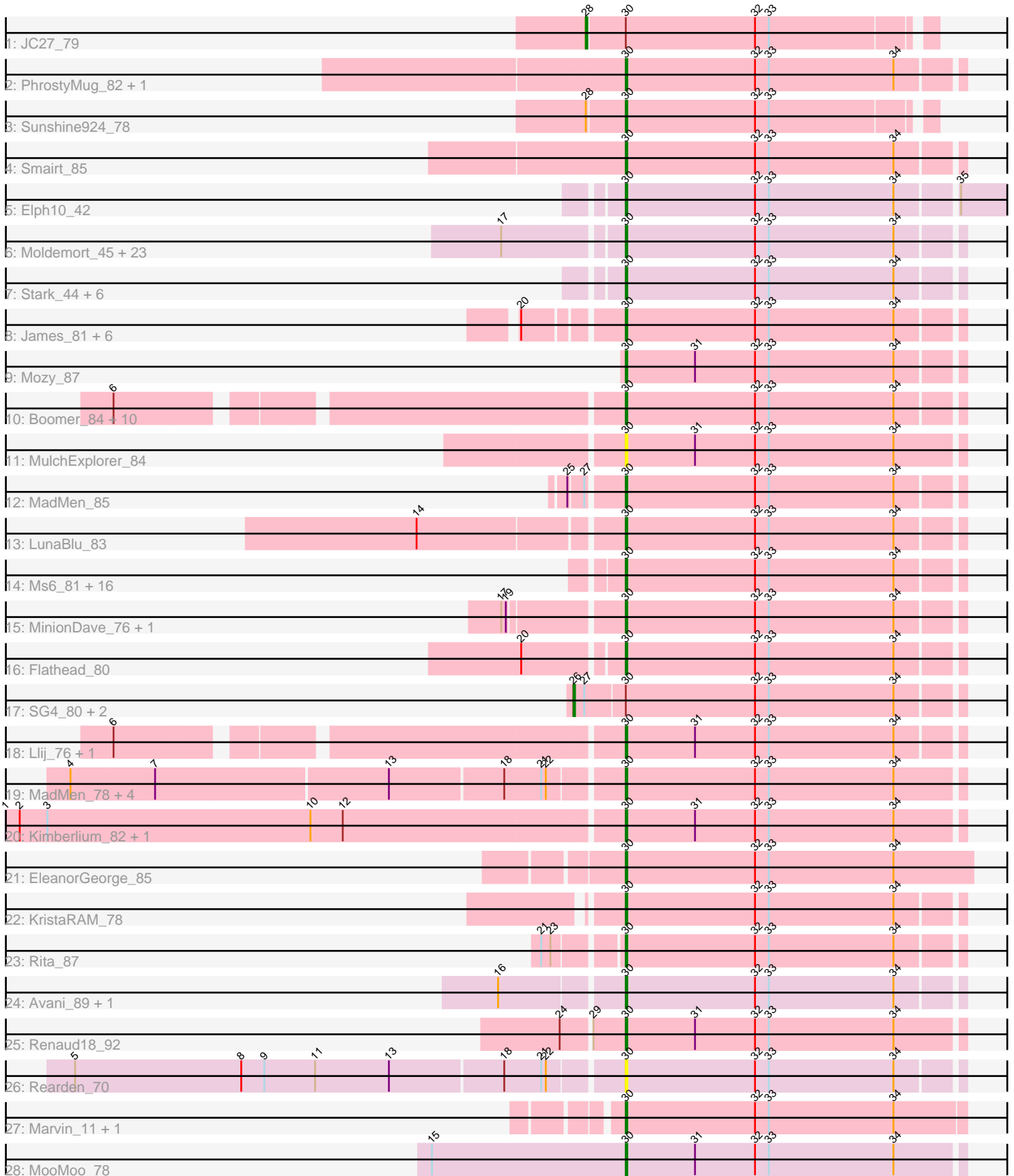


# Pham 221295



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 221295 Report

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

Pham number 221295 has 101 members, 7 are drafts.

Phages represented in each track:

- Track 1 : JC27\_79
- Track 2 : PhrostyMug\_82, Mule\_80
- Track 3 : Sunshine924\_78
- Track 4 : Smairt\_85
- Track 5 : Elph10\_42
- Track 6 : Moldemort\_45, Icee\_42, Cactus\_44, Barbarian\_42, Argent26\_45, Wiggin\_44, GooberAzure\_45, Goldilocks\_44, StolenFromERC\_45, Gage\_45, Stank\_46, Asriel\_42, Adnama\_46, Gemini\_46, GoldenSpark\_45, Command613\_44, Rakim\_44, AmericanBeauty\_46, Kimchi\_45, Sotrice96\_43, Thimble\_44, Bask21\_43, Hoonter\_45, TBrady12\_45
- Track 7 : Stark\_44, NoSleep\_44, Murphy\_44, Lilac\_45, Maxxinista\_44, Czyszczonek1\_43, RiverMonster\_43
- Track 8 : James\_81, Clifton\_73, OlympiaSaint\_80, Philus\_83, Jarcob\_80, DRBy19\_84, Burwell21\_75
- Track 9 : Mozy\_87
- Track 10 : Boomer\_84, DirtMcgirt\_79, UncleRicky\_79, Lorde\_80, Enby\_81, Cornie\_77, Drago\_77, Rockne\_81, PMC\_77, Wanda\_79, Klein\_75
- Track 11 : MulchExplorer\_84
- Track 12 : MadMen\_85
- Track 13 : LunaBlu\_83
- Track 14 : Ms6\_81, PhatBacter\_43, Elite2014\_43, Bobi\_87, Nimrod\_43, Phaux\_42, Murica\_42, xkcd\_44, Chuckly\_79, Palpatine\_43, HuffyPuff\_42, Lilpickle\_43, FireRed\_43, ChosenOne\_44, Petra64142\_45, Policronamos\_43, BugsBunny\_41
- Track 15 : MinionDave\_76, CaptainTrips\_80
- Track 16 : Flathead\_80
- Track 17 : SG4\_80, SG4\_83, Ogopogo\_86
- Track 18 : Llij\_76, Phatniss\_77
- Track 19 : MadMen\_78, Karhdo\_79, Pollywog\_80, Sabbb\_82, Kersh\_82
- Track 20 : Kimberlium\_82, Polo2Bam\_88
- Track 21 : EleanorGeorge\_85
- Track 22 : KristaRAM\_78
- Track 23 : Rita\_87
- Track 24 : Avani\_89, Latretium\_81
- Track 25 : Renaud18\_92
- Track 26 : Rearden\_70
- Track 27 : Marvin\_11, VasuNzinga\_10
- Track 28 : MooMoo\_78

### **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 90 of the 94 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Adnama\_46, AmericanBeauty\_46, Argent26\_45, Asriel\_42, Avani\_89, Barbarian\_42, Bask21\_43, Bobi\_87, Boomer\_84, BugsBunny\_41, Burwell21\_75, Cactus\_44, CaptainTrips\_80, ChosenOne\_44, Chuckly\_79, Clifton\_73, Command613\_44, Cornie\_77, Czyszczo1\_43, DRBy19\_84, DirtMcgirt\_79, Drago\_77, EleanorGeorge\_85, Elite2014\_43, Elph10\_42, Enby\_81, FireRed\_43, Flathead\_80, Gage\_45, Gemini\_46, GoldenSpark\_45, Goldilocks\_44, GooberAzure\_45, Hoonter\_45, HufflyPuff\_42, Icee\_42, James\_81, Jarcob\_80, Karhdo\_79, Kersh\_82, Kimberlium\_82, Kimchi\_45, Klein\_75, KristaRAM\_78, Latretium\_81, Lilac\_45, Lilpickle\_43, Llij\_76, Lorde\_80, LunaBlu\_83, MadMen\_78, MadMen\_85, Marvin\_11, Maxxinista\_44, MinionDave\_76, Moldemort\_45, MooMoo\_78, Mozy\_87, Ms6\_81, MulchExplorer\_84, Mule\_80, Murica\_42, Murphy\_44, Nimrod\_43, NoSleep\_44, OlympiaSaint\_80, PMC\_77, Palpatine\_43, Petra64142\_45, PhatBacter\_43, Phatniss\_77, Phaux\_42, Philus\_83, PhrostyMug\_82, Policronamos\_43, Pollywog\_80, Polo2Bam\_88, Rakim\_44, Rearden\_70, Renaud18\_92, Rita\_87, RiverMonster\_43, Rockne\_81, Sabbb\_82, Smairt\_85, Sotrice96\_43, Stank\_46, Stark\_44, StolenFromERC\_45, Sunshine924\_78, TBrady12\_45, Thimble\_44, UncleRicky\_79, VasuNzinga\_10, Wanda\_79, Wiggin\_44, xkcd\_44,

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

- JC27\_79, Ogopogo\_86, SG4\_80, SG4\_83,

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

- 

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

Start 26:

- Found in 3 of 101 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 3 of 94
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ogopogo\_86 (F1), SG4\_80 (F1), SG4\_83 (F1),

Start 28:

- Found in 2 of 101 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 94
- Called 50.0% of time when present
- Phage (with cluster) where this start called: JC27\_79 (A1),

Start 30:

- Found in 101 of 101 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 90 of 94

- Called 96.0% of time when present
- Phage (with cluster) where this start called: Adnama\_46 (E), AmericanBeauty\_46 (E), Argent26\_45 (E), Asriel\_42 (E), Avani\_89 (F2), Barbarian\_42 (E), Bask21\_43 (E), Bobi\_87 (F1), Boomer\_84 (F1), BugsBunny\_41 (E), Burwell21\_75 (F1), Cactus\_44 (E), CaptainTrips\_80 (F1), ChosenOne\_44 (E), Chuckly\_79 (F1), Clifton\_73 (F1), Command613\_44 (E), Cornie\_77 (F5), Czyszczo1\_43 (E), DRBy19\_84 (F1), DirtMcgirt\_79 (F1), Drago\_77 (F1), EleanorGeorge\_85 (F1), Elite2014\_43 (E), Elph10\_42 (E), Enby\_81 (F1), FireRed\_43 (E), Flathead\_80 (F1), Gage\_45 (E), Gemini\_46 (E), GoldenSpark\_45 (E), Goldilocks\_44 (E), GooberAzure\_45 (E), Hoonter\_45 (E), HufflyPuff\_42 (E), Icee\_42 (E), James\_81 (F1), Jarcob\_80 (F1), Karhdo\_79 (F1), Kersh\_82 (F1), Kimberlium\_82 (F1), Kimchi\_45 (E), Klein\_75 (J), KristaRAM\_78 (F1), Latretium\_81 (F1), Lilac\_45 (E), Lilpickle\_43 (E), Llij\_76 (F1), Lorde\_80 (F1), LunaBlu\_83 (F1), MadMen\_78 (F1), MadMen\_85 (F1), Marvin\_11 (S), Maxxinista\_44 (E), MinionDave\_76 (F1), Moldemort\_45 (E), MooMoo\_78 (singleton), Mozy\_87 (F1), Ms6\_81 (F1), MulchExplorer\_84 (F1), Mule\_80 (A1), Murica\_42 (E), Murphy\_44 (E), Nimrod\_43 (E), NoSleep\_44 (E), OlympiaSaint\_80 (F1), PMC\_77 (F1), Palpatine\_43 (E), Petra64142\_45 (E), PhatBacter\_43 (E), Phatniss\_77 (F1), Phaux\_42 (E), Philus\_83 (F1), PhrostyMug\_82 (A1), Policronamos\_43 (E), Pollywog\_80 (F1), Polo2Bam\_88 (F1), Rakim\_44 (E), Rearden\_70 (J), Renaud18\_92 (F4), Rita\_87 (F1), RiverMonster\_43 (E), Rockne\_81 (F1), Sabbb\_82 (F1), Smairt\_85 (A1), Sotrice96\_43 (E), Stank\_46 (E), Stark\_44 (E), StolenFromERC\_45 (E), Sunshine924\_78 (A1), TBrady12\_45 (E), Thimble\_44 (E), UncleRicky\_79 (F1), VasuNzinga\_10 (S), Wanda\_79 (J), Wiggin\_44 (E), xkcd\_44 (E),

### Summary by clusters:

There are 9 clusters represented in this pham: F1, F2, E, F5, J, singleton, A1, S, F4,

Info for manual annotations of cluster A1:

- Start number 28 was manually annotated 1 time for cluster A1.
- Start number 30 was manually annotated 4 times for cluster A1.

Info for manual annotations of cluster E:

- Start number 30 was manually annotated 43 times for cluster E.

Info for manual annotations of cluster F1:

- Start number 26 was manually annotated 3 times for cluster F1.
- Start number 30 was manually annotated 35 times for cluster F1.

Info for manual annotations of cluster F2:

- Start number 30 was manually annotated 1 time for cluster F2.

Info for manual annotations of cluster F4:

- Start number 30 was manually annotated 1 time for cluster F4.

Info for manual annotations of cluster F5:

- Start number 30 was manually annotated 1 time for cluster F5.

Info for manual annotations of cluster J:

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

Info for manual annotations of cluster S:

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

**Gene Information:**

Gene: Adnama\_46 Start: 35815, Stop: 35603, Start Num: 30

Candidate Starts for Adnama\_46:

(17, 35887), (Start: 30 @35815 has 90 MA's), (32, 35731), (33, 35722), (34, 35641),

Gene: AmericanBeauty\_46 Start: 35660, Stop: 35448, Start Num: 30

Candidate Starts for AmericanBeauty\_46:

(17, 35732), (Start: 30 @35660 has 90 MA's), (32, 35576), (33, 35567), (34, 35486),

Gene: Argent26\_45 Start: 35298, Stop: 35086, Start Num: 30

Candidate Starts for Argent26\_45:

(17, 35370), (Start: 30 @35298 has 90 MA's), (32, 35214), (33, 35205), (34, 35124),

Gene: Asriel\_42 Start: 34152, Stop: 33940, Start Num: 30

Candidate Starts for Asriel\_42:

(17, 34224), (Start: 30 @34152 has 90 MA's), (32, 34068), (33, 34059), (34, 33978),

Gene: Avani\_89 Start: 47124, Stop: 47336, Start Num: 30

Candidate Starts for Avani\_89:

(16, 47049), (Start: 30 @47124 has 90 MA's), (32, 47208), (33, 47217), (34, 47298),

Gene: Barbarian\_42 Start: 34152, Stop: 33940, Start Num: 30

Candidate Starts for Barbarian\_42:

(17, 34224), (Start: 30 @34152 has 90 MA's), (32, 34068), (33, 34059), (34, 33978),

Gene: Bask21\_43 Start: 34486, Stop: 34274, Start Num: 30

Candidate Starts for Bask21\_43:

(17, 34558), (Start: 30 @34486 has 90 MA's), (32, 34402), (33, 34393), (34, 34312),

Gene: Bobi\_87 Start: 51199, Stop: 51411, Start Num: 30

Candidate Starts for Bobi\_87:

(Start: 30 @51199 has 90 MA's), (32, 51283), (33, 51292), (34, 51373),

Gene: Boomer\_84 Start: 49469, Stop: 49681, Start Num: 30

Candidate Starts for Boomer\_84:

(6, 49169), (Start: 30 @49469 has 90 MA's), (32, 49553), (33, 49562), (34, 49643),

Gene: BugsBunny\_41 Start: 34880, Stop: 34668, Start Num: 30

Candidate Starts for BugsBunny\_41:

(Start: 30 @34880 has 90 MA's), (32, 34796), (33, 34787), (34, 34706),

Gene: Burwell21\_75 Start: 48377, Stop: 48589, Start Num: 30

Candidate Starts for Burwell21\_75:

(20, 48320), (Start: 30 @48377 has 90 MA's), (32, 48461), (33, 48470), (34, 48551),

Gene: Cactus\_44 Start: 34519, Stop: 34307, Start Num: 30

Candidate Starts for Cactus\_44:

(17, 34591), (Start: 30 @34519 has 90 MA's), (32, 34435), (33, 34426), (34, 34345),

Gene: CaptainTrips\_80 Start: 48282, Stop: 48494, Start Num: 30  
Candidate Starts for CaptainTrips\_80:  
(17, 48210), (19, 48213), (Start: 30 @48282 has 90 MA's), (32, 48366), (33, 48375), (34, 48456),

Gene: ChosenOne\_44 Start: 34613, Stop: 34401, Start Num: 30  
Candidate Starts for ChosenOne\_44:  
(Start: 30 @34613 has 90 MA's), (32, 34529), (33, 34520), (34, 34439),

Gene: Chuckly\_79 Start: 46425, Stop: 46637, Start Num: 30  
Candidate Starts for Chuckly\_79:  
(Start: 30 @46425 has 90 MA's), (32, 46509), (33, 46518), (34, 46599),

Gene: Clifton\_73 Start: 47193, Stop: 47405, Start Num: 30  
Candidate Starts for Clifton\_73:  
(20, 47136), (Start: 30 @47193 has 90 MA's), (32, 47277), (33, 47286), (34, 47367),

Gene: Command613\_44 Start: 35558, Stop: 35346, Start Num: 30  
Candidate Starts for Command613\_44:  
(17, 35630), (Start: 30 @35558 has 90 MA's), (32, 35474), (33, 35465), (34, 35384),

Gene: Cornie\_77 Start: 47331, Stop: 47543, Start Num: 30  
Candidate Starts for Cornie\_77:  
(6, 47031), (Start: 30 @47331 has 90 MA's), (32, 47415), (33, 47424), (34, 47505),

Gene: Czyszczone1\_43 Start: 34890, Stop: 34678, Start Num: 30  
Candidate Starts for Czyszczone1\_43:  
(Start: 30 @34890 has 90 MA's), (32, 34806), (33, 34797), (34, 34716),

Gene: DRBy19\_84 Start: 50922, Stop: 51134, Start Num: 30  
Candidate Starts for DRBy19\_84:  
(20, 50865), (Start: 30 @50922 has 90 MA's), (32, 51006), (33, 51015), (34, 51096),

Gene: DirtMcgirt\_79 Start: 46079, Stop: 46291, Start Num: 30  
Candidate Starts for DirtMcgirt\_79:  
(6, 45779), (Start: 30 @46079 has 90 MA's), (32, 46163), (33, 46172), (34, 46253),

Gene: Drago\_77 Start: 46082, Stop: 46294, Start Num: 30  
Candidate Starts for Drago\_77:  
(6, 45782), (Start: 30 @46082 has 90 MA's), (32, 46166), (33, 46175), (34, 46256),

Gene: EleanorGeorge\_85 Start: 50530, Stop: 50754, Start Num: 30  
Candidate Starts for EleanorGeorge\_85:  
(Start: 30 @50530 has 90 MA's), (32, 50614), (33, 50623), (34, 50704),

Gene: Elite2014\_43 Start: 34612, Stop: 34400, Start Num: 30  
Candidate Starts for Elite2014\_43:  
(Start: 30 @34612 has 90 MA's), (32, 34528), (33, 34519), (34, 34438),

Gene: Elph10\_42 Start: 34382, Stop: 34119, Start Num: 30  
Candidate Starts for Elph10\_42:  
(Start: 30 @34382 has 90 MA's), (32, 34298), (33, 34289), (34, 34208), (35, 34172),

Gene: Enby\_81 Start: 46358, Stop: 46570, Start Num: 30

Candidate Starts for Enby\_81:

(6, 46058), (Start: 30 @46358 has 90 MA's), (32, 46442), (33, 46451), (34, 46532),

Gene: FireRed\_43 Start: 35319, Stop: 35107, Start Num: 30

Candidate Starts for FireRed\_43:

(Start: 30 @35319 has 90 MA's), (32, 35235), (33, 35226), (34, 35145),

Gene: Flathead\_80 Start: 48531, Stop: 48743, Start Num: 30

Candidate Starts for Flathead\_80:

(20, 48471), (Start: 30 @48531 has 90 MA's), (32, 48615), (33, 48624), (34, 48705),

Gene: Gage\_45 Start: 35298, Stop: 35086, Start Num: 30

Candidate Starts for Gage\_45:

(17, 35370), (Start: 30 @35298 has 90 MA's), (32, 35214), (33, 35205), (34, 35124),

Gene: Gemini\_46 Start: 35815, Stop: 35603, Start Num: 30

Candidate Starts for Gemini\_46:

(17, 35887), (Start: 30 @35815 has 90 MA's), (32, 35731), (33, 35722), (34, 35641),

Gene: GoldenSpark\_45 Start: 35298, Stop: 35086, Start Num: 30

Candidate Starts for GoldenSpark\_45:

(17, 35370), (Start: 30 @35298 has 90 MA's), (32, 35214), (33, 35205), (34, 35124),

Gene: Goldilocks\_44 Start: 34800, Stop: 34588, Start Num: 30

Candidate Starts for Goldilocks\_44:

(17, 34872), (Start: 30 @34800 has 90 MA's), (32, 34716), (33, 34707), (34, 34626),

Gene: GooberAzure\_45 Start: 35298, Stop: 35086, Start Num: 30

Candidate Starts for GooberAzure\_45:

(17, 35370), (Start: 30 @35298 has 90 MA's), (32, 35214), (33, 35205), (34, 35124),

Gene: Hoonter\_45 Start: 35298, Stop: 35086, Start Num: 30

Candidate Starts for Hoonter\_45:

(17, 35370), (Start: 30 @35298 has 90 MA's), (32, 35214), (33, 35205), (34, 35124),

Gene: HuffyPuff\_42 Start: 35275, Stop: 35063, Start Num: 30

Candidate Starts for HuffyPuff\_42:

(Start: 30 @35275 has 90 MA's), (32, 35191), (33, 35182), (34, 35101),

Gene: Icee\_42 Start: 34966, Stop: 34754, Start Num: 30

Candidate Starts for Icee\_42:

(17, 35038), (Start: 30 @34966 has 90 MA's), (32, 34882), (33, 34873), (34, 34792),

Gene: JC27\_79 Start: 47151, Stop: 46936, Start Num: 28

Candidate Starts for JC27\_79:

(Start: 28 @47151 has 1 MA's), (Start: 30 @47127 has 90 MA's), (32, 47043), (33, 47034),

Gene: James\_81 Start: 50257, Stop: 50469, Start Num: 30

Candidate Starts for James\_81:

(20, 50200), (Start: 30 @50257 has 90 MA's), (32, 50341), (33, 50350), (34, 50431),

Gene: Jarcob\_80 Start: 49854, Stop: 50066, Start Num: 30

Candidate Starts for Jarcob\_80:

(20, 49797), (Start: 30 @49854 has 90 MA's), (32, 49938), (33, 49947), (34, 50028),

Gene: Karhdo\_79 Start: 47395, Stop: 47610, Start Num: 30

Candidate Starts for Karhdo\_79:

(4, 47050), (7, 47104), (13, 47251), (18, 47323), (21, 47347), (22, 47350), (Start: 30 @47395 has 90 MA's), (32, 47479), (33, 47488), (34, 47569),

Gene: Kersh\_82 Start: 50581, Stop: 50796, Start Num: 30

Candidate Starts for Kersh\_82:

(4, 50236), (7, 50290), (13, 50437), (18, 50509), (21, 50533), (22, 50536), (Start: 30 @50581 has 90 MA's), (32, 50665), (33, 50674), (34, 50755),

Gene: Kimberlium\_82 Start: 48347, Stop: 48562, Start Num: 30

Candidate Starts for Kimberlium\_82:

(1, 47951), (2, 47960), (3, 47978), (10, 48149), (12, 48170), (Start: 30 @48347 has 90 MA's), (31, 48392), (32, 48431), (33, 48440), (34, 48521),

Gene: Kimchi\_45 Start: 35301, Stop: 35089, Start Num: 30

Candidate Starts for Kimchi\_45:

(17, 35373), (Start: 30 @35301 has 90 MA's), (32, 35217), (33, 35208), (34, 35127),

Gene: Klein\_75 Start: 50592, Stop: 50374, Start Num: 30

Candidate Starts for Klein\_75:

(6, 50892), (Start: 30 @50592 has 90 MA's), (32, 50508), (33, 50499), (34, 50418),

Gene: KristaRAM\_78 Start: 47718, Stop: 47930, Start Num: 30

Candidate Starts for KristaRAM\_78:

(Start: 30 @47718 has 90 MA's), (32, 47802), (33, 47811), (34, 47892),

Gene: Latretium\_81 Start: 48097, Stop: 48309, Start Num: 30

Candidate Starts for Latretium\_81:

(16, 48022), (Start: 30 @48097 has 90 MA's), (32, 48181), (33, 48190), (34, 48271),

Gene: Lilac\_45 Start: 34788, Stop: 34576, Start Num: 30

Candidate Starts for Lilac\_45:

(Start: 30 @34788 has 90 MA's), (32, 34704), (33, 34695), (34, 34614),

Gene: Lilpickle\_43 Start: 34612, Stop: 34400, Start Num: 30

Candidate Starts for Lilpickle\_43:

(Start: 30 @34612 has 90 MA's), (32, 34528), (33, 34519), (34, 34438),

Gene: Llij\_76 Start: 46236, Stop: 46448, Start Num: 30

Candidate Starts for Llij\_76:

(6, 45936), (Start: 30 @46236 has 90 MA's), (31, 46281), (32, 46320), (33, 46329), (34, 46410),

Gene: Lorde\_80 Start: 45523, Stop: 45735, Start Num: 30

Candidate Starts for Lorde\_80:

(6, 45223), (Start: 30 @45523 has 90 MA's), (32, 45607), (33, 45616), (34, 45697),

Gene: LunaBlu\_83 Start: 49265, Stop: 49477, Start Num: 30

Candidate Starts for LunaBlu\_83:

(14, 49139), (Start: 30 @49265 has 90 MA's), (32, 49349), (33, 49358), (34, 49439),



Gene: MadMen\_85 Start: 49143, Stop: 49355, Start Num: 30  
Candidate Starts for MadMen\_85:  
(25, 49113), (27, 49122), (Start: 30 @49143 has 90 MA's), (32, 49227), (33, 49236), (34, 49317),

Gene: MadMen\_78 Start: 47239, Stop: 47454, Start Num: 30  
Candidate Starts for MadMen\_78:  
(4, 46894), (7, 46948), (13, 47095), (18, 47167), (21, 47191), (22, 47194), (Start: 30 @47239 has 90 MA's), (32, 47323), (33, 47332), (34, 47413),

Gene: Marvin\_11 Start: 3974, Stop: 4192, Start Num: 30  
Candidate Starts for Marvin\_11:  
(Start: 30 @3974 has 90 MA's), (32, 4058), (33, 4067), (34, 4148),

Gene: Maxxinista\_44 Start: 34758, Stop: 34546, Start Num: 30  
Candidate Starts for Maxxinista\_44:  
(Start: 30 @34758 has 90 MA's), (32, 34674), (33, 34665), (34, 34584),

Gene: MinionDave\_76 Start: 48282, Stop: 48494, Start Num: 30  
Candidate Starts for MinionDave\_76:  
(17, 48210), (19, 48213), (Start: 30 @48282 has 90 MA's), (32, 48366), (33, 48375), (34, 48456),

Gene: Moldemort\_45 Start: 35415, Stop: 35203, Start Num: 30  
Candidate Starts for Moldemort\_45:  
(17, 35487), (Start: 30 @35415 has 90 MA's), (32, 35331), (33, 35322), (34, 35241),

Gene: MooMoo\_78 Start: 47716, Stop: 47931, Start Num: 30  
Candidate Starts for MooMoo\_78:  
(15, 47590), (Start: 30 @47716 has 90 MA's), (31, 47761), (32, 47800), (33, 47809), (34, 47890),

Gene: Mozy\_87 Start: 48128, Stop: 48340, Start Num: 30  
Candidate Starts for Mozy\_87:  
(Start: 30 @48128 has 90 MA's), (31, 48173), (32, 48212), (33, 48221), (34, 48302),

Gene: Ms6\_81 Start: 45492, Stop: 45704, Start Num: 30  
Candidate Starts for Ms6\_81:  
(Start: 30 @45492 has 90 MA's), (32, 45576), (33, 45585), (34, 45666),

Gene: MulchExplorer\_84 Start: 48018, Stop: 48233, Start Num: 30  
Candidate Starts for MulchExplorer\_84:  
(Start: 30 @48018 has 90 MA's), (31, 48063), (32, 48102), (33, 48111), (34, 48192),

Gene: Mule\_80 Start: 47550, Stop: 47338, Start Num: 30  
Candidate Starts for Mule\_80:  
(Start: 30 @47550 has 90 MA's), (32, 47466), (33, 47457), (34, 47376),

Gene: Murica\_42 Start: 35275, Stop: 35063, Start Num: 30  
Candidate Starts for Murica\_42:  
(Start: 30 @35275 has 90 MA's), (32, 35191), (33, 35182), (34, 35101),

Gene: Murphy\_44 Start: 35270, Stop: 35058, Start Num: 30  
Candidate Starts for Murphy\_44:  
(Start: 30 @35270 has 90 MA's), (32, 35186), (33, 35177), (34, 35096),

Gene: Nimrod\_43 Start: 35533, Stop: 35321, Start Num: 30  
Candidate Starts for Nimrod\_43:  
(Start: 30 @35533 has 90 MA's), (32, 35449), (33, 35440), (34, 35359),

Gene: NoSleep\_44 Start: 35030, Stop: 34818, Start Num: 30  
Candidate Starts for NoSleep\_44:  
(Start: 30 @35030 has 90 MA's), (32, 34946), (33, 34937), (34, 34856),

Gene: Ogopogo\_86 Start: 48578, Stop: 48820, Start Num: 26  
Candidate Starts for Ogopogo\_86:  
(Start: 26 @48578 has 3 MA's), (27, 48584), (Start: 30 @48608 has 90 MA's), (32, 48692), (33, 48701),  
(34, 48782),

Gene: OlympiaSaint\_80 Start: 49199, Stop: 49411, Start Num: 30  
Candidate Starts for OlympiaSaint\_80:  
(20, 49142), (Start: 30 @49199 has 90 MA's), (32, 49283), (33, 49292), (34, 49373),

Gene: PMC\_77 Start: 47693, Stop: 47905, Start Num: 30  
Candidate Starts for PMC\_77:  
(6, 47393), (Start: 30 @47693 has 90 MA's), (32, 47777), (33, 47786), (34, 47867),

Gene: Palpatine\_43 Start: 35305, Stop: 35093, Start Num: 30  
Candidate Starts for Palpatine\_43:  
(Start: 30 @35305 has 90 MA's), (32, 35221), (33, 35212), (34, 35131),

Gene: Petra64142\_45 Start: 35769, Stop: 35557, Start Num: 30  
Candidate Starts for Petra64142\_45:  
(Start: 30 @35769 has 90 MA's), (32, 35685), (33, 35676), (34, 35595),

Gene: PhatBacter\_43 Start: 35319, Stop: 35107, Start Num: 30  
Candidate Starts for PhatBacter\_43:  
(Start: 30 @35319 has 90 MA's), (32, 35235), (33, 35226), (34, 35145),

Gene: Phatniss\_77 Start: 47331, Stop: 47543, Start Num: 30  
Candidate Starts for Phatniss\_77:  
(6, 47031), (Start: 30 @47331 has 90 MA's), (31, 47376), (32, 47415), (33, 47424), (34, 47505),

Gene: Phaux\_42 Start: 35317, Stop: 35105, Start Num: 30  
Candidate Starts for Phaux\_42:  
(Start: 30 @35317 has 90 MA's), (32, 35233), (33, 35224), (34, 35143),

Gene: Philus\_83 Start: 50898, Stop: 51110, Start Num: 30  
Candidate Starts for Philus\_83:  
(20, 50841), (Start: 30 @50898 has 90 MA's), (32, 50982), (33, 50991), (34, 51072),

Gene: PhrostyMug\_82 Start: 49720, Stop: 49508, Start Num: 30  
Candidate Starts for PhrostyMug\_82:  
(Start: 30 @49720 has 90 MA's), (32, 49636), (33, 49627), (34, 49546),

Gene: Policronamos\_43 Start: 35317, Stop: 35105, Start Num: 30  
Candidate Starts for Policronamos\_43:  
(Start: 30 @35317 has 90 MA's), (32, 35233), (33, 35224), (34, 35143),

Gene: Pollywog\_80 Start: 49464, Stop: 49676, Start Num: 30  
Candidate Starts for Pollywog\_80:  
(4, 49119), (7, 49173), (13, 49320), (18, 49392), (21, 49416), (22, 49419), (Start: 30 @49464 has 90 MA's), (32, 49548), (33, 49557), (34, 49638),

Gene: Polo2Bam\_88 Start: 47214, Stop: 47426, Start Num: 30  
Candidate Starts for Polo2Bam\_88:  
(1, 46818), (2, 46827), (3, 46845), (10, 47016), (12, 47037), (Start: 30 @47214 has 90 MA's), (31, 47259), (32, 47298), (33, 47307), (34, 47388),

Gene: Rakim\_44 Start: 35414, Stop: 35202, Start Num: 30  
Candidate Starts for Rakim\_44:  
(17, 35486), (Start: 30 @35414 has 90 MA's), (32, 35330), (33, 35321), (34, 35240),

Gene: Rearden\_70 Start: 46986, Stop: 46774, Start Num: 30  
Candidate Starts for Rearden\_70:  
(5, 47334), (8, 47226), (9, 47211), (11, 47178), (13, 47130), (18, 47058), (21, 47034), (22, 47031), (Start: 30 @46986 has 90 MA's), (32, 46902), (33, 46893), (34, 46812),

Gene: Renaud18\_92 Start: 50443, Stop: 50658, Start Num: 30  
Candidate Starts for Renaud18\_92:  
(24, 50404), (29, 50422), (Start: 30 @50443 has 90 MA's), (31, 50488), (32, 50527), (33, 50536), (34, 50617),

Gene: Rita\_87 Start: 51547, Stop: 51759, Start Num: 30  
Candidate Starts for Rita\_87:  
(21, 51502), (23, 51508), (Start: 30 @51547 has 90 MA's), (32, 51631), (33, 51640), (34, 51721),

Gene: RiverMonster\_43 Start: 35046, Stop: 34834, Start Num: 30  
Candidate Starts for RiverMonster\_43:  
(Start: 30 @35046 has 90 MA's), (32, 34962), (33, 34953), (34, 34872),

Gene: Rockne\_81 Start: 47705, Stop: 47917, Start Num: 30  
Candidate Starts for Rockne\_81:  
(6, 47405), (Start: 30 @47705 has 90 MA's), (32, 47789), (33, 47798), (34, 47879),

Gene: SG4\_80 Start: 49214, Stop: 49456, Start Num: 26  
Candidate Starts for SG4\_80:  
(Start: 26 @49214 has 3 MA's), (27, 49220), (Start: 30 @49244 has 90 MA's), (32, 49328), (33, 49337), (34, 49418),

Gene: SG4\_83 Start: 50085, Stop: 50327, Start Num: 26  
Candidate Starts for SG4\_83:  
(Start: 26 @50085 has 3 MA's), (27, 50091), (Start: 30 @50115 has 90 MA's), (32, 50199), (33, 50208), (34, 50289),

Gene: Sabbb\_82 Start: 46556, Stop: 46771, Start Num: 30  
Candidate Starts for Sabbb\_82:  
(4, 46211), (7, 46265), (13, 46412), (18, 46484), (21, 46508), (22, 46511), (Start: 30 @46556 has 90 MA's), (32, 46640), (33, 46649), (34, 46730),

Gene: Smairt\_85 Start: 50737, Stop: 50525, Start Num: 30  
Candidate Starts for Smairt\_85:

(Start: 30 @50737 has 90 MA's), (32, 50653), (33, 50644), (34, 50563),

Gene: Sotrice96\_43 Start: 35262, Stop: 35050, Start Num: 30

Candidate Starts for Sotrice96\_43:

(17, 35334), (Start: 30 @35262 has 90 MA's), (32, 35178), (33, 35169), (34, 35088),

Gene: Stank\_46 Start: 35814, Stop: 35602, Start Num: 30

Candidate Starts for Stank\_46:

(17, 35886), (Start: 30 @35814 has 90 MA's), (32, 35730), (33, 35721), (34, 35640),

Gene: Stark\_44 Start: 35049, Stop: 34837, Start Num: 30

Candidate Starts for Stark\_44:

(Start: 30 @35049 has 90 MA's), (32, 34965), (33, 34956), (34, 34875),

Gene: StolenFromERC\_45 Start: 35298, Stop: 35086, Start Num: 30

Candidate Starts for StolenFromERC\_45:

(17, 35370), (Start: 30 @35298 has 90 MA's), (32, 35214), (33, 35205), (34, 35124),

Gene: Sunshine924\_78 Start: 46439, Stop: 46248, Start Num: 30

Candidate Starts for Sunshine924\_78:

(Start: 28 @46463 has 1 MA's), (Start: 30 @46439 has 90 MA's), (32, 46355), (33, 46346),

Gene: TBrady12\_45 Start: 35298, Stop: 35086, Start Num: 30

Candidate Starts for TBrady12\_45:

(17, 35370), (Start: 30 @35298 has 90 MA's), (32, 35214), (33, 35205), (34, 35124),

Gene: Thimble\_44 Start: 34480, Stop: 34268, Start Num: 30

Candidate Starts for Thimble\_44:

(17, 34552), (Start: 30 @34480 has 90 MA's), (32, 34396), (33, 34387), (34, 34306),

Gene: UncleRicky\_79 Start: 47579, Stop: 47791, Start Num: 30

Candidate Starts for UncleRicky\_79:

(6, 47279), (Start: 30 @47579 has 90 MA's), (32, 47663), (33, 47672), (34, 47753),

Gene: VasuNzinga\_10 Start: 3181, Stop: 3399, Start Num: 30

Candidate Starts for VasuNzinga\_10:

(Start: 30 @3181 has 90 MA's), (32, 3265), (33, 3274), (34, 3355),

Gene: Wanda\_79 Start: 50901, Stop: 50683, Start Num: 30

Candidate Starts for Wanda\_79:

(6, 51201), (Start: 30 @50901 has 90 MA's), (32, 50817), (33, 50808), (34, 50727),

Gene: Wiggin\_44 Start: 35382, Stop: 35170, Start Num: 30

Candidate Starts for Wiggin\_44:

(17, 35454), (Start: 30 @35382 has 90 MA's), (32, 35298), (33, 35289), (34, 35208),

Gene: xkcd\_44 Start: 35460, Stop: 35248, Start Num: 30

Candidate Starts for xkcd\_44:

(Start: 30 @35460 has 90 MA's), (32, 35376), (33, 35367), (34, 35286),