

Pham 311286



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 311286 Report

This analysis was run 06/27/26 on database version 652.

Pham number 311286 has 171 members, 10 are drafts.

Phages represented in each track:

- Track 1 : Shapes\_88, Rowdy\_88, DustyMartin\_88
- Track 2 : Kerberos\_92, Pomar16\_92, StarStuff\_92
- Track 3 : Tristan\_85
- Track 4 : Tomathan\_92, D32\_80, Travvers\_92, DBQu4n\_92, Naji\_81
- Track 5 : D29\_82.2, Duplo\_93
- Track 6 : MissWhite\_84
- Track 7 : ANI8\_89, VC3\_88, AN9\_89
- Track 8 : BabyBack\_86
- Track 9 : GaugeLDP\_85
- Track 10 : Bactobuster\_81, IronMan\_86
- Track 11 : C3\_82
- Track 12 : NicoleTera\_90
- Track 13 : Kinmap\_98
- Track 14 : Eurydice\_87, Chaph\_86, Eapen\_86, Happiness\_85, JoongJeon\_85, KFPoly\_85, CentreCat\_86, DirtyDunning\_85, Ohfah\_87, BubbleTrouble\_85, Holli\_85, Kratark\_85, Baby16\_86, Thanksgivukkah\_85, LochMonster\_87, Kye\_86, Sparxx\_87, ICleared\_85, Taquarus\_85, PeterPeter\_86, Mazhar510\_86, Nebs\_87, Polymorphads\_87, SheldonCooper\_86, TygerBlood\_86, TroyPia\_87, Cerulean\_88, BellusTerra\_86, JetBlade\_87, Morrow\_88, Alberto7\_87, Eros\_86, Bartimeaus\_86, Phelipe\_86, Lunsford\_86, Scamp\_86, Connomayer\_86, Pumbaa\_86
- Track 15 : Tinybot\_85, Kremtemulon\_83, Funston\_85, Maxo\_88, Koan\_83, YoSam321\_86, Kamy\_85, Miramae\_86, Nemo27\_85, Phighter1804\_86, NorthStar\_83, Koreni\_85, Kingmustik0402\_86, Cintron\_86, Rosa24\_82, AvatarAhPeg\_86, NotAPhaseMom\_85, Ulysses\_85, Lorenzo\_86, Cocoaberry\_86, Stink\_86, Cindaradix\_81, SenorClean\_87, Houdini22\_85, SteMason\_86, Clarenza\_85
- Track 16 : PetiteSangsue\_83, Bumblebee11\_82, Datway\_83
- Track 17 : Noelle\_85, Shygu2\_84
- Track 18 : Maverick\_85, Bombshell\_86, Melvin\_88, Pipcraft\_82, Mundrea\_84, Caelakin\_84
- Track 19 : Phontbonne\_86
- Track 20 : DaVinci\_91, VohminGhazi\_93, Chartreuse\_92, Kazan\_94, Candra\_91, SmellyB\_93, BennyP\_95, McFly\_93
- Track 21 : SuperCallie99\_89, Zaka\_95, Hammer\_95, Roksolana\_95, Yokurt\_94, Hexamo\_94, Artemis2UCLA\_94, Zulu\_96, Rifter\_95, DelvinSonDorr\_88, BlessJoy\_95, CloudWang3\_95, Jeffabunny\_83, Gruunaga\_95, Blue7\_96, Wiks\_94, Lilbunny\_91, Koko\_96, Helmet\_97, Tucker\_95, Gladiator\_91, Garak\_96,

Temprado\_96

- Track 22 : JewelBug\_85, Hoot\_88, Neeharika16\_92, EricB\_91, Dorothea\_93, Jordennis\_91, BABullseye\_86, SuperAwesome\_93, Pmask\_92, Cookiedough\_93, Polyphemus\_86, Kipper29\_93, Priamo\_93, Newrala\_92
- Track 23 : Isiphiwo\_89
- Track 24 : PP\_05
- Track 25 : Gumball\_87, Erk16\_88, KandZ\_85
- Track 26 : Helpful\_90, Adjutor\_85, Delton\_86, Visconti\_88, Thoth\_87, WaldoWhy\_88, BigMama\_86, SuperheroCarly\_86, Butterscotch\_85, Troll4\_87, Chill\_88, Prager\_87, Penelope2018\_87
- Track 27 : Mopey\_89
- Track 28 : PLOT\_88, SirHarley\_89
- Track 29 : Nova\_87, Giuseppe\_89
- Track 30 : Phalaborwa\_89
- Track 31 : Hawkeye\_52

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

The start number called the most often in the published annotations is 21, it was called in 97 of the 161 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Adjutor\_85, Artemis2UCLA\_94, AvatarAhPeg\_86, BABullseye\_86, BennyP\_95, BigMama\_86, BlessJoy\_95, Blue7\_96, Bumblebee11\_82, Butterscotch\_85, C3\_82, Candra\_91, Chartreuse\_92, Chill\_88, Cindaradix\_81, Cintron\_86, Clarenza\_85, CloudWang3\_95, Cocoaberry\_86, Cookiedough\_93, D29\_82.2, DaVinci\_91, Datway\_83, Delton\_86, DelvinSonDorr\_88, Dorothea\_93, Duplo\_93, DustyMartin\_88, EricB\_91, Erk16\_88, Funston\_85, Garak\_96, Giuseppe\_89, Gladiator\_91, Gruunaga\_95, Gumball\_87, Hammer\_95, Hawkeye\_52, Helmet\_97, Helpful\_90, Hexamo\_94, Hoot\_88, Houdini22\_85, Isiphiwo\_89, Jeffabunny\_83, JewelBug\_85, Jordennis\_91, Kampy\_85, KandZ\_85, Kazan\_94, Kingmustik0402\_86, Kinmap\_98, Kipper29\_93, Koan\_83, Koko\_96, Koreni\_85, Kremtemulon\_83, Lilbunny\_91, Lorenzo\_86, Maxo\_88, McFly\_93, Miramae\_86, Neeharika16\_92, Nemo27\_85, Newrala\_92, NicoleTera\_90, Noelle\_85, NorthStar\_83, NotAPhaseMom\_85, Nova\_87, Penelope2018\_87, PetiteSangsue\_83, Phalaborwa\_89, Phighter1804\_86, Phontbonne\_86, Pmask\_92, Polyphemus\_86, Prager\_87, Priamo\_93, Rifter\_95, Roksolana\_95, Rosa24\_82, Rowdy\_88, SenorClean\_87, Shapes\_88, Shygu2\_84, SmellyB\_93, SteMason\_86, Stink\_86, SuperAwesome\_93, SuperCallie99\_89, SuperheroCarly\_86, Temprado\_96, Thoth\_87, Tinybot\_85, Troll4\_87, Tucker\_95, Ulysses\_85, Visconti\_88, VohminGhazi\_93, WaldoWhy\_88, Wiks\_94, YoSam321\_86, Yokurt\_94, Zaka\_95, Zulu\_96,

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

- AN9\_89, ANI8\_89, Bombshell\_86, Caelakin\_84, D32\_80, DBQu4n\_92, Kerberos\_92, Maverick\_85, Melvin\_88, Mopey\_89, Mundrea\_84, Naji\_81, PLOT\_88, Pipcraft\_82, Pomar16\_92, SirHarley\_89, StarStuff\_92, Tomathan\_92, Travvers\_92, VC3\_88,

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

- Alberto7\_87, Baby16\_86, BabyBack\_86, Bactobuster\_81, Bartimeaus\_86, BellusTerra\_86, BubbleTrouble\_85, CentreCat\_86, Cerulean\_88, Chaph\_86, Connomayer\_86, DirtyDunning\_85, Eapen\_86, Eros\_86, Eurydice\_87, GaugeLDP\_85, Happiness\_85, Holli\_85, ICleared\_85, IronMan\_86, JetBlade\_87, JoongJeon\_85, KFPoly\_85, Kratark\_85, Kye\_86, LochMonster\_87, Lunsford\_86, Mazhar510\_86, MissWhite\_84, Morrow\_88, Nebs\_87, Ohfah\_87, PP\_05, PeterPeter\_86, Phelipe\_86, Polymorphads\_87, Pumbaa\_86, Scamp\_86, SheldonCooper\_86, Sparxx\_87, Taquarus\_85, Thanksgivukkah\_85, Tristan\_85, TroyPia\_87, TygerBlood\_86,

### Summary by start number:

#### Start 17:

- Found in 14 of 171 ( 8.2% ) of genes in pham
- Manual Annotations of this start: 10 of 161
- Called 78.6% of time when present
- Phage (with cluster) where this start called: AN9\_89 (A2), ANI8\_89 (A2), D32\_80 (A2), DBQu4n\_92 (A2), Kerberos\_92 (A2), Naji\_81 (A2), Pomar16\_92 (A2), StarStuff\_92 (A2), Tomathan\_92 (A2), Travvers\_92 (A2), VC3\_88 (A2),

#### Start 18:

- Found in 7 of 171 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 3 of 161
- Called 42.9% of time when present
- Phage (with cluster) where this start called: Mopey\_89 (D1), PLOT\_88 (D1), SirHarley\_89 (D1),

#### Start 19:

- Found in 1 of 171 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 161
- Called 100.0% of time when present
- Phage (with cluster) where this start called: PP\_05 (A7),

#### Start 20:

- Found in 76 of 171 ( 44.4% ) of genes in pham
- Manual Annotations of this start: 50 of 161
- Called 65.8% of time when present
- Phage (with cluster) where this start called: Alberto7\_87 (A4), Baby16\_86 (A4), BabyBack\_86 (A2), Bactobuster\_81 (A2), Bartimeaus\_86 (A4), BellusTerra\_86 (A4), Bombshell\_86 (A4), BubbleTrouble\_85 (A4), Caelakin\_84 (A4), CentreCat\_86 (A4), Cerulean\_88 (A4), Chaph\_86 (A4), Connomayer\_86 (A4), DirtyDunning\_85 (A4), Eapen\_86 (A4), Eros\_86 (A4), Eurydice\_87 (A4), GaugeLDP\_85 (A2), Happiness\_85 (A4), Holli\_85 (A4), ICleared\_85 (A4), IronMan\_86 (A2), JetBlade\_87 (A4), JoongJeon\_85 (A4), KFPoly\_85 (A4), Kratark\_85 (A4), Kye\_86 (A4), LochMonster\_87 (A4), Lunsford\_86 (A4), Maverick\_85 (A4), Mazhar510\_86 (A4), Melvin\_88 (A4), MissWhite\_84 (A2), Morrow\_88 (A4), Mundrea\_84 (A4), Nebs\_87 (A4), Ohfah\_87 (A4), PeterPeter\_86 (A4), Phelipe\_86 (A4), Pipcraft\_82 (A4), Polymorphads\_87 (A4), Pumbaa\_86 (A4), Scamp\_86 (A4), SheldonCooper\_86 (A4), Sparxx\_87 (A4), Taquarus\_85 (A4), Thanksgivukkah\_85 (A4), Tristan\_85 (A2), TroyPia\_87 (A4), TygerBlood\_86 (A4),

#### Start 21:

- Found in 126 of 171 ( 73.7% ) of genes in pham

- Manual Annotations of this start: 97 of 161
- Called 84.1% of time when present
- Phage (with cluster) where this start called: Adjutor\_85 (D1), Artemis2UCLA\_94 (A6), AvatarAhPeg\_86 (A4), BABullseye\_86 (A6), BennyP\_95 (A6), BigMama\_86 (D1), BlessJoy\_95 (A6), Blue7\_96 (A6), Bumblebee11\_82 (A4), Butterscotch\_85 (D1), C3\_82 (A2), Candra\_91 (A6), Chartreuse\_92 (A6), Chill\_88 (D1), Cindaradix\_81 (A4), Cintron\_86 (A4), Clarenza\_85 (A4), CloudWang3\_95 (A6), Cocoaberry\_86 (A4), Cookiedough\_93 (A6), D29\_82.2 (A2), DaVinci\_91 (A6), Datway\_83 (A4), Delton\_86 (D1), DelvinSonDorr\_88 (A6), Dorothea\_93 (A6), Duplo\_93 (A2), DustyMartin\_88 (A10), EricB\_91 (A6), Erk16\_88 (D1), Funston\_85 (A4), Garak\_96 (A6), Giuseppe\_89 (D1), Gladiator\_91 (A6), Gruunaga\_95 (A6), Gumball\_87 (D1), Hammer\_95 (A6), Hawkeye\_52 (D2), Helmet\_97 (A6), Helpful\_90 (D1), Hexamo\_94 (A6), Hoot\_88 (A6), Houdini22\_85 (A4), Isiphiwo\_89 (A6), Jeffabunny\_83 (A6), JewelBug\_85 (A6), Jordennis\_91 (A6), Kampy\_85 (A4), KandZ\_85 (D1), Kazan\_94 (A6), Kingmustik0402\_86 (A4), Kinmap\_98 (A21), Kipper29\_93 (A6), Koan\_83 (A4), Koko\_96 (A6), Koreni\_85 (A4), Kremtemulon\_83 (A4), Lilbunny\_91 (A6), Lorenzo\_86 (A4), Maxo\_88 (A4), McFly\_93 (A6), Miramae\_86 (A4), Neeharika16\_92 (A6), Nemo27\_85 (A4), Newrala\_92 (A6), NicoleTera\_90 (A2), Noelle\_85 (A4), NorthStar\_83 (A4), NotAPhaseMom\_85 (A4), Nova\_87 (D1), Penelope2018\_87 (D1), PetiteSangsue\_83 (A4), Phalaborwa\_89 (D1), Phighter1804\_86 (A4), Phontbonne\_86 (A4), Pmask\_92 (A6), Polyphemus\_86 (A6), Prager\_87 (D1), Priamo\_93 (A6), Rifter\_95 (A6), Roksolana\_95 (A6), Rosa24\_82 (A4), Rowdy\_88 (A10), SenorClean\_87 (A4), Shapes\_88 (A10), Shygu2\_84 (A4), SmellyB\_93 (A6), SteMason\_86 (A4), Stink\_86 (A4), SuperAwesome\_93 (A6), SuperCallie99\_89 (A6), SuperheroCarly\_86 (D1), Temprado\_96 (A6), Thoth\_87 (D1), Tinybot\_85 (A4), Troll4\_87 (D1), Tucker\_95 (A6), Ulysses\_85 (A4), Visconti\_88 (D1), VohminGhazi\_93 (A6), WaldoWhy\_88 (D1), Wiks\_94 (A6), YoSam321\_86 (A4), Yokurt\_94 (A6), Zaka\_95 (A6), Zulu\_96 (A6),

### Summary by clusters:

There are 8 clusters represented in this pham: A21, A10, A2, A4, A7, A6, D2, D1,

Info for manual annotations of cluster A2:

- Start number 17 was manually annotated 10 times for cluster A2.
- Start number 20 was manually annotated 6 times for cluster A2.
- Start number 21 was manually annotated 4 times for cluster A2.

Info for manual annotations of cluster A4:

- Start number 20 was manually annotated 44 times for cluster A4.
- Start number 21 was manually annotated 31 times for cluster A4.

Info for manual annotations of cluster A6:

- Start number 21 was manually annotated 43 times for cluster A6.

Info for manual annotations of cluster A7:

- Start number 19 was manually annotated 1 time for cluster A7.

Info for manual annotations of cluster D1:

- Start number 18 was manually annotated 3 times for cluster D1.
- Start number 21 was manually annotated 18 times for cluster D1.

Info for manual annotations of cluster D2:

•Start number 21 was manually annotated 1 time for cluster D2.

**Gene Information:**

Gene: AN9\_89 Start: 48160, Stop: 48047, Start Num: 17

Candidate Starts for AN9\_89:

(10, 48226), (Start: 17 @48160 has 10 MA's), (Start: 21 @48142 has 97 MA's), (24, 48127), (26, 48118), (28, 48094),

Gene: ANI8\_89 Start: 48160, Stop: 48047, Start Num: 17

Candidate Starts for ANI8\_89:

(10, 48226), (Start: 17 @48160 has 10 MA's), (Start: 21 @48142 has 97 MA's), (24, 48127), (26, 48118), (28, 48094),

Gene: Adjutor\_85 Start: 60952, Stop: 61065, Start Num: 21

Candidate Starts for Adjutor\_85:

(Start: 21 @60952 has 97 MA's), (24, 60967), (25, 60970), (26, 60976),

Gene: Alberto7\_87 Start: 49235, Stop: 49137, Start Num: 20

Candidate Starts for Alberto7\_87:

(Start: 20 @49235 has 50 MA's), (24, 49220), (26, 49211),

Gene: Artemis2UCLA\_94 Start: 48593, Stop: 48501, Start Num: 21

Candidate Starts for Artemis2UCLA\_94:

(Start: 21 @48593 has 97 MA's), (24, 48578),

Gene: AvatarAhPeg\_86 Start: 49151, Stop: 49053, Start Num: 21

Candidate Starts for AvatarAhPeg\_86:

(Start: 20 @49154 has 50 MA's), (Start: 21 @49151 has 97 MA's), (24, 49136), (26, 49127),

Gene: BABullseye\_86 Start: 46928, Stop: 46836, Start Num: 21

Candidate Starts for BABullseye\_86:

(9, 47072), (12, 47000), (13, 46997), (15, 46988), (Start: 21 @46928 has 97 MA's), (23, 46916), (24, 46913),

Gene: Baby16\_86 Start: 48909, Stop: 48811, Start Num: 20

Candidate Starts for Baby16\_86:

(Start: 20 @48909 has 50 MA's), (24, 48894), (26, 48885),

Gene: BabyBack\_86 Start: 50367, Stop: 50266, Start Num: 20

Candidate Starts for BabyBack\_86:

(1, 50931), (2, 50814), (3, 50724), (16, 50385), (Start: 20 @50367 has 50 MA's), (23, 50355), (24, 50352), (26, 50343),

Gene: Bactobuster\_81 Start: 48864, Stop: 48763, Start Num: 20

Candidate Starts for Bactobuster\_81:

(16, 48882), (Start: 20 @48864 has 50 MA's), (24, 48849), (25, 48846),

Gene: Bartimeaus\_86 Start: 48900, Stop: 48802, Start Num: 20

Candidate Starts for Bartimeaus\_86:  
(Start: 20 @48900 has 50 MA's), (24, 48885), (26, 48876),

Gene: BellusTerra\_86 Start: 48763, Stop: 48665, Start Num: 20  
Candidate Starts for BellusTerra\_86:  
(Start: 20 @48763 has 50 MA's), (24, 48748), (26, 48739),

Gene: BennyP\_95 Start: 48770, Stop: 48678, Start Num: 21  
Candidate Starts for BennyP\_95:  
(Start: 21 @48770 has 97 MA's), (23, 48758), (24, 48755),

Gene: BigMama\_86 Start: 61043, Stop: 61156, Start Num: 21  
Candidate Starts for BigMama\_86:  
(Start: 21 @61043 has 97 MA's), (24, 61058), (25, 61061), (26, 61067),

Gene: BlessJoy\_95 Start: 49117, Stop: 49025, Start Num: 21  
Candidate Starts for BlessJoy\_95:  
(Start: 21 @49117 has 97 MA's), (24, 49102),

Gene: Blue7\_96 Start: 48827, Stop: 48735, Start Num: 21  
Candidate Starts for Blue7\_96:  
(Start: 21 @48827 has 97 MA's), (24, 48812),

Gene: Bombshell\_86 Start: 48898, Stop: 48797, Start Num: 20  
Candidate Starts for Bombshell\_86:  
(Start: 20 @48898 has 50 MA's), (Start: 21 @48895 has 97 MA's), (24, 48880), (26, 48871),

Gene: BubbleTrouble\_85 Start: 48925, Stop: 48827, Start Num: 20  
Candidate Starts for BubbleTrouble\_85:  
(Start: 20 @48925 has 50 MA's), (24, 48910), (26, 48901),

Gene: Bumblebee11\_82 Start: 48676, Stop: 48578, Start Num: 21  
Candidate Starts for Bumblebee11\_82:  
(Start: 21 @48676 has 97 MA's), (23, 48664), (24, 48661), (26, 48652),

Gene: Butterscotch\_85 Start: 61003, Stop: 61116, Start Num: 21  
Candidate Starts for Butterscotch\_85:  
(Start: 21 @61003 has 97 MA's), (24, 61018), (25, 61021), (26, 61027),

Gene: C3\_82 Start: 48142, Stop: 48047, Start Num: 21  
Candidate Starts for C3\_82:  
(10, 48226), (Start: 17 @48160 has 10 MA's), (Start: 21 @48142 has 97 MA's), (24, 48127), (26, 48118), (28, 48094),

Gene: Caelakin\_84 Start: 48901, Stop: 48800, Start Num: 20  
Candidate Starts for Caelakin\_84:  
(Start: 20 @48901 has 50 MA's), (Start: 21 @48898 has 97 MA's), (24, 48883), (26, 48874),

Gene: Candra\_91 Start: 48632, Stop: 48540, Start Num: 21  
Candidate Starts for Candra\_91:  
(Start: 21 @48632 has 97 MA's), (23, 48620), (24, 48617),

Gene: CentreCat\_86 Start: 48938, Stop: 48840, Start Num: 20

Candidate Starts for CentreCat\_86:  
(Start: 20 @48938 has 50 MA's), (24, 48923), (26, 48914),

Gene: Cerulean\_88 Start: 49336, Stop: 49238, Start Num: 20  
Candidate Starts for Cerulean\_88:  
(Start: 20 @49336 has 50 MA's), (24, 49321), (26, 49312),

Gene: Chaph\_86 Start: 48909, Stop: 48811, Start Num: 20  
Candidate Starts for Chaph\_86:  
(Start: 20 @48909 has 50 MA's), (24, 48894), (26, 48885),

Gene: Chartreuse\_92 Start: 47933, Stop: 47841, Start Num: 21  
Candidate Starts for Chartreuse\_92:  
(Start: 21 @47933 has 97 MA's), (23, 47921), (24, 47918),

Gene: Chill\_88 Start: 60980, Stop: 61093, Start Num: 21  
Candidate Starts for Chill\_88:  
(Start: 21 @60980 has 97 MA's), (24, 60995), (25, 60998), (26, 61004),

Gene: Cindaradix\_81 Start: 49097, Stop: 48999, Start Num: 21  
Candidate Starts for Cindaradix\_81:  
(Start: 20 @49100 has 50 MA's), (Start: 21 @49097 has 97 MA's), (24, 49082), (26, 49073),

Gene: Cintron\_86 Start: 48973, Stop: 48869, Start Num: 21  
Candidate Starts for Cintron\_86:  
(Start: 20 @48976 has 50 MA's), (Start: 21 @48973 has 97 MA's), (24, 48958), (26, 48949),

Gene: Clarenza\_85 Start: 48895, Stop: 48797, Start Num: 21  
Candidate Starts for Clarenza\_85:  
(Start: 20 @48898 has 50 MA's), (Start: 21 @48895 has 97 MA's), (24, 48880), (26, 48871),

Gene: CloudWang3\_95 Start: 49122, Stop: 49030, Start Num: 21  
Candidate Starts for CloudWang3\_95:  
(Start: 21 @49122 has 97 MA's), (24, 49107),

Gene: Cocoaberry\_86 Start: 48899, Stop: 48801, Start Num: 21  
Candidate Starts for Cocoaberry\_86:  
(Start: 20 @48902 has 50 MA's), (Start: 21 @48899 has 97 MA's), (24, 48884), (26, 48875),

Gene: Connomayer\_86 Start: 48898, Stop: 48800, Start Num: 20  
Candidate Starts for Connomayer\_86:  
(Start: 20 @48898 has 50 MA's), (24, 48883), (26, 48874),

Gene: Cookiedough\_93 Start: 49247, Stop: 49155, Start Num: 21  
Candidate Starts for Cookiedough\_93:  
(9, 49391), (12, 49319), (13, 49316), (15, 49307), (Start: 21 @49247 has 97 MA's), (23, 49235), (24, 49232),

Gene: D29\_82.2 Start: 46114, Stop: 46019, Start Num: 21  
Candidate Starts for D29\_82.2:  
(Start: 17 @46132 has 10 MA's), (Start: 21 @46114 has 97 MA's), (24, 46099), (26, 46090), (28, 46066),

Gene: D32\_80 Start: 46132, Stop: 46019, Start Num: 17

Candidate Starts for D32\_80:

(Start: 17 @46132 has 10 MA's), (Start: 21 @46114 has 97 MA's), (24, 46099), (26, 46090), (28, 46066),

Gene: DBQu4n\_92 Start: 49747, Stop: 49634, Start Num: 17

Candidate Starts for DBQu4n\_92:

(Start: 17 @49747 has 10 MA's), (Start: 21 @49729 has 97 MA's), (24, 49714), (26, 49705), (28, 49681),

Gene: DaVinci\_91 Start: 47987, Stop: 47895, Start Num: 21

Candidate Starts for DaVinci\_91:

(Start: 21 @47987 has 97 MA's), (23, 47975), (24, 47972),

Gene: Datway\_83 Start: 48706, Stop: 48611, Start Num: 21

Candidate Starts for Datway\_83:

(Start: 21 @48706 has 97 MA's), (23, 48694), (24, 48691), (26, 48682),

Gene: Delton\_86 Start: 61413, Stop: 61526, Start Num: 21

Candidate Starts for Delton\_86:

(Start: 21 @61413 has 97 MA's), (24, 61428), (25, 61431), (26, 61437),

Gene: DelvinSonDorr\_88 Start: 48196, Stop: 48104, Start Num: 21

Candidate Starts for DelvinSonDorr\_88:

(Start: 21 @48196 has 97 MA's), (24, 48181),

Gene: DirtyDunning\_85 Start: 48910, Stop: 48812, Start Num: 20

Candidate Starts for DirtyDunning\_85:

(Start: 20 @48910 has 50 MA's), (24, 48895), (26, 48886),

Gene: Dorothea\_93 Start: 49239, Stop: 49147, Start Num: 21

Candidate Starts for Dorothea\_93:

(9, 49383), (12, 49311), (13, 49308), (15, 49299), (Start: 21 @49239 has 97 MA's), (23, 49227), (24, 49224),

Gene: Duplo\_93 Start: 49786, Stop: 49691, Start Num: 21

Candidate Starts for Duplo\_93:

(Start: 17 @49804 has 10 MA's), (Start: 21 @49786 has 97 MA's), (24, 49771), (26, 49762), (28, 49738),

Gene: DustyMartin\_88 Start: 48914, Stop: 48810, Start Num: 21

Candidate Starts for DustyMartin\_88:

(14, 48980), (Start: 21 @48914 has 97 MA's), (24, 48899), (26, 48890),

Gene: Eapen\_86 Start: 48893, Stop: 48795, Start Num: 20

Candidate Starts for Eapen\_86:

(Start: 20 @48893 has 50 MA's), (24, 48878), (26, 48869),

Gene: EricB\_91 Start: 48136, Stop: 48044, Start Num: 21

Candidate Starts for EricB\_91:

(9, 48280), (12, 48208), (13, 48205), (15, 48196), (Start: 21 @48136 has 97 MA's), (23, 48124), (24, 48121),

Gene: Erk16\_88 Start: 61335, Stop: 61448, Start Num: 21  
Candidate Starts for Erk16\_88:  
(8, 61185), (11, 61266), (Start: 18 @61326 has 3 MA's), (Start: 21 @61335 has 97 MA's), (24, 61350),  
(25, 61353),

Gene: Eros\_86 Start: 48906, Stop: 48808, Start Num: 20  
Candidate Starts for Eros\_86:  
(Start: 20 @48906 has 50 MA's), (24, 48891), (26, 48882),

Gene: Eurydice\_87 Start: 48935, Stop: 48837, Start Num: 20  
Candidate Starts for Eurydice\_87:  
(Start: 20 @48935 has 50 MA's), (24, 48920), (26, 48911),

Gene: Funston\_85 Start: 48895, Stop: 48797, Start Num: 21  
Candidate Starts for Funston\_85:  
(Start: 20 @48898 has 50 MA's), (Start: 21 @48895 has 97 MA's), (24, 48880), (26, 48871),

Gene: Garak\_96 Start: 49067, Stop: 48975, Start Num: 21  
Candidate Starts for Garak\_96:  
(Start: 21 @49067 has 97 MA's), (24, 49052),

Gene: GaugeLDP\_85 Start: 49917, Stop: 49816, Start Num: 20  
Candidate Starts for GaugeLDP\_85:  
(16, 49935), (Start: 20 @49917 has 50 MA's), (24, 49902), (25, 49899), (26, 49893),

Gene: Giuseppe\_89 Start: 61055, Stop: 61168, Start Num: 21  
Candidate Starts for Giuseppe\_89:  
(Start: 21 @61055 has 97 MA's), (24, 61070), (25, 61073),

Gene: Gladiator\_91 Start: 48787, Stop: 48695, Start Num: 21  
Candidate Starts for Gladiator\_91:  
(Start: 21 @48787 has 97 MA's), (24, 48772),

Gene: Gruunaga\_95 Start: 48743, Stop: 48651, Start Num: 21  
Candidate Starts for Gruunaga\_95:  
(Start: 21 @48743 has 97 MA's), (24, 48728),

Gene: Gumball\_87 Start: 61267, Stop: 61380, Start Num: 21  
Candidate Starts for Gumball\_87:  
(8, 61117), (11, 61198), (Start: 18 @61258 has 3 MA's), (Start: 21 @61267 has 97 MA's), (24, 61282),  
(25, 61285),

Gene: Hammer\_95 Start: 48440, Stop: 48348, Start Num: 21  
Candidate Starts for Hammer\_95:  
(Start: 21 @48440 has 97 MA's), (24, 48425),

Gene: Happiness\_85 Start: 48921, Stop: 48823, Start Num: 20  
Candidate Starts for Happiness\_85:  
(Start: 20 @48921 has 50 MA's), (24, 48906), (26, 48897),

Gene: Hawkeye\_52 Start: 38301, Stop: 38384, Start Num: 21  
Candidate Starts for Hawkeye\_52:  
(10, 38220), (Start: 21 @38301 has 97 MA's), (24, 38316), (26, 38325),

Gene: Helmet\_97 Start: 49067, Stop: 48975, Start Num: 21

Candidate Starts for Helmet\_97:

(Start: 21 @49067 has 97 MA's), (24, 49052),

Gene: Helpful\_90 Start: 61254, Stop: 61367, Start Num: 21

Candidate Starts for Helpful\_90:

(Start: 21 @61254 has 97 MA's), (24, 61269), (25, 61272), (26, 61278),

Gene: Hexamo\_94 Start: 48608, Stop: 48516, Start Num: 21

Candidate Starts for Hexamo\_94:

(Start: 21 @48608 has 97 MA's), (24, 48593),

Gene: Holli\_85 Start: 48688, Stop: 48590, Start Num: 20

Candidate Starts for Holli\_85:

(Start: 20 @48688 has 50 MA's), (24, 48673), (26, 48664),

Gene: Hoot\_88 Start: 46453, Stop: 46361, Start Num: 21

Candidate Starts for Hoot\_88:

(9, 46597), (12, 46525), (13, 46522), (15, 46513), (Start: 21 @46453 has 97 MA's), (23, 46441), (24, 46438),

Gene: Houdini22\_85 Start: 48899, Stop: 48801, Start Num: 21

Candidate Starts for Houdini22\_85:

(Start: 20 @48902 has 50 MA's), (Start: 21 @48899 has 97 MA's), (24, 48884), (26, 48875),

Gene: ICleared\_85 Start: 48966, Stop: 48868, Start Num: 20

Candidate Starts for ICleared\_85:

(Start: 20 @48966 has 50 MA's), (24, 48951), (26, 48942),

Gene: IronMan\_86 Start: 50377, Stop: 50276, Start Num: 20

Candidate Starts for IronMan\_86:

(16, 50395), (Start: 20 @50377 has 50 MA's), (24, 50362), (25, 50359),

Gene: Isiphiwo\_89 Start: 48158, Stop: 48066, Start Num: 21

Candidate Starts for Isiphiwo\_89:

(Start: 21 @48158 has 97 MA's), (23, 48146), (24, 48143),

Gene: Jeffabunny\_83 Start: 45211, Stop: 45119, Start Num: 21

Candidate Starts for Jeffabunny\_83:

(Start: 21 @45211 has 97 MA's), (24, 45196),

Gene: JetBlade\_87 Start: 48926, Stop: 48828, Start Num: 20

Candidate Starts for JetBlade\_87:

(Start: 20 @48926 has 50 MA's), (24, 48911), (26, 48902),

Gene: JewelBug\_85 Start: 46932, Stop: 46840, Start Num: 21

Candidate Starts for JewelBug\_85:

(9, 47076), (12, 47004), (13, 47001), (15, 46992), (Start: 21 @46932 has 97 MA's), (23, 46920), (24, 46917),

Gene: JoongJeon\_85 Start: 48892, Stop: 48794, Start Num: 20

Candidate Starts for JoongJeon\_85:

(Start: 20 @48892 has 50 MA's), (24, 48877), (26, 48868),

Gene: Jordennis\_91 Start: 48836, Stop: 48744, Start Num: 21

Candidate Starts for Jordennis\_91:

(9, 48980), (12, 48908), (13, 48905), (15, 48896), (Start: 21 @48836 has 97 MA's), (23, 48824), (24, 48821),

Gene: KFPoly\_85 Start: 48892, Stop: 48794, Start Num: 20

Candidate Starts for KFPoly\_85:

(Start: 20 @48892 has 50 MA's), (24, 48877), (26, 48868),

Gene: Kamy\_85 Start: 48901, Stop: 48803, Start Num: 21

Candidate Starts for Kamy\_85:

(Start: 20 @48904 has 50 MA's), (Start: 21 @48901 has 97 MA's), (24, 48886), (26, 48877),

Gene: KandZ\_85 Start: 61077, Stop: 61190, Start Num: 21

Candidate Starts for KandZ\_85:

(8, 60927), (11, 61008), (Start: 18 @61068 has 3 MA's), (Start: 21 @61077 has 97 MA's), (24, 61092), (25, 61095),

Gene: Kazan\_94 Start: 48602, Stop: 48510, Start Num: 21

Candidate Starts for Kazan\_94:

(Start: 21 @48602 has 97 MA's), (23, 48590), (24, 48587),

Gene: Kerberos\_92 Start: 49767, Stop: 49654, Start Num: 17

Candidate Starts for Kerberos\_92:

(Start: 17 @49767 has 10 MA's), (Start: 21 @49749 has 97 MA's), (24, 49734), (26, 49725), (27, 49707), (28, 49701),

Gene: Kingmustik0402\_86 Start: 48887, Stop: 48789, Start Num: 21

Candidate Starts for Kingmustik0402\_86:

(Start: 20 @48890 has 50 MA's), (Start: 21 @48887 has 97 MA's), (24, 48872), (26, 48863),

Gene: Kinmap\_98 Start: 49864, Stop: 49757, Start Num: 21

Candidate Starts for Kinmap\_98:

(Start: 21 @49864 has 97 MA's), (24, 49849), (26, 49840),

Gene: Kipper29\_93 Start: 48611, Stop: 48519, Start Num: 21

Candidate Starts for Kipper29\_93:

(9, 48755), (12, 48683), (13, 48680), (15, 48671), (Start: 21 @48611 has 97 MA's), (23, 48599), (24, 48596),

Gene: Koan\_83 Start: 48898, Stop: 48800, Start Num: 21

Candidate Starts for Koan\_83:

(Start: 20 @48901 has 50 MA's), (Start: 21 @48898 has 97 MA's), (24, 48883), (26, 48874),

Gene: Koko\_96 Start: 49457, Stop: 49365, Start Num: 21

Candidate Starts for Koko\_96:

(Start: 21 @49457 has 97 MA's), (24, 49442),

Gene: Koreni\_85 Start: 48579, Stop: 48481, Start Num: 21

Candidate Starts for Koreni\_85:

(Start: 20 @48582 has 50 MA's), (Start: 21 @48579 has 97 MA's), (24, 48564), (26, 48555),

Gene: Kratark\_85 Start: 48932, Stop: 48834, Start Num: 20

Candidate Starts for Kratark\_85:

(Start: 20 @48932 has 50 MA's), (24, 48917), (26, 48908),

Gene: Kremtemulon\_83 Start: 48731, Stop: 48633, Start Num: 21

Candidate Starts for Kremtemulon\_83:

(Start: 20 @48734 has 50 MA's), (Start: 21 @48731 has 97 MA's), (24, 48716), (26, 48707),

Gene: Kyee\_86 Start: 48893, Stop: 48795, Start Num: 20

Candidate Starts for Kyee\_86:

(Start: 20 @48893 has 50 MA's), (24, 48878), (26, 48869),

Gene: Lilbunny\_91 Start: 47315, Stop: 47223, Start Num: 21

Candidate Starts for Lilbunny\_91:

(Start: 21 @47315 has 97 MA's), (24, 47300),

Gene: LochMonster\_87 Start: 49135, Stop: 49037, Start Num: 20

Candidate Starts for LochMonster\_87:

(Start: 20 @49135 has 50 MA's), (24, 49120), (26, 49111),

Gene: Lorenzo\_86 Start: 48896, Stop: 48798, Start Num: 21

Candidate Starts for Lorenzo\_86:

(Start: 20 @48899 has 50 MA's), (Start: 21 @48896 has 97 MA's), (24, 48881), (26, 48872),

Gene: Lunsford\_86 Start: 48891, Stop: 48793, Start Num: 20

Candidate Starts for Lunsford\_86:

(Start: 20 @48891 has 50 MA's), (24, 48876), (26, 48867),

Gene: Maverick\_85 Start: 48898, Stop: 48797, Start Num: 20

Candidate Starts for Maverick\_85:

(Start: 20 @48898 has 50 MA's), (Start: 21 @48895 has 97 MA's), (24, 48880), (26, 48871),

Gene: Maxo\_88 Start: 48901, Stop: 48803, Start Num: 21

Candidate Starts for Maxo\_88:

(Start: 20 @48904 has 50 MA's), (Start: 21 @48901 has 97 MA's), (24, 48886), (26, 48877),

Gene: Mazhar510\_86 Start: 48896, Stop: 48798, Start Num: 20

Candidate Starts for Mazhar510\_86:

(Start: 20 @48896 has 50 MA's), (24, 48881), (26, 48872),

Gene: McFly\_93 Start: 48941, Stop: 48849, Start Num: 21

Candidate Starts for McFly\_93:

(Start: 21 @48941 has 97 MA's), (23, 48929), (24, 48926),

Gene: Melvin\_88 Start: 48896, Stop: 48795, Start Num: 20

Candidate Starts for Melvin\_88:

(Start: 20 @48896 has 50 MA's), (Start: 21 @48893 has 97 MA's), (24, 48878), (26, 48869),

Gene: Miramae\_86 Start: 48814, Stop: 48716, Start Num: 21

Candidate Starts for Miramae\_86:

(Start: 20 @48817 has 50 MA's), (Start: 21 @48814 has 97 MA's), (24, 48799), (26, 48790),

Gene: MissWhite\_84 Start: 46424, Stop: 46323, Start Num: 20  
Candidate Starts for MissWhite\_84:  
(4, 46784), (5, 46760), (6, 46673), (7, 46667), (10, 46499), (16, 46442), (Start: 20 @46424 has 50 MA's), (24, 46409),

Gene: Mopey\_89 Start: 61066, Stop: 61188, Start Num: 18  
Candidate Starts for Mopey\_89:  
(11, 61006), (Start: 18 @61066 has 3 MA's), (Start: 21 @61075 has 97 MA's), (24, 61090), (25, 61093),

Gene: Morrow\_88 Start: 48938, Stop: 48840, Start Num: 20  
Candidate Starts for Morrow\_88:  
(Start: 20 @48938 has 50 MA's), (24, 48923), (26, 48914),

Gene: Mundrea\_84 Start: 48776, Stop: 48678, Start Num: 20  
Candidate Starts for Mundrea\_84:  
(Start: 20 @48776 has 50 MA's), (Start: 21 @48773 has 97 MA's), (24, 48758), (26, 48749),

Gene: Naji\_81 Start: 46132, Stop: 46019, Start Num: 17  
Candidate Starts for Naji\_81:  
(Start: 17 @46132 has 10 MA's), (Start: 21 @46114 has 97 MA's), (24, 46099), (26, 46090), (28, 46066),

Gene: Nebs\_87 Start: 48938, Stop: 48840, Start Num: 20  
Candidate Starts for Nebs\_87:  
(Start: 20 @48938 has 50 MA's), (24, 48923), (26, 48914),

Gene: Neeharika16\_92 Start: 48698, Stop: 48606, Start Num: 21  
Candidate Starts for Neeharika16\_92:  
(9, 48842), (12, 48770), (13, 48767), (15, 48758), (Start: 21 @48698 has 97 MA's), (23, 48686), (24, 48683),

Gene: Nemo27\_85 Start: 48894, Stop: 48796, Start Num: 21  
Candidate Starts for Nemo27\_85:  
(Start: 20 @48897 has 50 MA's), (Start: 21 @48894 has 97 MA's), (24, 48879), (26, 48870),

Gene: Newrala\_92 Start: 49044, Stop: 48952, Start Num: 21  
Candidate Starts for Newrala\_92:  
(9, 49188), (12, 49116), (13, 49113), (15, 49104), (Start: 21 @49044 has 97 MA's), (23, 49032), (24, 49029),

Gene: NicoleTera\_90 Start: 49767, Stop: 49672, Start Num: 21  
Candidate Starts for NicoleTera\_90:  
(Start: 21 @49767 has 97 MA's), (24, 49752), (25, 49749),

Gene: Noelle\_85 Start: 49016, Stop: 48912, Start Num: 21  
Candidate Starts for Noelle\_85:  
(Start: 21 @49016 has 97 MA's), (23, 49004), (24, 49001), (26, 48992),

Gene: NorthStar\_83 Start: 48898, Stop: 48800, Start Num: 21  
Candidate Starts for NorthStar\_83:  
(Start: 20 @48901 has 50 MA's), (Start: 21 @48898 has 97 MA's), (24, 48883), (26, 48874),

Gene: NotAPhaseMom\_85 Start: 48899, Stop: 48801, Start Num: 21

Candidate Starts for NotAPhaseMom\_85:

(Start: 20 @48902 has 50 MA's), (Start: 21 @48899 has 97 MA's), (24, 48884), (26, 48875),

Gene: Nova\_87 Start: 61568, Stop: 61681, Start Num: 21

Candidate Starts for Nova\_87:

(Start: 21 @61568 has 97 MA's), (24, 61583), (25, 61586),

Gene: Ohfah\_87 Start: 48938, Stop: 48840, Start Num: 20

Candidate Starts for Ohfah\_87:

(Start: 20 @48938 has 50 MA's), (24, 48923), (26, 48914),

Gene: PLOt\_88 Start: 61220, Stop: 61342, Start Num: 18

Candidate Starts for PLOt\_88:

(8, 61079), (11, 61160), (Start: 18 @61220 has 3 MA's), (Start: 21 @61229 has 97 MA's), (24, 61244), (25, 61247),

Gene: PP\_05 Start: 1199, Stop: 1101, Start Num: 19

Candidate Starts for PP\_05:

(Start: 19 @1199 has 1 MA's), (22, 1193), (24, 1184),

Gene: Penelope2018\_87 Start: 61005, Stop: 61118, Start Num: 21

Candidate Starts for Penelope2018\_87:

(Start: 21 @61005 has 97 MA's), (24, 61020), (25, 61023), (26, 61029),

Gene: PeterPeter\_86 Start: 48892, Stop: 48794, Start Num: 20

Candidate Starts for PeterPeter\_86:

(Start: 20 @48892 has 50 MA's), (24, 48877), (26, 48868),

Gene: PetiteSangsue\_83 Start: 48680, Stop: 48582, Start Num: 21

Candidate Starts for PetiteSangsue\_83:

(Start: 21 @48680 has 97 MA's), (23, 48668), (24, 48665), (26, 48656),

Gene: Phalaborwa\_89 Start: 61576, Stop: 61689, Start Num: 21

Candidate Starts for Phalaborwa\_89:

(8, 61426), (11, 61507), (Start: 18 @61567 has 3 MA's), (Start: 21 @61576 has 97 MA's), (24, 61591), (25, 61594), (26, 61600),

Gene: Phelipe\_86 Start: 48859, Stop: 48761, Start Num: 20

Candidate Starts for Phelipe\_86:

(Start: 20 @48859 has 50 MA's), (24, 48844), (26, 48835),

Gene: Phighter1804\_86 Start: 48959, Stop: 48861, Start Num: 21

Candidate Starts for Phighter1804\_86:

(Start: 20 @48962 has 50 MA's), (Start: 21 @48959 has 97 MA's), (24, 48944), (26, 48935),

Gene: Phontbonne\_86 Start: 48796, Stop: 48701, Start Num: 21

Candidate Starts for Phontbonne\_86:

(Start: 21 @48796 has 97 MA's), (24, 48781), (26, 48772),

Gene: Pipcraft\_82 Start: 48902, Stop: 48801, Start Num: 20

Candidate Starts for Pipcraft\_82:

(Start: 20 @48902 has 50 MA's), (Start: 21 @48899 has 97 MA's), (24, 48884), (26, 48875),

Gene: Pmask\_92 Start: 49245, Stop: 49153, Start Num: 21  
Candidate Starts for Pmask\_92:  
(9, 49389), (12, 49317), (13, 49314), (15, 49305), (Start: 21 @49245 has 97 MA's), (23, 49233), (24, 49230),

Gene: Polymorphads\_87 Start: 48919, Stop: 48821, Start Num: 20  
Candidate Starts for Polymorphads\_87:  
(Start: 20 @48919 has 50 MA's), (24, 48904), (26, 48895),

Gene: Polyphemus\_86 Start: 47016, Stop: 46924, Start Num: 21  
Candidate Starts for Polyphemus\_86:  
(9, 47160), (12, 47088), (13, 47085), (15, 47076), (Start: 21 @47016 has 97 MA's), (23, 47004), (24, 47001),

Gene: Pomar16\_92 Start: 49840, Stop: 49727, Start Num: 17  
Candidate Starts for Pomar16\_92:  
(Start: 17 @49840 has 10 MA's), (Start: 21 @49822 has 97 MA's), (24, 49807), (26, 49798), (27, 49780), (28, 49774),

Gene: Prager\_87 Start: 60913, Stop: 61026, Start Num: 21  
Candidate Starts for Prager\_87:  
(Start: 21 @60913 has 97 MA's), (24, 60928), (25, 60931), (26, 60937),

Gene: Priamo\_93 Start: 48288, Stop: 48196, Start Num: 21  
Candidate Starts for Priamo\_93:  
(9, 48432), (12, 48360), (13, 48357), (15, 48348), (Start: 21 @48288 has 97 MA's), (23, 48276), (24, 48273),

Gene: Pumbaa\_86 Start: 48843, Stop: 48745, Start Num: 20  
Candidate Starts for Pumbaa\_86:  
(Start: 20 @48843 has 50 MA's), (24, 48828), (26, 48819),

Gene: Rifter\_95 Start: 48235, Stop: 48143, Start Num: 21  
Candidate Starts for Rifter\_95:  
(Start: 21 @48235 has 97 MA's), (24, 48220),

Gene: Roksolana\_95 Start: 48951, Stop: 48859, Start Num: 21  
Candidate Starts for Roksolana\_95:  
(Start: 21 @48951 has 97 MA's), (24, 48936),

Gene: Rosa24\_82 Start: 48926, Stop: 48828, Start Num: 21  
Candidate Starts for Rosa24\_82:  
(Start: 20 @48929 has 50 MA's), (Start: 21 @48926 has 97 MA's), (24, 48911), (26, 48902),

Gene: Rowdy\_88 Start: 48914, Stop: 48810, Start Num: 21  
Candidate Starts for Rowdy\_88:  
(14, 48980), (Start: 21 @48914 has 97 MA's), (24, 48899), (26, 48890),

Gene: Scamp\_86 Start: 48900, Stop: 48802, Start Num: 20  
Candidate Starts for Scamp\_86:  
(Start: 20 @48900 has 50 MA's), (24, 48885), (26, 48876),

Gene: SeniorClean\_87 Start: 48898, Stop: 48800, Start Num: 21

Candidate Starts for SenorClean\_87:  
(Start: 20 @48901 has 50 MA's), (Start: 21 @48898 has 97 MA's), (24, 48883), (26, 48874),

Gene: Shapes\_88 Start: 48914, Stop: 48810, Start Num: 21  
Candidate Starts for Shapes\_88:  
(14, 48980), (Start: 21 @48914 has 97 MA's), (24, 48899), (26, 48890),

Gene: SheldonCooper\_86 Start: 49336, Stop: 49238, Start Num: 20  
Candidate Starts for SheldonCooper\_86:  
(Start: 20 @49336 has 50 MA's), (24, 49321), (26, 49312),

Gene: Shygu2\_84 Start: 48839, Stop: 48744, Start Num: 21  
Candidate Starts for Shygu2\_84:  
(Start: 21 @48839 has 97 MA's), (23, 48827), (24, 48824), (26, 48815),

Gene: SirHarley\_89 Start: 61242, Stop: 61364, Start Num: 18  
Candidate Starts for SirHarley\_89:  
(8, 61101), (11, 61182), (Start: 18 @61242 has 3 MA's), (Start: 21 @61251 has 97 MA's), (24, 61266),  
(25, 61269),

Gene: SmellyB\_93 Start: 48596, Stop: 48504, Start Num: 21  
Candidate Starts for SmellyB\_93:  
(Start: 21 @48596 has 97 MA's), (23, 48584), (24, 48581),

Gene: Sparxx\_87 Start: 48894, Stop: 48796, Start Num: 20  
Candidate Starts for Sparxx\_87:  
(Start: 20 @48894 has 50 MA's), (24, 48879), (26, 48870),

Gene: StarStuff\_92 Start: 49802, Stop: 49689, Start Num: 17  
Candidate Starts for StarStuff\_92:  
(Start: 17 @49802 has 10 MA's), (Start: 21 @49784 has 97 MA's), (24, 49769), (26, 49760), (27,  
49742), (28, 49736),

Gene: SteMason\_86 Start: 48895, Stop: 48797, Start Num: 21  
Candidate Starts for SteMason\_86:  
(Start: 20 @48898 has 50 MA's), (Start: 21 @48895 has 97 MA's), (24, 48880), (26, 48871),

Gene: Stink\_86 Start: 49122, Stop: 49024, Start Num: 21  
Candidate Starts for Stink\_86:  
(Start: 20 @49125 has 50 MA's), (Start: 21 @49122 has 97 MA's), (24, 49107), (26, 49098),

Gene: SuperAwesome\_93 Start: 49284, Stop: 49192, Start Num: 21  
Candidate Starts for SuperAwesome\_93:  
(9, 49428), (12, 49356), (13, 49353), (15, 49344), (Start: 21 @49284 has 97 MA's), (23, 49272), (24,  
49269),

Gene: SuperCallie99\_89 Start: 48659, Stop: 48567, Start Num: 21  
Candidate Starts for SuperCallie99\_89:  
(Start: 21 @48659 has 97 MA's), (24, 48644),

Gene: SuperheroCarly\_86 Start: 60982, Stop: 61095, Start Num: 21  
Candidate Starts for SuperheroCarly\_86:  
(Start: 21 @60982 has 97 MA's), (24, 60997), (25, 61000), (26, 61006),

Gene: Taquarus\_85 Start: 48907, Stop: 48809, Start Num: 20

Candidate Starts for Taquarus\_85:

(Start: 20 @48907 has 50 MA's), (24, 48892), (26, 48883),

Gene: Temprado\_96 Start: 49067, Stop: 48975, Start Num: 21

Candidate Starts for Temprado\_96:

(Start: 21 @49067 has 97 MA's), (24, 49052),

Gene: Thanksgivukkah\_85 Start: 48896, Stop: 48798, Start Num: 20

Candidate Starts for Thanksgivukkah\_85:

(Start: 20 @48896 has 50 MA's), (24, 48881), (26, 48872),

Gene: Thoth\_87 Start: 61056, Stop: 61169, Start Num: 21

Candidate Starts for Thoth\_87:

(Start: 21 @61056 has 97 MA's), (24, 61071), (25, 61074), (26, 61080),

Gene: Tinybot\_85 Start: 48925, Stop: 48827, Start Num: 21

Candidate Starts for Tinybot\_85:

(Start: 20 @48928 has 50 MA's), (Start: 21 @48925 has 97 MA's), (24, 48910), (26, 48901),

Gene: Tomathan\_92 Start: 49881, Stop: 49768, Start Num: 17

Candidate Starts for Tomathan\_92:

(Start: 17 @49881 has 10 MA's), (Start: 21 @49863 has 97 MA's), (24, 49848), (26, 49839), (28, 49815),

Gene: Travvers\_92 Start: 49798, Stop: 49685, Start Num: 17

Candidate Starts for Travvers\_92:

(Start: 17 @49798 has 10 MA's), (Start: 21 @49780 has 97 MA's), (24, 49765), (26, 49756), (28, 49732),

Gene: Tristan\_85 Start: 50209, Stop: 50108, Start Num: 20

Candidate Starts for Tristan\_85:

(16, 50227), (Start: 20 @50209 has 50 MA's), (24, 50194), (25, 50191), (26, 50185),

Gene: Troll4\_87 Start: 61063, Stop: 61176, Start Num: 21

Candidate Starts for Troll4\_87:

(Start: 21 @61063 has 97 MA's), (24, 61078), (25, 61081), (26, 61087),

Gene: TroyPia\_87 Start: 48933, Stop: 48835, Start Num: 20

Candidate Starts for TroyPia\_87:

(Start: 20 @48933 has 50 MA's), (24, 48918), (26, 48909),

Gene: Tucker\_95 Start: 48821, Stop: 48729, Start Num: 21

Candidate Starts for Tucker\_95:

(Start: 21 @48821 has 97 MA's), (24, 48806),

Gene: TygerBlood\_86 Start: 48898, Stop: 48800, Start Num: 20

Candidate Starts for TygerBlood\_86:

(Start: 20 @48898 has 50 MA's), (24, 48883), (26, 48874),

Gene: Ulysses\_85 Start: 48581, Stop: 48483, Start Num: 21

Candidate Starts for Ulysses\_85:

(Start: 20 @48584 has 50 MA's), (Start: 21 @48581 has 97 MA's), (24, 48566), (26, 48557),

Gene: VC3\_88 Start: 48160, Stop: 48047, Start Num: 17

Candidate Starts for VC3\_88:

(10, 48226), (Start: 17 @48160 has 10 MA's), (Start: 21 @48142 has 97 MA's), (24, 48127), (26, 48118), (28, 48094),

Gene: Visconti\_88 Start: 61020, Stop: 61133, Start Num: 21

Candidate Starts for Visconti\_88:

(Start: 21 @61020 has 97 MA's), (24, 61035), (25, 61038), (26, 61044),

Gene: VohminGhazi\_93 Start: 48597, Stop: 48505, Start Num: 21

Candidate Starts for VohminGhazi\_93:

(Start: 21 @48597 has 97 MA's), (23, 48585), (24, 48582),

Gene: WaldoWhy\_88 Start: 60980, Stop: 61093, Start Num: 21

Candidate Starts for WaldoWhy\_88:

(Start: 21 @60980 has 97 MA's), (24, 60995), (25, 60998), (26, 61004),

Gene: Wiks\_94 Start: 48698, Stop: 48606, Start Num: 21

Candidate Starts for Wiks\_94:

(Start: 21 @48698 has 97 MA's), (24, 48683),

Gene: YoSam321\_86 Start: 48893, Stop: 48795, Start Num: 21

Candidate Starts for YoSam321\_86:

(Start: 20 @48896 has 50 MA's), (Start: 21 @48893 has 97 MA's), (24, 48878), (26, 48869),

Gene: Yokurt\_94 Start: 48698, Stop: 48606, Start Num: 21

Candidate Starts for Yokurt\_94:

(Start: 21 @48698 has 97 MA's), (24, 48683),

Gene: Zaka\_95 Start: 48698, Stop: 48606, Start Num: 21

Candidate Starts for Zaka\_95:

(Start: 21 @48698 has 97 MA's), (24, 48683),

Gene: Zulu\_96 Start: 49075, Stop: 48983, Start Num: 21

Candidate Starts for Zulu\_96:

(Start: 21 @49075 has 97 MA's), (24, 49060),