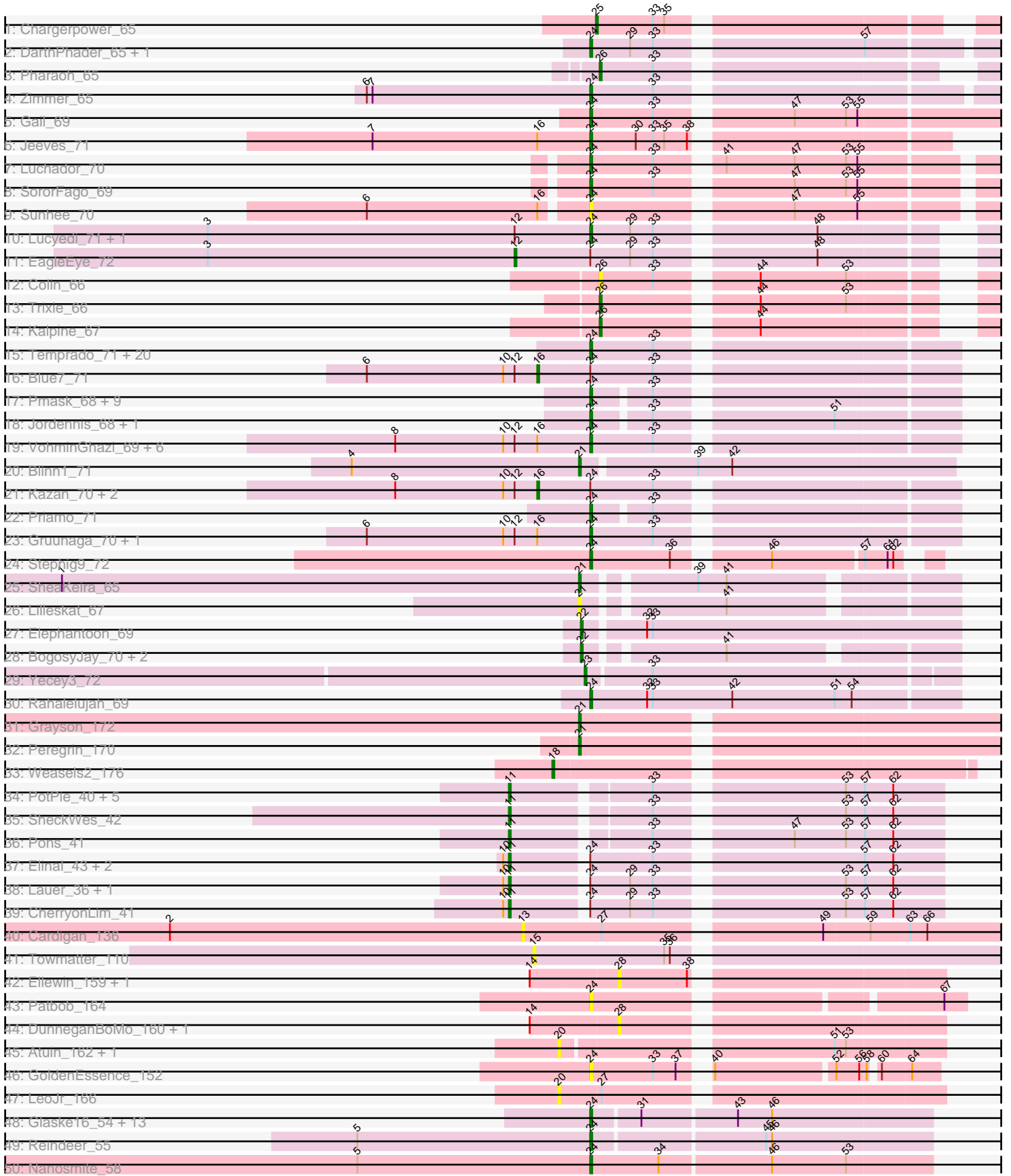


Pham 202790





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 202790 Report

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

Pham number 202790 has 119 members, 24 are drafts.

Phages represented in each track:

- Track 1 : Chargerpower\_65
- Track 2 : DarthPhader\_65, Refuge\_65
- Track 3 : Pharaoh\_65
- Track 4 : Zimmer\_65
- Track 5 : Gail\_69
- Track 6 : Jeeves\_71
- Track 7 : Luchador\_70
- Track 8 : SororFago\_69
- Track 9 : Sunhee\_70
- Track 10 : Lucyedi\_71, PainterBoy\_70
- Track 11 : EagleEye\_72
- Track 12 : Colin\_66
- Track 13 : Trixie\_66
- Track 14 : Kalpine\_67
- Track 15 : Temprado\_71, Rifter\_70, Wiks\_69, Gladiator\_67, Tucker\_70, Jeffabunny\_70, Hammer\_70, Lilbunny\_69, ToneTone\_67, Artemis2UCLA\_70, Zaka\_70, Koko\_72, Yokurt\_69, Zulu\_71, WunderPhul\_70, Hexamo\_70, CloudWang3\_71, Garak\_71, Helmet\_71, BlessJoy\_69, Indra\_73
- Track 16 : Blue7\_71
- Track 17 : Pmask\_68, Cookiedough\_69, McFly\_69, Isiphiwo\_67, Neeharika16\_68, SuperCallie99\_66, Dorothea\_69, Chartreuse\_66, JewelBug\_69, DaVinci\_67
- Track 18 : Jordennis\_68, BABullseye\_62
- Track 19 : VohminGhazi\_69, Hoot\_64, Candra\_67, GreedyLawyer\_66, Newrala\_69, Kipper29\_69, EricB\_68
- Track 20 : Blinn1\_71
- Track 21 : Kazan\_70, SmellyB\_69, SuperAwesome\_69
- Track 22 : Priamo\_71
- Track 23 : Gruunaga\_70, Roksolana\_71
- Track 24 : Stephig9\_72
- Track 25 : SheaKeira\_65
- Track 26 : Lilleskat\_67
- Track 27 : Elephantoon\_69
- Track 28 : BogosyJay\_70, Maminiaina\_70, LoneWolf\_70
- Track 29 : Yecey3\_72
- Track 30 : Rahalelujah\_69
- Track 31 : Grayson\_172
- Track 32 : Peregrin\_170

- Track 33 : Weasels2\_176
- Track 34 : PotPie\_40, Yucky\_43, Vine\_42, SummitAcademy\_39, BigChungus\_39, Feastonyeat\_39
- Track 35 : SheckWes\_42
- Track 36 : Pons\_41
- Track 37 : Elinal\_43, Bavidard\_39, KayGee\_41
- Track 38 : Lauer\_36, Mayweather\_43
- Track 39 : CherryonLim\_41
- Track 40 : Cardigan\_136
- Track 41 : Towmatter\_110
- Track 42 : Ellewin\_159, KSunshine22\_158
- Track 43 : Patbob\_164
- Track 44 : DunneganBoMo\_160, WaddleDee\_159
- Track 45 : Atuin\_162, ReginaGlobina\_169
- Track 46 : GoldenEssence\_152
- Track 47 : LeoJr\_166
- Track 48 : Glaske16\_54, IPhane7\_53, Diminimus\_54, PegLeg\_53, TyDawg\_53, LilhomieP\_52, Skinny\_54, FreakyGoo\_54, SlimJimmy\_52, Auspice\_53, Bricole\_53, Dulcita\_54, Bongo\_53, Izel\_53
- Track 49 : Reindeer\_55
- Track 50 : Nanosmite\_58
- Track 51 : IdentityCrisis\_47
- Track 52 : Yappy\_17

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

The start number called the most often in the published annotations is 24, it was called in 62 of the 95 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Artemis2UCLA\_70, Auspice\_53, BABullseye\_62, BlessJoy\_69, Bongo\_53, Bricole\_53, Candra\_67, Chartreuse\_66, CloudWang3\_71, Cookiedough\_69, DaVinci\_67, DARTHPhader\_65, Diminimus\_54, Dorothea\_69, Dulcita\_54, EricB\_68, FreakyGoo\_54, Gail\_69, Garak\_71, Gladiator\_67, Glaske16\_54, GoldenEssence\_152, GreedyLawyer\_66, Gruunaga\_70, Hammer\_70, Helmet\_71, Hexamo\_70, Hoot\_64, IPhane7\_53, Indra\_73, Isiphiwo\_67, Izel\_53, Jeeves\_71, Jeffabunny\_70, JewelBug\_69, Jordennis\_68, Kipper29\_69, Koko\_72, Lilbunny\_69, LilhomieP\_52, Luchador\_70, Lucyedi\_71, McFly\_69, Nanosmite\_58, Neeharika16\_68, Newrala\_69, PainterBoy\_70, Patbob\_164, PegLeg\_53, Pmask\_68, Priamo\_71, Rahalelujah\_69, Refuge\_65, Reindeer\_55, Rifter\_70, Roksolana\_71, Skinny\_54, SlimJimmy\_52, SororFago\_69, StepHig9\_72, Sunhee\_70, SuperCallie99\_66, Temprado\_71, ToneTone\_67, Tucker\_70, TyDawg\_53, VohminGhazi\_69, Wiks\_69, WunderPhul\_70, Yokurt\_69, Zaka\_70, Zimmer\_65, Zulu\_71,

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

- Bavidard\_39, Blue7\_71, CherryonLim\_41, EagleEye\_72, Elinal\_43, KayGee\_41, Kazan\_70, Lauer\_36, Mayweather\_43, SmellyB\_69, SuperAwesome\_69,

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

- Atuin\_162, BigChungus\_39, Blinn1\_71, BogosyJay\_70, Cardigan\_136, Chargerpower\_65, Colin\_66, DunneganBoMo\_160, Elephantoon\_69, Ellewin\_159, Feastonyeet\_39, Grayson\_172, IdentityCrisis\_47, KSunshine22\_158, Kalpine\_67, LeoJr\_166, Lilleskat\_67, LoneWolf\_70, Maminiaina\_70, Peregrin\_170, Pharaoh\_65, Pons\_41, PotPie\_40, ReginaGlobina\_169, SheaKeira\_65, SheckWes\_42, SummitAcademy\_39, Towmatter\_110, Trixie\_66, Vine\_42, WaddleDee\_159, Weasels2\_176, Yappy\_17, Yecey3\_72, Yucky\_43,

### Summary by start number:

#### Start 11:

- Found in 14 of 119 ( 11.8% ) of genes in pham
- Manual Annotations of this start: 12 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bavidard\_39 (CT), BigChungus\_39 (CT), CherryonLim\_41 (CT), Elinal\_43 (CT), Feastonyeet\_39 (CT), KayGee\_41 (CT), Lauer\_36 (CT), Mayweather\_43 (CT), Pons\_41 (CT), PotPie\_40 (CT), SheckWes\_42 (CT), SummitAcademy\_39 (CT), Vine\_42 (CT), Yucky\_43 (CT),

#### Start 12:

- Found in 16 of 119 ( 13.4% ) of genes in pham
- Manual Annotations of this start: 1 of 95
- Called 6.2% of time when present
- Phage (with cluster) where this start called: EagleEye\_72 (A16),

#### Start 13:

- Found in 1 of 119 ( 0.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cardigan\_136 (DD),

#### Start 15:

- Found in 1 of 119 ( 0.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Towmatter\_110 (DL),

#### Start 16:

- Found in 15 of 119 ( 12.6% ) of genes in pham
- Manual Annotations of this start: 4 of 95
- Called 26.7% of time when present
- Phage (with cluster) where this start called: Blue7\_71 (A6), Kazan\_70 (A6), SmellyB\_69 (A6), SuperAwesome\_69 (A6),

#### Start 17:

- Found in 1 of 119 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: IdentityCrisis\_47 (singleton),

#### Start 18:

- Found in 1 of 119 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 95

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Weasels2\_176 (CB),

#### Start 19:

- Found in 1 of 119 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Yappy\_17 (singleton),

#### Start 20:

- Found in 3 of 119 ( 2.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Atuin\_162 (FC), LeoJr\_166 (FC), ReginaGlobina\_169 (FC),

#### Start 21:

- Found in 5 of 119 ( 4.2% ) of genes in pham
- Manual Annotations of this start: 4 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Blinn1\_71 (A6), Grayson\_172 (CB), Lilleskat\_67 (A9), Peregrin\_170 (CB), SheaKeira\_65 (A9),

#### Start 22:

- Found in 4 of 119 ( 3.4% ) of genes in pham
- Manual Annotations of this start: 4 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BogosyJay\_70 (A9), Elephantoon\_69 (A9), LoneWolf\_70 (A9), Maminina\_70 (A9),

#### Start 23:

- Found in 1 of 119 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Yecey3\_72 (A9),

#### Start 24:

- Found in 84 of 119 ( 70.6% ) of genes in pham
- Manual Annotations of this start: 62 of 95
- Called 86.9% of time when present
- Phage (with cluster) where this start called: Artemis2UCLA\_70 (A6), Auspice\_53 (M1), BABullseye\_62 (A6), BlessJoy\_69 (A6), Bongo\_53 (M1), Bricole\_53 (M1), Candra\_67 (A6), Chartreuse\_66 (A6), CloudWang3\_71 (A6), Cookiedough\_69 (A6), DaVinci\_67 (A6), DarthPhader\_65 (A12), Diminimus\_54 (M1), Dorothea\_69 (A6), Dulcita\_54 (M1), EricB\_68 (A6), FreakyGoo\_54 (M1), Gail\_69 (A14), Garak\_71 (A6), Gladiator\_67 (A6), Glaske16\_54 (M1), GoldenEssence\_152 (FC), GreedyLawyer\_66 (A6), Gruunaga\_70 (A6), Hammer\_70 (A6), Helmet\_71 (A6), Hexamo\_70 (A6), Hoot\_64 (A6), IPhone7\_53 (M1), Indra\_73 (A6), Isiphiwo\_67 (A6), Izel\_53 (M1), Jeeves\_71 (A14), Jeffabunny\_70 (A6), JewelBug\_69 (A6), Jordennis\_68 (A6), Kipper29\_69 (A6), Koko\_72 (A6), Lilbunny\_69 (A6), LilhomieP\_52 (M1), Luchador\_70 (A14), Lucyedi\_71 (A16), McFly\_69 (A6), Nanosmite\_58 (M3), Neeharika16\_68 (A6), Newrala\_69 (A6), PainterBoy\_70 (A16), Patbob\_164 (FC), PegLeg\_53 (M1), Pmask\_68 (A6), Priamo\_71 (A6), Rahalelujah\_69 (A9), Refuge\_65 (A12),

Reindeer\_55 (M1), Rifter\_70 (A6), Roksolana\_71 (A6), Skinny\_54 (M1), SlimJimmy\_52 (M1), SororFago\_69 (A14), StepHig9\_72 (A8), Sunhee\_70 (A14), SuperCallie99\_66 (A6), Temprado\_71 (A6), ToneTone\_67 (A6), Tucker\_70 (A6), TyDawg\_53 (M1), VohminGhazi\_69 (A6), Wiks\_69 (A6), WunderPhul\_70 (A6), Yokurt\_69 (A6), Zaka\_70 (A6), Zimmer\_65 (A12), Zulu\_71 (A6),

Start 25:

- Found in 1 of 119 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chargerpower\_65 (A),

Start 26:

- Found in 4 of 119 ( 3.4% ) of genes in pham
- Manual Annotations of this start: 3 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Colin\_66 (A2), Kalpine\_67 (A2), Pharaoh\_65 (A12), Trixie\_66 (A2),

Start 28:

- Found in 4 of 119 ( 3.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DunneganBoMo\_160 (FC), Ellewin\_159 (FC), KSunshine22\_158 (FC), WaddleDee\_159 (FC),

### **Summary by clusters:**

There are 16 clusters represented in this pham: A, A14, singleton, A16, A12, CB, DD, DL, FC, M1, M3, A6, A9, A8, A2, CT,

Info for manual annotations of cluster A:

- Start number 25 was manually annotated 1 time for cluster A.

Info for manual annotations of cluster A12:

- Start number 24 was manually annotated 3 times for cluster A12.
- Start number 26 was manually annotated 1 time for cluster A12.

Info for manual annotations of cluster A14:

- Start number 24 was manually annotated 4 times for cluster A14.

Info for manual annotations of cluster A16:

- Start number 12 was manually annotated 1 time for cluster A16.
- Start number 24 was manually annotated 2 times for cluster A16.

Info for manual annotations of cluster A2:

- Start number 26 was manually annotated 2 times for cluster A2.

Info for manual annotations of cluster A6:

- Start number 16 was manually annotated 4 times for cluster A6.
- Start number 21 was manually annotated 1 time for cluster A6.
- Start number 24 was manually annotated 37 times for cluster A6.

Info for manual annotations of cluster A8:

- Start number 24 was manually annotated 1 time for cluster A8.

Info for manual annotations of cluster A9:

- Start number 21 was manually annotated 1 time for cluster A9.
- Start number 22 was manually annotated 4 times for cluster A9.
- Start number 23 was manually annotated 1 time for cluster A9.
- Start number 24 was manually annotated 1 time for cluster A9.

Info for manual annotations of cluster CB:

- Start number 18 was manually annotated 1 time for cluster CB.
- Start number 21 was manually annotated 2 times for cluster CB.

Info for manual annotations of cluster CT:

- Start number 11 was manually annotated 12 times for cluster CT.

Info for manual annotations of cluster M1:

- Start number 24 was manually annotated 13 times for cluster M1.

Info for manual annotations of cluster M3:

- Start number 24 was manually annotated 1 time for cluster M3.

**Gene Information:**

Gene: Artemis2UCLA\_70 Start: 40238, Stop: 40059, Start Num: 24

Candidate Starts for Artemis2UCLA\_70:

(Start: 24 @40238 has 62 MA's), (33, 40205),

Gene: Atuin\_162 Start: 110180, Stop: 110365, Start Num: 20

Candidate Starts for Atuin\_162:

(20, 110180), (51, 110309), (53, 110315),

Gene: Auspice\_53 Start: 38208, Stop: 38381, Start Num: 24

Candidate Starts for Auspice\_53:

(Start: 24 @38208 has 62 MA's), (31, 38232), (43, 38280), (46, 38298),

Gene: BABullseye\_62 Start: 37899, Stop: 37726, Start Num: 24

Candidate Starts for BABullseye\_62:

(Start: 24 @37899 has 62 MA's), (33, 37872), (51, 37788),

Gene: Bavilard\_39 Start: 28599, Stop: 28390, Start Num: 11

Candidate Starts for Bavilard\_39:

(10, 28602), (Start: 11 @28599 has 12 MA's), (Start: 24 @28563 has 62 MA's), (33, 28530), (57, 28431), (62, 28416),

Gene: BigChungus\_39 Start: 28782, Stop: 28576, Start Num: 11

Candidate Starts for BigChungus\_39:

(Start: 11 @28782 has 12 MA's), (33, 28716), (53, 28626), (57, 28617), (62, 28602),



Gene: BlessJoy\_69 Start: 40664, Stop: 40485, Start Num: 24

Candidate Starts for BlessJoy\_69:

(Start: 24 @40664 has 62 MA's), (33, 40631),

Gene: Blinn1\_71 Start: 39967, Stop: 39776, Start Num: 21

Candidate Starts for Blinn1\_71:

(4, 40087), (Start: 21 @39967 has 4 MA's), (39, 39910), (42, 39892),

Gene: Blue7\_71 Start: 40393, Stop: 40187, Start Num: 16

Candidate Starts for Blue7\_71:

(6, 40483), (10, 40411), (Start: 12 @40405 has 1 MA's), (Start: 16 @40393 has 4 MA's), (Start: 24 @40366 has 62 MA's), (33, 40333),

Gene: BogosyJay\_70 Start: 41590, Stop: 41414, Start Num: 22

Candidate Starts for BogosyJay\_70:

(Start: 22 @41590 has 4 MA's), (41, 41524),

Gene: Bongo\_53 Start: 38212, Stop: 38385, Start Num: 24

Candidate Starts for Bongo\_53:

(Start: 24 @38212 has 62 MA's), (31, 38236), (43, 38284), (46, 38302),

Gene: Bricole\_53 Start: 38194, Stop: 38367, Start Num: 24

Candidate Starts for Bricole\_53:

(Start: 24 @38194 has 62 MA's), (31, 38218), (43, 38266), (46, 38284),

Gene: Candra\_67 Start: 40269, Stop: 40090, Start Num: 24

Candidate Starts for Candra\_67:

(8, 40371), (10, 40314), (Start: 12 @40308 has 1 MA's), (Start: 16 @40296 has 4 MA's), (Start: 24 @40269 has 62 MA's), (33, 40236),

Gene: Cardigan\_136 Start: 76837, Stop: 77085, Start Num: 13

Candidate Starts for Cardigan\_136:

(2, 76651), (13, 76837), (27, 76879), (49, 76984), (59, 77008), (63, 77029), (66, 77038),

Gene: Chargerpower\_65 Start: 39591, Stop: 39409, Start Num: 25

Candidate Starts for Chargerpower\_65:

(Start: 25 @39591 has 1 MA's), (33, 39561), (35, 39555),

Gene: Chartreuse\_66 Start: 39579, Stop: 39406, Start Num: 24

Candidate Starts for Chartreuse\_66:

(Start: 24 @39579 has 62 MA's), (33, 39552),

Gene: CherryonLim\_41 Start: 29932, Stop: 29723, Start Num: 11

Candidate Starts for CherryonLim\_41:

(10, 29935), (Start: 11 @29932 has 12 MA's), (Start: 24 @29896 has 62 MA's), (29, 29875), (33, 29863), (53, 29773), (57, 29764), (62, 29749),

Gene: CloudWang3\_71 Start: 40750, Stop: 40571, Start Num: 24

Candidate Starts for CloudWang3\_71:

(Start: 24 @40750 has 62 MA's), (33, 40717),

Gene: Colin\_66 Start: 42014, Stop: 41838, Start Num: 26

Candidate Starts for Colin\_66:  
(Start: 26 @42014 has 3 MA's), (33, 41987), (44, 41942), (53, 41897),

Gene: Cookiedough\_69 Start: 40207, Stop: 40034, Start Num: 24  
Candidate Starts for Cookiedough\_69:  
(Start: 24 @40207 has 62 MA's), (33, 40180),

Gene: DaVinci\_67 Start: 39633, Stop: 39460, Start Num: 24  
Candidate Starts for DaVinci\_67:  
(Start: 24 @39633 has 62 MA's), (33, 39606),

Gene: DarthPhader\_65 Start: 42262, Stop: 42065, Start Num: 24  
Candidate Starts for DarthPhader\_65:  
(Start: 24 @42262 has 62 MA's), (29, 42241), (33, 42229), (57, 42130),

Gene: Diminimus\_54 Start: 38207, Stop: 38380, Start Num: 24  
Candidate Starts for Diminimus\_54:  
(Start: 24 @38207 has 62 MA's), (31, 38231), (43, 38279), (46, 38297),

Gene: Dorothea\_69 Start: 40205, Stop: 40032, Start Num: 24  
Candidate Starts for Dorothea\_69:  
(Start: 24 @40205 has 62 MA's), (33, 40178),

Gene: Dulcita\_54 Start: 38208, Stop: 38381, Start Num: 24  
Candidate Starts for Dulcita\_54:  
(Start: 24 @38208 has 62 MA's), (31, 38232), (43, 38280), (46, 38298),

Gene: DunneganBoMo\_160 Start: 107120, Stop: 107278, Start Num: 28  
Candidate Starts for DunneganBoMo\_160:  
(14, 107075), (28, 107120),

Gene: EagleEye\_72 Start: 41949, Stop: 41728, Start Num: 12  
Candidate Starts for EagleEye\_72:  
(3, 42111), (Start: 12 @41949 has 1 MA's), (Start: 24 @41910 has 62 MA's), (29, 41889), (33, 41877),  
(48, 41802),

Gene: Elephantoon\_69 Start: 40932, Stop: 40738, Start Num: 22  
Candidate Starts for Elephantoon\_69:  
(Start: 22 @40932 has 4 MA's), (32, 40902), (33, 40899),

Gene: Elinal\_43 Start: 29167, Stop: 28958, Start Num: 11  
Candidate Starts for Elinal\_43:  
(10, 29170), (Start: 11 @29167 has 12 MA's), (Start: 24 @29131 has 62 MA's), (33, 29098), (57,  
28999), (62, 28984),

Gene: Ellewin\_159 Start: 107224, Stop: 107382, Start Num: 28  
Candidate Starts for Ellewin\_159:  
(14, 107179), (28, 107224), (38, 107260),

Gene: EricB\_68 Start: 40226, Stop: 40047, Start Num: 24  
Candidate Starts for EricB\_68:  
(8, 40328), (10, 40271), (Start: 12 @40265 has 1 MA's), (Start: 16 @40253 has 4 MA's), (Start: 24  
@40226 has 62 MA's), (33, 40193),

Gene: Feastonyeet\_39 Start: 28782, Stop: 28576, Start Num: 11  
Candidate Starts for Feastonyeet\_39:  
(Start: 11 @28782 has 12 MA's), (33, 28716), (53, 28626), (57, 28617), (62, 28602),

Gene: FreakyGoo\_54 Start: 38208, Stop: 38381, Start Num: 24  
Candidate Starts for FreakyGoo\_54:  
(Start: 24 @38208 has 62 MA's), (31, 38232), (43, 38280), (46, 38298),

Gene: Gail\_69 Start: 42059, Stop: 41856, Start Num: 24  
Candidate Starts for Gail\_69:  
(Start: 24 @42059 has 62 MA's), (33, 42026), (47, 41963), (53, 41936), (55, 41930),

Gene: Garak\_71 Start: 40605, Stop: 40426, Start Num: 24  
Candidate Starts for Garak\_71:  
(Start: 24 @40605 has 62 MA's), (33, 40572),

Gene: Gladiator\_67 Start: 39830, Stop: 39651, Start Num: 24  
Candidate Starts for Gladiator\_67:  
(Start: 24 @39830 has 62 MA's), (33, 39797),

Gene: Glaske16\_54 Start: 38207, Stop: 38380, Start Num: 24  
Candidate Starts for Glaske16\_54:  
(Start: 24 @38207 has 62 MA's), (31, 38231), (43, 38279), (46, 38297),

Gene: GoldenEssence\_152 Start: 104838, Stop: 104999, Start Num: 24  
Candidate Starts for GoldenEssence\_152:  
(Start: 24 @104838 has 62 MA's), (33, 104871), (37, 104883), (40, 104892), (52, 104952), (56, 104964), (58, 104967), (60, 104970), (64, 104985),

Gene: Grayson\_172 Start: 92452, Stop: 92664, Start Num: 21  
Candidate Starts for Grayson\_172:  
(Start: 21 @92452 has 4 MA's),

Gene: GreedyLawyer\_66 Start: 40199, Stop: 40020, Start Num: 24  
Candidate Starts for GreedyLawyer\_66:  
(8, 40301), (10, 40244), (Start: 12 @40238 has 1 MA's), (Start: 16 @40226 has 4 MA's), (Start: 24 @40199 has 62 MA's), (33, 40166),

Gene: Gruunaga\_70 Start: 40563, Stop: 40384, Start Num: 24  
Candidate Starts for Gruunaga\_70:  
(6, 40680), (10, 40608), (Start: 12 @40602 has 1 MA's), (Start: 16 @40590 has 4 MA's), (Start: 24 @40563 has 62 MA's), (33, 40530),

Gene: Hammer\_70 Start: 40170, Stop: 39991, Start Num: 24  
Candidate Starts for Hammer\_70:  
(Start: 24 @40170 has 62 MA's), (33, 40137),

Gene: Helmet\_71 Start: 40605, Stop: 40426, Start Num: 24  
Candidate Starts for Helmet\_71:  
(Start: 24 @40605 has 62 MA's), (33, 40572),

Gene: Hexamo\_70 Start: 40235, Stop: 40056, Start Num: 24

Candidate Starts for Hexamo\_70:  
(Start: 24 @40235 has 62 MA's), (33, 40202),

Gene: Hoot\_64 Start: 38084, Stop: 37905, Start Num: 24  
Candidate Starts for Hoot\_64:  
(8, 38186), (10, 38129), (Start: 12 @38123 has 1 MA's), (Start: 16 @38111 has 4 MA's), (Start: 24 @38084 has 62 MA's), (33, 38051),

Gene: IPhone7\_53 Start: 38212, Stop: 38385, Start Num: 24  
Candidate Starts for IPhone7\_53:  
(Start: 24 @38212 has 62 MA's), (31, 38236), (43, 38284), (46, 38302),

Gene: IdentityCrisis\_47 Start: 31026, Stop: 31214, Start Num: 17  
Candidate Starts for IdentityCrisis\_47:  
(Start: 17 @31026 has 1 MA's), (29, 31071), (33, 31083), (36, 31092), (37, 31095), (50, 31164), (57, 31182), (61, 31194),

Gene: Indra\_73 Start: 40606, Stop: 40427, Start Num: 24  
Candidate Starts for Indra\_73:  
(Start: 24 @40606 has 62 MA's), (33, 40573),

Gene: Isiphiwo\_67 Start: 39765, Stop: 39586, Start Num: 24  
Candidate Starts for Isiphiwo\_67:  
(Start: 24 @39765 has 62 MA's), (33, 39732),

Gene: Izel\_53 Start: 38207, Stop: 38380, Start Num: 24  
Candidate Starts for Izel\_53:  
(Start: 24 @38207 has 62 MA's), (31, 38231), (43, 38279), (46, 38297),

Gene: Jeeves\_71 Start: 41042, Stop: 40869, Start Num: 24  
Candidate Starts for Jeeves\_71:  
(7, 41156), (Start: 16 @41069 has 4 MA's), (Start: 24 @41042 has 62 MA's), (30, 41018), (33, 41009), (35, 41003), (38, 40991),

Gene: Jeffabunny\_70 Start: 40232, Stop: 40053, Start Num: 24  
Candidate Starts for Jeffabunny\_70:  
(Start: 24 @40232 has 62 MA's), (33, 40199),

Gene: JewelBug\_69 Start: 40499, Stop: 40326, Start Num: 24  
Candidate Starts for JewelBug\_69:  
(Start: 24 @40499 has 62 MA's), (33, 40472),

Gene: Jordennis\_68 Start: 39980, Stop: 39807, Start Num: 24  
Candidate Starts for Jordennis\_68:  
(Start: 24 @39980 has 62 MA's), (33, 39953), (51, 39869),

Gene: KSunshine22\_158 Start: 108183, Stop: 108341, Start Num: 28  
Candidate Starts for KSunshine22\_158:  
(14, 108138), (28, 108183), (38, 108219),

Gene: Kalpine\_67 Start: 42195, Stop: 42019, Start Num: 26  
Candidate Starts for Kalpine\_67:  
(Start: 26 @42195 has 3 MA's), (44, 42123),

Gene: KayGee\_41 Start: 29167, Stop: 28958, Start Num: 11

Candidate Starts for KayGee\_41:

(10, 29170), (Start: 11 @29167 has 12 MA's), (Start: 24 @29131 has 62 MA's), (33, 29098), (57, 28999), (62, 28984),

Gene: Kazan\_70 Start: 40266, Stop: 40060, Start Num: 16

Candidate Starts for Kazan\_70:

(8, 40341), (10, 40284), (Start: 12 @40278 has 1 MA's), (Start: 16 @40266 has 4 MA's), (Start: 24 @40239 has 62 MA's), (33, 40206),

Gene: Kipper29\_69 Start: 40252, Stop: 40073, Start Num: 24

Candidate Starts for Kipper29\_69:

(8, 40354), (10, 40297), (Start: 12 @40291 has 1 MA's), (Start: 16 @40279 has 4 MA's), (Start: 24 @40252 has 62 MA's), (33, 40219),

Gene: Koko\_72 Start: 41090, Stop: 40911, Start Num: 24

Candidate Starts for Koko\_72:

(Start: 24 @41090 has 62 MA's), (33, 41057),

Gene: Lauer\_36 Start: 29997, Stop: 29788, Start Num: 11

Candidate Starts for Lauer\_36:

(10, 30000), (Start: 11 @29997 has 12 MA's), (Start: 24 @29961 has 62 MA's), (29, 29940), (33, 29928), (53, 29838), (57, 29829), (62, 29814),

Gene: LeoJr\_166 Start: 110788, Stop: 110976, Start Num: 20

Candidate Starts for LeoJr\_166:

(20, 110788), (27, 110809),

Gene: Lilbunny\_69 Start: 40236, Stop: 40057, Start Num: 24

Candidate Starts for Lilbunny\_69:

(Start: 24 @40236 has 62 MA's), (33, 40203),

Gene: LilhomieP\_52 Start: 38212, Stop: 38385, Start Num: 24

Candidate Starts for LilhomieP\_52:

(Start: 24 @38212 has 62 MA's), (31, 38236), (43, 38284), (46, 38302),

Gene: Lilleskat\_67 Start: 41392, Stop: 41216, Start Num: 21

Candidate Starts for Lilleskat\_67:

(Start: 21 @41392 has 4 MA's), (41, 41326),

Gene: LoneWolf\_70 Start: 41439, Stop: 41263, Start Num: 22

Candidate Starts for LoneWolf\_70:

(Start: 22 @41439 has 4 MA's), (41, 41373),

Gene: Luchador\_70 Start: 42522, Stop: 42328, Start Num: 24

Candidate Starts for Luchador\_70:

(Start: 24 @42522 has 62 MA's), (33, 42489), (41, 42462), (47, 42426), (53, 42399), (55, 42393),

Gene: Lucyedi\_71 Start: 42106, Stop: 41924, Start Num: 24

Candidate Starts for Lucyedi\_71:

(3, 42307), (Start: 12 @42145 has 1 MA's), (Start: 24 @42106 has 62 MA's), (29, 42085), (33, 42073), (48, 41998),

Gene: Maminiaina\_70 Start: 41572, Stop: 41396, Start Num: 22

Candidate Starts for Maminiaina\_70:

(Start: 22 @41572 has 4 MA's), (41, 41506),

Gene: Mayweather\_43 Start: 29791, Stop: 29582, Start Num: 11

Candidate Starts for Mayweather\_43:

(10, 29794), (Start: 11 @29791 has 12 MA's), (Start: 24 @29755 has 62 MA's), (29, 29734), (33, 29722), (53, 29632), (57, 29623), (62, 29608),

Gene: McFly\_69 Start: 40192, Stop: 40019, Start Num: 24

Candidate Starts for McFly\_69:

(Start: 24 @40192 has 62 MA's), (33, 40165),

Gene: Nanosmite\_58 Start: 39866, Stop: 40042, Start Num: 24

Candidate Starts for Nanosmite\_58:

(5, 39743), (Start: 24 @39866 has 62 MA's), (34, 39902), (46, 39959), (53, 39998),

Gene: Neeharika16\_68 Start: 39659, Stop: 39486, Start Num: 24

Candidate Starts for Neeharika16\_68:

(Start: 24 @39659 has 62 MA's), (33, 39632),

Gene: Newrala\_69 Start: 40200, Stop: 40021, Start Num: 24

Candidate Starts for Newrala\_69:

(8, 40302), (10, 40245), (Start: 12 @40239 has 1 MA's), (Start: 16 @40227 has 4 MA's), (Start: 24 @40200 has 62 MA's), (33, 40167),

Gene: PainterBoy\_70 Start: 41815, Stop: 41633, Start Num: 24

Candidate Starts for PainterBoy\_70:

(3, 42016), (Start: 12 @41854 has 1 MA's), (Start: 24 @41815 has 62 MA's), (29, 41794), (33, 41782), (48, 41707),

Gene: Patbob\_164 Start: 111552, Stop: 111728, Start Num: 24

Candidate Starts for Patbob\_164:

(Start: 24 @111552 has 62 MA's), (67, 111717),

Gene: PegLeg\_53 Start: 38211, Stop: 38384, Start Num: 24

Candidate Starts for PegLeg\_53:

(Start: 24 @38211 has 62 MA's), (31, 38235), (43, 38283), (46, 38301),

Gene: Peregrin\_170 Start: 91883, Stop: 92095, Start Num: 21

Candidate Starts for Peregrin\_170:

(Start: 21 @91883 has 4 MA's),

Gene: Pharaoh\_65 Start: 41502, Stop: 41326, Start Num: 26

Candidate Starts for Pharaoh\_65:

(Start: 26 @41502 has 3 MA's), (33, 41475),

Gene: Pmask\_68 Start: 40195, Stop: 40022, Start Num: 24

Candidate Starts for Pmask\_68:

(Start: 24 @40195 has 62 MA's), (33, 40168),

Gene: Pons\_41 Start: 29139, Stop: 28933, Start Num: 11

Candidate Starts for Pons\_41:

(Start: 11 @29139 has 12 MA's), (33, 29073), (47, 29010), (53, 28983), (57, 28974), (62, 28959),

Gene: PotPie\_40 Start: 30073, Stop: 29867, Start Num: 11

Candidate Starts for PotPie\_40:

(Start: 11 @30073 has 12 MA's), (33, 30007), (53, 29917), (57, 29908), (62, 29893),

Gene: Priamo\_71 Start: 40046, Stop: 39873, Start Num: 24

Candidate Starts for Priamo\_71:

(Start: 24 @40046 has 62 MA's), (33, 40019),

Gene: Rahalelujah\_69 Start: 41050, Stop: 40859, Start Num: 24

Candidate Starts for Rahalelujah\_69:

(Start: 24 @41050 has 62 MA's), (32, 41020), (33, 41017), (42, 40975), (51, 40921), (54, 40912),

Gene: Refuge\_65 Start: 42312, Stop: 42115, Start Num: 24

Candidate Starts for Refuge\_65:

(Start: 24 @42312 has 62 MA's), (29, 42291), (33, 42279), (57, 42180),

Gene: ReginaGlobina\_169 Start: 112062, Stop: 112247, Start Num: 20

Candidate Starts for ReginaGlobina\_169:

(20, 112062), (51, 112191), (53, 112197),

Gene: Reindeer\_55 Start: 39414, Stop: 39587, Start Num: 24

Candidate Starts for Reindeer\_55:

(5, 39291), (Start: 24 @39414 has 62 MA's), (45, 39501), (46, 39504),

Gene: Rifter\_70 Start: 39766, Stop: 39587, Start Num: 24

Candidate Starts for Rifter\_70:

(Start: 24 @39766 has 62 MA's), (33, 39733),

Gene: Roksolana\_71 Start: 40600, Stop: 40421, Start Num: 24

Candidate Starts for Roksolana\_71:

(6, 40717), (10, 40645), (Start: 12 @40639 has 1 MA's), (Start: 16 @40627 has 4 MA's), (Start: 24 @40600 has 62 MA's), (33, 40567),

Gene: SheaKeira\_65 Start: 40520, Stop: 40344, Start Num: 21

Candidate Starts for SheaKeira\_65:

(1, 40793), (Start: 21 @40520 has 4 MA's), (39, 40469), (41, 40454),

Gene: SheckWes\_42 Start: 28660, Stop: 28454, Start Num: 11

Candidate Starts for SheckWes\_42:

(Start: 11 @28660 has 12 MA's), (33, 28594), (53, 28504), (57, 28495), (62, 28480),

Gene: Skinny\_54 Start: 38641, Stop: 38814, Start Num: 24

Candidate Starts for Skinny\_54:

(Start: 24 @38641 has 62 MA's), (31, 38665), (43, 38713), (46, 38731),

Gene: SlimJimmy\_52 Start: 38195, Stop: 38368, Start Num: 24

Candidate Starts for SlimJimmy\_52:

(Start: 24 @38195 has 62 MA's), (31, 38219), (43, 38267), (46, 38285),

Gene: SmellyB\_69 Start: 40260, Stop: 40054, Start Num: 16

Candidate Starts for SmellyB\_69:

(8, 40335), (10, 40278), (Start: 12 @40272 has 1 MA's), (Start: 16 @40260 has 4 MA's), (Start: 24 @40233 has 62 MA's), (33, 40200),

Gene: SororFago\_69 Start: 42242, Stop: 42048, Start Num: 24

Candidate Starts for SororFago\_69:

(Start: 24 @42242 has 62 MA's), (33, 42209), (47, 42146), (53, 42119), (55, 42113),

Gene: Stephig9\_72 Start: 40770, Stop: 40612, Start Num: 24

Candidate Starts for Stephig9\_72:

(Start: 24 @40770 has 62 MA's), (36, 40728), (46, 40686), (57, 40641), (61, 40629), (62, 40626),

Gene: SummitAcademy\_39 Start: 28702, Stop: 28496, Start Num: 11

Candidate Starts for SummitAcademy\_39:

(Start: 11 @28702 has 12 MA's), (33, 28636), (53, 28546), (57, 28537), (62, 28522),

Gene: Sunhee\_70 Start: 40582, Stop: 40388, Start Num: 24

Candidate Starts for Sunhee\_70:

(6, 40693), (Start: 16 @40603 has 4 MA's), (Start: 24 @40582 has 62 MA's), (47, 40486), (55, 40453),

Gene: SuperAwesome\_69 Start: 40265, Stop: 40059, Start Num: 16

Candidate Starts for SuperAwesome\_69:

(8, 40340), (10, 40283), (Start: 12 @40277 has 1 MA's), (Start: 16 @40265 has 4 MA's), (Start: 24 @40238 has 62 MA's), (33, 40205),

Gene: SuperCallie99\_66 Start: 40079, Stop: 39906, Start Num: 24

Candidate Starts for SuperCallie99\_66:

(Start: 24 @40079 has 62 MA's), (33, 40052),

Gene: Temprado\_71 Start: 40605, Stop: 40426, Start Num: 24

Candidate Starts for Temprado\_71:

(Start: 24 @40605 has 62 MA's), (33, 40572),

Gene: ToneTone\_67 Start: 40165, Stop: 39986, Start Num: 24

Candidate Starts for ToneTone\_67:

(Start: 24 @40165 has 62 MA's), (33, 40132),

Gene: Towmatter\_110 Start: 68561, Stop: 68797, Start Num: 15

Candidate Starts for Towmatter\_110:

(15, 68561), (35, 68630), (36, 68633),

Gene: Trixie\_66 Start: 41830, Stop: 41654, Start Num: 26

Candidate Starts for Trixie\_66:

(Start: 26 @41830 has 3 MA's), (44, 41758), (53, 41713),

Gene: Tucker\_70 Start: 40368, Stop: 40189, Start Num: 24

Candidate Starts for Tucker\_70:

(Start: 24 @40368 has 62 MA's), (33, 40335),

Gene: TyDawg\_53 Start: 38212, Stop: 38385, Start Num: 24

Candidate Starts for TyDawg\_53:

(Start: 24 @38212 has 62 MA's), (31, 38236), (43, 38284), (46, 38302),



Gene: Vine\_42 Start: 29438, Stop: 29232, Start Num: 11

Candidate Starts for Vine\_42:

(Start: 11 @29438 has 12 MA's), (33, 29372), (53, 29282), (57, 29273), (62, 29258),

Gene: VohminGhazi\_69 Start: 40234, Stop: 40055, Start Num: 24

Candidate Starts for VohminGhazi\_69:

(8, 40336), (10, 40279), (Start: 12 @40273 has 1 MA's), (Start: 16 @40261 has 4 MA's), (Start: 24 @40234 has 62 MA's), (33, 40201),

Gene: WaddleDee\_159 Start: 106306, Stop: 106464, Start Num: 28

Candidate Starts for WaddleDee\_159:

(14, 106261), (28, 106306),

Gene: Weasels2\_176 Start: 96304, Stop: 96510, Start Num: 18

Candidate Starts for Weasels2\_176:

(Start: 18 @96304 has 1 MA's),

Gene: Wiks\_69 Start: 40236, Stop: 40057, Start Num: 24

Candidate Starts for Wiks\_69:

(Start: 24 @40236 has 62 MA's), (33, 40203),

Gene: WunderPhul\_70 Start: 40234, Stop: 40055, Start Num: 24

Candidate Starts for WunderPhul\_70:

(Start: 24 @40234 has 62 MA's), (33, 40201),

Gene: Yappy\_17 Start: 5650, Stop: 5847, Start Num: 19

Candidate Starts for Yappy\_17:

(9, 5620), (Start: 19 @5650 has 1 MA's), (33, 5698), (38, 5716), (46, 5749), (49, 5776), (57, 5797), (65, 5821), (67, 5833),

Gene: Yecey3\_72 Start: 41315, Stop: 41127, Start Num: 23

Candidate Starts for Yecey3\_72:

(Start: 23 @41315 has 1 MA's), (33, 41282),

Gene: Yokurt\_69 Start: 40236, Stop: 40057, Start Num: 24

Candidate Starts for Yokurt\_69:

(Start: 24 @40236 has 62 MA's), (33, 40203),

Gene: Yucky\_43 Start: 29378, Stop: 29172, Start Num: 11

Candidate Starts for Yucky\_43:

(Start: 11 @29378 has 12 MA's), (33, 29312), (53, 29222), (57, 29213), (62, 29198),

Gene: Zaka\_70 Start: 40236, Stop: 40057, Start Num: 24

Candidate Starts for Zaka\_70:

(Start: 24 @40236 has 62 MA's), (33, 40203),

Gene: Zimmer\_65 Start: 42012, Stop: 41815, Start Num: 24

Candidate Starts for Zimmer\_65:

(6, 42129), (7, 42126), (Start: 24 @42012 has 62 MA's), (33, 41979),

Gene: Zulu\_71 Start: 40614, Stop: 40435, Start Num: 24

Candidate Starts for Zulu\_71:

(Start: 24 @40614 has 62 MA's), (33, 40581),

