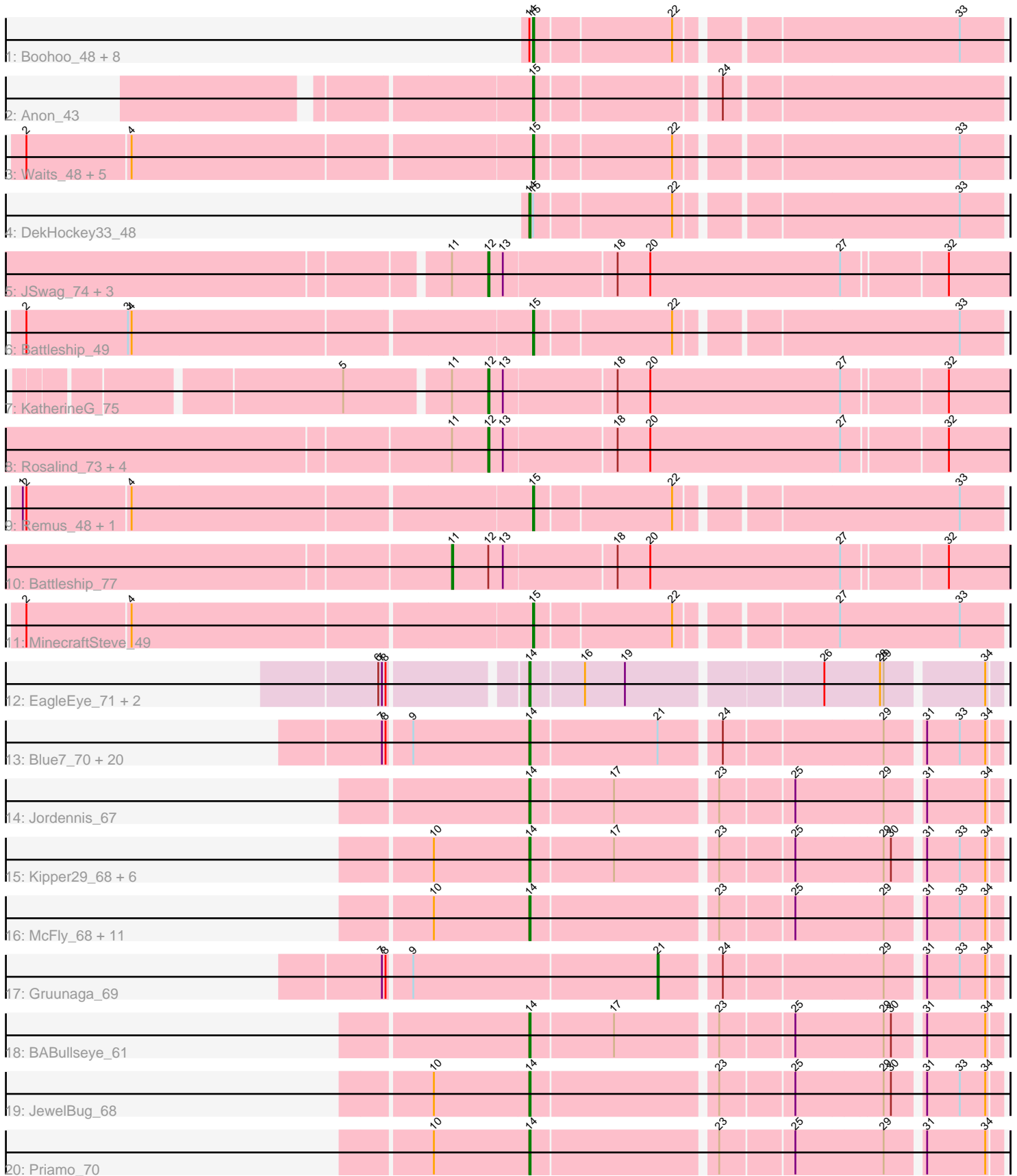


Pham 193943



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 193943 Report

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

Pham number 193943 has 80 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Boohoo\_48, Soups\_48, KatherineG\_49, Anaysia\_48, LastResort\_47, ShayRa\_49, Looper\_48, ReMo\_47, Nebulosus\_47
- Track 2 : Anon\_43
- Track 3 : Waits\_48, Rosalind\_47, Switzerland\_48, JSwag\_47, Oofda\_49, Epsocamisio\_47
- Track 4 : DekHockey33\_48
- Track 5 : JSwag\_74, Nebulosus\_72, MinecraftSteve\_75, Epsocamisio\_71
- Track 6 : Battleship\_49
- Track 7 : KatherineG\_75
- Track 8 : Rosalind\_73, Switzerland\_74, Soups\_75, DekHockey33\_76, ShayRa\_75
- Track 9 : Remus\_48, Strosahl\_48
- Track 10 : Battleship\_77
- Track 11 : MinecraftSteve\_49
- Track 12 : EagleEye\_71, Lucyedi\_70, PainterBoy\_69
- Track 13 : Blue7\_70, ToneTone\_66, Lilbunny\_68, Zaka\_69, Artemis2UCLA\_69, Koko\_71, Hammer\_69, Gladiator\_66, Tucker\_69, Hexamo\_69, Wiks\_68, Indra\_72, Rifter\_69, Roksolana\_70, Yokurt\_68, Helmet\_70, WunderPhul\_69, Garak\_70, Jeffabunny\_69, Zulu\_70, CloudWang3\_70
- Track 14 : Jordennis\_67
- Track 15 : Kipper29\_68, Kazan\_69, EricB\_67, Hoot\_63, VohminGhazi\_68, Candra\_66, SmellyB\_68
- Track 16 : McFly\_68, Isiphiwo\_66, Dorothea\_68, SuperAwesome\_68, Pmask\_67, Chartreuse\_65, Neeharika16\_67, SuperCallie99\_65, Cookiedough\_68, Newrala\_68, DaVinci\_66, GreedyLawyer\_65
- Track 17 : Gruunaga\_69
- Track 18 : BABullseye\_61
- Track 19 : JewelBug\_68
- Track 20 : Priamo\_70

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

The start number called the most often in the published annotations is 14, it was called in 44 of the 75 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Artemis2UCLA\_69, BABullseye\_61, Blue7\_70, Candra\_66, Chartreuse\_65, CloudWang3\_70, Cookiedough\_68, DaVinci\_66, DekHockey33\_48, Dorothea\_68, EagleEye\_71, EricB\_67, Garak\_70, Gladiator\_66, GreedyLawyer\_65, Hammer\_69, Helmet\_70, Hexamo\_69, Hoot\_63, Indra\_72, Isiphiwo\_66, Jeffabunny\_69, JewelBug\_68, Jordennis\_67, Kazan\_69, Kipper29\_68, Koko\_71, Lilbunny\_68, Lucyedi\_70, McFly\_68, Neeharika16\_67, Newrala\_68, PainterBoy\_69, Pmask\_67, Priamo\_70, Rifter\_69, Roksolana\_70, SmellyB\_68, SuperAwesome\_68, SuperCallie99\_65, ToneTone\_66, Tucker\_69, VohminGhazi\_68, Wiks\_68, WunderPhul\_69, Yokurt\_68, Zaka\_69, Zulu\_70,

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

- Anaysia\_48, Boohoo\_48, KatherineG\_49, LastResort\_47, Looper\_48, Nebulosus\_47, ReMo\_47, ShayRa\_49, Soups\_48,

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

- Anon\_43, Battleship\_49, Battleship\_77, DekHockey33\_76, Epsocamisio\_47, Epsocamisio\_71, Gruunaga\_69, JSwag\_47, JSwag\_74, KatherineG\_75, MinecraftSteve\_49, MinecraftSteve\_75, Nebulosus\_72, Oofda\_49, Remus\_48, Rosalind\_47, Rosalind\_73, ShayRa\_75, Soups\_75, Strosahl\_48, Switzerland\_48, Switzerland\_74, Waits\_48,

### Summary by start number:

Start 11:

- Found in 11 of 80 ( 13.8% ) of genes in pham
- Manual Annotations of this start: 1 of 75
- Called 9.1% of time when present
- Phage (with cluster) where this start called: Battleship\_77 (A15),

Start 12:

- Found in 11 of 80 ( 13.8% ) of genes in pham
- Manual Annotations of this start: 10 of 75
- Called 90.9% of time when present
- Phage (with cluster) where this start called: DekHockey33\_76 (A15), Epsocamisio\_71 (A15), JSwag\_74 (A15), KatherineG\_75 (A15), MinecraftSteve\_75 (A15), Nebulosus\_72 (A15), Rosalind\_73 (A15), ShayRa\_75 (A15), Soups\_75 (A15), Switzerland\_74 (A15),

Start 14:

- Found in 57 of 80 ( 71.2% ) of genes in pham
- Manual Annotations of this start: 44 of 75
- Called 84.2% of time when present
- Phage (with cluster) where this start called: Artemis2UCLA\_69 (A6), BABullseye\_61 (A6), Blue7\_70 (A6), Candra\_66 (A6), Chartreuse\_65 (A6), CloudWang3\_70 (A6), Cookiedough\_68 (A6), DaVinci\_66 (A6), DekHockey33\_48 (A15), Dorothea\_68 (A6), EagleEye\_71 (A16), EricB\_67 (A6), Garak\_70 (A6), Gladiator\_66 (A6), GreedyLawyer\_65 (A6), Hammer\_69 (A6), Helmet\_70 (A6), Hexamo\_69 (A6), Hoot\_63 (A6), Indra\_72 (A6), Isiphiwo\_66 (A6), Jeffabunny\_69 (A6), JewelBug\_68 (A6), Jordennis\_67 (A6), Kazan\_69 (A6), Kipper29\_68 (A6), Koko\_71 (A6), Lilbunny\_68 (A6), Lucyedi\_70 (A16), McFly\_68 (A6), Neeharika16\_67 (A6), Newrala\_68 (A6), PainterBoy\_69 (A16), Pmask\_67 (A6), Priamo\_70 (A6), Rifter\_69 (A6), Roksolana\_70 (A6), SmellyB\_68 (A6), SuperAwesome\_68 (A6),

SuperCallie99\_65 (A6), ToneTone\_66 (A6), Tucker\_69 (A6), VohminGhazi\_68 (A6), Wiks\_68 (A6), WunderPhul\_69 (A6), Yokurt\_68 (A6), Zaka\_69 (A6), Zulu\_70 (A6),

Start 15:

- Found in 21 of 80 ( 26.2% ) of genes in pham
- Manual Annotations of this start: 19 of 75
- Called 95.2% of time when present
- Phage (with cluster) where this start called: Anaysia\_48 (A15), Anon\_43 (A15), Battleship\_49 (A15), Boohoo\_48 (A15), Epsocamisio\_47 (A15), JSwag\_47 (A15), KatherineG\_49 (A15), LastResort\_47 (A15), Looper\_48 (A15), MinecraftSteve\_49 (A15), Nebulosus\_47 (A15), Oofda\_49 (A15), ReMo\_47 (A15), Remus\_48 (A15), Rosalind\_47 (A15), ShayRa\_49 (A15), Soups\_48 (A15), Strosahl\_48 (A15), Switzerland\_48 (A15), Waits\_48 (A15),

Start 21:

- Found in 22 of 80 ( 27.5% ) of genes in pham
- Manual Annotations of this start: 1 of 75
- Called 4.5% of time when present
- Phage (with cluster) where this start called: Gruunaga\_69 (A6),

### **Summary by clusters:**

There are 3 clusters represented in this pham: A15, A16, A6,

Info for manual annotations of cluster A15:

- Start number 11 was manually annotated 1 time for cluster A15.
- Start number 12 was manually annotated 10 times for cluster A15.
- Start number 14 was manually annotated 1 time for cluster A15.
- Start number 15 was manually annotated 19 times for cluster A15.

Info for manual annotations of cluster A16:

- Start number 14 was manually annotated 3 times for cluster A16.

Info for manual annotations of cluster A6:

- Start number 14 was manually annotated 40 times for cluster A6.
- Start number 21 was manually annotated 1 time for cluster A6.

### **Gene Information:**

Gene: Anaysia\_48 Start: 30327, Stop: 29968, Start Num: 15

Candidate Starts for Anaysia\_48:

(Start: 14 @30330 has 44 MA's), (Start: 15 @30327 has 19 MA's), (22, 30219), (33, 30003),

Gene: Anon\_43 Start: 29368, Stop: 29009, Start Num: 15

Candidate Starts for Anon\_43:

(Start: 15 @29368 has 19 MA's), (24, 29230),

Gene: Artemis2UCLA\_69 Start: 40044, Stop: 39688, Start Num: 14

Candidate Starts for Artemis2UCLA\_69:

(7, 40161), (8, 40158), (9, 40140), (Start: 14 @40044 has 44 MA's), (Start: 21 @39942 has 1 MA's), (24, 39897), (29, 39774), (31, 39747), (33, 39720), (34, 39699),

Gene: BABullseye\_61 Start: 37712, Stop: 37356, Start Num: 14

Candidate Starts for BABullseye\_61:

(Start: 14 @37712 has 44 MA's), (17, 37646), (23, 37568), (25, 37511), (29, 37442), (30, 37436), (31, 37415), (34, 37367),

Gene: Battleship\_49 Start: 30296, Stop: 29937, Start Num: 15

Candidate Starts for Battleship\_49:

(2, 30701), (3, 30617), (4, 30614), (Start: 15 @30296 has 19 MA's), (22, 30188), (33, 29972),

Gene: Battleship\_77 Start: 41490, Stop: 41044, Start Num: 11

Candidate Starts for Battleship\_77:

(Start: 11 @41490 has 1 MA's), (Start: 12 @41460 has 10 MA's), (13, 41448), (18, 41358), (20, 41331), (27, 41175), (32, 41094),

Gene: Blue7\_70 Start: 40172, Stop: 39816, Start Num: 14

Candidate Starts for Blue7\_70:

(7, 40289), (8, 40286), (9, 40268), (Start: 14 @40172 has 44 MA's), (Start: 21 @40070 has 1 MA's), (24, 40025), (29, 39902), (31, 39875), (33, 39848), (34, 39827),

Gene: Boohoo\_48 Start: 30327, Stop: 29968, Start Num: 15

Candidate Starts for Boohoo\_48:

(Start: 14 @30330 has 44 MA's), (Start: 15 @30327 has 19 MA's), (22, 30219), (33, 30003),

Gene: Candra\_66 Start: 40076, Stop: 39720, Start Num: 14

Candidate Starts for Candra\_66:

(10, 40154), (Start: 14 @40076 has 44 MA's), (17, 40010), (23, 39932), (25, 39875), (29, 39806), (30, 39800), (31, 39779), (33, 39752), (34, 39731),

Gene: Chartreuse\_65 Start: 39392, Stop: 39036, Start Num: 14

Candidate Starts for Chartreuse\_65:

(10, 39470), (Start: 14 @39392 has 44 MA's), (23, 39248), (25, 39191), (29, 39122), (31, 39095), (33, 39068), (34, 39047),

Gene: CloudWang3\_70 Start: 40556, Stop: 40200, Start Num: 14

Candidate Starts for CloudWang3\_70:

(7, 40673), (8, 40670), (9, 40652), (Start: 14 @40556 has 44 MA's), (Start: 21 @40454 has 1 MA's), (24, 40409), (29, 40286), (31, 40259), (33, 40232), (34, 40211),

Gene: Cookiedough\_68 Start: 40020, Stop: 39664, Start Num: 14

Candidate Starts for Cookiedough\_68:

(10, 40098), (Start: 14 @40020 has 44 MA's), (23, 39876), (25, 39819), (29, 39750), (31, 39723), (33, 39696), (34, 39675),

Gene: DaVinci\_66 Start: 39446, Stop: 39090, Start Num: 14

Candidate Starts for DaVinci\_66:

(10, 39524), (Start: 14 @39446 has 44 MA's), (23, 39302), (25, 39245), (29, 39176), (31, 39149), (33, 39122), (34, 39101),

Gene: DekHockey33\_48 Start: 30545, Stop: 30183, Start Num: 14

Candidate Starts for DekHockey33\_48:

(Start: 14 @30545 has 44 MA's), (Start: 15 @30542 has 19 MA's), (22, 30434), (33, 30218),

Gene: DekHockey33\_76 Start: 41545, Stop: 41129, Start Num: 12  
Candidate Starts for DekHockey33\_76:  
(Start: 11 @41575 has 1 MA's), (Start: 12 @41545 has 10 MA's), (13, 41533), (18, 41443), (20, 41416), (27, 41260), (32, 41179),

Gene: Dorothea\_68 Start: 40018, Stop: 39662, Start Num: 14  
Candidate Starts for Dorothea\_68:  
(10, 40096), (Start: 14 @40018 has 44 MA's), (23, 39874), (25, 39817), (29, 39748), (31, 39721), (33, 39694), (34, 39673),

Gene: EagleEye\_71 Start: 41731, Stop: 41372, Start Num: 14  
Candidate Starts for EagleEye\_71:  
(6, 41836), (7, 41833), (8, 41830), (Start: 14 @41731 has 44 MA's), (16, 41689), (19, 41656), (26, 41506), (28, 41461), (29, 41458), (34, 41383),

Gene: Epsocamisio\_71 Start: 40692, Stop: 40276, Start Num: 12  
Candidate Starts for Epsocamisio\_71:  
(Start: 11 @40722 has 1 MA's), (Start: 12 @40692 has 10 MA's), (13, 40680), (18, 40590), (20, 40563), (27, 40407), (32, 40326),

Gene: Epsocamisio\_47 Start: 30101, Stop: 29742, Start Num: 15  
Candidate Starts for Epsocamisio\_47:  
(2, 30503), (4, 30419), (Start: 15 @30101 has 19 MA's), (22, 29993), (33, 29777),

Gene: EricB\_67 Start: 40033, Stop: 39677, Start Num: 14  
Candidate Starts for EricB\_67:  
(10, 40111), (Start: 14 @40033 has 44 MA's), (17, 39967), (23, 39889), (25, 39832), (29, 39763), (30, 39757), (31, 39736), (33, 39709), (34, 39688),

Gene: Garak\_70 Start: 40411, Stop: 40055, Start Num: 14  
Candidate Starts for Garak\_70:  
(7, 40528), (8, 40525), (9, 40507), (Start: 14 @40411 has 44 MA's), (Start: 21 @40309 has 1 MA's), (24, 40264), (29, 40141), (31, 40114), (33, 40087), (34, 40066),

Gene: Gladiator\_66 Start: 39636, Stop: 39280, Start Num: 14  
Candidate Starts for Gladiator\_66:  
(7, 39753), (8, 39750), (9, 39732), (Start: 14 @39636 has 44 MA's), (Start: 21 @39534 has 1 MA's), (24, 39489), (29, 39366), (31, 39339), (33, 39312), (34, 39291),

Gene: GreedyLawyer\_65 Start: 40006, Stop: 39650, Start Num: 14  
Candidate Starts for GreedyLawyer\_65:  
(10, 40084), (Start: 14 @40006 has 44 MA's), (23, 39862), (25, 39805), (29, 39736), (31, 39709), (33, 39682), (34, 39661),

Gene: Gruunaga\_69 Start: 40267, Stop: 40013, Start Num: 21  
Candidate Starts for Gruunaga\_69:  
(7, 40486), (8, 40483), (9, 40465), (Start: 21 @40267 has 1 MA's), (24, 40222), (29, 40099), (31, 40072), (33, 40045), (34, 40024),

Gene: Hammer\_69 Start: 39976, Stop: 39620, Start Num: 14  
Candidate Starts for Hammer\_69:  
(7, 40093), (8, 40090), (9, 40072), (Start: 14 @39976 has 44 MA's), (Start: 21 @39874 has 1 MA's), (24, 39829), (29, 39706), (31, 39679), (33, 39652), (34, 39631),

Gene: Helmet\_70 Start: 40411, Stop: 40055, Start Num: 14

Candidate Starts for Helmet\_70:

(7, 40528), (8, 40525), (9, 40507), (Start: 14 @40411 has 44 MA's), (Start: 21 @40309 has 1 MA's), (24, 40264), (29, 40141), (31, 40114), (33, 40087), (34, 40066),

Gene: Hexamo\_69 Start: 40041, Stop: 39685, Start Num: 14

Candidate Starts for Hexamo\_69:

(7, 40158), (8, 40155), (9, 40137), (Start: 14 @40041 has 44 MA's), (Start: 21 @39939 has 1 MA's), (24, 39894), (29, 39771), (31, 39744), (33, 39717), (34, 39696),

Gene: Hoot\_63 Start: 37891, Stop: 37535, Start Num: 14

Candidate Starts for Hoot\_63:

(10, 37969), (Start: 14 @37891 has 44 MA's), (17, 37825), (23, 37747), (25, 37690), (29, 37621), (30, 37615), (31, 37594), (33, 37567), (34, 37546),

Gene: Indra\_72 Start: 40412, Stop: 40056, Start Num: 14

Candidate Starts for Indra\_72:

(7, 40529), (8, 40526), (9, 40508), (Start: 14 @40412 has 44 MA's), (Start: 21 @40310 has 1 MA's), (24, 40265), (29, 40142), (31, 40115), (33, 40088), (34, 40067),

Gene: Isiphiwo\_66 Start: 39572, Stop: 39216, Start Num: 14

Candidate Starts for Isiphiwo\_66:

(10, 39650), (Start: 14 @39572 has 44 MA's), (23, 39428), (25, 39371), (29, 39302), (31, 39275), (33, 39248), (34, 39227),

Gene: JSwag\_74 Start: 40977, Stop: 40561, Start Num: 12

Candidate Starts for JSwag\_74:

(Start: 11 @41007 has 1 MA's), (Start: 12 @40977 has 10 MA's), (13, 40965), (18, 40875), (20, 40848), (27, 40692), (32, 40611),

Gene: JSwag\_47 Start: 30039, Stop: 29680, Start Num: 15

Candidate Starts for JSwag\_47:

(2, 30441), (4, 30357), (Start: 15 @30039 has 19 MA's), (22, 29931), (33, 29715),

Gene: Jeffabunny\_69 Start: 40038, Stop: 39682, Start Num: 14

Candidate Starts for Jeffabunny\_69:

(7, 40155), (8, 40152), (9, 40134), (Start: 14 @40038 has 44 MA's), (Start: 21 @39936 has 1 MA's), (24, 39891), (29, 39768), (31, 39741), (33, 39714), (34, 39693),

Gene: JewelBug\_68 Start: 40312, Stop: 39956, Start Num: 14

Candidate Starts for JewelBug\_68:

(10, 40390), (Start: 14 @40312 has 44 MA's), (23, 40168), (25, 40111), (29, 40042), (30, 40036), (31, 40015), (33, 39988), (34, 39967),

Gene: Jordennis\_67 Start: 39793, Stop: 39437, Start Num: 14

Candidate Starts for Jordennis\_67:

(Start: 14 @39793 has 44 MA's), (17, 39727), (23, 39649), (25, 39592), (29, 39523), (31, 39496), (34, 39448),

Gene: KatherineG\_75 Start: 41450, Stop: 41034, Start Num: 12

Candidate Starts for KatherineG\_75:

(5, 41561), (Start: 11 @41480 has 1 MA's), (Start: 12 @41450 has 10 MA's), (13, 41438), (18, 41348), (20, 41321), (27, 41165), (32, 41084),

Gene: KatherineG\_49 Start: 30542, Stop: 30183, Start Num: 15

Candidate Starts for KatherineG\_49:

(Start: 14 @30545 has 44 MA's), (Start: 15 @30542 has 19 MA's), (22, 30434), (33, 30218),

Gene: Kazan\_69 Start: 40046, Stop: 39690, Start Num: 14

Candidate Starts for Kazan\_69:

(10, 40124), (Start: 14 @40046 has 44 MA's), (17, 39980), (23, 39902), (25, 39845), (29, 39776), (30, 39770), (31, 39749), (33, 39722), (34, 39701),

Gene: Kipper29\_68 Start: 40059, Stop: 39703, Start Num: 14

Candidate Starts for Kipper29\_68:

(10, 40137), (Start: 14 @40059 has 44 MA's), (17, 39993), (23, 39915), (25, 39858), (29, 39789), (30, 39783), (31, 39762), (33, 39735), (34, 39714),

Gene: Koko\_71 Start: 40896, Stop: 40540, Start Num: 14

Candidate Starts for Koko\_71:

(7, 41013), (8, 41010), (9, 40992), (Start: 14 @40896 has 44 MA's), (Start: 21 @40794 has 1 MA's), (24, 40749), (29, 40626), (31, 40599), (33, 40572), (34, 40551),

Gene: LastResort\_47 Start: 30103, Stop: 29744, Start Num: 15

Candidate Starts for LastResort\_47:

(Start: 14 @30106 has 44 MA's), (Start: 15 @30103 has 19 MA's), (22, 29995), (33, 29779),

Gene: Lilbunny\_68 Start: 40042, Stop: 39686, Start Num: 14

Candidate Starts for Lilbunny\_68:

(7, 40159), (8, 40156), (9, 40138), (Start: 14 @40042 has 44 MA's), (Start: 21 @39940 has 1 MA's), (24, 39895), (29, 39772), (31, 39745), (33, 39718), (34, 39697),

Gene: Looper\_48 Start: 30080, Stop: 29721, Start Num: 15

Candidate Starts for Looper\_48:

(Start: 14 @30083 has 44 MA's), (Start: 15 @30080 has 19 MA's), (22, 29972), (33, 29756),

Gene: Lucyedi\_70 Start: 41927, Stop: 41568, Start Num: 14

Candidate Starts for Lucyedi\_70:

(6, 42032), (7, 42029), (8, 42026), (Start: 14 @41927 has 44 MA's), (16, 41885), (19, 41852), (26, 41702), (28, 41657), (29, 41654), (34, 41579),

Gene: McFly\_68 Start: 40005, Stop: 39649, Start Num: 14

Candidate Starts for McFly\_68:

(10, 40083), (Start: 14 @40005 has 44 MA's), (23, 39861), (25, 39804), (29, 39735), (31, 39708), (33, 39681), (34, 39660),

Gene: MinecraftSteve\_75 Start: 41265, Stop: 40849, Start Num: 12

Candidate Starts for MinecraftSteve\_75:

(Start: 11 @41295 has 1 MA's), (Start: 12 @41265 has 10 MA's), (13, 41253), (18, 41163), (20, 41136), (27, 40980), (32, 40899),

Gene: MinecraftSteve\_49 Start: 30303, Stop: 29944, Start Num: 15

Candidate Starts for MinecraftSteve\_49:

(2, 30705), (4, 30621), (Start: 15 @30303 has 19 MA's), (22, 30195), (27, 30078), (33, 29979),



Gene: Nebulosus\_72 Start: 40929, Stop: 40513, Start Num: 12  
Candidate Starts for Nebulosus\_72:  
(Start: 11 @40959 has 1 MA's), (Start: 12 @40929 has 10 MA's), (13, 40917), (18, 40827), (20, 40800), (27, 40644), (32, 40563),

Gene: Nebulosus\_47 Start: 30099, Stop: 29740, Start Num: 15  
Candidate Starts for Nebulosus\_47:  
(Start: 14 @30102 has 44 MA's), (Start: 15 @30099 has 19 MA's), (22, 29991), (33, 29775),

Gene: Neeharika16\_67 Start: 39472, Stop: 39116, Start Num: 14  
Candidate Starts for Neeharika16\_67:  
(10, 39550), (Start: 14 @39472 has 44 MA's), (23, 39328), (25, 39271), (29, 39202), (31, 39175), (33, 39148), (34, 39127),

Gene: Newrala\_68 Start: 40007, Stop: 39651, Start Num: 14  
Candidate Starts for Newrala\_68:  
(10, 40085), (Start: 14 @40007 has 44 MA's), (23, 39863), (25, 39806), (29, 39737), (31, 39710), (33, 39683), (34, 39662),

Gene: Oofda\_49 Start: 30194, Stop: 29835, Start Num: 15  
Candidate Starts for Oofda\_49:  
(2, 30596), (4, 30512), (Start: 15 @30194 has 19 MA's), (22, 30086), (33, 29870),

Gene: PainterBoy\_69 Start: 41636, Stop: 41277, Start Num: 14  
Candidate Starts for PainterBoy\_69:  
(6, 41741), (7, 41738), (8, 41735), (Start: 14 @41636 has 44 MA's), (16, 41594), (19, 41561), (26, 41411), (28, 41366), (29, 41363), (34, 41288),

Gene: Pmask\_67 Start: 40008, Stop: 39652, Start Num: 14  
Candidate Starts for Pmask\_67:  
(10, 40086), (Start: 14 @40008 has 44 MA's), (23, 39864), (25, 39807), (29, 39738), (31, 39711), (33, 39684), (34, 39663),

Gene: Priamo\_70 Start: 39859, Stop: 39503, Start Num: 14  
Candidate Starts for Priamo\_70:  
(10, 39937), (Start: 14 @39859 has 44 MA's), (23, 39715), (25, 39658), (29, 39589), (31, 39562), (34, 39514),

Gene: ReMo\_47 Start: 30100, Stop: 29741, Start Num: 15  
Candidate Starts for ReMo\_47:  
(Start: 14 @30103 has 44 MA's), (Start: 15 @30100 has 19 MA's), (22, 29992), (33, 29776),

Gene: Remus\_48 Start: 30019, Stop: 29660, Start Num: 15  
Candidate Starts for Remus\_48:  
(1, 30424), (2, 30421), (4, 30337), (Start: 15 @30019 has 19 MA's), (22, 29911), (33, 29695),

Gene: Rifter\_69 Start: 39572, Stop: 39216, Start Num: 14  
Candidate Starts for Rifter\_69:  
(7, 39689), (8, 39686), (9, 39668), (Start: 14 @39572 has 44 MA's), (Start: 21 @39470 has 1 MA's), (24, 39425), (29, 39302), (31, 39275), (33, 39248), (34, 39227),

Gene: Roksolana\_70 Start: 40406, Stop: 40050, Start Num: 14

Candidate Starts for Roksolana\_70:

(7, 40523), (8, 40520), (9, 40502), (Start: 14 @40406 has 44 MA's), (Start: 21 @40304 has 1 MA's), (24, 40259), (29, 40136), (31, 40109), (33, 40082), (34, 40061),

Gene: Rosalind\_47 Start: 30222, Stop: 29863, Start Num: 15

Candidate Starts for Rosalind\_47:

(2, 30624), (4, 30540), (Start: 15 @30222 has 19 MA's), (22, 30114), (33, 29898),

Gene: Rosalind\_73 Start: 41184, Stop: 40768, Start Num: 12

Candidate Starts for Rosalind\_73:

(Start: 11 @41214 has 1 MA's), (Start: 12 @41184 has 10 MA's), (13, 41172), (18, 41082), (20, 41055), (27, 40899), (32, 40818),

Gene: ShayRa\_75 Start: 41213, Stop: 40797, Start Num: 12

Candidate Starts for ShayRa\_75:

(Start: 11 @41243 has 1 MA's), (Start: 12 @41213 has 10 MA's), (13, 41201), (18, 41111), (20, 41084), (27, 40928), (32, 40847),

Gene: ShayRa\_49 Start: 30304, Stop: 29945, Start Num: 15

Candidate Starts for ShayRa\_49:

(Start: 14 @30307 has 44 MA's), (Start: 15 @30304 has 19 MA's), (22, 30196), (33, 29980),

Gene: SmellyB\_68 Start: 40040, Stop: 39684, Start Num: 14

Candidate Starts for SmellyB\_68:

(10, 40118), (Start: 14 @40040 has 44 MA's), (17, 39974), (23, 39896), (25, 39839), (29, 39770), (30, 39764), (31, 39743), (33, 39716), (34, 39695),

Gene: Soups\_48 Start: 30303, Stop: 29944, Start Num: 15

Candidate Starts for Soups\_48:

(Start: 14 @30306 has 44 MA's), (Start: 15 @30303 has 19 MA's), (22, 30195), (33, 29979),

Gene: Soups\_75 Start: 41477, Stop: 41061, Start Num: 12

Candidate Starts for Soups\_75:

(Start: 11 @41507 has 1 MA's), (Start: 12 @41477 has 10 MA's), (13, 41465), (18, 41375), (20, 41348), (27, 41192), (32, 41111),

Gene: Strosahl\_48 Start: 30019, Stop: 29660, Start Num: 15

Candidate Starts for Strosahl\_48:

(1, 30424), (2, 30421), (4, 30337), (Start: 15 @30019 has 19 MA's), (22, 29911), (33, 29695),

Gene: SuperAwesome\_68 Start: 40045, Stop: 39689, Start Num: 14

Candidate Starts for SuperAwesome\_68:

(10, 40123), (Start: 14 @40045 has 44 MA's), (23, 39901), (25, 39844), (29, 39775), (31, 39748), (33, 39721), (34, 39700),

Gene: SuperCallie99\_65 Start: 39892, Stop: 39536, Start Num: 14

Candidate Starts for SuperCallie99\_65:

(10, 39970), (Start: 14 @39892 has 44 MA's), (23, 39748), (25, 39691), (29, 39622), (31, 39595), (33, 39568), (34, 39547),

Gene: Switzerland\_74 Start: 41352, Stop: 40936, Start Num: 12

Candidate Starts for Switzerland\_74:

(Start: 11 @41382 has 1 MA's), (Start: 12 @41352 has 10 MA's), (13, 41340), (18, 41250), (20, 41223), (27, 41067), (32, 40986),

Gene: Switzerland\_48 Start: 30402, Stop: 30043, Start Num: 15

Candidate Starts for Switzerland\_48:

(2, 30804), (4, 30720), (Start: 15 @30402 has 19 MA's), (22, 30294), (33, 30078),

Gene: ToneTone\_66 Start: 39971, Stop: 39615, Start Num: 14

Candidate Starts for ToneTone\_66:

(7, 40088), (8, 40085), (9, 40067), (Start: 14 @39971 has 44 MA's), (Start: 21 @39869 has 1 MA's), (24, 39824), (29, 39701), (31, 39674), (33, 39647), (34, 39626),

Gene: Tucker\_69 Start: 40174, Stop: 39818, Start Num: 14

Candidate Starts for Tucker\_69:

(7, 40291), (8, 40288), (9, 40270), (Start: 14 @40174 has 44 MA's), (Start: 21 @40072 has 1 MA's), (24, 40027), (29, 39904), (31, 39877), (33, 39850), (34, 39829),

Gene: VohminGhazi\_68 Start: 40041, Stop: 39685, Start Num: 14

Candidate Starts for VohminGhazi\_68:

(10, 40119), (Start: 14 @40041 has 44 MA's), (17, 39975), (23, 39897), (25, 39840), (29, 39771), (30, 39765), (31, 39744), (33, 39717), (34, 39696),

Gene: Waits\_48 Start: 30191, Stop: 29832, Start Num: 15

Candidate Starts for Waits\_48:

(2, 30593), (4, 30509), (Start: 15 @30191 has 19 MA's), (22, 30083), (33, 29867),

Gene: Wiks\_68 Start: 40042, Stop: 39686, Start Num: 14

Candidate Starts for Wiks\_68:

(7, 40159), (8, 40156), (9, 40138), (Start: 14 @40042 has 44 MA's), (Start: 21 @39940 has 1 MA's), (24, 39895), (29, 39772), (31, 39745), (33, 39718), (34, 39697),

Gene: WunderPhul\_69 Start: 40040, Stop: 39684, Start Num: 14

Candidate Starts for WunderPhul\_69:

(7, 40157), (8, 40154), (9, 40136), (Start: 14 @40040 has 44 MA's), (Start: 21 @39938 has 1 MA's), (24, 39893), (29, 39770), (31, 39743), (33, 39716), (34, 39695),

Gene: Yokurt\_68 Start: 40042, Stop: 39686, Start Num: 14

Candidate Starts for Yokurt\_68:

(7, 40159), (8, 40156), (9, 40138), (Start: 14 @40042 has 44 MA's), (Start: 21 @39940 has 1 MA's), (24, 39895), (29, 39772), (31, 39745), (33, 39718), (34, 39697),

Gene: Zaka\_69 Start: 40042, Stop: 39686, Start Num: 14

Candidate Starts for Zaka\_69:

(7, 40159), (8, 40156), (9, 40138), (Start: 14 @40042 has 44 MA's), (Start: 21 @39940 has 1 MA's), (24, 39895), (29, 39772), (31, 39745), (33, 39718), (34, 39697),

Gene: Zulu\_70 Start: 40420, Stop: 40064, Start Num: 14

Candidate Starts for Zulu\_70:

(7, 40537), (8, 40534), (9, 40516), (Start: 14 @40420 has 44 MA's), (Start: 21 @40318 has 1 MA's), (24, 40273), (29, 40150), (31, 40123), (33, 40096), (34, 40075),