoone\_53 Start: 32911, Stop: 33129, Start Num: 15

Candidate Starts for WilliamBoone\_53:

(Start: 15 @32911 has 14 MA's), (43, 33097),

Gene: Yoshi\_41 Start: 28866, Stop: 29099, Start Num: 11

Candidate Starts for Yoshi\_41:

(Start: 11 @28866 has 1 MA's), (Start: 14 @28884 has 1 MA's), (17, 28896), (Start: 18 @28899 has 32 MA's), (21, 28920), (23, 28947), (25, 28965), (29, 28983), (30, 28992), (36, 29022), (39, 29034), (41, 29049), (43, 29070), (44, 29073),

Gene: YungMoney\_45 Start: 38071, Stop: 38307, Start Num: 16

Candidate Starts for YungMoney\_45:

(Start: 16 @38071 has 14 MA's), (40, 38230), (42, 38236), (43, 38254),

Gene: Zapner\_41 Start: 29944, Stop: 30180, Start Num: 10

Candidate Starts for Zapner\_41:

(Start: 10 @29944 has 6 MA's), (Start: 11 @29947 has 1 MA's), (Start: 14 @29965 has 1 MA's), (17, 29977), (Start: 18 @29980 has 32 MA's), (21, 30001), (25, 30046), (29, 30064), (30, 30073), (36, 30103), (39, 30115), (41, 30130), (43, 30151), (44, 30154),