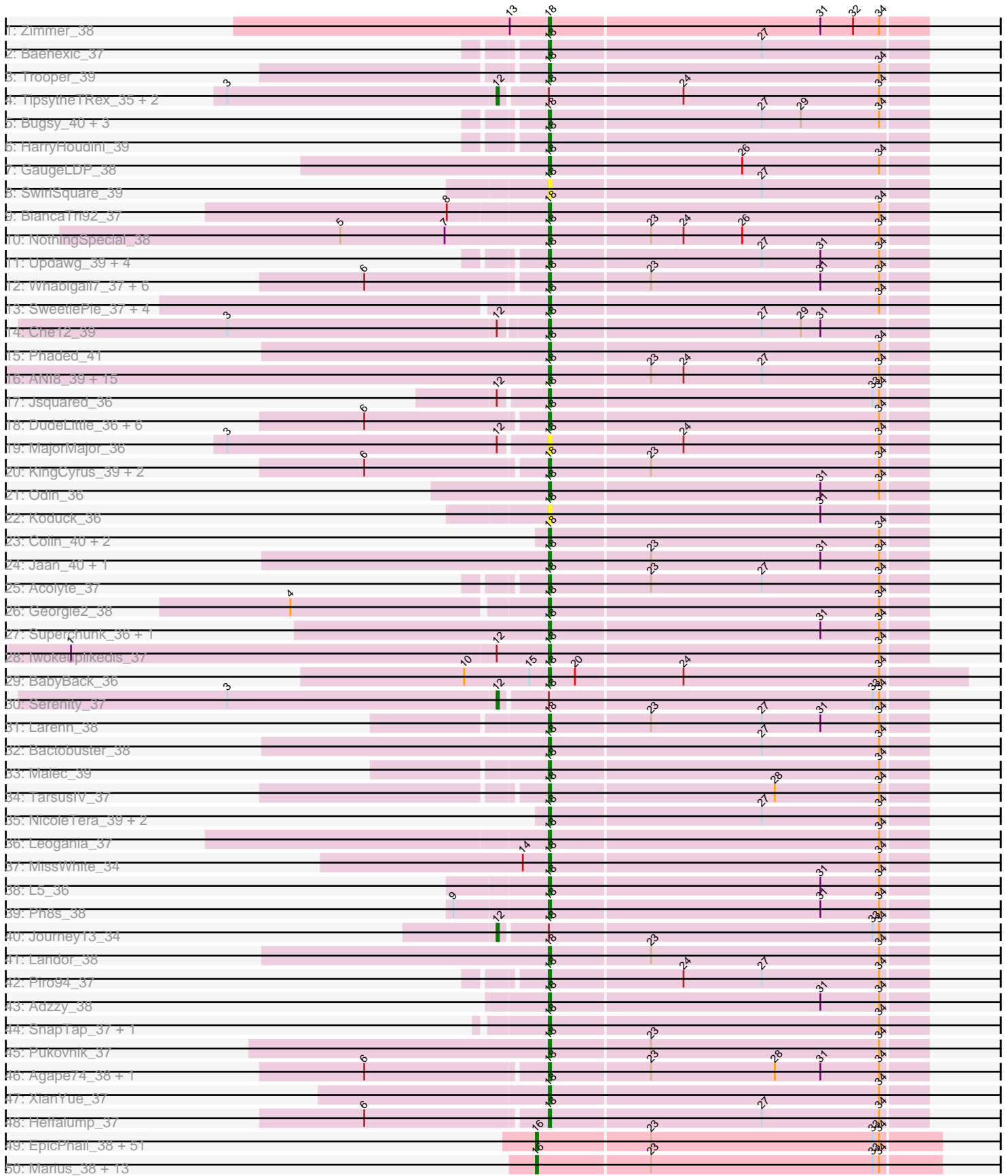
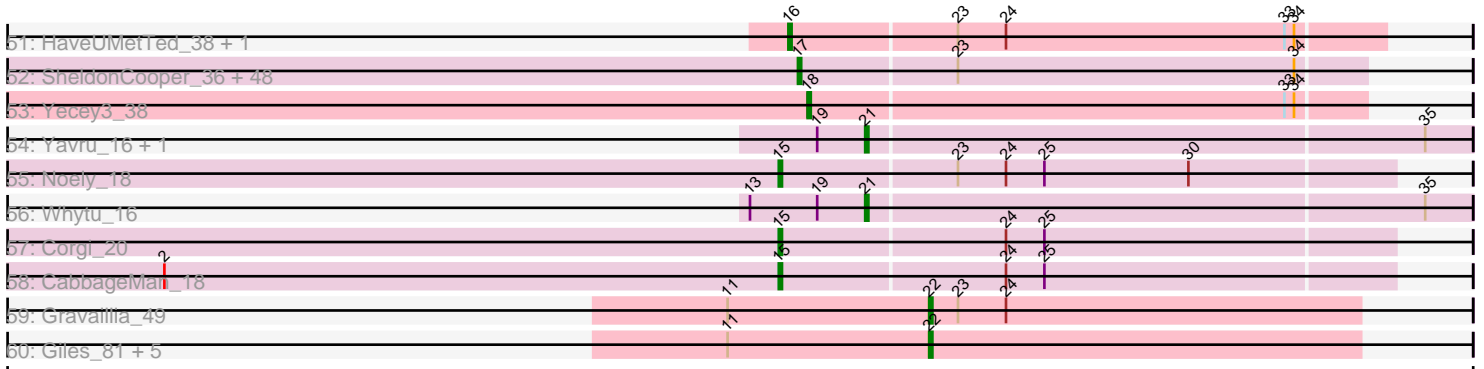


Pham 193717



Pham 193717



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 193717 Report

This analysis was run 11/02/24 on database version 579.

Pham number 193717 has 229 members, 18 are drafts.

Phages represented in each track:

- Track 1 : Zimmer\_38
- Track 2 : Baehexic\_37
- Track 3 : Trooper\_39
- Track 4 : TopsytheTRex\_35, Bradman\_36, Quokka\_35
- Track 5 : Buggy\_40, NaSiaTalie\_38, Flare16\_38, MiculUcigas\_38
- Track 6 : HarryHoudini\_39
- Track 7 : GaugeLDP\_38
- Track 8 : SwirlSquare\_39
- Track 9 : BiancaTri92\_37
- Track 10 : NothingSpecial\_38
- Track 11 : Updawg\_39, Equemioh13\_39, Centaur\_39, Drake55\_40, WideWale\_39
- Track 12 : Whabigail7\_37, AbbyPaige\_38, Jerm\_38, Dignity\_38, Leviathan\_38, LilTurb\_37, Smeagan\_39
- Track 13 : SweetiePie\_37, Crucio\_37, QueenBeesly\_37, FiringLine\_37, Power\_36
- Track 14 : Che12\_39
- Track 15 : Phaded\_41
- Track 16 : ANI8\_39, StarStuff\_39, Naji\_39, C3\_34, AN3\_36, DBQu4n\_39, Duplo\_39, VC3\_39, D29\_36, Tomathan\_39, AN9\_39, Kerberos\_39, D32\_39, Travvers\_39, VA6\_36, Pomar16\_39
- Track 17 : Jsquared\_36
- Track 18 : DudeLittle\_36, Anselm\_38, Fameo\_37, Retro23\_38, QueenB2\_37, Dalmatian\_38, JoshKayV\_38
- Track 19 : MajorMajor\_36
- Track 20 : KingCyrus\_39, ChipMunk\_39, EvilGenius\_39
- Track 21 : Odin\_36
- Track 22 : Koduck\_36
- Track 23 : Colin\_40, Kalpine\_37, Trixie\_37
- Track 24 : Jaan\_40, IronMan\_38
- Track 25 : Acolyte\_37
- Track 26 : Georgie2\_38
- Track 27 : Superchunk\_36, Caraxes\_37
- Track 28 : Iwokeuplikedis\_37
- Track 29 : BabyBack\_36
- Track 30 : Serenity\_37
- Track 31 : Larenn\_38
- Track 32 : Bactobuster\_38
- Track 33 : Malec\_39

- Track 34 : TarsusIV\_37
- Track 35 : NicoleTera\_39, Pharaoh\_35, WeiHuaDA\_42
- Track 36 : Leogania\_37
- Track 37 : MissWhite\_34
- Track 38 : L5\_36
- Track 39 : Ph8s\_38
- Track 40 : Journey13\_34
- Track 41 : Landor\_38
- Track 42 : Piro94\_37
- Track 43 : Adzzy\_38
- Track 44 : SnapTap\_37, SemperFi\_38
- Track 45 : Pukovnik\_37
- Track 46 : Agape74\_38, Turbido\_37
- Track 47 : XianYue\_37
- Track 48 : Heffalump\_37
- Track 49 : EpicPhail\_38, SoYo\_38, Snickers\_38, Vix\_38, Microwolf\_38, Taurus\_38, Dieselweasel\_38, Watson\_38, LBerry\_38, StepMih\_38, MadMarie\_38, PGHhamlin\_40, MuchMore\_40, PotatoSplit\_39, Malinsilva\_40, Farber\_38, Aglet\_38, Wooldri\_40, MarQuardt\_38, Tiffany\_38, Anubis\_40, Colbster\_38, DaHudson\_38, GingkoMaracino\_38, P28Green\_38, Fernando\_38, Grum1\_38, Phoebe\_38, Jobu08\_37, AugsMagnumOpus\_40, Zetzy\_37, JenCasNa\_38, Mainiac\_38, Grub\_38, Pembroke\_38, Ollie\_38, LugYA\_40, Cullens\_38, BreSam8\_38, JHC117\_38, SoilDragon\_37, GtownJaz\_38, MoneyMay\_38, Beauxregard13\_38, Grif\_38, Marie\_38, Sabinator\_37, Stagni\_38, Sabia\_38, Hercules11\_38, Lilith\_38, Penny1\_38
- Track 50 : Marius\_38, Kalb97\_38, Reba\_38, Manu\_38, Phranny\_38, ACFishhook\_37, Groupthink\_38, Heliosoles\_37, JeppNRM\_38, Gemma\_37, Pawn\_38, PhishRPhriends\_36, Kalnoky\_38, PurpleHaze\_37
- Track 51 : HaveUMetTed\_38, OlanP\_37
- Track 52 : SheldonCooper\_36, Rockstar\_35, LeoAvram\_35, TroyPia\_35, BabyRay\_35, BangNhom\_35, Heathen\_35, DropBear\_35, Puppy\_36, Abdiel\_34, TinaFeyge\_35, MK4\_35, ChampagnePapi\_36, Cerulean\_36, Polymorphads\_35, MA5\_35, Maxo\_35, BabyJohn\_34, Bugatti\_35, Commander\_35, Chiqui\_34, Fred313\_35, BellusTerra\_35, TNguyen7\_35, Eurydice\_35, Medusa\_35, Kamy\_35, Scout\_35, Pistachio\_36, JF4\_35, Phantastic\_35, JF2\_35, LHTSCC\_36, Nebs\_35, Giroux\_35, Morrow\_35, Eagle\_34, BlueBird\_36, HelDan\_35, Melvin\_36, Sparxx\_35, Isca\_35, SaturnRing\_35, Obama12\_36, Ohfah\_35, Marchesa\_35, Phelipe\_35, Idleandcovert\_35, B1\_33
- Track 53 : Yecey3\_38
- Track 54 : Yavru\_16, Piku\_16
- Track 55 : Noely\_18
- Track 56 : Whytu\_16
- Track 57 : Corgi\_20
- Track 58 : CabbageMan\_18
- Track 59 : Gravaiillia\_49
- Track 60 : Giles\_81, Luna22\_48, Wishmaker\_48, HH92\_49, Dewey\_48, Hail\_48

***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 87 of the 211 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AN3\_36, AN9\_39, AN18\_39, AbbyPaige\_38, Acolyte\_37, Adzzy\_38, Agape74\_38, Anselm\_38, BabyBack\_36, Bactobuster\_38, Baehexic\_37, BiancaTri92\_37, Buggy\_40, C3\_34, Caraxes\_37, Centaur\_39, Che12\_39, ChipMunk\_39, Colin\_40, Crucio\_37, D29\_36, D32\_39, DBQu4n\_39, Dalmatian\_38, Dignity\_38, Drake55\_40, DudeLittle\_36, Duplo\_39, Equemioh13\_39, EvilGenius\_39, Fameo\_37, FiringLine\_37, Flare16\_38, GaugeLDP\_38, Georgie2\_38, HarryHoudini\_39, Heffalump\_37, IronMan\_38, Iwokeuplikedis\_37, Jaan\_40, Jerm\_38, JoshKayV\_38, Jsquared\_36, Kalpine\_37, Kerberos\_39, KingCyrus\_39, Koduck\_36, L5\_36, Landor\_38, Larenn\_38, Leogania\_37, Leviathan\_38, LilTurb\_37, MajorMajor\_36, Malec\_39, MiculUcigas\_38, MissWhite\_34, NaSiaTalie\_38, Naji\_39, NicoleTera\_39, NothingSpecial\_38, Odin\_36, Ph8s\_38, Phaded\_41, Pharaoh\_35, Piro94\_37, Pomar16\_39, Power\_36, Pukovnik\_37, QueenB2\_37, QueenBeesly\_37, Retro23\_38, SemperFi\_38, Smeagan\_39, SnapTap\_37, StarStuff\_39, Superchunk\_36, SweetiePie\_37, SwirlSquare\_39, TarsusIV\_37, Tomathan\_39, Travvers\_39, Trixie\_37, Trooper\_39, Turbido\_37, Updawg\_39, VA6\_36, VC3\_39, WeiHuaDA\_42, Whabigail7\_37, WideWale\_39, XianYue\_37, Yecey3\_38, Zimmer\_38,

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

- Bradman\_36, Journey13\_34, Quokka\_35, Serenity\_37, TipsytheTRex\_35,

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

- ACFishhook\_37, Abdiel\_34, Aglet\_38, Anubis\_40, AugsMagnumOpus\_40, B1\_33, BabyJohn\_34, BabyRay\_35, BangNhom\_35, Beauxregard13\_38, BellusTerra\_35, BlueBird\_36, BreSam8\_38, Bugatti\_35, CabbageMan\_18, Cerulean\_36, ChampagnePapi\_36, Chiqui\_34, Colbster\_38, Commander\_35, Corgi\_20, Cullens\_38, DaHudson\_38, Dewey\_48, Dieselweasel\_38, DropBear\_35, Eagle\_34, EpicPhail\_38, Eurydice\_35, Farber\_38, Fernando\_38, Fred313\_35, Gemma\_37, Giles\_81, GingkoMaracino\_38, Giroux\_35, Gravaillia\_49, Grif\_38, Groupthink\_38, Grub\_38, Grum1\_38, GtownJaz\_38, HH92\_49, Hail\_48, HaveUMetTed\_38, Heathen\_35, HelDan\_35, Heliosoles\_37, Hercules11\_38, Idleandcovert\_35, Isca\_35, JF2\_35, JF4\_35, JHC117\_38, JenCasNa\_38, JeppNRM\_38, Jobu08\_37, Kalb97\_38, Kalnok\_38, Kampy\_35, LBerry\_38, LHTSCC\_36, LeoAvram\_35, Lilith\_38, LugYA\_40, Luna22\_48, MA5\_35, MK4\_35, MadMarie\_38, Mainiac\_38, Malinsilva\_40, Manu\_38, MarQuardt\_38, Marchesa\_35, Marie\_38, Marius\_38, Maxo\_35, Medusa\_35, Melvin\_36, Microwolf\_38, MoneyMay\_38, Morrow\_35, MuchMore\_40, Nebs\_35, Noely\_18, Obama12\_36, Ohfah\_35, OlanP\_37, Ollie\_38, P28Green\_38, PGHhamlin\_40, Pawn\_38, Pembroke\_38, Penny1\_38, Phantastic\_35, Phelipe\_35, PhishRPhriends\_36, Phoebe\_38, Phranny\_38, Piku\_16, Pistachio\_36, Polymorphads\_35, PotatoSplit\_39, Puppy\_36, PurpleHaze\_37, Reba\_38, Rockstar\_35, Sabia\_38, Sabinator\_37, SaturnRing\_35, Scout\_35, SheldonCooper\_36, Snickers\_38, SoYo\_38, SoilDragon\_37, Sparxx\_35, Stagni\_38, StepMih\_38, TNguyen7\_35, Taurus\_38, Tiffany\_38, TinaFeyge\_35, TroyPia\_35, Vix\_38, Watson\_38, Whytu\_16, Wishmaker\_48, Wooldri\_40, Yavru\_16, Zetzy\_37,

### Summary by start number:

Start 12:

- Found in 9 of 229 ( 3.9% ) of genes in pham
- Manual Annotations of this start: 3 of 211
- Called 55.6% of time when present

- Phage (with cluster) where this start called: Bradman\_36 (A2), Journey13\_34 (A2), Quokka\_35 (A2), Serenity\_37 (A2), TipsytheTRex\_35 (A2),

#### Start 15:

- Found in 4 of 229 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 3 of 211
- Called 75.0% of time when present
- Phage (with cluster) where this start called: CabbageMan\_18 (FE), Corgi\_20 (FE), Noely\_18 (FE),

#### Start 16:

- Found in 68 of 229 ( 29.7% ) of genes in pham
- Manual Annotations of this start: 66 of 211
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ACFishhook\_37 (A3), Aglet\_38 (A3), Anubis\_40 (A3), AugsMagnumOpus\_40 (A3), Beauxregard13\_38 (A3), BreSam8\_38 (A3), Colbster\_38 (A3), Cullens\_38 (A3), DaHudson\_38 (A3), Dieselweasel\_38 (A3), EpicPhail\_38 (A3), Farber\_38 (A3), Fernando\_38 (A3), Gemma\_37 (A3), GingkoMaracino\_38 (A3), Grif\_38 (A3), Groupthink\_38 (A3), Grub\_38 (A3), Grum1\_38 (A3), GtownJaz\_38 (A3), HaveUMetTed\_38 (A3), Heliosoles\_37 (A3), Hercules11\_38 (A3), JHC117\_38 (A3), JenCasNa\_38 (A3), JeppNRM\_38 (A3), Jobu08\_37 (A3), Kalb97\_38 (A3), Kalnoky\_38 (A3), LBerry\_38 (A3), Lilith\_38 (A3), LugYA\_40 (A3), MadMarie\_38 (A3), Mainiac\_38 (A3), Malinsilva\_40 (A3), Manu\_38 (A3), MarQuardt\_38 (A3), Marie\_38 (A3), Marius\_38 (A3), Microwolf\_38 (A3), MoneyMay\_38 (A3), MuchMore\_40 (A3), OlanP\_37 (A3), Ollie\_38 (A3), P28Green\_38 (A3), PGHhamlin\_40 (A3), Pawn\_38 (A3), Pembroke\_38 (A3), Penny1\_38 (A3), PhishRPhriends\_36 (A3), Phoebe\_38 (A3), Phranny\_38 (A3), PotatoSplit\_39 (A3), PurpleHaze\_37 (A3), Reba\_38 (A3), Sabia\_38 (A3), Sabinator\_37 (A3), Snickers\_38 (A3), SoYo\_38 (A3), SoilDragon\_37 (A3), Stagni\_38 (A3), StepMih\_38 (A3), Taurus\_38 (A3), Tiffany\_38 (A3), Vix\_38 (A3), Watson\_38 (A3), Wooldri\_40 (A3), Zetzy\_37 (A3),

#### Start 17:

- Found in 49 of 229 ( 21.4% ) of genes in pham
- Manual Annotations of this start: 42 of 211
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abdiel\_34 (A4), B1\_33 (A3), BabyJohn\_34 (A3), BabyRay\_35 (A3), BangNhom\_35 (A4), BellusTerra\_35 (A4), BlueBird\_36 (A3), Bugatti\_35 (A3), Cerulean\_36 (A4), ChampagnePapi\_36 (A4), Chiqui\_34 (A3), Commander\_35 (A4), DropBear\_35 (A3), Eagle\_34 (A4), Eurydice\_35 (A4), Fred313\_35 (A3), Giroux\_35 (A3), Heathen\_35 (A3), HelDan\_35 (A3), Idleandcovert\_35 (A3), Isca\_35 (A3), JF2\_35 (A3), JF4\_35 (A3), Kamy\_35 (A4), LHTSCC\_36 (A4), LeoAvram\_35 (A4), MA5\_35 (A3), MK4\_35 (A3), Marchesa\_35 (A3), Maxo\_35 (A4), Medusa\_35 (A4), Melvin\_36 (A4), Morrow\_35 (A4), Nebs\_35 (A4), Obama12\_36 (A4), Ohfah\_35 (A4), Phantastic\_35 (A3), Phelipe\_35 (A4), Pistachio\_36 (A3), Polymorphads\_35 (A4), Puppy\_36 (A3), Rockstar\_35 (A3), SaturnRing\_35 (A3), Scout\_35 (A3), SheldonCooper\_36 (A4), Sparxx\_35 (A4), TNguyen7\_35 (A3), TinaFeyge\_35 (A4), TroyPia\_35 (A4),

#### Start 18:

- Found in 99 of 229 ( 43.2% ) of genes in pham
- Manual Annotations of this start: 87 of 211
- Called 94.9% of time when present

- Phage (with cluster) where this start called: AN3\_36 (A2), AN9\_39 (A2), ANI8\_39 (A2), AbbyPaige\_38 (A2), Acolyte\_37 (A2), Adzzy\_38 (A2), Agape74\_38 (A2), Anselm\_38 (A2), BabyBack\_36 (A2), Bactobuster\_38 (A2), Baehexic\_37 (A2), BiancaTri92\_37 (A2), Buggy\_40 (A2), C3\_34 (A2), Caraxes\_37 (A2), Centaur\_39 (A2), Che12\_39 (A2), ChipMunk\_39 (A2), Colin\_40 (A2), Crucio\_37 (A2), D29\_36 (A2), D32\_39 (A2), DBQu4n\_39 (A2), Dalmatian\_38 (A2), Dignity\_38 (A2), Drake55\_40 (A2), DudeLittle\_36 (A2), Duplo\_39 (A2), Equemioh13\_39 (A2), EvilGenius\_39 (A2), Fameo\_37 (A2), FiringLine\_37 (A2), Flare16\_38 (A2), GaugeLDP\_38 (A2), Georgie2\_38 (A2), HarryHoudini\_39 (A2), Heffalump\_37 (A2), IronMan\_38 (A2), Iwokeuplikedis\_37 (A2), Jaan\_40 (A2), Jerm\_38 (A2), JoshKayV\_38 (A2), Jsquared\_36 (A2), Kalpine\_37 (A2), Kerberos\_39 (A2), KingCyrus\_39 (A2), Koduck\_36 (A2), L5\_36 (A2), Landor\_38 (A2), Larenn\_38 (A2), Leogania\_37 (A2), Leviathan\_38 (A2), LiITurb\_37 (A2), MajorMajor\_36 (A2), Malec\_39 (A2), MiculUcigas\_38 (A2), MissWhite\_34 (A2), NaSiaTalie\_38 (A2), Naji\_39 (A2), NicoleTera\_39 (A2), NothingSpecial\_38 (A2), Odin\_36 (A2), Ph8s\_38 (A2), Phaded\_41 (A2), Pharaoh\_35 (A12), Piro94\_37 (A2), Pomar16\_39 (A2), Power\_36 (A2), Pukovnik\_37 (A2), QueenB2\_37 (A2), QueenBeesly\_37 (A2), Retro23\_38 (A2), SemperFi\_38 (A2), Smeagan\_39 (A2), SnapTap\_37 (A2), StarStuff\_39 (A2), Superchunk\_36 (A2), SweetiePie\_37 (A2), SwirlSquare\_39 (A2), TarsusIV\_37 (A2), Tomathan\_39 (A2), Travvers\_39 (A2), Trixie\_37 (A2), Trooper\_39 (A2), Turbido\_37 (A2), Updawg\_39 (A2), VA6\_36 (A2), VC3\_39 (A2), WeiHuaDA\_42 (A2), Whabigail7\_37 (A2), WideWale\_39 (A2), XianYue\_37 (A2), Yecey3\_38 (A9), Zimmer\_38 (A12),

#### Start 21:

- Found in 3 of 229 ( 1.3% ) of genes in pham
- Manual Annotations of this start: 3 of 211
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Piku\_16 (FE), Whytu\_16 (FE), Yavru\_16 (FE),

#### Start 22:

- Found in 7 of 229 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 7 of 211
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dewey\_48 (Q), Giles\_81 (Q), Gravallia\_49 (Q), HH92\_49 (Q), Hail\_48 (Q), Luna22\_48 (Q), Wishmaker\_48 (Q),

### Summary by clusters:

There are 7 clusters represented in this pham: A12, Q, A3, A2, A4, A9, FE,

#### Info for manual annotations of cluster A12:

- Start number 18 was manually annotated 2 times for cluster A12.

#### Info for manual annotations of cluster A2:

- Start number 12 was manually annotated 3 times for cluster A2.
- Start number 18 was manually annotated 84 times for cluster A2.

#### Info for manual annotations of cluster A3:

- Start number 16 was manually annotated 66 times for cluster A3.
- Start number 17 was manually annotated 18 times for cluster A3.

Info for manual annotations of cluster A4:

- Start number 17 was manually annotated 24 times for cluster A4.

Info for manual annotations of cluster A9:

- Start number 18 was manually annotated 1 time for cluster A9.

Info for manual annotations of cluster FE:

- Start number 15 was manually annotated 3 times for cluster FE.
- Start number 21 was manually annotated 3 times for cluster FE.

Info for manual annotations of cluster Q:

- Start number 22 was manually annotated 7 times for cluster Q.

**Gene Information:**

Gene: ACFishhook\_37 Start: 27807, Stop: 27625, Start Num: 16

Candidate Starts for ACFishhook\_37:

(Start: 16 @27807 has 66 MA's), (23, 27756), (33, 27654), (34, 27651),

Gene: AN3\_36 Start: 27680, Stop: 27510, Start Num: 18

Candidate Starts for AN3\_36:

(Start: 18 @27680 has 87 MA's), (23, 27635), (24, 27620), (27, 27584), (34, 27530),

Gene: AN9\_39 Start: 27665, Stop: 27495, Start Num: 18

Candidate Starts for AN9\_39:

(Start: 18 @27665 has 87 MA's), (23, 27620), (24, 27605), (27, 27569), (34, 27515),

Gene: ANI8\_39 Start: 27665, Stop: 27495, Start Num: 18

Candidate Starts for ANI8\_39:

(Start: 18 @27665 has 87 MA's), (23, 27620), (24, 27605), (27, 27569), (34, 27515),

Gene: AbbyPaige\_38 Start: 28214, Stop: 28044, Start Num: 18

Candidate Starts for AbbyPaige\_38:

(6, 28295), (Start: 18 @28214 has 87 MA's), (23, 28169), (31, 28091), (34, 28064),

Gene: Abdiel\_34 Start: 27322, Stop: 27149, Start Num: 17

Candidate Starts for Abdiel\_34:

(Start: 17 @27322 has 42 MA's), (23, 27274), (34, 27169),

Gene: Acolyte\_37 Start: 28346, Stop: 28176, Start Num: 18

Candidate Starts for Acolyte\_37:

(Start: 18 @28346 has 87 MA's), (23, 28301), (27, 28250), (34, 28196),

Gene: Adzzy\_38 Start: 26529, Stop: 26359, Start Num: 18

Candidate Starts for Adzzy\_38:

(Start: 18 @26529 has 87 MA's), (31, 26406), (34, 26379),

Gene: Agape74\_38 Start: 28199, Stop: 28029, Start Num: 18

Candidate Starts for Agape74\_38:

(6, 28280), (Start: 18 @28199 has 87 MA's), (23, 28154), (28, 28097), (31, 28076), (34, 28049),



Gene: Aglet\_38 Start: 27905, Stop: 27723, Start Num: 16  
Candidate Starts for Aglet\_38:  
(Start: 16 @27905 has 66 MA's), (23, 27854), (33, 27752), (34, 27749),

Gene: Anselm\_38 Start: 28317, Stop: 28147, Start Num: 18  
Candidate Starts for Anselm\_38:  
(6, 28398), (Start: 18 @28317 has 87 MA's), (34, 28167),

Gene: Anubis\_40 Start: 27790, Stop: 27608, Start Num: 16  
Candidate Starts for Anubis\_40:  
(Start: 16 @27790 has 66 MA's), (23, 27739), (33, 27637), (34, 27634),

Gene: AugsMagnumOpus\_40 Start: 27896, Stop: 27714, Start Num: 16  
Candidate Starts for AugsMagnumOpus\_40:  
(Start: 16 @27896 has 66 MA's), (23, 27845), (33, 27743), (34, 27740),

Gene: B1\_33 Start: 26932, Stop: 26753, Start Num: 17  
Candidate Starts for B1\_33:  
(Start: 17 @26932 has 42 MA's), (23, 26884), (34, 26779),

Gene: BabyBack\_36 Start: 28565, Stop: 28377, Start Num: 18  
Candidate Starts for BabyBack\_36:  
(10, 28604), (Start: 15 @28574 has 3 MA's), (Start: 18 @28565 has 87 MA's), (20, 28553), (24, 28505), (34, 28415),

Gene: BabyJohn\_34 Start: 27705, Stop: 27526, Start Num: 17  
Candidate Starts for BabyJohn\_34:  
(Start: 17 @27705 has 42 MA's), (23, 27657), (34, 27552),

Gene: BabyRay\_35 Start: 27483, Stop: 27304, Start Num: 17  
Candidate Starts for BabyRay\_35:  
(Start: 17 @27483 has 42 MA's), (23, 27435), (34, 27330),

Gene: Bactobuster\_38 Start: 29229, Stop: 29059, Start Num: 18  
Candidate Starts for Bactobuster\_38:  
(Start: 18 @29229 has 87 MA's), (27, 29133), (34, 29079),

Gene: Baehexic\_37 Start: 28367, Stop: 28197, Start Num: 18  
Candidate Starts for Baehexic\_37:  
(Start: 18 @28367 has 87 MA's), (27, 28271),

Gene: BangNhom\_35 Start: 27659, Stop: 27486, Start Num: 17  
Candidate Starts for BangNhom\_35:  
(Start: 17 @27659 has 42 MA's), (23, 27611), (34, 27506),

Gene: Beauxregard13\_38 Start: 27904, Stop: 27722, Start Num: 16  
Candidate Starts for Beauxregard13\_38:  
(Start: 16 @27904 has 66 MA's), (23, 27853), (33, 27751), (34, 27748),

Gene: BellusTerra\_35 Start: 27322, Stop: 27149, Start Num: 17  
Candidate Starts for BellusTerra\_35:  
(Start: 17 @27322 has 42 MA's), (23, 27274), (34, 27169),

Gene: BiancaTri92\_37 Start: 28784, Stop: 28614, Start Num: 18

Candidate Starts for BiancaTri92\_37:

(8, 28829), (Start: 18 @28784 has 87 MA's), (34, 28634),

Gene: BlueBird\_36 Start: 27412, Stop: 27233, Start Num: 17

Candidate Starts for BlueBird\_36:

(Start: 17 @27412 has 42 MA's), (23, 27364), (34, 27259),

Gene: Bradman\_36 Start: 26740, Stop: 26549, Start Num: 12

Candidate Starts for Bradman\_36:

(3, 26863), (Start: 12 @26740 has 3 MA's), (Start: 18 @26719 has 87 MA's), (24, 26659), (34, 26569),

Gene: BreSam8\_38 Start: 27897, Stop: 27715, Start Num: 16

Candidate Starts for BreSam8\_38:

(Start: 16 @27897 has 66 MA's), (23, 27846), (33, 27744), (34, 27741),

Gene: Bugatti\_35 Start: 27412, Stop: 27233, Start Num: 17

Candidate Starts for Bugatti\_35:

(Start: 17 @27412 has 42 MA's), (23, 27364), (34, 27259),

Gene: Buggy\_40 Start: 28650, Stop: 28480, Start Num: 18

Candidate Starts for Buggy\_40:

(Start: 18 @28650 has 87 MA's), (27, 28554), (29, 28536), (34, 28500),

Gene: C3\_34 Start: 27665, Stop: 27495, Start Num: 18

Candidate Starts for C3\_34:

(Start: 18 @27665 has 87 MA's), (23, 27620), (24, 27605), (27, 27569), (34, 27515),

Gene: CabbageMan\_18 Start: 13371, Stop: 13559, Start Num: 15

Candidate Starts for CabbageMan\_18:

(2, 13179), (Start: 15 @13371 has 3 MA's), (24, 13440), (25, 13452),

Gene: Caraxes\_37 Start: 26412, Stop: 26242, Start Num: 18

Candidate Starts for Caraxes\_37:

(Start: 18 @26412 has 87 MA's), (31, 26289), (34, 26262),

Gene: Centaur\_39 Start: 28483, Stop: 28313, Start Num: 18

Candidate Starts for Centaur\_39:

(Start: 18 @28483 has 87 MA's), (27, 28387), (31, 28360), (34, 28333),

Gene: Cerulean\_36 Start: 27660, Stop: 27487, Start Num: 17

Candidate Starts for Cerulean\_36:

(Start: 17 @27660 has 42 MA's), (23, 27612), (34, 27507),

Gene: ChampagnePapi\_36 Start: 27659, Stop: 27486, Start Num: 17

Candidate Starts for ChampagnePapi\_36:

(Start: 17 @27659 has 42 MA's), (23, 27611), (34, 27506),

Gene: Che12\_39 Start: 26775, Stop: 26605, Start Num: 18

Candidate Starts for Che12\_39:

(3, 26919), (Start: 12 @26796 has 3 MA's), (Start: 18 @26775 has 87 MA's), (27, 26679), (29, 26661), (31, 26652),

Gene: ChipMunk\_39 Start: 29644, Stop: 29474, Start Num: 18  
Candidate Starts for ChipMunk\_39:  
(6, 29725), (Start: 18 @29644 has 87 MA's), (23, 29599), (34, 29494),

Gene: Chiqui\_34 Start: 27714, Stop: 27535, Start Num: 17  
Candidate Starts for Chiqui\_34:  
(Start: 17 @27714 has 42 MA's), (23, 27666), (34, 27561),

Gene: Colbster\_38 Start: 27904, Stop: 27722, Start Num: 16  
Candidate Starts for Colbster\_38:  
(Start: 16 @27904 has 66 MA's), (23, 27853), (33, 27751), (34, 27748),

Gene: Colin\_40 Start: 28947, Stop: 28777, Start Num: 18  
Candidate Starts for Colin\_40:  
(Start: 18 @28947 has 87 MA's), (34, 28797),

Gene: Commander\_35 Start: 27323, Stop: 27150, Start Num: 17  
Candidate Starts for Commander\_35:  
(Start: 17 @27323 has 42 MA's), (23, 27275), (34, 27170),

Gene: Corgi\_20 Start: 13530, Stop: 13718, Start Num: 15  
Candidate Starts for Corgi\_20:  
(Start: 15 @13530 has 3 MA's), (24, 13599), (25, 13611),

Gene: Crucio\_37 Start: 27910, Stop: 27740, Start Num: 18  
Candidate Starts for Crucio\_37:  
(Start: 18 @27910 has 87 MA's), (34, 27760),

Gene: Cullens\_38 Start: 27903, Stop: 27721, Start Num: 16  
Candidate Starts for Cullens\_38:  
(Start: 16 @27903 has 66 MA's), (23, 27852), (33, 27750), (34, 27747),

Gene: D29\_36 Start: 27596, Stop: 27426, Start Num: 18  
Candidate Starts for D29\_36:  
(Start: 18 @27596 has 87 MA's), (23, 27551), (24, 27536), (27, 27500), (34, 27446),

Gene: D32\_39 Start: 27596, Stop: 27426, Start Num: 18  
Candidate Starts for D32\_39:  
(Start: 18 @27596 has 87 MA's), (23, 27551), (24, 27536), (27, 27500), (34, 27446),

Gene: DBQu4n\_39 Start: 27596, Stop: 27426, Start Num: 18  
Candidate Starts for DBQu4n\_39:  
(Start: 18 @27596 has 87 MA's), (23, 27551), (24, 27536), (27, 27500), (34, 27446),

Gene: DaHudson\_38 Start: 27896, Stop: 27714, Start Num: 16  
Candidate Starts for DaHudson\_38:  
(Start: 16 @27896 has 66 MA's), (23, 27845), (33, 27743), (34, 27740),

Gene: Dalmatian\_38 Start: 28293, Stop: 28123, Start Num: 18  
Candidate Starts for Dalmatian\_38:  
(6, 28374), (Start: 18 @28293 has 87 MA's), (34, 28143),

Gene: Dewey\_48 Start: 37012, Stop: 37146, Start Num: 22

Candidate Starts for Dewey\_48:  
(11, 36949), (Start: 22 @37012 has 7 MA's),

Gene: Dieselweasel\_38 Start: 27906, Stop: 27724, Start Num: 16  
Candidate Starts for Dieselweasel\_38:  
(Start: 16 @27906 has 66 MA's), (23, 27855), (33, 27753), (34, 27750),

Gene: Dignity\_38 Start: 28279, Stop: 28109, Start Num: 18  
Candidate Starts for Dignity\_38:  
(6, 28360), (Start: 18 @28279 has 87 MA's), (23, 28234), (31, 28156), (34, 28129),

Gene: Drake55\_40 Start: 28546, Stop: 28376, Start Num: 18  
Candidate Starts for Drake55\_40:  
(Start: 18 @28546 has 87 MA's), (27, 28450), (31, 28423), (34, 28396),

Gene: DropBear\_35 Start: 27479, Stop: 27300, Start Num: 17  
Candidate Starts for DropBear\_35:  
(Start: 17 @27479 has 42 MA's), (23, 27431), (34, 27326),

Gene: DudeLittle\_36 Start: 27959, Stop: 27789, Start Num: 18  
Candidate Starts for DudeLittle\_36:  
(6, 28040), (Start: 18 @27959 has 87 MA's), (34, 27809),

Gene: Duplo\_39 Start: 27634, Stop: 27464, Start Num: 18  
Candidate Starts for Duplo\_39:  
(Start: 18 @27634 has 87 MA's), (23, 27589), (24, 27574), (27, 27538), (34, 27484),

Gene: Eagle\_34 Start: 27346, Stop: 27173, Start Num: 17  
Candidate Starts for Eagle\_34:  
(Start: 17 @27346 has 42 MA's), (23, 27298), (34, 27193),

Gene: EpicPhail\_38 Start: 27904, Stop: 27722, Start Num: 16  
Candidate Starts for EpicPhail\_38:  
(Start: 16 @27904 has 66 MA's), (23, 27853), (33, 27751), (34, 27748),

Gene: Equemioh13\_39 Start: 28486, Stop: 28316, Start Num: 18  
Candidate Starts for Equemioh13\_39:  
(Start: 18 @28486 has 87 MA's), (27, 28390), (31, 28363), (34, 28336),

Gene: Eurydice\_35 Start: 27321, Stop: 27148, Start Num: 17  
Candidate Starts for Eurydice\_35:  
(Start: 17 @27321 has 42 MA's), (23, 27273), (34, 27168),

Gene: EvilGenius\_39 Start: 29648, Stop: 29478, Start Num: 18  
Candidate Starts for EvilGenius\_39:  
(6, 29729), (Start: 18 @29648 has 87 MA's), (23, 29603), (34, 29498),

Gene: Fameo\_37 Start: 28087, Stop: 27917, Start Num: 18  
Candidate Starts for Fameo\_37:  
(6, 28168), (Start: 18 @28087 has 87 MA's), (34, 27937),

Gene: Farber\_38 Start: 27897, Stop: 27715, Start Num: 16  
Candidate Starts for Farber\_38:

(Start: 16 @27897 has 66 MA's), (23, 27846), (33, 27744), (34, 27741),

Gene: Fernando\_38 Start: 27903, Stop: 27721, Start Num: 16

Candidate Starts for Fernando\_38:

(Start: 16 @27903 has 66 MA's), (23, 27852), (33, 27750), (34, 27747),

Gene: FiringLine\_37 Start: 27891, Stop: 27721, Start Num: 18

Candidate Starts for FiringLine\_37:

(Start: 18 @27891 has 87 MA's), (34, 27741),

Gene: Flare16\_38 Start: 28158, Stop: 27988, Start Num: 18

Candidate Starts for Flare16\_38:

(Start: 18 @28158 has 87 MA's), (27, 28062), (29, 28044), (34, 28008),

Gene: Fred313\_35 Start: 27164, Stop: 26985, Start Num: 17

Candidate Starts for Fred313\_35:

(Start: 17 @27164 has 42 MA's), (23, 27116), (34, 27011),

Gene: GaugeLDP\_38 Start: 28708, Stop: 28538, Start Num: 18

Candidate Starts for GaugeLDP\_38:

(Start: 18 @28708 has 87 MA's), (26, 28621), (34, 28558),

Gene: Gemma\_37 Start: 27728, Stop: 27546, Start Num: 16

Candidate Starts for Gemma\_37:

(Start: 16 @27728 has 66 MA's), (23, 27677), (33, 27575), (34, 27572),

Gene: Georgie2\_38 Start: 27936, Stop: 27766, Start Num: 18

Candidate Starts for Georgie2\_38:

(4, 28050), (Start: 18 @27936 has 87 MA's), (34, 27786),

Gene: Giles\_81 Start: 37012, Stop: 37146, Start Num: 22

Candidate Starts for Giles\_81:

(11, 36949), (Start: 22 @37012 has 7 MA's),

Gene: GingkoMaracino\_38 Start: 27790, Stop: 27608, Start Num: 16

Candidate Starts for GingkoMaracino\_38:

(Start: 16 @27790 has 66 MA's), (23, 27739), (33, 27637), (34, 27634),

Gene: Giroux\_35 Start: 27411, Stop: 27232, Start Num: 17

Candidate Starts for Giroux\_35:

(Start: 17 @27411 has 42 MA's), (23, 27363), (34, 27258),

Gene: Gravaillia\_49 Start: 37008, Stop: 37142, Start Num: 22

Candidate Starts for Gravaillia\_49:

(11, 36945), (Start: 22 @37008 has 7 MA's), (23, 37017), (24, 37032),

Gene: Grif\_38 Start: 27978, Stop: 27796, Start Num: 16

Candidate Starts for Grif\_38:

(Start: 16 @27978 has 66 MA's), (23, 27927), (33, 27825), (34, 27822),

Gene: Groupthink\_38 Start: 27732, Stop: 27550, Start Num: 16

Candidate Starts for Groupthink\_38:

(Start: 16 @27732 has 66 MA's), (23, 27681), (33, 27579), (34, 27576),

Gene: Grub\_38 Start: 27896, Stop: 27714, Start Num: 16  
Candidate Starts for Grub\_38:  
(Start: 16 @27896 has 66 MA's), (23, 27845), (33, 27743), (34, 27740),

Gene: Grum1\_38 Start: 27903, Stop: 27721, Start Num: 16  
Candidate Starts for Grum1\_38:  
(Start: 16 @27903 has 66 MA's), (23, 27852), (33, 27750), (34, 27747),

Gene: GtownJaz\_38 Start: 27905, Stop: 27723, Start Num: 16  
Candidate Starts for GtownJaz\_38:  
(Start: 16 @27905 has 66 MA's), (23, 27854), (33, 27752), (34, 27749),

Gene: HH92\_49 Start: 37012, Stop: 37146, Start Num: 22  
Candidate Starts for HH92\_49:  
(11, 36949), (Start: 22 @37012 has 7 MA's),

Gene: Hail\_48 Start: 37012, Stop: 37146, Start Num: 22  
Candidate Starts for Hail\_48:  
(11, 36949), (Start: 22 @37012 has 7 MA's),

Gene: HarryHoudini\_39 Start: 28432, Stop: 28262, Start Num: 18  
Candidate Starts for HarryHoudini\_39:  
(Start: 18 @28432 has 87 MA's),

Gene: HaveUMetTed\_38 Start: 27725, Stop: 27543, Start Num: 16  
Candidate Starts for HaveUMetTed\_38:  
(Start: 16 @27725 has 66 MA's), (23, 27674), (24, 27659), (33, 27572), (34, 27569),

Gene: Heathen\_35 Start: 27220, Stop: 27041, Start Num: 17  
Candidate Starts for Heathen\_35:  
(Start: 17 @27220 has 42 MA's), (23, 27172), (34, 27067),

Gene: Heffalump\_37 Start: 28819, Stop: 28649, Start Num: 18  
Candidate Starts for Heffalump\_37:  
(6, 28900), (Start: 18 @28819 has 87 MA's), (27, 28723), (34, 28669),

Gene: HelDan\_35 Start: 27472, Stop: 27293, Start Num: 17  
Candidate Starts for HelDan\_35:  
(Start: 17 @27472 has 42 MA's), (23, 27424), (34, 27319),

Gene: Heliosoles\_37 Start: 27732, Stop: 27550, Start Num: 16  
Candidate Starts for Heliosoles\_37:  
(Start: 16 @27732 has 66 MA's), (23, 27681), (33, 27579), (34, 27576),

Gene: Hercules11\_38 Start: 27912, Stop: 27730, Start Num: 16  
Candidate Starts for Hercules11\_38:  
(Start: 16 @27912 has 66 MA's), (23, 27861), (33, 27759), (34, 27756),

Gene: Idleandcovert\_35 Start: 27412, Stop: 27233, Start Num: 17  
Candidate Starts for Idleandcovert\_35:  
(Start: 17 @27412 has 42 MA's), (23, 27364), (34, 27259),

Gene: IronMan\_38 Start: 29131, Stop: 28961, Start Num: 18  
Candidate Starts for IronMan\_38:  
(Start: 18 @29131 has 87 MA's), (23, 29086), (31, 29008), (34, 28981),

Gene: Isca\_35 Start: 27181, Stop: 27002, Start Num: 17  
Candidate Starts for Isca\_35:  
(Start: 17 @27181 has 42 MA's), (23, 27133), (34, 27028),

Gene: Iwokeuplikedis\_37 Start: 27530, Stop: 27360, Start Num: 18  
Candidate Starts for Iwokeuplikedis\_37:  
(1, 27749), (Start: 12 @27554 has 3 MA's), (Start: 18 @27530 has 87 MA's), (34, 27380),

Gene: JF2\_35 Start: 26932, Stop: 26753, Start Num: 17  
Candidate Starts for JF2\_35:  
(Start: 17 @26932 has 42 MA's), (23, 26884), (34, 26779),

Gene: JF4\_35 Start: 26932, Stop: 26753, Start Num: 17  
Candidate Starts for JF4\_35:  
(Start: 17 @26932 has 42 MA's), (23, 26884), (34, 26779),

Gene: JHC117\_38 Start: 27902, Stop: 27720, Start Num: 16  
Candidate Starts for JHC117\_38:  
(Start: 16 @27902 has 66 MA's), (23, 27851), (33, 27749), (34, 27746),

Gene: Jaan\_40 Start: 29710, Stop: 29540, Start Num: 18  
Candidate Starts for Jaan\_40:  
(Start: 18 @29710 has 87 MA's), (23, 29665), (31, 29587), (34, 29560),

Gene: JenCasNa\_38 Start: 27903, Stop: 27721, Start Num: 16  
Candidate Starts for JenCasNa\_38:  
(Start: 16 @27903 has 66 MA's), (23, 27852), (33, 27750), (34, 27747),

Gene: JeppNRM\_38 Start: 27730, Stop: 27548, Start Num: 16  
Candidate Starts for JeppNRM\_38:  
(Start: 16 @27730 has 66 MA's), (23, 27679), (33, 27577), (34, 27574),

Gene: Jerm\_38 Start: 28272, Stop: 28102, Start Num: 18  
Candidate Starts for Jerm\_38:  
(6, 28353), (Start: 18 @28272 has 87 MA's), (23, 28227), (31, 28149), (34, 28122),

Gene: Jobu08\_37 Start: 27733, Stop: 27551, Start Num: 16  
Candidate Starts for Jobu08\_37:  
(Start: 16 @27733 has 66 MA's), (23, 27682), (33, 27580), (34, 27577),

Gene: JoshKayV\_38 Start: 28235, Stop: 28065, Start Num: 18  
Candidate Starts for JoshKayV\_38:  
(6, 28316), (Start: 18 @28235 has 87 MA's), (34, 28085),

Gene: Journey13\_34 Start: 26962, Stop: 26771, Start Num: 12  
Candidate Starts for Journey13\_34:  
(Start: 12 @26962 has 3 MA's), (Start: 18 @26941 has 87 MA's), (33, 26794), (34, 26791),

Gene: Jsquared\_36 Start: 26790, Stop: 26620, Start Num: 18

Candidate Starts for Jsquared\_36:

(Start: 12 @26811 has 3 MA's), (Start: 18 @26790 has 87 MA's), (33, 26643), (34, 26640),

Gene: Kalb97\_38 Start: 27731, Stop: 27549, Start Num: 16

Candidate Starts for Kalb97\_38:

(Start: 16 @27731 has 66 MA's), (23, 27680), (33, 27578), (34, 27575),

Gene: Kalnoky\_38 Start: 27732, Stop: 27550, Start Num: 16

Candidate Starts for Kalnoky\_38:

(Start: 16 @27732 has 66 MA's), (23, 27681), (33, 27579), (34, 27576),

Gene: Kalpine\_37 Start: 28631, Stop: 28461, Start Num: 18

Candidate Starts for Kalpine\_37:

(Start: 18 @28631 has 87 MA's), (34, 28481),

Gene: Kamy\_35 Start: 27323, Stop: 27150, Start Num: 17

Candidate Starts for Kamy\_35:

(Start: 17 @27323 has 42 MA's), (23, 27275), (34, 27170),

Gene: Kerberos\_39 Start: 27596, Stop: 27426, Start Num: 18

Candidate Starts for Kerberos\_39:

(Start: 18 @27596 has 87 MA's), (23, 27551), (24, 27536), (27, 27500), (34, 27446),

Gene: KingCyrus\_39 Start: 29643, Stop: 29473, Start Num: 18

Candidate Starts for KingCyrus\_39:

(6, 29724), (Start: 18 @29643 has 87 MA's), (23, 29598), (34, 29493),

Gene: Koduck\_36 Start: 26767, Stop: 26597, Start Num: 18

Candidate Starts for Koduck\_36:

(Start: 18 @26767 has 87 MA's), (31, 26644),

Gene: L5\_36 Start: 26727, Stop: 26557, Start Num: 18

Candidate Starts for L5\_36:

(Start: 18 @26727 has 87 MA's), (31, 26604), (34, 26577),

Gene: LBerry\_38 Start: 27904, Stop: 27722, Start Num: 16

Candidate Starts for LBerry\_38:

(Start: 16 @27904 has 66 MA's), (23, 27853), (33, 27751), (34, 27748),

Gene: LHTSCC\_36 Start: 27659, Stop: 27486, Start Num: 17

Candidate Starts for LHTSCC\_36:

(Start: 17 @27659 has 42 MA's), (23, 27611), (34, 27506),

Gene: Landor\_38 Start: 29245, Stop: 29075, Start Num: 18

Candidate Starts for Landor\_38:

(Start: 18 @29245 has 87 MA's), (23, 29200), (34, 29095),

Gene: Larenn\_38 Start: 28329, Stop: 28159, Start Num: 18

Candidate Starts for Larenn\_38:

(Start: 18 @28329 has 87 MA's), (23, 28284), (27, 28233), (31, 28206), (34, 28179),

Gene: LeoAvram\_35 Start: 27321, Stop: 27148, Start Num: 17

Candidate Starts for LeoAvram\_35:



(Start: 17 @27321 has 42 MA's), (23, 27273), (34, 27168),

Gene: Leogania\_37 Start: 29148, Stop: 28978, Start Num: 18

Candidate Starts for Leogania\_37:

(Start: 18 @29148 has 87 MA's), (34, 28998),

Gene: Leviathan\_38 Start: 28328, Stop: 28158, Start Num: 18

Candidate Starts for Leviathan\_38:

(6, 28409), (Start: 18 @28328 has 87 MA's), (23, 28283), (31, 28205), (34, 28178),

Gene: LilTurb\_37 Start: 28161, Stop: 27991, Start Num: 18

Candidate Starts for LilTurb\_37:

(6, 28242), (Start: 18 @28161 has 87 MA's), (23, 28116), (31, 28038), (34, 28011),

Gene: Lilith\_38 Start: 27897, Stop: 27715, Start Num: 16

Candidate Starts for Lilith\_38:

(Start: 16 @27897 has 66 MA's), (23, 27846), (33, 27744), (34, 27741),

Gene: LugYA\_40 Start: 27904, Stop: 27722, Start Num: 16

Candidate Starts for LugYA\_40:

(Start: 16 @27904 has 66 MA's), (23, 27853), (33, 27751), (34, 27748),

Gene: Luna22\_48 Start: 36996, Stop: 37130, Start Num: 22

Candidate Starts for Luna22\_48:

(11, 36933), (Start: 22 @36996 has 7 MA's),

Gene: MA5\_35 Start: 27064, Stop: 26885, Start Num: 17

Candidate Starts for MA5\_35:

(Start: 17 @27064 has 42 MA's), (23, 27016), (34, 26911),

Gene: MK4\_35 Start: 27166, Stop: 26987, Start Num: 17

Candidate Starts for MK4\_35:

(Start: 17 @27166 has 42 MA's), (23, 27118), (34, 27013),

Gene: MadMarie\_38 Start: 27906, Stop: 27724, Start Num: 16

Candidate Starts for MadMarie\_38:

(Start: 16 @27906 has 66 MA's), (23, 27855), (33, 27753), (34, 27750),

Gene: Mainiac\_38 Start: 27897, Stop: 27715, Start Num: 16

Candidate Starts for Mainiac\_38:

(Start: 16 @27897 has 66 MA's), (23, 27846), (33, 27744), (34, 27741),

Gene: MajorMajor\_36 Start: 26719, Stop: 26549, Start Num: 18

Candidate Starts for MajorMajor\_36:

(3, 26863), (Start: 12 @26740 has 3 MA's), (Start: 18 @26719 has 87 MA's), (24, 26659), (34, 26569),

Gene: Malec\_39 Start: 28893, Stop: 28723, Start Num: 18

Candidate Starts for Malec\_39:

(Start: 18 @28893 has 87 MA's), (34, 28743),

Gene: Malinsilva\_40 Start: 27896, Stop: 27714, Start Num: 16

Candidate Starts for Malinsilva\_40:

(Start: 16 @27896 has 66 MA's), (23, 27845), (33, 27743), (34, 27740),

Gene: Manu\_38 Start: 27732, Stop: 27550, Start Num: 16  
Candidate Starts for Manu\_38:  
(Start: 16 @27732 has 66 MA's), (23, 27681), (33, 27579), (34, 27576),

Gene: MarQuardt\_38 Start: 27905, Stop: 27723, Start Num: 16  
Candidate Starts for MarQuardt\_38:  
(Start: 16 @27905 has 66 MA's), (23, 27854), (33, 27752), (34, 27749),

Gene: Marchesa\_35 Start: 27470, Stop: 27291, Start Num: 17  
Candidate Starts for Marchesa\_35:  
(Start: 17 @27470 has 42 MA's), (23, 27422), (34, 27317),

Gene: Marie\_38 Start: 27903, Stop: 27721, Start Num: 16  
Candidate Starts for Marie\_38:  
(Start: 16 @27903 has 66 MA's), (23, 27852), (33, 27750), (34, 27747),

Gene: Marius\_38 Start: 27732, Stop: 27550, Start Num: 16  
Candidate Starts for Marius\_38:  
(Start: 16 @27732 has 66 MA's), (23, 27681), (33, 27579), (34, 27576),

Gene: Maxo\_35 Start: 27323, Stop: 27150, Start Num: 17  
Candidate Starts for Maxo\_35:  
(Start: 17 @27323 has 42 MA's), (23, 27275), (34, 27170),

Gene: Medusa\_35 Start: 27323, Stop: 27150, Start Num: 17  
Candidate Starts for Medusa\_35:  
(Start: 17 @27323 has 42 MA's), (23, 27275), (34, 27170),

Gene: Melvin\_36 Start: 27322, Stop: 27149, Start Num: 17  
Candidate Starts for Melvin\_36:  
(Start: 17 @27322 has 42 MA's), (23, 27274), (34, 27169),

Gene: Microwolf\_38 Start: 27905, Stop: 27723, Start Num: 16  
Candidate Starts for Microwolf\_38:  
(Start: 16 @27905 has 66 MA's), (23, 27854), (33, 27752), (34, 27749),

Gene: MiculUcigas\_38 Start: 28157, Stop: 27987, Start Num: 18  
Candidate Starts for MiculUcigas\_38:  
(Start: 18 @28157 has 87 MA's), (27, 28061), (29, 28043), (34, 28007),

Gene: MissWhite\_34 Start: 26128, Stop: 25958, Start Num: 18  
Candidate Starts for MissWhite\_34:  
(14, 26140), (Start: 18 @26128 has 87 MA's), (34, 25978),

Gene: MoneyMay\_38 Start: 27903, Stop: 27721, Start Num: 16  
Candidate Starts for MoneyMay\_38:  
(Start: 16 @27903 has 66 MA's), (23, 27852), (33, 27750), (34, 27747),

Gene: Morrow\_35 Start: 27327, Stop: 27154, Start Num: 17  
Candidate Starts for Morrow\_35:  
(Start: 17 @27327 has 42 MA's), (23, 27279), (34, 27174),

Gene: MuchMore\_40 Start: 27896, Stop: 27714, Start Num: 16  
Candidate Starts for MuchMore\_40:  
(Start: 16 @27896 has 66 MA's), (23, 27845), (33, 27743), (34, 27740),

Gene: NaSiaTalie\_38 Start: 28155, Stop: 27985, Start Num: 18  
Candidate Starts for NaSiaTalie\_38:  
(Start: 18 @28155 has 87 MA's), (27, 28059), (29, 28041), (34, 28005),

Gene: Naji\_39 Start: 27596, Stop: 27426, Start Num: 18  
Candidate Starts for Naji\_39:  
(Start: 18 @27596 has 87 MA's), (23, 27551), (24, 27536), (27, 27500), (34, 27446),

Gene: Nebs\_35 Start: 27321, Stop: 27148, Start Num: 17  
Candidate Starts for Nebs\_35:  
(Start: 17 @27321 has 42 MA's), (23, 27273), (34, 27168),

Gene: NicoleTera\_39 Start: 28870, Stop: 28700, Start Num: 18  
Candidate Starts for NicoleTera\_39:  
(Start: 18 @28870 has 87 MA's), (27, 28774), (34, 28720),

Gene: Noely\_18 Start: 12900, Stop: 13088, Start Num: 15  
Candidate Starts for Noely\_18:  
(Start: 15 @12900 has 3 MA's), (23, 12954), (24, 12969), (25, 12981), (30, 13026),

Gene: NothingSpecial\_38 Start: 29153, Stop: 28983, Start Num: 18  
Candidate Starts for NothingSpecial\_38:  
(5, 29249), (7, 29201), (Start: 18 @29153 has 87 MA's), (23, 29108), (24, 29093), (26, 29066), (34, 29003),

Gene: Obama12\_36 Start: 27661, Stop: 27488, Start Num: 17  
Candidate Starts for Obama12\_36:  
(Start: 17 @27661 has 42 MA's), (23, 27613), (34, 27508),

Gene: Odin\_36 Start: 26579, Stop: 26409, Start Num: 18  
Candidate Starts for Odin\_36:  
(Start: 18 @26579 has 87 MA's), (31, 26456), (34, 26429),

Gene: Ohfah\_35 Start: 27321, Stop: 27148, Start Num: 17  
Candidate Starts for Ohfah\_35:  
(Start: 17 @27321 has 42 MA's), (23, 27273), (34, 27168),

Gene: OlanP\_37 Start: 27913, Stop: 27731, Start Num: 16  
Candidate Starts for OlanP\_37:  
(Start: 16 @27913 has 66 MA's), (23, 27862), (24, 27847), (33, 27760), (34, 27757),

Gene: Ollie\_38 Start: 27775, Stop: 27593, Start Num: 16  
Candidate Starts for Ollie\_38:  
(Start: 16 @27775 has 66 MA's), (23, 27724), (33, 27622), (34, 27619),

Gene: P28Green\_38 Start: 27906, Stop: 27724, Start Num: 16  
Candidate Starts for P28Green\_38:  
(Start: 16 @27906 has 66 MA's), (23, 27855), (33, 27753), (34, 27750),

Gene: PGHhamlin\_40 Start: 27896, Stop: 27714, Start Num: 16  
Candidate Starts for PGHhamlin\_40:  
(Start: 16 @27896 has 66 MA's), (23, 27845), (33, 27743), (34, 27740),

Gene: Pawn\_38 Start: 27733, Stop: 27551, Start Num: 16  
Candidate Starts for Pawn\_38:  
(Start: 16 @27733 has 66 MA's), (23, 27682), (33, 27580), (34, 27577),

Gene: Pembroke\_38 Start: 27905, Stop: 27723, Start Num: 16  
Candidate Starts for Pembroke\_38:  
(Start: 16 @27905 has 66 MA's), (23, 27854), (33, 27752), (34, 27749),

Gene: Penny1\_38 Start: 27904, Stop: 27722, Start Num: 16  
Candidate Starts for Penny1\_38:  
(Start: 16 @27904 has 66 MA's), (23, 27853), (33, 27751), (34, 27748),

Gene: Ph8s\_38 Start: 26829, Stop: 26659, Start Num: 18  
Candidate Starts for Ph8s\_38:  
(9, 26871), (Start: 18 @26829 has 87 MA's), (31, 26706), (34, 26679),

Gene: Phaded\_41 Start: 29586, Stop: 29416, Start Num: 18  
Candidate Starts for Phaded\_41:  
(Start: 18 @29586 has 87 MA's), (34, 29436),

Gene: Phantastic\_35 Start: 27197, Stop: 27018, Start Num: 17  
Candidate Starts for Phantastic\_35:  
(Start: 17 @27197 has 42 MA's), (23, 27149), (34, 27044),

Gene: Pharaoh\_35 Start: 28307, Stop: 28137, Start Num: 18  
Candidate Starts for Pharaoh\_35:  
(Start: 18 @28307 has 87 MA's), (27, 28211), (34, 28157),

Gene: Phelipe\_35 Start: 27324, Stop: 27151, Start Num: 17  
Candidate Starts for Phelipe\_35:  
(Start: 17 @27324 has 42 MA's), (23, 27276), (34, 27171),

Gene: PhishRPhriends\_36 Start: 26910, Stop: 26728, Start Num: 16  
Candidate Starts for PhishRPhriends\_36:  
(Start: 16 @26910 has 66 MA's), (23, 26859), (33, 26757), (34, 26754),

Gene: Phoebe\_38 Start: 27896, Stop: 27714, Start Num: 16  
Candidate Starts for Phoebe\_38:  
(Start: 16 @27896 has 66 MA's), (23, 27845), (33, 27743), (34, 27740),

Gene: Phranny\_38 Start: 27718, Stop: 27536, Start Num: 16  
Candidate Starts for Phranny\_38:  
(Start: 16 @27718 has 66 MA's), (23, 27667), (33, 27565), (34, 27562),

Gene: Piku\_16 Start: 12727, Stop: 12912, Start Num: 21  
Candidate Starts for Piku\_16:  
(19, 12712), (Start: 21 @12727 has 3 MA's), (35, 12898),

Gene: Piro94\_37 Start: 28335, Stop: 28165, Start Num: 18

Candidate Starts for Piro94\_37:  
(Start: 18 @28335 has 87 MA's), (24, 28275), (27, 28239), (34, 28185),

Gene: Pistachio\_36 Start: 26959, Stop: 26780, Start Num: 17  
Candidate Starts for Pistachio\_36:  
(Start: 17 @26959 has 42 MA's), (23, 26911), (34, 26806),

Gene: Polymorphads\_35 Start: 27320, Stop: 27147, Start Num: 17  
Candidate Starts for Polymorphads\_35:  
(Start: 17 @27320 has 42 MA's), (23, 27272), (34, 27167),

Gene: Pomar16\_39 Start: 27637, Stop: 27467, Start Num: 18  
Candidate Starts for Pomar16\_39:  
(Start: 18 @27637 has 87 MA's), (23, 27592), (24, 27577), (27, 27541), (34, 27487),

Gene: PotatoSplit\_39 Start: 27904, Stop: 27722, Start Num: 16  
Candidate Starts for PotatoSplit\_39:  
(Start: 16 @27904 has 66 MA's), (23, 27853), (33, 27751), (34, 27748),

Gene: Power\_36 Start: 27944, Stop: 27774, Start Num: 18  
Candidate Starts for Power\_36:  
(Start: 18 @27944 has 87 MA's), (34, 27794),

Gene: Pukovnik\_37 Start: 28796, Stop: 28626, Start Num: 18  
Candidate Starts for Pukovnik\_37:  
(Start: 18 @28796 has 87 MA's), (23, 28751), (34, 28646),

Gene: Puppy\_36 Start: 27029, Stop: 26850, Start Num: 17  
Candidate Starts for Puppy\_36:  
(Start: 17 @27029 has 42 MA's), (23, 26981), (34, 26876),

Gene: PurpleHaze\_37 Start: 27731, Stop: 27549, Start Num: 16  
Candidate Starts for PurpleHaze\_37:  
(Start: 16 @27731 has 66 MA's), (23, 27680), (33, 27578), (34, 27575),

Gene: QueenB2\_37 Start: 28005, Stop: 27835, Start Num: 18  
Candidate Starts for QueenB2\_37:  
(6, 28086), (Start: 18 @28005 has 87 MA's), (34, 27855),

Gene: QueenBeesly\_37 Start: 27891, Stop: 27721, Start Num: 18  
Candidate Starts for QueenBeesly\_37:  
(Start: 18 @27891 has 87 MA's), (34, 27741),

Gene: Quokka\_35 Start: 26740, Stop: 26549, Start Num: 12  
Candidate Starts for Quokka\_35:  
(3, 26863), (Start: 12 @26740 has 3 MA's), (Start: 18 @26719 has 87 MA's), (24, 26659), (34, 26569),

Gene: Reba\_38 Start: 27391, Stop: 27209, Start Num: 16  
Candidate Starts for Reba\_38:  
(Start: 16 @27391 has 66 MA's), (23, 27340), (33, 27238), (34, 27235),

Gene: Retro23\_38 Start: 28289, Stop: 28119, Start Num: 18  
Candidate Starts for Retro23\_38:

(6, 28370), (Start: 18 @28289 has 87 MA's), (34, 28139),

Gene: Rockstar\_35 Start: 27173, Stop: 26994, Start Num: 17

Candidate Starts for Rockstar\_35:

(Start: 17 @27173 has 42 MA's), (23, 27125), (34, 27020),

Gene: Sabia\_38 Start: 27897, Stop: 27715, Start Num: 16

Candidate Starts for Sabia\_38:

(Start: 16 @27897 has 66 MA's), (23, 27846), (33, 27744), (34, 27741),

Gene: Sabinator\_37 Start: 27902, Stop: 27720, Start Num: 16

Candidate Starts for Sabinator\_37:

(Start: 16 @27902 has 66 MA's), (23, 27851), (33, 27749), (34, 27746),

Gene: SaturnRing\_35 Start: 27412, Stop: 27233, Start Num: 17

Candidate Starts for SaturnRing\_35:

(Start: 17 @27412 has 42 MA's), (23, 27364), (34, 27259),

Gene: Scout\_35 Start: 26719, Stop: 26540, Start Num: 17

Candidate Starts for Scout\_35:

(Start: 17 @26719 has 42 MA's), (23, 26671), (34, 26566),

Gene: SemperFi\_38 Start: 28159, Stop: 27989, Start Num: 18

Candidate Starts for SemperFi\_38:

(Start: 18 @28159 has 87 MA's), (34, 28009),

Gene: Serenity\_37 Start: 26863, Stop: 26672, Start Num: 12

Candidate Starts for Serenity\_37:

(3, 26986), (Start: 12 @26863 has 3 MA's), (Start: 18 @26842 has 87 MA's), (33, 26695), (34, 26692),

Gene: SheldonCooper\_36 Start: 27660, Stop: 27487, Start Num: 17

Candidate Starts for SheldonCooper\_36:

(Start: 17 @27660 has 42 MA's), (23, 27612), (34, 27507),

Gene: Smeagan\_39 Start: 28415, Stop: 28245, Start Num: 18

Candidate Starts for Smeagan\_39:

(6, 28496), (Start: 18 @28415 has 87 MA's), (23, 28370), (31, 28292), (34, 28265),

Gene: SnapTap\_37 Start: 27970, Stop: 27800, Start Num: 18

Candidate Starts for SnapTap\_37:

(Start: 18 @27970 has 87 MA's), (34, 27820),

Gene: Snickers\_38 Start: 27877, Stop: 27695, Start Num: 16

Candidate Starts for Snickers\_38:

(Start: 16 @27877 has 66 MA's), (23, 27826), (33, 27724), (34, 27721),

Gene: SoYo\_38 Start: 27815, Stop: 27633, Start Num: 16

Candidate Starts for SoYo\_38:

(Start: 16 @27815 has 66 MA's), (23, 27764), (33, 27662), (34, 27659),

Gene: SoilDragon\_37 Start: 27349, Stop: 27167, Start Num: 16

Candidate Starts for SoilDragon\_37:

(Start: 16 @27349 has 66 MA's), (23, 27298), (33, 27196), (34, 27193),

Gene: Sparxx\_35 Start: 27322, Stop: 27149, Start Num: 17

Candidate Starts for Sparxx\_35:

(Start: 17 @27322 has 42 MA's), (23, 27274), (34, 27169),

Gene: Stagni\_38 Start: 27906, Stop: 27724, Start Num: 16

Candidate Starts for Stagni\_38:

(Start: 16 @27906 has 66 MA's), (23, 27855), (33, 27753), (34, 27750),

Gene: StarStuff\_39 Start: 27599, Stop: 27429, Start Num: 18

Candidate Starts for StarStuff\_39:

(Start: 18 @27599 has 87 MA's), (23, 27554), (24, 27539), (27, 27503), (34, 27449),

Gene: StepMih\_38 Start: 27897, Stop: 27715, Start Num: 16

Candidate Starts for StepMih\_38:

(Start: 16 @27897 has 66 MA's), (23, 27846), (33, 27744), (34, 27741),

Gene: Superchunk\_36 Start: 26412, Stop: 26242, Start Num: 18

Candidate Starts for Superchunk\_36:

(Start: 18 @26412 has 87 MA's), (31, 26289), (34, 26262),

Gene: SweetiePie\_37 Start: 27970, Stop: 27800, Start Num: 18

Candidate Starts for SweetiePie\_37:

(Start: 18 @27970 has 87 MA's), (34, 27820),

Gene: SwirlSquare\_39 Start: 26439, Stop: 26269, Start Num: 18

Candidate Starts for SwirlSquare\_39:

(Start: 18 @26439 has 87 MA's), (27, 26343),

Gene: TNguyen7\_35 Start: 27376, Stop: 27197, Start Num: 17

Candidate Starts for TNguyen7\_35:

(Start: 17 @27376 has 42 MA's), (23, 27328), (34, 27223),

Gene: TarsusIV\_37 Start: 28077, Stop: 27907, Start Num: 18

Candidate Starts for TarsusIV\_37:

(Start: 18 @28077 has 87 MA's), (28, 27975), (34, 27927),

Gene: Taurus\_38 Start: 27903, Stop: 27721, Start Num: 16

Candidate Starts for Taurus\_38:

(Start: 16 @27903 has 66 MA's), (23, 27852), (33, 27750), (34, 27747),

Gene: Tiffany\_38 Start: 27789, Stop: 27607, Start Num: 16

Candidate Starts for Tiffany\_38:

(Start: 16 @27789 has 66 MA's), (23, 27738), (33, 27636), (34, 27633),

Gene: TinaFeyge\_35 Start: 27319, Stop: 27146, Start Num: 17

Candidate Starts for TinaFeyge\_35:

(Start: 17 @27319 has 42 MA's), (23, 27271), (34, 27166),

Gene: TipsytheTRex\_35 Start: 27089, Stop: 26898, Start Num: 12

Candidate Starts for TipsytheTRex\_35:

(3, 27212), (Start: 12 @27089 has 3 MA's), (Start: 18 @27068 has 87 MA's), (24, 27008), (34, 26918),

Gene: Tomathan\_39 Start: 27596, Stop: 27426, Start Num: 18

Candidate Starts for Tomathan\_39:

(Start: 18 @27596 has 87 MA's), (23, 27551), (24, 27536), (27, 27500), (34, 27446),

Gene: Travvers\_39 Start: 27596, Stop: 27426, Start Num: 18

Candidate Starts for Travvers\_39:

(Start: 18 @27596 has 87 MA's), (23, 27551), (24, 27536), (27, 27500), (34, 27446),

Gene: Trixie\_37 Start: 28496, Stop: 28326, Start Num: 18

Candidate Starts for Trixie\_37:

(Start: 18 @28496 has 87 MA's), (34, 28346),

Gene: Trooper\_39 Start: 28311, Stop: 28141, Start Num: 18

Candidate Starts for Trooper\_39:

(Start: 18 @28311 has 87 MA's), (34, 28161),

Gene: TroyPia\_35 Start: 27322, Stop: 27149, Start Num: 17

Candidate Starts for TroyPia\_35:

(Start: 17 @27322 has 42 MA's), (23, 27274), (34, 27169),

Gene: Turbido\_37 Start: 28155, Stop: 27985, Start Num: 18

Candidate Starts for Turbido\_37:

(6, 28236), (Start: 18 @28155 has 87 MA's), (23, 28110), (28, 28053), (31, 28032), (34, 28005),

Gene: Updawg\_39 Start: 28486, Stop: 28316, Start Num: 18

Candidate Starts for Updawg\_39:

(Start: 18 @28486 has 87 MA's), (27, 28390), (31, 28363), (34, 28336),

Gene: VA6\_36 Start: 27677, Stop: 27507, Start Num: 18

Candidate Starts for VA6\_36:

(Start: 18 @27677 has 87 MA's), (23, 27632), (24, 27617), (27, 27581), (34, 27527),

Gene: VC3\_39 Start: 27665, Stop: 27495, Start Num: 18

Candidate Starts for VC3\_39:

(Start: 18 @27665 has 87 MA's), (23, 27620), (24, 27605), (27, 27569), (34, 27515),

Gene: Vix\_38 Start: 27986, Stop: 27804, Start Num: 16

Candidate Starts for Vix\_38:

(Start: 16 @27986 has 66 MA's), (23, 27935), (33, 27833), (34, 27830),

Gene: Watson\_38 Start: 27896, Stop: 27714, Start Num: 16

Candidate Starts for Watson\_38:

(Start: 16 @27896 has 66 MA's), (23, 27845), (33, 27743), (34, 27740),

Gene: WeiHuaDA\_42 Start: 29572, Stop: 29402, Start Num: 18

Candidate Starts for WeiHuaDA\_42:

(Start: 18 @29572 has 87 MA's), (27, 29476), (34, 29422),

Gene: Whabigail7\_37 Start: 28143, Stop: 27973, Start Num: 18

Candidate Starts for Whabigail7\_37:

(6, 28224), (Start: 18 @28143 has 87 MA's), (23, 28098), (31, 28020), (34, 27993),

Gene: Whytu\_16 Start: 12793, Stop: 12978, Start Num: 21



Candidate Starts for Whytu\_16:  
(13, 12757), (19, 12778), (Start: 21 @12793 has 3 MA's), (35, 12964),

Gene: WideWale\_39 Start: 28486, Stop: 28316, Start Num: 18  
Candidate Starts for WideWale\_39:  
(Start: 18 @28486 has 87 MA's), (27, 28390), (31, 28363), (34, 28336),

Gene: Wishmaker\_48 Start: 37012, Stop: 37146, Start Num: 22  
Candidate Starts for Wishmaker\_48:  
(11, 36949), (Start: 22 @37012 has 7 MA's),

Gene: Wooldri\_40 Start: 27815, Stop: 27633, Start Num: 16  
Candidate Starts for Wooldri\_40:  
(Start: 16 @27815 has 66 MA's), (23, 27764), (33, 27662), (34, 27659),

Gene: XianYue\_37 Start: 27771, Stop: 27601, Start Num: 18  
Candidate Starts for XianYue\_37:  
(Start: 18 @27771 has 87 MA's), (34, 27621),

Gene: Yavru\_16 Start: 12688, Stop: 12873, Start Num: 21  
Candidate Starts for Yavru\_16:  
(19, 12673), (Start: 21 @12688 has 3 MA's), (35, 12859),

Gene: Yecey3\_38 Start: 27629, Stop: 27459, Start Num: 18  
Candidate Starts for Yecey3\_38:  
(Start: 18 @27629 has 87 MA's), (33, 27482), (34, 27479),

Gene: Zetzy\_37 Start: 27467, Stop: 27285, Start Num: 16  
Candidate Starts for Zetzy\_37:  
(Start: 16 @27467 has 66 MA's), (23, 27416), (33, 27314), (34, 27311),

Gene: Zimmer\_38 Start: 29474, Stop: 29304, Start Num: 18  
Candidate Starts for Zimmer\_38:  
(13, 29492), (Start: 18 @29474 has 87 MA's), (31, 29351), (32, 29336), (34, 29324),