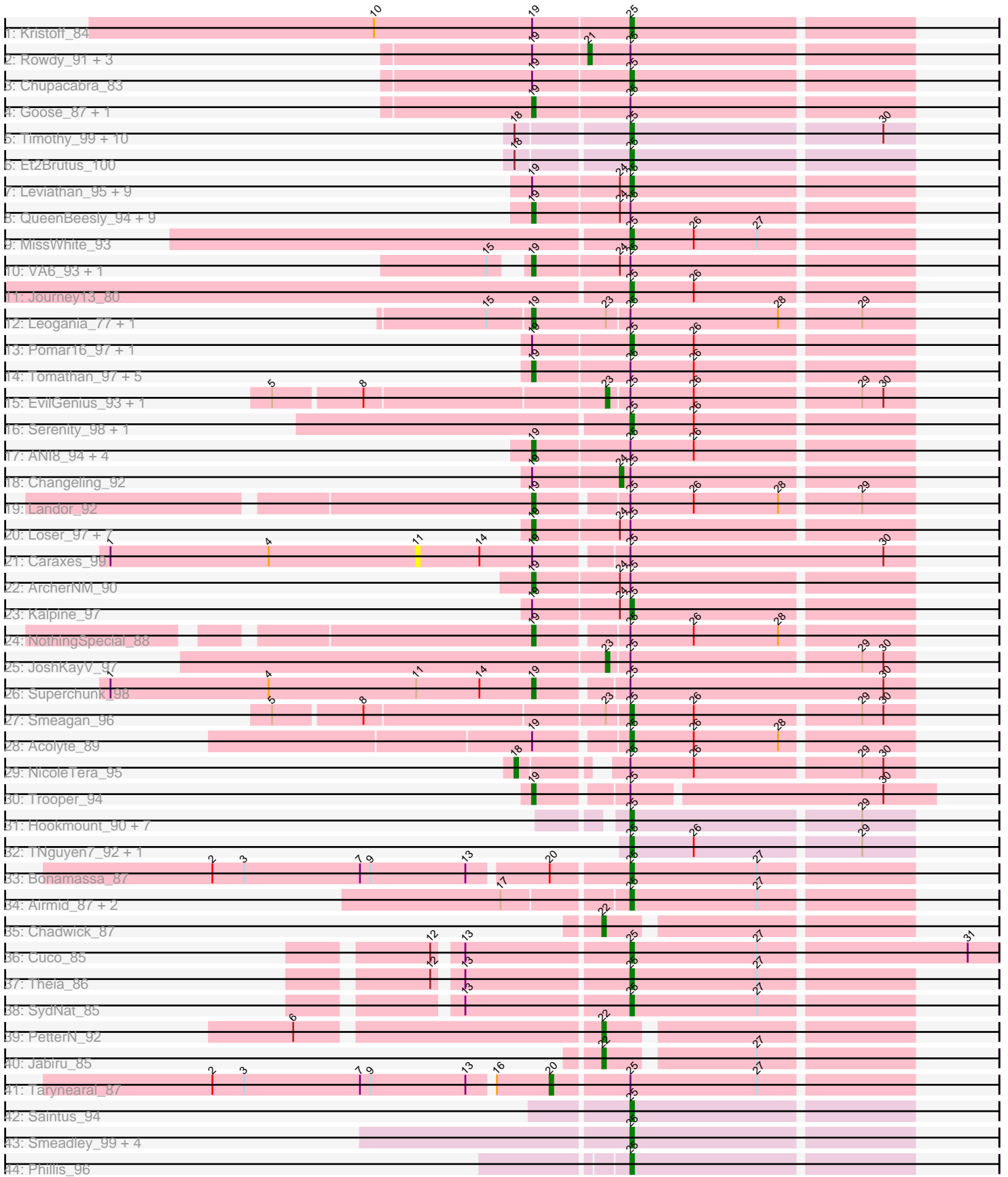


Pham 202801



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 202801 Report

This analysis was run 01/18/25 on database version 583.

Pham number 202801 has 111 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Kristoff\_84
- Track 2 : Rowdy\_91, RhynO\_75, Shapes\_91, DustyMartin\_91
- Track 3 : Chupacabra\_83
- Track 4 : Goose\_87, OKCentral2016\_85
- Track 5 : Timothy\_99, Orange\_99, Joselito\_97, Lucivia\_100, Ebony\_98, Mulciber\_98, Snape\_99, Mabel\_99, Gilberta\_97, Bowtie\_95, Fibonacci\_99
- Track 6 : Et2Brutus\_100
- Track 7 : Leviathan\_95, AbbyPaige\_96, Anselm\_97, Dalmatian\_94, Agape74\_96, Fameo\_93, FiringLine\_94, Power\_94, DudeLittle\_93, LilTurb\_95
- Track 8 : QueenBeesly\_94, Crucio\_94, SnapTap\_94, Jerm\_95, QueenB2\_93, Retro23\_95, Buggy\_84, Dignity\_96, Georgie2\_96, SweetiePie\_94
- Track 9 : MissWhite\_93
- Track 10 : VA6\_93, AN3\_93
- Track 11 : Journey13\_80
- Track 12 : Leogania\_77, BiancaTri92\_90
- Track 13 : Pomar16\_97, StarStuff\_97
- Track 14 : Tomathan\_97, Naji\_86, Duplo\_98, Travvers\_97, DBQu4n\_97, D32\_85
- Track 15 : EvilGenius\_93, ChipMunk\_94
- Track 16 : Serenity\_98, Jsquared\_101
- Track 17 : ANI8\_94, VC3\_93, C3\_87, AN9\_94, Kerberos\_97
- Track 18 : Changeling\_92
- Track 19 : Landor\_92
- Track 20 : Loser\_97, Loka\_89, AnnaL29\_96, Colin\_93, BobSwaget\_88, Miko\_90, Rachaly\_91, RedRock\_95
- Track 21 : Caraxes\_99
- Track 22 : ArcherNM\_90
- Track 23 : Kalpine\_97
- Track 24 : NothingSpecial\_88
- Track 25 : JoshKayV\_97
- Track 26 : Superchunk\_98
- Track 27 : Smeagan\_96
- Track 28 : Acolyte\_89
- Track 29 : NicoleTera\_95
- Track 30 : Trooper\_94
- Track 31 : Hookmount\_90, Todacoro\_90, Caviar\_79, Popcicle\_90, Margo\_90, QuinnKiro\_89, Lambert1\_90, Texage\_88
- Track 32 : TNguyen7\_92, BlueBird\_93

- Track 33 : Bonamassa\_87
- Track 34 : Airmid\_87, Benedict\_88, ElTiger69\_90
- Track 35 : Chadwick\_87
- Track 36 : Cuco\_85
- Track 37 : Theia\_86
- Track 38 : SydNat\_85
- Track 39 : PetterN\_92
- Track 40 : Jabiru\_85
- Track 41 : Tarynearal\_87
- Track 42 : Saintus\_94
- Track 43 : Smeadley\_99, Stephig9\_100, Dixon\_98, Astro\_98, NearlyHeadless\_100
- Track 44 : Phillis\_96

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

The start number called the most often in the published annotations is 25, it was called in 57 of the 105 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AbbyPaige\_96, Acolyte\_89, Agape74\_96, Airmid\_87, Anselm\_97, Astro\_98, Benedict\_88, BlueBird\_93, Bonamassa\_87, Bowtie\_95, Caviar\_79, Chupacabra\_83, Cuco\_85, Dalmatian\_94, Dixon\_98, DudeLittle\_93, Ebony\_98, ElTiger69\_90, Et2Brutus\_100, Fameo\_93, Fibonacci\_99, FiringLine\_94, Gilberta\_97, Hookmount\_90, Joselito\_97, Journey13\_80, Jsquared\_101, Kalpine\_97, Kristoff\_84, Lambert1\_90, Leviathan\_95, LilTurb\_95, Lucivia\_100, Mabel\_99, Margo\_90, MissWhite\_93, Mulciber\_98, NearlyHeadless\_100, Orange\_99, Phillis\_96, Pomar16\_97, Popcicle\_90, Power\_94, QuinnKiro\_89, Saintus\_94, Serenity\_98, Smeadley\_99, Smeagan\_96, Snape\_99, StarStuff\_97, Stephig9\_100, SydNat\_85, TNguyen7\_92, Texage\_88, Theia\_86, Timothy\_99, Todacoro\_90,

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

- AN3\_93, AN9\_94, ANI8\_94, AnnaL29\_96, ArcherNM\_90, BiancaTri92\_90, BobSwaget\_88, Buggy\_84, C3\_87, Caraxes\_99, Changeling\_92, ChipMunk\_94, Colin\_93, Crucio\_94, D32\_85, DBQu4n\_97, Dignity\_96, Duplo\_98, DustyMartin\_91, EvilGenius\_93, Georgie2\_96, Goose\_87, Jerm\_95, JoshKayV\_97, Kerberos\_97, Landor\_92, Leogania\_77, Lokk\_89, Loser\_97, Miko\_90, Naji\_86, NicoleTera\_95, NothingSpecial\_88, OKCentral2016\_85, QueenB2\_93, QueenBeesly\_94, Rachaly\_91, RedRock\_95, Retro23\_95, RhynO\_75, Rowdy\_91, Shapes\_91, SnapTap\_94, Superchunk\_98, SweetiePie\_94, Tarynearal\_87, Tomathan\_97, Travvers\_97, Trooper\_94, VA6\_93, VC3\_93,

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

- Chadwick\_87, Jabiru\_85, PetterN\_92,

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

Start 11:

- Found in 2 of 111 ( 1.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 50.0% of time when present

- Phage (with cluster) where this start called: Caraxes\_99 (A2),

#### Start 18:

- Found in 13 of 111 ( 11.7% ) of genes in pham
- Manual Annotations of this start: 1 of 105
- Called 7.7% of time when present
- Phage (with cluster) where this start called: NicoleTera\_95 (A2),

#### Start 19:

- Found in 62 of 111 ( 55.9% ) of genes in pham
- Manual Annotations of this start: 38 of 105
- Called 64.5% of time when present
- Phage (with cluster) where this start called: AN3\_93 (A2), AN9\_94 (A2), ANI8\_94 (A2), AnnaL29\_96 (A2), ArcherNM\_90 (A2), BiancaTri92\_90 (A2), BobSwaget\_88 (A2), Buggy\_84 (A2), C3\_87 (A2), Colin\_93 (A2), Crucio\_94 (A2), D32\_85 (A2), DBQu4n\_97 (A2), Dignity\_96 (A2), Duplo\_98 (A2), Georgie2\_96 (A2), Goose\_87 (A10), Jerm\_95 (A2), Kerberos\_97 (A2), Landor\_92 (A2), Leogania\_77 (A2), Loka\_89 (A2), Loser\_97 (A2), Miko\_90 (A2), Naji\_86 (A2), NothingSpecial\_88 (A2), OKCentral2016\_85 (A10), QueenB2\_93 (A2), QueenBeesly\_94 (A2), Rachaly\_91 (A2), RedRock\_95 (A2), Retro23\_95 (A2), SnapTap\_94 (A2), Superchunk\_98 (A2), SweetiePie\_94 (A2), Tomathan\_97 (A2), Travvers\_97 (A2), Trooper\_94 (A2), VA6\_93 (A2), VC3\_93 (A2),

#### Start 20:

- Found in 2 of 111 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 105
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Tarynearal\_87 (A5),

#### Start 21:

- Found in 4 of 111 ( 3.6% ) of genes in pham
- Manual Annotations of this start: 1 of 105
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DustyMartin\_91 (A10), RhynO\_75 (A10), Rowdy\_91 (A10), Shapes\_91 (A10),

#### Start 22:

- Found in 3 of 111 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 3 of 105
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chadwick\_87 (A5), Jabiru\_85 (A5), PetterN\_92 (A5),

#### Start 23:

- Found in 6 of 111 ( 5.4% ) of genes in pham
- Manual Annotations of this start: 3 of 105
- Called 50.0% of time when present
- Phage (with cluster) where this start called: ChipMunk\_94 (A2), EvilGenius\_93 (A2), JoshKayV\_97 (A2),

#### Start 24:

- Found in 33 of 111 ( 29.7% ) of genes in pham
- Manual Annotations of this start: 1 of 105

- Called 3.0% of time when present
- Phage (with cluster) where this start called: Changeling\_92 (A2),

Start 25:

- Found in 108 of 111 ( 97.3% ) of genes in pham
- Manual Annotations of this start: 57 of 105
- Called 52.8% of time when present
- Phage (with cluster) where this start called: AbbyPaige\_96 (A2), Acolyte\_89 (A2), Agape74\_96 (A2), Airmid\_87 (A5), Anselm\_97 (A2), Astro\_98 (A8), Benedict\_88 (A5), BlueBird\_93 (A3), Bonamassa\_87 (A5), Bowtie\_95 (A11), Caviar\_79 (A3), Chupacabra\_83 (A10), Cuco\_85 (A5), Dalmatian\_94 (A2), Dixon\_98 (A8), DudeLittle\_93 (A2), Ebony\_98 (A11), ElTiger69\_90 (A5), Et2Brutus\_100 (A11), Fameo\_93 (A2), Fibonacci\_99 (A11), FiringLine\_94 (A2), Gilberta\_97 (A11), Hookmount\_90 (A3), Joselito\_97 (A11), Journey13\_80 (A2), Jsquared\_101 (A2), Kalpine\_97 (A2), Kristoff\_84 (A10), Lambert1\_90 (A3), Leviathan\_95 (A2), LilTurb\_95 (A2), Lucivia\_100 (A11), Mabel\_99 (A11), Margo\_90 (A3), MissWhite\_93 (A2), Mulciber\_98 (A11), NearlyHeadless\_100 (A8), Orange\_99 (A11), Phillis\_96 (A8), Pomar16\_97 (A2), Popcicle\_90 (A3), Power\_94 (A2), QuinnKiro\_89 (A3), Saintus\_94 (A8), Serenity\_98 (A2), Smeadley\_99 (A8), Smeagan\_96 (A2), Snape\_99 (A11), StarStuff\_97 (A2), Stephig9\_100 (A8), SydNat\_85 (A5), TNguyen7\_92 (A3), Texage\_88 (A3), Theia\_86 (A5), Timothy\_99 (A11), Todacoro\_90 (A3),

### Summary by clusters:

There are 6 clusters represented in this pham: A11, A10, A3, A2, A5, A8,

Info for manual annotations of cluster A10:

- Start number 19 was manually annotated 2 times for cluster A10.
- Start number 21 was manually annotated 1 time for cluster A10.
- Start number 25 was manually annotated 2 times for cluster A10.

Info for manual annotations of cluster A11:

- Start number 25 was manually annotated 12 times for cluster A11.

Info for manual annotations of cluster A2:

- Start number 18 was manually annotated 1 time for cluster A2.
- Start number 19 was manually annotated 36 times for cluster A2.
- Start number 23 was manually annotated 3 times for cluster A2.
- Start number 24 was manually annotated 1 time for cluster A2.
- Start number 25 was manually annotated 19 times for cluster A2.

Info for manual annotations of cluster A3:

- Start number 25 was manually annotated 10 times for cluster A3.

Info for manual annotations of cluster A5:

- Start number 20 was manually annotated 1 time for cluster A5.
- Start number 22 was manually annotated 3 times for cluster A5.
- Start number 25 was manually annotated 7 times for cluster A5.

Info for manual annotations of cluster A8:

- Start number 25 was manually annotated 7 times for cluster A8.

**Gene Information:**

Gene: AN3\_93 Start: 49491, Stop: 49387, Start Num: 19

Candidate Starts for AN3\_93:

(15, 49497), (Start: 19 @49491 has 38 MA's), (Start: 24 @49467 has 1 MA's), (Start: 25 @49464 has 57 MA's),

Gene: AN9\_94 Start: 49621, Stop: 49517, Start Num: 19

Candidate Starts for AN9\_94:

(Start: 19 @49621 has 38 MA's), (Start: 25 @49594 has 57 MA's), (26, 49576),

Gene: ANI8\_94 Start: 49621, Stop: 49517, Start Num: 19

Candidate Starts for ANI8\_94:

(Start: 19 @49621 has 38 MA's), (Start: 25 @49594 has 57 MA's), (26, 49576),

Gene: AbbyPaige\_96 Start: 51634, Stop: 51557, Start Num: 25

Candidate Starts for AbbyPaige\_96:

(Start: 19 @51661 has 38 MA's), (Start: 24 @51637 has 1 MA's), (Start: 25 @51634 has 57 MA's),

Gene: Acolyte\_89 Start: 50809, Stop: 50732, Start Num: 25

Candidate Starts for Acolyte\_89:

(Start: 19 @50833 has 38 MA's), (Start: 25 @50809 has 57 MA's), (26, 50791), (28, 50767),

Gene: Agape74\_96 Start: 51607, Stop: 51530, Start Num: 25

Candidate Starts for Agape74\_96:

(Start: 19 @51634 has 38 MA's), (Start: 24 @51610 has 1 MA's), (Start: 25 @51607 has 57 MA's),

Gene: Airmid\_87 Start: 49229, Stop: 49152, Start Num: 25

Candidate Starts for Airmid\_87:

(17, 49262), (Start: 25 @49229 has 57 MA's), (27, 49193),

Gene: AnnaL29\_96 Start: 51737, Stop: 51633, Start Num: 19

Candidate Starts for AnnaL29\_96:

(Start: 19 @51737 has 38 MA's), (Start: 24 @51713 has 1 MA's), (Start: 25 @51710 has 57 MA's),

Gene: Anselm\_97 Start: 52009, Stop: 51932, Start Num: 25

Candidate Starts for Anselm\_97:

(Start: 19 @52036 has 38 MA's), (Start: 24 @52012 has 1 MA's), (Start: 25 @52009 has 57 MA's),

Gene: ArcherNM\_90 Start: 51024, Stop: 50920, Start Num: 19

Candidate Starts for ArcherNM\_90:

(Start: 19 @51024 has 38 MA's), (Start: 24 @51000 has 1 MA's), (Start: 25 @50997 has 57 MA's),

Gene: Astro\_98 Start: 50607, Stop: 50530, Start Num: 25

Candidate Starts for Astro\_98:

(Start: 25 @50607 has 57 MA's),

Gene: Benedict\_88 Start: 49072, Stop: 48995, Start Num: 25

Candidate Starts for Benedict\_88:

(17, 49105), (Start: 25 @49072 has 57 MA's), (27, 49036),

Gene: BiancaTri92\_90 Start: 50689, Stop: 50585, Start Num: 19

Candidate Starts for BiancaTri92\_90:

(15, 50701), (Start: 19 @50689 has 38 MA's), (Start: 23 @50668 has 3 MA's), (Start: 25 @50662 has 57 MA's), (28, 50620), (29, 50599),

Gene: BlueBird\_93 Start: 49300, Stop: 49223, Start Num: 25

Candidate Starts for BlueBird\_93:

(Start: 25 @49300 has 57 MA's), (26, 49282), (29, 49237),

Gene: BobSwaget\_88 Start: 48834, Stop: 48730, Start Num: 19

Candidate Starts for BobSwaget\_88:

(Start: 19 @48834 has 38 MA's), (Start: 24 @48810 has 1 MA's), (Start: 25 @48807 has 57 MA's),

Gene: Bonamassa\_87 Start: 49219, Stop: 49142, Start Num: 25

Candidate Starts for Bonamassa\_87:

(2, 49333), (3, 49324), (7, 49291), (9, 49288), (13, 49261), (Start: 20 @49240 has 1 MA's), (Start: 25 @49219 has 57 MA's), (27, 49183),

Gene: Bowtie\_95 Start: 49674, Stop: 49597, Start Num: 25

Candidate Starts for Bowtie\_95:

(Start: 18 @49704 has 1 MA's), (Start: 25 @49674 has 57 MA's), (30, 49605),

Gene: Buggy\_84 Start: 48373, Stop: 48269, Start Num: 19

Candidate Starts for Buggy\_84:

(Start: 19 @48373 has 38 MA's), (Start: 24 @48349 has 1 MA's), (Start: 25 @48346 has 57 MA's),

Gene: C3\_87 Start: 49621, Stop: 49517, Start Num: 19

Candidate Starts for C3\_87:

(Start: 19 @49621 has 38 MA's), (Start: 25 @49594 has 57 MA's), (26, 49576),

Gene: Caraxes\_99 Start: 51295, Stop: 51158, Start Num: 11

Candidate Starts for Caraxes\_99:

(1, 51382), (4, 51337), (11, 51295), (14, 51277), (Start: 19 @51262 has 38 MA's), (Start: 25 @51238 has 57 MA's), (30, 51166),

Gene: Caviar\_79 Start: 45928, Stop: 45851, Start Num: 25

Candidate Starts for Caviar\_79:

(Start: 25 @45928 has 57 MA's), (29, 45865),

Gene: Chadwick\_87 Start: 47540, Stop: 47460, Start Num: 22

Candidate Starts for Chadwick\_87:

(Start: 22 @47540 has 3 MA's),

Gene: Changeling\_92 Start: 51425, Stop: 51345, Start Num: 24

Candidate Starts for Changeling\_92:

(Start: 19 @51449 has 38 MA's), (Start: 24 @51425 has 1 MA's), (Start: 25 @51422 has 57 MA's),

Gene: ChipMunk\_94 Start: 52355, Stop: 52272, Start Num: 23

Candidate Starts for ChipMunk\_94:

(5, 52445), (8, 52421), (Start: 23 @52355 has 3 MA's), (Start: 25 @52349 has 57 MA's), (26, 52331), (29, 52286), (30, 52280),

Gene: Chupacabra\_83 Start: 49581, Stop: 49504, Start Num: 25

Candidate Starts for Chupacabra\_83:

(Start: 19 @49608 has 38 MA's), (Start: 25 @49581 has 57 MA's),

Gene: Colin\_93 Start: 51994, Stop: 51890, Start Num: 19  
Candidate Starts for Colin\_93:  
(Start: 19 @51994 has 38 MA's), (Start: 24 @51970 has 1 MA's), (Start: 25 @51967 has 57 MA's),

Gene: Crucio\_94 Start: 51711, Stop: 51607, Start Num: 19  
Candidate Starts for Crucio\_94:  
(Start: 19 @51711 has 38 MA's), (Start: 24 @51687 has 1 MA's), (Start: 25 @51684 has 57 MA's),

Gene: Cuco\_85 Start: 49160, Stop: 49059, Start Num: 25  
Candidate Starts for Cuco\_85:  
(12, 49211), (13, 49205), (Start: 25 @49160 has 57 MA's), (27, 49124), (31, 49067),

Gene: D32\_85 Start: 47615, Stop: 47511, Start Num: 19  
Candidate Starts for D32\_85:  
(Start: 19 @47615 has 38 MA's), (Start: 25 @47588 has 57 MA's), (26, 47570),

Gene: DBQu4n\_97 Start: 51230, Stop: 51126, Start Num: 19  
Candidate Starts for DBQu4n\_97:  
(Start: 19 @51230 has 38 MA's), (Start: 25 @51203 has 57 MA's), (26, 51185),

Gene: Dalmatian\_94 Start: 51310, Stop: 51233, Start Num: 25  
Candidate Starts for Dalmatian\_94:  
(Start: 19 @51337 has 38 MA's), (Start: 24 @51313 has 1 MA's), (Start: 25 @51310 has 57 MA's),

Gene: Dignity\_96 Start: 51741, Stop: 51637, Start Num: 19  
Candidate Starts for Dignity\_96:  
(Start: 19 @51741 has 38 MA's), (Start: 24 @51717 has 1 MA's), (Start: 25 @51714 has 57 MA's),

Gene: Dixon\_98 Start: 50172, Stop: 50095, Start Num: 25  
Candidate Starts for Dixon\_98:  
(Start: 25 @50172 has 57 MA's),

Gene: DudeLittle\_93 Start: 51376, Stop: 51299, Start Num: 25  
Candidate Starts for DudeLittle\_93:  
(Start: 19 @51403 has 38 MA's), (Start: 24 @51379 has 1 MA's), (Start: 25 @51376 has 57 MA's),

Gene: Duplo\_98 Start: 51287, Stop: 51183, Start Num: 19  
Candidate Starts for Duplo\_98:  
(Start: 19 @51287 has 38 MA's), (Start: 25 @51260 has 57 MA's), (26, 51242),

Gene: DustyMartin\_91 Start: 49998, Stop: 49909, Start Num: 21  
Candidate Starts for DustyMartin\_91:  
(Start: 19 @50013 has 38 MA's), (Start: 21 @49998 has 1 MA's), (Start: 25 @49986 has 57 MA's),

Gene: Ebony\_98 Start: 50638, Stop: 50561, Start Num: 25  
Candidate Starts for Ebony\_98:  
(Start: 18 @50668 has 1 MA's), (Start: 25 @50638 has 57 MA's), (30, 50569),

Gene: EITiger69\_90 Start: 49493, Stop: 49416, Start Num: 25  
Candidate Starts for EITiger69\_90:  
(17, 49526), (Start: 25 @49493 has 57 MA's), (27, 49457),



Gene: Et2Brutus\_100 Start: 50983, Stop: 50906, Start Num: 25

Candidate Starts for Et2Brutus\_100:

(Start: 18 @51013 has 1 MA's), (Start: 25 @50983 has 57 MA's),

Gene: EvilGenius\_93 Start: 52356, Stop: 52273, Start Num: 23

Candidate Starts for EvilGenius\_93:

(5, 52446), (8, 52422), (Start: 23 @52356 has 3 MA's), (Start: 25 @52350 has 57 MA's), (26, 52332), (29, 52287), (30, 52281),

Gene: Fameo\_93 Start: 51082, Stop: 51005, Start Num: 25

Candidate Starts for Fameo\_93:

(Start: 19 @51109 has 38 MA's), (Start: 24 @51085 has 1 MA's), (Start: 25 @51082 has 57 MA's),

Gene: Fibonacci\_99 Start: 50921, Stop: 50844, Start Num: 25

Candidate Starts for Fibonacci\_99:

(Start: 18 @50951 has 1 MA's), (Start: 25 @50921 has 57 MA's), (30, 50852),

Gene: FiringLine\_94 Start: 51780, Stop: 51703, Start Num: 25

Candidate Starts for FiringLine\_94:

(Start: 19 @51807 has 38 MA's), (Start: 24 @51783 has 1 MA's), (Start: 25 @51780 has 57 MA's),

Gene: Georgie2\_96 Start: 51855, Stop: 51751, Start Num: 19

Candidate Starts for Georgie2\_96:

(Start: 19 @51855 has 38 MA's), (Start: 24 @51831 has 1 MA's), (Start: 25 @51828 has 57 MA's),

Gene: Gilberta\_97 Start: 49941, Stop: 49864, Start Num: 25

Candidate Starts for Gilberta\_97:

(Start: 18 @49971 has 1 MA's), (Start: 25 @49941 has 57 MA's), (30, 49872),

Gene: Goose\_87 Start: 49419, Stop: 49315, Start Num: 19

Candidate Starts for Goose\_87:

(Start: 19 @49419 has 38 MA's), (Start: 25 @49392 has 57 MA's),

Gene: Hookmount\_90 Start: 48931, Stop: 48854, Start Num: 25

Candidate Starts for Hookmount\_90:

(Start: 25 @48931 has 57 MA's), (29, 48868),

Gene: Jabiru\_85 Start: 48652, Stop: 48572, Start Num: 22

Candidate Starts for Jabiru\_85:

(Start: 22 @48652 has 3 MA's), (27, 48613),

Gene: Jerm\_95 Start: 51599, Stop: 51495, Start Num: 19

Candidate Starts for Jerm\_95:

(Start: 19 @51599 has 38 MA's), (Start: 24 @51575 has 1 MA's), (Start: 25 @51572 has 57 MA's),

Gene: Joselito\_97 Start: 50819, Stop: 50742, Start Num: 25

Candidate Starts for Joselito\_97:

(Start: 18 @50849 has 1 MA's), (Start: 25 @50819 has 57 MA's), (30, 50750),

Gene: JoshKayV\_97 Start: 51822, Stop: 51739, Start Num: 23

Candidate Starts for JoshKayV\_97:

(Start: 23 @51822 has 3 MA's), (Start: 25 @51816 has 57 MA's), (29, 51753), (30, 51747),

Gene: Journey13\_80 Start: 46885, Stop: 46808, Start Num: 25

Candidate Starts for Journey13\_80:

(Start: 25 @46885 has 57 MA's), (26, 46867),

Gene: Jsquared\_101 Start: 51418, Stop: 51341, Start Num: 25

Candidate Starts for Jsquared\_101:

(Start: 25 @51418 has 57 MA's), (26, 51400),

Gene: Kalpine\_97 Start: 51831, Stop: 51754, Start Num: 25

Candidate Starts for Kalpine\_97:

(Start: 19 @51858 has 38 MA's), (Start: 24 @51834 has 1 MA's), (Start: 25 @51831 has 57 MA's),

Gene: Kerberos\_97 Start: 51250, Stop: 51146, Start Num: 19

Candidate Starts for Kerberos\_97:

(Start: 19 @51250 has 38 MA's), (Start: 25 @51223 has 57 MA's), (26, 51205),

Gene: Kristoff\_84 Start: 50050, Stop: 49973, Start Num: 25

Candidate Starts for Kristoff\_84:

(10, 50122), (Start: 19 @50077 has 38 MA's), (Start: 25 @50050 has 57 MA's),

Gene: Lambert1\_90 Start: 48932, Stop: 48855, Start Num: 25

Candidate Starts for Lambert1\_90:

(Start: 25 @48932 has 57 MA's), (29, 48869),

Gene: Landor\_92 Start: 52182, Stop: 52081, Start Num: 19

Candidate Starts for Landor\_92:

(Start: 19 @52182 has 38 MA's), (Start: 25 @52158 has 57 MA's), (26, 52140), (28, 52116), (29, 52095),

Gene: Leogania\_77 Start: 47504, Stop: 47400, Start Num: 19

Candidate Starts for Leogania\_77:

(15, 47516), (Start: 19 @47504 has 38 MA's), (Start: 23 @47483 has 3 MA's), (Start: 25 @47477 has 57 MA's), (28, 47435), (29, 47414),

Gene: Leviathan\_95 Start: 51650, Stop: 51573, Start Num: 25

Candidate Starts for Leviathan\_95:

(Start: 19 @51677 has 38 MA's), (Start: 24 @51653 has 1 MA's), (Start: 25 @51650 has 57 MA's),

Gene: LilTurb\_95 Start: 51562, Stop: 51485, Start Num: 25

Candidate Starts for LilTurb\_95:

(Start: 19 @51589 has 38 MA's), (Start: 24 @51565 has 1 MA's), (Start: 25 @51562 has 57 MA's),

Gene: Lokk\_89 Start: 49455, Stop: 49351, Start Num: 19

Candidate Starts for Lokk\_89:

(Start: 19 @49455 has 38 MA's), (Start: 24 @49431 has 1 MA's), (Start: 25 @49428 has 57 MA's),

Gene: Loser\_97 Start: 51981, Stop: 51877, Start Num: 19

Candidate Starts for Loser\_97:

(Start: 19 @51981 has 38 MA's), (Start: 24 @51957 has 1 MA's), (Start: 25 @51954 has 57 MA's),

Gene: Lucivia\_100 Start: 51098, Stop: 51021, Start Num: 25

Candidate Starts for Lucivia\_100:

(Start: 18 @51128 has 1 MA's), (Start: 25 @51098 has 57 MA's), (30, 51029),

Gene: Mabel\_99 Start: 51063, Stop: 50986, Start Num: 25  
Candidate Starts for Mabel\_99:  
(Start: 18 @51093 has 1 MA's), (Start: 25 @51063 has 57 MA's), (30, 50994),

Gene: Margo\_90 Start: 48957, Stop: 48880, Start Num: 25  
Candidate Starts for Margo\_90:  
(Start: 25 @48957 has 57 MA's), (29, 48894),

Gene: Miko\_90 Start: 50312, Stop: 50208, Start Num: 19  
Candidate Starts for Miko\_90:  
(Start: 19 @50312 has 38 MA's), (Start: 24 @50288 has 1 MA's), (Start: 25 @50285 has 57 MA's),

Gene: MissWhite\_93 Start: 48728, Stop: 48651, Start Num: 25  
Candidate Starts for MissWhite\_93:  
(Start: 25 @48728 has 57 MA's), (26, 48710), (27, 48692),

Gene: Mulciber\_98 Start: 50918, Stop: 50841, Start Num: 25  
Candidate Starts for Mulciber\_98:  
(Start: 18 @50948 has 1 MA's), (Start: 25 @50918 has 57 MA's), (30, 50849),

Gene: Naji\_86 Start: 47615, Stop: 47511, Start Num: 19  
Candidate Starts for Naji\_86:  
(Start: 19 @47615 has 38 MA's), (Start: 25 @47588 has 57 MA's), (26, 47570),

Gene: NearlyHeadless\_100 Start: 50504, Stop: 50427, Start Num: 25  
Candidate Starts for NearlyHeadless\_100:  
(Start: 25 @50504 has 57 MA's),

Gene: NicoleTera\_95 Start: 51425, Stop: 51324, Start Num: 18  
Candidate Starts for NicoleTera\_95:  
(Start: 18 @51425 has 1 MA's), (Start: 25 @51401 has 57 MA's), (26, 51383), (29, 51338), (30, 51332),

Gene: NothingSpecial\_88 Start: 50971, Stop: 50870, Start Num: 19  
Candidate Starts for NothingSpecial\_88:  
(Start: 19 @50971 has 38 MA's), (Start: 25 @50947 has 57 MA's), (26, 50929), (28, 50905),

Gene: OKCentral2016\_85 Start: 48846, Stop: 48742, Start Num: 19  
Candidate Starts for OKCentral2016\_85:  
(Start: 19 @48846 has 38 MA's), (Start: 25 @48819 has 57 MA's),

Gene: Orange\_99 Start: 50617, Stop: 50540, Start Num: 25  
Candidate Starts for Orange\_99:  
(Start: 18 @50647 has 1 MA's), (Start: 25 @50617 has 57 MA's), (30, 50548),

Gene: PetterN\_92 Start: 49239, Stop: 49159, Start Num: 22  
Candidate Starts for PetterN\_92:  
(6, 49320), (Start: 22 @49239 has 3 MA's),

Gene: Phillis\_96 Start: 49511, Stop: 49434, Start Num: 25  
Candidate Starts for Phillis\_96:  
(Start: 25 @49511 has 57 MA's),

Gene: Pomar16\_97 Start: 51296, Stop: 51219, Start Num: 25  
Candidate Starts for Pomar16\_97:  
(Start: 19 @51323 has 38 MA's), (Start: 25 @51296 has 57 MA's), (26, 51278),

Gene: Popcicle\_90 Start: 48928, Stop: 48851, Start Num: 25  
Candidate Starts for Popcicle\_90:  
(Start: 25 @48928 has 57 MA's), (29, 48865),

Gene: Power\_94 Start: 51827, Stop: 51750, Start Num: 25  
Candidate Starts for Power\_94:  
(Start: 19 @51854 has 38 MA's), (Start: 24 @51830 has 1 MA's), (Start: 25 @51827 has 57 MA's),

Gene: QueenB2\_93 Start: 51229, Stop: 51125, Start Num: 19  
Candidate Starts for QueenB2\_93:  
(Start: 19 @51229 has 38 MA's), (Start: 24 @51205 has 1 MA's), (Start: 25 @51202 has 57 MA's),

Gene: QueenBeesly\_94 Start: 51807, Stop: 51703, Start Num: 19  
Candidate Starts for QueenBeesly\_94:  
(Start: 19 @51807 has 38 MA's), (Start: 24 @51783 has 1 MA's), (Start: 25 @51780 has 57 MA's),

Gene: QuinnKiro\_89 Start: 48931, Stop: 48854, Start Num: 25  
Candidate Starts for QuinnKiro\_89:  
(Start: 25 @48931 has 57 MA's), (29, 48868),

Gene: Rachaly\_91 Start: 50455, Stop: 50351, Start Num: 19  
Candidate Starts for Rachaly\_91:  
(Start: 19 @50455 has 38 MA's), (Start: 24 @50431 has 1 MA's), (Start: 25 @50428 has 57 MA's),

Gene: RedRock\_95 Start: 51739, Stop: 51635, Start Num: 19  
Candidate Starts for RedRock\_95:  
(Start: 19 @51739 has 38 MA's), (Start: 24 @51715 has 1 MA's), (Start: 25 @51712 has 57 MA's),

Gene: Retro23\_95 Start: 51527, Stop: 51423, Start Num: 19  
Candidate Starts for Retro23\_95:  
(Start: 19 @51527 has 38 MA's), (Start: 24 @51503 has 1 MA's), (Start: 25 @51500 has 57 MA's),

Gene: RhynO\_75 Start: 45612, Stop: 45523, Start Num: 21  
Candidate Starts for RhynO\_75:  
(Start: 19 @45627 has 38 MA's), (Start: 21 @45612 has 1 MA's), (Start: 25 @45600 has 57 MA's),

Gene: Rowdy\_91 Start: 49998, Stop: 49909, Start Num: 21  
Candidate Starts for Rowdy\_91:  
(Start: 19 @50013 has 38 MA's), (Start: 21 @49998 has 1 MA's), (Start: 25 @49986 has 57 MA's),

Gene: Saintus\_94 Start: 47348, Stop: 47271, Start Num: 25  
Candidate Starts for Saintus\_94:  
(Start: 25 @47348 has 57 MA's),

Gene: Serenity\_98 Start: 50529, Stop: 50452, Start Num: 25  
Candidate Starts for Serenity\_98:  
(Start: 25 @50529 has 57 MA's), (26, 50511),

Gene: Shapes\_91 Start: 49998, Stop: 49909, Start Num: 21

Candidate Starts for Shapes\_91:  
(Start: 19 @50013 has 38 MA's), (Start: 21 @49998 has 1 MA's), (Start: 25 @49986 has 57 MA's),

Gene: Smeadley\_99 Start: 50508, Stop: 50431, Start Num: 25  
Candidate Starts for Smeadley\_99:  
(Start: 25 @50508 has 57 MA's),

Gene: Smeagan\_96 Start: 51716, Stop: 51639, Start Num: 25  
Candidate Starts for Smeagan\_96:  
(5, 51812), (8, 51788), (Start: 23 @51722 has 3 MA's), (Start: 25 @51716 has 57 MA's), (26, 51698),  
(29, 51653), (30, 51647),

Gene: SnapTap\_94 Start: 51510, Stop: 51406, Start Num: 19  
Candidate Starts for SnapTap\_94:  
(Start: 19 @51510 has 38 MA's), (Start: 24 @51486 has 1 MA's), (Start: 25 @51483 has 57 MA's),

Gene: Snape\_99 Start: 50606, Stop: 50529, Start Num: 25  
Candidate Starts for Snape\_99:  
(Start: 18 @50636 has 1 MA's), (Start: 25 @50606 has 57 MA's), (30, 50537),

Gene: StarStuff\_97 Start: 51258, Stop: 51181, Start Num: 25  
Candidate Starts for StarStuff\_97:  
(Start: 19 @51285 has 38 MA's), (Start: 25 @51258 has 57 MA's), (26, 51240),

Gene: Stephig9\_100 Start: 50834, Stop: 50757, Start Num: 25  
Candidate Starts for Stephig9\_100:  
(Start: 25 @50834 has 57 MA's),

Gene: Superchunk\_98 Start: 51262, Stop: 51158, Start Num: 19  
Candidate Starts for Superchunk\_98:  
(1, 51382), (4, 51337), (11, 51295), (14, 51277), (Start: 19 @51262 has 38 MA's), (Start: 25 @51238  
has 57 MA's), (30, 51166),

Gene: SweetiePie\_94 Start: 51643, Stop: 51539, Start Num: 19  
Candidate Starts for SweetiePie\_94:  
(Start: 19 @51643 has 38 MA's), (Start: 24 @51619 has 1 MA's), (Start: 25 @51616 has 57 MA's),

Gene: SydNat\_85 Start: 49394, Stop: 49317, Start Num: 25  
Candidate Starts for SydNat\_85:  
(13, 49439), (Start: 25 @49394 has 57 MA's), (27, 49358),

Gene: TNguyen7\_92 Start: 49258, Stop: 49181, Start Num: 25  
Candidate Starts for TNguyen7\_92:  
(Start: 25 @49258 has 57 MA's), (26, 49240), (29, 49195),

Gene: Tarynearal\_87 Start: 49212, Stop: 49114, Start Num: 20  
Candidate Starts for Tarynearal\_87:  
(2, 49305), (3, 49296), (7, 49263), (9, 49260), (13, 49233), (16, 49227), (Start: 20 @49212 has 1 MA's),  
(Start: 25 @49191 has 57 MA's), (27, 49155),

Gene: Texage\_88 Start: 48932, Stop: 48855, Start Num: 25  
Candidate Starts for Texage\_88:  
(Start: 25 @48932 has 57 MA's), (29, 48869),

Gene: Theia\_86 Start: 49737, Stop: 49660, Start Num: 25  
Candidate Starts for Theia\_86:  
(12, 49788), (13, 49782), (Start: 25 @49737 has 57 MA's), (27, 49701),

Gene: Timothy\_99 Start: 50583, Stop: 50506, Start Num: 25  
Candidate Starts for Timothy\_99:  
(Start: 18 @50613 has 1 MA's), (Start: 25 @50583 has 57 MA's), (30, 50514),

Gene: Todacoro\_90 Start: 48931, Stop: 48854, Start Num: 25  
Candidate Starts for Todacoro\_90:  
(Start: 25 @48931 has 57 MA's), (29, 48868),

Gene: Tomathan\_97 Start: 51364, Stop: 51260, Start Num: 19  
Candidate Starts for Tomathan\_97:  
(Start: 19 @51364 has 38 MA's), (Start: 25 @51337 has 57 MA's), (26, 51319),

Gene: Travvers\_97 Start: 51281, Stop: 51177, Start Num: 19  
Candidate Starts for Travvers\_97:  
(Start: 19 @51281 has 38 MA's), (Start: 25 @51254 has 57 MA's), (26, 51236),

Gene: Trooper\_94 Start: 51019, Stop: 50912, Start Num: 19  
Candidate Starts for Trooper\_94:  
(Start: 19 @51019 has 38 MA's), (Start: 25 @50995 has 57 MA's), (30, 50926),

Gene: VA6\_93 Start: 51062, Stop: 50958, Start Num: 19  
Candidate Starts for VA6\_93:  
(15, 51068), (Start: 19 @51062 has 38 MA's), (Start: 24 @51038 has 1 MA's), (Start: 25 @51035 has 57 MA's),

Gene: VC3\_93 Start: 49621, Stop: 49517, Start Num: 19  
Candidate Starts for VC3\_93:  
(Start: 19 @49621 has 38 MA's), (Start: 25 @49594 has 57 MA's), (26, 49576),