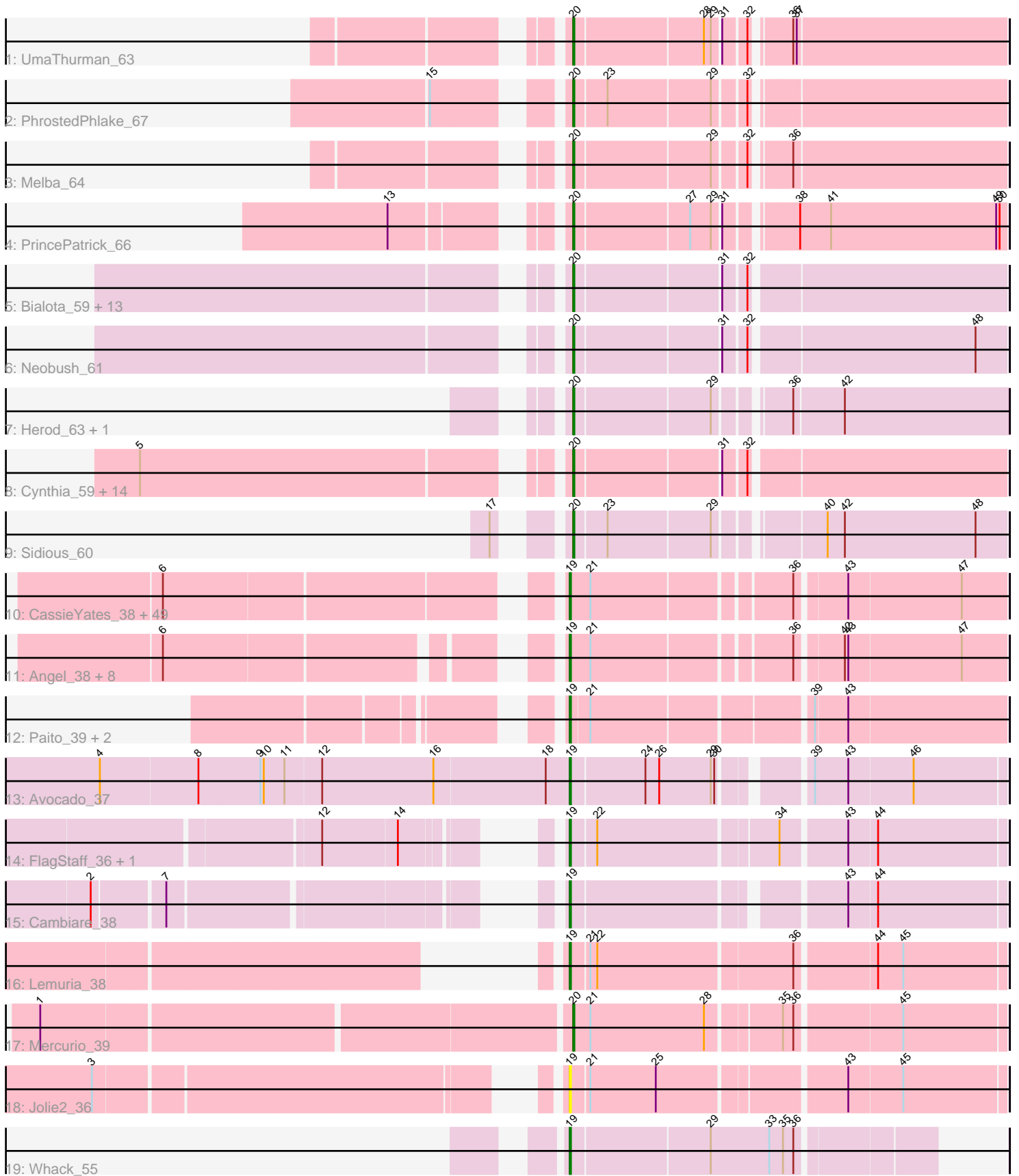


Pham 221284



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 221284 Report

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

Pham number 221284 has 107 members, 7 are drafts.

Phages represented in each track:

- Track 1 : UmaThurman\_63
- Track 2 : PhrostedPhlake\_67
- Track 3 : Melba\_64
- Track 4 : PrincePatrick\_66
- Track 5 : Bialota\_59, Trumpet\_61, Bosnia\_60, Antonio\_61, Polly\_58, Eudoria\_61, Manasvini\_62, Pickett\_54, Kita\_62, EdnaMode\_55, Susceptit\_61, Tayonia\_61, Zirinka\_58, Zameen\_61
- Track 6 : Neobush\_61
- Track 7 : Herod\_63, Hugley\_61
- Track 8 : Cynthia\_59, Sahara\_58, Savage\_59, Bjaner7\_56, Gizermo\_59, Nettuno\_55, Lamberg\_55, GemG\_59, Mocha12\_59, Ebert\_63, Whiteclaw\_59, Haley23\_59, Clap\_59, TueritoX\_59, Sproutie\_59
- Track 9 : Sidious\_60
- Track 10 : CassieYates\_38, DNAIII\_0037, Coleslaw\_38, BruceB\_38, TinaBug\_38, Sweets\_38, Halo\_38, AzulaCat\_38, Annihilator\_38, Kareem\_38, BPs\_38, Frosty24\_38, ShaboiShabazz\_38, Cherrybomb426\_38, Cedasite\_38, OctaviousRex\_38, Aroostook\_38, Jane\_38, Crespo\_38, Darionha\_38, Maliketh\_38, Hope\_38, Zombie\_38, Mowgli\_38, TomBrady\_38, DMoney\_38, ECartman\_38, Chance64\_38, Marmie\_38, Renaissance\_38, Camri\_38, Wendigo\_38, Gideon\_38, JorRay\_38, Phreak\_38, Liefie\_38, Avrafan\_38, Remy19\_38, LouisV14\_40, Periodt\_38, CLED96\_38, Gomashi\_38, ZoMa\_38, Jonghyun\_38, PinkYoshi\_38, Olga\_38, Hotshotbaby7\_38, Phish\_38, Jolene\_38, BQuat\_38
- Track 11 : Angel\_38, Barkley26\_38, GoldenAsh\_38, Grizzly\_38, Plagueis\_38, Peeb\_38, Kasen3\_38, Schiebel\_38, Sizemore\_38
- Track 12 : Paito\_39, Rabbs\_39, Sneeze\_39
- Track 13 : Avocado\_37
- Track 14 : FlagStaff\_36, Pace1224\_36
- Track 15 : Cambiare\_38
- Track 16 : Lemuria\_38
- Track 17 : Mercurio\_39
- Track 18 : Jolie2\_36
- Track 19 : Whack\_55

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

The start number called the most often in the published annotations is 19, it was called in 63 of the 100 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Angel\_38, Annihilator\_38, Aroostook\_38, Avocado\_37, Avrafan\_38, AzulaCat\_38, BPs\_38, BQuat\_38, Barkley26\_38, BruceB\_38, CLED96\_38, Cambiare\_38, Camri\_38, CassieYates\_38, Cedasite\_38, Chance64\_38, Cherrybomb426\_38, Coleslaw\_38, Crespo\_38, DMoney\_38, DNAIII\_0037, Darionha\_38, ECartman\_38, FlagStaff\_36, Frosty24\_38, Gideon\_38, GoldenAsh\_38, Gomashi\_38, Grizzly\_38, Halo\_38, Hope\_38, Hotshotbaby7\_38, Jane\_38, Jolene\_38, Jolie2\_36, Jonghyun\_38, JorRay\_38, Kareem\_38, Kasen3\_38, Lemuria\_38, Liefie\_38, LouisV14\_40, Maliketh\_38, Marmie\_38, Mowgli\_38, OctaviousRex\_38, Olga\_38, Pace1224\_36, Paito\_39, Peeb\_38, Periodt\_38, Phish\_38, Phreak\_38, PinkYoshi\_38, Plagueis\_38, Rabbs\_39, Remy19\_38, Renaissance\_38, Schiebel\_38, ShaboiShabazz\_38, Sizemore\_38, Sneeze\_39, Sweets\_38, TinaBug\_38, TomBrady\_38, Wendigo\_38, Whack\_55, ZoMa\_38, Zombie\_38,

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

- 

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

- Antonio\_61, Bialota\_59, Bjaner7\_56, Bosnia\_60, Clap\_59, Cynthia\_59, Ebert\_63, EdnaMode\_55, Eudoria\_61, GemG\_59, Gizermo\_59, Haley23\_59, Herod\_63, Hugley\_61, Kita\_62, Lamberg\_55, Manasvini\_62, Melba\_64, Mercurio\_39, Mocha12\_59, Neobush\_61, Nettuno\_55, PhrostedPhlake\_67, Pickett\_54, Polly\_58, PrincePatrick\_66, Sahara\_58, Savage\_59, Sidious\_60, Sproutie\_59, Suscepit\_61, Tayonia\_61, Trumpet\_61, TuertoX\_59, UmaThurman\_63, Whiteclaw\_59, Zameen\_61, Zirinka\_58,

### Summary by start number:

Start 19:

- Found in 69 of 107 ( 64.5% ) of genes in pham
- Manual Annotations of this start: 63 of 100
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Angel\_38 (G1), Annihilator\_38 (G1), Aroostook\_38 (G1), Avocado\_37 (G2), Avrafan\_38 (G1), AzulaCat\_38 (G1), BPs\_38 (G1), BQuat\_38 (G1), Barkley26\_38 (G1), BruceB\_38 (G1), CLED96\_38 (G1), Cambiare\_38 (G2), Camri\_38 (G1), CassieYates\_38 (G1), Cedasite\_38 (G1), Chance64\_38 (G1), Cherrybomb426\_38 (G1), Coleslaw\_38 (G1), Crespo\_38 (G1), DMoney\_38 (G1), DNAIII\_0037 (G1), Darionha\_38 (G1), ECartman\_38 (G1), FlagStaff\_36 (G2), Frosty24\_38 (G1), Gideon\_38 (G1), GoldenAsh\_38 (G1), Gomashi\_38 (G1), Grizzly\_38 (G1), Halo\_38 (G1), Hope\_38 (G1), Hotshotbaby7\_38 (G1), Jane\_38 (G1), Jolene\_38 (G1), Jolie2\_36 (G4), Jonghyun\_38 (G1), JorRay\_38 (G1), Kareem\_38 (G1), Kasen3\_38 (G1), Lemuria\_38 (G4), Liefie\_38 (G1), LouisV14\_40 (G1), Maliketh\_38 (G1), Marmie\_38 (G1), Mowgli\_38 (G1), OctaviousRex\_38 (G1), Olga\_38 (G1), Pace1224\_36 (G2), Paito\_39 (G1), Peeb\_38 (G1), Periodt\_38 (G1), Phish\_38 (G1), Phreak\_38 (G1), PinkYoshi\_38 (G1), Plagueis\_38 (G1), Rabbs\_39 (G1), Remy19\_38 (G1), Renaissance\_38 (G1), Schiebel\_38 (G1), ShaboiShabazz\_38 (G1), Sizemore\_38 (G1), Sneeze\_39 (G1), Sweets\_38 (G1), TinaBug\_38 (G1), TomBrady\_38 (G1), Wendigo\_38 (G1), Whack\_55 (singleton), ZoMa\_38 (G1), Zombie\_38 (G1),

Start 20:

- Found in 38 of 107 ( 35.5% ) of genes in pham
- Manual Annotations of this start: 37 of 100
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Antonio\_61 (CZ1), Bialota\_59 (CZ1), Bjaness7\_56 (CZ2), Bosnia\_60 (CZ1), Clap\_59 (CZ2), Cynthia\_59 (CZ2), Ebert\_63 (CZ2), EdnaMode\_55 (CZ2), Eudoria\_61 (CZ1), GemG\_59 (CZ2), Gizermo\_59 (CZ2), Haley23\_59 (CZ2), Herod\_63 (CZ1), Hugley\_61 (CZ1), Kita\_62 (CZ1), Lamberg\_55 (CZ2), Manasvini\_62 (CZ1), Melba\_64 (CV), Mercurio\_39 (G4), Mocha12\_59 (CZ2), Neobush\_61 (CZ1), Nettuno\_55 (CZ2), PhrostedPhlake\_67 (CV), Pickett\_54 (CZ2), Polly\_58 (CZ1), PrincePatrick\_66 (CV), Sahara\_58 (CZ2), Savage\_59 (CZ2), Sidious\_60 (CZ7), Sproutie\_59 (CZ2), Suscepit\_61 (CZ1), Tayonia\_61 (CZ1), Trumpet\_61 (CZ1), TuertoX\_59 (CZ2), UmaThurman\_63 (CV), Whiteclaw\_59 (CZ2), Zameen\_61 (CZ1), Zirinka\_58 (CZ1),

### **Summary by clusters:**

There are 8 clusters represented in this pham: singleton, G4, G2, G1, CZ2, CZ1, CZ7, CV,

Info for manual annotations of cluster CV:

- Start number 20 was manually annotated 4 times for cluster CV.

Info for manual annotations of cluster CZ1:

- Start number 20 was manually annotated 14 times for cluster CZ1.

Info for manual annotations of cluster CZ2:

- Start number 20 was manually annotated 17 times for cluster CZ2.

Info for manual annotations of cluster CZ7:

- Start number 20 was manually annotated 1 time for cluster CZ7.

Info for manual annotations of cluster G1:

- Start number 19 was manually annotated 58 times for cluster G1.

Info for manual annotations of cluster G2:

- Start number 19 was manually annotated 3 times for cluster G2.

Info for manual annotations of cluster G4:

- Start number 19 was manually annotated 1 time for cluster G4.
- Start number 20 was manually annotated 1 time for cluster G4.

### **Gene Information:**

Gene: Angel\_38 Start: 30913, Stop: 31263, Start Num: 19

Candidate Starts for Angel\_38:

(6, 30622), (Start: 19 @30913 has 63 MA's), (21, 30931), (36, 31090), (42, 31126), (43, 31129), (47, 31225),

Gene: Annihilator\_38 Start: 30919, Stop: 31269, Start Num: 19

Candidate Starts for Annihilator\_38:

(6, 30613), (Start: 19 @30919 has 63 MA's), (21, 30937), (36, 31096), (43, 31135), (47, 31231),

Gene: Antonio\_61 Start: 41679, Stop: 42029, Start Num: 20

Candidate Starts for Antonio\_61:

(Start: 20 @41679 has 37 MA's), (31, 41799), (32, 41817),

Gene: Aroostook\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Aroostook\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Avocado\_37 Start: 31962, Stop: 32303, Start Num: 19

Candidate Starts for Avocado\_37:

(4, 31563), (8, 31647), (9, 31698), (10, 31701), (11, 31719), (12, 31749), (16, 31845), (18, 31941), (Start: 19 @31962 has 63 MA's), (24, 32025), (26, 32037), (29, 32082), (30, 32085), (39, 32145), (43, 32172), (46, 32226),

Gene: Avrafan\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Avrafan\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: AzulaCat\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for AzulaCat\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: BPs\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for BPs\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: BQuat\_38 Start: 30919, Stop: 31269, Start Num: 19

Candidate Starts for BQuat\_38:

(6, 30613), (Start: 19 @30919 has 63 MA's), (21, 30937), (36, 31096), (43, 31135), (47, 31231),

Gene: Barkley26\_38 Start: 30935, Stop: 31285, Start Num: 19

Candidate Starts for Barkley26\_38:

(6, 30644), (Start: 19 @30935 has 63 MA's), (21, 30953), (36, 31112), (42, 31148), (43, 31151), (47, 31247),

Gene: Bialota\_59 Start: 42311, Stop: 42661, Start Num: 20

Candidate Starts for Bialota\_59:

(Start: 20 @42311 has 37 MA's), (31, 42431), (32, 42449),

Gene: Bjan7\_56 Start: 38058, Stop: 38408, Start Num: 20

Candidate Starts for Bjan7\_56:

(5, 37725), (Start: 20 @38058 has 37 MA's), (31, 38178), (32, 38196),

Gene: Bosnia\_60 Start: 44024, Stop: 44377, Start Num: 20

Candidate Starts for Bosnia\_60:

(Start: 20 @44024 has 37 MA's), (31, 44144), (32, 44162),

Gene: BruceB\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for BruceB\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: CLED96\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for CLED96\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Cambiare\_38 Start: 32235, Stop: 32576, Start Num: 19  
Candidate Starts for Cambiare\_38:  
(2, 31917), (7, 31974), (Start: 19 @32235 has 63 MA's), (43, 32445), (44, 32469),

Gene: Camri\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Camri\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: CassieYates\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for CassieYates\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Cedasite\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Cedasite\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Chance64\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Chance64\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Cherrybomb426\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Cherrybomb426\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Clap\_59 Start: 38237, Stop: 38587, Start Num: 20  
Candidate Starts for Clap\_59:  
(5, 37904), (Start: 20 @38237 has 37 MA's), (31, 38357), (32, 38375),

Gene: Coleslaw\_38 Start: 30919, Stop: 31269, Start Num: 19  
Candidate Starts for Coleslaw\_38:  
(6, 30613), (Start: 19 @30919 has 63 MA's), (21, 30937), (36, 31096), (43, 31135), (47, 31231),

Gene: Crespo\_38 Start: 30929, Stop: 31279, Start Num: 19  
Candidate Starts for Crespo\_38:  
(6, 30623), (Start: 19 @30929 has 63 MA's), (21, 30947), (36, 31106), (43, 31145), (47, 31241),

Gene: Cynthia\_59 Start: 38235, Stop: 38585, Start Num: 20  
Candidate Starts for Cynthia\_59:  
(5, 37902), (Start: 20 @38235 has 37 MA's), (31, 38355), (32, 38373),

Gene: DMoney\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for DMoney\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: DNAIII\_0037 Start: 29562, Stop: 29912, Start Num: 19  
Candidate Starts for DNAIII\_0037:  
(6, 29256), (Start: 19 @29562 has 63 MA's), (21, 29580), (36, 29739), (43, 29778), (47, 29874),

Gene: Darionha\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Darionha\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: ECartman\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for ECartman\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Ebert\_63 Start: 38669, Stop: 39019, Start Num: 20  
Candidate Starts for Ebert\_63:  
(5, 38336), (Start: 20 @38669 has 37 MA's), (31, 38789), (32, 38807),

Gene: EdnaMode\_55 Start: 37500, Stop: 37850, Start Num: 20  
Candidate Starts for EdnaMode\_55:  
(Start: 20 @37500 has 37 MA's), (31, 37620), (32, 37638),

Gene: Eudoria\_61 Start: 41679, Stop: 42029, Start Num: 20  
Candidate Starts for Eudoria\_61:  
(Start: 20 @41679 has 37 MA's), (31, 41799), (32, 41817),

Gene: FlagStaff\_36 Start: 31381, Stop: 31731, Start Num: 19  
Candidate Starts for FlagStaff\_36:  
(12, 31243), (14, 31306), (Start: 19 @31381 has 63 MA's), (22, 31402), (34, 31549), (43, 31600), (44, 31624),

Gene: Frosty24\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Frosty24\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: GemG\_59 Start: 38241, Stop: 38591, Start Num: 20  
Candidate Starts for GemG\_59:  
(5, 37908), (Start: 20 @38241 has 37 MA's), (31, 38361), (32, 38379),

Gene: Gideon\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Gideon\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Gizermo\_59 Start: 38237, Stop: 38587, Start Num: 20  
Candidate Starts for Gizermo\_59:  
(5, 37904), (Start: 20 @38237 has 37 MA's), (31, 38357), (32, 38375),

Gene: GoldenAsh\_38 Start: 30913, Stop: 31263, Start Num: 19  
Candidate Starts for GoldenAsh\_38:  
(6, 30622), (Start: 19 @30913 has 63 MA's), (21, 30931), (36, 31090), (42, 31126), (43, 31129), (47, 31225),

Gene: Gomashi\_38 Start: 30929, Stop: 31279, Start Num: 19  
Candidate Starts for Gomashi\_38:  
(6, 30623), (Start: 19 @30929 has 63 MA's), (21, 30947), (36, 31106), (43, 31145), (47, 31241),

Gene: Grizzly\_38 Start: 30913, Stop: 31263, Start Num: 19  
Candidate Starts for Grizzly\_38:

(6, 30622), (Start: 19 @30913 has 63 MA's), (21, 30931), (36, 31090), (42, 31126), (43, 31129), (47, 31225),

Gene: Haley23\_59 Start: 38237, Stop: 38587, Start Num: 20

Candidate Starts for Haley23\_59:

(5, 37904), (Start: 20 @38237 has 37 MA's), (31, 38357), (32, 38375),

Gene: Halo\_38 Start: 30923, Stop: 31273, Start Num: 19

Candidate Starts for Halo\_38:

(6, 30617), (Start: 19 @30923 has 63 MA's), (21, 30941), (36, 31100), (43, 31139), (47, 31235),

Gene: Herod\_63 Start: 44381, Stop: 44731, Start Num: 20

Candidate Starts for Herod\_63:

(Start: 20 @44381 has 37 MA's), (29, 44495), (36, 44546), (42, 44588),

Gene: Hope\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Hope\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Hotshotbaby7\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Hotshotbaby7\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Hugley\_61 Start: 44361, Stop: 44711, Start Num: 20

Candidate Starts for Hugley\_61:

(Start: 20 @44361 has 37 MA's), (29, 44475), (36, 44526), (42, 44568),

Gene: Jane\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Jane\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Jolene\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Jolene\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Jolie2\_36 Start: 30322, Stop: 30672, Start Num: 19

Candidate Starts for Jolie2\_36:

(3, 29977), (Start: 19 @30322 has 63 MA's), (21, 30337), (25, 30394), (43, 30541), (45, 30586),

Gene: Jonghyun\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Jonghyun\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: JorRay\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for JorRay\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Kareem\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Kareem\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Kasen3\_38 Start: 30914, Stop: 31264, Start Num: 19

Candidate Starts for Kasen3\_38:



(6, 30623), (Start: 19 @30914 has 63 MA's), (21, 30932), (36, 31091), (42, 31127), (43, 31130), (47, 31226),

Gene: Kita\_62 Start: 41688, Stop: 42038, Start Num: 20

Candidate Starts for Kita\_62:

(Start: 20 @41688 has 37 MA's), (31, 41808), (32, 41826),

Gene: Lamberg\_55 Start: 36746, Stop: 37096, Start Num: 20

Candidate Starts for Lamberg\_55:

(5, 36413), (Start: 20 @36746 has 37 MA's), (31, 36866), (32, 36884),

Gene: Lemuria\_38 Start: 31664, Stop: 32017, Start Num: 19

Candidate Starts for Lemuria\_38:

(Start: 19 @31664 has 63 MA's), (21, 31679), (22, 31685), (36, 31847), (44, 31910), (45, 31931),

Gene: Liefie\_38 Start: 30926, Stop: 31276, Start Num: 19

Candidate Starts for Liefie\_38:

(6, 30620), (Start: 19 @30926 has 63 MA's), (21, 30944), (36, 31103), (43, 31142), (47, 31238),

Gene: LouisV14\_40 Start: 33193, Stop: 33543, Start Num: 19

Candidate Starts for LouisV14\_40:

(6, 32887), (Start: 19 @33193 has 63 MA's), (21, 33211), (36, 33370), (43, 33409), (47, 33505),

Gene: Maliketh\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Maliketh\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Manasvini\_62 Start: 41703, Stop: 42053, Start Num: 20

Candidate Starts for Manasvini\_62:

(Start: 20 @41703 has 37 MA's), (31, 41823), (32, 41841),

Gene: Marmie\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Marmie\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Melba\_64 Start: 40839, Stop: 41186, Start Num: 20

Candidate Starts for Melba\_64:

(Start: 20 @40839 has 37 MA's), (29, 40953), (32, 40977), (36, 41004),

Gene: Mercurio\_39 Start: 32164, Stop: 32514, Start Num: 20

Candidate Starts for Mercurio\_39:

(1, 31726), (Start: 20 @32164 has 37 MA's), (21, 32179), (28, 32278), (35, 32335), (36, 32344), (45, 32428),

Gene: Mocha12\_59 Start: 38237, Stop: 38587, Start Num: 20

Candidate Starts for Mocha12\_59:

(5, 37904), (Start: 20 @38237 has 37 MA's), (31, 38357), (32, 38375),

Gene: Mowgli\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Mowgli\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Neobush\_61 Start: 41673, Stop: 42023, Start Num: 20

Candidate Starts for Neobush\_61:

(Start: 20 @41673 has 37 MA's), (31, 41793), (32, 41811), (48, 41997),

Gene: Nettuno\_55 Start: 36746, Stop: 37096, Start Num: 20

Candidate Starts for Nettuno\_55:

(5, 36413), (Start: 20 @36746 has 37 MA's), (31, 36866), (32, 36884),

Gene: OctaviousRex\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for OctaviousRex\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Olga\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Olga\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Pace1224\_36 Start: 31381, Stop: 31731, Start Num: 19

Candidate Starts for Pace1224\_36:

(12, 31243), (14, 31306), (Start: 19 @31381 has 63 MA's), (22, 31402), (34, 31549), (43, 31600), (44, 31624),

Gene: Paito\_39 Start: 31261, Stop: 31614, Start Num: 19

Candidate Starts for Paito\_39:

(Start: 19 @31261 has 63 MA's), (21, 31276), (39, 31453), (43, 31480),

Gene: Peeb\_38 Start: 30913, Stop: 31263, Start Num: 19

Candidate Starts for Peeb\_38:

(6, 30622), (Start: 19 @30913 has 63 MA's), (21, 30931), (36, 31090), (42, 31126), (43, 31129), (47, 31225),

Gene: Periodt\_38 Start: 30919, Stop: 31269, Start Num: 19

Candidate Starts for Periodt\_38:

(6, 30613), (Start: 19 @30919 has 63 MA's), (21, 30937), (36, 31096), (43, 31135), (47, 31231),

Gene: Phish\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Phish\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Phreak\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Phreak\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: PhrostedPhlake\_67 Start: 41454, Stop: 41801, Start Num: 20

Candidate Starts for PhrostedPhlake\_67:

(15, 41370), (Start: 20 @41454 has 37 MA's), (23, 41481), (29, 41568), (32, 41592),

Gene: Pickett\_54 Start: 35976, Stop: 36326, Start Num: 20

Candidate Starts for Pickett\_54:

(Start: 20 @35976 has 37 MA's), (31, 36096), (32, 36114),

Gene: PinkYoshi\_38 Start: 30919, Stop: 31269, Start Num: 19

Candidate Starts for PinkYoshi\_38:

(6, 30613), (Start: 19 @30919 has 63 MA's), (21, 30937), (36, 31096), (43, 31135), (47, 31231),

Gene: Plagueis\_38 Start: 30748, Stop: 31098, Start Num: 19  
Candidate Starts for Plagueis\_38:  
(6, 30457), (Start: 19 @30748 has 63 MA's), (21, 30766), (36, 30925), (42, 30961), (43, 30964), (47, 31060),

Gene: Polly\_58 Start: 41122, Stop: 41472, Start Num: 20  
Candidate Starts for Polly\_58:  
(Start: 20 @41122 has 37 MA's), (31, 41242), (32, 41260),

Gene: PrincePatrick\_66 Start: 41403, Stop: 41753, Start Num: 20  
Candidate Starts for PrincePatrick\_66:  
(13, 41289), (Start: 20 @41403 has 37 MA's), (27, 41499), (29, 41517), (31, 41523), (38, 41574), (41, 41601), (49, 41745), (50, 41748),

Gene: Rabbs\_39 Start: 31163, Stop: 31516, Start Num: 19  
Candidate Starts for Rabbs\_39:  
(Start: 19 @31163 has 63 MA's), (21, 31178), (39, 31355), (43, 31382),

Gene: Remy19\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Remy19\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Renaissance\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Renaissance\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Sahara\_58 Start: 37984, Stop: 38334, Start Num: 20  
Candidate Starts for Sahara\_58:  
(5, 37651), (Start: 20 @37984 has 37 MA's), (31, 38104), (32, 38122),

Gene: Savage\_59 Start: 38237, Stop: 38587, Start Num: 20  
Candidate Starts for Savage\_59:  
(5, 37904), (Start: 20 @38237 has 37 MA's), (31, 38357), (32, 38375),

Gene: Schiebel\_38 Start: 30913, Stop: 31263, Start Num: 19  
Candidate Starts for Schiebel\_38:  
(6, 30622), (Start: 19 @30913 has 63 MA's), (21, 30931), (36, 31090), (42, 31126), (43, 31129), (47, 31225),

Gene: ShaboiShabazz\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for ShaboiShabazz\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Sidious\_60 Start: 42842, Stop: 43189, Start Num: 20  
Candidate Starts for Sidious\_60:  
(17, 42806), (Start: 20 @42842 has 37 MA's), (23, 42869), (29, 42956), (40, 43034), (42, 43049), (48, 43163),

Gene: Sizemore\_38 Start: 30914, Stop: 31264, Start Num: 19  
Candidate Starts for Sizemore\_38:  
(6, 30623), (Start: 19 @30914 has 63 MA's), (21, 30932), (36, 31091), (42, 31127), (43, 31130), (47, 31226),

Gene: Sneeze\_39 Start: 31162, Stop: 31515, Start Num: 19  
Candidate Starts for Sneeze\_39:  
(Start: 19 @31162 has 63 MA's), (21, 31177), (39, 31354), (43, 31381),

Gene: Sproutie\_59 Start: 38237, Stop: 38587, Start Num: 20  
Candidate Starts for Sproutie\_59:  
(5, 37904), (Start: 20 @38237 has 37 MA's), (31, 38357), (32, 38375),

Gene: Susceptit\_61 Start: 41680, Stop: 42030, Start Num: 20  
Candidate Starts for Susceptit\_61:  
(Start: 20 @41680 has 37 MA's), (31, 41800), (32, 41818),

Gene: Sweets\_38 Start: 30923, Stop: 31273, Start Num: 19  
Candidate Starts for Sweets\_38:  
(6, 30617), (Start: 19 @30923 has 63 MA's), (21, 30941), (36, 31100), (43, 31139), (47, 31235),

Gene: Tayonia\_61 Start: 41679, Stop: 42029, Start Num: 20  
Candidate Starts for Tayonia\_61:  
(Start: 20 @41679 has 37 MA's), (31, 41799), (32, 41817),

Gene: TinaBug\_38 Start: 30923, Stop: 31273, Start Num: 19  
Candidate Starts for TinaBug\_38:  
(6, 30617), (Start: 19 @30923 has 63 MA's), (21, 30941), (36, 31100), (43, 31139), (47, 31235),

Gene: TomBrady\_38 Start: 30929, Stop: 31279, Start Num: 19  
Candidate Starts for TomBrady\_38:  
(6, 30623), (Start: 19 @30929 has 63 MA's), (21, 30947), (36, 31106), (43, 31145), (47, 31241),

Gene: Trumpet\_61 Start: 41680, Stop: 42030, Start Num: 20  
Candidate Starts for Trumpet\_61:  
(Start: 20 @41680 has 37 MA's), (31, 41800), (32, 41818),

Gene: TuertoX\_59 Start: 38237, Stop: 38587, Start Num: 20  
Candidate Starts for TuertoX\_59:  
(5, 37904), (Start: 20 @38237 has 37 MA's), (31, 38357), (32, 38375),

Gene: UmaThurman\_63 Start: 41482, Stop: 41829, Start Num: 20  
Candidate Starts for UmaThurman\_63:  
(Start: 20 @41482 has 37 MA's), (28, 41590), (29, 41596), (31, 41602), (32, 41620), (36, 41647), (37, 41650),

Gene: Wendigo\_38 Start: 30928, Stop: 31278, Start Num: 19  
Candidate Starts for Wendigo\_38:  
(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Whack\_55 Start: 38005, Stop: 38304, Start Num: 19  
Candidate Starts for Whack\_55:  
(Start: 19 @38005 has 63 MA's), (29, 38122), (33, 38173), (35, 38185), (36, 38194),

Gene: Whiteclaw\_59 Start: 38237, Stop: 38587, Start Num: 20  
Candidate Starts for Whiteclaw\_59:  
(5, 37904), (Start: 20 @38237 has 37 MA's), (31, 38357), (32, 38375),

Gene: Zameen\_61 Start: 41679, Stop: 42029, Start Num: 20

Candidate Starts for Zameen\_61:

(Start: 20 @41679 has 37 MA's), (31, 41799), (32, 41817),

Gene: Zirinka\_58 Start: 42299, Stop: 42649, Start Num: 20

Candidate Starts for Zirinka\_58:

(Start: 20 @42299 has 37 MA's), (31, 42419), (32, 42437),

Gene: ZoMa\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for ZoMa\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),

Gene: Zombie\_38 Start: 30928, Stop: 31278, Start Num: 19

Candidate Starts for Zombie\_38:

(6, 30622), (Start: 19 @30928 has 63 MA's), (21, 30946), (36, 31105), (43, 31144), (47, 31240),