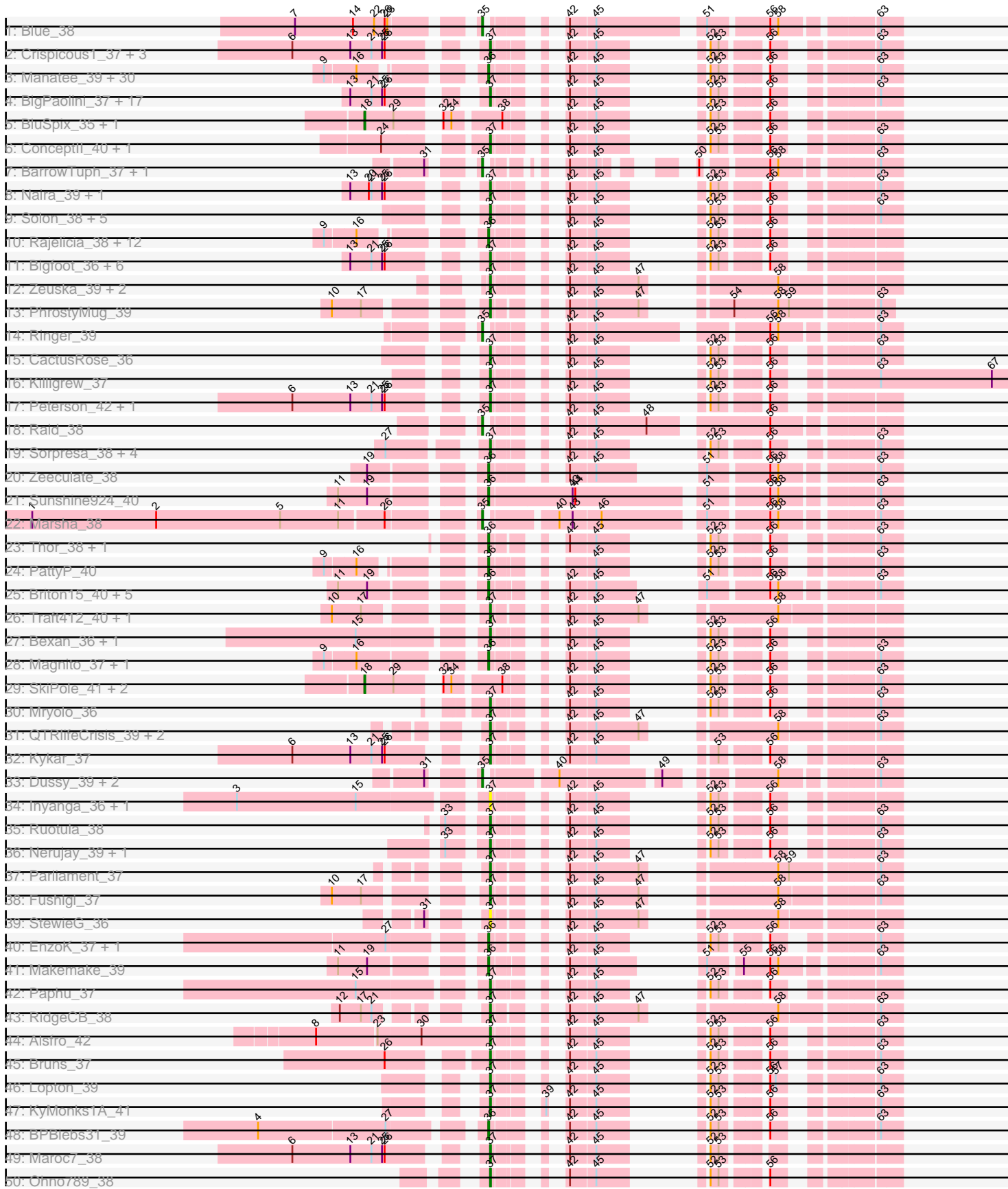
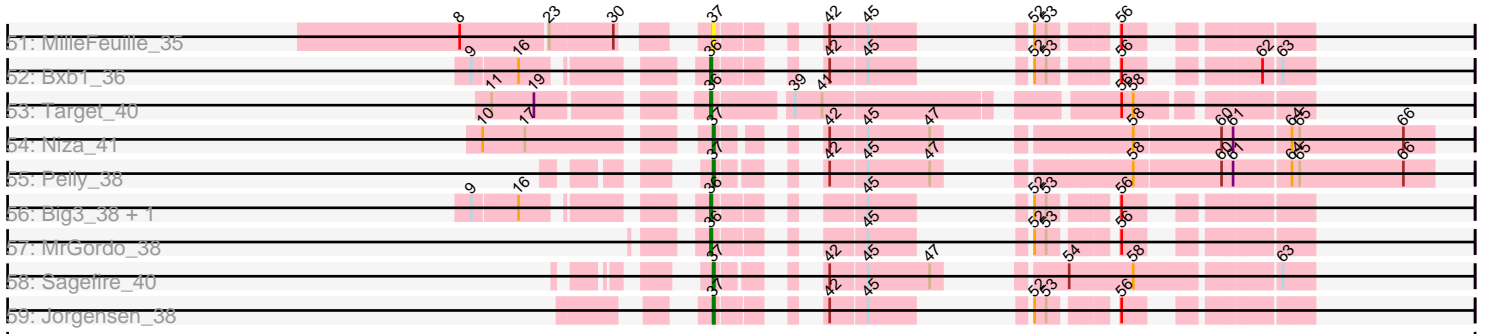


Pham 294479



# Pham 294479



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 294479 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294479 has 162 members, 21 are drafts.

Phages represented in each track:

- Track 1 : Blue\_38
- Track 2 : Crispicous1\_37, Magnar\_38, Fascinus\_37, Wheeler\_39
- Track 3 : Manatee\_39, DirtDevil\_40, Switzer\_39, Blesser\_38, MPlant7149\_38, Pinto\_40, Violet\_37, Gwendoluna\_41, Marge\_39, KikiBouba\_40, Rufus\_40, JuliaChild\_40, GroundGoblin\_40, CatBus\_40, Anglerfish\_40, GMonster\_37, Ichabod\_39, McGuire\_39, Dynamix\_39, Rhynn\_38, Mkhusele\_39, Squee\_39, Tripl3t\_39, NEHalo\_38, Smeagol\_40, Noxious\_40, Aldrich\_40, Tote\_35, AFIS\_38, Hermia\_41, Swole\_40
- Track 4 : BigPaolini\_37, Eyeball\_38, Agaliana\_36, A6\_35, KBG\_39, Froghopper\_38, Wilkins\_37, PacerPaul\_39, LunarLander\_39, Graduation\_40, ChristmasHams\_36, Topgun\_37, Phlippers\_36, BK1\_35, Puppet\_38, Francis47\_38, Smairt\_39, Licorice\_40
- Track 5 : BluSpix\_35, IgnatiusPatJac\_37
- Track 6 : ConceptII\_40, Teodoridan\_36
- Track 7 : BarrowTuph\_37, Marco3\_38
- Track 8 : Naira\_39, Fenn\_39
- Track 9 : Solon\_38, DrFeelGood\_37, Lamina13\_38, Sumter\_37, Rubeus\_38, Tasp14\_39
- Track 10 : Rajelicia\_38, Michley\_38, Lesedi\_37, GrecoEtereo\_40, Gachnar\_40, Arcanine\_38, Buttons\_38, Adahisdi\_39, TheloniousMonk\_40, Oogway\_37, HarryOW\_38, Slagathor\_39, Beatrix\_38
- Track 11 : Bigfoot\_36, Bircsak\_38, Bones\_38, Gompeii16\_38, Espresso\_38, Doom\_38, Papez\_40
- Track 12 : Zeuska\_39, Applejack\_35, Abrogate\_390
- Track 13 : PhrostyMug\_39
- Track 14 : Ringer\_39
- Track 15 : CactusRose\_36
- Track 16 : Killigrew\_37
- Track 17 : Peterson\_42, ILeeKay\_40
- Track 18 : Raid\_38
- Track 19 : Sorpresa\_38, Pita2\_40, Sandaddy\_38, BaconJack\_41, PSullivan\_37
- Track 20 : Zeeculate\_38
- Track 21 : Sunshine924\_40
- Track 22 : Marsha\_38
- Track 23 : Thor\_38, SarFire\_38
- Track 24 : PattyP\_40

- Track 25 : Briton15\_40, PascalRango\_39, Paraselene\_37, ProMouse\_36, Arlo\_37, Atkinbua\_40
- Track 26 : Traft412\_40, Perseus\_40
- Track 27 : Bexan\_36, StrongArm\_37
- Track 28 : Magnito\_37, Turj99\_37
- Track 29 : SkiPole\_41, Gandalf20\_39, STLscum\_39
- Track 30 : Mryolo\_36
- Track 31 : QTRlifeCrisis\_39, Dexes\_38, CartmannCramer\_38
- Track 32 : Kykar\_37
- Track 33 : Dussy\_39, Abbyshoes\_40, Kenmech\_41
- Track 34 : Inyanga\_36, Iqorha\_36
- Track 35 : Ruotula\_38
- Track 36 : Nerujay\_39, Hope4ever\_38
- Track 37 : Parliament\_37
- Track 38 : Fushigi\_37
- Track 39 : StewieG\_36
- Track 40 : EnzoK\_37, McSinger\_39
- Track 41 : Makemake\_39
- Track 42 : Paphu\_37
- Track 43 : RidgeCB\_38
- Track 44 : Alsfro\_42
- Track 45 : Bruns\_37
- Track 46 : Lopton\_39
- Track 47 : KyMonks1A\_41
- Track 48 : BPBiebs31\_39
- Track 49 : Maroc7\_38
- Track 50 : Ohno789\_38
- Track 51 : MilleFeuille\_35
- Track 52 : Bxb1\_36
- Track 53 : Target\_40
- Track 54 : Niza\_41
- Track 55 : Pelly\_38
- Track 56 : Big3\_38, Ajay\_39
- Track 57 : MrGordo\_38
- Track 58 : Sagefire\_40
- Track 59 : Jorgensen\_38

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

The start number called the most often in the published annotations is 37, it was called in 71 of the 141 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- A6\_35, Abrogate\_390, Agaliana\_36, Alsfro\_42, Applejack\_35, BK1\_35, BaconJack\_41, Bexan\_36, BigPaolini\_37, Bigfoot\_36, Bircsak\_38, Bones\_38, Bruns\_37, CactusRose\_36, CartmannCramer\_38, ChristmasHams\_36, ConceptII\_40, Crispicious1\_37, Dexes\_38, Doom\_38, DrFeelGood\_37, Espresso\_38, Eyeball\_38, Fascinus\_37, Fenn\_39, Francis47\_38, Froghopper\_38, Fushigi\_37, Gompeii16\_38, Graduation\_40, Hope4ever\_38, ILeeKay\_40, Inyanga\_36, Iqorha\_36, Jorgensen\_38, KBG\_39, Killigrew\_37, KyMonks1A\_41, Kykar\_37, Lamina13\_38, Licorice\_40,

Lopton\_39, LunarLander\_39, Magnar\_38, Maroc7\_38, MilleFeuille\_35, Mryolo\_36, Naira\_39, Nerujay\_39, Niza\_41, Ohno789\_38, PSullivan\_37, PacerPaul\_39, Papez\_40, Paphu\_37, Parliament\_37, Pelly\_38, Perseus\_40, Peterson\_42, Phippers\_36, PhrostyMug\_39, Pita2\_40, Puppet\_38, QTRlifeCrisis\_39, RidgeCB\_38, Rubeus\_38, Ruotula\_38, Sagefire\_40, Sandaddy\_38, Smairt\_39, Solon\_38, Sorpresa\_38, StewieG\_36, StrongArm\_37, Sumter\_37, Tasp14\_39, Teodoridan\_36, Topgun\_37, Traft412\_40, Wheeler\_39, Wilkins\_37, Zeuska\_39,

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

- 

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

- AFIS\_38, Abbyshoes\_40, Adahisdi\_39, Ajay\_39, Aldrich\_40, Anglerfish\_40, Arcanine\_38, Arlo\_37, Atkinbua\_40, BPBiebs31\_39, BarrowTuph\_37, Beatrix\_38, Big3\_38, Blesser\_38, BluSpix\_35, Blue\_38, Briton15\_40, Buttons\_38, Bxb1\_36, CatBus\_40, DirtDevil\_40, Dussy\_39, Dynamix\_39, EnzoK\_37, GMonster\_37, Gachnar\_40, Gandalf20\_39, GrecoEtereo\_40, GroundGoblin\_40, Gwendoluna\_41, HarryOW\_38, Hermia\_41, Ichabod\_39, IgnatiusPatJac\_37, JuliaChild\_40, Kenmech\_41, KikiBouba\_40, Lesedi\_37, MPlant7149\_38, Magnito\_37, Makemake\_39, Manatee\_39, Marco3\_38, Marge\_39, Marsha\_38, McGuire\_39, McSinger\_39, Michley\_38, Mkhuseleli\_39, MrGordo\_38, NEHalo\_38, Noxious\_40, Oogway\_37, Paraselene\_37, PascalRango\_39, PattyP\_40, Pinto\_40, ProMouse\_36, Raid\_38, Rajelicia\_38, Rhynn\_38, Ringer\_39, Rufus\_40, STLscum\_39, SarFire\_38, SkiPole\_41, Slagathor\_39, Smeagol\_40, Squee\_39, Sunshine924\_40, Switzer\_39, Swole\_40, Target\_40, TheloniousMonk\_40, Thor\_38, Tote\_35, Trip13t\_39, Turj99\_37, Violet\_37, Zeeculate\_38,

### Summary by start number:

Start 18:

- Found in 5 of 162 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 5 of 141
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BluSpix\_35 (A1), Gandalf20\_39 (A1), IgnatiusPatJac\_37 (A1), STLscum\_39 (A1), SkiPole\_41 (A1),

Start 35:

- Found in 9 of 162 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 9 of 141
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abbyshoes\_40 (A1), BarrowTuph\_37 (A1), Blue\_38 (A1), Dussy\_39 (A1), Kenmech\_41 (A1), Marco3\_38 (A1), Marsha\_38 (A1), Raid\_38 (A1), Ringer\_39 (A1),

Start 36:

- Found in 66 of 162 ( 40.7% ) of genes in pham
- Manual Annotations of this start: 56 of 141
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AFIS\_38 (A1), Adahisdi\_39 (A1), Ajay\_39 (A1), Aldrich\_40 (A1), Anglerfish\_40 (A1), Arcanine\_38 (A1), Arlo\_37 (A1), Atkinbua\_40 (A1), BPBiebs31\_39 (A1), Beatrix\_38 (A1), Big3\_38 (A1), Blesser\_38 (A1), Briton15\_40 (A1), Buttons\_38 (A1), Bxb1\_36 (A1), CatBus\_40 (A1), DirtDevil\_40 (A1), Dynamix\_39 (A1), EnzoK\_37 (A1), GMonster\_37 (A1), Gachnar\_40

(A1), GrecoEtereo\_40 (A1), GroundGoblin\_40 (A1), Gwendoluna\_41 (A1), HarryOW\_38 (A1), Hermia\_41 (A1), Ichabod\_39 (A1), JuliaChild\_40 (A1), KikiBouba\_40 (A1), Lesedi\_37 (A1), MPlant7149\_38 (A1), Magnito\_37 (A1), Makemake\_39 (A1), Manatee\_39 (A1), Marge\_39 (A1), McGuire\_39 (A1), McSinger\_39 (A1), Michley\_38 (A1), Mkhuseleli\_39 (A1), MrGordo\_38 (A1), NEHalo\_38 (A1), Noxious\_40 (A1), Oogway\_37 (A1), Paraselene\_37 (A1), PascalRango\_39 (A1), PattyP\_40 (A1), Pinto\_40 (A1), ProMouse\_36 (A1), Rajelicia\_38 (A1), Rhynn\_38 (A1), Rufus\_40 (A1), SarFire\_38 (A1), Slagathor\_39 (A1), Smeagol\_40 (A1), Squee\_39 (A1), Sunshine924\_40 (A1), Switzer\_39 (A1), Swole\_40 (A1), Target\_40 (A1), TheloniousMonk\_40 (A1), Thor\_38 (A1), Tote\_35 (A1), Tripl3t\_39 (A1), Turj99\_37 (A1), Violet\_37 (A1), Zeeculate\_38 (A1),

Start 37:

- Found in 82 of 162 ( 50.6% ) of genes in pham
- Manual Annotations of this start: 71 of 141
- Called 100.0% of time when present
- Phage (with cluster) where this start called: A6\_35 (A1), Abrogate\_390 (A1), Agaliana\_36 (A1), Alsfro\_42 (A1), Applejack\_35 (A1), BK1\_35 (A1), BaconJack\_41 (A1), Bexan\_36 (A1), BigPaolini\_37 (A1), Bigfoot\_36 (A1), Bircsak\_38 (A1), Bones\_38 (A1), Bruns\_37 (A1), CactusRose\_36 (A1), CartmannCramer\_38 (A1), ChristmasHams\_36 (A1), Conceptll\_40 (A1), Crispicous1\_37 (A1), Dexes\_38 (A1), Doom\_38 (A1), DrFeelGood\_37 (A1), Espresso\_38 (A1), Eyeball\_38 (A1), Fascinus\_37 (A1), Fenn\_39 (A1), Francis47\_38 (A1), Froghopper\_38 (A1), Fushigi\_37 (A1), Gompeii16\_38 (A1), Graduation\_40 (A1), Hope4ever\_38 (A1), ILeeKay\_40 (A1), Inyanga\_36 (A1), Iqorha\_36 (A1), Jorgensen\_38 (A1), KBG\_39 (A1), Killigrew\_37 (A1), KyMonks1A\_41 (A1), Kykar\_37 (A1), Lamina13\_38 (A1), Licorice\_40 (A1), Lopton\_39 (A1), LunarLander\_39 (A1), Magnar\_38 (A1), Maroc7\_38 (A1), MilleFeuille\_35 (A1), Mryolo\_36 (A1), Naira\_39 (A1), Nerujay\_39 (A1), Niza\_41 (A1), Ohno789\_38 (A1), PSullivan\_37 (A1), PacerPaul\_39 (A1), Papez\_40 (A1), Paphu\_37 (A1), Parliament\_37 (A1), Pelly\_38 (A1), Perseus\_40 (A1), Peterson\_42 (A1), Phlippers\_36 (A1), PhrostyMug\_39 (A1), Pita2\_40 (A1), Puppet\_38 (A1), QTRlifeCrisis\_39 (A1), RidgeCB\_38 (A1), Rubeus\_38 (A1), Ruotula\_38 (A1), Sagefire\_40 (A1), Sandaddy\_38 (A1), Smairt\_39 (A1), Solon\_38 (A1), Sorpresa\_38 (A1), StewieG\_36 (A1), StrongArm\_37 (A1), Sumter\_37 (A1), Tasp14\_39 (A1), Teodoridan\_36 (A1), Topgun\_37 (A1), Traft412\_40 (A1), Wheeler\_39 (A1), Wilkins\_37 (A1), Zeuska\_39 (A1),

### Summary by clusters:

There is one cluster represented in this pham: A1

Info for manual annotations of cluster A1:

- Start number 18 was manually annotated 5 times for cluster A1.
- Start number 35 was manually annotated 9 times for cluster A1.
- Start number 36 was manually annotated 56 times for cluster A1.
- Start number 37 was manually annotated 71 times for cluster A1.

### Gene Information:

Gene: A6\_35 Start: 30422, Stop: 30150, Start Num: 37

Candidate Starts for A6\_35:

(13, 30536), (21, 30512), (25, 30500), (26, 30497), (Start: 37 @30422 has 71 MA's), (42, 30380), (45, 30353), (52, 30308), (53, 30299), (56, 30260), (63, 30173),

Gene: AFIS\_38 Start: 31598, Stop: 31326, Start Num: 36

Candidate Starts for AFIS\_38:

(9, 31733), (16, 31700), (Start: 36 @31598 has 56 MA's), (42, 31556), (45, 31529), (52, 31484), (53, 31475), (56, 31436), (63, 31349),

Gene: Abbyshoes\_40 Start: 31568, Stop: 31185, Start Num: 35

Candidate Starts for Abbyshoes\_40:

(31, 31604), (Start: 35 @31568 has 9 MA's), (40, 31502), (49, 31400), (58, 31301), (63, 31208),

Gene: Abrogate\_390 Start: 32285, Stop: 31953, Start Num: 37

Candidate Starts for Abrogate\_390:

(Start: 37 @32285 has 71 MA's), (42, 32243), (45, 32216), (47, 32168), (58, 32075),

Gene: Adahisdi\_39 Start: 31648, Stop: 31376, Start Num: 36

Candidate Starts for Adahisdi\_39:

(9, 31783), (16, 31750), (Start: 36 @31648 has 56 MA's), (42, 31606), (45, 31579), (52, 31534), (53, 31525), (56, 31486),

Gene: Agaliana\_36 Start: 28180, Stop: 27908, Start Num: 37

Candidate Starts for Agaliana\_36:

(13, 28294), (21, 28270), (25, 28258), (26, 28255), (Start: 37 @28180 has 71 MA's), (42, 28138), (45, 28111), (52, 28066), (53, 28057), (56, 28018), (63, 27931),

Gene: Ajay\_39 Start: 31439, Stop: 31167, Start Num: 36

Candidate Starts for Ajay\_39:

(9, 31574), (16, 31541), (Start: 36 @31439 has 56 MA's), (45, 31370), (52, 31325), (53, 31316), (56, 31277),

Gene: Aldrich\_40 Start: 32611, Stop: 32339, Start Num: 36

Candidate Starts for Aldrich\_40:

(9, 32746), (16, 32713), (Start: 36 @32611 has 56 MA's), (42, 32569), (45, 32542), (52, 32497), (53, 32488), (56, 32449), (63, 32362),

Gene: Alsfro\_42 Start: 31790, Stop: 31518, Start Num: 37

Candidate Starts for Alsfro\_42:

(8, 31982), (23, 31916), (30, 31868), (Start: 37 @31790 has 71 MA's), (42, 31748), (45, 31721), (52, 31676), (53, 31667), (56, 31628), (63, 31541),

Gene: Anglerfish\_40 Start: 31701, Stop: 31429, Start Num: 36

Candidate Starts for Anglerfish\_40:

(9, 31836), (16, 31803), (Start: 36 @31701 has 56 MA's), (42, 31659), (45, 31632), (52, 31587), (53, 31578), (56, 31539), (63, 31452),

Gene: Applejack\_35 Start: 28515, Stop: 28180, Start Num: 37

Candidate Starts for Applejack\_35:

(Start: 37 @28515 has 71 MA's), (42, 28470), (45, 28443), (47, 28395), (58, 28302),

Gene: Arcanine\_38 Start: 30821, Stop: 30549, Start Num: 36

Candidate Starts for Arcanine\_38:

(9, 30956), (16, 30923), (Start: 36 @30821 has 56 MA's), (42, 30779), (45, 30752), (52, 30707), (53, 30698), (56, 30659),

Gene: Arlo\_37 Start: 31329, Stop: 31018, Start Num: 36

Candidate Starts for Arlo\_37:

(11, 31464), (19, 31431), (Start: 36 @31329 has 56 MA's), (42, 31287), (45, 31260), (51, 31206), (56, 31143), (58, 31134), (63, 31041),

Gene: Atkinbua\_40 Start: 31777, Stop: 31466, Start Num: 36

Candidate Starts for Atkinbua\_40:

(11, 31912), (19, 31879), (Start: 36 @31777 has 56 MA's), (42, 31735), (45, 31708), (51, 31654), (56, 31591), (58, 31582), (63, 31489),

Gene: BK1\_35 Start: 30422, Stop: 30150, Start Num: 37

Candidate Starts for BK1\_35:

(13, 30536), (21, 30512), (25, 30500), (26, 30497), (Start: 37 @30422 has 71 MA's), (42, 30380), (45, 30353), (52, 30308), (53, 30299), (56, 30260), (63, 30173),

Gene: BPBiebs31\_39 Start: 31743, Stop: 31468, Start Num: 36

Candidate Starts for BPBiebs31\_39:

(4, 31971), (27, 31830), (Start: 36 @31743 has 56 MA's), (42, 31698), (45, 31671), (52, 31626), (53, 31617), (56, 31578), (63, 31491),

Gene: BaconJack\_41 Start: 31798, Stop: 31526, Start Num: 37

Candidate Starts for BaconJack\_41:

(27, 31882), (Start: 37 @31798 has 71 MA's), (42, 31756), (45, 31729), (52, 31684), (53, 31675), (56, 31636), (63, 31549),

Gene: BarrowTuph\_37 Start: 31319, Stop: 31008, Start Num: 35

Candidate Starts for BarrowTuph\_37:

(31, 31355), (Start: 35 @31319 has 9 MA's), (42, 31277), (45, 31250), (50, 31196), (56, 31133), (58, 31124), (63, 31031),

Gene: Beatrix\_38 Start: 32774, Stop: 32502, Start Num: 36

Candidate Starts for Beatrix\_38:

(9, 32909), (16, 32876), (Start: 36 @32774 has 56 MA's), (42, 32732), (45, 32705), (52, 32660), (53, 32651), (56, 32612),

Gene: Bexan\_36 Start: 32268, Stop: 31996, Start Num: 37

Candidate Starts for Bexan\_36:

(15, 32394), (Start: 37 @32268 has 71 MA's), (42, 32226), (45, 32199), (52, 32154), (53, 32145), (56, 32106),

Gene: Big3\_38 Start: 31940, Stop: 31668, Start Num: 36

Candidate Starts for Big3\_38:

(9, 32075), (16, 32042), (Start: 36 @31940 has 56 MA's), (45, 31871), (52, 31826), (53, 31817), (56, 31778),

Gene: BigPaolini\_37 Start: 29684, Stop: 29412, Start Num: 37

Candidate Starts for BigPaolini\_37:

(13, 29798), (21, 29774), (25, 29762), (26, 29759), (Start: 37 @29684 has 71 MA's), (42, 29642), (45, 29615), (52, 29570), (53, 29561), (56, 29522), (63, 29435),

Gene: Bigfoot\_36 Start: 30710, Stop: 30438, Start Num: 37

Candidate Starts for Bigfoot\_36:

(13, 30824), (21, 30800), (25, 30788), (26, 30785), (Start: 37 @30710 has 71 MA's), (42, 30668), (45, 30641), (52, 30596), (53, 30587), (56, 30548),

Gene: Bircsak\_38 Start: 31775, Stop: 31503, Start Num: 37

Candidate Starts for Bircsak\_38:

(13, 31889), (21, 31865), (25, 31853), (26, 31850), (Start: 37 @31775 has 71 MA's), (42, 31733), (45, 31706), (52, 31661), (53, 31652), (56, 31613),

Gene: Blesser\_38 Start: 31835, Stop: 31563, Start Num: 36

Candidate Starts for Blesser\_38:

(9, 31970), (16, 31937), (Start: 36 @31835 has 56 MA's), (42, 31793), (45, 31766), (52, 31721), (53, 31712), (56, 31673), (63, 31586),

Gene: BluSpix\_35 Start: 27351, Stop: 26965, Start Num: 18

Candidate Starts for BluSpix\_35:

(Start: 18 @27351 has 5 MA's), (29, 27318), (32, 27282), (34, 27273), (38, 27225), (42, 27195), (45, 27168), (52, 27123), (53, 27114), (56, 27075),

Gene: Blue\_38 Start: 31834, Stop: 31469, Start Num: 35

Candidate Starts for Blue\_38:

(7, 32014), (14, 31948), (22, 31924), (26, 31912), (28, 31909), (Start: 35 @31834 has 9 MA's), (42, 31789), (45, 31762), (51, 31657), (56, 31594), (58, 31585), (63, 31492),

Gene: Bones\_38 Start: 31179, Stop: 30907, Start Num: 37

Candidate Starts for Bones\_38:

(13, 31293), (21, 31269), (25, 31257), (26, 31254), (Start: 37 @31179 has 71 MA's), (42, 31137), (45, 31110), (52, 31065), (53, 31056), (56, 31017),

Gene: Briton15\_40 Start: 31612, Stop: 31301, Start Num: 36

Candidate Starts for Briton15\_40:

(11, 31747), (19, 31714), (Start: 36 @31612 has 56 MA's), (42, 31570), (45, 31543), (51, 31489), (56, 31426), (58, 31417), (63, 31324),

Gene: Bruns\_37 Start: 31253, Stop: 30981, Start Num: 37

Candidate Starts for Bruns\_37:

(26, 31340), (Start: 37 @31253 has 71 MA's), (42, 31211), (45, 31184), (52, 31139), (53, 31130), (56, 31091), (63, 31004),

Gene: Buttons\_38 Start: 30324, Stop: 30052, Start Num: 36

Candidate Starts for Buttons\_38:

(9, 30459), (16, 30426), (Start: 36 @30324 has 56 MA's), (42, 30282), (45, 30255), (52, 30210), (53, 30201), (56, 30162),

Gene: Bxb1\_36 Start: 31386, Stop: 31114, Start Num: 36

Candidate Starts for Bxb1\_36:

(9, 31521), (16, 31488), (Start: 36 @31386 has 56 MA's), (42, 31344), (45, 31317), (52, 31272), (53, 31263), (56, 31224), (62, 31149), (63, 31137),

Gene: CactusRose\_36 Start: 30823, Stop: 30551, Start Num: 37

Candidate Starts for CactusRose\_36:

(Start: 37 @30823 has 71 MA's), (42, 30781), (45, 30754), (52, 30709), (53, 30700), (56, 30661), (63, 30574),

Gene: CartmannCramer\_38 Start: 33534, Stop: 33202, Start Num: 37

Candidate Starts for CartmannCramer\_38:

(Start: 37 @33534 has 71 MA's), (42, 33492), (45, 33465), (47, 33417), (58, 33324), (63, 33225),

Gene: CatBus\_40 Start: 32803, Stop: 32531, Start Num: 36

Candidate Starts for CatBus\_40:

(9, 32938), (16, 32905), (Start: 36 @32803 has 56 MA's), (42, 32761), (45, 32734), (52, 32689), (53, 32680), (56, 32641), (63, 32554),

Gene: ChristmasHams\_36 Start: 28576, Stop: 28304, Start Num: 37

Candidate Starts for ChristmasHams\_36:

(13, 28690), (21, 28666), (25, 28654), (26, 28651), (Start: 37 @28576 has 71 MA's), (42, 28534), (45, 28507), (52, 28462), (53, 28453), (56, 28414), (63, 28327),

Gene: ConceptII\_40 Start: 32357, Stop: 32085, Start Num: 37

Candidate Starts for ConceptII\_40:

(24, 32447), (Start: 37 @32357 has 71 MA's), (42, 32315), (45, 32288), (52, 32243), (53, 32234), (56, 32195), (63, 32108),

Gene: Crispicious1\_37 Start: 30836, Stop: 30564, Start Num: 37

Candidate Starts for Crispicious1\_37:

(6, 31016), (13, 30950), (21, 30926), (25, 30914), (26, 30911), (Start: 37 @30836 has 71 MA's), (42, 30794), (45, 30767), (52, 30722), (53, 30713), (56, 30674), (63, 30587),

Gene: Dexes\_38 Start: 31800, Stop: 31477, Start Num: 37

Candidate Starts for Dexes\_38:

(Start: 37 @31800 has 71 MA's), (42, 31758), (45, 31731), (47, 31683), (58, 31590), (63, 31491),

Gene: DirtDevil\_40 Start: 32611, Stop: 32339, Start Num: 36

Candidate Starts for DirtDevil\_40:

(9, 32746), (16, 32713), (Start: 36 @32611 has 56 MA's), (42, 32569), (45, 32542), (52, 32497), (53, 32488), (56, 32449), (63, 32362),

Gene: Doom\_38 Start: 31605, Stop: 31333, Start Num: 37

Candidate Starts for Doom\_38:

(13, 31719), (21, 31695), (25, 31683), (26, 31680), (Start: 37 @31605 has 71 MA's), (42, 31563), (45, 31536), (52, 31491), (53, 31482), (56, 31443),

Gene: DrFeelGood\_37 Start: 31699, Stop: 31427, Start Num: 37

Candidate Starts for DrFeelGood\_37:

(Start: 37 @31699 has 71 MA's), (42, 31657), (45, 31630), (52, 31585), (53, 31576), (56, 31537), (63, 31450),

Gene: Dussy\_39 Start: 31588, Stop: 31205, Start Num: 35

Candidate Starts for Dussy\_39:

(31, 31624), (Start: 35 @31588 has 9 MA's), (40, 31522), (49, 31420), (58, 31321), (63, 31228),

Gene: Dynamix\_39 Start: 31345, Stop: 31073, Start Num: 36

Candidate Starts for Dynamix\_39:

(9, 31480), (16, 31447), (Start: 36 @31345 has 56 MA's), (42, 31303), (45, 31276), (52, 31231), (53, 31222), (56, 31183), (63, 31096),

Gene: EnzoK\_37 Start: 29448, Stop: 29176, Start Num: 36

Candidate Starts for EnzoK\_37:

(27, 29535), (Start: 36 @29448 has 56 MA's), (42, 29406), (45, 29379), (52, 29334), (53, 29325), (56, 29286), (63, 29199),

Gene: Espresso\_38 Start: 31529, Stop: 31257, Start Num: 37

Candidate Starts for Espresso\_38:

(13, 31643), (21, 31619), (25, 31607), (26, 31604), (Start: 37 @31529 has 71 MA's), (42, 31487), (45, 31460), (52, 31415), (53, 31406), (56, 31367),

Gene: Eyeball\_38 Start: 31085, Stop: 30813, Start Num: 37

Candidate Starts for Eyeball\_38:

(13, 31199), (21, 31175), (25, 31163), (26, 31160), (Start: 37 @31085 has 71 MA's), (42, 31043), (45, 31016), (52, 30971), (53, 30962), (56, 30923), (63, 30836),

Gene: Fascinus\_37 Start: 30859, Stop: 30587, Start Num: 37

Candidate Starts for Fascinus\_37:

(6, 31039), (13, 30973), (21, 30949), (25, 30937), (26, 30934), (Start: 37 @30859 has 71 MA's), (42, 30817), (45, 30790), (52, 30745), (53, 30736), (56, 30697), (63, 30610),

Gene: Fenn\_39 Start: 32892, Stop: 32620, Start Num: 37

Candidate Starts for Fenn\_39:

(13, 33006), (20, 32985), (21, 32982), (25, 32970), (26, 32967), (Start: 37 @32892 has 71 MA's), (42, 32850), (45, 32823), (52, 32778), (53, 32769), (56, 32730), (63, 32643),

Gene: Francis47\_38 Start: 31946, Stop: 31674, Start Num: 37

Candidate Starts for Francis47\_38:

(13, 32060), (21, 32036), (25, 32024), (26, 32021), (Start: 37 @31946 has 71 MA's), (42, 31904), (45, 31877), (52, 31832), (53, 31823), (56, 31784), (63, 31697),

Gene: Froghopper\_38 Start: 30873, Stop: 30601, Start Num: 37

Candidate Starts for Froghopper\_38:

(13, 30987), (21, 30963), (25, 30951), (26, 30948), (Start: 37 @30873 has 71 MA's), (42, 30831), (45, 30804), (52, 30759), (53, 30750), (56, 30711), (63, 30624),

Gene: Fushigi\_37 Start: 29564, Stop: 29232, Start Num: 37

Candidate Starts for Fushigi\_37:

(10, 29699), (17, 29666), (Start: 37 @29564 has 71 MA's), (42, 29522), (45, 29495), (47, 29447), (58, 29354), (63, 29255),

Gene: GMonster\_37 Start: 30681, Stop: 30409, Start Num: 36

Candidate Starts for GMonster\_37:

(9, 30816), (16, 30783), (Start: 36 @30681 has 56 MA's), (42, 30639), (45, 30612), (52, 30567), (53, 30558), (56, 30519), (63, 30432),

Gene: Gachnar\_40 Start: 31453, Stop: 31181, Start Num: 36

Candidate Starts for Gachnar\_40:

(9, 31588), (16, 31555), (Start: 36 @31453 has 56 MA's), (42, 31411), (45, 31384), (52, 31339), (53, 31330), (56, 31291),

Gene: Gandalf20\_39 Start: 32248, Stop: 31862, Start Num: 18

Candidate Starts for Gandalf20\_39:

(Start: 18 @32248 has 5 MA's), (29, 32215), (32, 32179), (34, 32170), (38, 32122), (42, 32092), (45, 32065), (52, 32020), (53, 32011), (56, 31972), (63, 31885),

Gene: Gompeii16\_38 Start: 31776, Stop: 31504, Start Num: 37

Candidate Starts for Gompeii16\_38:

(13, 31890), (21, 31866), (25, 31854), (26, 31851), (Start: 37 @31776 has 71 MA's), (42, 31734), (45, 31707), (52, 31662), (53, 31653), (56, 31614),

Gene: Graduation\_40 Start: 31999, Stop: 31727, Start Num: 37

Candidate Starts for Graduation\_40:

(13, 32113), (21, 32089), (25, 32077), (26, 32074), (Start: 37 @31999 has 71 MA's), (42, 31957), (45, 31930), (52, 31885), (53, 31876), (56, 31837), (63, 31750),

Gene: GrecoEtereo\_40 Start: 32075, Stop: 31803, Start Num: 36

Candidate Starts for GrecoEtereo\_40:

(9, 32210), (16, 32177), (Start: 36 @32075 has 56 MA's), (42, 32033), (45, 32006), (52, 31961), (53, 31952), (56, 31913),

Gene: GroundGoblin\_40 Start: 32753, Stop: 32481, Start Num: 36

Candidate Starts for GroundGoblin\_40:

(9, 32888), (16, 32855), (Start: 36 @32753 has 56 MA's), (42, 32711), (45, 32684), (52, 32639), (53, 32630), (56, 32591), (63, 32504),

Gene: Gwendoluna\_41 Start: 33532, Stop: 33128, Start Num: 36

Candidate Starts for Gwendoluna\_41:

(9, 33667), (16, 33634), (Start: 36 @33532 has 56 MA's), (42, 33490), (45, 33463), (52, 33418), (53, 33409), (56, 33370), (63, 33277),

Gene: HarryOW\_38 Start: 31247, Stop: 30975, Start Num: 36

Candidate Starts for HarryOW\_38:

(9, 31382), (16, 31349), (Start: 36 @31247 has 56 MA's), (42, 31205), (45, 31178), (52, 31133), (53, 31124), (56, 31085),

Gene: Hermia\_41 Start: 32803, Stop: 32531, Start Num: 36

Candidate Starts for Hermia\_41:

(9, 32938), (16, 32905), (Start: 36 @32803 has 56 MA's), (42, 32761), (45, 32734), (52, 32689), (53, 32680), (56, 32641), (63, 32554),

Gene: Hope4ever\_38 Start: 31682, Stop: 31410, Start Num: 37

Candidate Starts for Hope4ever\_38:

(33, 31718), (Start: 37 @31682 has 71 MA's), (42, 31640), (45, 31613), (52, 31568), (53, 31559), (56, 31520), (63, 31433),

Gene: ILeeKay\_40 Start: 31449, Stop: 31177, Start Num: 37

Candidate Starts for ILeeKay\_40:

(6, 31629), (13, 31563), (21, 31539), (25, 31527), (26, 31524), (Start: 37 @31449 has 71 MA's), (42, 31407), (45, 31380), (52, 31335), (53, 31326), (56, 31287),

Gene: Ichabod\_39 Start: 31486, Stop: 31214, Start Num: 36

Candidate Starts for Ichabod\_39:

(9, 31621), (16, 31588), (Start: 36 @31486 has 56 MA's), (42, 31444), (45, 31417), (52, 31372), (53, 31363), (56, 31324), (63, 31237),

Gene: IgnatiusPatJac\_37 Start: 31296, Stop: 30910, Start Num: 18

Candidate Starts for IgnatiusPatJac\_37:

(Start: 18 @31296 has 5 MA's), (29, 31263), (32, 31227), (34, 31218), (38, 31170), (42, 31140), (45, 31113), (52, 31068), (53, 31059), (56, 31020),

Gene: Inyanga\_36 Start: 30633, Stop: 30358, Start Num: 37

Candidate Starts for Inyanga\_36:

(3, 30894), (15, 30759), (Start: 37 @30633 has 71 MA's), (42, 30588), (45, 30561), (52, 30516), (53, 30507), (56, 30468),

Gene: Iqorha\_36 Start: 30632, Stop: 30357, Start Num: 37

Candidate Starts for Iqorha\_36:

(3, 30893), (15, 30758), (Start: 37 @30632 has 71 MA's), (42, 30587), (45, 30560), (52, 30515), (53, 30506), (56, 30467),

Gene: Jorgensen\_38 Start: 31181, Stop: 30909, Start Num: 37

Candidate Starts for Jorgensen\_38:

(Start: 37 @31181 has 71 MA's), (42, 31139), (45, 31112), (52, 31067), (53, 31058), (56, 31019),

Gene: JuliaChild\_40 Start: 31921, Stop: 31649, Start Num: 36

Candidate Starts for JuliaChild\_40:

(9, 32056), (16, 32023), (Start: 36 @31921 has 56 MA's), (42, 31879), (45, 31852), (52, 31807), (53, 31798), (56, 31759), (63, 31672),

Gene: KBG\_39 Start: 32392, Stop: 32120, Start Num: 37

Candidate Starts for KBG\_39:

(13, 32506), (21, 32482), (25, 32470), (26, 32467), (Start: 37 @32392 has 71 MA's), (42, 32350), (45, 32323), (52, 32278), (53, 32269), (56, 32230), (63, 32143),

Gene: Kenmech\_41 Start: 32714, Stop: 32331, Start Num: 35

Candidate Starts for Kenmech\_41:

(31, 32750), (Start: 35 @32714 has 9 MA's), (40, 32648), (49, 32546), (58, 32447), (63, 32354),

Gene: KikiBouba\_40 Start: 32612, Stop: 32340, Start Num: 36

Candidate Starts for KikiBouba\_40:

(9, 32747), (16, 32714), (Start: 36 @32612 has 56 MA's), (42, 32570), (45, 32543), (52, 32498), (53, 32489), (56, 32450), (63, 32363),

Gene: Killigrew\_37 Start: 31321, Stop: 30923, Start Num: 37

Candidate Starts for Killigrew\_37:

(Start: 37 @31321 has 71 MA's), (42, 31279), (45, 31252), (52, 31207), (53, 31198), (56, 31159), (63, 31066), (67, 30940),

Gene: KyMonks1A\_41 Start: 31846, Stop: 31574, Start Num: 37

Candidate Starts for KyMonks1A\_41:

(Start: 37 @31846 has 71 MA's), (39, 31810), (42, 31804), (45, 31777), (52, 31732), (53, 31723), (56, 31684), (63, 31597),

Gene: Kykar\_37 Start: 30822, Stop: 30550, Start Num: 37

Candidate Starts for Kykar\_37:

(6, 31002), (13, 30936), (21, 30912), (25, 30900), (26, 30897), (Start: 37 @30822 has 71 MA's), (42, 30780), (45, 30753), (53, 30699), (56, 30660),

Gene: Lamina13\_38 Start: 30935, Stop: 30663, Start Num: 37

Candidate Starts for Lamina13\_38:

(Start: 37 @30935 has 71 MA's), (42, 30893), (45, 30866), (52, 30821), (53, 30812), (56, 30773), (63, 30686),

Gene: Lesedi\_37 Start: 31210, Stop: 30938, Start Num: 36

Candidate Starts for Lesedi\_37:

(9, 31345), (16, 31312), (Start: 36 @31210 has 56 MA's), (42, 31168), (45, 31141), (52, 31096), (53, 31087), (56, 31048),

Gene: Licorice\_40 Start: 32280, Stop: 32008, Start Num: 37

Candidate Starts for Licorice\_40:

(13, 32394), (21, 32370), (25, 32358), (26, 32355), (Start: 37 @32280 has 71 MA's), (42, 32238), (45, 32211), (52, 32166), (53, 32157), (56, 32118), (63, 32031),

Gene: Lopton\_39 Start: 32717, Stop: 32445, Start Num: 37

Candidate Starts for Lopton\_39:

(Start: 37 @32717 has 71 MA's), (42, 32675), (45, 32648), (52, 32603), (53, 32594), (56, 32555), (57, 32549), (63, 32468),

Gene: LunarLander\_39 Start: 31403, Stop: 31131, Start Num: 37

Candidate Starts for LunarLander\_39:

(13, 31517), (21, 31493), (25, 31481), (26, 31478), (Start: 37 @31403 has 71 MA's), (42, 31361), (45, 31334), (52, 31289), (53, 31280), (56, 31241), (63, 31154),

Gene: MPlant7149\_38 Start: 30995, Stop: 30723, Start Num: 36

Candidate Starts for MPlant7149\_38:

(9, 31130), (16, 31097), (Start: 36 @30995 has 56 MA's), (42, 30953), (45, 30926), (52, 30881), (53, 30872), (56, 30833), (63, 30746),

Gene: Magnar\_38 Start: 31184, Stop: 30912, Start Num: 37

Candidate Starts for Magnar\_38:

(6, 31364), (13, 31298), (21, 31274), (25, 31262), (26, 31259), (Start: 37 @31184 has 71 MA's), (42, 31142), (45, 31115), (52, 31070), (53, 31061), (56, 31022), (63, 30935),

Gene: Magnito\_37 Start: 30988, Stop: 30716, Start Num: 36

Candidate Starts for Magnito\_37:

(9, 31135), (16, 31102), (Start: 36 @30988 has 56 MA's), (42, 30946), (45, 30919), (52, 30874), (53, 30865), (56, 30826), (63, 30739),

Gene: Makemake\_39 Start: 32642, Stop: 32331, Start Num: 36

Candidate Starts for Makemake\_39:

(11, 32777), (19, 32744), (Start: 36 @32642 has 56 MA's), (42, 32600), (45, 32573), (51, 32519), (55, 32486), (56, 32456), (58, 32447), (63, 32354),

Gene: Manatee\_39 Start: 31021, Stop: 30749, Start Num: 36

Candidate Starts for Manatee\_39:

(9, 31156), (16, 31123), (Start: 36 @31021 has 56 MA's), (42, 30979), (45, 30952), (52, 30907), (53, 30898), (56, 30859), (63, 30772),

Gene: Marco3\_38 Start: 31609, Stop: 31298, Start Num: 35

Candidate Starts for Marco3\_38:

(31, 31645), (Start: 35 @31609 has 9 MA's), (42, 31567), (45, 31540), (50, 31486), (56, 31423), (58, 31414), (63, 31321),

Gene: Marge\_39 Start: 32073, Stop: 31798, Start Num: 36

Candidate Starts for Marge\_39:

(9, 32208), (16, 32175), (Start: 36 @32073 has 56 MA's), (42, 32028), (45, 32001), (52, 31956), (53, 31947), (56, 31908), (63, 31821),

Gene: Maroc7\_38 Start: 31169, Stop: 30897, Start Num: 37

Candidate Starts for Maroc7\_38:

(6, 31349), (13, 31283), (21, 31259), (25, 31247), (26, 31244), (Start: 37 @31169 has 71 MA's), (42, 31127), (45, 31100), (52, 31055), (53, 31046),

Gene: Marsha\_38 Start: 32325, Stop: 31924, Start Num: 35

Candidate Starts for Marsha\_38:

(1, 32799), (2, 32658), (5, 32517), (11, 32451), (26, 32403), (Start: 35 @32325 has 9 MA's), (40, 32259), (43, 32244), (46, 32214), (51, 32112), (56, 32049), (58, 32040), (63, 31947),

Gene: McGuire\_39 Start: 31317, Stop: 31045, Start Num: 36

Candidate Starts for McGuire\_39:

(9, 31452), (16, 31419), (Start: 36 @31317 has 56 MA's), (42, 31275), (45, 31248), (52, 31203), (53, 31194), (56, 31155), (63, 31068),

Gene: McSinger\_39 Start: 31876, Stop: 31604, Start Num: 36

Candidate Starts for McSinger\_39:

(27, 31963), (Start: 36 @31876 has 56 MA's), (42, 31834), (45, 31807), (52, 31762), (53, 31753), (56, 31714), (63, 31627),

Gene: Michley\_38 Start: 31162, Stop: 30890, Start Num: 36

Candidate Starts for Michley\_38:

(9, 31297), (16, 31264), (Start: 36 @31162 has 56 MA's), (42, 31120), (45, 31093), (52, 31048), (53, 31039), (56, 31000),

Gene: MilleFeuille\_35 Start: 31338, Stop: 31066, Start Num: 37

Candidate Starts for MilleFeuille\_35:

(8, 31488), (23, 31422), (30, 31374), (Start: 37 @31338 has 71 MA's), (42, 31296), (45, 31269), (52, 31224), (53, 31215), (56, 31176),

Gene: Mkhuseleli\_39 Start: 31361, Stop: 31089, Start Num: 36

Candidate Starts for Mkhuseleli\_39:

(9, 31496), (16, 31463), (Start: 36 @31361 has 56 MA's), (42, 31319), (45, 31292), (52, 31247), (53, 31238), (56, 31199), (63, 31112),

Gene: MrGordo\_38 Start: 31025, Stop: 30753, Start Num: 36

Candidate Starts for MrGordo\_38:

(Start: 36 @31025 has 56 MA's), (45, 30956), (52, 30911), (53, 30902), (56, 30863),

Gene: Mryolo\_36 Start: 31035, Stop: 30763, Start Num: 37

Candidate Starts for Mryolo\_36:

(Start: 37 @31035 has 71 MA's), (42, 30993), (45, 30966), (52, 30921), (53, 30912), (56, 30873), (63, 30786),

Gene: NEHalo\_38 Start: 31254, Stop: 30982, Start Num: 36

Candidate Starts for NEHalo\_38:

(9, 31389), (16, 31356), (Start: 36 @31254 has 56 MA's), (42, 31212), (45, 31185), (52, 31140), (53, 31131), (56, 31092), (63, 31005),

Gene: Naira\_39 Start: 32939, Stop: 32667, Start Num: 37

Candidate Starts for Naira\_39:

(13, 33053), (20, 33032), (21, 33029), (25, 33017), (26, 33014), (Start: 37 @32939 has 71 MA's), (42, 32897), (45, 32870), (52, 32825), (53, 32816), (56, 32777), (63, 32690),

Gene: Nerujay\_39 Start: 31923, Stop: 31651, Start Num: 37

Candidate Starts for Nerujay\_39:

(33, 31959), (Start: 37 @31923 has 71 MA's), (42, 31881), (45, 31854), (52, 31809), (53, 31800), (56, 31761), (63, 31674),

Gene: Niza\_41 Start: 32712, Stop: 32281, Start Num: 37

Candidate Starts for Niza\_41:

(10, 32859), (17, 32826), (Start: 37 @32712 has 71 MA's), (42, 32673), (45, 32646), (47, 32598), (58, 32505), (60, 32439), (61, 32430), (64, 32391), (65, 32385), (66, 32304),

Gene: Noxious\_40 Start: 32803, Stop: 32531, Start Num: 36

Candidate Starts for Noxious\_40:

(9, 32938), (16, 32905), (Start: 36 @32803 has 56 MA's), (42, 32761), (45, 32734), (52, 32689), (53, 32680), (56, 32641), (63, 32554),

Gene: Ohno789\_38 Start: 31317, Stop: 31045, Start Num: 37

Candidate Starts for Ohno789\_38:

(Start: 37 @31317 has 71 MA's), (42, 31275), (45, 31248), (52, 31203), (53, 31194), (56, 31155),

Gene: Oogway\_37 Start: 30855, Stop: 30583, Start Num: 36

Candidate Starts for Oogway\_37:

(9, 30990), (16, 30957), (Start: 36 @30855 has 56 MA's), (42, 30813), (45, 30786), (52, 30741), (53, 30732), (56, 30693),

Gene: PSullivan\_37 Start: 30492, Stop: 30220, Start Num: 37

Candidate Starts for PSullivan\_37:

(27, 30576), (Start: 37 @30492 has 71 MA's), (42, 30450), (45, 30423), (52, 30378), (53, 30369), (56, 30330), (63, 30243),

Gene: PacerPaul\_39 Start: 31313, Stop: 31041, Start Num: 37

Candidate Starts for PacerPaul\_39:

(13, 31427), (21, 31403), (25, 31391), (26, 31388), (Start: 37 @31313 has 71 MA's), (42, 31271), (45, 31244), (52, 31199), (53, 31190), (56, 31151), (63, 31064),

Gene: Papez\_40 Start: 33003, Stop: 32731, Start Num: 37

Candidate Starts for Papez\_40:

(13, 33117), (21, 33093), (25, 33081), (26, 33078), (Start: 37 @33003 has 71 MA's), (42, 32961), (45, 32934), (52, 32889), (53, 32880), (56, 32841),

Gene: Paphu\_37 Start: 31244, Stop: 30972, Start Num: 37

Candidate Starts for Paphu\_37:

(15, 31370), (Start: 37 @31244 has 71 MA's), (42, 31202), (45, 31175), (52, 31130), (53, 31121), (56, 31082),

Gene: Paraselene\_37 Start: 31722, Stop: 31354, Start Num: 36

Candidate Starts for Paraselene\_37:

(11, 31857), (19, 31824), (Start: 36 @31722 has 56 MA's), (42, 31677), (45, 31650), (51, 31542), (56, 31479), (58, 31470), (63, 31377),

Gene: Parliament\_37 Start: 31469, Stop: 31134, Start Num: 37

Candidate Starts for Parliament\_37:

(Start: 37 @31469 has 71 MA's), (42, 31427), (45, 31400), (47, 31352), (58, 31259), (59, 31247), (63, 31157),

Gene: PascalRango\_39 Start: 31395, Stop: 31084, Start Num: 36

Candidate Starts for PascalRango\_39:

(11, 31530), (19, 31497), (Start: 36 @31395 has 56 MA's), (42, 31353), (45, 31326), (51, 31272), (56, 31209), (58, 31200), (63, 31107),

Gene: PattyP\_40 Start: 31585, Stop: 31313, Start Num: 36

Candidate Starts for PattyP\_40:

(9, 31720), (16, 31687), (Start: 36 @31585 has 56 MA's), (45, 31516), (52, 31471), (53, 31462), (56, 31423), (63, 31336),

Gene: Pelly\_38 Start: 31718, Stop: 31284, Start Num: 37

Candidate Starts for Pelly\_38:

(Start: 37 @31718 has 71 MA's), (42, 31676), (45, 31649), (47, 31601), (58, 31508), (60, 31442), (61, 31433), (64, 31394), (65, 31388), (66, 31307),

Gene: Perseus\_40 Start: 32401, Stop: 32072, Start Num: 37

Candidate Starts for Perseus\_40:

(10, 32536), (17, 32503), (Start: 37 @32401 has 71 MA's), (42, 32362), (45, 32335), (47, 32287), (58, 32194),

Gene: Peterson\_42 Start: 33587, Stop: 33315, Start Num: 37

Candidate Starts for Peterson\_42:

(6, 33767), (13, 33701), (21, 33677), (25, 33665), (26, 33662), (Start: 37 @33587 has 71 MA's), (42, 33545), (45, 33518), (52, 33473), (53, 33464), (56, 33425),

Gene: Phlippers\_36 Start: 31867, Stop: 31595, Start Num: 37

Candidate Starts for Phlippers\_36:

(13, 31981), (21, 31957), (25, 31945), (26, 31942), (Start: 37 @31867 has 71 MA's), (42, 31825), (45, 31798), (52, 31753), (53, 31744), (56, 31705), (63, 31618),

Gene: PhrostyMug\_39 Start: 31697, Stop: 31371, Start Num: 37

Candidate Starts for PhrostyMug\_39:

(10, 31832), (17, 31799), (Start: 37 @31697 has 71 MA's), (42, 31655), (45, 31628), (47, 31580), (54, 31535), (58, 31487), (59, 31475), (63, 31385),

Gene: Pinto\_40 Start: 31529, Stop: 31257, Start Num: 36

Candidate Starts for Pinto\_40:

(9, 31664), (16, 31631), (Start: 36 @31529 has 56 MA's), (42, 31487), (45, 31460), (52, 31415), (53, 31406), (56, 31367), (63, 31280),

Gene: Pita2\_40 Start: 31989, Stop: 31717, Start Num: 37  
Candidate Starts for Pita2\_40:  
(27, 32073), (Start: 37 @31989 has 71 MA's), (42, 31947), (45, 31920), (52, 31875), (53, 31866), (56, 31827), (63, 31740),

Gene: ProMouse\_36 Start: 31549, Stop: 31166, Start Num: 36  
Candidate Starts for ProMouse\_36:  
(11, 31684), (19, 31651), (Start: 36 @31549 has 56 MA's), (42, 31507), (45, 31480), (51, 31354), (56, 31291), (58, 31282), (63, 31189),

Gene: Puppet\_38 Start: 31352, Stop: 31080, Start Num: 37  
Candidate Starts for Puppet\_38:  
(13, 31466), (21, 31442), (25, 31430), (26, 31427), (Start: 37 @31352 has 71 MA's), (42, 31310), (45, 31283), (52, 31238), (53, 31229), (56, 31190), (63, 31103),

Gene: QTRlifeCrisis\_39 Start: 32125, Stop: 31793, Start Num: 37  
Candidate Starts for QTRlifeCrisis\_39:  
(Start: 37 @32125 has 71 MA's), (42, 32083), (45, 32056), (47, 32008), (58, 31915), (63, 31816),

Gene: Raid\_38 Start: 31585, Stop: 31214, Start Num: 35  
Candidate Starts for Raid\_38:  
(Start: 35 @31585 has 9 MA's), (42, 31543), (45, 31516), (48, 31459), (56, 31339),

Gene: Rajelicia\_38 Start: 31483, Stop: 31211, Start Num: 36  
Candidate Starts for Rajelicia\_38:  
(9, 31618), (16, 31585), (Start: 36 @31483 has 56 MA's), (42, 31441), (45, 31414), (52, 31369), (53, 31360), (56, 31321),

Gene: Rhynn\_38 Start: 31498, Stop: 31226, Start Num: 36  
Candidate Starts for Rhynn\_38:  
(9, 31633), (16, 31600), (Start: 36 @31498 has 56 MA's), (42, 31456), (45, 31429), (52, 31384), (53, 31375), (56, 31336), (63, 31249),

Gene: RidgeCB\_38 Start: 31144, Stop: 30812, Start Num: 37  
Candidate Starts for RidgeCB\_38:  
(12, 31258), (17, 31234), (21, 31222), (Start: 37 @31144 has 71 MA's), (42, 31102), (45, 31075), (47, 31027), (58, 30934), (63, 30835),

Gene: Ringer\_39 Start: 31985, Stop: 31623, Start Num: 35  
Candidate Starts for Ringer\_39:  
(Start: 35 @31985 has 9 MA's), (42, 31943), (45, 31916), (56, 31748), (58, 31739), (63, 31646),

Gene: Rubeus\_38 Start: 29616, Stop: 29344, Start Num: 37  
Candidate Starts for Rubeus\_38:  
(Start: 37 @29616 has 71 MA's), (42, 29574), (45, 29547), (52, 29502), (53, 29493), (56, 29454), (63, 29367),

Gene: Rufus\_40 Start: 31854, Stop: 31582, Start Num: 36  
Candidate Starts for Rufus\_40:  
(9, 31989), (16, 31956), (Start: 36 @31854 has 56 MA's), (42, 31812), (45, 31785), (52, 31740), (53, 31731), (56, 31692), (63, 31605),

Gene: Ruotula\_38 Start: 32043, Stop: 31771, Start Num: 37

Candidate Starts for Ruotula\_38:

(33, 32079), (Start: 37 @32043 has 71 MA's), (42, 32001), (45, 31974), (52, 31929), (53, 31920), (56, 31881), (63, 31794),

Gene: STLscum\_39 Start: 32385, Stop: 31999, Start Num: 18

Candidate Starts for STLscum\_39:

(Start: 18 @32385 has 5 MA's), (29, 32352), (32, 32316), (34, 32307), (38, 32259), (42, 32229), (45, 32202), (52, 32157), (53, 32148), (56, 32109), (63, 32022),

Gene: Sagefire\_40 Start: 32355, Stop: 32020, Start Num: 37

Candidate Starts for Sagefire\_40:

(Start: 37 @32355 has 71 MA's), (42, 32313), (45, 32286), (47, 32238), (54, 32193), (58, 32145), (63, 32043),

Gene: Sandaddy\_38 Start: 31382, Stop: 31110, Start Num: 37

Candidate Starts for Sandaddy\_38:

(27, 31466), (Start: 37 @31382 has 71 MA's), (42, 31340), (45, 31313), (52, 31268), (53, 31259), (56, 31220), (63, 31133),

Gene: SarFire\_38 Start: 31557, Stop: 31285, Start Num: 36

Candidate Starts for SarFire\_38:

(Start: 36 @31557 has 56 MA's), (42, 31515), (45, 31488), (52, 31443), (53, 31434), (56, 31395), (63, 31308),

Gene: SkiPole\_41 Start: 31904, Stop: 31518, Start Num: 18

Candidate Starts for SkiPole\_41:

(Start: 18 @31904 has 5 MA's), (29, 31871), (32, 31835), (34, 31826), (38, 31778), (42, 31748), (45, 31721), (52, 31676), (53, 31667), (56, 31628), (63, 31541),

Gene: Slagathor\_39 Start: 31408, Stop: 31136, Start Num: 36

Candidate Starts for Slagathor\_39:

(9, 31543), (16, 31510), (Start: 36 @31408 has 56 MA's), (42, 31366), (45, 31339), (52, 31294), (53, 31285), (56, 31246),

Gene: Smairt\_39 Start: 31500, Stop: 31228, Start Num: 37

Candidate Starts for Smairt\_39:

(13, 31614), (21, 31590), (25, 31578), (26, 31575), (Start: 37 @31500 has 71 MA's), (42, 31458), (45, 31431), (52, 31386), (53, 31377), (56, 31338), (63, 31251),

Gene: Smeagol\_40 Start: 32730, Stop: 32458, Start Num: 36

Candidate Starts for Smeagol\_40:

(9, 32865), (16, 32832), (Start: 36 @32730 has 56 MA's), (42, 32688), (45, 32661), (52, 32616), (53, 32607), (56, 32568), (63, 32481),

Gene: Solon\_38 Start: 31615, Stop: 31343, Start Num: 37

Candidate Starts for Solon\_38:

(Start: 37 @31615 has 71 MA's), (42, 31573), (45, 31546), (52, 31501), (53, 31492), (56, 31453), (63, 31366),

Gene: Sorpresa\_38 Start: 31384, Stop: 31112, Start Num: 37

Candidate Starts for Sorpresa\_38:

(27, 31468), (Start: 37 @31384 has 71 MA's), (42, 31342), (45, 31315), (52, 31270), (53, 31261), (56, 31222), (63, 31135),

Gene: Squee\_39 Start: 32135, Stop: 31863, Start Num: 36

Candidate Starts for Squee\_39:

(9, 32270), (16, 32237), (Start: 36 @32135 has 56 MA's), (42, 32093), (45, 32066), (52, 32021), (53, 32012), (56, 31973), (63, 31886),

Gene: StewieG\_36 Start: 29129, Stop: 28797, Start Num: 37

Candidate Starts for StewieG\_36:

(31, 29165), (Start: 37 @29129 has 71 MA's), (42, 29087), (45, 29060), (47, 29012), (58, 28919),

Gene: StrongArm\_37 Start: 32396, Stop: 32124, Start Num: 37

Candidate Starts for StrongArm\_37:

(15, 32522), (Start: 37 @32396 has 71 MA's), (42, 32354), (45, 32327), (52, 32282), (53, 32273), (56, 32234),

Gene: Sumter\_37 Start: 31344, Stop: 31072, Start Num: 37

Candidate Starts for Sumter\_37:

(Start: 37 @31344 has 71 MA's), (42, 31302), (45, 31275), (52, 31230), (53, 31221), (56, 31182), (63, 31095),

Gene: Sunshine924\_40 Start: 31419, Stop: 31006, Start Num: 36

Candidate Starts for Sunshine924\_40:

(11, 31554), (19, 31521), (Start: 36 @31419 has 56 MA's), (43, 31329), (44, 31326), (51, 31194), (56, 31131), (58, 31122), (63, 31029),

Gene: Switzer\_39 Start: 31424, Stop: 31152, Start Num: 36

Candidate Starts for Switzer\_39:

(9, 31559), (16, 31526), (Start: 36 @31424 has 56 MA's), (42, 31382), (45, 31355), (52, 31310), (53, 31301), (56, 31262), (63, 31175),

Gene: Swole\_40 Start: 31396, Stop: 31124, Start Num: 36

Candidate Starts for Swole\_40:

(9, 31531), (16, 31498), (Start: 36 @31396 has 56 MA's), (42, 31354), (45, 31327), (52, 31282), (53, 31273), (56, 31234), (63, 31147),

Gene: Target\_40 Start: 30793, Stop: 30395, Start Num: 36

Candidate Starts for Target\_40:

(11, 30928), (19, 30895), (Start: 36 @30793 has 56 MA's), (39, 30742), (41, 30721), (56, 30520), (58, 30511),

Gene: Tasp14\_39 Start: 31559, Stop: 31287, Start Num: 37

Candidate Starts for Tasp14\_39:

(Start: 37 @31559 has 71 MA's), (42, 31517), (45, 31490), (52, 31445), (53, 31436), (56, 31397), (63, 31310),

Gene: Teodoridan\_36 Start: 30785, Stop: 30513, Start Num: 37

Candidate Starts for Teodoridan\_36:

(24, 30875), (Start: 37 @30785 has 71 MA's), (42, 30743), (45, 30716), (52, 30671), (53, 30662), (56, 30623), (63, 30536),

Gene: TheloniousMonk\_40 Start: 32966, Stop: 32694, Start Num: 36

Candidate Starts for TheloniousMonk\_40:

(9, 33101), (16, 33068), (Start: 36 @32966 has 56 MA's), (42, 32924), (45, 32897), (52, 32852), (53, 32843), (56, 32804),

Gene: Thor\_38 Start: 30915, Stop: 30643, Start Num: 36

Candidate Starts for Thor\_38:

(Start: 36 @30915 has 56 MA's), (42, 30873), (45, 30846), (52, 30801), (53, 30792), (56, 30753), (63, 30666),

Gene: Topgun\_37 Start: 30806, Stop: 30534, Start Num: 37

Candidate Starts for Topgun\_37:

(13, 30920), (21, 30896), (25, 30884), (26, 30881), (Start: 37 @30806 has 71 MA's), (42, 30764), (45, 30737), (52, 30692), (53, 30683), (56, 30644), (63, 30557),

Gene: Tote\_35 Start: 28663, Stop: 28391, Start Num: 36

Candidate Starts for Tote\_35:

(9, 28798), (16, 28765), (Start: 36 @28663 has 56 MA's), (42, 28621), (45, 28594), (52, 28549), (53, 28540), (56, 28501), (63, 28414),

Gene: Traft412\_40 Start: 32486, Stop: 32154, Start Num: 37

Candidate Starts for Traft412\_40:

(10, 32621), (17, 32588), (Start: 37 @32486 has 71 MA's), (42, 32444), (45, 32417), (47, 32369), (58, 32276),

Gene: Tripl3t\_39 Start: 32414, Stop: 32145, Start Num: 36

Candidate Starts for Tripl3t\_39:

(9, 32549), (16, 32516), (Start: 36 @32414 has 56 MA's), (42, 32369), (45, 32342), (52, 32297), (53, 32288), (56, 32249), (63, 32162),

Gene: Turj99\_37 Start: 31258, Stop: 30986, Start Num: 36

Candidate Starts for Turj99\_37:

(9, 31405), (16, 31372), (Start: 36 @31258 has 56 MA's), (42, 31216), (45, 31189), (52, 31144), (53, 31135), (56, 31096), (63, 31009),

Gene: Violet\_37 Start: 31832, Stop: 31560, Start Num: 36

Candidate Starts for Violet\_37:

(9, 31967), (16, 31934), (Start: 36 @31832 has 56 MA's), (42, 31790), (45, 31763), (52, 31718), (53, 31709), (56, 31670), (63, 31583),

Gene: Wheeler\_39 Start: 31744, Stop: 31472, Start Num: 37

Candidate Starts for Wheeler\_39:

(6, 31924), (13, 31858), (21, 31834), (25, 31822), (26, 31819), (Start: 37 @31744 has 71 MA's), (42, 31702), (45, 31675), (52, 31630), (53, 31621), (56, 31582), (63, 31495),

Gene: Wilkins\_37 Start: 30739, Stop: 30467, Start Num: 37

Candidate Starts for Wilkins\_37:

(13, 30853), (21, 30829), (25, 30817), (26, 30814), (Start: 37 @30739 has 71 MA's), (42, 30697), (45, 30670), (52, 30625), (53, 30616), (56, 30577), (63, 30490),

Gene: Zeeculate\_38 Start: 32108, Stop: 31794, Start Num: 36

Candidate Starts for Zeeculate\_38:

(19, 32210), (Start: 36 @32108 has 56 MA's), (42, 32063), (45, 32036), (51, 31982), (56, 31919), (58, 31910), (63, 31817),

Gene: Zeuska\_39 Start: 32058, Stop: 31723, Start Num: 37

Candidate Starts for Zeuska\_39:

(Start: 37 @32058 has 71 MA's), (42, 32013), (45, 31986), (47, 31938), (58, 31845),