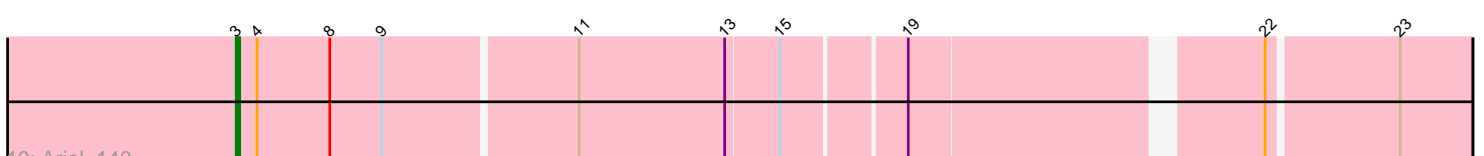
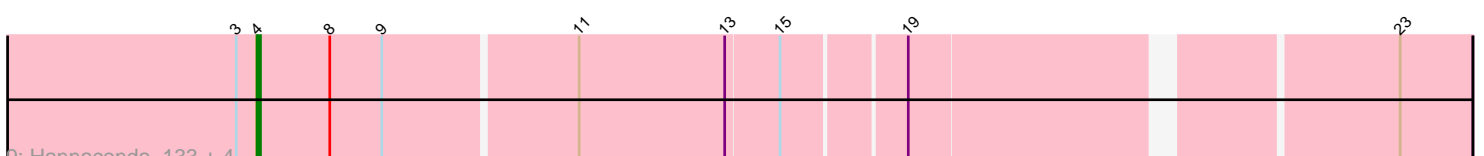
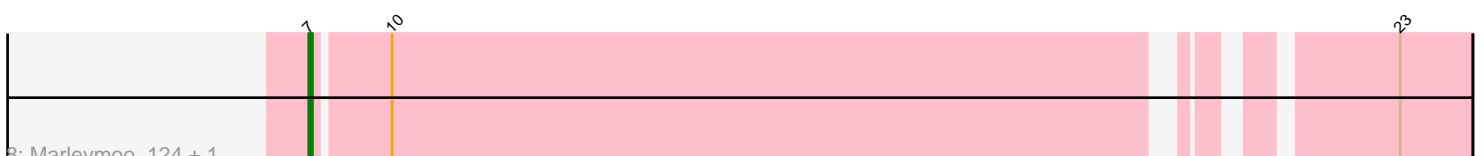
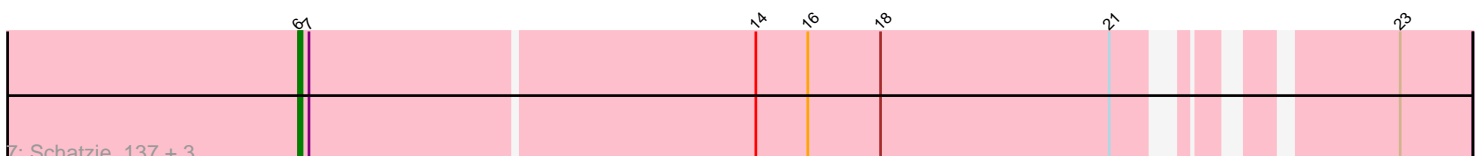
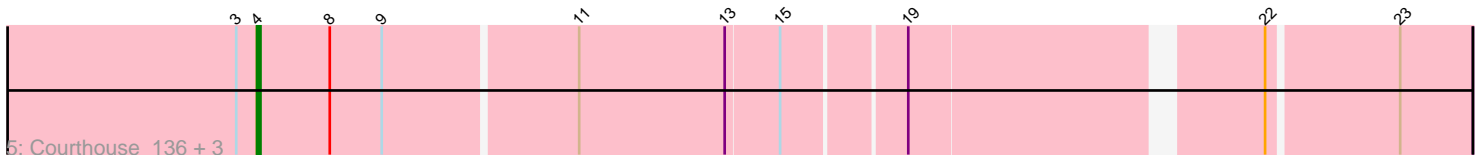
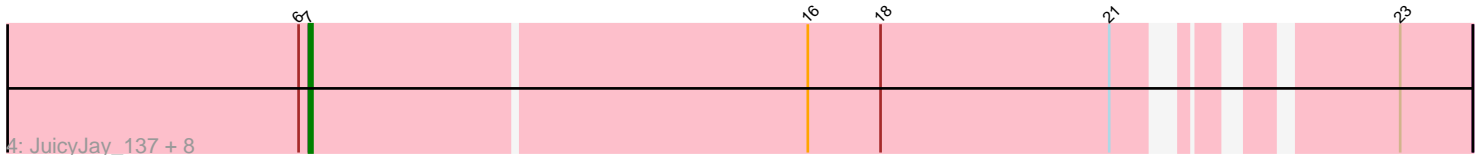
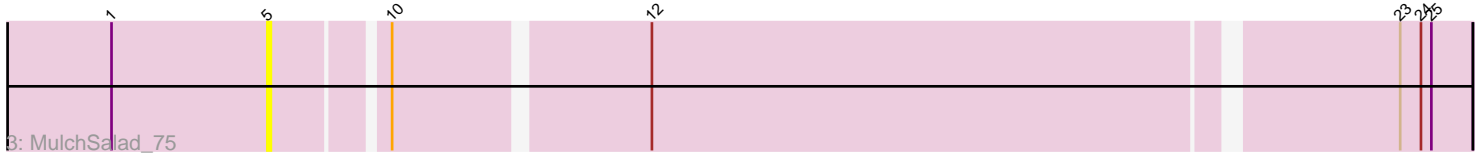
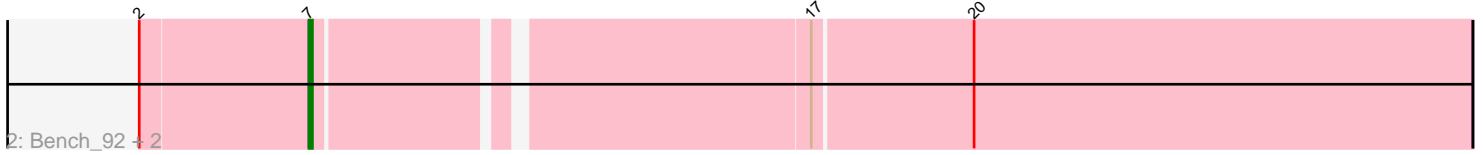


# Pham 212444



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 212444 Report

This analysis was run 02/22/25 on database version 588.

Pham number 212444 has 119 members, 11 are drafts.

Phages represented in each track:

- Track 1 : Thimble\_91, Phaux\_91, Tarkin\_88, Filch\_90, Highbury\_88, TBrady12\_92, Command613\_91, ShereKhan\_87, Hopey\_89, CrystalP\_88, Quallification\_90, Terminus\_92, Rakim\_90, Mosby\_85, Myrale\_89, Policronamos\_92, Dusk\_86, NelitzaMV\_87, Ukulele\_84, Pharsalus\_86, BugsBunny\_89, Czyszczone1\_90, Misfit\_90, Maxxinista\_91, Stark\_90, ShamWow\_89, ChosenOne\_89, Easy2Say\_90, StellaBean\_87, Teaspoon\_90, Pumpkin\_92, Marshmallow\_87, Lilpickle\_88, Henry\_87, Mindy\_88, Tomaszewski\_84, Cjw1\_89, Goku\_88, RiverMonster\_89, TeardropMSU\_85, Sassay\_84, Elite2014\_88, Saints25\_88, Eureka\_88, Youngblood\_92, Phaja\_87, Kostya\_89, Kanye\_86, SophKB\_86, Paperbeatsrock\_88, Inca\_86, Contagion\_85, Xandras\_88, Toto\_87, Simpliphy\_88, DrDrey\_89, Murica\_92, MadamMonkfish\_89, BilboSwaggins\_88, FairyPath\_89, Murphy\_89, StolenFromERC\_92, Tuco\_90, ABCat\_86, Miniwave\_84, Lilizi\_90, Bruin\_86, xkcd\_92, Willez\_84, Kimchi\_93, AmericanBeauty\_93, Gage\_91, Dumbo\_89, IHOP\_87
- Track 2 : Bench\_92, Palpatine\_91, BadStone\_86
- Track 3 : MulchSalad\_75
- Track 4 : JuicyJay\_137, Optimus\_132, Duke13\_137, Kalah2\_132, ThreeRngTarjay\_136, Ejimix\_134, Dallas\_142, Beem\_143, Zelink\_136
- Track 5 : Courthouse\_136, Superphikiman\_138, LittleE\_143, Shaboozey\_140
- Track 6 : Bagrid\_142, Bombitas\_129, BAKA\_141, NihilNomen\_143, HokkenD\_133, EricMillard\_133, Dove\_127, Constella\_135, Halley\_143, Minerva\_141, Hughesyang\_140, Yeet\_134, Pound\_129, Klein\_139, Redno2\_133, Phoebus\_141
- Track 7 : Schatzie\_137, Wanda\_141, Odette\_145, DmpstrDiver\_142
- Track 8 : Marleymoo\_124, Bobby\_131
- Track 9 : Hannaconda\_133, KashFlow\_138, Omega\_148, Gonephishing\_134, Rearden\_138
- Track 10 : Ariel\_140

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

The start number called the most often in the published annotations is 2, it was called in 70 of the 108 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ABCat\_86, AmericanBeauty\_93, BilboSwaggins\_88, Bruin\_86, BugsBunny\_89, ChosenOne\_89, Cjw1\_89, Command613\_91, Contagion\_85, CrystalP\_88, Czyszczone1\_90, DrDrey\_89, Dumbo\_89, Dusk\_86, Easy2Say\_90, Elite2014\_88, Eureka\_88, FairyPath\_89, Filch\_90, Gage\_91, Goku\_88, Henry\_87, Highbury\_88, Hopey\_89, IHOP\_87, Inca\_86, Kanye\_86, Kimchi\_93, Kostya\_89, Lilizi\_90, Lilipickle\_88, MadamMonkfish\_89, Marshmallow\_87, Maxxinista\_91, Mindy\_88, Miniwave\_84, Misfit\_90, Mosby\_85, Murica\_92, Murphy\_89, Myrale\_89, NelitzaMV\_87, Paperbeatsrock\_88, Phaja\_87, Pharsalus\_86, Phaux\_91, Policronamos\_92, Pumpkin\_92, Qualification\_90, Rakim\_90, RiverMonster\_89, Saints25\_88, Sassay\_84, ShamWow\_89, ShereKhan\_87, Simpliphy\_88, SophKB\_86, Stark\_90, StellaBean\_87, StolenFromERC\_92, TBrady12\_92, Tarkin\_88, TeardropMSU\_85, Teaspoon\_90, Terminus\_92, Thimble\_91, Tomaszewski\_84, Toto\_87, Tuco\_90, Ukulele\_84, Willez\_84, Xandras\_88, Youngblood\_92, xkcd\_92,

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

- BadStone\_86, Bench\_92, Palpatine\_91,

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

- Ariel\_140, BAKA\_141, Bagrid\_142, Beem\_143, Bobby\_131, Bombitas\_129, Constella\_135, Courthouse\_136, Dallas\_142, DmpstrDiver\_142, Dove\_127, Duke13\_137, Ejimix\_134, EricMillard\_133, Gonephishing\_134, Halley\_143, Hannaconda\_133, HokkenD\_133, Hughesyang\_140, JuicyJay\_137, Kalah2\_132, KashFlow\_138, Klein\_139, LittleE\_143, Marleymoo\_124, Minerva\_141, MulchSalad\_75, NihilNomen\_143, Odette\_145, Omega\_148, Optimus\_132, Phoebus\_141, Pound\_129, Rearden\_138, Redno2\_133, Schatzie\_137, Shaboozey\_140, Superphikiman\_138, ThreeRngTarjay\_136, Wanda\_141, Yeet\_134, Zelink\_136,

### Summary by start number:

Start 2:

- Found in 77 of 119 ( 64.7% ) of genes in pham
- Manual Annotations of this start: 70 of 108
- Called 96.1% of time when present
- Phage (with cluster) where this start called: ABCat\_86 (E), AmericanBeauty\_93 (E), BilboSwaggins\_88 (E), Bruin\_86 (E), BugsBunny\_89 (E), ChosenOne\_89 (E), Cjw1\_89 (E), Command613\_91 (E), Contagion\_85 (E), CrystalP\_88 (E), Czyszczone1\_90 (E), DrDrey\_89 (E), Dumbo\_89 (E), Dusk\_86 (E), Easy2Say\_90 (E), Elite2014\_88 (E), Eureka\_88 (E), FairyPath\_89 (E), Filch\_90 (E), Gage\_91 (E), Goku\_88 (E), Henry\_87 (E), Highbury\_88 (E), Hopey\_89 (E), IHOP\_87 (E), Inca\_86 (E), Kanye\_86 (E), Kimchi\_93 (E), Kostya\_89 (E), Lilizi\_90 (E), Lilipickle\_88 (E), MadamMonkfish\_89 (E), Marshmallow\_87 (E), Maxxinista\_91 (E), Mindy\_88 (E), Miniwave\_84 (E), Misfit\_90 (E), Mosby\_85 (E), Murica\_92 (E), Murphy\_89 (E), Myrale\_89 (E), NelitzaMV\_87 (E), Paperbeatsrock\_88 (E), Phaja\_87 (E), Pharsalus\_86 (E), Phaux\_91 (E), Policronamos\_92 (E), Pumpkin\_92 (E), Qualification\_90 (E), Rakim\_90 (E), RiverMonster\_89 (E), Saints25\_88 (E), Sassay\_84 (E), ShamWow\_89 (E), ShereKhan\_87 (E), Simpliphy\_88 (E), SophKB\_86 (E), Stark\_90 (E), StellaBean\_87 (E), StolenFromERC\_92 (E), TBrady12\_92 (E), Tarkin\_88 (E), TeardropMSU\_85 (E), Teaspoon\_90 (E), Terminus\_92 (E), Thimble\_91 (E), Tomaszewski\_84 (E), Toto\_87 (E), Tuco\_90 (E), Ukulele\_84 (E), Willez\_84 (E), Xandras\_88 (E), Youngblood\_92 (E), xkcd\_92 (E),

#### Start 3:

- Found in 10 of 119 ( 8.4% ) of genes in pham
- Manual Annotations of this start: 1 of 108
- Called 10.0% of time when present
- Phage (with cluster) where this start called: Ariel\_140 (J),

#### Start 4:

- Found in 10 of 119 ( 8.4% ) of genes in pham
- Manual Annotations of this start: 6 of 108
- Called 90.0% of time when present
- Phage (with cluster) where this start called: Courthouse\_136 (J), Gonephishing\_134 (J), Hannaconda\_133 (J), KashFlow\_138 (J), LittleE\_143 (J), Omega\_148 (J), Rearden\_138 (J), Shaboozey\_140 (J), Superphikiman\_138 (J),

#### Start 5:

- 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: MulchSalad\_75 (F),

#### Start 6:

- Found in 29 of 119 ( 24.4% ) of genes in pham
- Manual Annotations of this start: 18 of 108
- Called 69.0% of time when present
- Phage (with cluster) where this start called: BAKA\_141 (J), Bagrid\_142 (J), Bombitas\_129 (J), Constella\_135 (J), DmpstrDiver\_142 (J), Dove\_127 (J), EricMillard\_133 (J), Halley\_143 (J), HokkenD\_133 (J), Hughesyang\_140 (J), Klein\_139 (J), Minerva\_141 (J), NihilNomen\_143 (J), Odette\_145 (J), Phoebus\_141 (J), Pound\_129 (J), Redno2\_133 (J), Schatzie\_137 (J), Wanda\_141 (J), Yeet\_134 (J),

#### Start 7:

- Found in 108 of 119 ( 90.8% ) of genes in pham
- Manual Annotations of this start: 13 of 108
- Called 13.0% of time when present
- Phage (with cluster) where this start called: BadStone\_86 (E), Beem\_143 (J), Bench\_92 (E), Bobby\_131 (J), Dallas\_142 (J), Duke13\_137 (J), Ejimix\_134 (J), JuicyJay\_137 (J), Kalah2\_132 (J), Marleymoo\_124 (J), Optimus\_132 (J), Palpatine\_91 (E), ThreeRngTarjay\_136 (J), Zelink\_136 (J),

### **Summary by clusters:**

There are 3 clusters represented in this pham: J, E, F,

Info for manual annotations of cluster E:

- Start number 2 was manually annotated 70 times for cluster E.
- Start number 7 was manually annotated 3 times for cluster E.

Info for manual annotations of cluster J:

- Start number 3 was manually annotated 1 time for cluster J.
- Start number 4 was manually annotated 6 times for cluster J.
- Start number 6 was manually annotated 18 times for cluster J.
- Start number 7 was manually annotated 10 times for cluster J.

**Gene Information:**

Gene: ABCat\_86 Start: 54488, Stop: 54856, Start Num: 2

Candidate Starts for ABCat\_86:

(Start: 2 @54488 has 70 MA's), (Start: 7 @54536 has 13 MA's), (17, 54668), (20, 54713),

Gene: AmericanBeauty\_93 Start: 54657, Stop: 55025, Start Num: 2

Candidate Starts for AmericanBeauty\_93:

(Start: 2 @54657 has 70 MA's), (Start: 7 @54705 has 13 MA's), (17, 54837), (20, 54882),

Gene: Ariel\_140 Start: 72314, Stop: 72649, Start Num: 3

Candidate Starts for Ariel\_140:

(Start: 3 @72314 has 1 MA's), (Start: 4 @72320 has 6 MA's), (8, 72341), (9, 72356), (11, 72410), (13, 72452), (15, 72467), (19, 72500), (22, 72593), (23, 72629),

Gene: BAKA\_141 Start: 75066, Stop: 75377, Start Num: 6

Candidate Starts for BAKA\_141:

(Start: 6 @75066 has 18 MA's), (Start: 7 @75069 has 13 MA's), (16, 75210), (18, 75231), (21, 75297), (23, 75357),

Gene: BadStone\_86 Start: 54105, Stop: 54425, Start Num: 7

Candidate Starts for BadStone\_86:

(Start: 2 @54057 has 70 MA's), (Start: 7 @54105 has 13 MA's), (17, 54237), (20, 54282),

Gene: Bagrid\_142 Start: 75761, Stop: 76072, Start Num: 6

Candidate Starts for Bagrid\_142:

(Start: 6 @75761 has 18 MA's), (Start: 7 @75764 has 13 MA's), (16, 75905), (18, 75926), (21, 75992), (23, 76052),

Gene: Beem\_143 Start: 76667, Stop: 76975, Start Num: 7

Candidate Starts for Beem\_143:

(Start: 6 @76664 has 18 MA's), (Start: 7 @76667 has 13 MA's), (16, 76808), (18, 76829), (21, 76895), (23, 76955),

Gene: Bench\_92 Start: 54200, Stop: 54520, Start Num: 7

Candidate Starts for Bench\_92:

(Start: 2 @54152 has 70 MA's), (Start: 7 @54200 has 13 MA's), (17, 54332), (20, 54377),

Gene: BilboSwaggins\_88 Start: 54454, Stop: 54822, Start Num: 2

Candidate Starts for BilboSwaggins\_88:

(Start: 2 @54454 has 70 MA's), (Start: 7 @54502 has 13 MA's), (17, 54634), (20, 54679),

Gene: Bobby\_131 Start: 76521, Stop: 76829, Start Num: 7

Candidate Starts for Bobby\_131:

(Start: 7 @76521 has 13 MA's), (10, 76542), (23, 76809),

Gene: Bombitas\_129 Start: 74075, Stop: 74386, Start Num: 6

Candidate Starts for Bombitas\_129:

(Start: 6 @74075 has 18 MA's), (Start: 7 @74078 has 13 MA's), (16, 74219), (18, 74240), (21, 74306), (23, 74366),

Gene: Bruin\_86 Start: 53031, Stop: 53399, Start Num: 2

Candidate Starts for Bruin\_86:

(Start: 2 @53031 has 70 MA's), (Start: 7 @53079 has 13 MA's), (17, 53211), (20, 53256),

Gene: BugsBunny\_89 Start: 54560, Stop: 54928, Start Num: 2

Candidate Starts for BugsBunny\_89:

(Start: 2 @54560 has 70 MA's), (Start: 7 @54608 has 13 MA's), (17, 54740), (20, 54785),

Gene: ChosenOne\_89 Start: 53512, Stop: 53880, Start Num: 2

Candidate Starts for ChosenOne\_89:

(Start: 2 @53512 has 70 MA's), (Start: 7 @53560 has 13 MA's), (17, 53692), (20, 53737),

Gene: Cjw1\_89 Start: 55207, Stop: 55575, Start Num: 2

Candidate Starts for Cjw1\_89:

(Start: 2 @55207 has 70 MA's), (Start: 7 @55255 has 13 MA's), (17, 55387), (20, 55432),

Gene: Command613\_91 Start: 54551, Stop: 54919, Start Num: 2

Candidate Starts for Command613\_91:

(Start: 2 @54551 has 70 MA's), (Start: 7 @54599 has 13 MA's), (17, 54731), (20, 54776),

Gene: Constella\_135 Start: 75317, Stop: 75628, Start Num: 6

Candidate Starts for Constella\_135:

(Start: 6 @75317 has 18 MA's), (Start: 7 @75320 has 13 MA's), (16, 75461), (18, 75482), (21, 75548), (23, 75608),

Gene: Contagion\_85 Start: 53312, Stop: 53680, Start Num: 2

Candidate Starts for Contagion\_85:

(Start: 2 @53312 has 70 MA's), (Start: 7 @53360 has 13 MA's), (17, 53492), (20, 53537),

Gene: Courthouse\_136 Start: 72178, Stop: 72507, Start Num: 4

Candidate Starts for Courthouse\_136:

(Start: 3 @72172 has 1 MA's), (Start: 4 @72178 has 6 MA's), (8, 72199), (9, 72214), (11, 72268), (13, 72310), (15, 72325), (19, 72358), (22, 72451), (23, 72487),

Gene: CrystalP\_88 Start: 54454, Stop: 54822, Start Num: 2

Candidate Starts for CrystalP\_88:

(Start: 2 @54454 has 70 MA's), (Start: 7 @54502 has 13 MA's), (17, 54634), (20, 54679),

Gene: Czyszczone1\_90 Start: 54015, Stop: 54383, Start Num: 2

Candidate Starts for Czyszczone1\_90:

(Start: 2 @54015 has 70 MA's), (Start: 7 @54063 has 13 MA's), (17, 54195), (20, 54240),

Gene: Dallas\_142 Start: 76134, Stop: 76442, Start Num: 7

Candidate Starts for Dallas\_142:

(Start: 6 @76131 has 18 MA's), (Start: 7 @76134 has 13 MA's), (16, 76275), (18, 76296), (21, 76362), (23, 76422),

Gene: DmpstrDiver\_142 Start: 76050, Stop: 76361, Start Num: 6

Candidate Starts for DmpstrDiver\_142:

(Start: 6 @76050 has 18 MA's), (Start: 7 @76053 has 13 MA's), (14, 76179), (16, 76194), (18, 76215), (21, 76281), (23, 76341),

Gene: Dove\_127 Start: 71649, Stop: 71960, Start Num: 6  
Candidate Starts for Dove\_127:  
(Start: 6 @71649 has 18 MA's), (Start: 7 @71652 has 13 MA's), (16, 71793), (18, 71814), (21, 71880),  
(23, 71940),

Gene: DrDrey\_89 Start: 54934, Stop: 55302, Start Num: 2  
Candidate Starts for DrDrey\_89:  
(Start: 2 @54934 has 70 MA's), (Start: 7 @54982 has 13 MA's), (17, 55114), (20, 55159),

Gene: Duke13\_137 Start: 73354, Stop: 73662, Start Num: 7  
Candidate Starts for Duke13\_137:  
(Start: 6 @73351 has 18 MA's), (Start: 7 @73354 has 13 MA's), (16, 73495), (18, 73516), (21, 73582),  
(23, 73642),

Gene: Dumbo\_89 Start: 53414, Stop: 53782, Start Num: 2  
Candidate Starts for Dumbo\_89:  
(Start: 2 @53414 has 70 MA's), (Start: 7 @53462 has 13 MA's), (17, 53594), (20, 53639),

Gene: Dusk\_86 Start: 53717, Stop: 54085, Start Num: 2  
Candidate Starts for Dusk\_86:  
(Start: 2 @53717 has 70 MA's), (Start: 7 @53765 has 13 MA's), (17, 53897), (20, 53942),

Gene: Easy2Say\_90 Start: 54916, Stop: 55284, Start Num: 2  
Candidate Starts for Easy2Say\_90:  
(Start: 2 @54916 has 70 MA's), (Start: 7 @54964 has 13 MA's), (17, 55096), (20, 55141),

Gene: Ejimix\_134 Start: 76202, Stop: 76510, Start Num: 7  
Candidate Starts for Ejimix\_134:  
(Start: 6 @76199 has 18 MA's), (Start: 7 @76202 has 13 MA's), (16, 76343), (18, 76364), (21, 76430),  
(23, 76490),

Gene: Elite2014\_88 Start: 53511, Stop: 53879, Start Num: 2  
Candidate Starts for Elite2014\_88:  
(Start: 2 @53511 has 70 MA's), (Start: 7 @53559 has 13 MA's), (17, 53691), (20, 53736),

Gene: EricMillard\_133 Start: 74703, Stop: 75014, Start Num: 6  
Candidate Starts for EricMillard\_133:  
(Start: 6 @74703 has 18 MA's), (Start: 7 @74706 has 13 MA's), (16, 74847), (18, 74868), (21, 74934),  
(23, 74994),

Gene: Eureka\_88 Start: 54424, Stop: 54792, Start Num: 2  
Candidate Starts for Eureka\_88:  
(Start: 2 @54424 has 70 MA's), (Start: 7 @54472 has 13 MA's), (17, 54604), (20, 54649),

Gene: FairyPath\_89 Start: 54630, Stop: 54998, Start Num: 2  
Candidate Starts for FairyPath\_89:  
(Start: 2 @54630 has 70 MA's), (Start: 7 @54678 has 13 MA's), (17, 54810), (20, 54855),

Gene: Filch\_90 Start: 53440, Stop: 53808, Start Num: 2  
Candidate Starts for Filch\_90:  
(Start: 2 @53440 has 70 MA's), (Start: 7 @53488 has 13 MA's), (17, 53620), (20, 53665),

Gene: Gage\_91 Start: 54158, Stop: 54526, Start Num: 2

Candidate Starts for Gage\_91:

(Start: 2 @54158 has 70 MA's), (Start: 7 @54206 has 13 MA's), (17, 54338), (20, 54383),

Gene: Goku\_88 Start: 54153, Stop: 54521, Start Num: 2

Candidate Starts for Goku\_88:

(Start: 2 @54153 has 70 MA's), (Start: 7 @54201 has 13 MA's), (17, 54333), (20, 54378),

Gene: Gonephishing\_134 Start: 72306, Stop: 72635, Start Num: 4

Candidate Starts for Gonephishing\_134:

(Start: 3 @72300 has 1 MA's), (Start: 4 @72306 has 6 MA's), (8, 72327), (9, 72342), (11, 72396), (13, 72438), (15, 72453), (19, 72486), (23, 72615),

Gene: Halley\_143 Start: 76515, Stop: 76826, Start Num: 6

Candidate Starts for Halley\_143:

(Start: 6 @76515 has 18 MA's), (Start: 7 @76518 has 13 MA's), (16, 76659), (18, 76680), (21, 76746), (23, 76806),

Gene: Hannaconda\_133 Start: 72520, Stop: 72849, Start Num: 4

Candidate Starts for Hannaconda\_133:

(Start: 3 @72514 has 1 MA's), (Start: 4 @72520 has 6 MA's), (8, 72541), (9, 72556), (11, 72610), (13, 72652), (15, 72667), (19, 72700), (23, 72829),

Gene: Henry\_87 Start: 53894, Stop: 54262, Start Num: 2

Candidate Starts for Henry\_87:

(Start: 2 @53894 has 70 MA's), (Start: 7 @53942 has 13 MA's), (17, 54074), (20, 54119),

Gene: Highbury\_88 Start: 53584, Stop: 53952, Start Num: 2

Candidate Starts for Highbury\_88:

(Start: 2 @53584 has 70 MA's), (Start: 7 @53632 has 13 MA's), (17, 53764), (20, 53809),

Gene: HokkenD\_133 Start: 75399, Stop: 75710, Start Num: 6

Candidate Starts for HokkenD\_133:

(Start: 6 @75399 has 18 MA's), (Start: 7 @75402 has 13 MA's), (16, 75543), (18, 75564), (21, 75630), (23, 75690),

Gene: Hokey\_89 Start: 54126, Stop: 54494, Start Num: 2

Candidate Starts for Hokey\_89:

(Start: 2 @54126 has 70 MA's), (Start: 7 @54174 has 13 MA's), (17, 54306), (20, 54351),

Gene: Hughesyang\_140 Start: 76285, Stop: 76596, Start Num: 6

Candidate Starts for Hughesyang\_140:

(Start: 6 @76285 has 18 MA's), (Start: 7 @76288 has 13 MA's), (16, 76429), (18, 76450), (21, 76516), (23, 76576),

Gene: IHOP\_87 Start: 54057, Stop: 54425, Start Num: 2

Candidate Starts for IHOP\_87:

(Start: 2 @54057 has 70 MA's), (Start: 7 @54105 has 13 MA's), (17, 54237), (20, 54282),

Gene: Inca\_86 Start: 52546, Stop: 52914, Start Num: 2

Candidate Starts for Inca\_86:

(Start: 2 @52546 has 70 MA's), (Start: 7 @52594 has 13 MA's), (17, 52726), (20, 52771),

Gene: JuicyJay\_137 Start: 77803, Stop: 78111, Start Num: 7



Candidate Starts for JuicyJay\_137:

(Start: 6 @77800 has 18 MA's), (Start: 7 @77803 has 13 MA's), (16, 77944), (18, 77965), (21, 78031), (23, 78091),

Gene: Kalah2\_132 Start: 75409, Stop: 75717, Start Num: 7

Candidate Starts for Kalah2\_132:

(Start: 6 @75406 has 18 MA's), (Start: 7 @75409 has 13 MA's), (16, 75550), (18, 75571), (21, 75637), (23, 75697),

Gene: Kanye\_86 Start: 53641, Stop: 54009, Start Num: 2

Candidate Starts for Kanye\_86:

(Start: 2 @53641 has 70 MA's), (Start: 7 @53689 has 13 MA's), (17, 53821), (20, 53866),

Gene: KashFlow\_138 Start: 74098, Stop: 74427, Start Num: 4

Candidate Starts for KashFlow\_138:

(Start: 3 @74092 has 1 MA's), (Start: 4 @74098 has 6 MA's), (8, 74119), (9, 74134), (11, 74188), (13, 74230), (15, 74245), (19, 74278), (23, 74407),

Gene: Kimchi\_93 Start: 54161, Stop: 54529, Start Num: 2

Candidate Starts for Kimchi\_93:

(Start: 2 @54161 has 70 MA's), (Start: 7 @54209 has 13 MA's), (17, 54341), (20, 54386),

Gene: Klein\_139 Start: 74008, Stop: 74319, Start Num: 6

Candidate Starts for Klein\_139:

(Start: 6 @74008 has 18 MA's), (Start: 7 @74011 has 13 MA's), (16, 74152), (18, 74173), (21, 74239), (23, 74299),

Gene: Kostya\_89 Start: 54159, Stop: 54527, Start Num: 2

Candidate Starts for Kostya\_89:

(Start: 2 @54159 has 70 MA's), (Start: 7 @54207 has 13 MA's), (17, 54339), (20, 54384),

Gene: Lilizi\_90 Start: 53623, Stop: 53991, Start Num: 2

Candidate Starts for Lilizi\_90:

(Start: 2 @53623 has 70 MA's), (Start: 7 @53671 has 13 MA's), (17, 53803), (20, 53848),

Gene: Lilpickle\_88 Start: 53511, Stop: 53879, Start Num: 2

Candidate Starts for Lilpickle\_88:

(Start: 2 @53511 has 70 MA's), (Start: 7 @53559 has 13 MA's), (17, 53691), (20, 53736),

Gene: LittleE\_143 Start: 75162, Stop: 75491, Start Num: 4

Candidate Starts for LittleE\_143:

(Start: 3 @75156 has 1 MA's), (Start: 4 @75162 has 6 MA's), (8, 75183), (9, 75198), (11, 75252), (13, 75294), (15, 75309), (19, 75342), (22, 75435), (23, 75471),

Gene: MadamMonkfish\_89 Start: 53238, Stop: 53606, Start Num: 2

Candidate Starts for MadamMonkfish\_89:

(Start: 2 @53238 has 70 MA's), (Start: 7 @53286 has 13 MA's), (17, 53418), (20, 53463),

Gene: Marleymoo\_124 Start: 72267, Stop: 72575, Start Num: 7

Candidate Starts for Marleymoo\_124:

(Start: 7 @72267 has 13 MA's), (10, 72288), (23, 72555),

Gene: Marshmallow\_87 Start: 54787, Stop: 55155, Start Num: 2

Candidate Starts for Marshmallow\_87:

(Start: 2 @54787 has 70 MA's), (Start: 7 @54835 has 13 MA's), (17, 54967), (20, 55012),

Gene: Maxxinista\_91 Start: 53884, Stop: 54252, Start Num: 2

Candidate Starts for Maxxinista\_91:

(Start: 2 @53884 has 70 MA's), (Start: 7 @53932 has 13 MA's), (17, 54064), (20, 54109),

Gene: Mindy\_88 Start: 53060, Stop: 53428, Start Num: 2

Candidate Starts for Mindy\_88:

(Start: 2 @53060 has 70 MA's), (Start: 7 @53108 has 13 MA's), (17, 53240), (20, 53285),

Gene: Minerva\_141 Start: 75457, Stop: 75768, Start Num: 6

Candidate Starts for Minerva\_141:

(Start: 6 @75457 has 18 MA's), (Start: 7 @75460 has 13 MA's), (16, 75601), (18, 75622), (21, 75688), (23, 75748),

Gene: Miniwave\_84 Start: 53555, Stop: 53923, Start Num: 2

Candidate Starts for Miniwave\_84:

(Start: 2 @53555 has 70 MA's), (Start: 7 @53603 has 13 MA's), (17, 53735), (20, 53780),

Gene: Misfit\_90 Start: 55029, Stop: 55397, Start Num: 2

Candidate Starts for Misfit\_90:

(Start: 2 @55029 has 70 MA's), (Start: 7 @55077 has 13 MA's), (17, 55209), (20, 55254),

Gene: Mosby\_85 Start: 53312, Stop: 53680, Start Num: 2

Candidate Starts for Mosby\_85:

(Start: 2 @53312 has 70 MA's), (Start: 7 @53360 has 13 MA's), (17, 53492), (20, 53537),

Gene: MulchSalad\_75 Start: 46643, Stop: 46969, Start Num: 5

Candidate Starts for MulchSalad\_75:

(1, 46598), (5, 46643), (10, 46673), (12, 46742), (23, 46949), (24, 46955), (25, 46958),

Gene: Murica\_92 Start: 54955, Stop: 55323, Start Num: 2

Candidate Starts for Murica\_92:

(Start: 2 @54955 has 70 MA's), (Start: 7 @55003 has 13 MA's), (17, 55135), (20, 55180),

Gene: Murphy\_89 Start: 54396, Stop: 54764, Start Num: 2

Candidate Starts for Murphy\_89:

(Start: 2 @54396 has 70 MA's), (Start: 7 @54444 has 13 MA's), (17, 54576), (20, 54621),

Gene: Myrale\_89 Start: 54518, Stop: 54886, Start Num: 2

Candidate Starts for Myrale\_89:

(Start: 2 @54518 has 70 MA's), (Start: 7 @54566 has 13 MA's), (17, 54698), (20, 54743),

Gene: NelitzaMV\_87 Start: 53601, Stop: 53969, Start Num: 2

Candidate Starts for NelitzaMV\_87:

(Start: 2 @53601 has 70 MA's), (Start: 7 @53649 has 13 MA's), (17, 53781), (20, 53826),

Gene: NihilNomen\_143 Start: 75745, Stop: 76056, Start Num: 6

Candidate Starts for NihilNomen\_143:

(Start: 6 @75745 has 18 MA's), (Start: 7 @75748 has 13 MA's), (16, 75889), (18, 75910), (21, 75976), (23, 76036),

Gene: Odette\_145 Start: 77888, Stop: 78199, Start Num: 6  
Candidate Starts for Odette\_145:  
(Start: 6 @77888 has 18 MA's), (Start: 7 @77891 has 13 MA's), (14, 78017), (16, 78032), (18, 78053),  
(21, 78119), (23, 78179),

Gene: Omega\_148 Start: 76647, Stop: 76976, Start Num: 4  
Candidate Starts for Omega\_148:  
(Start: 3 @76641 has 1 MA's), (Start: 4 @76647 has 6 MA's), (8, 76668), (9, 76683), (11, 76737), (13,  
76779), (15, 76794), (19, 76827), (23, 76956),

Gene: Optimus\_132 Start: 73028, Stop: 73336, Start Num: 7  
Candidate Starts for Optimus\_132:  
(Start: 6 @73025 has 18 MA's), (Start: 7 @73028 has 13 MA's), (16, 73169), (18, 73190), (21, 73256),  
(23, 73316),

Gene: Palpatine\_91 Start: 55030, Stop: 55350, Start Num: 7  
Candidate Starts for Palpatine\_91:  
(Start: 2 @54982 has 70 MA's), (Start: 7 @55030 has 13 MA's), (17, 55162), (20, 55207),

Gene: Paperbeatsrock\_88 Start: 54233, Stop: 54601, Start Num: 2  
Candidate Starts for Paperbeatsrock\_88:  
(Start: 2 @54233 has 70 MA's), (Start: 7 @54281 has 13 MA's), (17, 54413), (20, 54458),

Gene: Phaja\_87 Start: 54059, Stop: 54427, Start Num: 2  
Candidate Starts for Phaja\_87:  
(Start: 2 @54059 has 70 MA's), (Start: 7 @54107 has 13 MA's), (17, 54239), (20, 54284),

Gene: Pharsalus\_86 Start: 54033, Stop: 54401, Start Num: 2  
Candidate Starts for Pharsalus\_86:  
(Start: 2 @54033 has 70 MA's), (Start: 7 @54081 has 13 MA's), (17, 54213), (20, 54258),

Gene: Phaux\_91 Start: 55000, Stop: 55368, Start Num: 2  
Candidate Starts for Phaux\_91:  
(Start: 2 @55000 has 70 MA's), (Start: 7 @55048 has 13 MA's), (17, 55180), (20, 55225),

Gene: Phoebus\_141 Start: 77639, Stop: 77950, Start Num: 6  
Candidate Starts for Phoebus\_141:  
(Start: 6 @77639 has 18 MA's), (Start: 7 @77642 has 13 MA's), (16, 77783), (18, 77804), (21, 77870),  
(23, 77930),

Gene: Policronamos\_92 Start: 55000, Stop: 55368, Start Num: 2  
Candidate Starts for Policronamos\_92:  
(Start: 2 @55000 has 70 MA's), (Start: 7 @55048 has 13 MA's), (17, 55180), (20, 55225),

Gene: Pound\_129 Start: 74337, Stop: 74648, Start Num: 6  
Candidate Starts for Pound\_129:  
(Start: 6 @74337 has 18 MA's), (Start: 7 @74340 has 13 MA's), (16, 74481), (18, 74502), (21, 74568),  
(23, 74628),

Gene: Pumpkin\_92 Start: 54652, Stop: 55020, Start Num: 2  
Candidate Starts for Pumpkin\_92:  
(Start: 2 @54652 has 70 MA's), (Start: 7 @54700 has 13 MA's), (17, 54832), (20, 54877),

Gene: Quallification\_90 Start: 54641, Stop: 55009, Start Num: 2

Candidate Starts for Quallification\_90:

(Start: 2 @54641 has 70 MA's), (Start: 7 @54689 has 13 MA's), (17, 54821), (20, 54866),

Gene: Rakim\_90 Start: 53970, Stop: 54338, Start Num: 2

Candidate Starts for Rakim\_90:

(Start: 2 @53970 has 70 MA's), (Start: 7 @54018 has 13 MA's), (17, 54150), (20, 54195),

Gene: Rearden\_138 Start: 73864, Stop: 74193, Start Num: 4

Candidate Starts for Rearden\_138:

(Start: 3 @73858 has 1 MA's), (Start: 4 @73864 has 6 MA's), (8, 73885), (9, 73900), (11, 73954), (13, 73996), (15, 74011), (19, 74044), (23, 74173),

Gene: Redno2\_133 Start: 73027, Stop: 73338, Start Num: 6

Candidate Starts for Redno2\_133:

(Start: 6 @73027 has 18 MA's), (Start: 7 @73030 has 13 MA's), (16, 73171), (18, 73192), (21, 73258), (23, 73318),

Gene: RiverMonster\_89 Start: 54172, Stop: 54540, Start Num: 2

Candidate Starts for RiverMonster\_89:

(Start: 2 @54172 has 70 MA's), (Start: 7 @54220 has 13 MA's), (17, 54352), (20, 54397),

Gene: Saints25\_88 Start: 53584, Stop: 53952, Start Num: 2

Candidate Starts for Saints25\_88:

(Start: 2 @53584 has 70 MA's), (Start: 7 @53632 has 13 MA's), (17, 53764), (20, 53809),

Gene: Sassay\_84 Start: 52274, Stop: 52642, Start Num: 2

Candidate Starts for Sassay\_84:

(Start: 2 @52274 has 70 MA's), (Start: 7 @52322 has 13 MA's), (17, 52454), (20, 52499),

Gene: Schatzie\_137 Start: 76307, Stop: 76618, Start Num: 6

Candidate Starts for Schatzie\_137:

(Start: 6 @76307 has 18 MA's), (Start: 7 @76310 has 13 MA's), (14, 76436), (16, 76451), (18, 76472), (21, 76538), (23, 76598),

Gene: Shaboozey\_140 Start: 73609, Stop: 73938, Start Num: 4

Candidate Starts for Shaboozey\_140:

(Start: 3 @73603 has 1 MA's), (Start: 4 @73609 has 6 MA's), (8, 73630), (9, 73645), (11, 73699), (13, 73741), (15, 73756), (19, 73789), (22, 73882), (23, 73918),

Gene: ShamWow\_89 Start: 54454, Stop: 54822, Start Num: 2

Candidate Starts for ShamWow\_89:

(Start: 2 @54454 has 70 MA's), (Start: 7 @54502 has 13 MA's), (17, 54634), (20, 54679),

Gene: ShereKhan\_87 Start: 54566, Stop: 54934, Start Num: 2

Candidate Starts for ShereKhan\_87:

(Start: 2 @54566 has 70 MA's), (Start: 7 @54614 has 13 MA's), (17, 54746), (20, 54791),

Gene: Simpliphy\_88 Start: 53574, Stop: 53942, Start Num: 2

Candidate Starts for Simpliphy\_88:

(Start: 2 @53574 has 70 MA's), (Start: 7 @53622 has 13 MA's), (17, 53754), (20, 53799),

Gene: SophKB\_86 Start: 53252, Stop: 53620, Start Num: 2

Candidate Starts for SophKB\_86:

(Start: 2 @53252 has 70 MA's), (Start: 7 @53300 has 13 MA's), (17, 53432), (20, 53477),

Gene: Stark\_90 Start: 54055, Stop: 54423, Start Num: 2

Candidate Starts for Stark\_90:

(Start: 2 @54055 has 70 MA's), (Start: 7 @54103 has 13 MA's), (17, 54235), (20, 54280),

Gene: StellaBean\_87 Start: 53778, Stop: 54146, Start Num: 2

Candidate Starts for StellaBean\_87:

(Start: 2 @53778 has 70 MA's), (Start: 7 @53826 has 13 MA's), (17, 53958), (20, 54003),

Gene: StolenFromERC\_92 Start: 54158, Stop: 54526, Start Num: 2

Candidate Starts for StolenFromERC\_92:

(Start: 2 @54158 has 70 MA's), (Start: 7 @54206 has 13 MA's), (17, 54338), (20, 54383),

Gene: Superphikiman\_138 Start: 72460, Stop: 72789, Start Num: 4

Candidate Starts for Superphikiman\_138:

(Start: 3 @72454 has 1 MA's), (Start: 4 @72460 has 6 MA's), (8, 72481), (9, 72496), (11, 72550), (13, 72592), (15, 72607), (19, 72640), (22, 72733), (23, 72769),

Gene: TBrady12\_92 Start: 53994, Stop: 54362, Start Num: 2

Candidate Starts for TBrady12\_92:

(Start: 2 @53994 has 70 MA's), (Start: 7 @54042 has 13 MA's), (17, 54174), (20, 54219),

Gene: Tarkin\_88 Start: 54242, Stop: 54610, Start Num: 2

Candidate Starts for Tarkin\_88:

(Start: 2 @54242 has 70 MA's), (Start: 7 @54290 has 13 MA's), (17, 54422), (20, 54467),

Gene: TeardropMSU\_85 Start: 53242, Stop: 53610, Start Num: 2

Candidate Starts for TeardropMSU\_85:

(Start: 2 @53242 has 70 MA's), (Start: 7 @53290 has 13 MA's), (17, 53422), (20, 53467),

Gene: Teaspoon\_90 Start: 54094, Stop: 54462, Start Num: 2

Candidate Starts for Teaspoon\_90:

(Start: 2 @54094 has 70 MA's), (Start: 7 @54142 has 13 MA's), (17, 54274), (20, 54319),

Gene: Terminus\_92 Start: 55029, Stop: 55397, Start Num: 2

Candidate Starts for Terminus\_92:

(Start: 2 @55029 has 70 MA's), (Start: 7 @55077 has 13 MA's), (17, 55209), (20, 55254),

Gene: Thimble\_91 Start: 53475, Stop: 53843, Start Num: 2

Candidate Starts for Thimble\_91:

(Start: 2 @53475 has 70 MA's), (Start: 7 @53523 has 13 MA's), (17, 53655), (20, 53700),

Gene: ThreeRngTarjay\_136 Start: 76233, Stop: 76541, Start Num: 7

Candidate Starts for ThreeRngTarjay\_136:

(Start: 6 @76230 has 18 MA's), (Start: 7 @76233 has 13 MA's), (16, 76374), (18, 76395), (21, 76461), (23, 76521),

Gene: Tomaszewski\_84 Start: 53405, Stop: 53773, Start Num: 2

Candidate Starts for Tomaszewski\_84:

(Start: 2 @53405 has 70 MA's), (Start: 7 @53453 has 13 MA's), (17, 53585), (20, 53630),

Gene: Toto\_87 Start: 54454, Stop: 54822, Start Num: 2

Candidate Starts for Toto\_87:

(Start: 2 @54454 has 70 MA's), (Start: 7 @54502 has 13 MA's), (17, 54634), (20, 54679),

Gene: Tuco\_90 Start: 55001, Stop: 55369, Start Num: 2

Candidate Starts for Tuco\_90:

(Start: 2 @55001 has 70 MA's), (Start: 7 @55049 has 13 MA's), (17, 55181), (20, 55226),

Gene: Ukulele\_84 Start: 53387, Stop: 53755, Start Num: 2

Candidate Starts for Ukulele\_84:

(Start: 2 @53387 has 70 MA's), (Start: 7 @53435 has 13 MA's), (17, 53567), (20, 53612),

Gene: Wanda\_141 Start: 73937, Stop: 74248, Start Num: 6

Candidate Starts for Wanda\_141:

(Start: 6 @73937 has 18 MA's), (Start: 7 @73940 has 13 MA's), (14, 74066), (16, 74081), (18, 74102), (21, 74168), (23, 74228),

Gene: Willez\_84 Start: 52274, Stop: 52642, Start Num: 2

Candidate Starts for Willez\_84:

(Start: 2 @52274 has 70 MA's), (Start: 7 @52322 has 13 MA's), (17, 52454), (20, 52499),

Gene: Xandras\_88 Start: 53486, Stop: 53854, Start Num: 2

Candidate Starts for Xandras\_88:

(Start: 2 @53486 has 70 MA's), (Start: 7 @53534 has 13 MA's), (17, 53666), (20, 53711),

Gene: Yeet\_134 Start: 75428, Stop: 75739, Start Num: 6

Candidate Starts for Yeet\_134:

(Start: 6 @75428 has 18 MA's), (Start: 7 @75431 has 13 MA's), (16, 75572), (18, 75593), (21, 75659), (23, 75719),

Gene: Youngblood\_92 Start: 54956, Stop: 55324, Start Num: 2

Candidate Starts for Youngblood\_92:

(Start: 2 @54956 has 70 MA's), (Start: 7 @55004 has 13 MA's), (17, 55136), (20, 55181),

Gene: Zelink\_136 Start: 76752, Stop: 77060, Start Num: 7

Candidate Starts for Zelink\_136:

(Start: 6 @76749 has 18 MA's), (Start: 7 @76752 has 13 MA's), (16, 76893), (18, 76914), (21, 76980), (23, 77040),

Gene: xkcd\_92 Start: 55140, Stop: 55508, Start Num: 2

Candidate Starts for xkcd\_92:

(Start: 2 @55140 has 70 MA's), (Start: 7 @55188 has 13 MA's), (17, 55320), (20, 55365),