

Pham 224574



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 224574 Report

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

Pham number 224574 has 64 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Jablanski\_56, Pytheas\_56
- Track 2 : Floral\_53, Pollux\_55
- Track 3 : Hugley\_52, TimTam\_56, Herod\_54, Eviarto\_56, BatStarr\_55, Nymphadora\_56
- Track 4 : Agueybana\_54
- Track 5 : Maridalia\_56, Bunnybear\_48
- Track 6 : Hyzer\_61
- Track 7 : WelcomeAyanna\_54, ThankyouJordi\_54
- Track 8 : PantheRoc\_56
- Track 9 : Thimann\_53
- Track 10 : Easley\_48
- Track 11 : Oregano\_53
- Track 12 : Suerte\_48
- Track 13 : Wizard\_51, VanDeWege\_55, Valary\_54, CherryCola\_55, RogerDodger\_55, CoveyB\_54, Halo3\_53
- Track 14 : PinkCoffee\_54, Egi03\_54, ClamChowder\_54, KimmyK\_53, Barb\_54, Phlop\_51, Fugax\_55, PullumCavea\_51
- Track 15 : Bakery\_58
- Track 16 : Nubi\_52, Togo\_51, SmokingBunny\_52
- Track 17 : TillyBobJoe\_54
- Track 18 : Arri\_55
- Track 19 : Shinji\_52
- Track 20 : Portcullis\_54, Danyall\_54, Twister6\_54
- Track 21 : Salvador\_51, Evamon\_51
- Track 22 : Savbucketdawg\_52, Jambalaya\_52
- Track 23 : Mutzi\_52
- Track 24 : Fireball\_54
- Track 25 : YungMoney\_55
- Track 26 : Clown\_63
- Track 27 : Hans\_50, Inspectinfecti\_49, Ali17\_46
- Track 28 : Phinally\_48, Leonard\_48
- Track 29 : MelBins\_49
- Track 30 : EMoore\_46
- Track 31 : RoadKill\_55
- Track 32 : Eyre\_39
- Track 33 : E3\_gp63

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

The start number called the most often in the published annotations is 21, it was called in 42 of the 57 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Agueybana\_54, Ali17\_46, Arri\_55, Bakery\_58, Barb\_54, BatStarr\_55, Bunnybear\_48, CherryCola\_55, ClamChowder\_54, CoveyB\_54, EMoore\_46, Easley\_48, Egi03\_54, Eviarto\_56, Eyre\_39, Floral\_53, Fugax\_55, Halo3\_53, Hans\_50, Herod\_54, Hugley\_52, Hyzer\_61, Inspectinfecti\_49, Jablanski\_56, KimmyK\_53, Leonard\_48, Maridalia\_56, MelBins\_49, Nymphadora\_56, Oregano\_53, PantheRoc\_56, Phinally\_48, Phlop\_51, PinkCoffee\_54, Pollux\_55, PullumCavea\_51, Pytheas\_56, RogerDodger\_55, Suerte\_48, ThankyouJordi\_54, Thimann\_53, TillyBobJoe\_54, TimTam\_56, Valary\_54, VanDeWege\_55, WelcomeAyanna\_54, Wizard\_51,

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

- 

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

- Clown\_63, Danyall\_54, E3\_gp63, Evamon\_51, Fireball\_54, Jambalaya\_52, Mutzi\_52, Nubi\_52, Portcullis\_54, RoadKill\_55, Salvador\_51, Savbucketdawg\_52, Shinji\_52, SmokingBunny\_52, Togo\_51, Twister6\_54, YungMoney\_55,

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

Start 19:

- Found in 1 of 64 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 57
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Clown\_63 (DC2),

Start 21:

- Found in 47 of 64 ( 73.4% ) of genes in pham
- Manual Annotations of this start: 42 of 57
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Agueybana\_54 (CZ1), Ali17\_46 (DE2), Arri\_55 (DC1), Bakery\_58 (DC1), Barb\_54 (DC1), BatStarr\_55 (CZ1), Bunnybear\_48 (CZ), CherryCola\_55 (DC1), ClamChowder\_54 (DC1), CoveyB\_54 (DC1), EMoore\_46 (DE2), Easley\_48 (CZ4), Egi03\_54 (DC1), Eviarto\_56 (CZ1), Eyre\_39 (singleton), Floral\_53 (CY1), Fugax\_55 (DC1), Halo3\_53 (DC1), Hans\_50 (DE2), Herod\_54 (CZ1), Hugley\_52 (CZ1), Hyzer\_61 (CZ1), Inspectinfecti\_49 (DE2), Jablanski\_56 (CY), KimmyK\_53 (DC1), Leonard\_48 (DE2), Maridalia\_56 (CZ1), MelBins\_49 (DE2), Nymphadora\_56 (CZ1), Oregano\_53 (CZ4), PantheRoc\_56 (CZ3), Phinally\_48 (DE2), Phlop\_51 (DC1), PinkCoffee\_54 (DC1), Pollux\_55 (CY1), PullumCavea\_51 (DC1), Pytheas\_56 (CY), RogerDodger\_55 (DC1), Suerte\_48 (CZ4), ThankyouJordi\_54 (CZ1), Thimann\_53 (CZ4), TillyBobJoe\_54 (DC1), TimTam\_56 (CZ1), Valary\_54 (DC1), VanDeWege\_55 (DC1), WelcomeAyanna\_54 (CZ1), Wizard\_51 (DC1),

Start 22:

- Found in 14 of 64 ( 21.9% ) of genes in pham
- Manual Annotations of this start: 13 of 57
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Danyall\_54 (DC1), Evamon\_51 (DC1), Fireball\_54 (DC1), Jambalaya\_52 (DC1), Mutzi\_52 (DC1), Nubi\_52 (DC1), Portcullis\_54 (DC1), Salvador\_51 (DC1), Savbucketdawg\_52 (DC1), Shinji\_52 (DC1), SmokingBunny\_52 (DC1), Togo\_51 (DC1), Twister6\_54 (DC1), YungMoney\_55 (DC1),

Start 28:

- Found in 1 of 64 ( 1.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: E3\_gp63 (singleton),

Start 40:

- Found in 7 of 64 ( 10.9% ) of genes in pham
- Manual Annotations of this start: 1 of 57
- Called 14.3% of time when present
- Phage (with cluster) where this start called: RoadKill\_55 (DE3),

**Summary by clusters:**

There are 11 clusters represented in this pham: CY1, DE3, CZ3, DE2, CZ1, singleton, CZ4, CZ, CY, DC2, DC1,

Info for manual annotations of cluster CY:

- Start number 21 was manually annotated 2 times for cluster CY.

Info for manual annotations of cluster CY1:

- Start number 21 was manually annotated 2 times for cluster CY1.

Info for manual annotations of cluster CZ:

- Start number 21 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ1:

- Start number 21 was manually annotated 9 times for cluster CZ1.

Info for manual annotations of cluster CZ3:

- Start number 21 was manually annotated 1 time for cluster CZ3.

Info for manual annotations of cluster CZ4:

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

Info for manual annotations of cluster DC1:

- Start number 21 was manually annotated 15 times for cluster DC1.
- Start number 22 was manually annotated 13 times for cluster DC1.

Info for manual annotations of cluster DC2:

- Start number 19 was manually annotated 1 time for cluster DC2.

Info for manual annotations of cluster DE2:

•Start number 21 was manually annotated 7 times for cluster DE2.

Info for manual annotations of cluster DE3:

•Start number 40 was manually annotated 1 time for cluster DE3.

**Gene Information:**

Gene: Agueybana\_54 Start: 39148, Stop: 39417, Start Num: 21

Candidate Starts for Agueybana\_54:

(12, 38995), (14, 39046), (Start: 21 @39148 has 42 MA's), (48, 39301),

Gene: Ali17\_46 Start: 41005, Stop: 41274, Start Num: 21

Candidate Starts for Ali17\_46:

(Start: 21 @41005 has 42 MA's), (29, 41059), (Start: 40 @41113 has 1 MA's), (44, 41131),

Gene: Arri\_55 Start: 40733, Stop: 40987, Start Num: 21

Candidate Starts for Arri\_55:

(1, 40349), (2, 40385), (3, 40415), (4, 40457), (5, 40490), (6, 40502), (8, 40535), (11, 40577), (Start: 21 @40733 has 42 MA's), (46, 40871), (49, 40898),

Gene: Bakery\_58 Start: 41850, Stop: 42167, Start Num: 21

Candidate Starts for Bakery\_58:

(1, 41490), (2, 41526), (3, 41556), (Start: 21 @41850 has 42 MA's), (27, 41910), (30, 41928), (31, 41943), (33, 41949), (39, 41994), (48, 42063),

Gene: Barb\_54 Start: 40852, Stop: 41124, Start Num: 21

Candidate Starts for Barb\_54:

(1, 40468), (2, 40504), (3, 40534), (4, 40576), (5, 40609), (6, 40621), (8, 40654), (Start: 21 @40852 has 42 MA's), (44, 40975), (46, 41008), (49, 41035),

Gene: BatStarr\_55 Start: 40436, Stop: 40723, Start Num: 21

Candidate Starts for BatStarr\_55:

(Start: 21 @40436 has 42 MA's), (34, 40511), (44, 40565), (48, 40610),

Gene: Bunnybear\_48 Start: 36890, Stop: 37207, Start Num: 21

Candidate Starts for Bunnybear\_48:

(Start: 21 @36890 has 42 MA's), (26, 36938), (44, 37049), (48, 37094),

Gene: CherryCola\_55 Start: 41506, Stop: 41757, Start Num: 21

Candidate Starts for CherryCola\_55:

(1, 41122), (2, 41158), (3, 41188), (4, 41230), (5, 41263), (6, 41275), (8, 41308), (11, 41350), (13, 41398), (Start: 21 @41506 has 42 MA's), (41, 41587), (46, 41641), (49, 41668),

Gene: ClamChowder\_54 Start: 40852, Stop: 41124, Start Num: 21

Candidate Starts for ClamChowder\_54:

(1, 40468), (2, 40504), (3, 40534), (4, 40576), (5, 40609), (6, 40621), (8, 40654), (Start: 21 @40852 has 42 MA's), (44, 40975), (46, 41008), (49, 41035),

Gene: Clown\_63 Start: 44726, Stop: 45010, Start Num: 19

Candidate Starts for Clown\_63:

(Start: 19 @44726 has 1 MA's), (20, 44744), (41, 44840), (43, 44846), (44, 44861), (45, 44879),

Gene: CoveyB\_54 Start: 40551, Stop: 40802, Start Num: 21

Candidate Starts for CoveyB\_54:

(1, 40167), (2, 40203), (3, 40233), (4, 40275), (5, 40308), (6, 40320), (8, 40353), (11, 40395), (13, 40443), (Start: 21 @40551 has 42 MA's), (41, 40632), (46, 40686), (49, 40713),

Gene: Danyall\_54 Start: 40589, Stop: 40831, Start Num: 22

Candidate Starts for Danyall\_54:

(1, 40169), (2, 40205), (3, 40235), (4, 40277), (5, 40310), (6, 40322), (8, 40355), (13, 40445), (Start: 22 @40589 has 13 MA's), (32, 40625), (36, 40628), (46, 40715), (49, 40742),

Gene: E3\_gp63 Start: 24893, Stop: 25126, Start Num: 28

Candidate Starts for E3\_gp63:

(9, 24641), (16, 24737), (28, 24893), (35, 24935), (41, 24980), (42, 24983), (44, 25001),

Gene: EMoore\_46 Start: 42206, Stop: 42475, Start Num: 21

Candidate Starts for EMoore\_46:

(Start: 21 @42206 has 42 MA's), (25, 42245), (Start: 40 @42314 has 1 MA's), (44, 42332),

Gene: Easley\_48 Start: 35265, Stop: 35531, Start Num: 21

Candidate Starts for Easley\_48:

(Start: 21 @35265 has 42 MA's), (24, 35301), (44, 35373), (51, 35508),

Gene: Egi03\_54 Start: 40333, Stop: 40605, Start Num: 21

Candidate Starts for Egi03\_54:

(1, 39949), (2, 39985), (3, 40015), (4, 40057), (5, 40090), (6, 40102), (8, 40135), (Start: 21 @40333 has 42 MA's), (44, 40456), (46, 40489), (49, 40516),

Gene: Evamon\_51 Start: 40608, Stop: 40850, Start Num: 22

Candidate Starts for Evamon\_51:

(1, 40188), (2, 40224), (3, 40254), (4, 40296), (5, 40329), (6, 40341), (8, 40374), (13, 40464), (Start: 22 @40608 has 13 MA's), (32, 40644), (36, 40647), (46, 40734), (49, 40761), (51, 40836),

Gene: Eviarto\_56 Start: 40411, Stop: 40698, Start Num: 21

Candidate Starts for Eviarto\_56:

(Start: 21 @40411 has 42 MA's), (34, 40486), (44, 40540), (48, 40585),

Gene: Eyre\_39 Start: 28551, Stop: 28820, Start Num: 21

Candidate Starts for Eyre\_39:

(Start: 21 @28551 has 42 MA's), (44, 28653),

Gene: Fireball\_54 Start: 41224, Stop: 41466, Start Num: 22

Candidate Starts for Fireball\_54:

(1, 40804), (2, 40840), (3, 40870), (4, 40912), (5, 40945), (6, 40957), (7, 40963), (8, 40990), (13, 41080), (Start: 22 @41224 has 13 MA's), (32, 41260), (36, 41263), (46, 41350), (49, 41377),

Gene: Floral\_53 Start: 39990, Stop: 40280, Start Num: 21

Candidate Starts for Floral\_53:

(Start: 21 @39990 has 42 MA's), (32, 40065), (44, 40119), (48, 40164), (50, 40236),

Gene: Fugax\_55 Start: 40844, Stop: 41116, Start Num: 21

Candidate Starts for Fugax\_55:

(1, 40460), (2, 40496), (3, 40526), (4, 40568), (5, 40601), (6, 40613), (8, 40646), (Start: 21 @40844 has 42 MA's), (44, 40967), (46, 41000), (49, 41027),

Gene: Halo3\_53 Start: 41289, Stop: 41540, Start Num: 21

Candidate Starts for Halo3\_53:

(1, 40905), (2, 40941), (3, 40971), (4, 41013), (5, 41046), (6, 41058), (8, 41091), (11, 41133), (13, 41181), (Start: 21 @41289 has 42 MA's), (41, 41370), (46, 41424), (49, 41451),

Gene: Hans\_50 Start: 41645, Stop: 41914, Start Num: 21

Candidate Starts for Hans\_50:

(Start: 21 @41645 has 42 MA's), (29, 41699), (Start: 40 @41753 has 1 MA's), (44, 41771),

Gene: Herod\_54 Start: 40455, Stop: 40742, Start Num: 21

Candidate Starts for Herod\_54:

(Start: 21 @40455 has 42 MA's), (34, 40530), (44, 40584), (48, 40629),

Gene: Hugley\_52 Start: 40435, Stop: 40722, Start Num: 21

Candidate Starts for Hugley\_52:

(Start: 21 @40435 has 42 MA's), (34, 40510), (44, 40564), (48, 40609),

Gene: Hyzer\_61 Start: 41797, Stop: 42114, Start Num: 21

Candidate Starts for Hyzer\_61:

(10, 41635), (Start: 21 @41797 has 42 MA's), (38, 41923), (44, 41956),

Gene: Inspectinfecti\_49 Start: 42091, Stop: 42360, Start Num: 21

Candidate Starts for Inspectinfecti\_49:

(Start: 21 @42091 has 42 MA's), (29, 42145), (Start: 40 @42199 has 1 MA's), (44, 42217),

Gene: Jablanski\_56 Start: 41463, Stop: 41780, Start Num: 21

Candidate Starts for Jablanski\_56:

(Start: 21 @41463 has 42 MA's), (38, 41589), (44, 41622),

Gene: Jambalaya\_52 Start: 40387, Stop: 40629, Start Num: 22

Candidate Starts for Jambalaya\_52:

(1, 39967), (2, 40003), (3, 40033), (4, 40075), (5, 40108), (6, 40120), (8, 40153), (13, 40243), (Start: 22 @40387 has 13 MA's), (32, 40423), (36, 40426), (46, 40513), (49, 40540),

Gene: KimmyK\_53 Start: 41286, Stop: 41558, Start Num: 21

Candidate Starts for KimmyK\_53:

(1, 40902), (2, 40938), (3, 40968), (4, 41010), (5, 41043), (6, 41055), (8, 41088), (Start: 21 @41286 has 42 MA's), (44, 41409), (46, 41442), (49, 41469),

Gene: Leonard\_48 Start: 41738, Stop: 42007, Start Num: 21

Candidate Starts for Leonard\_48:

(Start: 21 @41738 has 42 MA's), (Start: 40 @41846 has 1 MA's), (44, 41864),

Gene: Maridalia\_56 Start: 38636, Stop: 38953, Start Num: 21

Candidate Starts for Maridalia\_56:

(Start: 21 @38636 has 42 MA's), (26, 38684), (44, 38795), (48, 38840),

Gene: MelBins\_49 Start: 41918, Stop: 42259, Start Num: 21

Candidate Starts for MelBins\_49:

(Start: 21 @41918 has 42 MA's), (44, 42116),

Gene: Mutzi\_52 Start: 41716, Stop: 41958, Start Num: 22

Candidate Starts for Mutzi\_52:

(1, 41296), (2, 41332), (3, 41362), (4, 41404), (5, 41437), (6, 41449), (8, 41482), (11, 41524), (13, 41572), (Start: 22 @41716 has 13 MA's), (32, 41752), (36, 41755), (46, 41842), (49, 41869),

Gene: Nubi\_52 Start: 40713, Stop: 40955, Start Num: 22

Candidate Starts for Nubi\_52:

(1, 40293), (2, 40329), (3, 40359), (4, 40401), (5, 40434), (6, 40446), (8, 40479), (11, 40521), (13, 40569), (Start: 22 @40713 has 13 MA's), (32, 40749), (36, 40752), (46, 40839), (49, 40866), (51, 40941),

Gene: Nymphadora\_56 Start: 40435, Stop: 40722, Start Num: 21

Candidate Starts for Nymphadora\_56:

(Start: 21 @40435 has 42 MA's), (34, 40510), (44, 40564), (48, 40609),

Gene: Oregano\_53 Start: 35949, Stop: 36215, Start Num: 21

Candidate Starts for Oregano\_53:

(Start: 21 @35949 has 42 MA's), (24, 35985), (44, 36057),

Gene: PantheRoc\_56 Start: 39256, Stop: 39543, Start Num: 21

Candidate Starts for PantheRoc\_56:

(Start: 21 @39256 has 42 MA's), (34, 39331), (44, 39385), (48, 39430), (49, 39445),

Gene: Phinally\_48 Start: 41735, Stop: 42004, Start Num: 21

Candidate Starts for Phinally\_48:

(Start: 21 @41735 has 42 MA's), (Start: 40 @41843 has 1 MA's), (44, 41861),

Gene: Phlop\_51 Start: 40758, Stop: 41030, Start Num: 21

Candidate Starts for Phlop\_51:

(1, 40374), (2, 40410), (3, 40440), (4, 40482), (5, 40515), (6, 40527), (8, 40560), (Start: 21 @40758 has 42 MA's), (44, 40881), (46, 40914), (49, 40941),

Gene: PinkCoffee\_54 Start: 40861, Stop: 41133, Start Num: 21

Candidate Starts for PinkCoffee\_54:

(1, 40477), (2, 40513), (3, 40543), (4, 40585), (5, 40618), (6, 40630), (8, 40663), (Start: 21 @40861 has 42 MA's), (44, 40984), (46, 41017), (49, 41044),

Gene: Pollux\_55 Start: 39990, Stop: 40280, Start Num: 21

Candidate Starts for Pollux\_55:

(Start: 21 @39990 has 42 MA's), (32, 40065), (44, 40119), (48, 40164), (50, 40236),

Gene: Portcullis\_54 Start: 40400, Stop: 40642, Start Num: 22

Candidate Starts for Portcullis\_54:

(1, 39980), (2, 40016), (3, 40046), (4, 40088), (5, 40121), (6, 40133), (8, 40166), (13, 40256), (Start: 22 @40400 has 13 MA's), (32, 40436), (36, 40439), (46, 40526), (49, 40553),

Gene: PullumCavea\_51 Start: 40758, Stop: 41030, Start Num: 21

Candidate Starts for PullumCavea\_51:

(1, 40374), (2, 40410), (3, 40440), (4, 40482), (5, 40515), (6, 40527), (8, 40560), (Start: 21 @40758 has 42 MA's), (44, 40881), (46, 40914), (49, 40941),

Gene: Pytheas\_56 Start: 41462, Stop: 41779, Start Num: 21



Candidate Starts for Pytheas\_56:

(Start: 21 @41462 has 42 MA's), (38, 41588), (44, 41621),

Gene: RoadKill\_55 Start: 43934, Stop: 44122, Start Num: 40

Candidate Starts for RoadKill\_55:

(15, 43679), (18, 43709), (23, 43787), (Start: 40 @43934 has 1 MA's),

Gene: RogerDodger\_55 Start: 40901, Stop: 41152, Start Num: 21

Candidate Starts for RogerDodger\_55:

(1, 40517), (2, 40553), (3, 40583), (4, 40625), (5, 40658), (6, 40670), (8, 40703), (11, 40745), (13, 40793), (Start: 21 @40901 has 42 MA's), (41, 40982), (46, 41036), (49, 41063),

Gene: Salvador\_51 Start: 40606, Stop: 40848, Start Num: 22

Candidate Starts for Salvador\_51:

(1, 40186), (2, 40222), (3, 40252), (4, 40294), (5, 40327), (6, 40339), (8, 40372), (13, 40462), (Start: 22 @40606 has 13 MA's), (32, 40642), (36, 40645), (46, 40732), (49, 40759), (51, 40834),

Gene: Savbucketdawg\_52 Start: 40387, Stop: 40629, Start Num: 22

Candidate Starts for Savbucketdawg\_52:

(1, 39967), (2, 40003), (3, 40033), (4, 40075), (5, 40108), (6, 40120), (8, 40153), (13, 40243), (Start: 22 @40387 has 13 MA's), (32, 40423), (36, 40426), (46, 40513), (49, 40540),

Gene: Shinji\_52 Start: 40150, Stop: 40392, Start Num: 22

Candidate Starts for Shinji\_52:

(1, 39730), (2, 39766), (3, 39796), (4, 39838), (5, 39871), (6, 39883), (8, 39916), (13, 40006), (Start: 22 @40150 has 13 MA's), (32, 40186), (46, 40276), (49, 40303),

Gene: SmokingBunny\_52 Start: 40699, Stop: 40941, Start Num: 22

Candidate Starts for SmokingBunny\_52:

(1, 40279), (2, 40315), (3, 40345), (4, 40387), (5, 40420), (6, 40432), (8, 40465), (11, 40507), (13, 40555), (Start: 22 @40699 has 13 MA's), (32, 40735), (36, 40738), (46, 40825), (49, 40852), (51, 40927),

Gene: Suerte\_48 Start: 35385, Stop: 35651, Start Num: 21

Candidate Starts for Suerte\_48:

(Start: 21 @35385 has 42 MA's), (44, 35493),

Gene: ThankyouJordi\_54 Start: 40335, Stop: 40622, Start Num: 21

Candidate Starts for ThankyouJordi\_54:

(Start: 21 @40335 has 42 MA's), (34, 40410), (44, 40464), (48, 40509), (52, 40614),

Gene: Thimann\_53 Start: 36829, Stop: 37095, Start Num: 21

Candidate Starts for Thimann\_53:

(Start: 21 @36829 has 42 MA's), (24, 36865), (44, 36937), (47, 36973), (48, 36982), (51, 37072),

Gene: TillyBobJoe\_54 Start: 42186, Stop: 42452, Start Num: 21

Candidate Starts for TillyBobJoe\_54:

(17, 42120), (Start: 21 @42186 has 42 MA's), (37, 42255), (44, 42288),

Gene: TimTam\_56 Start: 40435, Stop: 40722, Start Num: 21

Candidate Starts for TimTam\_56:

(Start: 21 @40435 has 42 MA's), (34, 40510), (44, 40564), (48, 40609),

Gene: Togo\_51 Start: 40699, Stop: 40941, Start Num: 22

Candidate Starts for Togo\_51:

(1, 40279), (2, 40315), (3, 40345), (4, 40387), (5, 40420), (6, 40432), (8, 40465), (11, 40507), (13, 40555), (Start: 22 @40699 has 13 MA's), (32, 40735), (36, 40738), (46, 40825), (49, 40852), (51, 40927),

Gene: Twister6\_54 Start: 40500, Stop: 40742, Start Num: 22

Candidate Starts for Twister6\_54:

(1, 40080), (2, 40116), (3, 40146), (4, 40188), (5, 40221), (6, 40233), (8, 40266), (13, 40356), (Start: 22 @40500 has 13 MA's), (32, 40536), (36, 40539), (46, 40626), (49, 40653),

Gene: Valary\_54 Start: 41506, Stop: 41757, Start Num: 21

Candidate Starts for Valary\_54:

(1, 41122), (2, 41158), (3, 41188), (4, 41230), (5, 41263), (6, 41275), (8, 41308), (11, 41350), (13, 41398), (Start: 21 @41506 has 42 MA's), (41, 41587), (46, 41641), (49, 41668),

Gene: VanDeWege\_55 Start: 40798, Stop: 41049, Start Num: 21

Candidate Starts for VanDeWege\_55:

(1, 40414), (2, 40450), (3, 40480), (4, 40522), (5, 40555), (6, 40567), (8, 40600), (11, 40642), (13, 40690), (Start: 21 @40798 has 42 MA's), (41, 40879), (46, 40933), (49, 40960),

Gene: WelcomeAyanna\_54 Start: 40482, Stop: 40769, Start Num: 21

Candidate Starts for WelcomeAyanna\_54:

(Start: 21 @40482 has 42 MA's), (34, 40557), (44, 40611), (48, 40656), (52, 40761),

Gene: Wizard\_51 Start: 40704, Stop: 40955, Start Num: 21

Candidate Starts for Wizard\_51:

(1, 40320), (2, 40356), (3, 40386), (4, 40428), (5, 40461), (6, 40473), (8, 40506), (11, 40548), (13, 40596), (Start: 21 @40704 has 42 MA's), (41, 40785), (46, 40839), (49, 40866),

Gene: YungMoney\_55 Start: 44258, Stop: 44500, Start Num: 22

Candidate Starts for YungMoney\_55:

(2, 43874), (3, 43904), (4, 43946), (5, 43979), (6, 43991), (8, 44024), (13, 44114), (Start: 22 @44258 has 13 MA's), (32, 44294), (36, 44297), (46, 44384), (49, 44411),