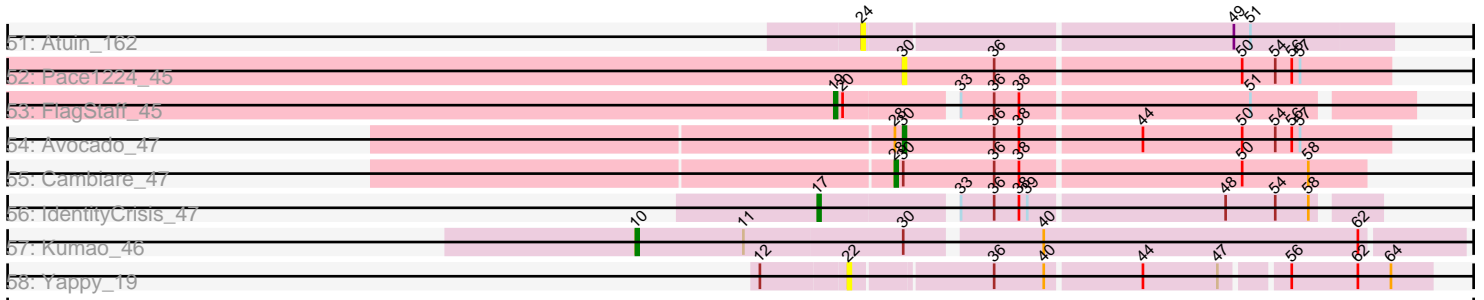


Pham 193861



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 193861 Report

This analysis was run 11/02/24 on database version 579.

Pham number 193861 has 114 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Chargerpower\_65
- Track 2 : Zimmer\_65
- Track 3 : DarthPhader\_65, Refuge\_65
- Track 4 : Pharaoh\_65
- Track 5 : Jeeves\_71
- Track 6 : Luchador\_70
- Track 7 : SororFago\_69
- Track 8 : Sunhee\_70
- Track 9 : Gail\_69
- Track 10 : Lucyedi\_71, PainterBoy\_70
- Track 11 : EagleEye\_72
- Track 12 : Colin\_66
- Track 13 : Trixie\_66
- Track 14 : Kalpine\_67
- Track 15 : Anthony\_66
- Track 16 : Kinmap\_70
- Track 17 : Rifter\_70, Tucker\_70, Hexamo\_70, Jeffabunny\_70, Hammer\_70, Lilbunny\_69, ToneTone\_67, Artemis2UCLA\_70, Zaka\_70, Koko\_72, Yokurt\_69, WunderPhul\_70, Zulu\_71, Gladiator\_67, Wiks\_69, Garak\_71, Helmet\_71, CloudWang3\_71, Indra\_73
- Track 18 : Blue7\_71
- Track 19 : Pmask\_68, Cookiedough\_69, McFly\_69, Isiphiwo\_67, Neeharika16\_68, SuperCallie99\_66, Dorothea\_69, Chartreuse\_66, DaVinci\_67, JewelBug\_69
- Track 20 : SuperAwesome\_69, Kazan\_70, SmellyB\_69
- Track 21 : Jordennis\_68, BABullseye\_62
- Track 22 : VohminGhazi\_69, Hoot\_64, Candra\_67, GreedyLawyer\_66, Newrala\_69, Kipper29\_69, EricB\_68
- Track 23 : Blinn1\_71
- Track 24 : Priamo\_71
- Track 25 : Gruunaga\_70, Roksolana\_71
- Track 26 : NearlyHeadless\_73, Saintus\_68, Dixon\_72
- Track 27 : Roary\_74
- Track 28 : Phillis\_70
- Track 29 : Danforth\_73, Expelliarmus\_70, Astro\_73, Groundhog\_72, Smeadley\_73
- Track 30 : Stephig9\_72
- Track 31 : SheaKeira\_65
- Track 32 : Elephantoon\_69

- Track 33 : BogosyJay\_70, Maminiaina\_70, LoneWolf\_70
- Track 34 : Yecey3\_72
- Track 35 : Lilleskat\_67
- Track 36 : Rahalelujah\_69
- Track 37 : Grayson\_172
- Track 38 : Peregrin\_170
- Track 39 : Weasels2\_176
- Track 40 : PotPie\_40, Vine\_42, SummitAcademy\_39, BigChungus\_39, Feastonyeet\_39
- Track 41 : Yummy\_40, Buttrmilkdreams\_40, Horseradish\_40, MScarn\_41
- Track 42 : SheckWes\_42
- Track 43 : Pons\_41
- Track 44 : Elinal\_43, KayGee\_41
- Track 45 : Lauer\_36, Mayweather\_43
- Track 46 : CherryonLim\_41
- Track 47 : Yvonnetastic\_130
- Track 48 : Cardigan\_136
- Track 49 : JonJames\_134
- Track 50 : Patbob\_164
- Track 51 : Atuin\_162
- Track 52 : Pace1224\_45
- Track 53 : FlagStaff\_45
- Track 54 : Avocado\_47
- Track 55 : Cambiare\_47
- Track 56 : IdentityCrisis\_47
- Track 57 : Kumao\_46
- Track 58 : Yappy\_19

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

The start number called the most often in the published annotations is 30, it was called in 61 of the 101 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

• Artemis2UCLA\_70, Astro\_73, Avocado\_47, BABullseye\_62, Candra\_67, Chartreuse\_66, CloudWang3\_71, Colin\_66, Cookiedough\_69, DaVinci\_67, Danforth\_73, DarthPhader\_65, Dixon\_72, Dorothea\_69, EricB\_68, Expelliarmus\_70, Gail\_69, Garak\_71, Gladiator\_67, GreedyLawyer\_66, Groundhog\_72, Gruunaga\_70, Hammer\_70, Helmet\_71, Hexamo\_70, Hoot\_64, Indra\_73, Isiphiwo\_67, Jeeves\_71, Jeffabunny\_70, JewelBug\_69, Jordennis\_68, Kalpine\_67, Kipper29\_69, Koko\_72, Lilbunny\_69, Luchador\_70, Lucyedi\_71, McFly\_69, NearlyHeadless\_73, Neeharika16\_68, Newrala\_69, Pace1224\_45, PainterBoy\_70, Pharaoh\_65, Phillis\_70, Pmask\_68, Priamo\_71, Refuge\_65, Rifter\_70, Roary\_74, Roksolana\_71, Saintus\_68, Smeadley\_73, SororFago\_69, Stephig9\_72, Sunhee\_70, SuperCallie99\_66, ToneTone\_67, Trixie\_66, Tucker\_70, 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:

• Blue7\_71, Cambiare\_47, Cardigan\_136, EagleEye\_72, JonJames\_134, Kazan\_70, Kumao\_46, SmellyB\_69, SuperAwesome\_69, Yvonnetastic\_130,

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

- Anthony\_66, Atuin\_162, BigChungus\_39, Blinn1\_71, BogosyJay\_70, Buttrmlkdreams\_40, Chargerpower\_65, CherryonLim\_41, Elephantoon\_69, Elinal\_43, Feastonyeet\_39, FlagStaff\_45, Grayson\_172, Horseradish\_40, IdentityCrisis\_47, KayGee\_41, Kinmap\_70, Lauer\_36, Lilleskat\_67, LoneWolf\_70, MScarn\_41, Maminiaina\_70, Mayweather\_43, Patbob\_164, Peregrin\_170, Pons\_41, PotPie\_40, Rahalelujah\_69, SheaKeira\_65, SheckWes\_42, SummitAcademy\_39, Vine\_42, Weasels2\_176, Yappy\_19, Yecey3\_72, Yummy\_40,

### Summary by start number:

Start 10:

- Found in 1 of 114 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 101
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kumao\_46 (singleton),

Start 14:

- Found in 12 of 114 ( 10.5% ) of genes in pham
- Manual Annotations of this start: 12 of 101
- Called 100.0% of time when present
- Phage (with cluster) where this start called: 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),

Start 15:

- Found in 3 of 114 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 2 of 101
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cardigan\_136 (DD), JonJames\_134 (DD), Yvonnetastic\_130 (DD),

Start 16:

- Found in 16 of 114 ( 14.0% ) of genes in pham
- Manual Annotations of this start: 1 of 101
- Called 6.2% of time when present
- Phage (with cluster) where this start called: EagleEye\_72 (A16),

Start 17:

- Found in 1 of 114 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 101
- Called 100.0% of time when present
- Phage (with cluster) where this start called: IdentityCrisis\_47 (singleton),

Start 18:

- Found in 15 of 114 ( 13.2% ) of genes in pham
- Manual Annotations of this start: 4 of 101
- 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 19:

- Found in 1 of 114 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 101
- Called 100.0% of time when present
- Phage (with cluster) where this start called: FlagStaff\_45 (G2),

Start 20:

- Found in 6 of 114 ( 5.3% ) of genes in pham
- Manual Annotations of this start: 4 of 101
- Called 83.3% of time when present
- Phage (with cluster) where this start called: Blinn1\_71 (A6), Lilleskat\_67 (A9), Rahalelujah\_69 (A9), SheaKeira\_65 (A9), Weasels2\_176 (CB),

Start 21:

- Found in 4 of 114 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 4 of 101
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BogosyJay\_70 (A9), Elephantoon\_69 (A9), LoneWolf\_70 (A9), Maminiaina\_70 (A9),

Start 22:

- Found in 1 of 114 ( 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: Yappy\_19 (singleton),

Start 23:

- Found in 5 of 114 ( 4.4% ) of genes in pham
- Manual Annotations of this start: 5 of 101
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Buttrmlkdreams\_40 (CT), Horseradish\_40 (CT), MScarn\_41 (CT), Yecey3\_72 (A9), Yummy\_40 (CT),

Start 24:

- Found in 1 of 114 ( 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: Atuin\_162 (FC),

Start 25:

- Found in 1 of 114 ( 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: Kinmap\_70 (A21),

Start 26:

- Found in 2 of 114 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 2 of 101
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Grayson\_172 (CB), Peregrin\_170 (CB),

Start 28:

- Found in 2 of 114 ( 1.8% ) of genes in pham

- Manual Annotations of this start: 1 of 101
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Cambiare\_47 (G2),

Start 29:

- Found in 1 of 114 ( 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: Patbob\_164 (FC),

Start 30:

- Found in 78 of 114 ( 68.4% ) of genes in pham
- Manual Annotations of this start: 61 of 101
- Called 87.2% of time when present
- Phage (with cluster) where this start called: Artemis2UCLA\_70 (A6), Astro\_73 (A8), Avocado\_47 (G2), BABullseye\_62 (A6), Candra\_67 (A6), Chartreuse\_66 (A6), CloudWang3\_71 (A6), Colin\_66 (A2), Cookiedough\_69 (A6), DaVinci\_67 (A6), Danforth\_73 (A8), DARTHPhader\_65 (A12), Dixon\_72 (A8), Dorothea\_69 (A6), EricB\_68 (A6), Expelliarmus\_70 (A8), Gail\_69 (A14), Garak\_71 (A6), Gladiator\_67 (A6), GreedyLawyer\_66 (A6), Groundhog\_72 (A8), Gruunaga\_70 (A6), Hammer\_70 (A6), Helmet\_71 (A6), Hexamo\_70 (A6), Hoot\_64 (A6), Indra\_73 (A6), Isiphiwo\_67 (A6), Jeeves\_71 (A14), Jeffabunny\_70 (A6), JewelBug\_69 (A6), Jordennis\_68 (A6), Kalpine\_67 (A2), Kipper29\_69 (A6), Koko\_72 (A6), Lilbunny\_69 (A6), Luchador\_70 (A14), Lucyedi\_71 (A16), McFly\_69 (A6), NearlyHeadless\_73 (A8), Neeharika16\_68 (A6), Newrala\_69 (A6), Pace1224\_45 (G2), PainterBoy\_70 (A16), Pharaoh\_65 (A12), Phillis\_70 (A8), Pmask\_68 (A6), Priamo\_71 (A6), Refuge\_65 (A12), Rifter\_70 (A6), Roary\_74 (A8), Roksolana\_71 (A6), Saintus\_68 (A8), Smeadley\_73 (A8), SororFago\_69 (A14), Stephig9\_72 (A8), Sunhee\_70 (A14), SuperCallie99\_66 (A6), ToneTone\_67 (A6), Trixie\_66 (A2), Tucker\_70 (A6), VohminGhazi\_69 (A6), Wiks\_69 (A6), WunderPhul\_70 (A6), Yokurt\_69 (A6), Zaka\_70 (A6), Zimmer\_65 (A12), Zulu\_71 (A6),

Start 31:

- Found in 3 of 114 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 2 of 101
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Anthony\_66 (A20), Chargerpower\_65 (A),

### Summary by clusters:

There are 16 clusters represented in this pham: A, A14, singleton, A16, G2, A12, CB, DD, A21, A20, FC, A6, A9, A8, A2, CT,

Info for manual annotations of cluster A:

- Start number 31 was manually annotated 1 time for cluster A.

Info for manual annotations of cluster A12:

- Start number 30 was manually annotated 4 times for cluster A12.

Info for manual annotations of cluster A14:

- Start number 30 was manually annotated 4 times for cluster A14.

Info for manual annotations of cluster A16:

- Start number 16 was manually annotated 1 time for cluster A16.
- Start number 30 was manually annotated 2 times for cluster A16.

Info for manual annotations of cluster A2:

- Start number 30 was manually annotated 2 times for cluster A2.

Info for manual annotations of cluster A20:

- Start number 31 was manually annotated 1 time for cluster A20.

Info for manual annotations of cluster A6:

- Start number 18 was manually annotated 4 times for cluster A6.
- Start number 20 was manually annotated 1 time for cluster A6.
- Start number 30 was manually annotated 37 times for cluster A6.

Info for manual annotations of cluster A8:

- Start number 30 was manually annotated 11 times for cluster A8.

Info for manual annotations of cluster A9:

- Start number 20 was manually annotated 2 times for cluster A9.
- Start number 21 was manually annotated 4 times for cluster A9.
- Start number 23 was manually annotated 1 time for cluster A9.

Info for manual annotations of cluster CB:

- Start number 20 was manually annotated 1 time for cluster CB.
- Start number 26 was manually annotated 2 times for cluster CB.

Info for manual annotations of cluster CT:

- Start number 14 was manually annotated 12 times for cluster CT.
- Start number 23 was manually annotated 4 times for cluster CT.

Info for manual annotations of cluster DD:

- Start number 15 was manually annotated 2 times for cluster DD.

Info for manual annotations of cluster G2:

- Start number 19 was manually annotated 1 time for cluster G2.
- Start number 28 was manually annotated 1 time for cluster G2.
- Start number 30 was manually annotated 1 time for cluster G2.

**Gene Information:**

Gene: Anthony\_66 Start: 40829, Stop: 40665, Start Num: 31

Candidate Starts for Anthony\_66:

(Start: 31 @40829 has 2 MA's), (36, 40799), (56, 40694),

Gene: Artemis2UCLA\_70 Start: 40238, Stop: 40059, Start Num: 30

Candidate Starts for Artemis2UCLA\_70:

(Start: 30 @40238 has 61 MA's), (36, 40205),



Gene: Astro\_73 Start: 40939, Stop: 40778, Start Num: 30  
Candidate Starts for Astro\_73:  
(Start: 30 @40939 has 61 MA's), (44, 40855), (53, 40810), (57, 40798),

Gene: Atuin\_162 Start: 110180, Stop: 110365, Start Num: 24  
Candidate Starts for Atuin\_162:  
(24, 110180), (49, 110309), (51, 110315),

Gene: Avocado\_47 Start: 37189, Stop: 37362, Start Num: 30  
Candidate Starts for Avocado\_47:  
(Start: 28 @37186 has 1 MA's), (Start: 30 @37189 has 61 MA's), (36, 37222), (38, 37231), (44, 37273), (50, 37309), (54, 37321), (56, 37327), (57, 37330),

Gene: BABullseye\_62 Start: 37899, Stop: 37726, Start Num: 30  
Candidate Starts for BABullseye\_62:  
(Start: 30 @37899 has 61 MA's), (36, 37872), (49, 37788),

Gene: BigChungus\_39 Start: 28782, Stop: 28576, Start Num: 14  
Candidate Starts for BigChungus\_39:  
(Start: 14 @28782 has 12 MA's), (36, 28716), (52, 28626), (55, 28617), (60, 28602),

Gene: Blinn1\_71 Start: 39967, Stop: 39776, Start Num: 20  
Candidate Starts for Blinn1\_71:  
(6, 40087), (Start: 20 @39967 has 4 MA's), (39, 39910), (42, 39892),

Gene: Blue7\_71 Start: 40393, Stop: 40187, Start Num: 18  
Candidate Starts for Blue7\_71:  
(7, 40483), (13, 40411), (Start: 16 @40405 has 1 MA's), (Start: 18 @40393 has 4 MA's), (Start: 30 @40366 has 61 MA's), (36, 40333),

Gene: BogosyJay\_70 Start: 41590, Stop: 41414, Start Num: 21  
Candidate Starts for BogosyJay\_70:  
(Start: 21 @41590 has 4 MA's), (41, 41524),

Gene: Buttrmlkdreams\_40 Start: 27645, Stop: 27442, Start Num: 23  
Candidate Starts for Buttrmlkdreams\_40:  
(3, 27837), (Start: 23 @27645 has 5 MA's), (38, 27585), (41, 27567),

Gene: Cambiare\_47 Start: 37281, Stop: 37448, Start Num: 28  
Candidate Starts for Cambiare\_47:  
(Start: 28 @37281 has 1 MA's), (Start: 30 @37284 has 61 MA's), (36, 37317), (38, 37326), (50, 37404), (58, 37428),

Gene: Candra\_67 Start: 40269, Stop: 40090, Start Num: 30  
Candidate Starts for Candra\_67:  
(9, 40371), (13, 40314), (Start: 16 @40308 has 1 MA's), (Start: 18 @40296 has 4 MA's), (Start: 30 @40269 has 61 MA's), (36, 40236),

Gene: Cardigan\_136 Start: 76837, Stop: 77085, Start Num: 15  
Candidate Starts for Cardigan\_136:  
(2, 76651), (Start: 15 @76837 has 2 MA's), (Start: 30 @76879 has 61 MA's), (47, 76984), (55, 77008), (61, 77029), (63, 77038),

Gene: Chargerpower\_65 Start: 39591, Stop: 39409, Start Num: 31  
Candidate Starts for Chargerpower\_65:  
(Start: 31 @39591 has 2 MA's), (36, 39561), (37, 39555),

Gene: Chartreuse\_66 Start: 39579, Stop: 39406, Start Num: 30  
Candidate Starts for Chartreuse\_66:  
(Start: 30 @39579 has 61 MA's), (36, 39552),

Gene: CherryonLim\_41 Start: 29932, Stop: 29723, Start Num: 14  
Candidate Starts for CherryonLim\_41:  
(13, 29935), (Start: 14 @29932 has 12 MA's), (27, 29896), (33, 29875), (36, 29863), (52, 29773), (55, 29764), (60, 29749),

Gene: CloudWang3\_71 Start: 40750, Stop: 40571, Start Num: 30  
Candidate Starts for CloudWang3\_71:  
(Start: 30 @40750 has 61 MA's), (36, 40717),

Gene: Colin\_66 Start: 42014, Stop: 41838, Start Num: 30  
Candidate Starts for Colin\_66:  
(Start: 30 @42014 has 61 MA's), (36, 41987), (43, 41942), (51, 41897),

Gene: Cookiedough\_69 Start: 40207, Stop: 40034, Start Num: 30  
Candidate Starts for Cookiedough\_69:  
(Start: 30 @40207 has 61 MA's), (36, 40180),

Gene: DaVinci\_67 Start: 39633, Stop: 39460, Start Num: 30  
Candidate Starts for DaVinci\_67:  
(Start: 30 @39633 has 61 MA's), (36, 39606),

Gene: Danforth\_73 Start: 40987, Stop: 40826, Start Num: 30  
Candidate Starts for Danforth\_73:  
(Start: 30 @40987 has 61 MA's), (44, 40903), (53, 40858), (57, 40846),

Gene: DarthPhader\_65 Start: 42262, Stop: 42065, Start Num: 30  
Candidate Starts for DarthPhader\_65:  
(Start: 30 @42262 has 61 MA's), (33, 42241), (36, 42229), (54, 42130),

Gene: Dixon\_72 Start: 40507, Stop: 40346, Start Num: 30  
Candidate Starts for Dixon\_72:  
(Start: 30 @40507 has 61 MA's), (44, 40423), (53, 40378), (57, 40366),

Gene: Dorothea\_69 Start: 40205, Stop: 40032, Start Num: 30  
Candidate Starts for Dorothea\_69:  
(Start: 30 @40205 has 61 MA's), (36, 40178),

Gene: EagleEye\_72 Start: 41949, Stop: 41728, Start Num: 16  
Candidate Starts for EagleEye\_72:  
(4, 42111), (Start: 16 @41949 has 1 MA's), (Start: 30 @41910 has 61 MA's), (33, 41889), (36, 41877), (46, 41802),

Gene: Elephantoon\_69 Start: 40932, Stop: 40738, Start Num: 21  
Candidate Starts for Elephantoon\_69:  
(Start: 21 @40932 has 4 MA's), (32, 40902), (33, 40899),

Gene: Elinal\_43 Start: 29167, Stop: 28958, Start Num: 14

Candidate Starts for Elinal\_43:

(13, 29170), (Start: 14 @29167 has 12 MA's), (27, 29131), (36, 29098), (55, 28999), (60, 28984),

Gene: EricB\_68 Start: 40226, Stop: 40047, Start Num: 30

Candidate Starts for EricB\_68:

(9, 40328), (13, 40271), (Start: 16 @40265 has 1 MA's), (Start: 18 @40253 has 4 MA's), (Start: 30 @40226 has 61 MA's), (36, 40193),

Gene: Expelliarmus\_70 Start: 40711, Stop: 40550, Start Num: 30

Candidate Starts for Expelliarmus\_70:

(Start: 30 @40711 has 61 MA's), (44, 40627), (53, 40582), (57, 40570),

Gene: Feastonyeet\_39 Start: 28782, Stop: 28576, Start Num: 14

Candidate Starts for Feastonyeet\_39:

(Start: 14 @28782 has 12 MA's), (36, 28716), (52, 28626), (55, 28617), (60, 28602),

Gene: FlagStaff\_45 Start: 36055, Stop: 36249, Start Num: 19

Candidate Starts for FlagStaff\_45:

(Start: 19 @36055 has 1 MA's), (Start: 20 @36058 has 4 MA's), (33, 36094), (36, 36106), (38, 36115), (51, 36196),

Gene: Gail\_69 Start: 42059, Stop: 41856, Start Num: 30

Candidate Starts for Gail\_69:

(Start: 30 @42059 has 61 MA's), (36, 42026), (45, 41963), (51, 41936), (53, 41930),

Gene: Garak\_71 Start: 40605, Stop: 40426, Start Num: 30

Candidate Starts for Garak\_71:

(Start: 30 @40605 has 61 MA's), (36, 40572),

Gene: Gladiator\_67 Start: 39830, Stop: 39651, Start Num: 30

Candidate Starts for Gladiator\_67:

(Start: 30 @39830 has 61 MA's), (36, 39797),

Gene: Grayson\_172 Start: 92452, Stop: 92664, Start Num: 26

Candidate Starts for Grayson\_172:

(Start: 26 @92452 has 2 MA's),

Gene: GreedyLawyer\_66 Start: 40199, Stop: 40020, Start Num: 30

Candidate Starts for GreedyLawyer\_66:

(9, 40301), (13, 40244), (Start: 16 @40238 has 1 MA's), (Start: 18 @40226 has 4 MA's), (Start: 30 @40199 has 61 MA's), (36, 40166),

Gene: Groundhog\_72 Start: 40917, Stop: 40756, Start Num: 30

Candidate Starts for Groundhog\_72:

(Start: 30 @40917 has 61 MA's), (44, 40833), (53, 40788), (57, 40776),

Gene: Gruunaga\_70 Start: 40563, Stop: 40384, Start Num: 30

Candidate Starts for Gruunaga\_70:

(7, 40680), (13, 40608), (Start: 16 @40602 has 1 MA's), (Start: 18 @40590 has 4 MA's), (Start: 30 @40563 has 61 MA's), (36, 40530),

Gene: Hammer\_70 Start: 40170, Stop: 39991, Start Num: 30  
Candidate Starts for Hammer\_70:  
(Start: 30 @40170 has 61 MA's), (36, 40137),

Gene: Helmet\_71 Start: 40605, Stop: 40426, Start Num: 30  
Candidate Starts for Helmet\_71:  
(Start: 30 @40605 has 61 MA's), (36, 40572),

Gene: Hexamo\_70 Start: 40235, Stop: 40056, Start Num: 30  
Candidate Starts for Hexamo\_70:  
(Start: 30 @40235 has 61 MA's), (36, 40202),

Gene: Hoot\_64 Start: 38084, Stop: 37905, Start Num: 30  
Candidate Starts for Hoot\_64:  
(9, 38186), (13, 38129), (Start: 16 @38123 has 1 MA's), (Start: 18 @38111 has 4 MA's), (Start: 30 @38084 has 61 MA's), (36, 38051),

Gene: Horseradish\_40 Start: 27173, Stop: 26970, Start Num: 23  
Candidate Starts for Horseradish\_40:  
(3, 27365), (Start: 23 @27173 has 5 MA's), (38, 27113), (41, 27095),

Gene: IdentityCrisis\_47 Start: 31026, Stop: 31214, Start Num: 17  
Candidate Starts for IdentityCrisis\_47:  
(Start: 17 @31026 has 1 MA's), (33, 31071), (36, 31083), (38, 31092), (39, 31095), (48, 31164), (54, 31182), (58, 31194),

Gene: Indra\_73 Start: 40606, Stop: 40427, Start Num: 30  
Candidate Starts for Indra\_73:  
(Start: 30 @40606 has 61 MA's), (36, 40573),

Gene: Isiphiwo\_67 Start: 39765, Stop: 39586, Start Num: 30  
Candidate Starts for Isiphiwo\_67:  
(Start: 30 @39765 has 61 MA's), (36, 39732),

Gene: Jeeves\_71 Start: 41042, Stop: 40869, Start Num: 30  
Candidate Starts for Jeeves\_71:  
(8, 41156), (Start: 18 @41069 has 4 MA's), (Start: 30 @41042 has 61 MA's), (34, 41018), (36, 41009), (37, 41003), (40, 40991),

Gene: Jeffabunny\_70 Start: 40232, Stop: 40053, Start Num: 30  
Candidate Starts for Jeffabunny\_70:  
(Start: 30 @40232 has 61 MA's), (36, 40199),

Gene: JewelBug\_69 Start: 40499, Stop: 40326, Start Num: 30  
Candidate Starts for JewelBug\_69:  
(Start: 30 @40499 has 61 MA's), (36, 40472),

Gene: JonJames\_134 Start: 77470, Stop: 77718, Start Num: 15  
Candidate Starts for JonJames\_134:  
(Start: 15 @77470 has 2 MA's), (Start: 30 @77512 has 61 MA's), (47, 77617), (55, 77641), (61, 77662), (63, 77671),

Gene: Jordennis\_68 Start: 39980, Stop: 39807, Start Num: 30

Candidate Starts for Jordennis\_68:  
(Start: 30 @39980 has 61 MA's), (36, 39953), (49, 39869),

Gene: Kalpine\_67 Start: 42195, Stop: 42019, Start Num: 30  
Candidate Starts for Kalpine\_67:  
(Start: 30 @42195 has 61 MA's), (43, 42123),

Gene: KayGee\_41 Start: 29167, Stop: 28958, Start Num: 14  
Candidate Starts for KayGee\_41:  
(13, 29170), (Start: 14 @29167 has 12 MA's), (27, 29131), (36, 29098), (55, 28999), (60, 28984),

Gene: Kazan\_70 Start: 40266, Stop: 40060, Start Num: 18  
Candidate Starts for Kazan\_70:  
(9, 40341), (13, 40284), (Start: 16 @40278 has 1 MA's), (Start: 18 @40266 has 4 MA's), (Start: 30 @40239 has 61 MA's), (36, 40206),

Gene: Kinmap\_70 Start: 40504, Stop: 40307, Start Num: 25  
Candidate Starts for Kinmap\_70:  
(7, 40609), (25, 40504), (Start: 31 @40489 has 2 MA's), (35, 40468), (39, 40453),

Gene: Kipper29\_69 Start: 40252, Stop: 40073, Start Num: 30  
Candidate Starts for Kipper29\_69:  
(9, 40354), (13, 40297), (Start: 16 @40291 has 1 MA's), (Start: 18 @40279 has 4 MA's), (Start: 30 @40252 has 61 MA's), (36, 40219),

Gene: Koko\_72 Start: 41090, Stop: 40911, Start Num: 30  
Candidate Starts for Koko\_72:  
(Start: 30 @41090 has 61 MA's), (36, 41057),

Gene: Kumao\_46 Start: 37602, Stop: 37892, Start Num: 10  
Candidate Starts for Kumao\_46:  
(Start: 10 @37602 has 1 MA's), (11, 37641), (Start: 30 @37698 has 61 MA's), (40, 37743), (62, 37857),

Gene: Lauer\_36 Start: 29997, Stop: 29788, Start Num: 14  
Candidate Starts for Lauer\_36:  
(13, 30000), (Start: 14 @29997 has 12 MA's), (27, 29961), (33, 29940), (36, 29928), (52, 29838), (55, 29829), (60, 29814),

Gene: Lilbunny\_69 Start: 40236, Stop: 40057, Start Num: 30  
Candidate Starts for Lilbunny\_69:  
(Start: 30 @40236 has 61 MA's), (36, 40203),

Gene: Lilleskat\_67 Start: 41392, Stop: 41216, Start Num: 20  
Candidate Starts for Lilleskat\_67:  
(Start: 20 @41392 has 4 MA's), (41, 41326),

Gene: LoneWolf\_70 Start: 41439, Stop: 41263, Start Num: 21  
Candidate Starts for LoneWolf\_70:  
(Start: 21 @41439 has 4 MA's), (41, 41373),

Gene: Luchador\_70 Start: 42522, Stop: 42328, Start Num: 30  
Candidate Starts for Luchador\_70:

(Start: 30 @42522 has 61 MA's), (36, 42489), (41, 42462), (45, 42426), (51, 42399), (53, 42393),

Gene: Lucyedi\_71 Start: 42106, Stop: 41924, Start Num: 30

Candidate Starts for Lucyedi\_71:

(4, 42307), (Start: 16 @42145 has 1 MA's), (Start: 30 @42106 has 61 MA's), (33, 42085), (36, 42073), (46, 41998),

Gene: MScarn\_41 Start: 27313, Stop: 27110, Start Num: 23

Candidate Starts for MScarn\_41:

(3, 27505), (Start: 23 @27313 has 5 MA's), (38, 27253), (41, 27235),

Gene: Maminiaina\_70 Start: 41572, Stop: 41396, Start Num: 21

Candidate Starts for Maminiaina\_70:

(Start: 21 @41572 has 4 MA's), (41, 41506),

Gene: Mayweather\_43 Start: 29791, Stop: 29582, Start Num: 14

Candidate Starts for Mayweather\_43:

(13, 29794), (Start: 14 @29791 has 12 MA's), (27, 29755), (33, 29734), (36, 29722), (52, 29632), (55, 29623), (60, 29608),

Gene: McFly\_69 Start: 40192, Stop: 40019, Start Num: 30

Candidate Starts for McFly\_69:

(Start: 30 @40192 has 61 MA's), (36, 40165),

Gene: NearlyHeadless\_73 Start: 40753, Stop: 40592, Start Num: 30

Candidate Starts for NearlyHeadless\_73:

(Start: 30 @40753 has 61 MA's), (44, 40669), (53, 40624), (57, 40612),

Gene: Neeharika16\_68 Start: 39659, Stop: 39486, Start Num: 30

Candidate Starts for Neeharika16\_68:

(Start: 30 @39659 has 61 MA's), (36, 39632),

Gene: Newrala\_69 Start: 40200, Stop: 40021, Start Num: 30

Candidate Starts for Newrala\_69:

(9, 40302), (13, 40245), (Start: 16 @40239 has 1 MA's), (Start: 18 @40227 has 4 MA's), (Start: 30 @40200 has 61 MA's), (36, 40167),

Gene: Pace1224\_45 Start: 36103, Stop: 36276, Start Num: 30

Candidate Starts for Pace1224\_45:

(Start: 30 @36103 has 61 MA's), (36, 36136), (50, 36223), (54, 36235), (56, 36241), (57, 36244),

Gene: PainterBoy\_70 Start: 41815, Stop: 41633, Start Num: 30

Candidate Starts for PainterBoy\_70:

(4, 42016), (Start: 16 @41854 has 1 MA's), (Start: 30 @41815 has 61 MA's), (33, 41794), (36, 41782), (46, 41707),

Gene: Patbob\_164 Start: 111552, Stop: 111728, Start Num: 29

Candidate Starts for Patbob\_164:

(29, 111552), (64, 111717),

Gene: Peregrin\_170 Start: 91883, Stop: 92095, Start Num: 26

Candidate Starts for Peregrin\_170:

(Start: 26 @91883 has 2 MA's),

Gene: Pharaoh\_65 Start: 41502, Stop: 41326, Start Num: 30  
Candidate Starts for Pharaoh\_65:  
(Start: 30 @41502 has 61 MA's), (36, 41475),

Gene: Phillis\_70 Start: 40207, Stop: 40049, Start Num: 30  
Candidate Starts for Phillis\_70:  
(5, 40354), (7, 40321), (Start: 30 @40207 has 61 MA's), (50, 40087), (57, 40066), (58, 40063), (59, 40060),

Gene: Pmask\_68 Start: 40195, Stop: 40022, Start Num: 30  
Candidate Starts for Pmask\_68:  
(Start: 30 @40195 has 61 MA's), (36, 40168),

Gene: Pons\_41 Start: 29139, Stop: 28933, Start Num: 14  
Candidate Starts for Pons\_41:  
(Start: 14 @29139 has 12 MA's), (36, 29073), (45, 29010), (52, 28983), (55, 28974), (60, 28959),

Gene: PotPie\_40 Start: 30073, Stop: 29867, Start Num: 14  
Candidate Starts for PotPie\_40:  
(Start: 14 @30073 has 12 MA's), (36, 30007), (52, 29917), (55, 29908), (60, 29893),

Gene: Priamo\_71 Start: 40046, Stop: 39873, Start Num: 30  
Candidate Starts for Priamo\_71:  
(Start: 30 @40046 has 61 MA's), (36, 40019),

Gene: Rahalelujah\_69 Start: 41050, Stop: 40859, Start Num: 20  
Candidate Starts for Rahalelujah\_69:  
(Start: 20 @41050 has 4 MA's), (32, 41020), (33, 41017), (42, 40975), (52, 40921), (55, 40912),

Gene: Refuge\_65 Start: 42312, Stop: 42115, Start Num: 30  
Candidate Starts for Refuge\_65:  
(Start: 30 @42312 has 61 MA's), (33, 42291), (36, 42279), (54, 42180),

Gene: Rifter\_70 Start: 39766, Stop: 39587, Start Num: 30  
Candidate Starts for Rifter\_70:  
(Start: 30 @39766 has 61 MA's), (36, 39733),

Gene: Roary\_74 Start: 40972, Stop: 40811, Start Num: 30  
Candidate Starts for Roary\_74:  
(Start: 30 @40972 has 61 MA's), (44, 40888), (45, 40876), (53, 40843), (57, 40831),

Gene: Roksolana\_71 Start: 40600, Stop: 40421, Start Num: 30  
Candidate Starts for Roksolana\_71:  
(7, 40717), (13, 40645), (Start: 16 @40639 has 1 MA's), (Start: 18 @40627 has 4 MA's), (Start: 30 @40600 has 61 MA's), (36, 40567),

Gene: Saintus\_68 Start: 37637, Stop: 37476, Start Num: 30  
Candidate Starts for Saintus\_68:  
(Start: 30 @37637 has 61 MA's), (44, 37553), (53, 37508), (57, 37496),

Gene: SheaKeira\_65 Start: 40520, Stop: 40344, Start Num: 20  
Candidate Starts for SheaKeira\_65:

(1, 40793), (Start: 20 @40520 has 4 MA's), (39, 40469), (41, 40454),

Gene: SheckWes\_42 Start: 28660, Stop: 28454, Start Num: 14

Candidate Starts for SheckWes\_42:

(Start: 14 @28660 has 12 MA's), (36, 28594), (52, 28504), (55, 28495), (60, 28480),

Gene: Smeadley\_73 Start: 40833, Stop: 40672, Start Num: 30

Candidate Starts for Smeadley\_73:

(Start: 30 @40833 has 61 MA's), (44, 40749), (53, 40704), (57, 40692),

Gene: SmellyB\_69 Start: 40260, Stop: 40054, Start Num: 18

Candidate Starts for SmellyB\_69:

(9, 40335), (13, 40278), (Start: 16 @40272 has 1 MA's), (Start: 18 @40260 has 4 MA's), (Start: 30 @40233 has 61 MA's), (36, 40200),

Gene: SororFago\_69 Start: 42242, Stop: 42048, Start Num: 30

Candidate Starts for SororFago\_69:

(Start: 30 @42242 has 61 MA's), (36, 42209), (45, 42146), (51, 42119), (53, 42113),

Gene: Stephig9\_72 Start: 40770, Stop: 40612, Start Num: 30

Candidate Starts for Stephig9\_72:

(Start: 30 @40770 has 61 MA's), (38, 40728), (44, 40686), (53, 40641), (57, 40629), (58, 40626),

Gene: SummitAcademy\_39 Start: 28702, Stop: 28496, Start Num: 14

Candidate Starts for SummitAcademy\_39:

(Start: 14 @28702 has 12 MA's), (36, 28636), (52, 28546), (55, 28537), (60, 28522),

Gene: Sunhee\_70 Start: 40582, Stop: 40388, Start Num: 30

Candidate Starts for Sunhee\_70:

(7, 40693), (Start: 18 @40603 has 4 MA's), (Start: 30 @40582 has 61 MA's), (45, 40486), (53, 40453),

Gene: SuperAwesome\_69 Start: 40265, Stop: 40059, Start Num: 18

Candidate Starts for SuperAwesome\_69:

(9, 40340), (13, 40283), (Start: 16 @40277 has 1 MA's), (Start: 18 @40265 has 4 MA's), (Start: 30 @40238 has 61 MA's), (36, 40205),

Gene: SuperCallie99\_66 Start: 40079, Stop: 39906, Start Num: 30

Candidate Starts for SuperCallie99\_66:

(Start: 30 @40079 has 61 MA's), (36, 40052),

Gene: ToneTone\_67 Start: 40165, Stop: 39986, Start Num: 30

Candidate Starts for ToneTone\_67:

(Start: 30 @40165 has 61 MA's), (36, 40132),

Gene: Trixie\_66 Start: 41830, Stop: 41654, Start Num: 30

Candidate Starts for Trixie\_66:

(Start: 30 @41830 has 61 MA's), (43, 41758), (51, 41713),

Gene: Tucker\_70 Start: 40368, Stop: 40189, Start Num: 30

Candidate Starts for Tucker\_70:

(Start: 30 @40368 has 61 MA's), (36, 40335),

Gene: Vine\_42 Start: 29438, Stop: 29232, Start Num: 14



Candidate Starts for Vine\_42:

(Start: 14 @29438 has 12 MA's), (36, 29372), (52, 29282), (55, 29273), (60, 29258),

Gene: VohminGhazi\_69 Start: 40234, Stop: 40055, Start Num: 30

Candidate Starts for VohminGhazi\_69:

(9, 40336), (13, 40279), (Start: 16 @40273 has 1 MA's), (Start: 18 @40261 has 4 MA's), (Start: 30 @40234 has 61 MA's), (36, 40201),

Gene: Weasels2\_176 Start: 96304, Stop: 96510, Start Num: 20

Candidate Starts for Weasels2\_176:

(Start: 20 @96304 has 4 MA's),

Gene: Wiks\_69 Start: 40236, Stop: 40057, Start Num: 30

Candidate Starts for Wiks\_69:

(Start: 30 @40236 has 61 MA's), (36, 40203),

Gene: WunderPhul\_70 Start: 40234, Stop: 40055, Start Num: 30

Candidate Starts for WunderPhul\_70:

(Start: 30 @40234 has 61 MA's), (36, 40201),

Gene: Yappy\_19 Start: 5650, Stop: 5847, Start Num: 22

Candidate Starts for Yappy\_19:

(12, 5620), (22, 5650), (36, 5698), (40, 5716), (44, 5749), (47, 5776), (56, 5797), (62, 5821), (64, 5833),

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

Candidate Starts for Yecey3\_72:

(Start: 23 @41315 has 5 MA's), (33, 41282),

Gene: Yokurt\_69 Start: 40236, Stop: 40057, Start Num: 30

Candidate Starts for Yokurt\_69:

(Start: 30 @40236 has 61 MA's), (36, 40203),

Gene: Yummy\_40 Start: 27287, Stop: 27084, Start Num: 23

Candidate Starts for Yummy\_40:

(3, 27479), (Start: 23 @27287 has 5 MA's), (38, 27227), (41, 27209),

Gene: Yvonnetastic\_130 Start: 73750, Stop: 73998, Start Num: 15

Candidate Starts for Yvonnetastic\_130:

(Start: 15 @73750 has 2 MA's), (Start: 30 @73792 has 61 MA's), (47, 73897), (54, 73918), (61, 73942), (63, 73951),

Gene: Zaka\_70 Start: 40236, Stop: 40057, Start Num: 30

Candidate Starts for Zaka\_70:

(Start: 30 @40236 has 61 MA's), (36, 40203),

Gene: Zimmer\_65 Start: 42012, Stop: 41815, Start Num: 30

Candidate Starts for Zimmer\_65:

(7, 42129), (8, 42126), (Start: 30 @42012 has 61 MA's), (36, 41979),

Gene: Zulu\_71 Start: 40614, Stop: 40435, Start Num: 30

Candidate Starts for Zulu\_71:

(Start: 30 @40614 has 61 MA's), (36, 40581),

