

Pham 193963



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 193963 Report

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

Pham number 193963 has 75 members, 13 are drafts.

Phages represented in each track:

- Track 1 : Enceladus\_3, Appletree2\_3, Calm\_3, Silverleaf\_3, Zaria\_3, Wamburgexpress\_3, MAckerman\_3, Wyatt2\_3, CicholasNage\_3, Halena\_3, DirkDirk\_3, Acquire49\_3, Rose5\_3
- Track 2 : Tyson\_3, OhShagHennessy\_3, AvadaKedavra\_3, JoeDirt\_3
- Track 3 : LeBron\_3, UPIE\_3
- Track 4 : Kahlid\_3, Sarshaun\_3
- Track 5 : Soap141\_3, DrSeegs\_3, Wilder\_3, Netyap\_3, Nicholasp3\_3, Miley16\_3, Crossroads\_3, Finemlucis\_3, Gabriela\_3, LilDestine\_3, Gardann\_3, Vetrix\_3, MkaliMitinis3\_3, Faith1\_3, Breezona\_3, Hafay\_3, BigCheese\_3, Lewan\_3, Loadrie\_3, Winky\_3, BobsGarage\_3, Wigglewiggle\_3, Rumpelstiltskin\_3, Itos\_3
- Track 6 : GuuelaD\_3
- Track 7 : Zakai\_3
- Track 8 : Archie\_3
- Track 9 : Claus\_3
- Track 10 : Krypton555\_3, Bellis\_3, Snenia\_3, MsGreen\_3, Clautastrophe\_3, DuncansLeg\_3, Jubie\_3, Lumos\_3, Kingsolomon\_3, Nicholas\_3
- Track 11 : Samty\_3
- Track 12 : Ellson\_3, Whirlwind\_4, Moostard\_3, LiyuLake\_3, Jobypre\_3
- Track 13 : MiniLon\_3
- Track 14 : Lolly9\_3, MiniMac\_3
- Track 15 : Finnry\_3
- Track 16 : Douzhi\_3, Quby\_3, BrainDrainer\_3, PYPDinur\_3, Sheng711\_3
- Track 17 : Douge\_3

### ***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 48 of the 62 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acquire49\_3, Appletree2\_3, Archie\_3, Bellis\_3, BigCheese\_3, BobsGarage\_3, Breezona\_3, Calm\_3, CicholasNage\_3, Claus\_3, Clautastrophe\_3, Crossroads\_3, DirkDirk\_3, DrSeegs\_3, DuncansLeg\_3, Enceladus\_3, Faith1\_3, Finemlucis\_3, Finnry\_3, Gabriela\_3, Gardann\_3, GuuelaD\_3, Hafay\_3, Halena\_3, Itos\_3, Jubie\_3,

Kingsolomon\_3, Krypton555\_3, Lewan\_3, LilDestine\_3, Loadrie\_3, Lumos\_3, MAckerman\_3, Miley16\_3, MkaliMitinis3\_3, MsGreen\_3, Netyap\_3, Nicholas\_3, Nicholasp3\_3, Rose5\_3, Rumpelstiltskin\_3, Silverleaf\_3, Snenia\_3, Soap141\_3, Vetrix\_3, Wamburggrxpress\_3, Wigglewiggle\_3, Wilder\_3, Winky\_3, Wyatt2\_3, Zakai\_3, Zaria\_3,

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

- AvadaKedavra\_3, BrainDrainer\_3, Douge\_3, Douzhi\_3, Ellson\_3, Jobypre\_3, JoeDirt\_3, Kahlid\_3, LeBron\_3, LiyuLake\_3, Moostard\_3, OhShagHennessy\_3, PYPDinur\_3, Quby\_3, Samty\_3, Sarshaun\_3, Sheng711\_3, Tyson\_3, UPIE\_3, Whirlwind\_4,

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

- Lolly9\_3, MiniLon\_3, MiniMac\_3,

### Summary by start number:

Start 1:

- Found in 3 of 75 ( 4.0% ) of genes in pham
- Manual Annotations of this start: 2 of 62
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Lolly9\_3 (L3), MiniMac\_3 (L3),

Start 2:

- Found in 72 of 75 ( 96.0% ) of genes in pham
- Manual Annotations of this start: 48 of 62
- Called 72.2% of time when present
- Phage (with cluster) where this start called: Acquire49\_3 (L1), Appletree2\_3 (L1), Archie\_3 (L2), Bellis\_3 (L3), BigCheese\_3 (L2), BobsGarage\_3 (L2), Breezona\_3 (L2), Calm\_3 (L1), CicholasNage\_3 (L1), Claus\_3 (L2), Clautastrophe\_3 (L3), Crossroads\_3 (L2), DirkDirk\_3 (L1), DrSeegs\_3 (L2), DuncansLeg\_3 (L3), Enceladus\_3 (L1), Faith1\_3 (L2), Finemlucis\_3 (L2), Finnry\_3 (L3), Gabriela\_3 (L2), Gardann\_3 (L2), GuuelaD\_3 (L2), Hafay\_3 (L2), Halena\_3 (L1), Itos\_3 (L2), Jubie\_3 (L3), Kingsolomon\_3 (L3), Krypton555\_3 (L3), Lewan\_3 (L2), LilDestine\_3 (L2), Loadrie\_3 (L2), Lumos\_3 (L3), MAckerman\_3 (L1), Miley16\_3 (L2), MkaliMitinis3\_3 (L2), MsGreen\_3 (L3), Netyap\_3 (L2), Nicholas\_3 (L3), Nicholasp3\_3 (L2), Rose5\_3 (L1), Rumpelstiltskin\_3 (L2), Silverleaf\_3 (L1), Snenia\_3 (L3), Soap141\_3 (L2), Vetrix\_3 (L2), Wamburggrxpress\_3 (L1), Wigglewiggle\_3 (L2), Wilder\_3 (L2), Winky\_3 (L2), Wyatt2\_3 (L1), Zakai\_3 (L2), Zaria\_3 (L1),

Start 3:

- Found in 75 of 75 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 8 of 62
- Called 22.7% of time when present
- Phage (with cluster) where this start called: AvadaKedavra\_3 (L1), BrainDrainer\_3 (L4), Douzhi\_3 (L4), Ellson\_3 (L3), Jobypre\_3 (L3), JoeDirt\_3 (L1), Kahlid\_3 (L2), LiyuLake\_3 (L3), MiniLon\_3 (L3), Moostard\_3 (L3), OhShagHennessy\_3 (L1), PYPDinur\_3 (L4), Quby\_3 (L4), Sarshaun\_3 (L2), Sheng711\_3 (L4), Tyson\_3 (L1), Whirlwind\_4 (L3),

Start 4:

- Found in 72 of 75 ( 96.0% ) of genes in pham
- Manual Annotations of this start: 4 of 62

- Called 5.6% of time when present
- Phage (with cluster) where this start called: Douge\_3 (L4), LeBron\_3 (L1), Samty\_3 (L3), UPIE\_3 (L1),

### **Summary by clusters:**

There are 4 clusters represented in this pham: L4, L2, L3, L1,

Info for manual annotations of cluster L1:

- Start number 2 was manually annotated 13 times for cluster L1.
- Start number 3 was manually annotated 4 times for cluster L1.
- Start number 4 was manually annotated 2 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 2 was manually annotated 25 times for cluster L2.
- Start number 3 was manually annotated 1 time for cluster L2.

Info for manual annotations of cluster L3:

- Start number 1 was manually annotated 2 times for cluster L3.
- Start number 2 was manually annotated 10 times for cluster L3.
- Start number 3 was manually annotated 3 times for cluster L3.
- Start number 4 was manually annotated 1 time for cluster L3.

Info for manual annotations of cluster L4:

- Start number 4 was manually annotated 1 time for cluster L4.

### **Gene Information:**

Gene: Acquire49\_3 Start: 849, Stop: 1052, Start Num: 2

Candidate Starts for Acquire49\_3:

(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: Appletree2\_3 Start: 822, Stop: 1025, Start Num: 2

Candidate Starts for Appletree2\_3:

(Start: 2 @822 has 48 MA's), (Start: 3 @831 has 8 MA's), (Start: 4 @834 has 4 MA's), (5, 861), (9, 978),

Gene: Archie\_3 Start: 831, Stop: 1034, Start Num: 2

Candidate Starts for Archie\_3:

(Start: 2 @831 has 48 MA's), (Start: 3 @840 has 8 MA's), (Start: 4 @843 has 4 MA's), (6, 930), (7, 969),

Gene: AvadaKedavra\_3 Start: 858, Stop: 1052, Start Num: 3

Candidate Starts for AvadaKedavra\_3:

(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: Bellis\_3 Start: 850, Stop: 1035, Start Num: 2

Candidate Starts for Bellis\_3:

(Start: 2 @850 has 48 MA's), (Start: 3 @859 has 8 MA's), (Start: 4 @862 has 4 MA's), (8, 997), (10, 1021),

Gene: BigCheese\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for BigCheese\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: BobsGarage\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for BobsGarage\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: BrainDrainer\_3 Start: 613, Stop: 771, Start Num: 3

Candidate Starts for BrainDrainer\_3:

(Start: 2 @604 has 48 MA's), (Start: 3 @613 has 8 MA's), (Start: 4 @616 has 4 MA's),

Gene: Breezona\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Breezona\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Calm\_3 Start: 849, Stop: 1052, Start Num: 2

Candidate Starts for Calm\_3:

(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: CicholasNage\_3 Start: 850, Stop: 1053, Start Num: 2

Candidate Starts for CicholasNage\_3:

(Start: 2 @850 has 48 MA's), (Start: 3 @859 has 8 MA's), (Start: 4 @862 has 4 MA's), (5, 889), (9, 1006),

Gene: Claus\_3 Start: 878, Stop: 1081, Start Num: 2

Candidate Starts for Claus\_3:

(Start: 2 @878 has 48 MA's), (Start: 3 @887 has 8 MA's), (Start: 4 @890 has 4 MA's), (6, 977), (7, 1016),

Gene: Clautastrophe\_3 Start: 860, Stop: 1048, Start Num: 2

Candidate Starts for Clautastrophe\_3:

(Start: 2 @860 has 48 MA's), (Start: 3 @869 has 8 MA's), (Start: 4 @872 has 4 MA's), (8, 1007), (10, 1031),

Gene: Crossroads\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Crossroads\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: DirkDirk\_3 Start: 850, Stop: 1053, Start Num: 2

Candidate Starts for DirkDirk\_3:

(Start: 2 @850 has 48 MA's), (Start: 3 @859 has 8 MA's), (Start: 4 @862 has 4 MA's), (5, 889), (9, 1006),

Gene: Douge\_3 Start: 616, Stop: 771, Start Num: 4

Candidate Starts for Douge\_3:

(Start: 2 @604 has 48 MA's), (Start: 3 @613 has 8 MA's), (Start: 4 @616 has 4 MA's),

Gene: Douzhi\_3 Start: 613, Stop: 771, Start Num: 3

Candidate Starts for Douzhi\_3:

(Start: 2 @604 has 48 MA's), (Start: 3 @613 has 8 MA's), (Start: 4 @616 has 4 MA's),

Gene: DrSeegs\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for DrSeegs\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: DuncansLeg\_3 Start: 863, Stop: 1051, Start Num: 2

Candidate Starts for DuncansLeg\_3:

(Start: 2 @863 has 48 MA's), (Start: 3 @872 has 8 MA's), (Start: 4 @875 has 4 MA's), (8, 1010), (10, 1034),

Gene: Ellson\_3 Start: 881, Stop: 1060, Start Num: 3

Candidate Starts for Ellson\_3:

(Start: 2 @872 has 48 MA's), (Start: 3 @881 has 8 MA's), (Start: 4 @884 has 4 MA's), (8, 1019), (10, 1043),

Gene: Enceladus\_3 Start: 850, Stop: 1053, Start Num: 2

Candidate Starts for Enceladus\_3:

(Start: 2 @850 has 48 MA's), (Start: 3 @859 has 8 MA's), (Start: 4 @862 has 4 MA's), (5, 889), (9, 1006),

Gene: Faith1\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Faith1\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Finemlucis\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Finemlucis\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Finnry\_3 Start: 851, Stop: 1036, Start Num: 2

Candidate Starts for Finnry\_3:

(Start: 2 @851 has 48 MA's), (Start: 3 @860 has 8 MA's), (Start: 4 @863 has 4 MA's), (8, 998), (10, 1022),

Gene: Gabriela\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Gabriela\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Gardann\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Gardann\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: GuuelaD\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for GuuelaD\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (5, 905), (6, 965), (7, 1004),

Gene: Hafay\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Hafay\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Halena\_3 Start: 849, Stop: 1052, Start Num: 2

Candidate Starts for Halena\_3:

(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: Itos\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Itos\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Jobypre\_3 Start: 869, Stop: 1048, Start Num: 3

Candidate Starts for Jobypre\_3:

(Start: 2 @860 has 48 MA's), (Start: 3 @869 has 8 MA's), (Start: 4 @872 has 4 MA's), (8, 1007), (10, 1031),

Gene: JoeDirt\_3 Start: 859, Stop: 1053, Start Num: 3

Candidate Starts for JoeDirt\_3:

(Start: 2 @850 has 48 MA's), (Start: 3 @859 has 8 MA's), (Start: 4 @862 has 4 MA's), (5, 889), (9, 1006),

Gene: Jubie\_3 Start: 860, Stop: 1048, Start Num: 2

Candidate Starts for Jubie\_3:

(Start: 2 @860 has 48 MA's), (Start: 3 @869 has 8 MA's), (Start: 4 @872 has 4 MA's), (8, 1007), (10, 1031),

Gene: Kahlid\_3 Start: 875, Stop: 1069, Start Num: 3

Candidate Starts for Kahlid\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Kingsolomon\_3 Start: 860, Stop: 1048, Start Num: 2

Candidate Starts for Kingsolomon\_3:

(Start: 2 @860 has 48 MA's), (Start: 3 @869 has 8 MA's), (Start: 4 @872 has 4 MA's), (8, 1007), (10, 1031),

Gene: Krypton555\_3 Start: 849, Stop: 1034, Start Num: 2

Candidate Starts for Krypton555\_3:

(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (8, 996), (10, 1020),

Gene: LeBron\_3 Start: 862, Stop: 1053, Start Num: 4

Candidate Starts for LeBron\_3:

(Start: 2 @850 has 48 MA's), (Start: 3 @859 has 8 MA's), (Start: 4 @862 has 4 MA's), (5, 889), (9, 1006),

Gene: Lewan\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Lewan\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: LilDestine\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for LilDestine\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: LiyuLake\_3 Start: 872, Stop: 1051, Start Num: 3

Candidate Starts for LiyuLake\_3:

(Start: 2 @863 has 48 MA's), (Start: 3 @872 has 8 MA's), (Start: 4 @875 has 4 MA's), (8, 1010), (10, 1034),

Gene: Loadrie\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Loadrie\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Lolly9\_3 Start: 857, Stop: 1045, Start Num: 1

Candidate Starts for Lolly9\_3:

(Start: 1 @857 has 2 MA's), (Start: 3 @869 has 8 MA's), (8, 1007), (10, 1031),

Gene: Lumos\_3 Start: 860, Stop: 1048, Start Num: 2

Candidate Starts for Lumos\_3:

(Start: 2 @860 has 48 MA's), (Start: 3 @869 has 8 MA's), (Start: 4 @872 has 4 MA's), (8, 1007), (10, 1031),

Gene: MAckerman\_3 Start: 849, Stop: 1052, Start Num: 2

Candidate Starts for MAckerman\_3:

(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: Miley16\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Miley16\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: MiniLon\_3 Start: 869, Stop: 1045, Start Num: 3

Candidate Starts for MiniLon\_3:

(Start: 1 @857 has 2 MA's), (Start: 3 @869 has 8 MA's), (8, 1007), (10, 1031),

Gene: MiniMac\_3 Start: 857, Stop: 1045, Start Num: 1

Candidate Starts for MiniMac\_3:

(Start: 1 @857 has 2 MA's), (Start: 3 @869 has 8 MA's), (8, 1007), (10, 1031),

Gene: MkaliMitinis3\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for MkaliMitinis3\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),



Gene: Moostard\_3 Start: 859, Stop: 1035, Start Num: 3  
Candidate Starts for Moostard\_3:  
(Start: 2 @850 has 48 MA's), (Start: 3 @859 has 8 MA's), (Start: 4 @862 has 4 MA's), (8, 997), (10, 1021),

Gene: MsGreen\_3 Start: 860, Stop: 1048, Start Num: 2  
Candidate Starts for MsGreen\_3:  
(Start: 2 @860 has 48 MA's), (Start: 3 @869 has 8 MA's), (Start: 4 @872 has 4 MA's), (8, 1007), (10, 1031),

Gene: Netyap\_3 Start: 866, Stop: 1069, Start Num: 2  
Candidate Starts for Netyap\_3:  
(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Nicholas\_3 Start: 860, Stop: 1048, Start Num: 2  
Candidate Starts for Nicholas\_3:  
(Start: 2 @860 has 48 MA's), (Start: 3 @869 has 8 MA's), (Start: 4 @872 has 4 MA's), (8, 1007), (10, 1031),

Gene: Nicholasp3\_3 Start: 866, Stop: 1069, Start Num: 2  
Candidate Starts for Nicholasp3\_3:  
(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: OhShagHennessy\_3 Start: 831, Stop: 1025, Start Num: 3  
Candidate Starts for OhShagHennessy\_3:  
(Start: 2 @822 has 48 MA's), (Start: 3 @831 has 8 MA's), (Start: 4 @834 has 4 MA's), (5, 861), (9, 978),

Gene: PYPDinur\_3 Start: 613, Stop: 771, Start Num: 3  
Candidate Starts for PYPDinur\_3:  
(Start: 2 @604 has 48 MA's), (Start: 3 @613 has 8 MA's), (Start: 4 @616 has 4 MA's),

Gene: Quby\_3 Start: 613, Stop: 771, Start Num: 3  
Candidate Starts for Quby\_3:  
(Start: 2 @604 has 48 MA's), (Start: 3 @613 has 8 MA's), (Start: 4 @616 has 4 MA's),

Gene: Rose5\_3 Start: 849, Stop: 1052, Start Num: 2  
Candidate Starts for Rose5\_3:  
(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: Rumpelstiltskin\_3 Start: 866, Stop: 1069, Start Num: 2  
Candidate Starts for Rumpelstiltskin\_3:  
(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Samty\_3 Start: 862, Stop: 1035, Start Num: 4  
Candidate Starts for Samty\_3:  
(Start: 2 @850 has 48 MA's), (Start: 3 @859 has 8 MA's), (Start: 4 @862 has 4 MA's), (8, 997), (10, 1021),

Gene: Sarshaun\_3 Start: 875, Stop: 1069, Start Num: 3  
Candidate Starts for Sarshaun\_3:  
(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Sheng711\_3 Start: 613, Stop: 771, Start Num: 3  
Candidate Starts for Sheng711\_3:  
(Start: 2 @604 has 48 MA's), (Start: 3 @613 has 8 MA's), (Start: 4 @616 has 4 MA's),

Gene: Silverleaf\_3 Start: 849, Stop: 1052, Start Num: 2  
Candidate Starts for Silverleaf\_3:  
(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: Snenia\_3 Start: 860, Stop: 1048, Start Num: 2  
Candidate Starts for Snenia\_3:  
(Start: 2 @860 has 48 MA's), (Start: 3 @869 has 8 MA's), (Start: 4 @872 has 4 MA's), (8, 1007), (10, 1031),

Gene: Soap141\_3 Start: 866, Stop: 1069, Start Num: 2  
Candidate Starts for Soap141\_3:  
(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Tyson\_3 Start: 858, Stop: 1052, Start Num: 3  
Candidate Starts for Tyson\_3:  
(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: UPIE\_3 Start: 862, Stop: 1053, Start Num: 4  
Candidate Starts for UPIE\_3:  
(Start: 2 @850 has 48 MA's), (Start: 3 @859 has 8 MA's), (Start: 4 @862 has 4 MA's), (5, 889), (9, 1006),

Gene: Vetrix\_3 Start: 866, Stop: 1069, Start Num: 2  
Candidate Starts for Vetrix\_3:  
(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Wamburgrexpress\_3 Start: 849, Stop: 1052, Start Num: 2  
Candidate Starts for Wamburgrexpress\_3:  
(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: Whirlwind\_4 Start: 858, Stop: 1034, Start Num: 3  
Candidate Starts for Whirlwind\_4:  
(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (8, 996), (10, 1020),

Gene: Wigglewigggle\_3 Start: 866, Stop: 1069, Start Num: 2  
Candidate Starts for Wigglewigggle\_3:  
(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Wilder\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Wilder\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Winky\_3 Start: 866, Stop: 1069, Start Num: 2

Candidate Starts for Winky\_3:

(Start: 2 @866 has 48 MA's), (Start: 3 @875 has 8 MA's), (Start: 4 @878 has 4 MA's), (6, 965), (7, 1004),

Gene: Wyatt2\_3 Start: 849, Stop: 1052, Start Num: 2

Candidate Starts for Wyatt2\_3:

(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),

Gene: Zakai\_3 Start: 854, Stop: 1057, Start Num: 2

Candidate Starts for Zakai\_3:

(Start: 2 @854 has 48 MA's), (Start: 3 @863 has 8 MA's), (Start: 4 @866 has 4 MA's), (6, 953), (7, 992),

Gene: Zaria\_3 Start: 849, Stop: 1052, Start Num: 2

Candidate Starts for Zaria\_3:

(Start: 2 @849 has 48 MA's), (Start: 3 @858 has 8 MA's), (Start: 4 @861 has 4 MA's), (5, 888), (9, 1005),