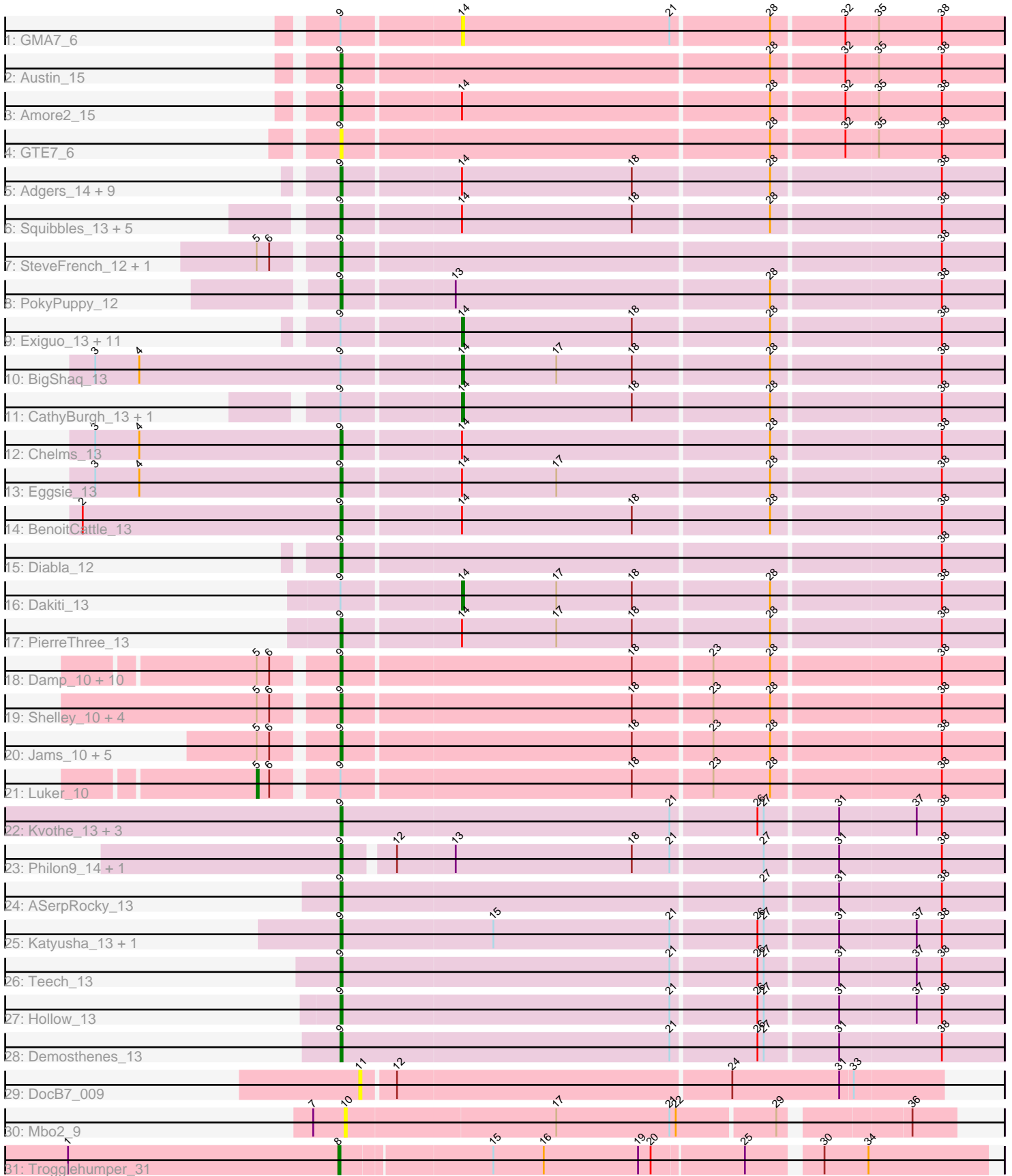


Pham 304939



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 304939 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304939 has 82 members, 8 are drafts.

Phages represented in each track:

- Track 1 : GMA7\_6
- Track 2 : Austin\_15
- Track 3 : Amore2\_15
- Track 4 : GTE7\_6
- Track 5 : Adgers\_14, Barbochs\_13, Boneham\_13, Jellybones\_13, Sam12\_13, Breezic\_13, John316\_13, BirksAndSocks\_13, Beaver\_13, Ekhein\_13
- Track 6 : Squibbles\_13, Flakey\_13, Linetti\_14, Lizzo\_13, GourdThymes\_13, Hotorobo\_13
- Track 7 : SteveFrench\_12, RoyalG\_14
- Track 8 : PokyPuppy\_12
- Track 9 : Exiguo\_13, Msay19\_14, RemRem\_14, Gorko\_13, Butterball\_13, Sombrero\_13, FelixAlejandro\_14, Poland\_14, BillyBobJr\_14, CinnamonToast\_14, Worcestershire\_13, Monty\_12
- Track 10 : BigShaq\_13
- Track 11 : CathyBurgh\_13, Kelzog\_13
- Track 12 : Chelms\_13
- Track 13 : Eggsie\_13
- Track 14 : BenoitCattle\_13
- Track 15 : Diabla\_12
- Track 16 : Dakiti\_13
- Track 17 : PierreThree\_13
- Track 18 : Damp\_10, Teal\_10, Charianelly\_10, GalacticEye\_10, Guillaume\_10, Newt\_10, MrWormie\_10, Minos\_10, Nimi13\_10, Sticker17\_10, Jormungandr\_10
- Track 19 : Shelley\_10, Berries\_10, Kaseim\_10, Woes\_10, Lidong\_10
- Track 20 : Jams\_10, Harambe\_10, Lahirium\_10, Anamika\_10, Neoevie\_10, Hail2Pitt\_10
- Track 21 : Luker\_10
- Track 22 : Kvothe\_13, Tredge\_13, Niagara\_13, Teatealatte\_13
- Track 23 : Philon9\_14, Vitaenoi\_14
- Track 24 : ASerpRocky\_13
- Track 25 : Katyusha\_13, Benczkowski14\_13
- Track 26 : Teech\_13
- Track 27 : Hollow\_13
- Track 28 : Demosthenes\_13
- Track 29 : DocB7\_009
- Track 30 : Mbo2\_9
- Track 31 : Trogglehumper\_31

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

The start number called the most often in the published annotations is 9, it was called in 60 of the 74 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ASerpRocky\_13, Adgers\_14, Amore2\_15, Anamika\_10, Austin\_15, Barbochs\_13, Beaver\_13, Benczkowski14\_13, BenoitCattle\_13, Berries\_10, BirksAndSocks\_13, Boneham\_13, Breezic\_13, Charianelly\_10, Chelms\_13, Damp\_10, Demosthenes\_13, Diabla\_12, Eggsie\_13, Ekhein\_13, Flakey\_13, GTE7\_6, GalacticEye\_10, GourdThymes\_13, Guillaume\_10, Hail2Pitt\_10, Harambe\_10, Hollow\_13, Hotorobo\_13, Jams\_10, Jellybones\_13, John316\_13, Jormungandr\_10, Kaseim\_10, Katyusha\_13, Kvothe\_13, Lahirium\_10, Lidong\_10, Linetti\_14, Lizzo\_13, Minos\_10, MrWormie\_10, Neoevie\_10, Newt\_10, Niagara\_13, Nimi13\_10, Philon9\_14, PierreThree\_13, PokyPuppy\_12, RoyalG\_14, Sam12\_13, Shelley\_10, Squibbles\_13, SteveFrench\_12, Sticker17\_10, Teal\_10, Teatealatte\_13, Teech\_13, Tredge\_13, Vitaenoi\_14, Woes\_10,

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

- BigShaq\_13, BillyBobJr\_14, Butterball\_13, CathyBurgh\_13, CinnamonToast\_14, Dakiti\_13, Exiguo\_13, FelixAlejandro\_14, GMA7\_6, Gorko\_13, Kelzog\_13, Luker\_10, Monty\_12, Msay19\_14, Poland\_14, RemRem\_14, Sombrero\_13, Worcestershire\_13,

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

- DocB7\_009, Mbo2\_9, Trogglehumper\_31,

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

Start 5:

- Found in 25 of 82 ( 30.5% ) of genes in pham
- Manual Annotations of this start: 1 of 74
- Called 4.0% of time when present
- Phage (with cluster) where this start called: Luker\_10 (CS3),

Start 8:

- Found in 1 of 82 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 74
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Trogglehumper\_31 (singleton),

Start 9:

- Found in 79 of 82 ( 96.3% ) of genes in pham
- Manual Annotations of this start: 60 of 74
- Called 77.2% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_13 (CS4), Adgers\_14 (CS2), Amore2\_15 (CS1), Anamika\_10 (CS3), Austin\_15 (CS1), Barbochs\_13 (CS2), Beaver\_13 (CS2), Benczkowski14\_13 (CS4), BenoitCattle\_13 (CS2), Berries\_10 (CS3), BirksAndSocks\_13 (CS2), Boneham\_13 (CS2), Breezic\_13 (CS2), Charianelly\_10 (CS3), Chelms\_13 (CS2), Damp\_10 (CS3), Demosthenes\_13 (CS4),

Diabla\_12 (CS2), Eggsie\_13 (CS2), Ekhein\_13 (CS2), Flakey\_13 (CS2), GTE7\_6 (CS1), GalacticEye\_10 (CS3), GourdThymes\_13 (CS2), Guillaume\_10 (CS3), Hail2Pitt\_10 (CS3), Harambe\_10 (CS3), Hollow\_13 (CS4), Hotorobo\_13 (CS2), Jams\_10 (CS3), Jellybones\_13 (CS2), John316\_13 (CS2), Jormungandr\_10 (CS3), Kaseim\_10 (CS3), Katyusha\_13 (CS4), Kvothe\_13 (CS4), Lahirium\_10 (CS3), Lidong\_10 (CS3), Linetti\_14 (CS2), Lizzo\_13 (CS2), Minos\_10 (CS3), MrWormie\_10 (CS3), Neoevie\_10 (CS3), Newt\_10 (CS3), Niagara\_13 (CS4), Nimi13\_10 (CS3), Philon9\_14 (CS4), PierreThree\_13 (CS2), PokyPuppy\_12 (CS2), RoyalG\_14 (CS2), Sam12\_13 (CS2), Shelley\_10 (CS3), Squibbles\_13 (CS2), SteveFrench\_12 (CS2), Sticker17\_10 (CS3), Teal\_10 (CS3), Teatealatte\_13 (CS4), Teech\_13 (CS4), Tredge\_13 (CS4), Vitaenoi\_14 (CS4), Woes\_10 (CS3),

Start 10:

- Found in 1 of 82 ( 1.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mbo2\_9 (singleton),

Start 11:

- Found in 1 of 82 ( 1.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DocB7\_009 (singleton),

Start 14:

- Found in 38 of 82 ( 46.3% ) of genes in pham
- Manual Annotations of this start: 12 of 74
- Called 44.7% of time when present
- Phage (with cluster) where this start called: BigShaq\_13 (CS2), BillyBobJr\_14 (CS2), Butterball\_13 (CS2), CathyBurgh\_13 (CS2), CinnamonToast\_14 (CS2), Dakiti\_13 (CS2), Exiguo\_13 (CS2), FelixAlejandro\_14 (CS2), GMA7\_6 (CS1), Gorko\_13 (CS2), Kelzog\_13 (CS2), Monty\_12 (CS2), Msay19\_14 (CS2), Poland\_14 (CS2), RemRem\_14 (CS2), Sombrero\_13 (CS2), Worcestershire\_13 (CS2),

### **Summary by clusters:**

There are 5 clusters represented in this pham: CS4, singleton, CS1, CS3, CS2,

Info for manual annotations of cluster CS1:

- Start number 9 was manually annotated 2 times for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 9 was manually annotated 24 times for cluster CS2.
- Start number 14 was manually annotated 12 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 5 was manually annotated 1 time for cluster CS3.
- Start number 9 was manually annotated 22 times for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 9 was manually annotated 12 times for cluster CS4.

**Gene Information:**

Gene: ASerpRocky\_13 Start: 14958, Stop: 15266, Start Num: 9

Candidate Starts for ASerpRocky\_13:

(Start: 9 @14958 has 60 MA's), (27, 15156), (31, 15189), (38, 15237),

Gene: Adgers\_14 Start: 12592, Stop: 12897, Start Num: 9

Candidate Starts for Adgers\_14:

(Start: 9 @12592 has 60 MA's), (Start: 14 @12646 has 12 MA's), (18, 12727), (28, 12790), (38, 12868),

Gene: Amore2\_15 Start: 12500, Stop: 12805, Start Num: 9

Candidate Starts for Amore2\_15:

(Start: 9 @12500 has 60 MA's), (Start: 14 @12554 has 12 MA's), (28, 12698), (32, 12731), (35, 12746), (38, 12776),

Gene: Anamika\_10 Start: 13516, Stop: 13821, Start Num: 9

Candidate Starts for Anamika\_10:

(Start: 5 @13483 has 1 MA's), (6, 13489), (Start: 9 @13516 has 60 MA's), (18, 13651), (23, 13687), (28, 13714), (38, 13792),

Gene: Austin\_15 Start: 12500, Stop: 12805, Start Num: 9

Candidate Starts for Austin\_15:

(Start: 9 @12500 has 60 MA's), (28, 12698), (32, 12731), (35, 12746), (38, 12776),

Gene: Barbochs\_13 Start: 12430, Stop: 12735, Start Num: 9

Candidate Starts for Barbochs\_13:

(Start: 9 @12430 has 60 MA's), (Start: 14 @12484 has 12 MA's), (18, 12565), (28, 12628), (38, 12706),

Gene: Beaver\_13 Start: 12438, Stop: 12743, Start Num: 9

Candidate Starts for Beaver\_13:

(Start: 9 @12438 has 60 MA's), (Start: 14 @12492 has 12 MA's), (18, 12573), (28, 12636), (38, 12714),

Gene: Benczkowski14\_13 Start: 15021, Stop: 15329, Start Num: 9

Candidate Starts for Benczkowski14\_13:

(Start: 9 @15021 has 60 MA's), (15, 15093), (21, 15177), (26, 15216), (27, 15219), (31, 15252), (37, 15288), (38, 15300),

Gene: BenoitCattle\_13 Start: 12430, Stop: 12735, Start Num: 9

Candidate Starts for BenoitCattle\_13:

(2, 12307), (Start: 9 @12430 has 60 MA's), (Start: 14 @12484 has 12 MA's), (18, 12565), (28, 12628), (38, 12706),

Gene: Berries\_10 Start: 13501, Stop: 13806, Start Num: 9

Candidate Starts for Berries\_10:

(Start: 5 @13468 has 1 MA's), (6, 13474), (Start: 9 @13501 has 60 MA's), (18, 13636), (23, 13672), (28, 13699), (38, 13777),

Gene: BigShaq\_13 Start: 12486, Stop: 12737, Start Num: 14

Candidate Starts for BigShaq\_13:

(3, 12315), (4, 12336), (Start: 9 @12432 has 60 MA's), (Start: 14 @12486 has 12 MA's), (17, 12531), (18, 12567), (28, 12630), (38, 12708),

Gene: BillyBobJr\_14 Start: 12516, Stop: 12767, Start Num: 14

Candidate Starts for BillyBobJr\_14:

(Start: 9 @12462 has 60 MA's), (Start: 14 @12516 has 12 MA's), (18, 12597), (28, 12660), (38, 12738),

Gene: BirksAndSocks\_13 Start: 12427, Stop: 12732, Start Num: 9

Candidate Starts for BirksAndSocks\_13:

(Start: 9 @12427 has 60 MA's), (Start: 14 @12481 has 12 MA's), (18, 12562), (28, 12625), (38, 12703),

Gene: Boneham\_13 Start: 12426, Stop: 12731, Start Num: 9

Candidate Starts for Boneham\_13:

(Start: 9 @12426 has 60 MA's), (Start: 14 @12480 has 12 MA's), (18, 12561), (28, 12624), (38, 12702),

Gene: Breezic\_13 Start: 12441, Stop: 12746, Start Num: 9

Candidate Starts for Breezic\_13:

(Start: 9 @12441 has 60 MA's), (Start: 14 @12495 has 12 MA's), (18, 12576), (28, 12639), (38, 12717),

Gene: Butterball\_13 Start: 12480, Stop: 12731, Start Num: 14

Candidate Starts for Butterball\_13:

(Start: 9 @12426 has 60 MA's), (Start: 14 @12480 has 12 MA's), (18, 12561), (28, 12624), (38, 12702),

Gene: CathyBurgh\_13 Start: 13352, Stop: 13603, Start Num: 14

Candidate Starts for CathyBurgh\_13:

(Start: 9 @13298 has 60 MA's), (Start: 14 @13352 has 12 MA's), (18, 13433), (28, 13496), (38, 13574),

Gene: Charianelly\_10 Start: 13233, Stop: 13538, Start Num: 9

Candidate Starts for Charianelly\_10:

(Start: 5 @13200 has 1 MA's), (6, 13206), (Start: 9 @13233 has 60 MA's), (18, 13368), (23, 13404), (28, 13431), (38, 13509),

Gene: Chelms\_13 Start: 12432, Stop: 12737, Start Num: 9

Candidate Starts for Chelms\_13:

(3, 12315), (4, 12336), (Start: 9 @12432 has 60 MA's), (Start: 14 @12486 has 12 MA's), (28, 12630), (38, 12708),

Gene: CinnamonToast\_14 Start: 12516, Stop: 12767, Start Num: 14

Candidate Starts for CinnamonToast\_14:

(Start: 9 @12462 has 60 MA's), (Start: 14 @12516 has 12 MA's), (18, 12597), (28, 12660), (38, 12738),

Gene: Dakiti\_13 Start: 13354, Stop: 13605, Start Num: 14

Candidate Starts for Dakiti\_13:

(Start: 9 @13300 has 60 MA's), (Start: 14 @13354 has 12 MA's), (17, 13399), (18, 13435), (28, 13498), (38, 13576),

Gene: Damp\_10 Start: 12397, Stop: 12702, Start Num: 9

Candidate Starts for Damp\_10:

(Start: 5 @12364 has 1 MA's), (6, 12370), (Start: 9 @12397 has 60 MA's), (18, 12532), (23, 12568), (28, 12595), (38, 12673),

Gene: Demosthenes\_13 Start: 14928, Stop: 15236, Start Num: 9

Candidate Starts for Demosthenes\_13:

(Start: 9 @14928 has 60 MA's), (21, 15084), (26, 15123), (27, 15126), (31, 15159), (38, 15207),

Gene: Diabla\_12 Start: 12248, Stop: 12553, Start Num: 9

Candidate Starts for Diabla\_12:

(Start: 9 @12248 has 60 MA's), (38, 12524),

Gene: DocB7\_009 Start: 10204, Stop: 10473, Start Num: 11

Candidate Starts for DocB7\_009:

(11, 10204), (12, 10219), (24, 10375), (31, 10426), (33, 10432),

Gene: Eggsie\_13 Start: 12443, Stop: 12748, Start Num: 9

Candidate Starts for Eggsie\_13:

(3, 12326), (4, 12347), (Start: 9 @12443 has 60 MA's), (Start: 14 @12497 has 12 MA's), (17, 12542), (28, 12641), (38, 12719),

Gene: Ekhein\_13 Start: 12426, Stop: 12731, Start Num: 9

Candidate Starts for Ekhein\_13:

(Start: 9 @12426 has 60 MA's), (Start: 14 @12480 has 12 MA's), (18, 12561), (28, 12624), (38, 12702),

Gene: Exiguo\_13 Start: 12492, Stop: 12743, Start Num: 14

Candidate Starts for Exiguo\_13:

(Start: 9 @12438 has 60 MA's), (Start: 14 @12492 has 12 MA's), (18, 12573), (28, 12636), (38, 12714),

Gene: FelixAlejandro\_14 Start: 12678, Stop: 12929, Start Num: 14

Candidate Starts for FelixAlejandro\_14:

(Start: 9 @12624 has 60 MA's), (Start: 14 @12678 has 12 MA's), (18, 12759), (28, 12822), (38, 12900),

Gene: Flakey\_13 Start: 13299, Stop: 13604, Start Num: 9

Candidate Starts for Flakey\_13:

(Start: 9 @13299 has 60 MA's), (Start: 14 @13353 has 12 MA's), (18, 13434), (28, 13497), (38, 13575),

Gene: GMA7\_6 Start: 6743, Stop: 6994, Start Num: 14

Candidate Starts for GMA7\_6:

(Start: 9 @6689 has 60 MA's), (Start: 14 @6743 has 12 MA's), (21, 6842), (28, 6887), (32, 6920), (35, 6935), (38, 6965),

Gene: GTE7\_6 Start: 6748, Stop: 7053, Start Num: 9

Candidate Starts for GTE7\_6:

(Start: 9 @6748 has 60 MA's), (28, 6946), (32, 6979), (35, 6994), (38, 7024),

Gene: GalacticEye\_10 Start: 13222, Stop: 13527, Start Num: 9

Candidate Starts for GalacticEye\_10:

(Start: 5 @13189 has 1 MA's), (6, 13195), (Start: 9 @13222 has 60 MA's), (18, 13357), (23, 13393), (28, 13420), (38, 13498),

Gene: Gorko\_13 Start: 12484, Stop: 12735, Start Num: 14

Candidate Starts for Gorko\_13:

(Start: 9 @12430 has 60 MA's), (Start: 14 @12484 has 12 MA's), (18, 12565), (28, 12628), (38, 12706),

Gene: GourdThymes\_13 Start: 13298, Stop: 13603, Start Num: 9

Candidate Starts for GourdThymes\_13:

(Start: 9 @13298 has 60 MA's), (Start: 14 @13352 has 12 MA's), (18, 13433), (28, 13496), (38, 13574),

Gene: Guillaume\_10 Start: 13254, Stop: 13559, Start Num: 9

Candidate Starts for Guillaume\_10:

(Start: 5 @13221 has 1 MA's), (6, 13227), (Start: 9 @13254 has 60 MA's), (18, 13389), (23, 13425), (28, 13452), (38, 13530),

Gene: Hail2Pitt\_10 Start: 13731, Stop: 14036, Start Num: 9  
Candidate Starts for Hail2Pitt\_10:  
(Start: 5 @13698 has 1 MA's), (6, 13704), (Start: 9 @13731 has 60 MA's), (18, 13866), (23, 13902),  
(28, 13929), (38, 14007),

Gene: Harambe\_10 Start: 13515, Stop: 13820, Start Num: 9  
Candidate Starts for Harambe\_10:  
(Start: 5 @13482 has 1 MA's), (6, 13488), (Start: 9 @13515 has 60 MA's), (18, 13650), (23, 13686),  
(28, 13713), (38, 13791),

Gene: Hollow\_13 Start: 14187, Stop: 14495, Start Num: 9  
Candidate Starts for Hollow\_13:  
(Start: 9 @14187 has 60 MA's), (21, 14343), (26, 14382), (27, 14385), (31, 14418), (37, 14454), (38,  
14466),

Gene: Hotorobo\_13 Start: 13309, Stop: 13614, Start Num: 9  
Candidate Starts for Hotorobo\_13:  
(Start: 9 @13309 has 60 MA's), (Start: 14 @13363 has 12 MA's), (18, 13444), (28, 13507), (38, 13585),

Gene: Jams\_10 Start: 12695, Stop: 13000, Start Num: 9  
Candidate Starts for Jams\_10:  
(Start: 5 @12662 has 1 MA's), (6, 12668), (Start: 9 @12695 has 60 MA's), (18, 12830), (23, 12866),  
(28, 12893), (38, 12971),

Gene: Jellybones\_13 Start: 12461, Stop: 12766, Start Num: 9  
Candidate Starts for Jellybones\_13:  
(Start: 9 @12461 has 60 MA's), (Start: 14 @12515 has 12 MA's), (18, 12596), (28, 12659), (38, 12737),

Gene: John316\_13 Start: 12426, Stop: 12731, Start Num: 9  
Candidate Starts for John316\_13:  
(Start: 9 @12426 has 60 MA's), (Start: 14 @12480 has 12 MA's), (18, 12561), (28, 12624), (38, 12702),

Gene: Jormungandr\_10 Start: 13236, Stop: 13541, Start Num: 9  
Candidate Starts for Jormungandr\_10:  
(Start: 5 @13203 has 1 MA's), (6, 13209), (Start: 9 @13236 has 60 MA's), (18, 13371), (23, 13407),  
(28, 13434), (38, 13512),

Gene: Kaseim\_10 Start: 12687, Stop: 12992, Start Num: 9  
Candidate Starts for Kaseim\_10:  
(Start: 5 @12654 has 1 MA's), (6, 12660), (Start: 9 @12687 has 60 MA's), (18, 12822), (23, 12858),  
(28, 12885), (38, 12963),

Gene: Katyusha\_13 Start: 15021, Stop: 15329, Start Num: 9  
Candidate Starts for Katyusha\_13:  
(Start: 9 @15021 has 60 MA's), (15, 15093), (21, 15177), (26, 15216), (27, 15219), (31, 15252), (37,  
15288), (38, 15300),

Gene: Kelzog\_13 Start: 13364, Stop: 13615, Start Num: 14  
Candidate Starts for Kelzog\_13:  
(Start: 9 @13310 has 60 MA's), (Start: 14 @13364 has 12 MA's), (18, 13445), (28, 13508), (38, 13586),

Gene: Kvothe\_13 Start: 14958, Stop: 15266, Start Num: 9

Candidate Starts for Kvothe\_13:

(Start: 9 @14958 has 60 MA's), (21, 15114), (26, 15153), (27, 15156), (31, 15189), (37, 15225), (38, 15237),

Gene: Lahirium\_10 Start: 13752, Stop: 14057, Start Num: 9

Candidate Starts for Lahirium\_10:

(Start: 5 @13719 has 1 MA's), (6, 13725), (Start: 9 @13752 has 60 MA's), (18, 13887), (23, 13923), (28, 13950), (38, 14028),

Gene: Lidong\_10 Start: 13501, Stop: 13806, Start Num: 9

Candidate Starts for Lidong\_10:

(Start: 5 @13468 has 1 MA's), (6, 13474), (Start: 9 @13501 has 60 MA's), (18, 13636), (23, 13672), (28, 13699), (38, 13777),

Gene: Linetti\_14 Start: 13449, Stop: 13754, Start Num: 9

Candidate Starts for Linetti\_14:

(Start: 9 @13449 has 60 MA's), (Start: 14 @13503 has 12 MA's), (18, 13584), (28, 13647), (38, 13725),

Gene: Lizzo\_13 Start: 13298, Stop: 13603, Start Num: 9

Candidate Starts for Lizzo\_13:

(Start: 9 @13298 has 60 MA's), (Start: 14 @13352 has 12 MA's), (18, 13433), (28, 13496), (38, 13574),

Gene: Luker\_10 Start: 13183, Stop: 13521, Start Num: 5

Candidate Starts for Luker\_10:

(Start: 5 @13183 has 1 MA's), (6, 13189), (Start: 9 @13216 has 60 MA's), (18, 13351), (23, 13387), (28, 13414), (38, 13492),

Gene: Mbo2\_9 Start: 6654, Stop: 6929, Start Num: 10

Candidate Starts for Mbo2\_9:

(7, 6639), (10, 6654), (17, 6753), (21, 6807), (22, 6810), (29, 6855), (36, 6909),

Gene: Minos\_10 Start: 13222, Stop: 13527, Start Num: 9

Candidate Starts for Minos\_10:

(Start: 5 @13189 has 1 MA's), (6, 13195), (Start: 9 @13222 has 60 MA's), (18, 13357), (23, 13393), (28, 13420), (38, 13498),

Gene: Monty\_12 Start: 12496, Stop: 12747, Start Num: 14

Candidate Starts for Monty\_12:

(Start: 9 @12442 has 60 MA's), (Start: 14 @12496 has 12 MA's), (18, 12577), (28, 12640), (38, 12718),

Gene: MrWormie\_10 Start: 12386, Stop: 12691, Start Num: 9

Candidate Starts for MrWormie\_10:

(Start: 5 @12353 has 1 MA's), (6, 12359), (Start: 9 @12386 has 60 MA's), (18, 12521), (23, 12557), (28, 12584), (38, 12662),

Gene: Msay19\_14 Start: 12670, Stop: 12921, Start Num: 14

Candidate Starts for Msay19\_14:

(Start: 9 @12616 has 60 MA's), (Start: 14 @12670 has 12 MA's), (18, 12751), (28, 12814), (38, 12892),

Gene: Neoevie\_10 Start: 13492, Stop: 13797, Start Num: 9

Candidate Starts for Neoevie\_10:

(Start: 5 @13459 has 1 MA's), (6, 13465), (Start: 9 @13492 has 60 MA's), (18, 13627), (23, 13663), (28, 13690), (38, 13768),

Gene: Newt\_10 Start: 13233, Stop: 13538, Start Num: 9

Candidate Starts for Newt\_10:

(Start: 5 @13200 has 1 MA's), (6, 13206), (Start: 9 @13233 has 60 MA's), (18, 13368), (23, 13404), (28, 13431), (38, 13509),

Gene: Niagara\_13 Start: 14978, Stop: 15286, Start Num: 9

Candidate Starts for Niagara\_13:

(Start: 9 @14978 has 60 MA's), (21, 15134), (26, 15173), (27, 15176), (31, 15209), (37, 15245), (38, 15257),

Gene: Nimi13\_10 Start: 13234, Stop: 13539, Start Num: 9

Candidate Starts for Nimi13\_10:

(Start: 5 @13201 has 1 MA's), (6, 13207), (Start: 9 @13234 has 60 MA's), (18, 13369), (23, 13405), (28, 13432), (38, 13510),

Gene: Philon9\_14 Start: 16867, Stop: 17169, Start Num: 9

Candidate Starts for Philon9\_14:

(Start: 9 @16867 has 60 MA's), (12, 16888), (13, 16915), (18, 16999), (21, 17017), (27, 17059), (31, 17092), (38, 17140),

Gene: PierreThree\_13 Start: 13300, Stop: 13605, Start Num: 9

Candidate Starts for PierreThree\_13:

(Start: 9 @13300 has 60 MA's), (Start: 14 @13354 has 12 MA's), (17, 13399), (18, 13435), (28, 13498), (38, 13576),

Gene: PokyPuppy\_12 Start: 13191, Stop: 13496, Start Num: 9

Candidate Starts for PokyPuppy\_12:

(Start: 9 @13191 has 60 MA's), (13, 13242), (28, 13389), (38, 13467),

Gene: Poland\_14 Start: 12646, Stop: 12897, Start Num: 14

Candidate Starts for Poland\_14:

(Start: 9 @12592 has 60 MA's), (Start: 14 @12646 has 12 MA's), (18, 12727), (28, 12790), (38, 12868),

Gene: RemRem\_14 Start: 12492, Stop: 12743, Start Num: 14

Candidate Starts for RemRem\_14:

(Start: 9 @12438 has 60 MA's), (Start: 14 @12492 has 12 MA's), (18, 12573), (28, 12636), (38, 12714),

Gene: RoyalG\_14 Start: 12925, Stop: 13230, Start Num: 9

Candidate Starts for RoyalG\_14:

(Start: 5 @12892 has 1 MA's), (6, 12898), (Start: 9 @12925 has 60 MA's), (38, 13201),

Gene: Sam12\_13 Start: 12438, Stop: 12743, Start Num: 9

Candidate Starts for Sam12\_13:

(Start: 9 @12438 has 60 MA's), (Start: 14 @12492 has 12 MA's), (18, 12573), (28, 12636), (38, 12714),

Gene: Shelley\_10 Start: 12710, Stop: 13015, Start Num: 9

Candidate Starts for Shelley\_10:

(Start: 5 @12677 has 1 MA's), (6, 12683), (Start: 9 @12710 has 60 MA's), (18, 12845), (23, 12881), (28, 12908), (38, 12986),

Gene: Sombrero\_13 Start: 12526, Stop: 12777, Start Num: 14

Candidate Starts for Sombrero\_13:

(Start: 9 @12472 has 60 MA's), (Start: 14 @12526 has 12 MA's), (18, 12607), (28, 12670), (38, 12748),

Gene: Squibbles\_13 Start: 13298, Stop: 13603, Start Num: 9

Candidate Starts for Squibbles\_13:

(Start: 9 @13298 has 60 MA's), (Start: 14 @13352 has 12 MA's), (18, 13433), (28, 13496), (38, 13574),

Gene: SteveFrench\_12 Start: 12519, Stop: 12824, Start Num: 9

Candidate Starts for SteveFrench\_12:

(Start: 5 @12486 has 1 MA's), (6, 12492), (Start: 9 @12519 has 60 MA's), (38, 12795),

Gene: Sticker17\_10 Start: 13233, Stop: 13538, Start Num: 9

Candidate Starts for Sticker17\_10:

(Start: 5 @13200 has 1 MA's), (6, 13206), (Start: 9 @13233 has 60 MA's), (18, 13368), (23, 13404), (28, 13431), (38, 13509),

Gene: Teal\_10 Start: 13210, Stop: 13515, Start Num: 9

Candidate Starts for Teal\_10:

(Start: 5 @13177 has 1 MA's), (6, 13183), (Start: 9 @13210 has 60 MA's), (18, 13345), (23, 13381), (28, 13408), (38, 13486),

Gene: Teatealatte\_13 Start: 14941, Stop: 15249, Start Num: 9

Candidate Starts for Teatealatte\_13:

(Start: 9 @14941 has 60 MA's), (21, 15097), (26, 15136), (27, 15139), (31, 15172), (37, 15208), (38, 15220),

Gene: Teech\_13 Start: 14742, Stop: 15050, Start Num: 9

Candidate Starts for Teech\_13:

(Start: 9 @14742 has 60 MA's), (21, 14898), (26, 14937), (27, 14940), (31, 14973), (37, 15009), (38, 15021),

Gene: Tredge\_13 Start: 14941, Stop: 15249, Start Num: 9

Candidate Starts for Tredge\_13:

(Start: 9 @14941 has 60 MA's), (21, 15097), (26, 15136), (27, 15139), (31, 15172), (37, 15208), (38, 15220),

Gene: Trogglehumper\_31 Start: 19780, Stop: 20073, Start Num: 8

Candidate Starts for Trogglehumper\_31:

(1, 19651), (Start: 8 @19780 has 1 MA's), (15, 19849), (16, 19873), (19, 19918), (20, 19924), (25, 19966), (30, 19996), (34, 20017),

Gene: Vitaenoi\_14 Start: 16866, Stop: 17168, Start Num: 9

Candidate Starts for Vitaenoi\_14:

(Start: 9 @16866 has 60 MA's), (12, 16887), (13, 16914), (18, 16998), (21, 17016), (27, 17058), (31, 17091), (38, 17139),

Gene: Woes\_10 Start: 13762, Stop: 14067, Start Num: 9

Candidate Starts for Woes\_10:

(Start: 5 @13729 has 1 MA's), (6, 13735), (Start: 9 @13762 has 60 MA's), (18, 13897), (23, 13933), (28, 13960), (38, 14038),

Gene: Worcestershire\_13 Start: 12494, Stop: 12745, Start Num: 14

Candidate Starts for Worcestershire\_13:

(Start: 9 @12440 has 60 MA's), (Start: 14 @12494 has 12 MA's), (18, 12575), (28, 12638), (38, 12716),

