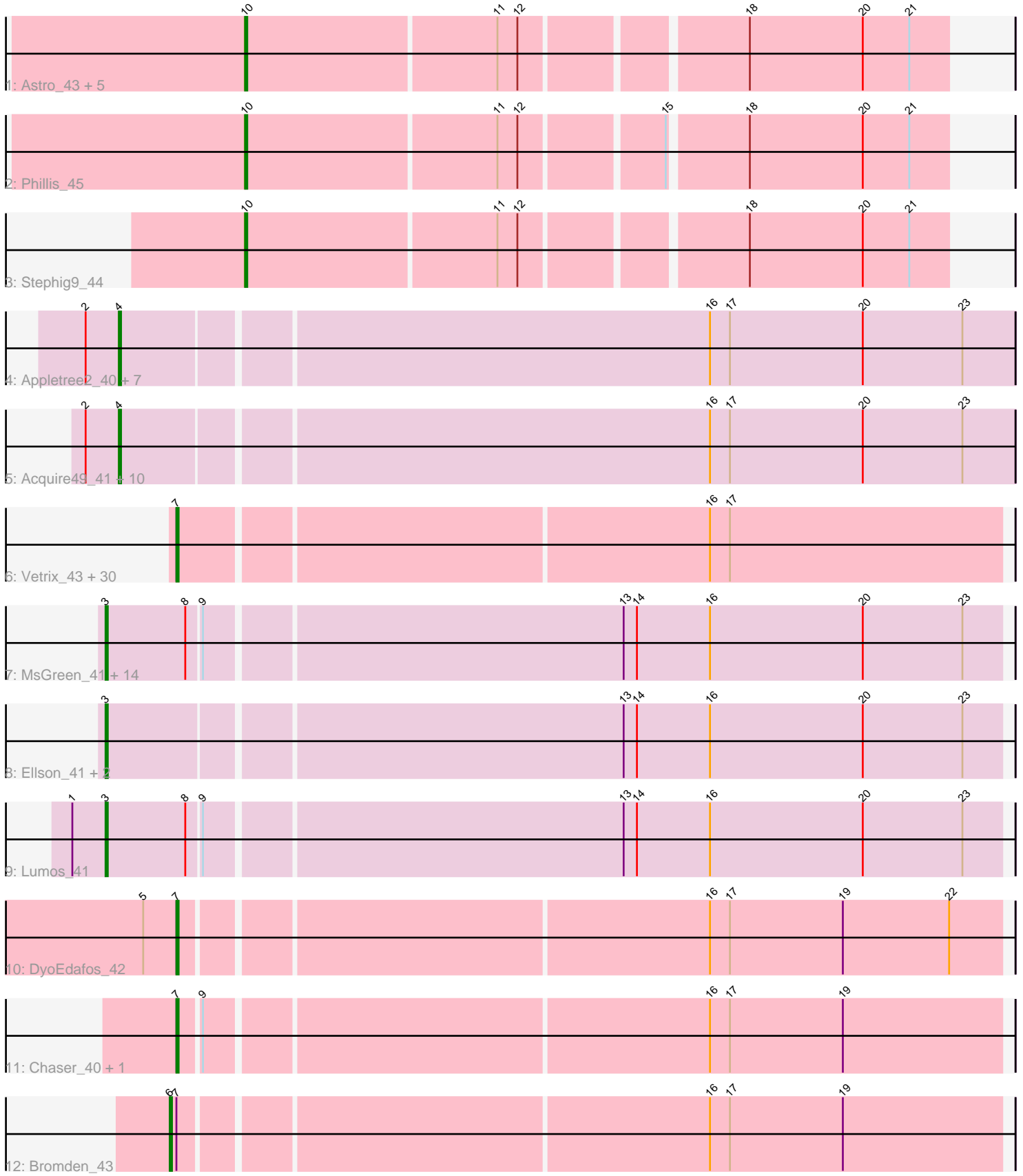


Pham 163551



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 163551 Report

This analysis was run 04/28/24 on database version 559.

Pham number 163551 has 81 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Astro\_43, Danforth\_43, Expelliarmus\_43, Smeadley\_44, Roary\_44, Groundhog\_42
- Track 2 : Phillis\_45
- Track 3 : Stephig9\_44
- Track 4 : Appletree2\_40, JoeDirt\_40, Wamburggrxpress\_41, OhShagHennessy\_40, DirkDirk\_40, Enceladus\_40, UPIE\_41, LeBron\_41
- Track 5 : Acquire49\_41, Zaria\_41, Halena\_40, AvadaKedavra\_41, Wyatt2\_41, Tyson\_40, Rose5\_40, MAckerman\_40, Silverleaf\_40, Calm\_41, CicholasNage\_41
- Track 6 : Vetrix\_43, Crossroads\_43, Breezona\_43, BigCheese\_43, Finemlucis\_43, Claus\_43, BobsGarage\_43, Nicholasp3\_43, ZhongYanYuan\_41, GuuelaD\_43, Faith1\_43, Netyap\_43, Wilder\_43, MkaliMitinis3\_43, Loadrie\_43, Rumpelstiltskin\_43, Wigglewiggles\_43, Gabriela\_43, Miley16\_43, Archie\_43, Gardann\_43, Lewan\_43, Kahlid\_43, Baoshan\_41, Zakai\_43, Itos\_42, LilDestine\_43, DrSeegs\_43, Hafay\_43, Bazzle\_43, Winky\_43
- Track 7 : MsGreen\_41, MiniLon\_41, Kingsolomon\_41, DuncansLeg\_41, MiniMac\_41, Jubie\_41, Snenia\_41, Bellis\_41, Finnry\_41, Clautastrophe\_41, Nicholas\_41, Jobypre\_41, Lolly9\_41, Moostard\_41, Samty\_41
- Track 8 : Ellson\_41, Krypton555\_41, Whirlwind\_42
- Track 9 : Lumos\_41
- Track 10 : DyoEdafos\_42
- Track 11 : Chaser\_40, Douge\_40
- Track 12 : Bromden\_43

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

The start number called the most often in the published annotations is 7, it was called in 29 of the 72 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Archie\_43, Baoshan\_41, Bazzle\_43, BigCheese\_43, BobsGarage\_43, Breezona\_43, Chaser\_40, Claus\_43, Crossroads\_43, Douge\_40, DrSeegs\_43, DyoEdafos\_42, Faith1\_43, Finemlucis\_43, Gabriela\_43, Gardann\_43, GuuelaD\_43, Hafay\_43, Itos\_42, Kahlid\_43, Lewan\_43, LilDestine\_43, Loadrie\_43, Miley16\_43, MkaliMitinis3\_43, Netyap\_43, Nicholasp3\_43, Rumpelstiltskin\_43, Vetrix\_43,

Wigglewiggles\_43, Wilder\_43, Winky\_43, Zakai\_43, ZhongYanYuan\_41,

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

- Bromden\_43,

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

- Acquire49\_41, Appletree2\_40, Astro\_43, AvadaKedavra\_41, Bellis\_41, Calm\_41, CicholasNage\_41, Clautastrophe\_41, Danforth\_43, DirkDirk\_40, DuncansLeg\_41, Ellson\_41, Enceladus\_40, Expelliarmus\_43, Finnry\_41, Groundhog\_42, Halena\_40, Jobypre\_41, JoeDirt\_40, Jubie\_41, Kingsolomon\_41, Krypton555\_41, LeBron\_41, Lolly9\_41, Lumos\_41, MAckerman\_40, MiniLon\_41, MiniMac\_41, Moostard\_41, MsGreen\_41, Nicholas\_41, OhShagHennessy\_40, Phillis\_45, Roary\_44, Rose5\_40, Samty\_41, Silverleaf\_40, Smeadley\_44, Snenia\_41, Stephig9\_44, Tyson\_40, UPIE\_41, Wamburgxpress\_41, Whirlwind\_42, Wyatt2\_41, Zaria\_41,

### Summary by start number:

Start 3:

- Found in 19 of 81 ( 23.5% ) of genes in pham
- Manual Annotations of this start: 16 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bellis\_41 (L3), Clautastrophe\_41 (L3), DuncansLeg\_41 (L3), Ellson\_41 (L3), Finnry\_41 (L3), Jobypre\_41 (L3), Jubie\_41 (L3), Kingsolomon\_41 (L3), Krypton555\_41 (L3), Lolly9\_41 (L3), Lumos\_41 (L3), MiniLon\_41 (L3), MiniMac\_41 (L3), Moostard\_41 (L3), MsGreen\_41 (L3), Nicholas\_41 (L3), Samty\_41 (L3), Snenia\_41 (L3), Whirlwind\_42 (L3),

Start 4:

- Found in 19 of 81 ( 23.5% ) of genes in pham
- Manual Annotations of this start: 18 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acquire49\_41 (L1), Appletree2\_40 (L1), AvadaKedavra\_41 (L1), Calm\_41 (L1), CicholasNage\_41 (L1), DirkDirk\_40 (L1), Enceladus\_40 (L1), Halena\_40 (L1), JoeDirt\_40 (L1), LeBron\_41 (L1), MAckerman\_40 (L1), OhShagHennessy\_40 (L1), Rose5\_40 (L1), Silverleaf\_40 (L1), Tyson\_40 (L1), UPIE\_41 (L1), Wamburgxpress\_41 (L1), Wyatt2\_41 (L1), Zaria\_41 (L1),

Start 6:

- Found in 1 of 81 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Bromden\_43 (L4),

Start 7:

- Found in 35 of 81 ( 43.2% ) of genes in pham
- Manual Annotations of this start: 29 of 72
- Called 97.1% of time when present
- Phage (with cluster) where this start called: Archie\_43 (L2), Baoshan\_41 (L2), Bazzle\_43 (L2), BigCheese\_43 (L2), BobsGarage\_43 (L2), Breezona\_43 (L2), Chaser\_40 (L4), Claus\_43 (L2), Crossroads\_43 (L2), Douge\_40 (L4), DrSeegs\_43 (L2), DyoEdafos\_42 (L4), Faith1\_43 (L2), Finemlucis\_43 (L2), Gabriela\_43 (L2), Gardann\_43 (L2), GuuelaD\_43 (L2), Hafay\_43 (L2), Itos\_42 (L2), Kahlid\_43 (L2),

Lewan\_43 (L2), LilDestine\_43 (L2), Loadrie\_43 (L2), Miley16\_43 (L2), MkaliMitinis3\_43 (L2), Netyap\_43 (L2), Nicholasp3\_43 (L2), Rumpelstiltskin\_43 (L2), Vetric\_43 (L2), Wigglewobble\_43 (L2), Wilder\_43 (L2), Winky\_43 (L2), Zakai\_43 (L2), ZhongYanYuan\_41 (L2),

Start 10:

- Found in 8 of 81 ( 9.9% ) of genes in pham
- Manual Annotations of this start: 8 of 72
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Astro\_43 (A8), Danforth\_43 (A8), Expelliarmus\_43 (A8), Groundhog\_42 (A8), Phillis\_45 (A8), Roary\_44 (A8), Smeadley\_44 (A8), Stephig9\_44 (A8),

### **Summary by clusters:**

There are 5 clusters represented in this pham: A8, L4, L2, L3, L1,

Info for manual annotations of cluster A8:

- Start number 10 was manually annotated 8 times for cluster A8.

Info for manual annotations of cluster L1:

- Start number 4 was manually annotated 18 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 7 was manually annotated 27 times for cluster L2.

Info for manual annotations of cluster L3:

- Start number 3 was manually annotated 16 times for cluster L3.

Info for manual annotations of cluster L4:

- Start number 6 was manually annotated 1 time for cluster L4.
- Start number 7 was manually annotated 2 times for cluster L4.

### **Gene Information:**

Gene: Acquire49\_41 Start: 33548, Stop: 33943, Start Num: 4

Candidate Starts for Acquire49\_41:

(2, 33533), (Start: 4 @33548 has 18 MA's), (16, 33806), (17, 33815), (20, 33875), (23, 33920),

Gene: Appletree2\_40 Start: 33475, Stop: 33870, Start Num: 4

Candidate Starts for Appletree2\_40:

(2, 33460), (Start: 4 @33475 has 18 MA's), (16, 33733), (17, 33742), (20, 33802), (23, 33847),

Gene: Archie\_43 Start: 35110, Stop: 35472, Start Num: 7

Candidate Starts for Archie\_43:

(Start: 7 @35110 has 29 MA's), (16, 35341), (17, 35350),

Gene: Astro\_43 Start: 30852, Stop: 30550, Start Num: 10

Candidate Starts for Astro\_43:

(Start: 10 @30852 has 8 MA's), (11, 30741), (12, 30732), (18, 30639), (20, 30588), (21, 30567),

Gene: AvadaKedavra\_41 Start: 33557, Stop: 33952, Start Num: 4  
Candidate Starts for AvadaKedavra\_41:  
(2, 33542), (Start: 4 @33557 has 18 MA's), (16, 33815), (17, 33824), (20, 33884), (23, 33929),

Gene: Baoshan\_41 Start: 34767, Stop: 35129, Start Num: 7  
Candidate Starts for Baoshan\_41:  
(Start: 7 @34767 has 29 MA's), (16, 34998), (17, 35007),

Gene: Bazzle\_43 Start: 35142, Stop: 35504, Start Num: 7  
Candidate Starts for Bazzle\_43:  
(Start: 7 @35142 has 29 MA's), (16, 35373), (17, 35382),

Gene: Bellis\_41 Start: 35165, Stop: 35560, Start Num: 3  
Candidate Starts for Bellis\_41:  
(Start: 3 @35165 has 16 MA's), (8, 35201), (9, 35207), (13, 35390), (14, 35396), (16, 35429), (20, 35498), (23, 35543),

Gene: BigCheese\_43 Start: 34906, Stop: 35268, Start Num: 7  
Candidate Starts for BigCheese\_43:  
(Start: 7 @34906 has 29 MA's), (16, 35137), (17, 35146),

Gene: BobsGarage\_43 Start: 34906, Stop: 35268, Start Num: 7  
Candidate Starts for BobsGarage\_43:  
(Start: 7 @34906 has 29 MA's), (16, 35137), (17, 35146),

Gene: Breezona\_43 Start: 34906, Stop: 35268, Start Num: 7  
Candidate Starts for Breezona\_43:  
(Start: 7 @34906 has 29 MA's), (16, 35137), (17, 35146),

Gene: Bromden\_43 Start: 34662, Stop: 35024, Start Num: 6  
Candidate Starts for Bromden\_43:  
(Start: 6 @34662 has 1 MA's), (Start: 7 @34665 has 29 MA's), (16, 34893), (17, 34902), (19, 34953),

Gene: Calm\_41 Start: 33563, Stop: 33958, Start Num: 4  
Candidate Starts for Calm\_41:  
(2, 33548), (Start: 4 @33563 has 18 MA's), (16, 33821), (17, 33830), (20, 33890), (23, 33935),

Gene: Chaser\_40 Start: 33656, Stop: 34015, Start Num: 7  
Candidate Starts for Chaser\_40:  
(Start: 7 @33656 has 29 MA's), (9, 33665), (16, 33884), (17, 33893), (19, 33944),

Gene: CicholasNage\_41 Start: 33584, Stop: 33979, Start Num: 4  
Candidate Starts for CicholasNage\_41:  
(2, 33569), (Start: 4 @33584 has 18 MA's), (16, 33842), (17, 33851), (20, 33911), (23, 33956),

Gene: Claus\_43 Start: 34925, Stop: 35287, Start Num: 7  
Candidate Starts for Claus\_43:  
(Start: 7 @34925 has 29 MA's), (16, 35156), (17, 35165),

Gene: Clautastrophe\_41 Start: 35163, Stop: 35558, Start Num: 3  
Candidate Starts for Clautastrophe\_41:  
(Start: 3 @35163 has 16 MA's), (8, 35199), (9, 35205), (13, 35388), (14, 35394), (16, 35427), (20, 35496), (23, 35541),

Gene: Crossroads\_43 Start: 34908, Stop: 35270, Start Num: 7

Candidate Starts for Crossroads\_43:

(Start: 7 @34908 has 29 MA's), (16, 35139), (17, 35148),

Gene: Danforth\_43 Start: 30881, Stop: 30579, Start Num: 10

Candidate Starts for Danforth\_43:

(Start: 10 @30881 has 8 MA's), (11, 30770), (12, 30761), (18, 30668), (20, 30617), (21, 30596),

Gene: DirkDirk\_40 Start: 33535, Stop: 33930, Start Num: 4

Candidate Starts for DirkDirk\_40:

(2, 33520), (Start: 4 @33535 has 18 MA's), (16, 33793), (17, 33802), (20, 33862), (23, 33907),

Gene: Douge\_40 Start: 33594, Stop: 33953, Start Num: 7

Candidate Starts for Douge\_40:

(Start: 7 @33594 has 29 MA's), (9, 33603), (16, 33822), (17, 33831), (19, 33882),

Gene: DrSeegs\_43 Start: 34906, Stop: 35268, Start Num: 7

Candidate Starts for DrSeegs\_43:

(Start: 7 @34906 has 29 MA's), (16, 35137), (17, 35146),

Gene: DuncansLeg\_41 Start: 35184, Stop: 35579, Start Num: 3

Candidate Starts for DuncansLeg\_41:

(Start: 3 @35184 has 16 MA's), (8, 35220), (9, 35226), (13, 35409), (14, 35415), (16, 35448), (20, 35517), (23, 35562),

Gene: DyoEdafos\_42 Start: 33916, Stop: 34275, Start Num: 7

Candidate Starts for DyoEdafos\_42:

(5, 33901), (Start: 7 @33916 has 29 MA's), (16, 34144), (17, 34153), (19, 34204), (22, 34252),

Gene: Ellson\_41 Start: 35160, Stop: 35555, Start Num: 3

Candidate Starts for Ellson\_41:

(Start: 3 @35160 has 16 MA's), (13, 35385), (14, 35391), (16, 35424), (20, 35493), (23, 35538),

Gene: Enceladus\_40 Start: 33518, Stop: 33913, Start Num: 4

Candidate Starts for Enceladus\_40:

(2, 33503), (Start: 4 @33518 has 18 MA's), (16, 33776), (17, 33785), (20, 33845), (23, 33890),

Gene: Expelliarmus\_43 Start: 30910, Stop: 30608, Start Num: 10

Candidate Starts for Expelliarmus\_43:

(Start: 10 @30910 has 8 MA's), (11, 30799), (12, 30790), (18, 30697), (20, 30646), (21, 30625),

Gene: Faith1\_43 Start: 34906, Stop: 35268, Start Num: 7

Candidate Starts for Faith1\_43:

(Start: 7 @34906 has 29 MA's), (16, 35137), (17, 35146),

Gene: Finemlucis\_43 Start: 35182, Stop: 35544, Start Num: 7

Candidate Starts for Finemlucis\_43:

(Start: 7 @35182 has 29 MA's), (16, 35413), (17, 35422),

Gene: Finnry\_41 Start: 35166, Stop: 35561, Start Num: 3

Candidate Starts for Finnry\_41:

(Start: 3 @35166 has 16 MA's), (8, 35202), (9, 35208), (13, 35391), (14, 35397), (16, 35430), (20, 35499), (23, 35544),

Gene: Gabriela\_43 Start: 35168, Stop: 35530, Start Num: 7

Candidate Starts for Gabriela\_43:

(Start: 7 @35168 has 29 MA's), (16, 35399), (17, 35408),

Gene: Gardann\_43 Start: 34907, Stop: 35269, Start Num: 7

Candidate Starts for Gardann\_43:

(Start: 7 @34907 has 29 MA's), (16, 35138), (17, 35147),

Gene: Groundhog\_42 Start: 30817, Stop: 30515, Start Num: 10

Candidate Starts for Groundhog\_42:

(Start: 10 @30817 has 8 MA's), (11, 30706), (12, 30697), (18, 30604), (20, 30553), (21, 30532),

Gene: GuuelaD\_43 Start: 34945, Stop: 35307, Start Num: 7

Candidate Starts for GuuelaD\_43:

(Start: 7 @34945 has 29 MA's), (16, 35176), (17, 35185),

Gene: Hafay\_43 Start: 34940, Stop: 35302, Start Num: 7

Candidate Starts for Hafay\_43:

(Start: 7 @34940 has 29 MA's), (16, 35171), (17, 35180),

Gene: Halena\_40 Start: 33559, Stop: 33954, Start Num: 4

Candidate Starts for Halena\_40:

(2, 33544), (Start: 4 @33559 has 18 MA's), (16, 33817), (17, 33826), (20, 33886), (23, 33931),

Gene: Itos\_42 Start: 33812, Stop: 34174, Start Num: 7

Candidate Starts for Itos\_42:

(Start: 7 @33812 has 29 MA's), (16, 34043), (17, 34052),

Gene: Jobypre\_41 Start: 35163, Stop: 35558, Start Num: 3

Candidate Starts for Jobypre\_41:

(Start: 3 @35163 has 16 MA's), (8, 35199), (9, 35205), (13, 35388), (14, 35394), (16, 35427), (20, 35496), (23, 35541),

Gene: JoeDirt\_40 Start: 33516, Stop: 33911, Start Num: 4

Candidate Starts for JoeDirt\_40:

(2, 33501), (Start: 4 @33516 has 18 MA's), (16, 33774), (17, 33783), (20, 33843), (23, 33888),

Gene: Jubie\_41 Start: 35164, Stop: 35559, Start Num: 3

Candidate Starts for Jubie\_41:

(Start: 3 @35164 has 16 MA's), (8, 35200), (9, 35206), (13, 35389), (14, 35395), (16, 35428), (20, 35497), (23, 35542),

Gene: Kahlid\_43 Start: 34912, Stop: 35274, Start Num: 7

Candidate Starts for Kahlid\_43:

(Start: 7 @34912 has 29 MA's), (16, 35143), (17, 35152),

Gene: Kingsolomon\_41 Start: 35163, Stop: 35558, Start Num: 3

Candidate Starts for Kingsolomon\_41:

(Start: 3 @35163 has 16 MA's), (8, 35199), (9, 35205), (13, 35388), (14, 35394), (16, 35427), (20, 35496), (23, 35541),

Gene: Krypton555\_41 Start: 35080, Stop: 35475, Start Num: 3  
Candidate Starts for Krypton555\_41:  
(Start: 3 @35080 has 16 MA's), (13, 35305), (14, 35311), (16, 35344), (20, 35413), (23, 35458),

Gene: LeBron\_41 Start: 33560, Stop: 33955, Start Num: 4  
Candidate Starts for LeBron\_41:  
(2, 33545), (Start: 4 @33560 has 18 MA's), (16, 33818), (17, 33827), (20, 33887), (23, 33932),

Gene: Lewan\_43 Start: 34899, Stop: 35261, Start Num: 7  
Candidate Starts for Lewan\_43:  
(Start: 7 @34899 has 29 MA's), (16, 35130), (17, 35139),

Gene: LilDestine\_43 Start: 34904, Stop: 35266, Start Num: 7  
Candidate Starts for LilDestine\_43:  
(Start: 7 @34904 has 29 MA's), (16, 35135), (17, 35144),

Gene: Loadrie\_43 Start: 34938, Stop: 35300, Start Num: 7  
Candidate Starts for Loadrie\_43:  
(Start: 7 @34938 has 29 MA's), (16, 35169), (17, 35178),

Gene: Lolly9\_41 Start: 34974, Stop: 35369, Start Num: 3  
Candidate Starts for Lolly9\_41:  
(Start: 3 @34974 has 16 MA's), (8, 35010), (9, 35016), (13, 35199), (14, 35205), (16, 35238), (20, 35307), (23, 35352),

Gene: Lumos\_41 Start: 35160, Stop: 35555, Start Num: 3  
Candidate Starts for Lumos\_41:  
(1, 35145), (Start: 3 @35160 has 16 MA's), (8, 35196), (9, 35202), (13, 35385), (14, 35391), (16, 35424), (20, 35493), (23, 35538),

Gene: MAckerman\_40 Start: 33553, Stop: 33948, Start Num: 4  
Candidate Starts for MAckerman\_40:  
(2, 33538), (Start: 4 @33553 has 18 MA's), (16, 33811), (17, 33820), (20, 33880), (23, 33925),

Gene: Miley16\_43 Start: 34906, Stop: 35268, Start Num: 7  
Candidate Starts for Miley16\_43:  
(Start: 7 @34906 has 29 MA's), (16, 35137), (17, 35146),

Gene: MiniLon\_41 Start: 34975, Stop: 35370, Start Num: 3  
Candidate Starts for MiniLon\_41:  
(Start: 3 @34975 has 16 MA's), (8, 35011), (9, 35017), (13, 35200), (14, 35206), (16, 35239), (20, 35308), (23, 35353),

Gene: MiniMac\_41 Start: 34972, Stop: 35367, Start Num: 3  
Candidate Starts for MiniMac\_41:  
(Start: 3 @34972 has 16 MA's), (8, 35008), (9, 35014), (13, 35197), (14, 35203), (16, 35236), (20, 35305), (23, 35350),

Gene: MkaliMitinis3\_43 Start: 34908, Stop: 35270, Start Num: 7  
Candidate Starts for MkaliMitinis3\_43:  
(Start: 7 @34908 has 29 MA's), (16, 35139), (17, 35148),



Gene: Moostard\_41 Start: 35165, Stop: 35560, Start Num: 3

Candidate Starts for Moostard\_41:

(Start: 3 @35165 has 16 MA's), (8, 35201), (9, 35207), (13, 35390), (14, 35396), (16, 35429), (20, 35498), (23, 35543),

Gene: MsGreen\_41 Start: 35163, Stop: 35558, Start Num: 3

Candidate Starts for MsGreen\_41:

(Start: 3 @35163 has 16 MA's), (8, 35199), (9, 35205), (13, 35388), (14, 35394), (16, 35427), (20, 35496), (23, 35541),

Gene: Netyap\_43 Start: 34906, Stop: 35268, Start Num: 7

Candidate Starts for Netyap\_43:

(Start: 7 @34906 has 29 MA's), (16, 35137), (17, 35146),

Gene: Nicholas\_41 Start: 35163, Stop: 35558, Start Num: 3

Candidate Starts for Nicholas\_41:

(Start: 3 @35163 has 16 MA's), (8, 35199), (9, 35205), (13, 35388), (14, 35394), (16, 35427), (20, 35496), (23, 35541),

Gene: Nicholasp3\_43 Start: 34907, Stop: 35269, Start Num: 7

Candidate Starts for Nicholasp3\_43:

(Start: 7 @34907 has 29 MA's), (16, 35138), (17, 35147),

Gene: OhShagHennessy\_40 Start: 33506, Stop: 33901, Start Num: 4

Candidate Starts for OhShagHennessy\_40:

(2, 33491), (Start: 4 @33506 has 18 MA's), (16, 33764), (17, 33773), (20, 33833), (23, 33878),

Gene: Phillis\_45 Start: 31235, Stop: 30933, Start Num: 10

Candidate Starts for Phillis\_45:

(Start: 10 @31235 has 8 MA's), (11, 31124), (12, 31115), (15, 31055), (18, 31022), (20, 30971), (21, 30950),

Gene: Roary\_44 Start: 30866, Stop: 30564, Start Num: 10

Candidate Starts for Roary\_44:

(Start: 10 @30866 has 8 MA's), (11, 30755), (12, 30746), (18, 30653), (20, 30602), (21, 30581),

Gene: Rose5\_40 Start: 33548, Stop: 33943, Start Num: 4

Candidate Starts for Rose5\_40:

(2, 33533), (Start: 4 @33548 has 18 MA's), (16, 33806), (17, 33815), (20, 33875), (23, 33920),

Gene: Rumpelstiltskin\_43 Start: 35173, Stop: 35535, Start Num: 7

Candidate Starts for Rumpelstiltskin\_43:

(Start: 7 @35173 has 29 MA's), (16, 35404), (17, 35413),

Gene: Samty\_41 Start: 35164, Stop: 35559, Start Num: 3

Candidate Starts for Samty\_41:

(Start: 3 @35164 has 16 MA's), (8, 35200), (9, 35206), (13, 35389), (14, 35395), (16, 35428), (20, 35497), (23, 35542),

Gene: Silverleaf\_40 Start: 33548, Stop: 33943, Start Num: 4

Candidate Starts for Silverleaf\_40:

(2, 33533), (Start: 4 @33548 has 18 MA's), (16, 33806), (17, 33815), (20, 33875), (23, 33920),

Gene: Smeadley\_44 Start: 31032, Stop: 30730, Start Num: 10

Candidate Starts for Smeadley\_44:

(Start: 10 @31032 has 8 MA's), (11, 30921), (12, 30912), (18, 30819), (20, 30768), (21, 30747),

Gene: Snenia\_41 Start: 35164, Stop: 35559, Start Num: 3

Candidate Starts for Snenia\_41:

(Start: 3 @35164 has 16 MA's), (8, 35200), (9, 35206), (13, 35389), (14, 35395), (16, 35428), (20, 35497), (23, 35542),

Gene: Stephig9\_44 Start: 30891, Stop: 30589, Start Num: 10

Candidate Starts for Stephig9\_44:

(Start: 10 @30891 has 8 MA's), (11, 30780), (12, 30771), (18, 30678), (20, 30627), (21, 30606),

Gene: Tyson\_40 Start: 33549, Stop: 33944, Start Num: 4

Candidate Starts for Tyson\_40:

(2, 33534), (Start: 4 @33549 has 18 MA's), (16, 33807), (17, 33816), (20, 33876), (23, 33921),

Gene: UPIE\_41 Start: 33532, Stop: 33927, Start Num: 4

Candidate Starts for UPIE\_41:

(2, 33517), (Start: 4 @33532 has 18 MA's), (16, 33790), (17, 33799), (20, 33859), (23, 33904),

Gene: Vetrix\_43 Start: 34913, Stop: 35275, Start Num: 7

Candidate Starts for Vetrix\_43:

(Start: 7 @34913 has 29 MA's), (16, 35144), (17, 35153),

Gene: Wamburgexpress\_41 Start: 33547, Stop: 33942, Start Num: 4

Candidate Starts for Wamburgexpress\_41:

(2, 33532), (Start: 4 @33547 has 18 MA's), (16, 33805), (17, 33814), (20, 33874), (23, 33919),

Gene: Whirlwind\_42 Start: 34922, Stop: 35317, Start Num: 3

Candidate Starts for Whirlwind\_42:

(Start: 3 @34922 has 16 MA's), (13, 35147), (14, 35153), (16, 35186), (20, 35255), (23, 35300),

Gene: Wigglewigggle\_43 Start: 34939, Stop: 35301, Start Num: 7

Candidate Starts for Wigglewigggle\_43:

(Start: 7 @34939 has 29 MA's), (16, 35170), (17, 35179),

Gene: Wilder\_43 Start: 34912, Stop: 35274, Start Num: 7

Candidate Starts for Wilder\_43:

(Start: 7 @34912 has 29 MA's), (16, 35143), (17, 35152),

Gene: Winky\_43 Start: 34906, Stop: 35268, Start Num: 7

Candidate Starts for Winky\_43:

(Start: 7 @34906 has 29 MA's), (16, 35137), (17, 35146),

Gene: Wyatt2\_41 Start: 33548, Stop: 33943, Start Num: 4

Candidate Starts for Wyatt2\_41:

(2, 33533), (Start: 4 @33548 has 18 MA's), (16, 33806), (17, 33815), (20, 33875), (23, 33920),

Gene: Zakai\_43 Start: 35164, Stop: 35526, Start Num: 7

Candidate Starts for Zakai\_43:

(Start: 7 @35164 has 29 MA's), (16, 35395), (17, 35404),

Gene: Zaria\_41 Start: 33563, Stop: 33958, Start Num: 4

Candidate Starts for Zaria\_41:

(2, 33548), (Start: 4 @33563 has 18 MA's), (16, 33821), (17, 33830), (20, 33890), (23, 33935),

Gene: ZhongYanYuan\_41 Start: 34767, Stop: 35129, Start Num: 7

Candidate Starts for ZhongYanYuan\_41:

(Start: 7 @34767 has 29 MA's), (16, 34998), (17, 35007),