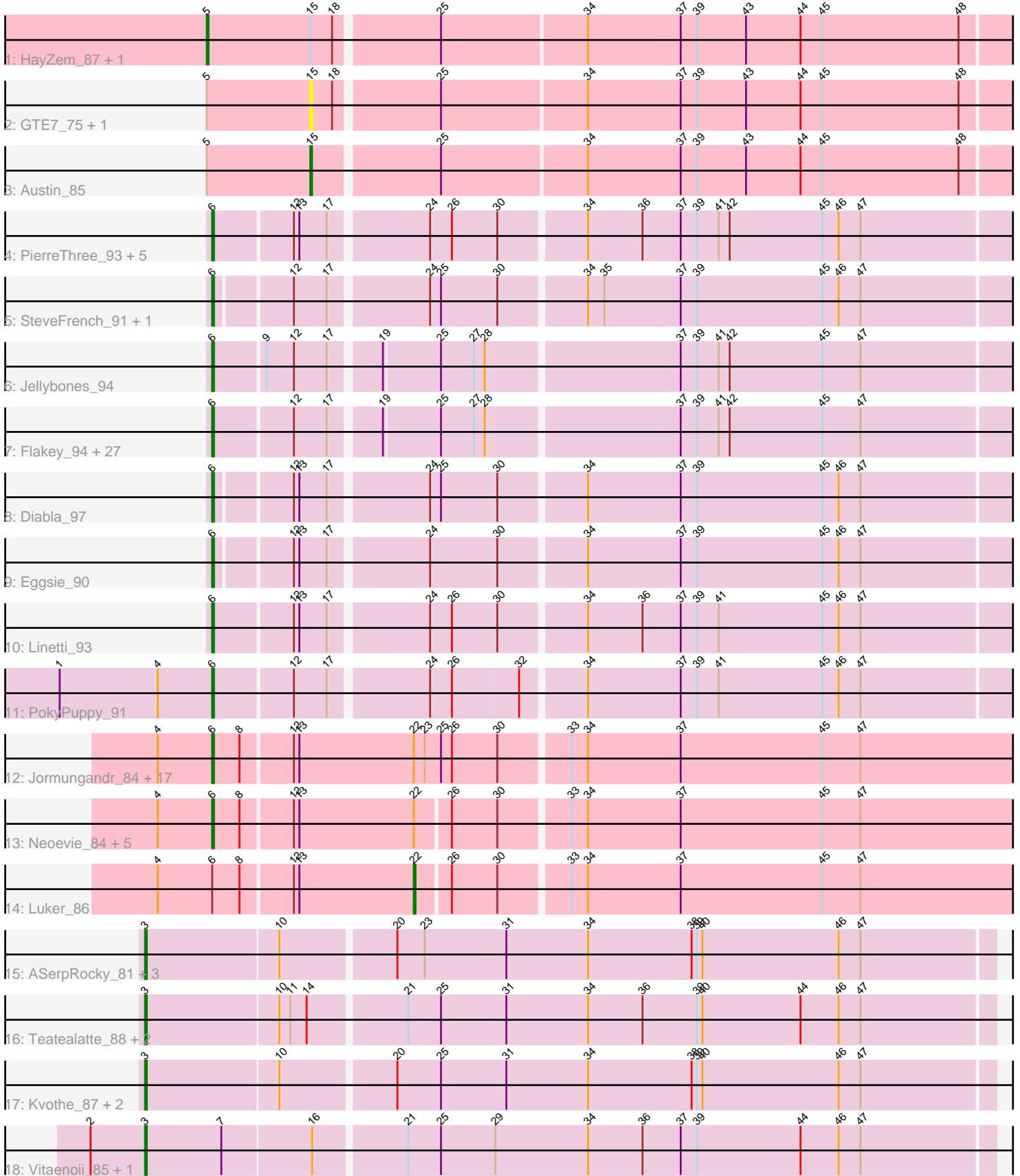


# Pham 296484



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 296484 Report

This analysis was run 04/25/26 on database version 644.

Pham number 296484 has 83 members, 7 are drafts.

Phages represented in each track:

- Track 1 : HayZem\_87, Amore2\_86
- Track 2 : GTE7\_75, GMA7\_74
- Track 3 : Austin\_85
- Track 4 : PierreThree\_93, Dakiti\_95, BenoitCattle\_95, BigShaq\_94, Chelms\_93, Crete\_94
- Track 5 : SteveFrench\_91, RoyalG\_92
- Track 6 : Jellybones\_94
- Track 7 : Flakey\_94, Barbochs\_90, Hotorobo\_95, Sam12\_92, Breezic\_94, Adgers\_96, Exiguo\_92, BirksAndSocks\_96, John316\_96, Ekhein\_95, Boneham\_95, Msay19\_97, CathyBurgh\_93, Poland\_97, FelixAlejandro\_96, RemRem\_96, Monty\_93, GourdThymes\_93, Gorko\_92, Lizzo\_93, BillyBobJr\_97, Sombrero\_94, Kelzog\_95, Butterball\_94, Squibbles\_93, Worcestershire\_92, Beaver\_96, CinnamonToast\_97
- Track 8 : Diabla\_97
- Track 9 : Eggsie\_90
- Track 10 : Linetti\_93
- Track 11 : PokyPuppy\_91
- Track 12 : Jormungandr\_84, MrWormie\_85, Anamika\_84, Nimi13\_84, Lahirium\_85, Damp\_85, Bianmat\_85, Charianelly\_85, Shelley\_85, Hello\_84, Jams\_85, Berries\_85, Sticker17\_85, Harambe\_84, Guillaume\_84, Kaseim\_85, Newt\_86, Lidong\_85
- Track 13 : Neoevie\_84, Minos\_86, Woes\_84, Hail2Pitt\_83, GalacticEye\_85, Teal\_84
- Track 14 : Luker\_86
- Track 15 : ASerpRocky\_81, Demosthenes\_81, Benczkowski14\_88, Katyusha\_86
- Track 16 : Teatealatte\_88, Niagara\_87, Tredge\_87
- Track 17 : Kvothe\_87, Hollow\_87, Teech\_88
- Track 18 : Vitaenoi\_85, Philon9\_85

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

The start number called the most often in the published annotations is 6, it was called in 60 of the 76 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Adgers\_96, Anamika\_84, Barbochs\_90, Beaver\_96, BenoitCattle\_95, Berries\_85, Bianmat\_85, BigShaq\_94, BillyBobJr\_97, BirksAndSocks\_96, Boneham\_95, Breezic\_94, Butterball\_94, CathyBurgh\_93, Charianelly\_85, Chelms\_93, CinnamonToast\_97, Crete\_94, Dakiti\_95, Damp\_85, Diabla\_97, Eggsie\_90, Ekhein\_95, Exiguo\_92, FelixAlejandro\_96, Flakey\_94, GalacticEye\_85, Gorko\_92, GourdThymes\_93, Guillaume\_84, Hail2Pitt\_83, Harambe\_84, Hello\_84, Hotorobo\_95, Jams\_85, Jellybones\_94, John316\_96, Jormungandr\_84, Kaseim\_85, Kelzog\_95, Lahirium\_85, Lidong\_85, Linetti\_93, Lizzo\_93, Minos\_86, Monty\_93, MrWormie\_85, Msay19\_97, Neoevie\_84, Newt\_86, Nimi13\_84, PierreThree\_93, PokyPuppy\_91, Poland\_97, RemRem\_96, RoyalG\_92, Sam12\_92, Shelley\_85, Sombrero\_94, Squibbles\_93, SteveFrench\_91, Sticker17\_85, Teal\_84, Woes\_84, Worcestershire\_92,

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

- Luker\_86,

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

- ASerpRocky\_81, Amore2\_86, Austin\_85, Benczkowski14\_88, Demosthenes\_81, GMA7\_74, GTE7\_75, HayZem\_87, Hollow\_87, Katyusha\_86, Kvothe\_87, Niagara\_87, Philon9\_85, Teatealatte\_88, Teech\_88, Tredge\_87, Vitaenoi\_85,

### Summary by start number:

Start 3:

- Found in 12 of 83 ( 14.5% ) of genes in pham
- Manual Annotations of this start: 12 of 76
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ASerpRocky\_81 (CS4), Benczkowski14\_88 (CS4), Demosthenes\_81 (CS4), Hollow\_87 (CS4), Katyusha\_86 (CS4), Kvothe\_87 (CS4), Niagara\_87 (CS4), Philon9\_85 (CS4), Teatealatte\_88 (CS4), Teech\_88 (CS4), Tredge\_87 (CS4), Vitaenoi\_85 (CS4),

Start 5:

- Found in 5 of 83 ( 6.0% ) of genes in pham
- Manual Annotations of this start: 2 of 76
- Called 40.0% of time when present
- Phage (with cluster) where this start called: Amore2\_86 (CS1), HayZem\_87 (CS1),

Start 6:

- Found in 66 of 83 ( 79.5% ) of genes in pham
- Manual Annotations of this start: 60 of 76
- Called 98.5% of time when present
- Phage (with cluster) where this start called: Adgers\_96 (CS2), Anamika\_84 (CS3), Barbochs\_90 (CS2), Beaver\_96 (CS2), BenoitCattle\_95 (CS2), Berries\_85 (CS3), Bianmat\_85 (CS3), BigShaq\_94 (CS2), BillyBobJr\_97 (CS2), BirksAndSocks\_96 (CS2), Boneham\_95 (CS2), Breezic\_94 (CS2), Butterball\_94 (CS2), CathyBurgh\_93 (CS2), Charianelly\_85 (CS3), Chelms\_93 (CS2), CinnamonToast\_97 (CS2), Crete\_94 (CS2), Dakiti\_95 (CS2), Damp\_85 (CS3), Diabla\_97 (CS2), Eggsie\_90 (CS2), Ekhein\_95 (CS2), Exiguo\_92 (CS2), FelixAlejandro\_96 (CS2), Flakey\_94 (CS2), GalacticEye\_85 (CS3), Gorko\_92 (CS2), GourdThymes\_93 (CS2), Guillaume\_84 (CS3), Hail2Pitt\_83 (CS3), Harambe\_84 (CS3), Hello\_84 (CS3), Hotorobo\_95 (CS2), Jams\_85 (CS3), Jellybones\_94 (CS2), John316\_96 (CS2), Jormungandr\_84 (CS3), Kaseim\_85 (CS3), Kelzog\_95 (CS2), Lahirium\_85 (CS3), Lidong\_85 (CS3), Linetti\_93

(CS2), Lizzo\_93 (CS2), Minos\_86 (CS3), Monty\_93 (CS2), MrWormie\_85 (CS3), Msay19\_97 (CS2), Neoevie\_84 (CS3), Newt\_86 (CS3), Nimi13\_84 (CS3), PierreThree\_93 (CS2), PokyPuppy\_91 (CS2), Poland\_97 (CS2), RemRem\_96 (CS2), RoyalG\_92 (CS2), Sam12\_92 (CS2), Shelley\_85 (CS3), Sombrero\_94 (CS2), Squibbles\_93 (CS2), SteveFrench\_91 (CS2), Sticker17\_85 (CS3), Teal\_84 (CS3), Woes\_84 (CS3), Worcestershire\_92 (CS2),

Start 15:

- Found in 5 of 83 ( 6.0% ) of genes in pham
- Manual Annotations of this start: 1 of 76
- Called 60.0% of time when present
- Phage (with cluster) where this start called: Austin\_85 (CS1), GMA7\_74 (CS1), GTE7\_75 (CS1),

Start 22:

- Found in 25 of 83 ( 30.1% ) of genes in pham
- Manual Annotations of this start: 1 of 76
- Called 4.0% of time when present
- Phage (with cluster) where this start called: Luker\_86 (CS3),

### **Summary by clusters:**

There are 4 clusters represented in this pham: CS4, CS1, CS3, CS2,

Info for manual annotations of cluster CS1:

- Start number 5 was manually annotated 2 times for cluster CS1.
- Start number 15 was manually annotated 1 time for cluster CS1.

Info for manual annotations of cluster CS2:

- Start number 6 was manually annotated 36 times for cluster CS2.

Info for manual annotations of cluster CS3:

- Start number 6 was manually annotated 24 times for cluster CS3.
- Start number 22 was manually annotated 1 time for cluster CS3.

Info for manual annotations of cluster CS4:

- Start number 3 was manually annotated 12 times for cluster CS4.

### **Gene Information:**

Gene: ASerpRocky\_81 Start: 67672, Stop: 67214, Start Num: 3

Candidate Starts for ASerpRocky\_81:

(Start: 3 @67672 has 12 MA's), (10, 67600), (20, 67540), (23, 67525), (31, 67480), (34, 67435), (38, 67378), (39, 67375), (40, 67372), (46, 67297), (47, 67285),

Gene: Adgers\_96 Start: 69350, Stop: 68928, Start Num: 6

Candidate Starts for Adgers\_96:

(Start: 6 @69350 has 60 MA's), (12, 69308), (17, 69290), (19, 69266), (25, 69236), (27, 69218), (28, 69212), (37, 69110), (39, 69101), (41, 69089), (42, 69083), (45, 69032), (47, 69011),

Gene: Amore2\_86 Start: 66698, Stop: 66267, Start Num: 5

Candidate Starts for Amore2\_86:

(Start: 5 @66698 has 2 MA's), (Start: 15 @66641 has 1 MA's), (18, 66629), (25, 66575), (34, 66497), (37, 66446), (39, 66437), (43, 66410), (44, 66380), (45, 66368), (48, 66293),

Gene: Anamika\_84 Start: 67876, Stop: 67436, Start Num: 6

Candidate Starts for Anamika\_84:

(4, 67906), (Start: 6 @67876 has 60 MA's), (8, 67861), (12, 67834), (13, 67831), (Start: 22 @67768 has 1 MA's), (23, 67762), (25, 67753), (26, 67747), (30, 67723), (33, 67687), (34, 67678), (37, 67627), (45, 67549), (47, 67528),

Gene: Austin\_85 Start: 66639, Stop: 66265, Start Num: 15

Candidate Starts for Austin\_85:

(Start: 5 @66696 has 2 MA's), (Start: 15 @66639 has 1 MA's), (25, 66573), (34, 66495), (37, 66444), (39, 66435), (43, 66408), (44, 66378), (45, 66366), (48, 66291),

Gene: Barbochs\_90 Start: 68520, Stop: 68098, Start Num: 6

Candidate Starts for Barbochs\_90:

(Start: 6 @68520 has 60 MA's), (12, 68478), (17, 68460), (19, 68436), (25, 68406), (27, 68388), (28, 68382), (37, 68280), (39, 68271), (41, 68259), (42, 68253), (45, 68202), (47, 68181),

Gene: Beaver\_96 Start: 70691, Stop: 70269, Start Num: 6

Candidate Starts for Beaver\_96:

(Start: 6 @70691 has 60 MA's), (12, 70649), (17, 70631), (19, 70607), (25, 70577), (27, 70559), (28, 70553), (37, 70451), (39, 70442), (41, 70430), (42, 70424), (45, 70373), (47, 70352),

Gene: Benczkowski14\_88 Start: 69205, Stop: 68747, Start Num: 3

Candidate Starts for Benczkowski14\_88:

(Start: 3 @69205 has 12 MA's), (10, 69133), (20, 69073), (23, 69058), (31, 69013), (34, 68968), (38, 68911), (39, 68908), (40, 68905), (46, 68830), (47, 68818),

Gene: BenoitCattle\_95 Start: 70089, Stop: 69664, Start Num: 6

Candidate Starts for BenoitCattle\_95:

(Start: 6 @70089 has 60 MA's), (12, 70047), (13, 70044), (17, 70029), (24, 69978), (26, 69966), (30, 69942), (34, 69897), (36, 69867), (37, 69846), (39, 69837), (41, 69825), (42, 69819), (45, 69768), (46, 69759), (47, 69747),

Gene: Berries\_85 Start: 67848, Stop: 67408, Start Num: 6

Candidate Starts for Berries\_85:

(4, 67878), (Start: 6 @67848 has 60 MA's), (8, 67833), (12, 67806), (13, 67803), (Start: 22 @67740 has 1 MA's), (23, 67734), (25, 67725), (26, 67719), (30, 67695), (33, 67659), (34, 67650), (37, 67599), (45, 67521), (47, 67500),

Gene: Bianmat\_85 Start: 67888, Stop: 67448, Start Num: 6

Candidate Starts for Bianmat\_85:

(4, 67918), (Start: 6 @67888 has 60 MA's), (8, 67873), (12, 67846), (13, 67843), (Start: 22 @67780 has 1 MA's), (23, 67774), (25, 67765), (26, 67759), (30, 67735), (33, 67699), (34, 67690), (37, 67639), (45, 67561), (47, 67540),

Gene: BigShaq\_94 Start: 69679, Stop: 69254, Start Num: 6

Candidate Starts for BigShaq\_94:

(Start: 6 @69679 has 60 MA's), (12, 69637), (13, 69634), (17, 69619), (24, 69568), (26, 69556), (30, 69532), (34, 69487), (36, 69457), (37, 69436), (39, 69427), (41, 69415), (42, 69409), (45, 69358), (46, 69349), (47, 69337),

Gene: BillyBobJr\_97 Start: 70798, Stop: 70376, Start Num: 6

Candidate Starts for BillyBobJr\_97:

(Start: 6 @70798 has 60 MA's), (12, 70756), (17, 70738), (19, 70714), (25, 70684), (27, 70666), (28, 70660), (37, 70558), (39, 70549), (41, 70537), (42, 70531), (45, 70480), (47, 70459),

Gene: BirksAndSocks\_96 Start: 70305, Stop: 69883, Start Num: 6

Candidate Starts for BirksAndSocks\_96:

(Start: 6 @70305 has 60 MA's), (12, 70263), (17, 70245), (19, 70221), (25, 70191), (27, 70173), (28, 70167), (37, 70065), (39, 70056), (41, 70044), (42, 70038), (45, 69987), (47, 69966),

Gene: Boneham\_95 Start: 70230, Stop: 69808, Start Num: 6

Candidate Starts for Boneham\_95:

(Start: 6 @70230 has 60 MA's), (12, 70188), (17, 70170), (19, 70146), (25, 70116), (27, 70098), (28, 70092), (37, 69990), (39, 69981), (41, 69969), (42, 69963), (45, 69912), (47, 69891),

Gene: Breezic\_94 Start: 69221, Stop: 68799, Start Num: 6

Candidate Starts for Breezic\_94:

(Start: 6 @69221 has 60 MA's), (12, 69179), (17, 69161), (19, 69137), (25, 69107), (27, 69089), (28, 69083), (37, 68981), (39, 68972), (41, 68960), (42, 68954), (45, 68903), (47, 68882),

Gene: Butterball\_94 Start: 70235, Stop: 69813, Start Num: 6

Candidate Starts for Butterball\_94:

(Start: 6 @70235 has 60 MA's), (12, 70193), (17, 70175), (19, 70151), (25, 70121), (27, 70103), (28, 70097), (37, 69995), (39, 69986), (41, 69974), (42, 69968), (45, 69917), (47, 69896),

Gene: CathyBurgh\_93 Start: 69251, Stop: 68829, Start Num: 6

Candidate Starts for CathyBurgh\_93:

(Start: 6 @69251 has 60 MA's), (12, 69209), (17, 69191), (19, 69167), (25, 69137), (27, 69119), (28, 69113), (37, 69011), (39, 69002), (41, 68990), (42, 68984), (45, 68933), (47, 68912),

Gene: Charianelly\_85 Start: 67598, Stop: 67158, Start Num: 6

Candidate Starts for Charianelly\_85:

(4, 67628), (Start: 6 @67598 has 60 MA's), (8, 67583), (12, 67556), (13, 67553), (Start: 22 @67490 has 1 MA's), (23, 67484), (25, 67475), (26, 67469), (30, 67445), (33, 67409), (34, 67400), (37, 67349), (45, 67271), (47, 67250),

Gene: Chelms\_93 Start: 69826, Stop: 69401, Start Num: 6

Candidate Starts for Chelms\_93:

(Start: 6 @69826 has 60 MA's), (12, 69784), (13, 69781), (17, 69766), (24, 69715), (26, 69703), (30, 69679), (34, 69634), (36, 69604), (37, 69583), (39, 69574), (41, 69562), (42, 69556), (45, 69505), (46, 69496), (47, 69484),

Gene: CinnamonToast\_97 Start: 70798, Stop: 70376, Start Num: 6

Candidate Starts for CinnamonToast\_97:

(Start: 6 @70798 has 60 MA's), (12, 70756), (17, 70738), (19, 70714), (25, 70684), (27, 70666), (28, 70660), (37, 70558), (39, 70549), (41, 70537), (42, 70531), (45, 70480), (47, 70459),

Gene: Crete\_94 Start: 69862, Stop: 69437, Start Num: 6

Candidate Starts for Crete\_94:

(Start: 6 @69862 has 60 MA's), (12, 69820), (13, 69817), (17, 69802), (24, 69751), (26, 69739), (30, 69715), (34, 69670), (36, 69640), (37, 69619), (39, 69610), (41, 69598), (42, 69592), (45, 69541), (46, 69532), (47, 69520),

Gene: Dakiti\_95 Start: 70769, Stop: 70344, Start Num: 6

Candidate Starts for Dakiti\_95:

(Start: 6 @70769 has 60 MA's), (12, 70727), (13, 70724), (17, 70709), (24, 70658), (26, 70646), (30, 70622), (34, 70577), (36, 70547), (37, 70526), (39, 70517), (41, 70505), (42, 70499), (45, 70448), (46, 70439), (47, 70427),

Gene: Damp\_85 Start: 66762, Stop: 66322, Start Num: 6

Candidate Starts for Damp\_85:

(4, 66792), (Start: 6 @66762 has 60 MA's), (8, 66747), (12, 66720), (13, 66717), (Start: 22 @66654 has 1 MA's), (23, 66648), (25, 66639), (26, 66633), (30, 66609), (33, 66573), (34, 66564), (37, 66513), (45, 66435), (47, 66414),

Gene: Demosthenes\_81 Start: 67538, Stop: 67080, Start Num: 3

Candidate Starts for Demosthenes\_81:

(Start: 3 @67538 has 12 MA's), (10, 67466), (20, 67406), (23, 67391), (31, 67346), (34, 67301), (38, 67244), (39, 67241), (40, 67238), (46, 67163), (47, 67151),

Gene: Diabla\_97 Start: 70219, Stop: 69797, Start Num: 6

Candidate Starts for Diabla\_97:

(Start: 6 @70219 has 60 MA's), (12, 70180), (13, 70177), (17, 70162), (24, 70111), (25, 70105), (30, 70075), (34, 70030), (37, 69979), (39, 69970), (45, 69901), (46, 69892), (47, 69880),

Gene: Eggsie\_90 Start: 67775, Stop: 67353, Start Num: 6

Candidate Starts for Eggsie\_90:

(Start: 6 @67775 has 60 MA's), (12, 67736), (13, 67733), (17, 67718), (24, 67667), (30, 67631), (34, 67586), (37, 67535), (39, 67526), (45, 67457), (46, 67448), (47, 67436),

Gene: Ekhein\_95 Start: 69265, Stop: 68843, Start Num: 6

Candidate Starts for Ekhein\_95:

(Start: 6 @69265 has 60 MA's), (12, 69223), (17, 69205), (19, 69181), (25, 69151), (27, 69133), (28, 69127), (37, 69025), (39, 69016), (41, 69004), (42, 68998), (45, 68947), (47, 68926),

Gene: Exiguo\_92 Start: 68690, Stop: 68268, Start Num: 6

Candidate Starts for Exiguo\_92:

(Start: 6 @68690 has 60 MA's), (12, 68648), (17, 68630), (19, 68606), (25, 68576), (27, 68558), (28, 68552), (37, 68450), (39, 68441), (41, 68429), (42, 68423), (45, 68372), (47, 68351),

Gene: FelixAlejandro\_96 Start: 70748, Stop: 70326, Start Num: 6

Candidate Starts for FelixAlejandro\_96:

(Start: 6 @70748 has 60 MA's), (12, 70706), (17, 70688), (19, 70664), (25, 70634), (27, 70616), (28, 70610), (37, 70508), (39, 70499), (41, 70487), (42, 70481), (45, 70430), (47, 70409),

Gene: Flakey\_94 Start: 70162, Stop: 69740, Start Num: 6

Candidate Starts for Flakey\_94:

(Start: 6 @70162 has 60 MA's), (12, 70120), (17, 70102), (19, 70078), (25, 70048), (27, 70030), (28, 70024), (37, 69922), (39, 69913), (41, 69901), (42, 69895), (45, 69844), (47, 69823),

Gene: GMA7\_74 Start: 60526, Stop: 60152, Start Num: 15

Candidate Starts for GMA7\_74:

(Start: 5 @60583 has 2 MA's), (Start: 15 @60526 has 1 MA's), (18, 60514), (25, 60460), (34, 60382), (37, 60331), (39, 60322), (43, 60295), (44, 60265), (45, 60253), (48, 60178),

Gene: GTE7\_75 Start: 61092, Stop: 60718, Start Num: 15

Candidate Starts for GTE7\_75:

(Start: 5 @61149 has 2 MA's), (Start: 15 @61092 has 1 MA's), (18, 61080), (25, 61026), (34, 60948), (37, 60897), (39, 60888), (43, 60861), (44, 60831), (45, 60819), (48, 60744),

Gene: GalacticEye\_85 Start: 67556, Stop: 67119, Start Num: 6

Candidate Starts for GalacticEye\_85:

(4, 67586), (Start: 6 @67556 has 60 MA's), (8, 67541), (12, 67514), (13, 67511), (Start: 22 @67448 has 1 MA's), (26, 67430), (30, 67406), (33, 67370), (34, 67361), (37, 67310), (45, 67232), (47, 67211),

Gene: Gorko\_92 Start: 68434, Stop: 68012, Start Num: 6

Candidate Starts for Gorko\_92:

(Start: 6 @68434 has 60 MA's), (12, 68392), (17, 68374), (19, 68350), (25, 68320), (27, 68302), (28, 68296), (37, 68194), (39, 68185), (41, 68173), (42, 68167), (45, 68116), (47, 68095),

Gene: GourdThymes\_93 Start: 69278, Stop: 68856, Start Num: 6

Candidate Starts for GourdThymes\_93:

(Start: 6 @69278 has 60 MA's), (12, 69236), (17, 69218), (19, 69194), (25, 69164), (27, 69146), (28, 69140), (37, 69038), (39, 69029), (41, 69017), (42, 69011), (45, 68960), (47, 68939),

Gene: Guillaume\_84 Start: 67609, Stop: 67169, Start Num: 6

Candidate Starts for Guillaume\_84:

(4, 67639), (Start: 6 @67609 has 60 MA's), (8, 67594), (12, 67567), (13, 67564), (Start: 22 @67501 has 1 MA's), (23, 67495), (25, 67486), (26, 67480), (30, 67456), (33, 67420), (34, 67411), (37, 67360), (45, 67282), (47, 67261),

Gene: Hail2Pitt\_83 Start: 68082, Stop: 67645, Start Num: 6

Candidate Starts for Hail2Pitt\_83:

(4, 68112), (Start: 6 @68082 has 60 MA's), (8, 68067), (12, 68040), (13, 68037), (Start: 22 @67974 has 1 MA's), (26, 67956), (30, 67932), (33, 67896), (34, 67887), (37, 67836), (45, 67758), (47, 67737),

Gene: Harambe\_84 Start: 67876, Stop: 67436, Start Num: 6

Candidate Starts for Harambe\_84:

(4, 67906), (Start: 6 @67876 has 60 MA's), (8, 67861), (12, 67834), (13, 67831), (Start: 22 @67768 has 1 MA's), (23, 67762), (25, 67753), (26, 67747), (30, 67723), (33, 67687), (34, 67678), (37, 67627), (45, 67549), (47, 67528),

Gene: HayZem\_87 Start: 66696, Stop: 66265, Start Num: 5

Candidate Starts for HayZem\_87:

(Start: 5 @66696 has 2 MA's), (Start: 15 @66639 has 1 MA's), (18, 66627), (25, 66573), (34, 66495), (37, 66444), (39, 66435), (43, 66408), (44, 66378), (45, 66366), (48, 66291),

Gene: Hello\_84 Start: 67838, Stop: 67398, Start Num: 6

Candidate Starts for Hello\_84:

(4, 67868), (Start: 6 @67838 has 60 MA's), (8, 67823), (12, 67796), (13, 67793), (Start: 22 @67730 has 1 MA's), (23, 67724), (25, 67715), (26, 67709), (30, 67685), (33, 67649), (34, 67640), (37, 67589), (45, 67511), (47, 67490),

Gene: Hollow\_87 Start: 69016, Stop: 68558, Start Num: 3

Candidate Starts for Hollow\_87:

(Start: 3 @69016 has 12 MA's), (10, 68944), (20, 68884), (25, 68860), (31, 68824), (34, 68779), (38, 68722), (39, 68719), (40, 68716), (46, 68641), (47, 68629),

Gene: Hotorobo\_95 Start: 70139, Stop: 69717, Start Num: 6

Candidate Starts for Hotorobo\_95:

(Start: 6 @70139 has 60 MA's), (12, 70097), (17, 70079), (19, 70055), (25, 70025), (27, 70007), (28, 70001), (37, 69899), (39, 69890), (41, 69878), (42, 69872), (45, 69821), (47, 69800),

Gene: Jams\_85 Start: 66886, Stop: 66446, Start Num: 6

Candidate Starts for Jams\_85:

(4, 66916), (Start: 6 @66886 has 60 MA's), (8, 66871), (12, 66844), (13, 66841), (Start: 22 @66778 has 1 MA's), (23, 66772), (25, 66763), (26, 66757), (30, 66733), (33, 66697), (34, 66688), (37, 66637), (45, 66559), (47, 66538),

Gene: Jellybones\_94 Start: 70436, Stop: 70014, Start Num: 6

Candidate Starts for Jellybones\_94:

(Start: 6 @70436 has 60 MA's), (9, 70409), (12, 70394), (17, 70376), (19, 70352), (25, 70322), (27, 70304), (28, 70298), (37, 70196), (39, 70187), (41, 70175), (42, 70169), (45, 70118), (47, 70097),

Gene: John316\_96 Start: 70392, Stop: 69970, Start Num: 6

Candidate Starts for John316\_96:

(Start: 6 @70392 has 60 MA's), (12, 70350), (17, 70332), (19, 70308), (25, 70278), (27, 70260), (28, 70254), (37, 70152), (39, 70143), (41, 70131), (42, 70125), (45, 70074), (47, 70053),

Gene: Jormungandr\_84 Start: 67591, Stop: 67151, Start Num: 6

Candidate Starts for Jormungandr\_84:

(4, 67621), (Start: 6 @67591 has 60 MA's), (8, 67576), (12, 67549), (13, 67546), (Start: 22 @67483 has 1 MA's), (23, 67477), (25, 67468), (26, 67462), (30, 67438), (33, 67402), (34, 67393), (37, 67342), (45, 67264), (47, 67243),

Gene: Kaseim\_85 Start: 67033, Stop: 66593, Start Num: 6

Candidate Starts for Kaseim\_85:

(4, 67063), (Start: 6 @67033 has 60 MA's), (8, 67018), (12, 66991), (13, 66988), (Start: 22 @66925 has 1 MA's), (23, 66919), (25, 66910), (26, 66904), (30, 66880), (33, 66844), (34, 66835), (37, 66784), (45, 66706), (47, 66685),

Gene: Katyusha\_86 Start: 69205, Stop: 68747, Start Num: 3

Candidate Starts for Katyusha\_86:

(Start: 3 @69205 has 12 MA's), (10, 69133), (20, 69073), (23, 69058), (31, 69013), (34, 68968), (38, 68911), (39, 68908), (40, 68905), (46, 68830), (47, 68818),

Gene: Kelzog\_95 Start: 69665, Stop: 69243, Start Num: 6

Candidate Starts for Kelzog\_95:

(Start: 6 @69665 has 60 MA's), (12, 69623), (17, 69605), (19, 69581), (25, 69551), (27, 69533), (28, 69527), (37, 69425), (39, 69416), (41, 69404), (42, 69398), (45, 69347), (47, 69326),

Gene: Kvothe\_87 Start: 69214, Stop: 68756, Start Num: 3

Candidate Starts for Kvothe\_87:

(Start: 3 @69214 has 12 MA's), (10, 69142), (20, 69082), (25, 69058), (31, 69022), (34, 68977), (38, 68920), (39, 68917), (40, 68914), (46, 68839), (47, 68827),

Gene: Lahirium\_85 Start: 68627, Stop: 68187, Start Num: 6

Candidate Starts for Lahirium\_85:

(4, 68657), (Start: 6 @68627 has 60 MA's), (8, 68612), (12, 68585), (13, 68582), (Start: 22 @68519 has 1 MA's), (23, 68513), (25, 68504), (26, 68498), (30, 68474), (33, 68438), (34, 68429), (37, 68378), (45, 68300), (47, 68279),

Gene: Lidong\_85 Start: 67848, Stop: 67408, Start Num: 6

Candidate Starts for Lidong\_85:

(4, 67878), (Start: 6 @67848 has 60 MA's), (8, 67833), (12, 67806), (13, 67803), (Start: 22 @67740 has 1 MA's), (23, 67734), (25, 67725), (26, 67719), (30, 67695), (33, 67659), (34, 67650), (37, 67599), (45, 67521), (47, 67500),

Gene: Linetti\_93 Start: 70786, Stop: 70361, Start Num: 6

Candidate Starts for Linetti\_93:

(Start: 6 @70786 has 60 MA's), (12, 70744), (13, 70741), (17, 70726), (24, 70675), (26, 70663), (30, 70639), (34, 70594), (36, 70564), (37, 70543), (39, 70534), (41, 70522), (45, 70465), (46, 70456), (47, 70444),

Gene: Lizzo\_93 Start: 69251, Stop: 68829, Start Num: 6

Candidate Starts for Lizzo\_93:

(Start: 6 @69251 has 60 MA's), (12, 69209), (17, 69191), (19, 69167), (25, 69137), (27, 69119), (28, 69113), (37, 69011), (39, 69002), (41, 68990), (42, 68984), (45, 68933), (47, 68912),

Gene: Luker\_86 Start: 67793, Stop: 67464, Start Num: 22

Candidate Starts for Luker\_86:

(4, 67931), (Start: 6 @67901 has 60 MA's), (8, 67886), (12, 67859), (13, 67856), (Start: 22 @67793 has 1 MA's), (26, 67775), (30, 67751), (33, 67715), (34, 67706), (37, 67655), (45, 67577), (47, 67556),

Gene: Minos\_86 Start: 67587, Stop: 67150, Start Num: 6

Candidate Starts for Minos\_86:

(4, 67617), (Start: 6 @67587 has 60 MA's), (8, 67572), (12, 67545), (13, 67542), (Start: 22 @67479 has 1 MA's), (26, 67461), (30, 67437), (33, 67401), (34, 67392), (37, 67341), (45, 67263), (47, 67242),

Gene: Monty\_93 Start: 68953, Stop: 68531, Start Num: 6

Candidate Starts for Monty\_93:

(Start: 6 @68953 has 60 MA's), (12, 68911), (17, 68893), (19, 68869), (25, 68839), (27, 68821), (28, 68815), (37, 68713), (39, 68704), (41, 68692), (42, 68686), (45, 68635), (47, 68614),

Gene: MrWormie\_85 Start: 66589, Stop: 66149, Start Num: 6

Candidate Starts for MrWormie\_85:

(4, 66619), (Start: 6 @66589 has 60 MA's), (8, 66574), (12, 66547), (13, 66544), (Start: 22 @66481 has 1 MA's), (23, 66475), (25, 66466), (26, 66460), (30, 66436), (33, 66400), (34, 66391), (37, 66340), (45, 66262), (47, 66241),

Gene: Msay19\_97 Start: 71031, Stop: 70609, Start Num: 6

Candidate Starts for Msay19\_97:

(Start: 6 @71031 has 60 MA's), (12, 70989), (17, 70971), (19, 70947), (25, 70917), (27, 70899), (28, 70893), (37, 70791), (39, 70782), (41, 70770), (42, 70764), (45, 70713), (47, 70692),

Gene: Neoevie\_84 Start: 67849, Stop: 67412, Start Num: 6

Candidate Starts for Neoevie\_84:

(4, 67879), (Start: 6 @67849 has 60 MA's), (8, 67834), (12, 67807), (13, 67804), (Start: 22 @67741 has 1 MA's), (26, 67723), (30, 67699), (33, 67663), (34, 67654), (37, 67603), (45, 67525), (47, 67504),

Gene: Newt\_86 Start: 67918, Stop: 67478, Start Num: 6

Candidate Starts for Newt\_86:

(4, 67948), (Start: 6 @67918 has 60 MA's), (8, 67903), (12, 67876), (13, 67873), (Start: 22 @67810 has 1 MA's), (23, 67804), (25, 67795), (26, 67789), (30, 67765), (33, 67729), (34, 67720), (37, 67669),

(45, 67591), (47, 67570),

Gene: Niagara\_87 Start: 69138, Stop: 68680, Start Num: 3

Candidate Starts for Niagara\_87:

(Start: 3 @69138 has 12 MA's), (10, 69066), (11, 69060), (14, 69051), (21, 69000), (25, 68982), (31, 68946), (34, 68901), (36, 68871), (39, 68841), (40, 68838), (44, 68784), (46, 68763), (47, 68751),

Gene: Nimi13\_84 Start: 67599, Stop: 67159, Start Num: 6

Candidate Starts for Nimi13\_84:

(4, 67629), (Start: 6 @67599 has 60 MA's), (8, 67584), (12, 67557), (13, 67554), (Start: 22 @67491 has 1 MA's), (23, 67485), (25, 67476), (26, 67470), (30, 67446), (33, 67410), (34, 67401), (37, 67350), (45, 67272), (47, 67251),

Gene: Philon9\_85 Start: 69156, Stop: 68698, Start Num: 3

Candidate Starts for Philon9\_85:

(2, 69186), (Start: 3 @69156 has 12 MA's), (7, 69114), (16, 69066), (21, 69018), (25, 69000), (29, 68970), (34, 68919), (36, 68889), (37, 68868), (39, 68859), (44, 68802), (46, 68781), (47, 68769),

Gene: PierreThree\_93 Start: 70400, Stop: 69975, Start Num: 6

Candidate Starts for PierreThree\_93:

(Start: 6 @70400 has 60 MA's), (12, 70358), (13, 70355), (17, 70340), (24, 70289), (26, 70277), (30, 70253), (34, 70208), (36, 70178), (37, 70157), (39, 70148), (41, 70136), (42, 70130), (45, 70079), (46, 70070), (47, 70058),

Gene: PokyPuppy\_91 Start: 69670, Stop: 69245, Start Num: 6

Candidate Starts for PokyPuppy\_91:

(1, 69754), (4, 69700), (Start: 6 @69670 has 60 MA's), (12, 69628), (17, 69610), (24, 69559), (26, 69547), (32, 69511), (34, 69478), (37, 69427), (39, 69418), (41, 69406), (45, 69349), (46, 69340), (47, 69328),

Gene: Poland\_97 Start: 71013, Stop: 70591, Start Num: 6

Candidate Starts for Poland\_97:

(Start: 6 @71013 has 60 MA's), (12, 70971), (17, 70953), (19, 70929), (25, 70899), (27, 70881), (28, 70875), (37, 70773), (39, 70764), (41, 70752), (42, 70746), (45, 70695), (47, 70674),

Gene: RemRem\_96 Start: 69248, Stop: 68826, Start Num: 6

Candidate Starts for RemRem\_96:

(Start: 6 @69248 has 60 MA's), (12, 69206), (17, 69188), (19, 69164), (25, 69134), (27, 69116), (28, 69110), (37, 69008), (39, 68999), (41, 68987), (42, 68981), (45, 68930), (47, 68909),

Gene: RoyalG\_92 Start: 68966, Stop: 68544, Start Num: 6

Candidate Starts for RoyalG\_92:

(Start: 6 @68966 has 60 MA's), (12, 68927), (17, 68909), (24, 68858), (25, 68852), (30, 68822), (34, 68777), (35, 68768), (37, 68726), (39, 68717), (45, 68648), (46, 68639), (47, 68627),

Gene: Sam12\_92 Start: 68687, Stop: 68265, Start Num: 6

Candidate Starts for Sam12\_92:

(Start: 6 @68687 has 60 MA's), (12, 68645), (17, 68627), (19, 68603), (25, 68573), (27, 68555), (28, 68549), (37, 68447), (39, 68438), (41, 68426), (42, 68420), (45, 68369), (47, 68348),

Gene: Shelley\_85 Start: 67075, Stop: 66635, Start Num: 6

Candidate Starts for Shelley\_85:

(4, 67105), (Start: 6 @67075 has 60 MA's), (8, 67060), (12, 67033), (13, 67030), (Start: 22 @66967 has 1 MA's), (23, 66961), (25, 66952), (26, 66946), (30, 66922), (33, 66886), (34, 66877), (37, 66826), (45, 66748), (47, 66727),

Gene: Sombrero\_94 Start: 69315, Stop: 68893, Start Num: 6

Candidate Starts for Sombrero\_94:

(Start: 6 @69315 has 60 MA's), (12, 69273), (17, 69255), (19, 69231), (25, 69201), (27, 69183), (28, 69177), (37, 69075), (39, 69066), (41, 69054), (42, 69048), (45, 68997), (47, 68976),

Gene: Squibbles\_93 Start: 69768, Stop: 69346, Start Num: 6

Candidate Starts for Squibbles\_93:

(Start: 6 @69768 has 60 MA's), (12, 69726), (17, 69708), (19, 69684), (25, 69654), (27, 69636), (28, 69630), (37, 69528), (39, 69519), (41, 69507), (42, 69501), (45, 69450), (47, 69429),

Gene: SteveFrench\_91 Start: 69206, Stop: 68784, Start Num: 6

Candidate Starts for SteveFrench\_91:

(Start: 6 @69206 has 60 MA's), (12, 69167), (17, 69149), (24, 69098), (25, 69092), (30, 69062), (34, 69017), (35, 69008), (37, 68966), (39, 68957), (45, 68888), (46, 68879), (47, 68867),

Gene: Sticker17\_85 Start: 67563, Stop: 67123, Start Num: 6

Candidate Starts for Sticker17\_85:

(4, 67593), (Start: 6 @67563 has 60 MA's), (8, 67548), (12, 67521), (13, 67518), (Start: 22 @67455 has 1 MA's), (23, 67449), (25, 67440), (26, 67434), (30, 67410), (33, 67374), (34, 67365), (37, 67314), (45, 67236), (47, 67215),

Gene: Teal\_84 Start: 68054, Stop: 67617, Start Num: 6

Candidate Starts for Teal\_84:

(4, 68084), (Start: 6 @68054 has 60 MA's), (8, 68039), (12, 68012), (13, 68009), (Start: 22 @67946 has 1 MA's), (26, 67928), (30, 67904), (33, 67868), (34, 67859), (37, 67808), (45, 67730), (47, 67709),

Gene: Teatealatte\_88 Start: 69221, Stop: 68763, Start Num: 3

Candidate Starts for Teatealatte\_88:

(Start: 3 @69221 has 12 MA's), (10, 69149), (11, 69143), (14, 69134), (21, 69083), (25, 69065), (31, 69029), (34, 68984), (36, 68954), (39, 68924), (40, 68921), (44, 68867), (46, 68846), (47, 68834),

Gene: Teech\_88 Start: 68851, Stop: 68393, Start Num: 3

Candidate Starts for Teech\_88:

(Start: 3 @68851 has 12 MA's), (10, 68779), (20, 68719), (25, 68695), (31, 68659), (34, 68614), (38, 68557), (39, 68554), (40, 68551), (46, 68476), (47, 68464),

Gene: Tredge\_87 Start: 69221, Stop: 68763, Start Num: 3

Candidate Starts for Tredge\_87:

(Start: 3 @69221 has 12 MA's), (10, 69149), (11, 69143), (14, 69134), (21, 69083), (25, 69065), (31, 69029), (34, 68984), (36, 68954), (39, 68924), (40, 68921), (44, 68867), (46, 68846), (47, 68834),

Gene: Vitaenoi\_85 Start: 69140, Stop: 68682, Start Num: 3

Candidate Starts for Vitaenoi\_85:

(2, 69170), (Start: 3 @69140 has 12 MA's), (7, 69098), (16, 69050), (21, 69002), (25, 68984), (29, 68954), (34, 68903), (36, 68873), (37, 68852), (39, 68843), (44, 68786), (46, 68765), (47, 68753),

Gene: Woes\_84 Start: 68105, Stop: 67668, Start Num: 6

Candidate Starts for Woes\_84:

(4, 68135), (Start: 6 @68105 has 60 MA's), (8, 68090), (12, 68063), (13, 68060), (Start: 22 @67997 has 1 MA's), (26, 67979), (30, 67955), (33, 67919), (34, 67910), (37, 67859), (45, 67781), (47, 67760),

Gene: Worcestershire\_92 Start: 68673, Stop: 68251, Start Num: 6

Candidate Starts for Worcestershire\_92:

(Start: 6 @68673 has 60 MA's), (12, 68631), (17, 68613), (19, 68589), (25, 68559), (27, 68541), (28, 68535), (37, 68433), (39, 68424), (41, 68412), (42, 68406), (45, 68355), (47, 68334),