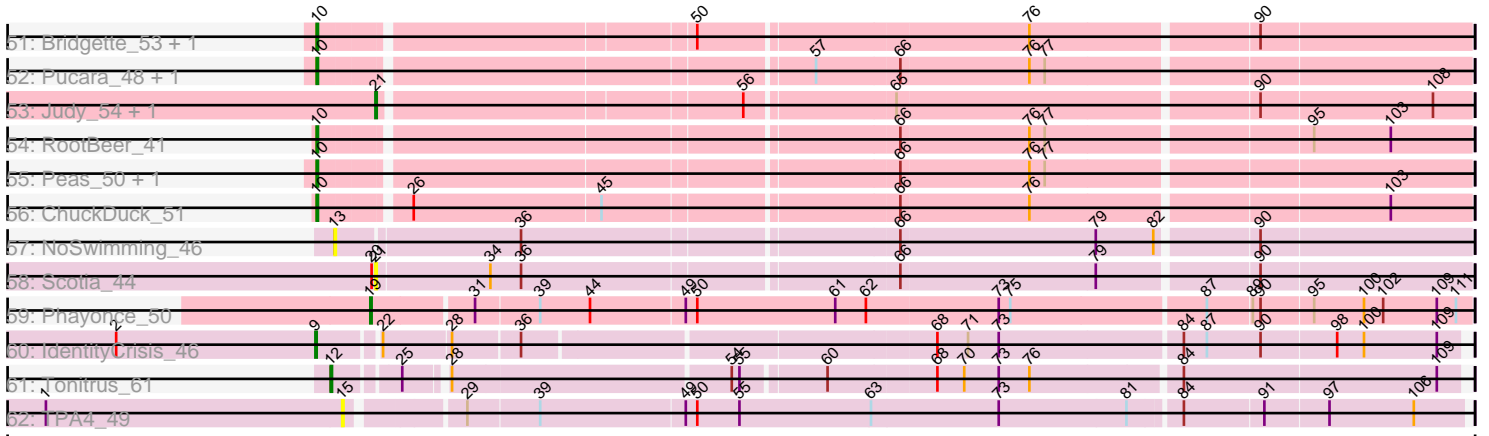




Pham 202810



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 202810 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202810 has 109 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Dori\_66
- Track 2 : Mask\_66
- Track 3 : Mao1\_68
- Track 4 : Sparky\_70, Farewell\_71
- Track 5 : Amo99\_75, Sting\_73, Jollymon\_75, ColdSoup\_75, Soos\_70
- Track 6 : Clawz\_74
- Track 7 : KingstonB\_75
- Track 8 : DonTron\_74
- Track 9 : Jablanski\_54, Pytheas\_54
- Track 10 : BeeGee\_59
- Track 11 : Cashline\_51
- Track 12 : Wrigley\_59, Posh\_57
- Track 13 : Angelique\_53
- Track 14 : EnalisNailo\_50
- Track 15 : EMSquaredA\_51, Marteena\_50
- Track 16 : Confidence\_53
- Track 17 : Bradissa\_50
- Track 18 : Pollux\_53, Floral\_51
- Track 19 : Lilas\_52
- Track 20 : Bunnybear\_46, Maridalia\_54
- Track 21 : Neobush\_53, Antonio\_53, Bialota\_51, Kita\_54, Pickett\_46, Manasvini\_54, Trumpet\_53, Yeet412\_48, Polly\_50, LordFarquaad\_50, EdnaMode\_47, Tayonia\_53, SoilAssassin\_48, Zirinka\_50, Zameen\_53, Attis\_48, Suscepit\_53
- Track 22 : Hyzer\_59
- Track 23 : Eviarto\_54, BatStarr\_53, Nymphadora\_54, TimTam\_54, Hugley\_50
- Track 24 : BoyNamedSue\_53, AlumE\_53
- Track 25 : Eudoria\_53
- Track 26 : WelcomeAyanna\_52, ThankyouJordi\_52
- Track 27 : Vasanti\_50
- Track 28 : Yeezy\_51
- Track 29 : PantheRoc\_54
- Track 30 : Thimann\_51
- Track 31 : RavenCo17\_51
- Track 32 : WheatThin\_49, Mulch\_50, Nadeem\_50, Brylie\_50, Parada\_50
- Track 33 : Hamood\_50, Chop\_50, GrandSlam\_50
- Track 34 : NancyRae\_49, Bock\_50
- Track 35 : Pimento\_51

- Track 36 : Ayotoya\_50
- Track 37 : Francois\_49
- Track 38 : BetterKatz\_50
- Track 39 : DelRio\_51
- Track 40 : Malibo\_54
- Track 41 : DumpsterDude\_52
- Track 42 : ArchiDore\_51, BaxterFox\_54, Madeline\_51
- Track 43 : Zodiariah\_54
- Track 44 : Ruthy\_50
- Track 45 : Jojo24\_45
- Track 46 : Santhid\_45
- Track 47 : Hibiscus\_47, Heinz\_47
- Track 48 : Reyja\_46
- Track 49 : Tarzan\_46
- Track 50 : KayMoney\_50, Constance\_51
- Track 51 : Bridgette\_53, Karkharias\_50
- Track 52 : Pucara\_48, PeggyLeg03\_51
- Track 53 : Judy\_54, GlobiWarming\_53
- Track 54 : RootBeer\_41
- Track 55 : Peas\_50, HotPotato\_51
- Track 56 : ChuckDuck\_51
- Track 57 : NoSwimming\_46
- Track 58 : Scotia\_44
- Track 59 : Phayonce\_50
- Track 60 : IdentityCrisis\_46
- Track 61 : Tonitrus\_61
- Track 62 : TPA4\_49

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

The start number called the most often in the published annotations is 7, it was called in 29 of the 93 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• ArchiDore\_51, Ayotoya\_50, BatStarr\_53, BaxterFox\_54, BetterKatz\_50, Bock\_50, Brylie\_50, Bunnybear\_46, Chop\_50, DelRio\_51, Eviarto\_54, Floral\_51, Francois\_49, GrandSlam\_50, Hamood\_50, Hugley\_50, Madeline\_51, Maridalia\_54, Mulch\_50, Nadeem\_50, NancyRae\_49, Nymphadora\_54, Parada\_50, Pimento\_51, Pollux\_53, RavenCo17\_51, Ruthy\_50, TimTam\_54, Vasanti\_50, WheatThin\_49, Yeezy\_51,

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

•

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

• AlumE\_53, Amo99\_75, Angelique\_53, Antonio\_53, Attis\_48, BeeGee\_59, Bialota\_51, BoyNamedSue\_53, Bradissa\_50, Bridgette\_53, Cashline\_51, ChuckDuck\_51, Clawz\_74, ColdSoup\_75, Confidence\_53, Constance\_51, DonTron\_74, Dori\_66, DumpsterDude\_52, EMsquaredA\_51, EdnaMode\_47, EnalisNailo\_50, Eudoria\_53, Farewell\_71, GlobiWarming\_53, Heinz\_47, Hibiscus\_47, HotPotato\_51, Hyzer\_59, IdentityCrisis\_46, Jablanski\_54, Jojo24\_45, Jollymon\_75,

Judy\_54, Karkharias\_50, KayMoney\_50, KingstonB\_75, Kita\_54, Lilas\_52, LordFarquaad\_50, Malibo\_54, Manasvini\_54, Mao1\_68, Marteena\_50, Mask\_66, Neobush\_53, NoSwimming\_46, PantheRoc\_54, Peas\_50, PeggyLeg03\_51, Phayonce\_50, Pickett\_46, Polly\_50, Posh\_57, Pucara\_48, Pytheas\_54, Reyja\_46, RootBeer\_41, Santhid\_45, Scotia\_44, SoilAssassin\_48, Soos\_70, Sparky\_70, Sting\_73, Suscepit\_53, TPA4\_49, Tarzan\_46, Tayonia\_53, ThankyouJordi\_52, Thimann\_51, Tonitrus\_61, Trumpet\_53, WelcomeAyanna\_52, Wrigley\_59, Yeet412\_48, Zameen\_53, Zirinka\_50, Zodiariah\_54,

### Summary by start number:

#### Start 4:

- Found in 21 of 109 ( 19.3% ) of genes in pham
- Manual Annotations of this start: 19 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AlumE\_53 (CZ1), Angelique\_53 (CY1), BeeGee\_59 (CY), BoyNamedSue\_53 (CZ1), Bradissa\_50 (CY1), Cashline\_51 (CY), Confidence\_53 (CY1), EMSquaredA\_51 (CY1), EnalisNailo\_50 (CY1), Hyzer\_59 (CZ1), Jablanski\_54 (CY), Lilas\_52 (CY1), Marteena\_50 (CY1), PantheRoc\_54 (CZ3), Posh\_57 (CY), Pytheas\_54 (CY), ThankyouJordi\_52 (CZ1), Thimann\_51 (CZ4), WelcomeAyanna\_52 (CZ1), Wrigley\_59 (CY), Zodiariah\_54 (DW),

#### Start 5:

- Found in 6 of 109 ( 5.5% ) of genes in pham
- Manual Annotations of this start: 5 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Heinz\_47 (DY), Hibiscus\_47 (DY), Jojo24\_45 (DY), Reyja\_46 (DY), Santhid\_45 (DY), Tarzan\_46 (DY),

#### Start 6:

- Found in 1 of 109 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DumpsterDude\_52 (DW),

#### Start 7:

- Found in 31 of 109 ( 28.4% ) of genes in pham
- Manual Annotations of this start: 29 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ArchiDore\_51 (DW), Ayotoya\_50 (DI), BatStarr\_53 (CZ1), BaxterFox\_54 (CZ3), BetterKatz\_50 (DI), Bock\_50 (DI), Brylie\_50 (DI), Bunnybear\_46 (CZ), Chop\_50 (DI), DelRio\_51 (DI), Eviarto\_54 (CZ1), Floral\_51 (CY1), Francois\_49 (DI), GrandSlam\_50 (DI), Hamood\_50 (DI), Hugley\_50 (CZ1), Madeline\_51 (CZ1), Maridalia\_54 (CZ1), Mulch\_50 (DI), Nadeem\_50 (DI), NancyRae\_49 (DI), Nymphadora\_54 (CZ1), Parada\_50 (DI), Pimento\_51 (DI), Pollux\_53 (CY1), RavenCo17\_51 (CZ8), Ruthy\_50 (DW), TimTam\_54 (CZ1), Vasanti\_50 (CZ2), WheatThin\_49 (DI), Yeezy\_51 (CZ3),

#### Start 8:

- Found in 8 of 109 ( 7.3% ) of genes in pham
- Manual Annotations of this start: 3 of 93
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Amo99\_75 (CP), Clawz\_74 (CP), ColdSoup\_75 (CP), DonTron\_74 (CP), Jollymon\_75 (CP), KingstonB\_75 (CP), Soos\_70 (CP), Sting\_73 (CP),

#### Start 9:

- Found in 3 of 109 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 3 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Farewell\_71 (AF), IdentityCrisis\_46 (singleton), Sparky\_70 (AF),

#### Start 10:

- Found in 8 of 109 ( 7.3% ) of genes in pham
- Manual Annotations of this start: 6 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bridgette\_53 (FA), ChuckDuck\_51 (FA), HotPotato\_51 (FA), Karkharias\_50 (FA), Peas\_50 (FA), PeggyLeg03\_51 (FA), Pucara\_48 (FA), RootBeer\_41 (FA),

#### Start 11:

- Found in 19 of 109 ( 17.4% ) of genes in pham
- Manual Annotations of this start: 19 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Antonio\_53 (CZ1), Attis\_48 (CZ2), Bialota\_51 (CZ1), EdnaMode\_47 (CZ2), Eudoria\_53 (CZ1), Kita\_54 (CZ1), LordFarquaad\_50 (CZ2), Malibo\_54 (DW), Manasvini\_54 (CZ1), Neobush\_53 (CZ1), Pickett\_46 (CZ2), Polly\_50 (CZ1), SoilAssassin\_48 (CZ2), Suscepit\_53 (CZ1), Tayonia\_53 (CZ1), Trumpet\_53 (CZ1), Yeet412\_48 (CZ2), Zameen\_53 (CZ1), Zirinka\_50 (CZ1),

#### Start 12:

- Found in 1 of 109 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Tonitrus\_61 (singleton),

#### Start 13:

- Found in 1 of 109 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: NoSwimming\_46 (FO),

#### Start 15:

- Found in 1 of 109 ( 0.9% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: TPA4\_49 (singleton),

#### Start 19:

- Found in 4 of 109 ( 3.7% ) of genes in pham
- Manual Annotations of this start: 4 of 93
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Dori\_66 (AD), Mao1\_68 (AD), Mask\_66 (AD), Phayonce\_50 (P5),

Start 21:

- Found in 5 of 109 ( 4.6% ) of genes in pham
- Manual Annotations of this start: 3 of 93
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Constance\_51 (FA), GlobiWarming\_53 (FA), Judy\_54 (FA), KayMoney\_50 (FA), Scotia\_44 (FO),

### **Summary by clusters:**

There are 18 clusters represented in this pham: CZ8, AD, DI, CZ2, CZ3, CZ1, CY1, CZ4, FA, CY, AF, DY, CZ, DW, singleton, CP, P5, FO,

Info for manual annotations of cluster AD:

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

Info for manual annotations of cluster AF:

- Start number 9 was manually annotated 2 times for cluster AF.

Info for manual annotations of cluster CP:

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

Info for manual annotations of cluster CY:

- Start number 4 was manually annotated 6 times for cluster CY.

Info for manual annotations of cluster CY1:

- Start number 4 was manually annotated 7 times for cluster CY1.
- Start number 7 was manually annotated 2 times for cluster CY1.

Info for manual annotations of cluster CZ:

- Start number 7 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ1:

- Start number 4 was manually annotated 4 times for cluster CZ1.
- Start number 7 was manually annotated 6 times for cluster CZ1.
- Start number 11 was manually annotated 12 times for cluster CZ1.

Info for manual annotations of cluster CZ2:

- Start number 7 was manually annotated 1 time for cluster CZ2.
- Start number 11 was manually annotated 6 times for cluster CZ2.

Info for manual annotations of cluster CZ3:

- Start number 4 was manually annotated 1 time for cluster CZ3.
- Start number 7 was manually annotated 2 times for cluster CZ3.

Info for manual annotations of cluster CZ4:

- Start number 4 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster CZ8:

- Start number 7 was manually annotated 1 time for cluster CZ8.

Info for manual annotations of cluster DI:

- Start number 7 was manually annotated 15 times for cluster DI.

Info for manual annotations of cluster DW:

- Start number 6 was manually annotated 1 time for cluster DW.
- Start number 7 was manually annotated 1 time for cluster DW.
- Start number 11 was manually annotated 1 time for cluster DW.

Info for manual annotations of cluster DY:

- Start number 5 was manually annotated 5 times for cluster DY.

Info for manual annotations of cluster FA:

- Start number 10 was manually annotated 6 times for cluster FA.
- Start number 21 was manually annotated 3 times for cluster FA.

Info for manual annotations of cluster P5:

- Start number 19 was manually annotated 1 time for cluster P5.

### **Gene Information:**

Gene: AlumE\_53 Start: 38055, Stop: 38939, Start Num: 4

Candidate Starts for AlumE\_53:

(Start: 4 @38055 has 19 MA's), (47, 38304), (64, 38493), (66, 38508), (73, 38583), (94, 38799),

Gene: Amo99\_75 Start: 48879, Stop: 49730, Start Num: 8

Candidate Starts for Amo99\_75:

(Start: 8 @48879 has 3 MA's), (14, 48897), (32, 48987), (33, 48993), (46, 49080), (51, 49158), (52, 49161), (53, 49173), (72, 49368), (74, 49377), (79, 49446), (84, 49506), (87, 49524), (109, 49701), (112, 49719),

Gene: Angelique\_53 Start: 39273, Stop: 40166, Start Num: 4

Candidate Starts for Angelique\_53:

(Start: 4 @39273 has 19 MA's), (66, 39735), (70, 39783), (73, 39810), (94, 40026),

Gene: Antonio\_53 Start: 37328, Stop: 38179, Start Num: 11

Candidate Starts for Antonio\_53:

(Start: 11 @37328 has 19 MA's), (42, 37502), (47, 37544), (73, 37823), (84, 37958), (86, 37970), (90, 38015), (94, 38039),

Gene: ArchiDore\_51 Start: 38360, Stop: 39235, Start Num: 7

Candidate Starts for ArchiDore\_51:

(Start: 7 @38360 has 29 MA's), (30, 38477), (47, 38591), (99, 39146),

Gene: Attis\_48 Start: 34461, Stop: 35312, Start Num: 11

Candidate Starts for Attis\_48:

(Start: 11 @34461 has 19 MA's), (42, 34635), (47, 34677), (73, 34956), (84, 35091), (86, 35103), (90, 35148), (94, 35172),

Gene: Ayotoya\_50 Start: 36390, Stop: 37253, Start Num: 7

Candidate Starts for Ayotoya\_50:



(Start: 7 @36390 has 29 MA's), (23, 36444), (24, 36453), (44, 36594), (56, 36711), (61, 36780), (81, 37005), (99, 37173), (100, 37176),

Gene: BatStarr\_53 Start: 39301, Stop: 40170, Start Num: 7

Candidate Starts for BatStarr\_53:

(Start: 7 @39301 has 29 MA's), (42, 39493), (73, 39814), (90, 40006), (94, 40030),

Gene: BaxterFox\_54 Start: 39130, Stop: 40005, Start Num: 7

Candidate Starts for BaxterFox\_54:

(Start: 7 @39130 has 29 MA's), (30, 39247), (47, 39361), (99, 39916),

Gene: BeeGee\_59 Start: 39213, Stop: 40106, Start Num: 4

Candidate Starts for BeeGee\_59:

(Start: 4 @39213 has 19 MA's), (16, 39264), (73, 39750), (86, 39897), (90, 39942), (94, 39966),

Gene: BetterKatz\_50 Start: 35876, Stop: 36739, Start Num: 7

Candidate Starts for BetterKatz\_50:

(Start: 7 @35876 has 29 MA's), (23, 35930), (24, 35939), (44, 36080), (56, 36197), (86, 36539), (99, 36659), (100, 36662),

Gene: Bialota\_51 Start: 37960, Stop: 38811, Start Num: 11

Candidate Starts for Bialota\_51:

(Start: 11 @37960 has 19 MA's), (42, 38134), (47, 38176), (73, 38455), (84, 38590), (86, 38602), (90, 38647), (94, 38671),

Gene: Bock\_50 Start: 35610, Stop: 36473, Start Num: 7

Candidate Starts for Bock\_50:

(Start: 7 @35610 has 29 MA's), (23, 35664), (24, 35673), (44, 35814), (56, 35931), (61, 36000), (99, 36393), (100, 36396),

Gene: BoyNamedSue\_53 Start: 38055, Stop: 38939, Start Num: 4

Candidate Starts for BoyNamedSue\_53:

(Start: 4 @38055 has 19 MA's), (47, 38304), (64, 38493), (66, 38508), (73, 38583), (94, 38799),

Gene: Bradissa\_50 Start: 38423, Stop: 39316, Start Num: 4

Candidate Starts for Bradissa\_50:

(Start: 4 @38423 has 19 MA's), (38, 38612), (47, 38681), (73, 38960), (86, 39107), (90, 39152), (94, 39176),

Gene: Bridgette\_53 Start: 33693, Stop: 34538, Start Num: 10

Candidate Starts for Bridgette\_53:

(Start: 10 @33693 has 6 MA's), (50, 33963), (76, 34209), (90, 34377),

Gene: Brylie\_50 Start: 35660, Stop: 36523, Start Num: 7

Candidate Starts for Brylie\_50:

(Start: 7 @35660 has 29 MA's), (23, 35714), (24, 35723), (44, 35864), (56, 35981), (61, 36050), (99, 36443), (100, 36446),

Gene: Bunnybear\_46 Start: 35755, Stop: 36624, Start Num: 7

Candidate Starts for Bunnybear\_46:

(Start: 7 @35755 has 29 MA's), (42, 35947), (57, 36130), (73, 36268), (90, 36460), (94, 36484),

Gene: Cashline\_51 Start: 38564, Stop: 39454, Start Num: 4

Candidate Starts for Cashline\_51:

(Start: 4 @38564 has 19 MA's), (27, 38672), (73, 39098), (94, 39314),

Gene: Chop\_50 Start: 36140, Stop: 37003, Start Num: 7

Candidate Starts for Chop\_50:

(Start: 7 @36140 has 29 MA's), (23, 36194), (24, 36203), (44, 36344), (56, 36461), (99, 36923), (100, 36926),

Gene: ChuckDuck\_51 Start: 32702, Stop: 33550, Start Num: 10

Candidate Starts for ChuckDuck\_51:

(Start: 10 @32702 has 6 MA's), (26, 32762), (45, 32906), (66, 33122), (76, 33221), (103, 33488),

Gene: Clawz\_74 Start: 48756, Stop: 49607, Start Num: 8

Candidate Starts for Clawz\_74:

(Start: 8 @48756 has 3 MA's), (14, 48774), (27, 48831), (33, 48873), (35, 48891), (40, 48921), (46, 48960), (51, 49038), (52, 49041), (53, 49053), (66, 49176), (67, 49191), (71, 49227), (72, 49248), (74, 49257), (79, 49326), (84, 49386), (94, 49470), (95, 49485), (107, 49566), (109, 49581), (110, 49587), (113, 49602),

Gene: ColdSoup\_75 Start: 48960, Stop: 49811, Start Num: 8

Candidate Starts for ColdSoup\_75:

(Start: 8 @48960 has 3 MA's), (14, 48978), (32, 49068), (33, 49074), (46, 49161), (51, 49239), (52, 49242), (53, 49254), (72, 49449), (74, 49458), (79, 49527), (84, 49587), (87, 49605), (109, 49782), (112, 49800),

Gene: Confidence\_53 Start: 36720, Stop: 37613, Start Num: 4

Candidate Starts for Confidence\_53:

(Start: 4 @36720 has 19 MA's), (47, 36978), (73, 37257), (90, 37449), (94, 37473),

Gene: Constance\_51 Start: 33323, Stop: 34138, Start Num: 21

Candidate Starts for Constance\_51:

(Start: 21 @33323 has 3 MA's), (58, 33650), (76, 33809), (77, 33821), (90, 33977), (108, 34109),

Gene: DelRio\_51 Start: 36854, Stop: 37717, Start Num: 7

Candidate Starts for DelRio\_51:

(Start: 7 @36854 has 29 MA's), (23, 36908), (24, 36917), (44, 37058), (56, 37175), (61, 37244), (72, 37367), (84, 37505), (93, 37580), (99, 37637), (100, 37640), (106, 37679),

Gene: DonTron\_74 Start: 48997, Stop: 49848, Start Num: 8

Candidate Starts for DonTron\_74:

(Start: 8 @48997 has 3 MA's), (14, 49015), (32, 49105), (33, 49111), (46, 49198), (51, 49276), (52, 49279), (53, 49291), (72, 49486), (74, 49495), (79, 49564), (84, 49624), (87, 49642), (94, 49708), (96, 49729), (109, 49819), (112, 49837),

Gene: Dori\_66 Start: 51686, Stop: 52519, Start Num: 19

Candidate Starts for Dori\_66:

(Start: 19 @51686 has 4 MA's), (31, 51761), (39, 51809), (44, 51848), (49, 51920), (50, 51929), (61, 52037), (62, 52061), (73, 52163), (75, 52172), (87, 52319), (89, 52352), (90, 52358), (95, 52397), (100, 52436), (102, 52451), (105, 52469), (109, 52493), (111, 52508),

Gene: DumpsterDude\_52 Start: 40585, Stop: 41478, Start Num: 6

Candidate Starts for DumpsterDude\_52:

(Start: 6 @40585 has 1 MA's), (41, 40783), (47, 40834), (50, 40891), (68, 41065), (99, 41389),

Gene: EMSquaredA\_51 Start: 37224, Stop: 38114, Start Num: 4

Candidate Starts for EMSquaredA\_51:

(Start: 4 @37224 has 19 MA's), (73, 37758), (94, 37974),

Gene: EdnaMode\_47 Start: 33149, Stop: 34000, Start Num: 11

Candidate Starts for EdnaMode\_47:

(Start: 11 @33149 has 19 MA's), (42, 33323), (47, 33365), (73, 33644), (84, 33779), (86, 33791), (90, 33836), (94, 33860),

Gene: EnalisNailo\_50 Start: 37936, Stop: 38829, Start Num: 4

Candidate Starts for EnalisNailo\_50:

(Start: 4 @37936 has 19 MA's), (70, 38446), (73, 38473), (90, 38665), (94, 38689),

Gene: Eudoria\_53 Start: 37328, Stop: 38179, Start Num: 11

Candidate Starts for Eudoria\_53:

(Start: 11 @37328 has 19 MA's), (42, 37502), (47, 37544), (73, 37823), (84, 37958), (94, 38039),

Gene: Eviarto\_54 Start: 39276, Stop: 40145, Start Num: 7

Candidate Starts for Eviarto\_54:

(Start: 7 @39276 has 29 MA's), (42, 39468), (73, 39789), (90, 39981), (94, 40005),

Gene: Farewell\_71 Start: 48032, Stop: 48883, Start Num: 9

Candidate Starts for Farewell\_71:

(Start: 9 @48032 has 3 MA's), (22, 48080), (28, 48131), (36, 48179), (37, 48185), (68, 48485), (71, 48509), (73, 48533), (84, 48671), (87, 48689), (90, 48731), (95, 48770), (98, 48788), (100, 48809), (109, 48866),

Gene: Floral\_51 Start: 38684, Stop: 39553, Start Num: 7

Candidate Starts for Floral\_51:

(Start: 7 @38684 has 29 MA's), (42, 38876), (47, 38918), (73, 39197), (90, 39389), (94, 39413),

Gene: Francois\_49 Start: 35662, Stop: 36525, Start Num: 7

Candidate Starts for Francois\_49:

(Start: 7 @35662 has 29 MA's), (23, 35716), (24, 35725), (32, 35782), (44, 35866), (84, 36313), (99, 36445), (100, 36448), (106, 36487),

Gene: GlobiWarming\_53 Start: 33087, Stop: 33893, Start Num: 21

Candidate Starts for GlobiWarming\_53:

(Start: 21 @33087 has 3 MA's), (56, 33354), (65, 33462), (90, 33732), (108, 33864),

Gene: GrandSlam\_50 Start: 36140, Stop: 37003, Start Num: 7

Candidate Starts for GrandSlam\_50:

(Start: 7 @36140 has 29 MA's), (23, 36194), (24, 36203), (44, 36344), (56, 36461), (99, 36923), (100, 36926),

Gene: Hamood\_50 Start: 36140, Stop: 37003, Start Num: 7

Candidate Starts for Hamood\_50:

(Start: 7 @36140 has 29 MA's), (23, 36194), (24, 36203), (44, 36344), (56, 36461), (99, 36923), (100, 36926),

Gene: Heinz\_47 Start: 29864, Stop: 30724, Start Num: 5

Candidate Starts for Heinz\_47:

(Start: 5 @29864 has 5 MA's), (41, 30047), (43, 30062), (46, 30080), (48, 30092), (57, 30230), (72, 30365), (83, 30497), (85, 30512), (92, 30575), (101, 30644), (109, 30698),

Gene: Hibiscus\_47 Start: 29813, Stop: 30673, Start Num: 5

Candidate Starts for Hibiscus\_47:

(Start: 5 @29813 has 5 MA's), (41, 29996), (43, 30011), (46, 30029), (48, 30041), (57, 30179), (72, 30314), (83, 30446), (85, 30461), (92, 30524), (101, 30593), (109, 30647),

Gene: HotPotato\_51 Start: 33740, Stop: 34588, Start Num: 10

Candidate Starts for HotPotato\_51:

(Start: 10 @33740 has 6 MA's), (66, 34160), (76, 34259), (77, 34271),

Gene: Hugley\_50 Start: 39300, Stop: 40169, Start Num: 7

Candidate Starts for Hugley\_50:

(Start: 7 @39300 has 29 MA's), (42, 39492), (73, 39813), (90, 40005), (94, 40029),

Gene: Hyzer\_59 Start: 40629, Stop: 41531, Start Num: 4

Candidate Starts for Hyzer\_59:

(Start: 4 @40629 has 19 MA's), (35, 40803), (69, 41130), (78, 41205), (80, 41259), (90, 41367), (99, 41442), (100, 41445),

Gene: IdentityCrisis\_46 Start: 30184, Stop: 31029, Start Num: 9

Candidate Starts for IdentityCrisis\_46:

(2, 30028), (Start: 9 @30184 has 3 MA's), (22, 30226), (28, 30277), (36, 30325), (68, 30631), (71, 30655), (73, 30679), (84, 30817), (87, 30835), (90, 30877), (98, 30934), (100, 30955), (109, 31012),

Gene: Jablanski\_54 Start: 40313, Stop: 41197, Start Num: 4

Candidate Starts for Jablanski\_54:

(Start: 4 @40313 has 19 MA's), (27, 40415), (47, 40562), (66, 40766), (70, 40814), (73, 40841), (90, 41033), (94, 41057),

Gene: Jojo24\_45 Start: 30491, Stop: 31363, Start Num: 5

Candidate Starts for Jojo24\_45:

(Start: 5 @30491 has 5 MA's), (14, 30533), (43, 30698), (48, 30728), (57, 30866), (83, 31133), (85, 31148), (92, 31211), (101, 31283), (109, 31337),

Gene: Jollymon\_75 Start: 48960, Stop: 49811, Start Num: 8

Candidate Starts for Jollymon\_75:

(Start: 8 @48960 has 3 MA's), (14, 48978), (32, 49068), (33, 49074), (46, 49161), (51, 49239), (52, 49242), (53, 49254), (72, 49449), (74, 49458), (79, 49527), (84, 49587), (87, 49605), (109, 49782), (112, 49800),

Gene: Judy\_54 Start: 34155, Stop: 34961, Start Num: 21

Candidate Starts for Judy\_54:

(Start: 21 @34155 has 3 MA's), (56, 34422), (65, 34530), (90, 34800), (108, 34932),

Gene: Karkharias\_50 Start: 33234, Stop: 34079, Start Num: 10

Candidate Starts for Karkharias\_50:

(Start: 10 @33234 has 6 MA's), (50, 33504), (76, 33750), (90, 33918),

Gene: KayMoney\_50 Start: 32666, Stop: 33481, Start Num: 21

Candidate Starts for KayMoney\_50:

(Start: 21 @32666 has 3 MA's), (58, 32993), (76, 33152), (77, 33164), (90, 33320), (108, 33452),

Gene: KingstonB\_75 Start: 48435, Stop: 49286, Start Num: 8

Candidate Starts for KingstonB\_75:

(Start: 8 @48435 has 3 MA's), (14, 48453), (32, 48543), (33, 48549), (46, 48636), (51, 48714), (52, 48717), (53, 48729), (72, 48924), (74, 48933), (79, 49002), (84, 49062), (109, 49257),

Gene: Kita\_54 Start: 37337, Stop: 38188, Start Num: 11

Candidate Starts for Kita\_54:

(Start: 11 @37337 has 19 MA's), (42, 37511), (47, 37553), (73, 37832), (84, 37967), (86, 37979), (90, 38024), (94, 38048),

Gene: Lilas\_52 Start: 39668, Stop: 40561, Start Num: 4

Candidate Starts for Lilas\_52:

(Start: 4 @39668 has 19 MA's), (38, 39857), (73, 40205), (86, 40352), (90, 40397), (94, 40421),

Gene: LordFarquaad\_50 Start: 34442, Stop: 35293, Start Num: 11

Candidate Starts for LordFarquaad\_50:

(Start: 11 @34442 has 19 MA's), (42, 34616), (47, 34658), (73, 34937), (84, 35072), (86, 35084), (90, 35129), (94, 35153),

Gene: Madeline\_51 Start: 38260, Stop: 39135, Start Num: 7

Candidate Starts for Madeline\_51:

(Start: 7 @38260 has 29 MA's), (30, 38377), (47, 38491), (99, 39046),

Gene: Malibo\_54 Start: 38001, Stop: 38852, Start Num: 11

Candidate Starts for Malibo\_54:

(Start: 11 @38001 has 19 MA's), (18, 38028), (66, 38421), (70, 38469), (73, 38496), (90, 38688), (94, 38712), (95, 38727),

Gene: Manasvini\_54 Start: 37352, Stop: 38203, Start Num: 11

Candidate Starts for Manasvini\_54:

(Start: 11 @37352 has 19 MA's), (42, 37526), (47, 37568), (73, 37847), (84, 37982), (86, 37994), (90, 38039), (94, 38063),

Gene: Mao1\_68 Start: 50146, Stop: 50979, Start Num: 19

Candidate Starts for Mao1\_68:

(Start: 19 @50146 has 4 MA's), (31, 50221), (39, 50269), (44, 50308), (49, 50380), (50, 50389), (61, 50497), (62, 50521), (73, 50623), (75, 50632), (87, 50779), (89, 50812), (90, 50818), (95, 50857), (100, 50896), (102, 50911), (109, 50953), (111, 50968),

Gene: Maridalia\_54 Start: 37501, Stop: 38370, Start Num: 7

Candidate Starts for Maridalia\_54:

(Start: 7 @37501 has 29 MA's), (42, 37693), (57, 37876), (73, 38014), (90, 38206), (94, 38230),

Gene: Marteena\_50 Start: 37224, Stop: 38114, Start Num: 4

Candidate Starts for Marteena\_50:

(Start: 4 @37224 has 19 MA's), (73, 37758), (94, 37974),

Gene: Mask\_66 Start: 52429, Stop: 53262, Start Num: 19

Candidate Starts for Mask\_66:

(Start: 19 @52429 has 4 MA's), (31, 52504), (39, 52552), (44, 52591), (49, 52663), (50, 52672), (61, 52780), (62, 52804), (73, 52906), (75, 52915), (89, 53095), (90, 53101), (95, 53140), (100, 53179), (102, 53194), (109, 53236), (111, 53251),

Gene: Mulch\_50 Start: 35660, Stop: 36523, Start Num: 7  
Candidate Starts for Mulch\_50:  
(Start: 7 @35660 has 29 MA's), (23, 35714), (24, 35723), (44, 35864), (56, 35981), (61, 36050), (99, 36443), (100, 36446),

Gene: Nadeem\_50 Start: 35660, Stop: 36523, Start Num: 7  
Candidate Starts for Nadeem\_50:  
(Start: 7 @35660 has 29 MA's), (23, 35714), (24, 35723), (44, 35864), (56, 35981), (61, 36050), (99, 36443), (100, 36446),

Gene: NancyRae\_49 Start: 35679, Stop: 36542, Start Num: 7  
Candidate Starts for NancyRae\_49:  
(Start: 7 @35679 has 29 MA's), (23, 35733), (24, 35742), (44, 35883), (56, 36000), (61, 36069), (99, 36462), (100, 36465),

Gene: Neobush\_53 Start: 37322, Stop: 38173, Start Num: 11  
Candidate Starts for Neobush\_53:  
(Start: 11 @37322 has 19 MA's), (42, 37496), (47, 37538), (73, 37817), (84, 37952), (86, 37964), (90, 38009), (94, 38033),

Gene: NoSwimming\_46 Start: 32215, Stop: 33060, Start Num: 13  
Candidate Starts for NoSwimming\_46:  
(13, 32215), (36, 32353), (66, 32632), (79, 32782), (82, 32827), (90, 32899),

Gene: Nymphadora\_54 Start: 39300, Stop: 40169, Start Num: 7  
Candidate Starts for Nymphadora\_54:  
(Start: 7 @39300 has 29 MA's), (42, 39492), (73, 39813), (90, 40005), (94, 40029),

Gene: PantheRoc\_54 Start: 38106, Stop: 38990, Start Num: 4  
Candidate Starts for PantheRoc\_54:  
(Start: 4 @38106 has 19 MA's), (47, 38355), (66, 38559), (73, 38634), (94, 38850),

Gene: Parada\_50 Start: 35660, Stop: 36523, Start Num: 7  
Candidate Starts for Parada\_50:  
(Start: 7 @35660 has 29 MA's), (23, 35714), (24, 35723), (44, 35864), (56, 35981), (61, 36050), (99, 36443), (100, 36446),

Gene: Peas\_50 Start: 34597, Stop: 35445, Start Num: 10  
Candidate Starts for Peas\_50:  
(Start: 10 @34597 has 6 MA's), (66, 35017), (76, 35116), (77, 35128),

Gene: PeggyLeg03\_51 Start: 33338, Stop: 34186, Start Num: 10  
Candidate Starts for PeggyLeg03\_51:  
(Start: 10 @33338 has 6 MA's), (57, 33695), (66, 33758), (76, 33857), (77, 33869),

Gene: Phayonce\_50 Start: 36309, Stop: 37142, Start Num: 19  
Candidate Starts for Phayonce\_50:  
(Start: 19 @36309 has 4 MA's), (31, 36384), (39, 36432), (44, 36471), (49, 36543), (50, 36552), (61, 36660), (62, 36684), (73, 36786), (75, 36795), (87, 36942), (89, 36975), (90, 36981), (95, 37020), (100, 37059), (102, 37074), (109, 37116), (111, 37131),

Gene: Pickett\_46 Start: 31625, Stop: 32476, Start Num: 11

Candidate Starts for Pickett\_46:

(Start: 11 @31625 has 19 MA's), (42, 31799), (47, 31841), (73, 32120), (84, 32255), (86, 32267), (90, 32312), (94, 32336),

Gene: Pimento\_51 Start: 35257, Stop: 36120, Start Num: 7

Candidate Starts for Pimento\_51:

(Start: 7 @35257 has 29 MA's), (23, 35311), (24, 35320), (44, 35461), (56, 35578), (61, 35647), (84, 35908), (86, 35920), (99, 36040), (100, 36043),

Gene: Pollux\_53 Start: 38684, Stop: 39553, Start Num: 7

Candidate Starts for Pollux\_53:

(Start: 7 @38684 has 29 MA's), (42, 38876), (47, 38918), (73, 39197), (90, 39389), (94, 39413),

Gene: Polly\_50 Start: 36771, Stop: 37622, Start Num: 11

Candidate Starts for Polly\_50:

(Start: 11 @36771 has 19 MA's), (42, 36945), (47, 36987), (73, 37266), (84, 37401), (86, 37413), (90, 37458), (94, 37482),

Gene: Posh\_57 Start: 40046, Stop: 40936, Start Num: 4

Candidate Starts for Posh\_57:

(Start: 4 @40046 has 19 MA's), (47, 40301), (66, 40505), (70, 40553), (73, 40580), (88, 40739), (90, 40772), (94, 40796),

Gene: Pucara\_48 Start: 32943, Stop: 33791, Start Num: 10

Candidate Starts for Pucara\_48:

(Start: 10 @32943 has 6 MA's), (57, 33300), (66, 33363), (76, 33462), (77, 33474),

Gene: Pytheas\_54 Start: 40312, Stop: 41196, Start Num: 4

Candidate Starts for Pytheas\_54:

(Start: 4 @40312 has 19 MA's), (27, 40414), (47, 40561), (66, 40765), (70, 40813), (73, 40840), (90, 41032), (94, 41056),

Gene: RavenCo17\_51 Start: 37505, Stop: 38374, Start Num: 7

Candidate Starts for RavenCo17\_51:

(Start: 7 @37505 has 29 MA's), (42, 37697), (73, 38018), (94, 38234),

Gene: Reyja\_46 Start: 30927, Stop: 31790, Start Num: 5

Candidate Starts for Reyja\_46:

(Start: 5 @30927 has 5 MA's), (43, 31125), (48, 31155), (57, 31293), (72, 31428), (81, 31530), (83, 31560), (85, 31575), (88, 31590), (92, 31638), (101, 31710), (109, 31764),

Gene: RootBeer\_41 Start: 29068, Stop: 29916, Start Num: 10

Candidate Starts for RootBeer\_41:

(Start: 10 @29068 has 6 MA's), (66, 29488), (76, 29587), (77, 29599), (95, 29794), (103, 29854),

Gene: Ruthy\_50 Start: 37941, Stop: 38801, Start Num: 7

Candidate Starts for Ruthy\_50:

(Start: 7 @37941 has 29 MA's), (17, 37968), (99, 38712),

Gene: Santhid\_45 Start: 29208, Stop: 30077, Start Num: 5

Candidate Starts for Santhid\_45:

(Start: 5 @29208 has 5 MA's), (14, 29250), (43, 29412), (48, 29442), (57, 29583), (83, 29850), (85, 29865), (92, 29928), (101, 29997), (109, 30051),

Gene: Scotia\_44 Start: 31242, Stop: 32060, Start Num: 21

Candidate Starts for Scotia\_44:

(20, 31239), (Start: 21 @31242 has 3 MA's), (34, 31329), (36, 31353), (66, 31632), (79, 31782), (90, 31899),

Gene: SoilAssassin\_48 Start: 34460, Stop: 35311, Start Num: 11

Candidate Starts for SoilAssassin\_48:

(Start: 11 @34460 has 19 MA's), (42, 34634), (47, 34676), (73, 34955), (84, 35090), (86, 35102), (90, 35147), (94, 35171),

Gene: Soos\_70 Start: 48164, Stop: 49015, Start Num: 8

Candidate Starts for Soos\_70:

(Start: 8 @48164 has 3 MA's), (14, 48182), (32, 48272), (33, 48278), (46, 48365), (51, 48443), (52, 48446), (53, 48458), (72, 48653), (74, 48662), (79, 48731), (84, 48791), (87, 48809), (109, 48986), (112, 49004),

Gene: Sparky\_70 Start: 49626, Stop: 50477, Start Num: 9

Candidate Starts for Sparky\_70:

(Start: 9 @49626 has 3 MA's), (22, 49674), (28, 49725), (36, 49773), (37, 49779), (68, 50079), (71, 50103), (73, 50127), (84, 50265), (87, 50283), (90, 50325), (95, 50364), (98, 50382), (100, 50403), (109, 50460),

Gene: Sting\_73 Start: 48603, Stop: 49454, Start Num: 8

Candidate Starts for Sting\_73:

(Start: 8 @48603 has 3 MA's), (14, 48621), (32, 48711), (33, 48717), (46, 48804), (51, 48882), (52, 48885), (53, 48897), (72, 49092), (74, 49101), (79, 49170), (84, 49230), (87, 49248), (109, 49425), (112, 49443),

Gene: Suscepit\_53 Start: 37329, Stop: 38180, Start Num: 11

Candidate Starts for Suscepit\_53:

(Start: 11 @37329 has 19 MA's), (42, 37503), (47, 37545), (73, 37824), (84, 37959), (86, 37971), (90, 38016), (94, 38040),

Gene: TPA4\_49 Start: 37276, Stop: 38109, Start Num: 15

Candidate Starts for TPA4\_49:

(1, 37045), (15, 37276), (29, 37354), (39, 37408), (49, 37519), (50, 37528), (55, 37561), (63, 37663), (73, 37762), (81, 37861), (84, 37897), (91, 37957), (97, 38005), (106, 38071),

Gene: Tarzan\_46 Start: 30318, Stop: 31178, Start Num: 5

Candidate Starts for Tarzan\_46:

(Start: 5 @30318 has 5 MA's), (43, 30516), (48, 30546), (57, 30684), (83, 30951), (85, 30966), (92, 31029), (101, 31098), (104, 31119), (109, 31152),

Gene: Tayonia\_53 Start: 37328, Stop: 38179, Start Num: 11

Candidate Starts for Tayonia\_53:

(Start: 11 @37328 has 19 MA's), (42, 37502), (47, 37544), (73, 37823), (84, 37958), (86, 37970), (90, 38015), (94, 38039),

Gene: ThankyouJordi\_52 Start: 39176, Stop: 40069, Start Num: 4

Candidate Starts for ThankyouJordi\_52:

(Start: 4 @39176 has 19 MA's), (37, 39362), (73, 39713), (90, 39905), (94, 39929),



Gene: Thimann\_51 Start: 35487, Stop: 36365, Start Num: 4

Candidate Starts for Thimann\_51:

(3, 35376), (Start: 4 @35487 has 19 MA's), (42, 35688), (47, 35730), (66, 35934), (73, 36009), (90, 36201), (94, 36225),

Gene: TimTam\_54 Start: 39300, Stop: 40169, Start Num: 7

Candidate Starts for TimTam\_54:

(Start: 7 @39300 has 29 MA's), (42, 39492), (73, 39813), (90, 40005), (94, 40029),

Gene: Tonitrus\_61 Start: 44978, Stop: 45802, Start Num: 12

Candidate Starts for Tonitrus\_61:

(Start: 12 @44978 has 1 MA's), (25, 45023), (28, 45050), (54, 45260), (55, 45266), (60, 45326), (68, 45407), (70, 45428), (73, 45455), (76, 45479), (84, 45590), (109, 45785),

Gene: Trumpet\_53 Start: 37329, Stop: 38180, Start Num: 11

Candidate Starts for Trumpet\_53:

(Start: 11 @37329 has 19 MA's), (42, 37503), (47, 37545), (73, 37824), (84, 37959), (86, 37971), (90, 38016), (94, 38040),

Gene: Vasanti\_50 Start: 33874, Stop: 34743, Start Num: 7

Candidate Starts for Vasanti\_50:

(Start: 7 @33874 has 29 MA's), (42, 34066), (59, 34255), (66, 34312), (73, 34387), (90, 34579),

Gene: WelcomeAyanna\_52 Start: 39323, Stop: 40216, Start Num: 4

Candidate Starts for WelcomeAyanna\_52:

(Start: 4 @39323 has 19 MA's), (37, 39509), (73, 39860), (90, 40052), (94, 40076),

Gene: WheatThin\_49 Start: 35660, Stop: 36523, Start Num: 7

Candidate Starts for WheatThin\_49:

(Start: 7 @35660 has 29 MA's), (23, 35714), (24, 35723), (44, 35864), (56, 35981), (61, 36050), (99, 36443), (100, 36446),

Gene: Wrigley\_59 Start: 39635, Stop: 40519, Start Num: 4

Candidate Starts for Wrigley\_59:

(Start: 4 @39635 has 19 MA's), (47, 39884), (66, 40088), (70, 40136), (73, 40163), (88, 40322), (90, 40355), (94, 40379),

Gene: Yeet412\_48 Start: 34461, Stop: 35312, Start Num: 11

Candidate Starts for Yeet412\_48:

(Start: 11 @34461 has 19 MA's), (42, 34635), (47, 34677), (73, 34956), (84, 35091), (86, 35103), (90, 35148), (94, 35172),

Gene: Yeezy\_51 Start: 36236, Stop: 37114, Start Num: 7

Candidate Starts for Yeezy\_51:

(Start: 7 @36236 has 29 MA's), (42, 36428), (68, 36701), (78, 36788), (99, 37025),

Gene: Zameen\_53 Start: 37328, Stop: 38179, Start Num: 11

Candidate Starts for Zameen\_53:

(Start: 11 @37328 has 19 MA's), (42, 37502), (47, 37544), (73, 37823), (84, 37958), (86, 37970), (90, 38015), (94, 38039),

Gene: Zirinka\_50 Start: 37948, Stop: 38799, Start Num: 11

Candidate Starts for Zirinka\_50:

(Start: 11 @37948 has 19 MA's), (42, 38122), (47, 38164), (73, 38443), (84, 38578), (86, 38590), (90, 38635), (94, 38659),

Gene: Zodiariah\_54 Start: 39902, Stop: 40801, Start Num: 4

Candidate Starts for Zodiariah\_54:

(3, 39791), (Start: 4 @39902 has 19 MA's), (31, 40055), (35, 40082), (42, 40124), (47, 40166), (50, 40223), (59, 40313), (73, 40445), (90, 40637), (94, 40661), (96, 40682), (98, 40694),