

Pham 308514

|                       |    |    |    |    |    |    |     |  |  |    |     |     |  |     |     |     |  |     |     |     |     |     |     |  |     |     |     |     |     |     |     |  |     |     |     |     |     |
|-----------------------|----|----|----|----|----|----|-----|--|--|----|-----|-----|--|-----|-----|-----|--|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|-----|
| 1: Kowalski_36 + 2    |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 2: Onika_36 + 4       |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 3: Scumberland_38 + 2 |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 4: Zapato_36          | 10 |    | 16 | 18 | 23 | 29 | 31  |  |  | 38 | 58  | 102 |  |     | 94  | 103 |  |     | 140 | 160 |     |     | 195 |  | 233 | 250 | 272 |     |     | 309 | 312 |  | 320 | 324 | 346 | 405 | 413 |
| 5: RobsFeet_38 + 1    |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 6: Yeti_37 + 7        |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 7: Piperis_37         |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 8: Lucretia_37 + 1    |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 9: Ariadne_45 + 1     | 19 | 15 | 19 |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 10: Fireman_37        |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 11: SirFrank_36       |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 12: BeagleBug_36 + 4  |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 13: Megan_31          |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 14: Glorp_38          |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 15: Antares_37        |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 16: PiperSansNom_37   |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 17: EarickHC_37 + 1   |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 18: Quhwah_40         |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 19: NoodlelyBoi_37    |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 20: Paschalis_36      |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 21: Skugga_35         | 10 |    |    | 24 | 29 |    | 35  |  |  | 38 | 58  | 102 |  |     | 94  | 103 |  |     | 140 | 160 |     |     | 195 |  | 233 | 250 | 272 |     |     | 309 | 312 |  | 320 | 324 | 346 | 405 | 413 |
| 22: Jayden_38         |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 23: Teamocil_38 + 1   |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 24: Crisis_38         | 19 | 15 | 19 |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 25: Tyumbra_35        | 10 |    | 16 | 18 | 23 | 29 | 31  |  |  | 38 | 58  | 102 |  |     | 94  | 103 |  |     | 140 | 160 |     |     | 195 |  | 233 | 250 | 272 |     |     | 309 | 312 |  | 320 | 324 | 346 | 405 | 413 |
| 26: Metamorphoo_37    |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 27: Shotgun_36        |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 28: Nicole72_32       |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 29: UneinaGillian_36  |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 30: Tempo_36 + 2      |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 31: Phinky_43         |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 32: Kelcole_35 + 3    |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 33: BabyDotz_36       |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 34: Margie_41         | 6  | 10 | 13 | 17 | 20 |    | 34  |  |  | 38 | 58  | 102 |  |     | 94  | 103 |  |     | 140 | 160 |     |     | 195 |  | 233 | 250 | 272 |     |     | 309 | 312 |  | 320 | 324 | 346 | 405 | 413 |
| 35: SadLad_41 + 21    |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 36: Matzah_33         |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 37: Cressida_34       |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 38: MementoMori_33    |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 39: Cinna_32          |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 40: Kozie_33          |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 41: Margaery_32       |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 42: Hendrix_71        |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 43: Rasputia_72       |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |
| 44: MisoSoup_29       |    |    |    |    | 38 | 58 | 102 |  |  | 94 | 103 |     |  | 140 | 160 |     |  | 195 |     | 233 | 250 | 272 |     |  | 309 | 312 |     | 320 | 324 | 346 |     |  | 374 | 379 | 383 | 405 |     |

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 308514 Report

This analysis was run 06/27/26 on database version 652.

Pham number 308514 has 75 members, 8 are drafts.

Phages represented in each track:

- Track 1 : Kowalski\_36, Ramiel05\_36, Savannah\_36
- Track 2 : Onika\_36, Cranjjs\_38, CrazyRich\_36, PhedwardCullen\_36, Rockwell\_36
- Track 3 : Scumberland\_38, Selwyn23\_38, LittleFortune\_38
- Track 4 : Zapato\_36
- Track 5 : RobsFeet\_38, Shrubaron\_37
- Track 6 : Yeti\_37, Honeyfin\_38, Phrancesco\_37, Germa\_38, Ganandorf\_36, Jefe\_37, Phorgeous\_36, Busephilis\_36
- Track 7 : Piperis\_37
- Track 8 : Lucretia\_37, PierreOrion\_37
- Track 9 : Ariadne\_45, Smarties\_45
- Track 10 : Fireman\_37
- Track 11 : SirFrank\_36
- Track 12 : BeagleBug\_36, Pulchra\_38, Jollipop\_37, Hermeonysus\_36, BrazzalePHS\_36
- Track 13 : Megan\_31
- Track 14 : Glorp\_38
- Track 15 : Antares\_37
- Track 16 : PiperSansNom\_37
- Track 17 : EarickHC\_37, KaiHaiDragon\_37
- Track 18 : Quhwah\_40
- Track 19 : NoodlelyBoi\_37
- Track 20 : Paschalis\_36
- Track 21 : Skugga\_35
- Track 22 : Jayden\_38
- Track 23 : Teamocil\_38, Gina\_38
- Track 24 : Crisis\_38
- Track 25 : Tyumbra\_35
- Track 26 : Metamorphoo\_37
- Track 27 : Shotgun\_36
- Track 28 : Nicole72\_32
- Track 29 : OneinaGillian\_36
- Track 30 : Tempo\_36, Fregley\_37, CandC\_35
- Track 31 : Phinky\_43
- Track 32 : Kelcole\_35, RobinRose\_38, Romm\_38, KillerQueen\_37
- Track 33 : BabyDotz\_36
- Track 34 : Marcie\_41
- Track 35 : SadLad\_41, RubyRalph\_39, Fransoyer\_39

- Track 36 : Matzah\_33
- Track 37 : Cressida\_34
- Track 38 : MementoMori\_33
- Track 39 : Cinna\_32
- Track 40 : Kozie\_33
- Track 41 : Margaery\_32
- Track 42 : Hendrix\_71
- Track 43 : Rasputia\_72
- Track 44 : MisoSoup\_29

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

The start number called the most often in the published annotations is 38, it was called in 39 of the 67 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Antares\_37, BeagleBug\_36, BrazzalePHS\_36, Busephilis\_36, Cinna\_32, Cranjis\_38, CrazyRich\_36, Cressida\_34, Crisis\_38, EarickHC\_37, Ganandorf\_36, Germa\_38, Glorp\_38, Hermeonysus\_36, Honeyfin\_38, Jefe\_37, Jollipop\_37, KaiHaiDragon\_37, Kowalski\_36, LittleFortune\_38, Lucretia\_37, Margaery\_32, Matzah\_33, MementoMori\_33, NoodlelyBoi\_37, Onika\_36, Paschalis\_36, PhedwardCullen\_36, Phorgeous\_36, Phrancesco\_37, PierreOrion\_37, PiperSansNom\_37, Piperis\_37, Pulchra\_38, Quhwah\_40, Ramiel05\_36, Rockwell\_36, Savannah\_36, Scumberland\_38, Selwyn23\_38, Shotgun\_36, SirFrank\_36, Yeti\_37,

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

- 

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

- Ariadne\_45, BabyDotz\_36, CandC\_35, Fireman\_37, Fransoyer\_39, Fregley\_37, Gina\_38, Hendrix\_71, Jayden\_38, Kelcole\_35, KillerQueen\_37, Kozie\_33, Marcie\_41, Megan\_31, Metamorphoo\_37, MisoSoup\_29, Nicole72\_32, OneinaGillian\_36, Phinky\_43, Rasputia\_72, RobinRose\_38, RobsFeet\_38, Romm\_38, RubyRalph\_39, SadLad\_41, Shrubaron\_37, Skugga\_35, Smarties\_45, Teamocil\_38, Tempo\_36, Tyrumbra\_35, Zapato\_36,

**Summary by start number:**

Start 1:

- Found in 3 of 75 ( 4.0% ) of genes in pham
- Manual Annotations of this start: 3 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Fransoyer\_39 (EG), RubyRalph\_39 (EG), SadLad\_41 (EG),

Start 10:

- Found in 6 of 75 ( 8.0% ) of genes in pham
- Manual Annotations of this start: 6 of 67
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Fireman\_37 (EC), Jayden\_38 (EC), Metamorphoo\_37 (EC), RobsFeet\_38 (EC), Shrubaron\_37 (EC), Tyrumbra\_35 (EC),

#### Start 16:

- Found in 1 of 75 ( 1.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Zapato\_36 (EC),

#### Start 38:

- Found in 43 of 75 ( 57.3% ) of genes in pham
- Manual Annotations of this start: 39 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Antares\_37 (EC), BeagleBug\_36 (EC), BrazzalePHS\_36 (EC), Busephilis\_36 (EC), Cinna\_32 (EI), Cranjis\_38 (EC), CrazyRich\_36 (EC), Cressida\_34 (EI), Crisis\_38 (EC), EarickHC\_37 (EC), Ganandorf\_36 (EC), Germa\_38 (EC), Glorp\_38 (EC), Hermeonysus\_36 (EC), Honeyfin\_38 (EC), Jefe\_37 (EC), Jollipop\_37 (EC), KaiHaiDragon\_37 (EC), Kowalski\_36 (EC), LittleFortune\_38 (EC), Lucretia\_37 (EC), Margaery\_32 (EI), Matzah\_33 (EI), MementoMori\_33 (EI), NoodlelyBoi\_37 (EC), Onika\_36 (EC), Paschalis\_36 (EC), PhedwardCullen\_36 (EC), Phorgeous\_36 (EC), Phrancesco\_37 (EC), PierreOrion\_37 (EC), PiperSansNom\_37 (EC), Piperis\_37 (EC), Pulchra\_38 (EC), Quhwah\_40 (EC), Ramiel05\_36 (EC), Rockwell\_36 (EC), Savannah\_36 (EC), Scumberland\_38 (EC), Selwyn23\_38 (EC), Shotgun\_36 (EC), SirFrank\_36 (EC), Yeti\_37 (EC),

#### Start 39:

- Found in 1 of 75 ( 1.3% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: MisoSoup\_29 (GM),

#### Start 40:

- Found in 13 of 75 ( 17.3% ) of genes in pham
- Manual Annotations of this start: 12 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BabyDotz\_36 (EG), CandC\_35 (EG), Fregley\_37 (EG), Hendrix\_71 (GC), Kelcole\_35 (EG), KillerQueen\_37 (EG), Marcie\_41 (EG), OneinaGillian\_36 (EG), Phinky\_43 (EG), Rasputia\_72 (GC), RobinRose\_38 (EG), Romm\_38 (EG), Tempo\_36 (EG),

#### Start 55:

- Found in 8 of 75 ( 10.7% ) of genes in pham
- Manual Annotations of this start: 7 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ariadne\_45 (EC), Gina\_38 (EC), Kozie\_33 (EI), Megan\_31 (EC), Nicole72\_32 (EC), Skugga\_35 (EC), Smarties\_45 (EC), Teamocil\_38 (EC),

### Summary by clusters:

There are 5 clusters represented in this pham: EI, EG, GC, GM, EC,

Info for manual annotations of cluster EC:

- Start number 10 was manually annotated 6 times for cluster EC.
- Start number 38 was manually annotated 34 times for cluster EC.
- Start number 55 was manually annotated 6 times for cluster EC.

Info for manual annotations of cluster EG:

- Start number 1 was manually annotated 3 times for cluster EG.
- Start number 40 was manually annotated 10 times for cluster EG.

Info for manual annotations of cluster EI:

- Start number 38 was manually annotated 5 times for cluster EI.
- Start number 55 was manually annotated 1 time for cluster EI.

Info for manual annotations of cluster GC:

- Start number 40 was manually annotated 2 times for cluster GC.

### **Gene Information:**

Gene: Antares\_37 Start: 23711, Stop: 25657, Start Num: 38

Candidate Starts for Antares\_37:

(Start: 38 @23711 has 39 MA's), (50, 23756), (53, 23780), (57, 23807), (62, 23828), (94, 23984), (103, 24020), (115, 24053), (117, 24059), (121, 24074), (149, 24218), (160, 24260), (171, 24305), (195, 24338), (226, 24446), (232, 24473), (233, 24476), (245, 24521), (250, 24548), (251, 24551), (272, 24641), (279, 24680), (280, 24689), (284, 24704), (309, 24851), (311, 24890), (312, 24902), (327, 24992), (328, 24995), (329, 25019), (330, 25028), (333, 25058), (340, 25133), (344, 25166), (348, 25196), (374, 25403), (379, 25442), (383, 25472), (405, 25589),

Gene: Ariadne\_45 Start: 25427, Stop: 27295, Start Num: 55

Candidate Starts for Ariadne\_45:

(Start: 55 @25427 has 7 MA's), (58, 25457), (60, 25463), (82, 25580), (84, 25595), (125, 25742), (127, 25754), (129, 25766), (130, 25769), (152, 25865), (156, 25883), (161, 25895), (176, 25949), (185, 25979), (217, 26075), (230, 26126), (231, 26132), (259, 26249), (276, 26312), (281, 26345), (283, 26351), (285, 26360), (315, 26570), (325, 26630), (329, 26666), (332, 26687), (333, 26705), (336, 26741), (343, 26801), (361, 26903), (362, 26924), (369, 26981), (401, 27209), (403, 27215),

Gene: BabyDotz\_36 Start: 26482, Stop: 28446, Start Num: 40

Candidate Starts for BabyDotz\_36:

(Start: 40 @26482 has 12 MA's), (47, 26506), (59, 26578), (62, 26593), (113, 26809), (117, 26824), (128, 26881), (138, 26932), (205, 27151), (207, 27166), (252, 27319), (262, 27361), (283, 27451), (285, 27460), (311, 27640), (313, 27661), (318, 27694), (320, 27703), (329, 27769), (334, 27817), (335, 27820), (340, 27883), (361, 28018), (373, 28147), (379, 28204), (385, 28252), (400, 28345), (402, 28354), (412, 28432),

Gene: BeagleBug\_36 Start: 23492, Stop: 25438, Start Num: 38

Candidate Starts for BeagleBug\_36:

(Start: 38 @23492 has 39 MA's), (50, 23537), (53, 23561), (57, 23588), (62, 23609), (94, 23765), (103, 23801), (115, 23834), (117, 23840), (121, 23855), (149, 23999), (160, 24041), (195, 24119), (232, 24254), (233, 24257), (245, 24302), (250, 24329), (251, 24332), (272, 24422), (279, 24461), (280, 24470), (284, 24485), (309, 24632), (311, 24671), (312, 24683), (327, 24773), (328, 24776), (329, 24800), (330, 24809), (340, 24914), (344, 24947), (348, 24977), (374, 25184), (379, 25223), (383,

25253), (405, 25370),

Gene: BrazzalePHS\_36 Start: 23506, Stop: 25452, Start Num: 38

Candidate Starts for BrazzalePHS\_36:

(Start: 38 @23506 has 39 MA's), (50, 23551), (53, 23575), (57, 23602), (62, 23623), (94, 23779), (103, 23815), (115, 23848), (117, 23854), (121, 23869), (149, 24013), (160, 24055), (195, 24133), (232, 24268), (233, 24271), (245, 24316), (250, 24343), (251, 24346), (272, 24436), (279, 24475), (280, 24484), (284, 24499), (309, 24646), (311, 24685), (312, 24697), (327, 24787), (328, 24790), (329, 24814), (330, 24823), (340, 24928), (344, 24961), (348, 24991), (374, 25198), (379, 25237), (383, 25267), (405, 25384),

Gene: Busephilis\_36 Start: 23441, Stop: 25393, Start Num: 38

Candidate Starts for Busephilis\_36:

(Start: 38 @23441 has 39 MA's), (50, 23486), (53, 23510), (57, 23537), (62, 23558), (94, 23714), (103, 23750), (115, 23783), (117, 23789), (121, 23804), (149, 23948), (160, 23990), (161, 23993), (195, 24074), (233, 24212), (234, 24218), (245, 24257), (250, 24284), (254, 24305), (257, 24314), (269, 24368), (272, 24377), (276, 24392), (279, 24416), (280, 24425), (284, 24440), (306, 24566), (309, 24587), (311, 24626), (312, 24638), (327, 24728), (328, 24731), (329, 24755), (330, 24764), (333, 24794), (339, 24866), (340, 24869), (344, 24902), (348, 24932), (374, 25139), (379, 25178), (383, 25208), (405, 25325),

Gene: CandC\_35 Start: 24614, Stop: 26587, Start Num: 40

Candidate Starts for CandC\_35:

(Start: 40 @24614 has 12 MA's), (41, 24617), (68, 24752), (113, 24944), (117, 24959), (128, 25016), (140, 25070), (142, 25082), (149, 25115), (178, 25220), (252, 25454), (266, 25511), (283, 25586), (313, 25796), (315, 25811), (329, 25910), (330, 25919), (335, 25961), (345, 26063), (361, 26159), (373, 26288), (385, 26393), (400, 26486), (402, 26495), (412, 26573),

Gene: Cinna\_32 Start: 22859, Stop: 25375, Start Num: 38

Candidate Starts for Cinna\_32:

(14, 22466), (Start: 38 @22859 has 39 MA's), (57, 22952), (64, 22985), (71, 23009), (75, 23027), (89, 23111), (97, 23141), (100, 23150), (105, 23168), (109, 23177), (115, 23198), (117, 23204), (121, 23219), (126, 23252), (128, 23261), (143, 23336), (149, 23363), (180, 23570), (186, 23630), (189, 23663), (192, 23735), (193, 23738), (198, 23771), (199, 23774), (200, 23786), (211, 23825), (219, 23870), (221, 23876), (223, 23885), (226, 23942), (246, 24053), (255, 24101), (263, 24140), (268, 24194), (288, 24296), (294, 24407), (302, 24476), (307, 24512), (311, 24569), (316, 24608), (322, 24641), (326, 24665), (328, 24674), (330, 24707), (335, 24749), (339, 24809), (351, 24884), (367, 25019), (372, 25076), (403, 25289), (408, 25334),

Gene: Cranjis\_38 Start: 23666, Stop: 25612, Start Num: 38

Candidate Starts for Cranjis\_38:

(Start: 38 @23666 has 39 MA's), (50, 23711), (53, 23735), (57, 23762), (62, 23783), (94, 23939), (103, 23975), (115, 24008), (117, 24014), (121, 24029), (149, 24173), (160, 24215), (171, 24260), (195, 24293), (232, 24428), (233, 24431), (245, 24476), (250, 24503), (251, 24506), (272, 24596), (279, 24635), (280, 24644), (284, 24659), (309, 24806), (311, 24845), (312, 24857), (327, 24947), (328, 24950), (329, 24974), (330, 24983), (340, 25088), (344, 25121), (348, 25151), (374, 25358), (379, 25397), (383, 25427), (405, 25544),

Gene: CrazyRich\_36 Start: 23475, Stop: 25421, Start Num: 38

Candidate Starts for CrazyRich\_36:

(Start: 38 @23475 has 39 MA's), (50, 23520), (53, 23544), (57, 23571), (62, 23592), (94, 23748), (103, 23784), (115, 23817), (117, 23823), (121, 23838), (149, 23982), (160, 24024), (171, 24069), (195, 24102), (232, 24237), (233, 24240), (245, 24285), (250, 24312), (251, 24315), (272, 24405), (279,

24444), (280, 24453), (284, 24468), (309, 24615), (311, 24654), (312, 24666), (327, 24756), (328, 24759), (329, 24783), (330, 24792), (340, 24897), (344, 24930), (348, 24960), (374, 25167), (379, 25206), (383, 25236), (405, 25353),

Gene: Cressida\_34 Start: 22922, Stop: 24850, Start Num: 38

Candidate Starts for Cressida\_34:

(Start: 38 @22922 has 39 MA's), (64, 23048), (86, 23165), (97, 23204), (100, 23213), (105, 23231), (109, 23240), (117, 23267), (126, 23315), (143, 23399), (149, 23426), (169, 23495), (177, 23522), (197, 23558), (199, 23564), (214, 23615), (225, 23651), (231, 23678), (233, 23684), (248, 23738), (253, 23765), (268, 23816), (277, 23837), (283, 23867), (292, 23900), (307, 23990), (311, 24047), (316, 24086), (317, 24101), (319, 24107), (328, 24152), (329, 24176), (330, 24185), (332, 24197), (335, 24227), (352, 24362), (358, 24401), (364, 24473), (367, 24494), (369, 24512), (372, 24551), (374, 24569), (378, 24602), (380, 24617), (381, 24620), (392, 24704), (401, 24758), (403, 24764),

Gene: Crisis\_38 Start: 23460, Stop: 25412, Start Num: 38

Candidate Starts for Crisis\_38:

(Start: 38 @23460 has 39 MA's), (50, 23505), (53, 23529), (57, 23556), (62, 23577), (94, 23733), (103, 23769), (115, 23802), (117, 23808), (121, 23823), (149, 23967), (160, 24009), (161, 24012), (195, 24093), (233, 24231), (234, 24237), (245, 24276), (250, 24303), (254, 24324), (257, 24333), (269, 24387), (272, 24396), (276, 24411), (279, 24435), (280, 24444), (284, 24459), (306, 24585), (309, 24606), (311, 24645), (312, 24657), (327, 24747), (328, 24750), (329, 24774), (330, 24783), (333, 24813), (339, 24885), (340, 24888), (344, 24921), (348, 24951), (379, 25197), (383, 25227), (405, 25344),

Gene: EarickHC\_37 Start: 23386, Stop: 25338, Start Num: 38

Candidate Starts for EarickHC\_37:

(Start: 38 @23386 has 39 MA's), (50, 23431), (53, 23455), (57, 23482), (62, 23503), (103, 23695), (115, 23728), (117, 23734), (121, 23749), (149, 23893), (160, 23935), (161, 23938), (166, 23956), (195, 24019), (233, 24157), (234, 24163), (245, 24202), (250, 24229), (269, 24313), (272, 24322), (276, 24337), (279, 24361), (280, 24370), (284, 24385), (306, 24511), (309, 24532), (311, 24571), (312, 24583), (327, 24673), (328, 24676), (329, 24700), (330, 24709), (339, 24811), (340, 24814), (344, 24847), (348, 24877), (374, 25084), (379, 25123), (383, 25153), (405, 25270),

Gene: Fireman\_37 Start: 24038, Stop: 26530, Start Num: 10

Candidate Starts for Fireman\_37:

(Start: 10 @24038 has 6 MA's), (11, 24068), (15, 24131), (19, 24191), (30, 24401), (31, 24419), (33, 24437), (35, 24470), (48, 24548), (52, 24578), (61, 24620), (70, 24671), (73, 24689), (79, 24725), (92, 24794), (98, 24818), (125, 24932), (133, 24977), (135, 24989), (137, 24995), (147, 25043), (163, 25103), (165, 25112), (174, 25157), (231, 25352), (259, 25469), (264, 25493), (281, 25565), (285, 25580), (309, 25718), (314, 25784), (331, 25901), (333, 25925), (336, 25961), (363, 26186), (369, 26219), (372, 26258), (385, 26351), (390, 26381),

Gene: Fransoyer\_39 Start: 25911, Stop: 28880, Start Num: 1

Candidate Starts for Fransoyer\_39:

(Start: 1 @25911 has 3 MA's), (2, 25941), (3, 26073), (4, 26112), (5, 26157), (6, 26235), (7, 26337), (8, 26361), (9, 26367), (13, 26463), (17, 26559), (20, 26643), (34, 26841), (46, 26916), (51, 26943), (66, 27033), (67, 27036), (69, 27045), (72, 27057), (78, 27090), (81, 27117), (93, 27183), (95, 27189), (106, 27234), (112, 27255), (136, 27384), (146, 27429), (153, 27471), (159, 27486), (162, 27495), (170, 27528), (219, 27660), (237, 27720), (261, 27816), (265, 27834), (272, 27858), (273, 27861), (306, 28047), (311, 28107), (313, 28128), (315, 28143), (321, 28176), (323, 28194), (326, 28209), (332, 28263), (335, 28293), (339, 28353), (340, 28356), (346, 28413), (355, 28443), (359, 28461), (368, 28545), (373, 28602), (379, 28656), (400, 28788), (407, 28836), (408, 28839),

Gene: Fregley\_37 Start: 25184, Stop: 27157, Start Num: 40

Candidate Starts for Fregley\_37:

(Start: 40 @25184 has 12 MA's), (41, 25187), (68, 25322), (113, 25514), (117, 25529), (128, 25586), (140, 25640), (142, 25652), (149, 25685), (178, 25790), (252, 26024), (266, 26081), (283, 26156), (313, 26366), (315, 26381), (329, 26480), (330, 26489), (335, 26531), (345, 26633), (361, 26729), (373, 26858), (385, 26963), (400, 27056), (402, 27065), (412, 27143),

Gene: Ganandorf\_36 Start: 23522, Stop: 25474, Start Num: 38

Candidate Starts for Ganandorf\_36:

(Start: 38 @23522 has 39 MA's), (50, 23567), (53, 23591), (57, 23618), (62, 23639), (94, 23795), (103, 23831), (115, 23864), (117, 23870), (121, 23885), (149, 24029), (160, 24071), (161, 24074), (195, 24155), (233, 24293), (234, 24299), (245, 24338), (250, 24365), (254, 24386), (257, 24395), (269, 24449), (272, 24458), (276, 24473), (279, 24497), (280, 24506), (284, 24521), (306, 24647), (309, 24668), (311, 24707), (312, 24719), (327, 24809), (328, 24812), (329, 24836), (330, 24845), (333, 24875), (339, 24947), (340, 24950), (344, 24983), (348, 25013), (374, 25220), (379, 25259), (383, 25289), (405, 25406),

Gene: Germa\_38 Start: 23351, Stop: 25303, Start Num: 38

Candidate Starts for Germa\_38:

(Start: 38 @23351 has 39 MA's), (50, 23396), (53, 23420), (57, 23447), (62, 23468), (94, 23624), (103, 23660), (115, 23693), (117, 23699), (121, 23714), (149, 23858), (160, 23900), (161, 23903), (195, 23984), (233, 24122), (234, 24128), (245, 24167), (250, 24194), (254, 24215), (257, 24224), (269, 24278), (272, 24287), (276, 24302), (279, 24326), (280, 24335), (284, 24350), (306, 24476), (309, 24497), (311, 24536), (312, 24548), (327, 24638), (328, 24641), (329, 24665), (330, 24674), (333, 24704), (339, 24776), (340, 24779), (344, 24812), (348, 24842), (374, 25049), (379, 25088), (383, 25118), (405, 25235),

Gene: Gina\_38 Start: 23314, Stop: 25212, Start Num: 55

Candidate Starts for Gina\_38:

(Start: 55 @23314 has 7 MA's), (58, 23344), (60, 23350), (82, 23467), (114, 23590), (116, 23596), (122, 23614), (135, 23677), (137, 23683), (139, 23689), (151, 23752), (154, 23770), (173, 23848), (206, 23959), (212, 23971), (217, 23992), (227, 24028), (231, 24049), (232, 24052), (276, 24229), (281, 24262), (283, 24268), (285, 24277), (297, 24325), (324, 24541), (325, 24547), (329, 24583), (333, 24622), (336, 24658), (343, 24718), (344, 24733), (362, 24841), (369, 24898), (373, 24943), (384, 25030), (403, 25132), (413, 25204),

Gene: Glorp\_38 Start: 23523, Stop: 25475, Start Num: 38

Candidate Starts for Glorp\_38:

(Start: 38 @23523 has 39 MA's), (50, 23568), (53, 23592), (57, 23619), (62, 23640), (94, 23796), (103, 23832), (115, 23865), (117, 23871), (121, 23886), (149, 24030), (160, 24072), (161, 24075), (195, 24156), (233, 24294), (234, 24300), (245, 24339), (250, 24366), (254, 24387), (257, 24396), (269, 24450), (272, 24459), (276, 24474), (279, 24498), (280, 24507), (284, 24522), (306, 24648), (309, 24669), (311, 24708), (312, 24720), (327, 24810), (328, 24813), (329, 24837), (330, 24846), (333, 24876), (339, 24948), (340, 24951), (344, 24984), (348, 25014), (357, 25050), (374, 25221), (377, 25242), (383, 25290), (405, 25407),

Gene: Hendrix\_71 Start: 44066, Stop: 46000, Start Num: 40

Candidate Starts for Hendrix\_71:

(Start: 40 @44066 has 12 MA's), (50, 44108), (57, 44156), (96, 44342), (115, 44402), (117, 44408), (126, 44456), (128, 44465), (129, 44471), (141, 44528), (146, 44555), (182, 44684), (194, 44690), (196, 44696), (203, 44726), (204, 44729), (227, 44792), (231, 44813), (236, 44825), (249, 44876), (266, 44951), (270, 44963), (287, 45026), (313, 45209), (315, 45224), (326, 45284), (328, 45293), (330, 45323), (334, 45362), (335, 45365), (340, 45428), (344, 45461), (360, 45554), (362, 45584),

(364, 45614), (367, 45638), (369, 45656), (371, 45686), (391, 45848), (396, 45872), (400, 45899), (404, 45917), (411, 45983), (412, 45986), (413, 45992),

Gene: Hermeonysus\_36 Start: 23395, Stop: 25341, Start Num: 38

Candidate Starts for Hermeonysus\_36:

(Start: 38 @23395 has 39 MA's), (50, 23440), (53, 23464), (57, 23491), (62, 23512), (94, 23668), (103, 23704), (115, 23737), (117, 23743), (121, 23758), (149, 23902), (160, 23944), (195, 24022), (232, 24157), (233, 24160), (245, 24205), (250, 24232), (251, 24235), (272, 24325), (279, 24364), (280, 24373), (284, 24388), (309, 24535), (311, 24574), (312, 24586), (327, 24676), (328, 24679), (329, 24703), (330, 24712), (340, 24817), (344, 24850), (348, 24880), (374, 25087), (379, 25126), (383, 25156), (405, 25273),

Gene: Honeyfin\_38 Start: 23710, Stop: 25662, Start Num: 38

Candidate Starts for Honeyfin\_38:

(Start: 38 @23710 has 39 MA's), (50, 23755), (53, 23779), (57, 23806), (62, 23827), (94, 23983), (103, 24019), (115, 24052), (117, 24058), (121, 24073), (149, 24217), (160, 24259), (161, 24262), (195, 24343), (233, 24481), (234, 24487), (245, 24526), (250, 24553), (254, 24574), (257, 24583), (269, 24637), (272, 24646), (276, 24661), (279, 24685), (280, 24694), (284, 24709), (306, 24835), (309, 24856), (311, 24895), (312, 24907), (327, 24997), (328, 25000), (329, 25024), (330, 25033), (333, 25063), (339, 25135), (340, 25138), (344, 25171), (348, 25201), (374, 25408), (379, 25447), (383, 25477), (405, 25594),

Gene: Jayden\_38 Start: 23468, Stop: 25918, Start Num: 10

Candidate Starts for Jayden\_38:

(Start: 10 @23468 has 6 MA's), (11, 23498), (12, 23504), (24, 23768), (29, 23834), (32, 23870), (45, 23972), (56, 24026), (74, 24125), (87, 24206), (96, 24233), (100, 24251), (102, 24260), (108, 24278), (110, 24287), (120, 24320), (143, 24425), (160, 24506), (174, 24569), (183, 24602), (217, 24698), (276, 24935), (281, 24968), (285, 24983), (315, 25193), (325, 25253), (332, 25310), (333, 25328), (336, 25364), (341, 25406), (343, 25424), (344, 25439), (350, 25472), (361, 25526), (362, 25547), (363, 25571), (366, 25583), (369, 25604), (370, 25619), (382, 25712), (384, 25736), (403, 25838), (413, 25910),

Gene: Jefe\_37 Start: 23447, Stop: 25399, Start Num: 38

Candidate Starts for Jefe\_37:

(Start: 38 @23447 has 39 MA's), (50, 23492), (53, 23516), (57, 23543), (62, 23564), (94, 23720), (103, 23756), (115, 23789), (117, 23795), (121, 23810), (149, 23954), (160, 23996), (161, 23999), (195, 24080), (233, 24218), (234, 24224), (245, 24263), (250, 24290), (254, 24311), (257, 24320), (269, 24374), (272, 24383), (276, 24398), (279, 24422), (280, 24431), (284, 24446), (306, 24572), (309, 24593), (311, 24632), (312, 24644), (327, 24734), (328, 24737), (329, 24761), (330, 24770), (333, 24800), (339, 24872), (340, 24875), (344, 24908), (348, 24938), (374, 25145), (379, 25184), (383, 25214), (405, 25331),

Gene: Jollipop\_37 Start: 23792, Stop: 25738, Start Num: 38

Candidate Starts for Jollipop\_37:

(Start: 38 @23792 has 39 MA's), (50, 23837), (53, 23861), (57, 23888), (62, 23909), (94, 24065), (103, 24101), (115, 24134), (117, 24140), (121, 24155), (149, 24299), (160, 24341), (195, 24419), (232, 24554), (233, 24557), (245, 24602), (250, 24629), (251, 24632), (272, 24722), (279, 24761), (280, 24770), (284, 24785), (309, 24932), (311, 24971), (312, 24983), (327, 25073), (328, 25076), (329, 25100), (330, 25109), (340, 25214), (344, 25247), (348, 25277), (374, 25484), (379, 25523), (383, 25553), (405, 25670),

Gene: KaiHaiDragon\_37 Start: 23386, Stop: 25338, Start Num: 38

Candidate Starts for KaiHaiDragon\_37:

(Start: 38 @23386 has 39 MA's), (50, 23431), (53, 23455), (57, 23482), (62, 23503), (103, 23695), (115, 23728), (117, 23734), (121, 23749), (149, 23893), (160, 23935), (161, 23938), (166, 23956), (195, 24019), (233, 24157), (234, 24163), (245, 24202), (250, 24229), (269, 24313), (272, 24322), (276, 24337), (279, 24361), (280, 24370), (284, 24385), (306, 24511), (309, 24532), (311, 24571), (312, 24583), (327, 24673), (328, 24676), (329, 24700), (330, 24709), (339, 24811), (340, 24814), (344, 24847), (348, 24877), (374, 25084), (379, 25123), (383, 25153), (405, 25270),

Gene: Kelcole\_35 Start: 25066, Stop: 27039, Start Num: 40

Candidate Starts for Kelcole\_35:

(Start: 40 @25066 has 12 MA's), (41, 25069), (68, 25204), (113, 25396), (117, 25411), (128, 25468), (140, 25522), (142, 25534), (178, 25672), (252, 25906), (266, 25963), (283, 26038), (313, 26248), (315, 26263), (329, 26362), (330, 26371), (335, 26413), (345, 26515), (361, 26611), (373, 26740), (385, 26845), (400, 26938), (402, 26947), (412, 27025),

Gene: KillerQueen\_37 Start: 24861, Stop: 26834, Start Num: 40

Candidate Starts for KillerQueen\_37:

(Start: 40 @24861 has 12 MA's), (41, 24864), (68, 24999), (113, 25191), (117, 25206), (128, 25263), (140, 25317), (142, 25329), (178, 25467), (252, 25701), (266, 25758), (283, 25833), (313, 26043), (315, 26058), (329, 26157), (330, 26166), (335, 26208), (345, 26310), (361, 26406), (373, 26535), (385, 26640), (400, 26733), (402, 26742), (412, 26820),

Gene: Kowalski\_36 Start: 23502, Stop: 25448, Start Num: 38

Candidate Starts for Kowalski\_36:

(Start: 38 @23502 has 39 MA's), (50, 23547), (53, 23571), (57, 23598), (62, 23619), (94, 23775), (103, 23811), (115, 23844), (117, 23850), (121, 23865), (149, 24009), (160, 24051), (195, 24129), (232, 24264), (233, 24267), (245, 24312), (250, 24339), (251, 24342), (272, 24432), (279, 24471), (280, 24480), (284, 24495), (309, 24642), (311, 24681), (312, 24693), (327, 24783), (328, 24786), (329, 24810), (330, 24819), (339, 24921), (340, 24924), (344, 24957), (348, 24987), (374, 25194), (379, 25233), (383, 25263), (405, 25380),

Gene: Kozie\_33 Start: 23180, Stop: 25093, Start Num: 55

Candidate Starts for Kozie\_33:

(43, 23129), (Start: 55 @23180 has 7 MA's), (82, 23333), (93, 23381), (107, 23432), (133, 23546), (139, 23570), (151, 23633), (178, 23741), (225, 23903), (259, 24047), (276, 24110), (281, 24143), (283, 24149), (285, 24158), (315, 24368), (325, 24428), (329, 24464), (333, 24503), (336, 24539), (343, 24599), (350, 24647), (362, 24722), (363, 24746), (369, 24779), (401, 25007), (403, 25013), (413, 25085),

Gene: LittleFortune\_38 Start: 23752, Stop: 25704, Start Num: 38

Candidate Starts for LittleFortune\_38:

(Start: 38 @23752 has 39 MA's), (50, 23797), (53, 23821), (57, 23848), (62, 23869), (94, 24025), (103, 24061), (115, 24094), (117, 24100), (121, 24115), (149, 24259), (160, 24301), (161, 24304), (195, 24385), (233, 24523), (234, 24529), (245, 24568), (250, 24595), (254, 24616), (257, 24625), (269, 24679), (272, 24688), (276, 24703), (279, 24727), (280, 24736), (284, 24751), (306, 24877), (309, 24898), (311, 24937), (312, 24949), (327, 25039), (328, 25042), (329, 25066), (330, 25075), (333, 25105), (339, 25177), (340, 25180), (344, 25213), (348, 25243), (374, 25450), (377, 25471), (379, 25489), (383, 25519), (405, 25636),

Gene: Lucretia\_37 Start: 23439, Stop: 25391, Start Num: 38

Candidate Starts for Lucretia\_37:

(Start: 38 @23439 has 39 MA's), (50, 23484), (53, 23508), (57, 23535), (62, 23556), (94, 23712), (103, 23748), (115, 23781), (117, 23787), (121, 23802), (149, 23946), (160, 23988), (161, 23991), (195, 24072), (233, 24210), (234, 24216), (245, 24255), (254, 24303), (257, 24312), (269, 24366), (272,

24375), (276, 24390), (279, 24414), (280, 24423), (284, 24438), (306, 24564), (309, 24585), (311, 24624), (312, 24636), (327, 24726), (328, 24729), (329, 24753), (330, 24762), (333, 24792), (339, 24864), (340, 24867), (344, 24900), (348, 24930), (374, 25137), (379, 25176), (383, 25206), (405, 25323),

Gene: Marcie\_41 Start: 25722, Stop: 27695, Start Num: 40

Candidate Starts for Marcie\_41:

(Start: 40 @25722 has 12 MA's), (41, 25725), (68, 25860), (113, 26052), (117, 26067), (128, 26124), (140, 26178), (149, 26223), (182, 26340), (194, 26349), (233, 26484), (266, 26619), (313, 26904), (315, 26919), (318, 26940), (326, 26985), (329, 27018), (334, 27066), (335, 27069), (345, 27171), (373, 27396), (377, 27438), (379, 27456), (395, 27561), (396, 27567), (400, 27594), (412, 27681),

Gene: Margaery\_32 Start: 22803, Stop: 24701, Start Num: 38

Candidate Starts for Margaery\_32:

(14, 22407), (Start: 38 @22803 has 39 MA's), (57, 22899), (59, 22908), (80, 23007), (90, 23061), (95, 23079), (103, 23112), (115, 23145), (117, 23151), (121, 23166), (131, 23220), (141, 23271), (148, 23307), (149, 23310), (175, 23406), (202, 23466), (221, 23529), (224, 23535), (231, 23562), (249, 23625), (260, 23649), (265, 23673), (283, 23751), (299, 23820), (300, 23841), (303, 23859), (305, 23868), (314, 23976), (327, 24048), (328, 24051), (329, 24075), (332, 24096), (336, 24150), (339, 24186), (347, 24249), (348, 24252), (354, 24273), (361, 24315), (373, 24432), (377, 24468), (409, 24666), (412, 24687),

Gene: Matzah\_33 Start: 22835, Stop: 25315, Start Num: 38

Candidate Starts for Matzah\_33:

(Start: 38 @22835 has 39 MA's), (57, 22928), (64, 22961), (71, 22985), (75, 23003), (89, 23087), (97, 23117), (100, 23126), (105, 23144), (109, 23153), (115, 23174), (117, 23180), (121, 23195), (126, 23228), (128, 23237), (143, 23312), (149, 23339), (157, 23396), (172, 23495), (180, 23543), (181, 23558), (188, 23600), (190, 23645), (191, 23651), (206, 23747), (213, 23777), (241, 23963), (244, 23978), (247, 23993), (257, 24041), (264, 24080), (268, 24131), (275, 24188), (277, 24206), (278, 24212), (293, 24314), (295, 24362), (296, 24371), (301, 24419), (316, 24560), (322, 24593), (326, 24617), (328, 24626), (330, 24659), (335, 24701), (339, 24761), (353, 24839), (358, 24875), (372, 25025), (377, 25070), (388, 25154), (389, 25157),

Gene: Megan\_31 Start: 24332, Stop: 26239, Start Num: 55

Candidate Starts for Megan\_31:

(Start: 55 @24332 has 7 MA's), (76, 24440), (84, 24500), (101, 24557), (108, 24581), (116, 24617), (135, 24704), (139, 24716), (145, 24743), (179, 24896), (187, 24926), (220, 25034), (259, 25193), (264, 25217), (267, 25229), (281, 25289), (283, 25295), (285, 25304), (287, 25310), (290, 25322), (326, 25577), (329, 25610), (333, 25649), (336, 25685), (337, 25706), (362, 25868), (367, 25907), (369, 25925), (373, 25970), (403, 26159), (406, 26183), (408, 26198), (413, 26231),

Gene: MementoMori\_33 Start: 22559, Stop: 25063, Start Num: 38

Candidate Starts for MementoMori\_33:

(Start: 38 @22559 has 39 MA's), (57, 22652), (64, 22685), (71, 22709), (75, 22727), (89, 22811), (97, 22841), (100, 22850), (105, 22868), (109, 22877), (115, 22898), (117, 22904), (121, 22919), (126, 22952), (128, 22961), (149, 23063), (169, 23186), (180, 23270), (189, 23363), (193, 23438), (199, 23474), (211, 23525), (221, 23576), (223, 23585), (226, 23642), (246, 23753), (255, 23801), (263, 23840), (268, 23894), (294, 24107), (302, 24176), (307, 24212), (311, 24269), (316, 24308), (322, 24341), (326, 24365), (328, 24374), (330, 24407), (335, 24449), (339, 24509), (353, 24587), (358, 24623), (372, 24773), (377, 24818), (386, 24884), (388, 24902), (389, 24905),

Gene: Metamorphoo\_37 Start: 23324, Stop: 25813, Start Num: 10

Candidate Starts for Metamorphoo\_37:

(Start: 10 @23324 has 6 MA's), (19, 23477), (20, 23540), (21, 23552), (37, 23792), (42, 23813), (48, 23834), (58, 23897), (61, 23906), (63, 23924), (65, 23933), (73, 23975), (79, 24011), (85, 24059), (91, 24077), (115, 24167), (117, 24173), (118, 24176), (132, 24245), (156, 24365), (164, 24395), (215, 24569), (218, 24581), (231, 24635), (259, 24752), (264, 24776), (276, 24815), (281, 24848), (285, 24863), (297, 24911), (309, 25001), (314, 25067), (329, 25169), (331, 25184), (333, 25208), (336, 25244), (338, 25277), (342, 25289), (350, 25370), (361, 25424), (362, 25445), (363, 25469), (369, 25502), (372, 25541), (399, 25718), (413, 25805),

Gene: MisoSoup\_29 Start: 19901, Stop: 21790, Start Num: 39

Candidate Starts for MisoSoup\_29:

(39, 19901), (49, 19940), (57, 19991), (80, 20096), (115, 20237), (119, 20252), (167, 20465), (209, 20573), (228, 20630), (229, 20636), (237, 20660), (243, 20681), (272, 20786), (274, 20792), (282, 20834), (301, 20918), (308, 20969), (315, 21056), (321, 21086), (336, 21224), (355, 21356), (371, 21506), (374, 21533), (375, 21539), (377, 21554), (379, 21572), (384, 21608), (397, 21674), (400, 21698),

Gene: Nicole72\_32 Start: 25270, Stop: 27153, Start Num: 55

Candidate Starts for Nicole72\_32:

(Start: 55 @25270 has 7 MA's), (82, 25423), (111, 25537), (123, 25582), (125, 25588), (129, 25612), (136, 25648), (139, 25657), (152, 25711), (184, 25834), (196, 25852), (201, 25876), (225, 25963), (259, 26107), (264, 26131), (276, 26170), (281, 26203), (283, 26209), (285, 26218), (324, 26482), (326, 26491), (329, 26524), (336, 26599), (337, 26620), (343, 26659), (362, 26782), (369, 26839), (373, 26884), (384, 26971), (398, 27040), (403, 27073), (413, 27145),

Gene: NoodlelyBoi\_37 Start: 23832, Stop: 25775, Start Num: 38

Candidate Starts for NoodlelyBoi\_37:

(Start: 38 @23832 has 39 MA's), (50, 23877), (57, 23928), (62, 23949), (80, 24036), (90, 24090), (103, 24141), (115, 24174), (117, 24180), (121, 24195), (149, 24339), (150, 24348), (160, 24381), (195, 24459), (210, 24522), (216, 24537), (222, 24558), (233, 24597), (234, 24603), (250, 24669), (269, 24750), (274, 24765), (276, 24774), (278, 24792), (279, 24798), (280, 24807), (284, 24822), (298, 24882), (306, 24948), (309, 24969), (312, 25020), (313, 25029), (314, 25038), (326, 25104), (327, 25110), (328, 25113), (329, 25137), (339, 25248), (340, 25251), (344, 25284), (348, 25314), (374, 25521), (387, 25617), (394, 25647), (400, 25683), (401, 25689), (413, 25767),

Gene: OneinaGillian\_36 Start: 24713, Stop: 26689, Start Num: 40

Candidate Starts for OneinaGillian\_36:

(Start: 40 @24713 has 12 MA's), (41, 24716), (68, 24851), (113, 25043), (117, 25058), (128, 25115), (140, 25169), (142, 25181), (178, 25319), (252, 25553), (266, 25610), (283, 25685), (313, 25895), (315, 25910), (329, 26009), (330, 26018), (335, 26060), (345, 26162), (361, 26258), (373, 26387), (379, 26447), (385, 26495), (400, 26588), (402, 26597), (412, 26675),

Gene: Onika\_36 Start: 23477, Stop: 25423, Start Num: 38

Candidate Starts for Onika\_36:

(Start: 38 @23477 has 39 MA's), (50, 23522), (53, 23546), (57, 23573), (62, 23594), (94, 23750), (103, 23786), (115, 23819), (117, 23825), (121, 23840), (149, 23984), (160, 24026), (171, 24071), (195, 24104), (232, 24239), (233, 24242), (245, 24287), (250, 24314), (251, 24317), (272, 24407), (279, 24446), (280, 24455), (284, 24470), (309, 24617), (311, 24656), (312, 24668), (327, 24758), (328, 24761), (329, 24785), (330, 24794), (340, 24899), (344, 24932), (348, 24962), (374, 25169), (379, 25208), (383, 25238), (405, 25355),

Gene: Paschalis\_36 Start: 23490, Stop: 25430, Start Num: 38

Candidate Starts for Paschalis\_36:

(Start: 38 @23490 has 39 MA's), (50, 23535), (53, 23559), (57, 23586), (62, 23607), (94, 23763), (103, 23799), (115, 23832), (117, 23838), (121, 23853), (149, 23997), (160, 24039), (171, 24084), (195, 24117), (226, 24225), (232, 24252), (233, 24255), (245, 24300), (250, 24327), (251, 24330), (272, 24420), (279, 24459), (280, 24468), (284, 24483), (309, 24630), (311, 24669), (312, 24681), (327, 24771), (328, 24774), (329, 24798), (330, 24807), (333, 24837), (340, 24912), (361, 25041), (368, 25110), (369, 25122), (376, 25191), (394, 25302), (400, 25338), (413, 25422),

Gene: PhedwardCullen\_36 Start: 23235, Stop: 25181, Start Num: 38

Candidate Starts for PhedwardCullen\_36:

(Start: 38 @23235 has 39 MA's), (50, 23280), (53, 23304), (57, 23331), (62, 23352), (94, 23508), (103, 23544), (115, 23577), (117, 23583), (121, 23598), (149, 23742), (160, 23784), (171, 23829), (195, 23862), (232, 23997), (233, 24000), (245, 24045), (250, 24072), (251, 24075), (272, 24165), (279, 24204), (280, 24213), (284, 24228), (309, 24375), (311, 24414), (312, 24426), (327, 24516), (328, 24519), (329, 24543), (330, 24552), (340, 24657), (344, 24690), (348, 24720), (374, 24927), (379, 24966), (383, 24996), (405, 25113),

Gene: Phinky\_43 Start: 27523, Stop: 29499, Start Num: 40

Candidate Starts for Phinky\_43:

(Start: 40 @27523 has 12 MA's), (47, 27547), (113, 27850), (124, 27901), (130, 27931), (138, 27973), (219, 28234), (233, 28285), (256, 28378), (262, 28405), (283, 28495), (303, 28597), (314, 28714), (329, 28813), (335, 28864), (346, 28984), (356, 29029), (365, 29128), (377, 29242), (379, 29260), (412, 29485),

Gene: Phorgeous\_36 Start: 23344, Stop: 25296, Start Num: 38

Candidate Starts for Phorgeous\_36:

(Start: 38 @23344 has 39 MA's), (50, 23389), (53, 23413), (57, 23440), (62, 23461), (94, 23617), (103, 23653), (115, 23686), (117, 23692), (121, 23707), (149, 23851), (160, 23893), (161, 23896), (195, 23977), (233, 24115), (234, 24121), (245, 24160), (250, 24187), (254, 24208), (257, 24217), (269, 24271), (272, 24280), (276, 24295), (279, 24319), (280, 24328), (284, 24343), (306, 24469), (309, 24490), (311, 24529), (312, 24541), (327, 24631), (328, 24634), (329, 24658), (330, 24667), (333, 24697), (339, 24769), (340, 24772), (344, 24805), (348, 24835), (374, 25042), (379, 25081), (383, 25111), (405, 25228),

Gene: Phrancesco\_37 Start: 23622, Stop: 25574, Start Num: 38

Candidate Starts for Phrancesco\_37:

(Start: 38 @23622 has 39 MA's), (50, 23667), (53, 23691), (57, 23718), (62, 23739), (94, 23895), (103, 23931), (115, 23964), (117, 23970), (121, 23985), (149, 24129), (160, 24171), (161, 24174), (195, 24255), (233, 24393), (234, 24399), (245, 24438), (250, 24465), (254, 24486), (257, 24495), (269, 24549), (272, 24558), (276, 24573), (279, 24597), (280, 24606), (284, 24621), (306, 24747), (309, 24768), (311, 24807), (312, 24819), (327, 24909), (328, 24912), (329, 24936), (330, 24945), (333, 24975), (339, 25047), (340, 25050), (344, 25083), (348, 25113), (374, 25320), (379, 25359), (383, 25389), (405, 25506),

Gene: PierreOrion\_37 Start: 23645, Stop: 25597, Start Num: 38

Candidate Starts for PierreOrion\_37:

(Start: 38 @23645 has 39 MA's), (50, 23690), (53, 23714), (57, 23741), (62, 23762), (94, 23918), (103, 23954), (115, 23987), (117, 23993), (121, 24008), (149, 24152), (160, 24194), (161, 24197), (195, 24278), (233, 24416), (234, 24422), (245, 24461), (254, 24509), (257, 24518), (269, 24572), (272, 24581), (276, 24596), (279, 24620), (280, 24629), (284, 24644), (306, 24770), (309, 24791), (311, 24830), (312, 24842), (327, 24932), (328, 24935), (329, 24959), (330, 24968), (333, 24998), (339, 25070), (340, 25073), (344, 25106), (348, 25136), (374, 25343), (379, 25382), (383, 25412), (405, 25529),

Gene: PiperSansNom\_37 Start: 23797, Stop: 25737, Start Num: 38

Candidate Starts for PiperSansNom\_37:

(Start: 38 @23797 has 39 MA's), (50, 23842), (53, 23866), (57, 23893), (62, 23914), (94, 24070), (103, 24106), (115, 24139), (117, 24145), (121, 24160), (149, 24304), (160, 24346), (171, 24391), (195, 24424), (226, 24532), (232, 24559), (233, 24562), (245, 24607), (250, 24634), (251, 24637), (272, 24727), (279, 24766), (280, 24775), (284, 24790), (311, 24976), (327, 25078), (328, 25081), (329, 25105), (330, 25114), (333, 25144), (340, 25219), (361, 25348), (368, 25417), (369, 25429), (376, 25498), (394, 25609), (400, 25645), (413, 25729),

Gene: Piperis\_37 Start: 23467, Stop: 25419, Start Num: 38

Candidate Starts for Piperis\_37:

(Start: 38 @23467 has 39 MA's), (50, 23512), (53, 23536), (57, 23563), (62, 23584), (94, 23740), (103, 23776), (115, 23809), (117, 23815), (121, 23830), (149, 23974), (160, 24016), (161, 24019), (195, 24100), (233, 24238), (234, 24244), (245, 24283), (250, 24310), (269, 24394), (272, 24403), (276, 24418), (279, 24442), (280, 24451), (284, 24466), (306, 24592), (309, 24613), (311, 24652), (312, 24664), (327, 24754), (328, 24757), (329, 24781), (330, 24790), (333, 24820), (339, 24892), (340, 24895), (344, 24928), (348, 24958), (357, 24994), (374, 25165), (377, 25186), (383, 25234), (405, 25351),

Gene: Pulchra\_38 Start: 23867, Stop: 25813, Start Num: 38

Candidate Starts for Pulchra\_38:

(Start: 38 @23867 has 39 MA's), (50, 23912), (53, 23936), (57, 23963), (62, 23984), (94, 24140), (103, 24176), (115, 24209), (117, 24215), (121, 24230), (149, 24374), (160, 24416), (195, 24494), (232, 24629), (233, 24632), (245, 24677), (250, 24704), (251, 24707), (272, 24797), (279, 24836), (280, 24845), (284, 24860), (309, 25007), (311, 25046), (312, 25058), (327, 25148), (328, 25151), (329, 25175), (330, 25184), (340, 25289), (344, 25322), (348, 25352), (374, 25559), (379, 25598), (383, 25628), (405, 25745),

Gene: Quhwah\_40 Start: 24093, Stop: 26045, Start Num: 38

Candidate Starts for Quhwah\_40:

(Start: 38 @24093 has 39 MA's), (50, 24138), (53, 24162), (57, 24189), (62, 24210), (94, 24366), (103, 24402), (115, 24435), (117, 24441), (121, 24456), (149, 24600), (160, 24642), (161, 24645), (166, 24663), (195, 24726), (233, 24864), (234, 24870), (245, 24909), (250, 24936), (254, 24957), (257, 24966), (269, 25020), (272, 25029), (276, 25044), (279, 25068), (280, 25077), (284, 25092), (306, 25218), (309, 25239), (311, 25278), (312, 25290), (327, 25380), (328, 25383), (329, 25407), (330, 25416), (333, 25446), (339, 25518), (340, 25521), (344, 25554), (379, 25830), (383, 25860), (405, 25977),

Gene: Ramiel05\_36 Start: 23502, Stop: 25448, Start Num: 38

Candidate Starts for Ramiel05\_36:

(Start: 38 @23502 has 39 MA's), (50, 23547), (53, 23571), (57, 23598), (62, 23619), (94, 23775), (103, 23811), (115, 23844), (117, 23850), (121, 23865), (149, 24009), (160, 24051), (195, 24129), (232, 24264), (233, 24267), (245, 24312), (250, 24339), (251, 24342), (272, 24432), (279, 24471), (280, 24480), (284, 24495), (309, 24642), (311, 24681), (312, 24693), (327, 24783), (328, 24786), (329, 24810), (330, 24819), (339, 24921), (340, 24924), (344, 24957), (348, 24987), (374, 25194), (379, 25233), (383, 25263), (405, 25380),

Gene: Rasputia\_72 Start: 44029, Stop: 45960, Start Num: 40

Candidate Starts for Rasputia\_72:

(Start: 40 @44029 has 12 MA's), (44, 44047), (50, 44071), (57, 44119), (96, 44305), (103, 44332), (115, 44365), (117, 44371), (126, 44419), (128, 44428), (129, 44434), (134, 44464), (141, 44491), (196, 44659), (203, 44692), (227, 44758), (233, 44785), (237, 44794), (238, 44797), (239, 44800), (249, 44842), (271, 44935), (291, 45007), (310, 45118), (313, 45175), (315, 45190), (326, 45250),

(328, 45259), (334, 45328), (335, 45331), (353, 45469), (369, 45616), (371, 45646), (372, 45652), (373, 45658), (379, 45718), (385, 45766), (393, 45817), (396, 45832), (400, 45859), (404, 45877), (410, 45940), (412, 45946), (413, 45952),

Gene: RobinRose\_38 Start: 25217, Stop: 27190, Start Num: 40

Candidate Starts for RobinRose\_38:

(Start: 40 @25217 has 12 MA's), (41, 25220), (68, 25355), (113, 25547), (117, 25562), (128, 25619), (140, 25673), (142, 25685), (178, 25823), (252, 26057), (266, 26114), (283, 26189), (313, 26399), (315, 26414), (329, 26513), (330, 26522), (335, 26564), (345, 26666), (361, 26762), (373, 26891), (385, 26996), (400, 27089), (402, 27098), (412, 27176),

Gene: RobsFeet\_38 Start: 23605, Stop: 26094, Start Num: 10

Candidate Starts for RobsFeet\_38:

(Start: 10 @23605 has 6 MA's), (19, 23758), (20, 23821), (21, 23833), (37, 24073), (42, 24094), (48, 24115), (58, 24178), (61, 24187), (63, 24205), (65, 24214), (73, 24256), (79, 24292), (85, 24340), (91, 24358), (115, 24448), (117, 24454), (118, 24457), (132, 24526), (156, 24646), (164, 24676), (196, 24775), (215, 24850), (218, 24862), (231, 24916), (259, 25033), (264, 25057), (276, 25096), (281, 25129), (285, 25144), (297, 25192), (309, 25282), (314, 25348), (329, 25450), (331, 25465), (333, 25489), (336, 25525), (338, 25558), (342, 25570), (350, 25651), (361, 25705), (362, 25726), (363, 25750), (369, 25783), (372, 25822), (399, 25999), (413, 26086),

Gene: Rockwell\_36 Start: 23502, Stop: 25448, Start Num: 38

Candidate Starts for Rockwell\_36:

(Start: 38 @23502 has 39 MA's), (50, 23547), (53, 23571), (57, 23598), (62, 23619), (94, 23775), (103, 23811), (115, 23844), (117, 23850), (121, 23865), (149, 24009), (160, 24051), (171, 24096), (195, 24129), (232, 24264), (233, 24267), (245, 24312), (250, 24339), (251, 24342), (272, 24432), (279, 24471), (280, 24480), (284, 24495), (309, 24642), (311, 24681), (312, 24693), (327, 24783), (328, 24786), (329, 24810), (330, 24819), (340, 24924), (344, 24957), (348, 24987), (374, 25194), (379, 25233), (383, 25263), (405, 25380),

Gene: Romm\_38 Start: 25217, Stop: 27190, Start Num: 40

Candidate Starts for Romm\_38:

(Start: 40 @25217 has 12 MA's), (41, 25220), (68, 25355), (113, 25547), (117, 25562), (128, 25619), (140, 25673), (142, 25685), (178, 25823), (252, 26057), (266, 26114), (283, 26189), (313, 26399), (315, 26414), (329, 26513), (330, 26522), (335, 26564), (345, 26666), (361, 26762), (373, 26891), (385, 26996), (400, 27089), (402, 27098), (412, 27176),

Gene: RubyRalph\_39 Start: 25839, Stop: 28808, Start Num: 1

Candidate Starts for RubyRalph\_39:

(Start: 1 @25839 has 3 MA's), (2, 25869), (3, 26001), (4, 26040), (5, 26085), (6, 26163), (7, 26265), (8, 26289), (9, 26295), (13, 26391), (17, 26487), (20, 26571), (34, 26769), (46, 26844), (51, 26871), (66, 26961), (67, 26964), (69, 26973), (72, 26985), (78, 27018), (81, 27045), (93, 27111), (95, 27117), (106, 27162), (112, 27183), (136, 27312), (146, 27357), (153, 27399), (159, 27414), (162, 27423), (170, 27456), (219, 27588), (237, 27648), (261, 27744), (265, 27762), (272, 27786), (273, 27789), (306, 27975), (311, 28035), (313, 28056), (315, 28071), (321, 28104), (323, 28122), (326, 28137), (332, 28191), (335, 28221), (339, 28281), (340, 28284), (346, 28341), (355, 28371), (359, 28389), (368, 28473), (373, 28530), (379, 28584), (400, 28716), (407, 28764), (408, 28767),

Gene: SadLad\_41 Start: 26782, Stop: 29751, Start Num: 1

Candidate Starts for SadLad\_41:

(Start: 1 @26782 has 3 MA's), (2, 26812), (3, 26944), (4, 26983), (5, 27028), (6, 27106), (7, 27208), (8, 27232), (9, 27238), (13, 27334), (17, 27430), (20, 27514), (34, 27712), (46, 27787), (51, 27814), (66, 27904), (67, 27907), (69, 27916), (72, 27928), (78, 27961), (81, 27988), (93, 28054), (95, 28060), (106,

28105), (112, 28126), (136, 28255), (146, 28300), (153, 28342), (159, 28357), (162, 28366), (170, 28399), (219, 28531), (237, 28591), (261, 28687), (265, 28705), (272, 28729), (273, 28732), (306, 28918), (311, 28978), (313, 28999), (315, 29014), (321, 29047), (323, 29065), (326, 29080), (332, 29134), (335, 29164), (339, 29224), (340, 29227), (346, 29284), (355, 29314), (359, 29332), (368, 29416), (373, 29473), (379, 29527), (400, 29659), (407, 29707), (408, 29710),

Gene: Savannah\_36 Start: 23529, Stop: 25475, Start Num: 38

Candidate Starts for Savannah\_36:

(Start: 38 @23529 has 39 MA's), (50, 23574), (53, 23598), (57, 23625), (62, 23646), (94, 23802), (103, 23838), (115, 23871), (117, 23877), (121, 23892), (149, 24036), (160, 24078), (195, 24156), (232, 24291), (233, 24294), (245, 24339), (250, 24366), (251, 24369), (272, 24459), (279, 24498), (280, 24507), (284, 24522), (309, 24669), (311, 24708), (312, 24720), (327, 24810), (328, 24813), (329, 24837), (330, 24846), (339, 24948), (340, 24951), (344, 24984), (348, 25014), (374, 25221), (379, 25260), (383, 25290), (405, 25407),

Gene: Scumberland\_38 Start: 23718, Stop: 25670, Start Num: 38

Candidate Starts for Scumberland\_38:

(Start: 38 @23718 has 39 MA's), (50, 23763), (53, 23787), (57, 23814), (62, 23835), (94, 23991), (103, 24027), (115, 24060), (117, 24066), (121, 24081), (149, 24225), (160, 24267), (161, 24270), (195, 24351), (233, 24489), (234, 24495), (245, 24534), (250, 24561), (254, 24582), (257, 24591), (269, 24645), (272, 24654), (276, 24669), (279, 24693), (280, 24702), (284, 24717), (306, 24843), (309, 24864), (311, 24903), (312, 24915), (327, 25005), (328, 25008), (329, 25032), (330, 25041), (333, 25071), (339, 25143), (340, 25146), (344, 25179), (348, 25209), (374, 25416), (377, 25437), (379, 25455), (383, 25485), (405, 25602),

Gene: Selwyn23\_38 Start: 23695, Stop: 25647, Start Num: 38

Candidate Starts for Selwyn23\_38:

(Start: 38 @23695 has 39 MA's), (50, 23740), (53, 23764), (57, 23791), (62, 23812), (94, 23968), (103, 24004), (115, 24037), (117, 24043), (121, 24058), (149, 24202), (160, 24244), (161, 24247), (195, 24328), (233, 24466), (234, 24472), (245, 24511), (250, 24538), (254, 24559), (257, 24568), (269, 24622), (272, 24631), (276, 24646), (279, 24670), (280, 24679), (284, 24694), (306, 24820), (309, 24841), (311, 24880), (312, 24892), (327, 24982), (328, 24985), (329, 25009), (330, 25018), (333, 25048), (339, 25120), (340, 25123), (344, 25156), (348, 25186), (374, 25393), (377, 25414), (379, 25432), (383, 25462), (405, 25579),

Gene: Shotgun\_36 Start: 23328, Stop: 25274, Start Num: 38

Candidate Starts for Shotgun\_36:

(Start: 38 @23328 has 39 MA's), (50, 23373), (53, 23397), (57, 23424), (62, 23445), (94, 23601), (103, 23637), (115, 23670), (117, 23676), (121, 23691), (149, 23835), (160, 23877), (171, 23922), (195, 23955), (226, 24063), (232, 24090), (233, 24093), (245, 24138), (250, 24165), (251, 24168), (272, 24258), (279, 24297), (280, 24306), (284, 24321), (311, 24507), (327, 24609), (328, 24612), (329, 24636), (330, 24645), (333, 24675), (340, 24750), (344, 24783), (348, 24813), (374, 25020), (379, 25059), (383, 25089), (405, 25206),

Gene: Shrubaron\_37 Start: 23239, Stop: 25728, Start Num: 10

Candidate Starts for Shrubaron\_37:

(Start: 10 @23239 has 6 MA's), (19, 23392), (20, 23455), (21, 23467), (37, 23707), (42, 23728), (48, 23749), (58, 23812), (61, 23821), (63, 23839), (65, 23848), (73, 23890), (79, 23926), (85, 23974), (91, 23992), (115, 24082), (117, 24088), (118, 24091), (132, 24160), (156, 24280), (164, 24310), (196, 24409), (215, 24484), (218, 24496), (231, 24550), (259, 24667), (264, 24691), (276, 24730), (281, 24763), (285, 24778), (297, 24826), (309, 24916), (314, 24982), (329, 25084), (331, 25099), (333, 25123), (336, 25159), (338, 25192), (342, 25204), (350, 25285), (361, 25339), (362, 25360), (363, 25384), (369, 25417), (372, 25456), (399, 25633), (413, 25720),

Gene: SirFrank\_36 Start: 23432, Stop: 25330, Start Num: 38

Candidate Starts for SirFrank\_36:

(Start: 38 @23432 has 39 MA's), (50, 23477), (57, 23528), (62, 23549), (80, 23636), (90, 23690), (103, 23741), (115, 23774), (117, 23780), (121, 23795), (149, 23939), (208, 24089), (233, 24164), (234, 24170), (239, 24182), (240, 24188), (242, 24194), (250, 24233), (258, 24257), (280, 24365), (284, 24380), (286, 24386), (289, 24395), (304, 24482), (312, 24575), (313, 24584), (314, 24593), (327, 24665), (328, 24668), (329, 24692), (339, 24803), (340, 24806), (344, 24839), (348, 24869), (374, 25076), (394, 25202), (400, 25238), (401, 25244), (413, 25322),

Gene: Skugga\_35 Start: 23330, Stop: 25228, Start Num: 55

Candidate Starts for Skugga\_35:

(Start: 55 @23330 has 7 MA's), (58, 23360), (60, 23366), (82, 23483), (83, 23495), (99, 23546), (104, 23570), (114, 23606), (116, 23612), (122, 23630), (135, 23693), (137, 23699), (144, 23726), (155, 23789), (170, 23846), (173, 23864), (206, 23975), (212, 23987), (217, 24008), (232, 24068), (235, 24083), (276, 24245), (281, 24278), (283, 24284), (285, 24293), (297, 24341), (324, 24557), (325, 24563), (329, 24599), (333, 24638), (336, 24674), (343, 24734), (344, 24749), (362, 24857), (369, 24914), (384, 25046), (403, 25148), (413, 25220),

Gene: Smarties\_45 Start: 25427, Stop: 27295, Start Num: 55

Candidate Starts for Smarties\_45:

(Start: 55 @25427 has 7 MA's), (58, 25457), (60, 25463), (82, 25580), (84, 25595), (125, 25742), (127, 25754), (129, 25766), (130, 25769), (152, 25865), (156, 25883), (161, 25895), (176, 25949), (185, 25979), (217, 26075), (230, 26126), (231, 26132), (259, 26249), (276, 26312), (281, 26345), (283, 26351), (285, 26360), (315, 26570), (325, 26630), (329, 26666), (332, 26687), (333, 26705), (336, 26741), (343, 26801), (361, 26903), (362, 26924), (369, 26981), (401, 27209), (403, 27215),

Gene: Teamocil\_38 Start: 23413, Stop: 25311, Start Num: 55

Candidate Starts for Teamocil\_38:

(Start: 55 @23413 has 7 MA's), (58, 23443), (60, 23449), (82, 23566), (114, 23689), (116, 23695), (122, 23713), (135, 23776), (137, 23782), (139, 23788), (151, 23851), (154, 23869), (173, 23947), (206, 24058), (212, 24070), (217, 24091), (227, 24127), (231, 24148), (232, 24151), (276, 24328), (281, 24361), (283, 24367), (285, 24376), (297, 24424), (324, 24640), (325, 24646), (329, 24682), (333, 24721), (336, 24757), (343, 24817), (344, 24832), (362, 24940), (369, 24997), (373, 25042), (384, 25129), (403, 25231), (413, 25303),

Gene: Tempo\_36 Start: 25093, Stop: 27066, Start Num: 40

Candidate Starts for Tempo\_36:

(Start: 40 @25093 has 12 MA's), (41, 25096), (68, 25231), (113, 25423), (117, 25438), (128, 25495), (140, 25549), (142, 25561), (149, 25594), (178, 25699), (252, 25933), (266, 25990), (283, 26065), (313, 26275), (315, 26290), (329, 26389), (330, 26398), (335, 26440), (345, 26542), (361, 26638), (373, 26767), (385, 26872), (400, 26965), (402, 26974), (412, 27052),

Gene: Tyrumbra\_35 Start: 23381, Stop: 25870, Start Num: 10

Candidate Starts for Tyrumbra\_35:

(Start: 10 @23381 has 6 MA's), (11, 23411), (15, 23474), (19, 23534), (25, 23681), (27, 23708), (35, 23813), (61, 23963), (70, 24011), (73, 24029), (79, 24065), (92, 24134), (98, 24158), (105, 24188), (125, 24272), (133, 24317), (135, 24329), (137, 24335), (147, 24383), (165, 24452), (174, 24497), (231, 24692), (259, 24809), (264, 24833), (281, 24905), (285, 24920), (309, 25058), (314, 25124), (329, 25226), (331, 25241), (333, 25265), (336, 25301), (346, 25418), (349, 25421), (369, 25559), (372, 25598), (373, 25604), (386, 25700),

Gene: Yeti\_37 Start: 23497, Stop: 25449, Start Num: 38

Candidate Starts for Yeti\_37:

(Start: 38 @23497 has 39 MA's), (50, 23542), (53, 23566), (57, 23593), (62, 23614), (94, 23770), (103, 23806), (115, 23839), (117, 23845), (121, 23860), (149, 24004), (160, 24046), (161, 24049), (195, 24130), (233, 24268), (234, 24274), (245, 24313), (250, 24340), (254, 24361), (257, 24370), (269, 24424), (272, 24433), (276, 24448), (279, 24472), (280, 24481), (284, 24496), (306, 24622), (309, 24643), (311, 24682), (312, 24694), (327, 24784), (328, 24787), (329, 24811), (330, 24820), (333, 24850), (339, 24922), (340, 24925), (344, 24958), (348, 24988), (374, 25195), (379, 25234), (383, 25264), (405, 25381),

Gene: Zapato\_36 Start: 23358, Stop: 25736, Start Num: 16

Candidate Starts for Zapato\_36:

(16, 23358), (17, 23388), (18, 23394), (22, 23511), (23, 23526), (26, 23559), (28, 23586), (31, 23637), (36, 23703), (54, 23799), (77, 23925), (80, 23943), (84, 23976), (88, 23997), (99, 24033), (110, 24078), (156, 24303), (158, 24309), (168, 24345), (174, 24381), (186, 24426), (195, 24435), (217, 24516), (276, 24753), (281, 24786), (285, 24801), (315, 25011), (325, 25071), (333, 25146), (336, 25182), (341, 25224), (343, 25242), (350, 25290), (361, 25344), (362, 25365), (363, 25389), (366, 25401), (369, 25422), (370, 25437), (382, 25530), (403, 25656), (413, 25728),