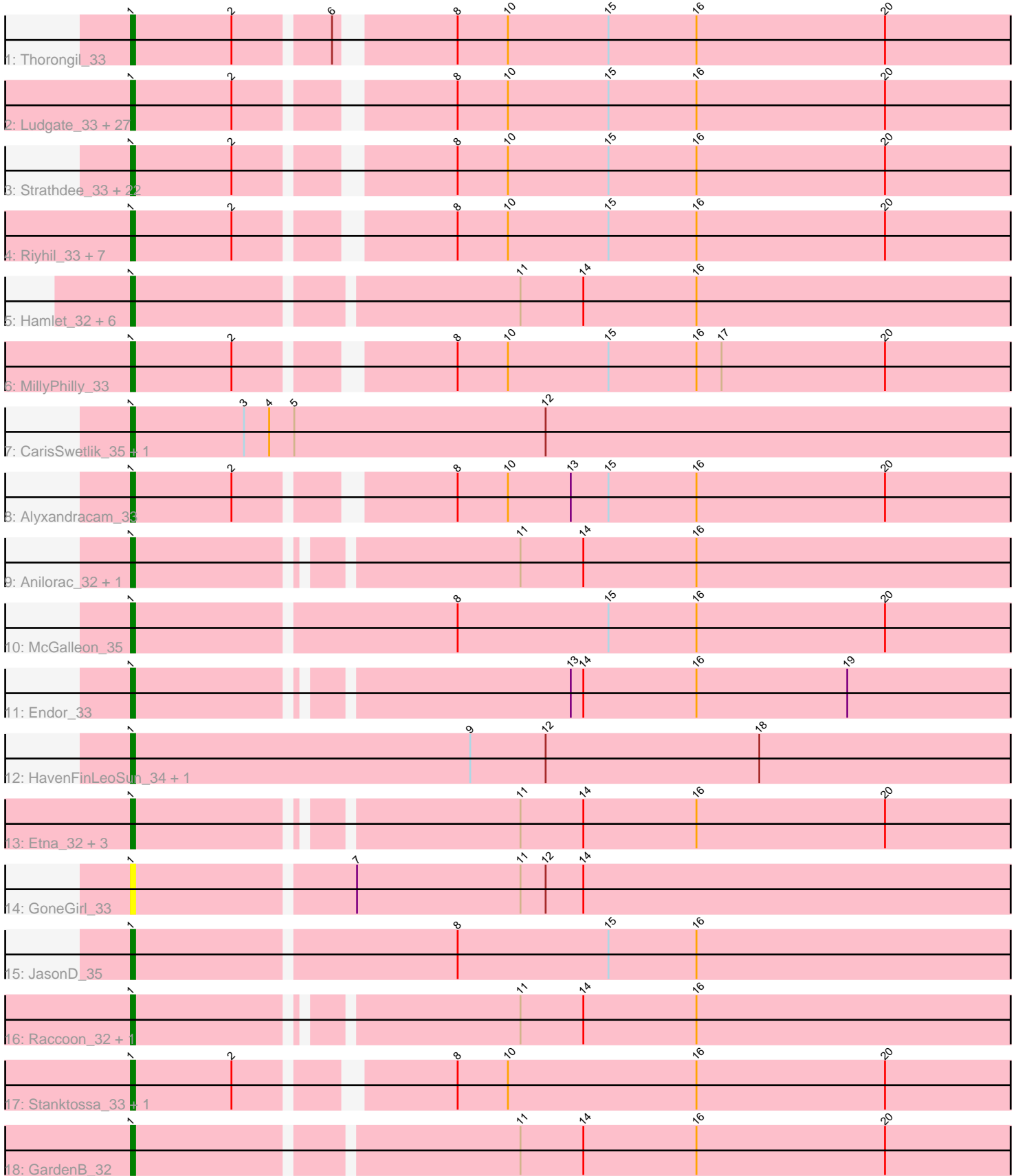


Pham 304919



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 304919 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304919 has 88 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Thorongil\_33
- Track 2 : Ludgate\_33, Phiderman\_33, MrWorldwide\_33, Inventa\_33, Kurt1\_33, Robinson\_33, Antoinette\_33, TatarkaPM\_33, TinSulphur\_33, Teagan\_33, Superfresh\_33, ParleG\_33, Pherferi\_33, SolidSnake\_34, Byron23\_33, Shee\_33, Rappheph\_33, Nagem\_33, Peep\_33, NickSell\_33, Martin\_34, AlexAdler\_33, Bandik\_33, Dave\_33, SJay\_33, PhredFlintston\_33, Zada\_33, Renzie\_33
- Track 3 : Strathdee\_33, BeautPeep30\_33, Velene\_33, BonesMcCoy\_33, Raptor\_33, Phireproof\_33, GoingMerry\_33, AxiPup\_33, Gargoyle\_33, Blage\_33, ShaiHulud\_33, BigRedClifford\_33, PuppyEggo\_33, Vispistious\_33, Convict\_33, Oxtober96\_33, Den3\_33, WildNOut\_33, Ioannes\_33, Thompsone\_33, Knox\_33, Lovelyunicorn\_33, Greys\_33
- Track 4 : Riyhil\_33, MaeLinda\_33, Phriends\_33, Delphidian\_33, OldNelly\_33, Merida02\_34, Figueroism\_33, SoilGremlin\_33
- Track 5 : Hamlet\_32, Peppino\_32, Redfield\_32, PhillyPhantom\_32, BeeBee8\_33, Schnapsidee\_32, Balsa\_32
- Track 6 : MillyPhilly\_33
- Track 7 : CarisSwetlik\_35, Jenos\_36
- Track 8 : Alyxandracam\_33
- Track 9 : Anilorac\_32, Agente005\_33
- Track 10 : McGalleon\_35
- Track 11 : Endor\_33
- Track 12 : HavenFinLeoSun\_34, Acosta\_34
- Track 13 : Etna\_32, KingJulien\_32, Stormbreaker8\_32, Soror1\_32
- Track 14 : GoneGirl\_33
- Track 15 : JasonD\_35
- Track 16 : Raccoon\_32, Leafus\_32
- Track 17 : Stanktossa\_33, Dothraki\_33
- Track 18 : GardenB\_32

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

The start number called the most often in the published annotations is 1, it was called in 81 of the 81 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acosta\_34, Agente005\_33, AlexAdler\_33, Alyxandracam\_33, Anilorac\_32, Antoinette\_33, AxiPup\_33, Balsa\_32, Bandik\_33, BeautPeep30\_33, BeeBee8\_33, BigRedClifford\_33, Blage\_33, BonesMcCoy\_33, Byron23\_33, CarisSwetlik\_35, Convict\_33, Dave\_33, Delphidian\_33, Den3\_33, Dothraki\_33, Endor\_33, Etna\_32, Figueroism\_33, GardenB\_32, Gargoyle\_33, GoingMerry\_33, GoneGirl\_33, Greys\_33, Hamlet\_32, HavenFinLeoSun\_34, Inventa\_33, Ioannes\_33, JasonD\_35, Jenos\_36, KingJulien\_32, Knox\_33, Kurt1\_33, Leafus\_32, Lovelyunicorn\_33, Ludgate\_33, MaeLinda\_33, Martin\_34, McGalleon\_35, Merida02\_34, MillyPhilly\_33, MrWorldwide\_33, Nagem\_33, NickSell\_33, OldNelly\_33, Oxtober96\_33, ParleG\_33, Peep\_33, Peppino\_32, Pherferi\_33, Phiderman\_33, PhillyPhantom\_32, Phireproof\_33, PhredFlintston\_33, Phriends\_33, PuppyEggo\_33, Raccoon\_32, Rappheph\_33, Raptor\_33, Redfield\_32, Renzie\_33, Riyhil\_33, Robinson\_33, SJay\_33, Schnapsidee\_32, ShaiHulud\_33, Shee\_33, SoilGremlin\_33, SolidSnake\_34, Soror1\_32, Stanktossa\_33, Stormbreaker8\_32, Strathdee\_33, Superfresh\_33, TatarkaPM\_33, Teagan\_33, Thompsone\_33, Thorongil\_33, TinSulphur\_33, Velene\_33, Vispistious\_33, WildNOOut\_33, Zada\_33,

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

- 

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

- 

### Summary by start number:

Start 1:

- Found in 88 of 88 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 81 of 81
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acosta\_34 (EA1), Agente005\_33 (EA1), AlexAdler\_33 (EA1), Alyxandracam\_33 (EA1), Anilorac\_32 (EA1), Antoinette\_33 (EA1), AxiPup\_33 (EA1), Balsa\_32 (EA1), Bandik\_33 (EA1), BeautPeep30\_33 (EA1), BeeBee8\_33 (EA1), BigRedClifford\_33 (EA1), Blage\_33 (EA1), BonesMcCoy\_33 (EA1), Byron23\_33 (EA1), CarisSwetlik\_35 (EA1), Convict\_33 (EA1), Dave\_33 (EA1), Delphidian\_33 (EA1), Den3\_33 (EA1), Dothraki\_33 (EA1), Endor\_33 (EA1), Etna\_32 (EA1), Figueroism\_33 (EA1), GardenB\_32 (EA1), Gargoyle\_33 (EA1), GoingMerry\_33 (EA1), GoneGirl\_33 (EA1), Greys\_33 (EA1), Hamlet\_32 (EA1), HavenFinLeoSun\_34 (EA1), Inventa\_33 (EA1), Ioannes\_33 (EA1), JasonD\_35 (EA1), Jenos\_36 (EA1), KingJulien\_32 (EA1), Knox\_33 (EA1), Kurt1\_33 (EA1), Leafus\_32 (EA1), Lovelyunicorn\_33 (EA1), Ludgate\_33 (EA1), MaeLinda\_33 (EA1), Martin\_34 (EA1), McGalleon\_35 (EA1), Merida02\_34 (EA1), MillyPhilly\_33 (EA1), MrWorldwide\_33 (EA1), Nagem\_33 (EA1), NickSell\_33 (EA1), OldNelly\_33 (EA1), Oxtober96\_33 (EA1), ParleG\_33 (EA1), Peep\_33 (EA1), Peppino\_32 (EA1), Pherferi\_33 (EA1), Phiderman\_33 (EA1), PhillyPhantom\_32 (EA1), Phireproof\_33 (EA1), PhredFlintston\_33 (EA1), Phriends\_33 (EA1), PuppyEggo\_33 (EA1), Raccoon\_32 (EA1), Rappheph\_33 (EA1), Raptor\_33 (EA1), Redfield\_32 (EA1), Renzie\_33 (EA1), Riyhil\_33 (EA1), Robinson\_33 (EA1), SJay\_33 (EA1), Schnapsidee\_32 (EA1), ShaiHulud\_33 (EA1), Shee\_33 (EA1), SoilGremlin\_33 (EA1), SolidSnake\_34 (EA1), Soror1\_32 (EA1), Stanktossa\_33 (EA1), Stormbreaker8\_32 (EA1), Strathdee\_33 (EA1), Superfresh\_33 (EA1), TatarkaPM\_33 (EA1), Teagan\_33 (EA1), Thompsone\_33 (EA1), Thorongil\_33 (EA1), TinSulphur\_33 (EA1), Velene\_33 (EA1), Vispistious\_33 (EA1), WildNOOut\_33 (EA1), Zada\_33 (EA1),

## Summary by clusters:

There is one cluster represented in this pham: EA1

Info for manual annotations of cluster EA1:

•Start number 1 was manually annotated 81 times for cluster EA1.

### **Gene Information:**

Gene: Acosta\_34 Start: 22806, Stop: 22555, Start Num: 1

Candidate Starts for Acosta\_34:

(Start: 1 @22806 has 81 MA's), (9, 22725), (12, 22707), (18, 22656),

Gene: Agente005\_33 Start: 22618, Stop: 22376, Start Num: 1

Candidate Starts for Agente005\_33:

(Start: 1 @22618 has 81 MA's), (11, 22534), (14, 22519), (16, 22492),

Gene: AlexAdler\_33 Start: 22421, Stop: 22179, Start Num: 1

Candidate Starts for AlexAdler\_33:

(Start: 1 @22421 has 81 MA's), (2, 22397), (8, 22352), (10, 22340), (15, 22316), (16, 22295), (20, 22250),

Gene: Alyxandracam\_33 Start: 22430, Stop: 22188, Start Num: 1

Candidate Starts for Alyxandracam\_33:

(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (13, 22334), (15, 22325), (16, 22304), (20, 22259),

Gene: Anilorac\_32 Start: 22462, Stop: 22220, Start Num: 1

Candidate Starts for Anilorac\_32:

(Start: 1 @22462 has 81 MA's), (11, 22378), (14, 22363), (16, 22336),

Gene: Antoinette\_33 Start: 22418, Stop: 22176, Start Num: 1

Candidate Starts for Antoinette\_33:

(Start: 1 @22418 has 81 MA's), (2, 22394), (8, 22349), (10, 22337), (15, 22313), (16, 22292), (20, 22247),

Gene: AxiPup\_33 Start: 22430, Stop: 22188, Start Num: 1

Candidate Starts for AxiPup\_33:

(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Balsa\_32 Start: 22463, Stop: 22218, Start Num: 1

Candidate Starts for Balsa\_32:

(Start: 1 @22463 has 81 MA's), (11, 22376), (14, 22361), (16, 22334),

Gene: Bandik\_33 Start: 22426, Stop: 22184, Start Num: 1

Candidate Starts for Bandik\_33:

(Start: 1 @22426 has 81 MA's), (2, 22402), (8, 22357), (10, 22345), (15, 22321), (16, 22300), (20, 22255),

Gene: BeautPeep30\_33 Start: 22432, Stop: 22190, Start Num: 1  
Candidate Starts for BeautPeep30\_33:  
(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: BeeBee8\_33 Start: 22630, Stop: 22385, Start Num: 1  
Candidate Starts for BeeBee8\_33:  
(Start: 1 @22630 has 81 MA's), (11, 22543), (14, 22528), (16, 22501),

Gene: BigRedClifford\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for BigRedClifford\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Blage\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for Blage\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: BonesMcCoy\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for BonesMcCoy\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Byron23\_33 Start: 22435, Stop: 22193, Start Num: 1  
Candidate Starts for Byron23\_33:  
(Start: 1 @22435 has 81 MA's), (2, 22411), (8, 22366), (10, 22354), (15, 22330), (16, 22309), (20, 22264),

Gene: CarisSwetlik\_35 Start: 23301, Stop: 23050, Start Num: 1  
Candidate Starts for CarisSwetlik\_35:  
(Start: 1 @23301 has 81 MA's), (3, 23274), (4, 23268), (5, 23262), (12, 23202),

Gene: Convict\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for Convict\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Dave\_33 Start: 22418, Stop: 22176, Start Num: 1  
Candidate Starts for Dave\_33:  
(Start: 1 @22418 has 81 MA's), (2, 22394), (8, 22349), (10, 22337), (15, 22313), (16, 22292), (20, 22247),

Gene: Delphidian\_33 Start: 22429, Stop: 22187, Start Num: 1  
Candidate Starts for Delphidian\_33:  
(Start: 1 @22429 has 81 MA's), (2, 22405), (8, 22360), (10, 22348), (15, 22324), (16, 22303), (20, 22258),

Gene: Den3\_33 Start: 22435, Stop: 22193, Start Num: 1  
Candidate Starts for Den3\_33:  
(Start: 1 @22435 has 81 MA's), (2, 22411), (8, 22366), (10, 22354), (15, 22330), (16, 22309), (20, 22264),

Gene: Dothraki\_33 Start: 22432, Stop: 22190, Start Num: 1  
Candidate Starts for Dothraki\_33:  
(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (16, 22306), (20, 22261),

Gene: Endor\_33 Start: 22735, Stop: 22493, Start Num: 1  
Candidate Starts for Endor\_33:  
(Start: 1 @22735 has 81 MA's), (13, 22639), (14, 22636), (16, 22609), (19, 22573),

Gene: Etna\_32 Start: 22465, Stop: 22223, Start Num: 1  
Candidate Starts for Etna\_32:  
(Start: 1 @22465 has 81 MA's), (11, 22381), (14, 22366), (16, 22339), (20, 22294),

Gene: Figueroism\_33 Start: 22417, Stop: 22175, Start Num: 1  
Candidate Starts for Figueroism\_33:  
(Start: 1 @22417 has 81 MA's), (2, 22393), (8, 22348), (10, 22336), (15, 22312), (16, 22291), (20, 22246),

Gene: GardenB\_32 Start: 22466, Stop: 22221, Start Num: 1  
Candidate Starts for GardenB\_32:  
(Start: 1 @22466 has 81 MA's), (11, 22379), (14, 22364), (16, 22337), (20, 22292),

Gene: Gargoyle\_33 Start: 22432, Stop: 22190, Start Num: 1  
Candidate Starts for Gargoyle\_33:  
(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: GoingMerry\_33 Start: 22440, Stop: 22198, Start Num: 1  
Candidate Starts for GoingMerry\_33:  
(Start: 1 @22440 has 81 MA's), (2, 22416), (8, 22371), (10, 22359), (15, 22335), (16, 22314), (20, 22269),

Gene: GoneGirl\_33 Start: 22507, Stop: 22259, Start Num: 1  
Candidate Starts for GoneGirl\_33:  
(Start: 1 @22507 has 81 MA's), (7, 22456), (11, 22417), (12, 22411), (14, 22402),

Gene: Greys\_33 Start: 22428, Stop: 22186, Start Num: 1  
Candidate Starts for Greys\_33:  
(Start: 1 @22428 has 81 MA's), (2, 22404), (8, 22359), (10, 22347), (15, 22323), (16, 22302), (20, 22257),

Gene: Hamlet\_32 Start: 22463, Stop: 22218, Start Num: 1  
Candidate Starts for Hamlet\_32:  
(Start: 1 @22463 has 81 MA's), (11, 22376), (14, 22361), (16, 22334),

Gene: HavenFinLeoSun\_34 Start: 22761, Stop: 22510, Start Num: 1  
Candidate Starts for HavenFinLeoSun\_34:  
(Start: 1 @22761 has 81 MA's), (9, 22680), (12, 22662), (18, 22611),

Gene: Inventa\_33 Start: 22432, Stop: 22190, Start Num: 1  
Candidate Starts for Inventa\_33:  
(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: loannes\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for loannes\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: JasonD\_35 Start: 22938, Stop: 22690, Start Num: 1  
Candidate Starts for JasonD\_35:  
(Start: 1 @22938 has 81 MA's), (8, 22863), (15, 22827), (16, 22806),

Gene: Jenos\_36 Start: 23598, Stop: 23347, Start Num: 1  
Candidate Starts for Jenos\_36:  
(Start: 1 @23598 has 81 MA's), (3, 23571), (4, 23565), (5, 23559), (12, 23499),

Gene: KingJulien\_32 Start: 22456, Stop: 22214, Start Num: 1  
Candidate Starts for KingJulien\_32:  
(Start: 1 @22456 has 81 MA's), (11, 22372), (14, 22357), (16, 22330), (20, 22285),

Gene: Knox\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for Knox\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Kurt1\_33 Start: 22432, Stop: 22190, Start Num: 1  
Candidate Starts for Kurt1\_33:  
(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: Leafus\_32 Start: 22598, Stop: 22356, Start Num: 1  
Candidate Starts for Leafus\_32:  
(Start: 1 @22598 has 81 MA's), (11, 22514), (14, 22499), (16, 22472),

Gene: Lovelyunicorn\_33 Start: 22431, Stop: 22189, Start Num: 1  
Candidate Starts for Lovelyunicorn\_33:  
(Start: 1 @22431 has 81 MA's), (2, 22407), (8, 22362), (10, 22350), (15, 22326), (16, 22305), (20, 22260),

Gene: Ludgate\_33 Start: 22426, Stop: 22184, Start Num: 1  
Candidate Starts for Ludgate\_33:  
(Start: 1 @22426 has 81 MA's), (2, 22402), (8, 22357), (10, 22345), (15, 22321), (16, 22300), (20, 22255),

Gene: MaeLinda\_33 Start: 22433, Stop: 22191, Start Num: 1  
Candidate Starts for MaeLinda\_33:  
(Start: 1 @22433 has 81 MA's), (2, 22409), (8, 22364), (10, 22352), (15, 22328), (16, 22307), (20, 22262),

Gene: Martin\_34 Start: 22432, Stop: 22190, Start Num: 1  
Candidate Starts for Martin\_34:  
(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: McGalleon\_35 Start: 23815, Stop: 23567, Start Num: 1  
Candidate Starts for McGalleon\_35:

(Start: 1 @23815 has 81 MA's), (8, 23740), (15, 23704), (16, 23683), (20, 23638),

Gene: Merida02\_34 Start: 22429, Stop: 22187, Start Num: 1

Candidate Starts for Merida02\_34:

(Start: 1 @22429 has 81 MA's), (2, 22405), (8, 22360), (10, 22348), (15, 22324), (16, 22303), (20, 22258),

Gene: MillyPhilly\_33 Start: 22429, Stop: 22187, Start Num: 1

Candidate Starts for MillyPhilly\_33:

(Start: 1 @22429 has 81 MA's), (2, 22405), (8, 22360), (10, 22348), (15, 22324), (16, 22303), (17, 22297), (20, 22258),

Gene: MrWorldwide\_33 Start: 22433, Stop: 22191, Start Num: 1

Candidate Starts for MrWorldwide\_33:

(Start: 1 @22433 has 81 MA's), (2, 22409), (8, 22364), (10, 22352), (15, 22328), (16, 22307), (20, 22262),

Gene: Nagem\_33 Start: 22426, Stop: 22184, Start Num: 1

Candidate Starts for Nagem\_33:

(Start: 1 @22426 has 81 MA's), (2, 22402), (8, 22357), (10, 22345), (15, 22321), (16, 22300), (20, 22255),

Gene: NickSell\_33 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for NickSell\_33:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: OldNelly\_33 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for OldNelly\_33:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: Oxtober96\_33 Start: 22431, Stop: 22189, Start Num: 1

Candidate Starts for Oxtober96\_33:

(Start: 1 @22431 has 81 MA's), (2, 22407), (8, 22362), (10, 22350), (15, 22326), (16, 22305), (20, 22260),

Gene: ParleG\_33 Start: 22433, Stop: 22191, Start Num: 1

Candidate Starts for ParleG\_33:

(Start: 1 @22433 has 81 MA's), (2, 22409), (8, 22364), (10, 22352), (15, 22328), (16, 22307), (20, 22262),

Gene: Peep\_33 Start: 22418, Stop: 22176, Start Num: 1

Candidate Starts for Peep\_33:

(Start: 1 @22418 has 81 MA's), (2, 22394), (8, 22349), (10, 22337), (15, 22313), (16, 22292), (20, 22247),

Gene: Peppino\_32 Start: 22455, Stop: 22210, Start Num: 1

Candidate Starts for Peppino\_32:

(Start: 1 @22455 has 81 MA's), (11, 22368), (14, 22353), (16, 22326),

Gene: Pherferi\_33 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for Pherferi\_33:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: Phiderman\_33 Start: 22429, Stop: 22187, Start Num: 1

Candidate Starts for Phiderman\_33:

(Start: 1 @22429 has 81 MA's), (2, 22405), (8, 22360), (10, 22348), (15, 22324), (16, 22303), (20, 22258),

Gene: PhillyPhantom\_32 Start: 22436, Stop: 22191, Start Num: 1

Candidate Starts for PhillyPhantom\_32:

(Start: 1 @22436 has 81 MA's), (11, 22349), (14, 22334), (16, 22307),

Gene: Phireproof\_33 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for Phireproof\_33:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: PhredFlintston\_33 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for PhredFlintston\_33:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: Phriends\_33 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for Phriends\_33:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: PuppyEggo\_33 Start: 22430, Stop: 22188, Start Num: 1

Candidate Starts for PuppyEggo\_33:

(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Raccoon\_32 Start: 22421, Stop: 22179, Start Num: 1

Candidate Starts for Raccoon\_32:

(Start: 1 @22421 has 81 MA's), (11, 22337), (14, 22322), (16, 22295),

Gene: Rapheph\_33 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for Rapheph\_33:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: Raptor\_33 Start: 22430, Stop: 22188, Start Num: 1

Candidate Starts for Raptor\_33:

(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Redfield\_32 Start: 22462, Stop: 22217, Start Num: 1

Candidate Starts for Redfield\_32:

(Start: 1 @22462 has 81 MA's), (11, 22375), (14, 22360), (16, 22333),

Gene: Renzie\_33 Start: 22418, Stop: 22176, Start Num: 1

Candidate Starts for Renzie\_33:

(Start: 1 @22418 has 81 MA's), (2, 22394), (8, 22349), (10, 22337), (15, 22313), (16, 22292), (20, 22247),

Gene: Riyhil\_33 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for Riyhil\_33:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: Robinson\_33 Start: 22424, Stop: 22182, Start Num: 1

Candidate Starts for Robinson\_33:

(Start: 1 @22424 has 81 MA's), (2, 22400), (8, 22355), (10, 22343), (15, 22319), (16, 22298), (20, 22253),

Gene: SJay\_33 Start: 22427, Stop: 22185, Start Num: 1

Candidate Starts for SJay\_33:

(Start: 1 @22427 has 81 MA's), (2, 22403), (8, 22358), (10, 22346), (15, 22322), (16, 22301), (20, 22256),

Gene: Schnapsidee\_32 Start: 22456, Stop: 22211, Start Num: 1

Candidate Starts for Schnapsidee\_32:

(Start: 1 @22456 has 81 MA's), (11, 22369), (14, 22354), (16, 22327),

Gene: ShaiHulud\_33 Start: 22430, Stop: 22188, Start Num: 1

Candidate Starts for ShaiHulud\_33:

(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Shee\_33 Start: 22429, Stop: 22187, Start Num: 1

Candidate Starts for Shee\_33:

(Start: 1 @22429 has 81 MA's), (2, 22405), (8, 22360), (10, 22348), (15, 22324), (16, 22303), (20, 22258),

Gene: SoilGremlin\_33 Start: 22429, Stop: 22187, Start Num: 1

Candidate Starts for SoilGremlin\_33:

(Start: 1 @22429 has 81 MA's), (2, 22405), (8, 22360), (10, 22348), (15, 22324), (16, 22303), (20, 22258),

Gene: SolidSnake\_34 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for SolidSnake\_34:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: Soror1\_32 Start: 22465, Stop: 22223, Start Num: 1

Candidate Starts for Soror1\_32:

(Start: 1 @22465 has 81 MA's), (11, 22381), (14, 22366), (16, 22339), (20, 22294),

Gene: Stanktossa\_33 Start: 22432, Stop: 22190, Start Num: 1

Candidate Starts for Stanktossa\_33:

(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (16, 22306), (20, 22261),

Gene: Stormbreaker8\_32 Start: 22456, Stop: 22214, Start Num: 1

Candidate Starts for Stormbreaker8\_32:

(Start: 1 @22456 has 81 MA's), (11, 22372), (14, 22357), (16, 22330), (20, 22285),

Gene: Strathdee\_33 Start: 22431, Stop: 22189, Start Num: 1  
Candidate Starts for Strathdee\_33:  
(Start: 1 @22431 has 81 MA's), (2, 22407), (8, 22362), (10, 22350), (15, 22326), (16, 22305), (20, 22260),

Gene: Superfresh\_33 Start: 22418, Stop: 22176, Start Num: 1  
Candidate Starts for Superfresh\_33:  
(Start: 1 @22418 has 81 MA's), (2, 22394), (8, 22349), (10, 22337), (15, 22313), (16, 22292), (20, 22247),

Gene: TatarkaPM\_33 Start: 22432, Stop: 22190, Start Num: 1  
Candidate Starts for TatarkaPM\_33:  
(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: Teagan\_33 Start: 22426, Stop: 22184, Start Num: 1  
Candidate Starts for Teagan\_33:  
(Start: 1 @22426 has 81 MA's), (2, 22402), (8, 22357), (10, 22345), (15, 22321), (16, 22300), (20, 22255),

Gene: Thompsone\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for Thompsone\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Thorongil\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for Thorongil\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (6, 22385), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: TinSulphur\_33 Start: 22432, Stop: 22190, Start Num: 1  
Candidate Starts for TinSulphur\_33:  
(Start: 1 @22432 has 81 MA's), (2, 22408), (8, 22363), (10, 22351), (15, 22327), (16, 22306), (20, 22261),

Gene: Velene\_33 Start: 22431, Stop: 22189, Start Num: 1  
Candidate Starts for Velene\_33:  
(Start: 1 @22431 has 81 MA's), (2, 22407), (8, 22362), (10, 22350), (15, 22326), (16, 22305), (20, 22260),

Gene: Vispistious\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for Vispistious\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: WildNOut\_33 Start: 22430, Stop: 22188, Start Num: 1  
Candidate Starts for WildNOut\_33:  
(Start: 1 @22430 has 81 MA's), (2, 22406), (8, 22361), (10, 22349), (15, 22325), (16, 22304), (20, 22259),

Gene: Zada\_33 Start: 22411, Stop: 22169, Start Num: 1  
Candidate Starts for Zada\_33:

(Start: 1 @22411 has 81 MA's), (2, 22387), (8, 22342), (10, 22330), (15, 22306), (16, 22285), (20, 22240),