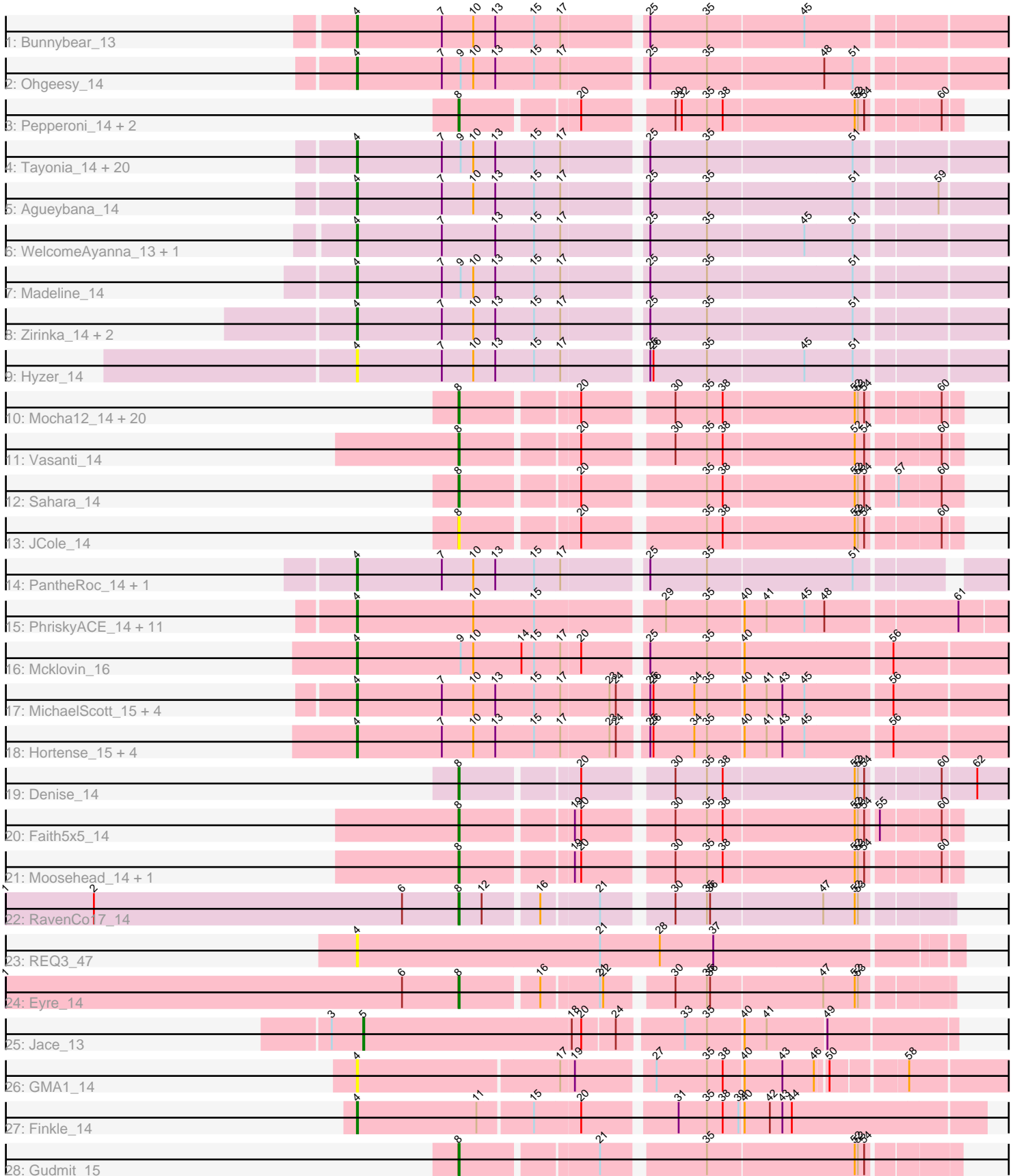


# Pham 216050



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 216050 Report

This analysis was run 02/22/25 on database version 588.

Pham number 216050 has 94 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Bunnybear\_13
- Track 2 : Ohgeesy\_14
- Track 3 : Pepperoni\_14, Lton\_14, OneDirection\_14
- Track 4 : Tayonia\_14, BaxterFox\_13, TimTam\_14, Hugley\_14, Zameen\_14, Kita\_14, Suscepit\_14, Neobush\_14, Bosnia\_14, Antonio\_14, Herod\_14, Eviarto\_14, Manasvini\_14, BatStarr\_14, Maridalia\_14, Polly\_14, AlumE\_14, BoyNamedSue\_14, Eudoria\_14, Nymphadora\_14, Trumpet\_14
- Track 5 : Agueybana\_14
- Track 6 : WelcomeAyanna\_13, ThankyouJordi\_13
- Track 7 : Madeline\_14
- Track 8 : Zirinka\_14, Bialota\_14, Yeezy\_15
- Track 9 : Hyzer\_14
- Track 10 : Mocha12\_14, EdnaMode\_14, Matteo\_14, Gizermo\_14, Attis\_14, Whiteclaw\_14, Clap\_14, SoilAssassin\_14, Haley23\_14, GemG\_14, TuertoX\_14, Sproutie\_14, Bjanes7\_14, Savage\_14, Cynthia\_14, Lamberg\_14, Ebert\_14, Pickett\_14, Nettuno\_14, Yeet412\_14, LordFarquaad\_14
- Track 11 : Vasanti\_14
- Track 12 : Sahara\_14
- Track 13 : JCole\_14
- Track 14 : PantheRoc\_14, Sidious\_14
- Track 15 : PhriskyACE\_14, Clark\_15, Annalisa\_15, WinkNick\_15, Easley\_15, Dolores\_15, Dorito\_14, Powerball\_14, Samman98\_15, Thimann\_15, Suerte\_14, DobbysSock\_14
- Track 16 : Mcklovin\_16
- Track 17 : MichaelScott\_15, Oregano\_15, Sekhmet\_15, Beenie\_16, Invectora\_15
- Track 18 : Hortense\_15, Twinkle\_15, Howe\_15, Adora\_15, Shlim410\_15
- Track 19 : Denise\_14
- Track 20 : Faith5x5\_14
- Track 21 : Moosehead\_14, FroggyToad\_14
- Track 22 : RavenCo17\_14
- Track 23 : REQ3\_47
- Track 24 : Eyre\_14
- Track 25 : Jace\_13
- Track 26 : GMA1\_14
- Track 27 : Finkle\_14
- Track 28 : Gudmit\_15

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

The start number called the most often in the published annotations is 4, it was called in 53 of the 85 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Adora\_15, Agueybana\_14, AlumE\_14, Annalisa\_15, Antonio\_14, BatStarr\_14, BaxterFox\_13, Beenie\_16, Bialota\_14, Bosnia\_14, BoyNamedSue\_14, Bunnybear\_13, Clark\_15, DobbysSock\_14, Dolores\_15, Dorito\_14, Easley\_15, Eudoria\_14, Eviarto\_14, Finkle\_14, GMA1\_14, Herod\_14, Hortense\_15, Howe\_15, Hugley\_14, Hyzer\_14, Invecetra\_15, Kita\_14, Madeline\_14, Manasvini\_14, Maridalia\_14, Mcklovin\_16, MichaelScott\_15, Neobush\_14, Nymphadora\_14, Ohgeesy\_14, Oregano\_15, PantheRoc\_14, PhriskyACE\_14, Polly\_14, Powerball\_14, REQ3\_47, Samman98\_15, Sekhmet\_15, Shlim410\_15, Sidious\_14, Suerte\_14, Suscepit\_14, Tayonia\_14, ThankyouJordi\_13, Thimann\_15, TimTam\_14, Trumpet\_14, Twinkle\_15, WelcomeAyanna\_13, WinkNick\_15, Yeezy\_15, Zameen\_14, Zirinka\_14,

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

- 

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

- Attis\_14, Bjanest7\_14, Clap\_14, Cynthia\_14, Denise\_14, Ebert\_14, EdnaMode\_14, Eyre\_14, Faith5x5\_14, FroggyToad\_14, GemG\_14, Gizermo\_14, Gudmit\_15, Haley23\_14, JCole\_14, Jace\_13, Lamberg\_14, LordFarquaad\_14, Lton\_14, Matteo\_14, Mocha12\_14, Moosehead\_14, Nettuno\_14, OneDirection\_14, Pepperoni\_14, Pickett\_14, RavenCo17\_14, Sahara\_14, Savage\_14, SoilAssassin\_14, Sproutie\_14, TuertoX\_14, Vasanti\_14, Whiteclaw\_14, Yeet412\_14,

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

Start 4:

- Found in 59 of 94 ( 62.8% ) of genes in pham
- Manual Annotations of this start: 53 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Adora\_15 (CZ4), Agueybana\_14 (CZ1), AlumE\_14 (CZ1), Annalisa\_15 (CZ4), Antonio\_14 (CZ1), BatStarr\_14 (CZ1), BaxterFox\_13 (CZ3), Beenie\_16 (CZ4), Bialota\_14 (CZ1), Bosnia\_14 (CZ1), BoyNamedSue\_14 (CZ1), Bunnybear\_13 (CZ), Clark\_15 (CZ4), DobbysSock\_14 (CZ4), Dolores\_15 (CZ4), Dorito\_14 (CZ4), Easley\_15 (CZ4), Eudoria\_14 (CZ1), Eviarto\_14 (CZ1), Finkle\_14 (singleton), GMA1\_14 (singleton), Herod\_14 (CZ1), Hortense\_15 (CZ4), Howe\_15 (CZ4), Hugley\_14 (CZ1), Hyzer\_14 (CZ1), Invecetra\_15 (CZ4), Kita\_14 (CZ1), Madeline\_14 (CZ1), Manasvini\_14 (CZ1), Maridalia\_14 (CZ1), Mcklovin\_16 (CZ4), MichaelScott\_15 (CZ4), Neobush\_14 (CZ1), Nymphadora\_14 (CZ1), Ohgeesy\_14 (CZ), Oregano\_15 (CZ4), PantheRoc\_14 (CZ3), PhriskyACE\_14 (CZ4), Polly\_14 (CZ1), Powerball\_14 (CZ4), REQ3\_47 (singleton), Samman98\_15 (CZ4), Sekhmet\_15 (CZ4), Shlim410\_15 (CZ4), Sidious\_14 (CZ7), Suerte\_14 (CZ4), Suscepit\_14 (CZ1), Tayonia\_14 (CZ1), ThankyouJordi\_13 (CZ1), Thimann\_15 (CZ4), TimTam\_14 (CZ1), Trumpet\_14 (CZ1), Twinkle\_15 (CZ4), WelcomeAyanna\_13 (CZ1), WinkNick\_15 (CZ4), Yeezy\_15 (CZ3), Zameen\_14 (CZ1), Zirinka\_14 (CZ1),

Start 5:

- Found in 1 of 94 ( 1.1% ) of genes in pham
- Manual Annotations of this start: 1 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jace\_13 (singleton),

Start 8:

- Found in 34 of 94 ( 36.2% ) of genes in pham
- Manual Annotations of this start: 31 of 85
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Attis\_14 (CZ2), Bjaner7\_14 (CZ2), Clap\_14 (CZ2), Cynthia\_14 (CZ2), Denise\_14 (CZ5), Ebert\_14 (CZ2), EdnaMode\_14 (CZ2), Eyre\_14 (singleton), Faith5x5\_14 (CZ6), FroggyToad\_14 (CZ2), GemG\_14 (CZ2), Gizermo\_14 (CZ2), Gudmit\_15 (singleton), Haley23\_14 (CZ2), JCole\_14 (CZ2), Lamberg\_14 (CZ2), LordFarquaad\_14 (CZ2), Lton\_14 (CZ), Matteo\_14 (CZ2), Mocha12\_14 (CZ2), Moosehead\_14 (CZ6), Nettuno\_14 (CZ2), OneDirection\_14 (CZ6), Pepperoni\_14 (CZ), Pickett\_14 (CZ2), RavenCo17\_14 (CZ8), Sahara\_14 (CZ2), Savage\_14 (CZ2), SoilAssassin\_14 (CZ2), Sproutie\_14 (CZ2), TueritoX\_14 (CZ2), Vasanti\_14 (CZ2), Whiteclaw\_14 (CZ2), Yeet412\_14 (CZ2),

**Summary by clusters:**

There are 10 clusters represented in this pham: singleton, CZ2, CZ3, CZ1, CZ6, CZ7, CZ4, CZ5, CZ, CZ8,

Info for manual annotations of cluster CZ:

- Start number 4 was manually annotated 2 times for cluster CZ.
- Start number 8 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ1:

- Start number 4 was manually annotated 25 times for cluster CZ1.

Info for manual annotations of cluster CZ2:

- Start number 8 was manually annotated 23 times for cluster CZ2.

Info for manual annotations of cluster CZ3:

- Start number 4 was manually annotated 3 times for cluster CZ3.

Info for manual annotations of cluster CZ4:

- Start number 4 was manually annotated 21 times for cluster CZ4.

Info for manual annotations of cluster CZ5:

- Start number 8 was manually annotated 1 time for cluster CZ5.

Info for manual annotations of cluster CZ6:

- Start number 8 was manually annotated 3 times for cluster CZ6.

Info for manual annotations of cluster CZ7:

- Start number 4 was manually annotated 1 time for cluster CZ7.

Info for manual annotations of cluster CZ8:

- Start number 8 was manually annotated 1 time for cluster CZ8.

**Gene Information:**

Gene: Adora\_15 Start: 8998, Stop: 9651, Start Num: 4

Candidate Starts for Adora\_15:

(Start: 4 @8998 has 53 MA's), (7, 9079), (10, 9109), (13, 9130), (15, 9166), (17, 9190), (23, 9235), (24, 9241), (25, 9265), (26, 9268), (34, 9307), (35, 9319), (40, 9352), (41, 9373), (43, 9388), (45, 9409), (56, 9487),

Gene: Agueybana\_14 Start: 9286, Stop: 9933, Start Num: 4

Candidate Starts for Agueybana\_14:

(Start: 4 @9286 has 53 MA's), (7, 9367), (10, 9397), (13, 9418), (15, 9454), (17, 9478), (25, 9550), (35, 9604), (51, 9739), (59, 9811),

Gene: AlumE\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for AlumE\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Annalisa\_15 Start: 8856, Stop: 9503, Start Num: 4

Candidate Starts for Annalisa\_15:

(Start: 4 @8856 has 53 MA's), (10, 8967), (15, 9024), (29, 9135), (35, 9174), (40, 9207), (41, 9228), (45, 9264), (48, 9282), (61, 9399),

Gene: Antonio\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Antonio\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Attis\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for Attis\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: BatStarr\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for BatStarr\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: BaxterFox\_13 Start: 8633, Stop: 9280, Start Num: 4

Candidate Starts for BaxterFox\_13:

(Start: 4 @8633 has 53 MA's), (7, 8714), (9, 8732), (10, 8744), (13, 8765), (15, 8801), (17, 8825), (25, 8897), (35, 8951), (51, 9086),

Gene: Beenie\_16 Start: 8840, Stop: 9493, Start Num: 4

Candidate Starts for Beenie\_16:

(Start: 4 @8840 has 53 MA's), (7, 8921), (10, 8951), (13, 8972), (15, 9008), (17, 9032), (23, 9077), (24, 9083), (25, 9107), (26, 9110), (34, 9149), (35, 9161), (40, 9194), (41, 9215), (43, 9230), (45, 9251), (56, 9329),

Gene: Bialota\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Bialota\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Bjaner7\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for Bjaner7\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: Bosnia\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Bosnia\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: BoyNamedSue\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for BoyNamedSue\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Bunnybear\_13 Start: 9302, Stop: 9949, Start Num: 4

Candidate Starts for Bunnybear\_13:

(Start: 4 @9302 has 53 MA's), (7, 9383), (10, 9413), (13, 9434), (15, 9470), (17, 9494), (25, 9566), (35, 9620), (45, 9710),

Gene: Clap\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for Clap\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Clark\_15 Start: 8856, Stop: 9503, Start Num: 4

Candidate Starts for Clark\_15:

(Start: 4 @8856 has 53 MA's), (10, 8967), (15, 9024), (29, 9135), (35, 9174), (40, 9207), (41, 9228), (45, 9264), (48, 9282), (61, 9399),

Gene: Cynthia\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for Cynthia\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Denise\_14 Start: 9083, Stop: 9601, Start Num: 8

Candidate Starts for Denise\_14:

(Start: 8 @9083 has 31 MA's), (20, 9185), (30, 9260), (35, 9290), (38, 9305), (52, 9428), (53, 9431), (54, 9437), (60, 9500), (62, 9530),

Gene: DobbysSock\_14 Start: 8339, Stop: 8986, Start Num: 4

Candidate Starts for DobbysSock\_14:

(Start: 4 @8339 has 53 MA's), (10, 8450), (15, 8507), (29, 8618), (35, 8657), (40, 8690), (41, 8711), (45, 8747), (48, 8765), (61, 8882),

Gene: Dolores\_15 Start: 8841, Stop: 9488, Start Num: 4

Candidate Starts for Dolores\_15:

(Start: 4 @8841 has 53 MA's), (10, 8952), (15, 9009), (29, 9120), (35, 9159), (40, 9192), (41, 9213), (45, 9249), (48, 9267), (61, 9384),

Gene: Dorito\_14 Start: 8338, Stop: 8985, Start Num: 4

Candidate Starts for Dorito\_14:

(Start: 4 @8338 has 53 MA's), (10, 8449), (15, 8506), (29, 8617), (35, 8656), (40, 8689), (41, 8710), (45, 8746), (48, 8764), (61, 8881),

Gene: Easley\_15 Start: 8845, Stop: 9492, Start Num: 4

Candidate Starts for Easley\_15:

(Start: 4 @8845 has 53 MA's), (10, 8956), (15, 9013), (29, 9124), (35, 9163), (40, 9196), (41, 9217), (45, 9253), (48, 9271), (61, 9388),

Gene: Ebert\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for Ebert\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: EdnaMode\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for EdnaMode\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: Eudoria\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Eudoria\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Eviarto\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Eviarto\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Eyre\_14 Start: 9759, Stop: 10187, Start Num: 8

Candidate Starts for Eyre\_14:

(1, 9327), (6, 9705), (Start: 8 @9759 has 31 MA's), (16, 9828), (21, 9879), (22, 9882), (30, 9936), (35, 9966), (36, 9969), (47, 10074), (52, 10104), (53, 10107),

Gene: Faith5x5\_14 Start: 9042, Stop: 9476, Start Num: 8

Candidate Starts for Faith5x5\_14:

(Start: 8 @9042 has 31 MA's), (19, 9138), (20, 9144), (30, 9219), (35, 9249), (38, 9264), (52, 9387), (53, 9390), (54, 9396), (55, 9405), (60, 9459),

Gene: Finkle\_14 Start: 8643, Stop: 9212, Start Num: 4

Candidate Starts for Finkle\_14:

(Start: 4 @8643 has 53 MA's), (11, 8757), (15, 8805), (20, 8847), (31, 8928), (35, 8955), (38, 8970), (39, 8985), (40, 8988), (42, 9012), (43, 9024), (44, 9033),

Gene: FroggyToad\_14 Start: 9086, Stop: 9520, Start Num: 8

Candidate Starts for FroggyToad\_14:

(Start: 8 @9086 has 31 MA's), (19, 9182), (20, 9188), (30, 9263), (35, 9293), (38, 9308), (52, 9431), (53, 9434), (54, 9440), (60, 9503),

Gene: GMA1\_14 Start: 8784, Stop: 9359, Start Num: 4

Candidate Starts for GMA1\_14:

(Start: 4 @8784 has 53 MA's), (17, 8970), (19, 8982), (27, 9048), (35, 9096), (38, 9111), (40, 9129), (43, 9165), (46, 9195), (50, 9204), (58, 9270),

Gene: GemG\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for GemG\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Gizermo\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for Gizermo\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Gudmit\_15 Start: 9859, Stop: 10293, Start Num: 8

Candidate Starts for Gudmit\_15:

(Start: 8 @9859 has 31 MA's), (21, 9979), (35, 10066), (52, 10204), (53, 10207), (54, 10213),

Gene: Haley23\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for Haley23\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Herod\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Herod\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Hortense\_15 Start: 9045, Stop: 9698, Start Num: 4

Candidate Starts for Hortense\_15:

(Start: 4 @9045 has 53 MA's), (7, 9126), (10, 9156), (13, 9177), (15, 9213), (17, 9237), (23, 9282), (24, 9288), (25, 9312), (26, 9315), (34, 9354), (35, 9366), (40, 9399), (41, 9420), (43, 9435), (45, 9456), (56, 9534),

Gene: Howe\_15 Start: 9045, Stop: 9698, Start Num: 4

Candidate Starts for Howe\_15:

(Start: 4 @9045 has 53 MA's), (7, 9126), (10, 9156), (13, 9177), (15, 9213), (17, 9237), (23, 9282), (24, 9288), (25, 9312), (26, 9315), (34, 9354), (35, 9366), (40, 9399), (41, 9420), (43, 9435), (45, 9456), (56, 9534),

Gene: Hugley\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Hugley\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Hyzer\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Hyzer\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (26, 9552), (35, 9603), (45, 9693), (51, 9738),

Gene: Invectra\_15 Start: 8840, Stop: 9493, Start Num: 4

Candidate Starts for Invectra\_15:

(Start: 4 @8840 has 53 MA's), (7, 8921), (10, 8951), (13, 8972), (15, 9008), (17, 9032), (23, 9077), (24, 9083), (25, 9107), (26, 9110), (34, 9149), (35, 9161), (40, 9194), (41, 9215), (43, 9230), (45, 9251), (56,



9329),

Gene: JCole\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for JCole\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Jace\_13 Start: 8989, Stop: 9525, Start Num: 5

Candidate Starts for Jace\_13:

(3, 8959), (Start: 5 @8989 has 1 MA's), (18, 9184), (20, 9193), (24, 9223), (33, 9280), (35, 9301), (40, 9334), (41, 9355), (49, 9409),

Gene: Kita\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Kita\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Lamberg\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for Lamberg\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: LordFarquaad\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for LordFarquaad\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: Lton\_14 Start: 9099, Stop: 9533, Start Num: 8

Candidate Starts for Lton\_14:

(Start: 8 @9099 has 31 MA's), (20, 9201), (30, 9276), (32, 9282), (35, 9306), (38, 9321), (52, 9444), (53, 9447), (54, 9453), (60, 9516),

Gene: Madeline\_14 Start: 9287, Stop: 9934, Start Num: 4

Candidate Starts for Madeline\_14:

(Start: 4 @9287 has 53 MA's), (7, 9368), (9, 9386), (10, 9398), (13, 9419), (15, 9455), (17, 9479), (25, 9551), (35, 9605), (51, 9740),

Gene: Manasvini\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Manasvini\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Maridalia\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Maridalia\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Matteo\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for Matteo\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: Mcklovin\_16 Start: 10161, Stop: 10811, Start Num: 4

Candidate Starts for Mcklovin\_16:

(Start: 4 @10161 has 53 MA's), (9, 10260), (10, 10272), (14, 10317), (15, 10329), (17, 10353), (20, 10371), (25, 10425), (35, 10479), (40, 10512), (56, 10647),

Gene: MichaelScott\_15 Start: 8840, Stop: 9493, Start Num: 4

Candidate Starts for MichaelScott\_15:

(Start: 4 @8840 has 53 MA's), (7, 8921), (10, 8951), (13, 8972), (15, 9008), (17, 9032), (23, 9077), (24, 9083), (25, 9107), (26, 9110), (34, 9149), (35, 9161), (40, 9194), (41, 9215), (43, 9230), (45, 9251), (56, 9329),

Gene: Mocha12\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for Mocha12\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Moosehead\_14 Start: 9045, Stop: 9479, Start Num: 8

Candidate Starts for Moosehead\_14:

(Start: 8 @9045 has 31 MA's), (19, 9141), (20, 9147), (30, 9222), (35, 9252), (38, 9267), (52, 9390), (53, 9393), (54, 9399), (60, 9462),

Gene: Neobush\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Neobush\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Nettuno\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for Nettuno\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: Nymphadora\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Nymphadora\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Ohgeesy\_14 Start: 8633, Stop: 9280, Start Num: 4

Candidate Starts for Ohgeesy\_14:

(Start: 4 @8633 has 53 MA's), (7, 8714), (9, 8732), (10, 8744), (13, 8765), (15, 8801), (17, 8825), (25, 8897), (35, 8951), (48, 9059), (51, 9086),

Gene: OneDirection\_14 Start: 9043, Stop: 9477, Start Num: 8

Candidate Starts for OneDirection\_14:

(Start: 8 @9043 has 31 MA's), (20, 9145), (30, 9220), (32, 9226), (35, 9250), (38, 9265), (52, 9388), (53, 9391), (54, 9397), (60, 9460),

Gene: Oregano\_15 Start: 8511, Stop: 9164, Start Num: 4

Candidate Starts for Oregano\_15:

(Start: 4 @8511 has 53 MA's), (7, 8592), (10, 8622), (13, 8643), (15, 8679), (17, 8703), (23, 8748), (24, 8754), (25, 8778), (26, 8781), (34, 8820), (35, 8832), (40, 8865), (41, 8886), (43, 8901), (45, 8922), (56, 9000),

Gene: PantheRoc\_14 Start: 8634, Stop: 9266, Start Num: 4

Candidate Starts for PantheRoc\_14:

(Start: 4 @8634 has 53 MA's), (7, 8715), (10, 8745), (13, 8766), (15, 8802), (17, 8826), (25, 8898), (35, 8952), (51, 9087),

Gene: Pepperoni\_14 Start: 9393, Stop: 9827, Start Num: 8

Candidate Starts for Pepperoni\_14:

(Start: 8 @9393 has 31 MA's), (20, 9495), (30, 9570), (32, 9576), (35, 9600), (38, 9615), (52, 9738), (53, 9741), (54, 9747), (60, 9810),

Gene: PhriskyACE\_14 Start: 8338, Stop: 8985, Start Num: 4

Candidate Starts for PhriskyACE\_14:

(Start: 4 @8338 has 53 MA's), (10, 8449), (15, 8506), (29, 8617), (35, 8656), (40, 8689), (41, 8710), (45, 8746), (48, 8764), (61, 8881),

Gene: Pickett\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for Pickett\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: Polly\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Polly\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Powerball\_14 Start: 8347, Stop: 8994, Start Num: 4

Candidate Starts for Powerball\_14:

(Start: 4 @8347 has 53 MA's), (10, 8458), (15, 8515), (29, 8626), (35, 8665), (40, 8698), (41, 8719), (45, 8755), (48, 8773), (61, 8890),

Gene: REQ3\_47 Start: 25838, Stop: 26401, Start Num: 4

Candidate Starts for REQ3\_47:

(Start: 4 @25838 has 53 MA's), (21, 26069), (28, 26126), (37, 26177),

Gene: RavenCo17\_14 Start: 9940, Stop: 10368, Start Num: 8

Candidate Starts for RavenCo17\_14:

(1, 9508), (2, 9592), (6, 9886), (Start: 8 @9940 has 31 MA's), (12, 9961), (16, 10009), (21, 10060), (30, 10117), (35, 10147), (36, 10150), (47, 10255), (52, 10285), (53, 10288),

Gene: Sahara\_14 Start: 9154, Stop: 9591, Start Num: 8

Candidate Starts for Sahara\_14:

(Start: 8 @9154 has 31 MA's), (20, 9256), (35, 9361), (38, 9376), (52, 9499), (53, 9502), (54, 9508), (57, 9532), (60, 9571),

Gene: Samman98\_15 Start: 8856, Stop: 9503, Start Num: 4

Candidate Starts for Samman98\_15:

(Start: 4 @8856 has 53 MA's), (10, 8967), (15, 9024), (29, 9135), (35, 9174), (40, 9207), (41, 9228), (45, 9264), (48, 9282), (61, 9399),

Gene: Savage\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for Savage\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Sekhmet\_15 Start: 8840, Stop: 9493, Start Num: 4

Candidate Starts for Sekhmet\_15:

(Start: 4 @8840 has 53 MA's), (7, 8921), (10, 8951), (13, 8972), (15, 9008), (17, 9032), (23, 9077), (24, 9083), (25, 9107), (26, 9110), (34, 9149), (35, 9161), (40, 9194), (41, 9215), (43, 9230), (45, 9251), (56, 9329),

Gene: Shlim410\_15 Start: 9045, Stop: 9698, Start Num: 4

Candidate Starts for Shlim410\_15:

(Start: 4 @9045 has 53 MA's), (7, 9126), (10, 9156), (13, 9177), (15, 9213), (17, 9237), (23, 9282), (24, 9288), (25, 9312), (26, 9315), (34, 9354), (35, 9366), (40, 9399), (41, 9420), (43, 9435), (45, 9456), (56, 9534),

Gene: Sidious\_14 Start: 8632, Stop: 9279, Start Num: 4

Candidate Starts for Sidious\_14:

(Start: 4 @8632 has 53 MA's), (7, 8713), (10, 8743), (13, 8764), (15, 8800), (17, 8824), (25, 8896), (35, 8950), (51, 9085),

Gene: SoilAssassin\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for SoilAssassin\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: Sproutie\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for Sproutie\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Suerte\_14 Start: 8339, Stop: 8986, Start Num: 4

Candidate Starts for Suerte\_14:

(Start: 4 @8339 has 53 MA's), (10, 8450), (15, 8507), (29, 8618), (35, 8657), (40, 8690), (41, 8711), (45, 8747), (48, 8765), (61, 8882),

Gene: Suscepit\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Suscepit\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Tayonia\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Tayonia\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: ThankyouJordi\_13 Start: 9309, Stop: 9956, Start Num: 4

Candidate Starts for ThankyouJordi\_13:

(Start: 4 @9309 has 53 MA's), (7, 9390), (13, 9441), (15, 9477), (17, 9501), (25, 9573), (35, 9627), (45, 9717), (51, 9762),

Gene: Thimann\_15 Start: 8826, Stop: 9473, Start Num: 4

Candidate Starts for Thimann\_15:

(Start: 4 @8826 has 53 MA's), (10, 8937), (15, 8994), (29, 9105), (35, 9144), (40, 9177), (41, 9198), (45, 9234), (48, 9252), (61, 9369),

Gene: TimTam\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for TimTam\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Trumpet\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Trumpet\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: TuertoX\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for TuertoX\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: Twinkle\_15 Start: 9045, Stop: 9698, Start Num: 4

Candidate Starts for Twinkle\_15:

(Start: 4 @9045 has 53 MA's), (7, 9126), (10, 9156), (13, 9177), (15, 9213), (17, 9237), (23, 9282), (24, 9288), (25, 9312), (26, 9315), (34, 9354), (35, 9366), (40, 9399), (41, 9420), (43, 9435), (45, 9456), (56, 9534),

Gene: Vasanti\_14 Start: 9086, Stop: 9520, Start Num: 8

Candidate Starts for Vasanti\_14:

(Start: 8 @9086 has 31 MA's), (20, 9188), (30, 9263), (35, 9293), (38, 9308), (52, 9431), (54, 9440), (60, 9503),

Gene: WelcomeAyanna\_13 Start: 9309, Stop: 9956, Start Num: 4

Candidate Starts for WelcomeAyanna\_13:

(Start: 4 @9309 has 53 MA's), (7, 9390), (13, 9441), (15, 9477), (17, 9501), (25, 9573), (35, 9627), (45, 9717), (51, 9762),

Gene: Whiteclaw\_14 Start: 9137, Stop: 9571, Start Num: 8

Candidate Starts for Whiteclaw\_14:

(Start: 8 @9137 has 31 MA's), (20, 9239), (30, 9314), (35, 9344), (38, 9359), (52, 9482), (53, 9485), (54, 9491), (60, 9554),

Gene: WinkNick\_15 Start: 8841, Stop: 9488, Start Num: 4

Candidate Starts for WinkNick\_15:

(Start: 4 @8841 has 53 MA's), (10, 8952), (15, 9009), (29, 9120), (35, 9159), (40, 9192), (41, 9213), (45, 9249), (48, 9267), (61, 9384),

Gene: Yeet412\_14 Start: 9070, Stop: 9504, Start Num: 8

Candidate Starts for Yeet412\_14:

(Start: 8 @9070 has 31 MA's), (20, 9172), (30, 9247), (35, 9277), (38, 9292), (52, 9415), (53, 9418), (54, 9424), (60, 9487),

Gene: Yeezy\_15 Start: 8643, Stop: 9290, Start Num: 4

Candidate Starts for Yeezy\_15:

(Start: 4 @8643 has 53 MA's), (7, 8724), (10, 8754), (13, 8775), (15, 8811), (17, 8835), (25, 8907), (35, 8961), (51, 9096),

Gene: Zameen\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Zameen\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (9, 9384), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),

Gene: Zirinka\_14 Start: 9285, Stop: 9932, Start Num: 4

Candidate Starts for Zirinka\_14:

(Start: 4 @9285 has 53 MA's), (7, 9366), (10, 9396), (13, 9417), (15, 9453), (17, 9477), (25, 9549), (35, 9603), (51, 9738),