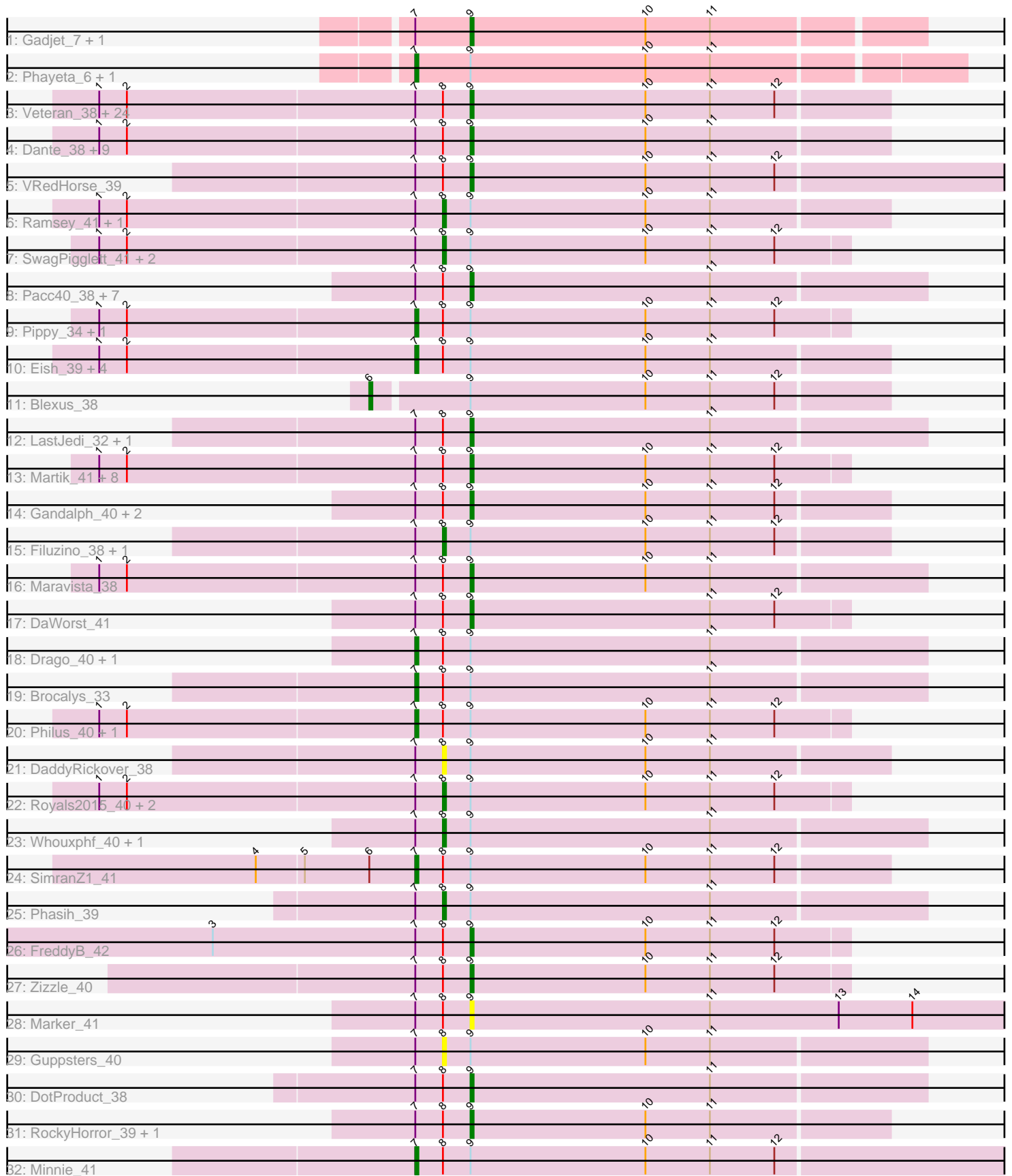


# Pham 85300



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 85300 Report

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

Pham number 85300 has 100 members, 7 are drafts.

Phages represented in each track:

- Track 1 : Gadget\_7, GlenHope\_7
- Track 2 : Phayeta\_6, Athena\_7
- Track 3 : Veteran\_38, BigPhil\_35, Girafales\_42, Mattes\_40, Zapner\_47, Rita\_41, Gorge\_40, Ogopogo\_40, Chevrolet\_42, Florinda\_43, Cornucopia\_42, Kimberlium\_41, Jabbawokkie\_48, QuickMath\_40, Wachhund\_40, DRBy19\_40, Cerasum\_35, James\_40, Avani\_43, Tootsieroll\_42, Quico\_42, Saal\_40, Sarma624\_35, Sandalphon\_41, Doug\_41
- Track 4 : Dante\_38, KingMidas\_40, OlympiaSaint\_38, Empress\_39, Scottish\_39, OldBen\_38, JoeyJr\_38, Geralt\_38, PHappiness\_38, Radiance\_39
- Track 5 : VRedHorse\_39
- Track 6 : Ramsey\_41, Stap\_39
- Track 7 : SwagPiggett\_41, BobaPhett\_40, Burwell21\_40
- Track 8 : Pacc40\_38, LilMoolah\_40, Phatniss\_39, Madiba\_37, SiSi\_38, Nivrat\_40, Plumbus\_40, UncleRicky\_41
- Track 9 : Pippy\_34, Lizziana\_40
- Track 10 : Eish\_39, Girr\_40, Spoonbill\_38, Ruby\_39, MisterCuddles\_40
- Track 11 : Blexus\_38
- Track 12 : LastJedi\_32, Clifton\_32
- Track 13 : Martik\_41, Jarcob\_40, Koella\_34, ShowerHandel\_41, NormanBulbieJr\_41, ShiLan\_40, Priscilla\_39, Crumble\_34, Cabrinians\_40
- Track 14 : Gandalph\_40, BuzzLyseyear\_41, Alexphander\_43
- Track 15 : Filuzino\_38, Beakin\_41
- Track 16 : Maravista\_38
- Track 17 : DaWorst\_41
- Track 18 : Drago\_40, RitaG\_39
- Track 19 : Brocalys\_33
- Track 20 : Philus\_40, Totinger\_43
- Track 21 : DaddyRickover\_38
- Track 22 : Royals2015\_40, GUmbie\_38, Velveteen\_34
- Track 23 : Whouxphf\_40, Llij\_38
- Track 24 : SimranZ1\_41
- Track 25 : Phasih\_39
- Track 26 : FreddyB\_42
- Track 27 : Zizzle\_40
- Track 28 : Marker\_41
- Track 29 : Guppsters\_40
- Track 30 : DotProduct\_38

- Track 31 : RockyHorror\_39, Zerg\_38
- Track 32 : Minnie\_41

### ***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 64 of the 93 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Alexphander\_43, Avani\_43, BigPhil\_35, BuzzLyseyear\_41, Cabrinians\_40, Cerasum\_35, Chevrolet\_42, Clifton\_32, Cornucopia\_42, Crumble\_34, DRBy19\_40, DaWorst\_41, Dante\_38, DotProduct\_38, Doug\_41, Empress\_39, Florinda\_43, FreddyB\_42, Gadget\_7, Gandolph\_40, Geralt\_38, Girafales\_42, GlenHope\_7, Gorge\_40, Jabbawokkie\_48, James\_40, Jarcob\_40, JoeyJr\_38, Kimberlium\_41, KingMidas\_40, Koella\_34, LastJedi\_32, LilMoolah\_40, Madiba\_37, Maravista\_38, Marker\_41, Martik\_41, Mattes\_40, Nivrat\_40, NormanBulbieJr\_41, Ogoogo\_40, OldBen\_38, OlympiaSaint\_38, PHappiness\_38, Pacc40\_38, Phatniss\_39, Plumbus\_40, Priscilla\_39, QuickMath\_40, Quico\_42, Radiance\_39, Rita\_41, RockyHorror\_39, Saal\_40, Sandalphon\_41, Sarma624\_35, Scottish\_39, ShiLan\_40, ShowerHandel\_41, SiSi\_38, Tootsieroll\_42, UncleRicky\_41, VRedHorse\_39, Veteran\_38, Wachhund\_40, Zapner\_47, Zerg\_38, Zizzle\_40,

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

- Athena\_7, Beakin\_41, Blexus\_38, BobaPhett\_40, Brocalys\_33, Burwell21\_40, DaddyRickover\_38, Drago\_40, Eish\_39, Filuzino\_38, GUmbe\_38, Girr\_40, Guppsters\_40, Lizziana\_40, Lij\_38, Minnie\_41, MisterCuddles\_40, Phasih\_39, Phayeta\_6, Philus\_40, Pippy\_34, Ramsey\_41, RitaG\_39, Royals2015\_40, Ruby\_39, SimranZ1\_41, Spoonbill\_38, Stap\_39, SwagPigglett\_41, Totinger\_43, Velveteen\_34, Whouxphf\_40,

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

- 

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

Start 6:

- Found in 2 of 100 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 93
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Blexus\_38 (F1),

Start 7:

- Found in 99 of 100 ( 99.0% ) of genes in pham
- Manual Annotations of this start: 15 of 93
- Called 16.2% of time when present
- Phage (with cluster) where this start called: Athena\_7 (B3), Brocalys\_33 (F1), Drago\_40 (F1), Eish\_39 (F1), Girr\_40 (F1), Lizziana\_40 (F1), Minnie\_41 (F1), MisterCuddles\_40 (F1), Phayeta\_6 (B3), Philus\_40 (F1), Pippy\_34 (F1), RitaG\_39 (F1), Ruby\_39 (F1), SimranZ1\_41 (F1), Spoonbill\_38 (F1), Totinger\_43 (F1),

#### Start 8:

- Found in 95 of 100 ( 95.0% ) of genes in pham
- Manual Annotations of this start: 13 of 93
- Called 15.8% of time when present
- Phage (with cluster) where this start called: Beakin\_41 (F1), BobaPhett\_40 (F1), Burwell21\_40 (F1), DaddyRickover\_38 (F1), Filuzino\_38 (F1), GUmble\_38 (F1), Guppsters\_40 (F1), Llij\_38 (F1), Phasih\_39 (F1), Ramsey\_41 (F1), Royals2015\_40 (F1), Stap\_39 (F1), SwagPigglett\_41 (F1), Velveteen\_34 (F1), Whouxphf\_40 (F1),

#### Start 9:

- Found in 100 of 100 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 64 of 93
- Called 68.0% of time when present
- Phage (with cluster) where this start called: Alexphander\_43 (F1), Avani\_43 (F2), BigPhil\_35 (F1), BuzzLyseyear\_41 (F1), Cabrinians\_40 (F1), Cerasum\_35 (F1), Chevrolet\_42 (F1), Clifton\_32 (F1), Cornucopia\_42 (F1), Crumble\_34 (F1), DRBy19\_40 (F1), DaWorst\_41 (F1), Dante\_38 (F1), DotProduct\_38 (F1), Doug\_41 (F1), Empress\_39 (F1), Florinda\_43 (F1), FreddyB\_42 (F1), Gadget\_7 (B3), Gandolph\_40 (F1), Geralt\_38 (F1), Girafales\_42 (F1), GlenHope\_7 (B3), Gorge\_40 (F1), Jabbawokkie\_48 (F2), James\_40 (F1), Jacob\_40 (F1), JoeyJr\_38 (F1), Kimberlium\_41 (F1), KingMidas\_40 (F1), Koella\_34 (F1), LastJedi\_32 (F1), LilMoolah\_40 (F1), Madiba\_37 (F1), Maravista\_38 (F1), Marker\_41 (F1), Martik\_41 (F1), Mattes\_40 (F1), Nivrat\_40 (F1), NormanBulbieJr\_41 (F1), Ogopogo\_40 (F1), OldBen\_38 (F1), OlympiaSaint\_38 (F1), PHappiness\_38 (F1), Pacc40\_38 (F1), Phatniss\_39 (F1), Plumbus\_40 (F1), Priscilla\_39 (F1), QuickMath\_40 (F1), Quico\_42 (F1), Radiance\_39 (F1), Rita\_41 (F1), RockyHorror\_39 (F1), Saal\_40 (F1), Sandalphon\_41 (F1), Sarma624\_35 (F1), Scottish\_39 (F1), ShiLan\_40 (F1), ShowerHandel\_41 (F1), SiSi\_38 (F1), Tootsieroll\_42 (F1), UncleRicky\_41 (F1), VRedHorse\_39 (F1), Veteran\_38 (F1), Wachhund\_40 (F1), Zapner\_47 (F2), Zerg\_38 (F1), Zizzle\_40 (F1),

#### Summary by clusters:

There are 3 clusters represented in this pham: F1, F2, B3,

#### Info for manual annotations of cluster B3:

- Start number 7 was manually annotated 2 times for cluster B3.
- Start number 9 was manually annotated 2 times for cluster B3.

#### Info for manual annotations of cluster F1:

- Start number 6 was manually annotated 1 time for cluster F1.
- Start number 7 was manually annotated 13 times for cluster F1.
- Start number 8 was manually annotated 13 times for cluster F1.
- Start number 9 was manually annotated 59 times for cluster F1.

#### Info for manual annotations of cluster F2:

- Start number 9 was manually annotated 3 times for cluster F2.

#### Gene Information:

Gene: Alexphander\_43 Start: 31893, Stop: 31771, Start Num: 9

Candidate Starts for Alexphander\_43:

(Start: 7 @31911 has 15 MA's), (Start: 8 @31902 has 13 MA's), (Start: 9 @31893 has 64 MA's), (10, 31836), (11, 31815), (12, 31794),

Gene: Athena\_7 Start: 5387, Stop: 5214, Start Num: 7

Candidate Starts for Athena\_7:

(Start: 7 @5387 has 15 MA's), (Start: 9 @5369 has 64 MA's), (10, 5312), (11, 5291),

Gene: Avani\_43 Start: 30288, Stop: 30166, Start Num: 9

Candidate Starts for Avani\_43:

(1, 30408), (2, 30399), (Start: 7 @30306 has 15 MA's), (Start: 8 @30297 has 13 MA's), (Start: 9 @30288 has 64 MA's), (10, 30231), (11, 30210), (12, 30189),

Gene: Beakin\_41 Start: 31059, Stop: 30928, Start Num: 8

Candidate Starts for Beakin\_41:

(Start: 7 @31068 has 15 MA's), (Start: 8 @31059 has 13 MA's), (Start: 9 @31050 has 64 MA's), (10, 30993), (11, 30972), (12, 30951),

Gene: BigPhil\_35 Start: 27361, Stop: 27170, Start Num: 9

Candidate Starts for BigPhil\_35:

(1, 27481), (2, 27472), (Start: 7 @27379 has 15 MA's), (Start: 8 @27370 has 13 MA's), (Start: 9 @27361 has 64 MA's), (10, 27304), (11, 27283), (12, 27262),

Gene: Blexus\_38 Start: 31116, Stop: 30952, Start Num: 6

Candidate Starts for Blexus\_38:

(Start: 6 @31116 has 1 MA's), (Start: 9 @31086 has 64 MA's), (10, 31029), (11, 31008), (12, 30987),

Gene: BobaPhett\_40 Start: 31325, Stop: 31194, Start Num: 8

Candidate Starts for BobaPhett\_40:

(1, 31436), (2, 31427), (Start: 7 @31334 has 15 MA's), (Start: 8 @31325 has 13 MA's), (Start: 9 @31316 has 64 MA's), (10, 31259), (11, 31238), (12, 31217),

Gene: Brocalys\_33 Start: 26649, Stop: 26485, Start Num: 7

Candidate Starts for Brocalys\_33:

(Start: 7 @26649 has 15 MA's), (Start: 8 @26640 has 13 MA's), (Start: 9 @26631 has 64 MA's), (11, 26553),

Gene: Burwell21\_40 Start: 31308, Stop: 31177, Start Num: 8

Candidate Starts for Burwell21\_40:

(1, 31419), (2, 31410), (Start: 7 @31317 has 15 MA's), (Start: 8 @31308 has 13 MA's), (Start: 9 @31299 has 64 MA's), (10, 31242), (11, 31221), (12, 31200),

Gene: BuzzLyseyear\_41 Start: 31555, Stop: 31421, Start Num: 9

Candidate Starts for BuzzLyseyear\_41:

(Start: 7 @31573 has 15 MA's), (Start: 8 @31564 has 13 MA's), (Start: 9 @31555 has 64 MA's), (10, 31498), (11, 31477), (12, 31456),

Gene: Cabrinians\_40 Start: 31377, Stop: 31255, Start Num: 9

Candidate Starts for Cabrinians\_40:

(1, 31497), (2, 31488), (Start: 7 @31395 has 15 MA's), (Start: 8 @31386 has 13 MA's), (Start: 9 @31377 has 64 MA's), (10, 31320), (11, 31299), (12, 31278),

Gene: Cerasum\_35 Start: 27361, Stop: 27170, Start Num: 9

Candidate Starts for Cerasum\_35:

(1, 27481), (2, 27472), (Start: 7 @27379 has 15 MA's), (Start: 8 @27370 has 13 MA's), (Start: 9 @27361 has 64 MA's), (10, 27304), (11, 27283), (12, 27262),

Gene: Chevrolet\_42 Start: 32521, Stop: 32399, Start Num: 9

Candidate Starts for Chevrolet\_42:

(1, 32641), (2, 32632), (Start: 7 @32539 has 15 MA's), (Start: 8 @32530 has 13 MA's), (Start: 9 @32521 has 64 MA's), (10, 32464), (11, 32443), (12, 32422),

Gene: Clifton\_32 Start: 26982, Stop: 26836, Start Num: 9

Candidate Starts for Clifton\_32:

(Start: 7 @27000 has 15 MA's), (Start: 8 @26991 has 13 MA's), (Start: 9 @26982 has 64 MA's), (11, 26904),

Gene: Cornucopia\_42 Start: 31378, Stop: 31256, Start Num: 9

Candidate Starts for Cornucopia\_42:

(1, 31498), (2, 31489), (Start: 7 @31396 has 15 MA's), (Start: 8 @31387 has 13 MA's), (Start: 9 @31378 has 64 MA's), (10, 31321), (11, 31300), (12, 31279),

Gene: Crumble\_34 Start: 27313, Stop: 27191, Start Num: 9

Candidate Starts for Crumble\_34:

(1, 27433), (2, 27424), (Start: 7 @27331 has 15 MA's), (Start: 8 @27322 has 13 MA's), (Start: 9 @27313 has 64 MA's), (10, 27256), (11, 27235), (12, 27214),

Gene: DRBy19\_40 Start: 31225, Stop: 31103, Start Num: 9

Candidate Starts for DRBy19\_40:

(1, 31345), (2, 31336), (Start: 7 @31243 has 15 MA's), (Start: 8 @31234 has 13 MA's), (Start: 9 @31225 has 64 MA's), (10, 31168), (11, 31147), (12, 31126),

Gene: DaWorst\_41 Start: 31667, Stop: 31545, Start Num: 9

Candidate Starts for DaWorst\_41:

(Start: 7 @31685 has 15 MA's), (Start: 8 @31676 has 13 MA's), (Start: 9 @31667 has 64 MA's), (11, 31589), (12, 31568),

Gene: DaddyRickover\_38 Start: 30956, Stop: 30813, Start Num: 8

Candidate Starts for DaddyRickover\_38:

(Start: 7 @30965 has 15 MA's), (Start: 8 @30956 has 13 MA's), (Start: 9 @30947 has 64 MA's), (10, 30890), (11, 30869),

Gene: Dante\_38 Start: 30886, Stop: 30752, Start Num: 9

Candidate Starts for Dante\_38:

(1, 31006), (2, 30997), (Start: 7 @30904 has 15 MA's), (Start: 8 @30895 has 13 MA's), (Start: 9 @30886 has 64 MA's), (10, 30829), (11, 30808),

Gene: DotProduct\_38 Start: 30834, Stop: 30688, Start Num: 9

Candidate Starts for DotProduct\_38:

(Start: 7 @30852 has 15 MA's), (Start: 8 @30843 has 13 MA's), (Start: 9 @30834 has 64 MA's), (11, 30756),

Gene: Doug\_41 Start: 31691, Stop: 31569, Start Num: 9

Candidate Starts for Doug\_41:

(1, 31811), (2, 31802), (Start: 7 @31709 has 15 MA's), (Start: 8 @31700 has 13 MA's), (Start: 9 @31691 has 64 MA's), (10, 31634), (11, 31613), (12, 31592),

Gene: Drago\_40 Start: 30680, Stop: 30516, Start Num: 7

Candidate Starts for Drago\_40:

(Start: 7 @30680 has 15 MA's), (Start: 8 @30671 has 13 MA's), (Start: 9 @30662 has 64 MA's), (11, 30584),

Gene: Eish\_39 Start: 31492, Stop: 31340, Start Num: 7

Candidate Starts for Eish\_39:

(1, 31594), (2, 31585), (Start: 7 @31492 has 15 MA's), (Start: 8 @31483 has 13 MA's), (Start: 9 @31474 has 64 MA's), (10, 31417), (11, 31396),

Gene: Empress\_39 Start: 32182, Stop: 32048, Start Num: 9

Candidate Starts for Empress\_39:

(1, 32302), (2, 32293), (Start: 7 @32200 has 15 MA's), (Start: 8 @32191 has 13 MA's), (Start: 9 @32182 has 64 MA's), (10, 32125), (11, 32104),

Gene: Filuzino\_38 Start: 30727, Stop: 30584, Start Num: 8

Candidate Starts for Filuzino\_38:

(Start: 7 @30736 has 15 MA's), (Start: 8 @30727 has 13 MA's), (Start: 9 @30718 has 64 MA's), (10, 30661), (11, 30640), (12, 30619),

Gene: Florinda\_43 Start: 31512, Stop: 31393, Start Num: 9

Candidate Starts for Florinda\_43:

(1, 31632), (2, 31623), (Start: 7 @31530 has 15 MA's), (Start: 8 @31521 has 13 MA's), (Start: 9 @31512 has 64 MA's), (10, 31455), (11, 31434), (12, 31413),

Gene: FreddyB\_42 Start: 31793, Stop: 31671, Start Num: 9

Candidate Starts for FreddyB\_42:

(3, 31877), (Start: 7 @31811 has 15 MA's), (Start: 8 @31802 has 13 MA's), (Start: 9 @31793 has 64 MA's), (10, 31736), (11, 31715), (12, 31694),

Gene: GUmbie\_38 Start: 30797, Stop: 30654, Start Num: 8

Candidate Starts for GUmbie\_38:

(1, 30908), (2, 30899), (Start: 7 @30806 has 15 MA's), (Start: 8 @30797 has 13 MA's), (Start: 9 @30788 has 64 MA's), (10, 30731), (11, 30710), (12, 30689),

Gene: Gadget\_7 Start: 4611, Stop: 4468, Start Num: 9

Candidate Starts for Gadget\_7:

(Start: 7 @4629 has 15 MA's), (Start: 9 @4611 has 64 MA's), (10, 4554), (11, 4533),

Gene: Gandalph\_40 Start: 31103, Stop: 30969, Start Num: 9

Candidate Starts for Gandalph\_40:

(Start: 7 @31121 has 15 MA's), (Start: 8 @31112 has 13 MA's), (Start: 9 @31103 has 64 MA's), (10, 31046), (11, 31025), (12, 31004),

Gene: Geralt\_38 Start: 30768, Stop: 30634, Start Num: 9

Candidate Starts for Geralt\_38:

(1, 30888), (2, 30879), (Start: 7 @30786 has 15 MA's), (Start: 8 @30777 has 13 MA's), (Start: 9 @30768 has 64 MA's), (10, 30711), (11, 30690),

Gene: Girafales\_42 Start: 31320, Stop: 31201, Start Num: 9

Candidate Starts for Girafales\_42:

(1, 31440), (2, 31431), (Start: 7 @31338 has 15 MA's), (Start: 8 @31329 has 13 MA's), (Start: 9 @31320 has 64 MA's), (10, 31263), (11, 31242), (12, 31221),

Gene: Girr\_40 Start: 31823, Stop: 31671, Start Num: 7

Candidate Starts for Girr\_40:

(1, 31925), (2, 31916), (Start: 7 @31823 has 15 MA's), (Start: 8 @31814 has 13 MA's), (Start: 9 @31805 has 64 MA's), (10, 31748), (11, 31727),

Gene: GlenHope\_7 Start: 4620, Stop: 4477, Start Num: 9

Candidate Starts for GlenHope\_7:

(Start: 7 @4638 has 15 MA's), (Start: 9 @4620 has 64 MA's), (10, 4563), (11, 4542),

Gene: Gorge\_40 Start: 31359, Stop: 31237, Start Num: 9

Candidate Starts for Gorge\_40:

(1, 31479), (2, 31470), (Start: 7 @31377 has 15 MA's), (Start: 8 @31368 has 13 MA's), (Start: 9 @31359 has 64 MA's), (10, 31302), (11, 31281), (12, 31260),

Gene: Guppsters\_40 Start: 31372, Stop: 31217, Start Num: 8

Candidate Starts for Guppsters\_40:

(Start: 7 @31381 has 15 MA's), (Start: 8 @31372 has 13 MA's), (Start: 9 @31363 has 64 MA's), (10, 31306), (11, 31285),

Gene: Jabbawokkie\_48 Start: 31466, Stop: 31344, Start Num: 9

Candidate Starts for Jabbawokkie\_48:

(1, 31586), (2, 31577), (Start: 7 @31484 has 15 MA's), (Start: 8 @31475 has 13 MA's), (Start: 9 @31466 has 64 MA's), (10, 31409), (11, 31388), (12, 31367),

Gene: James\_40 Start: 31316, Stop: 31194, Start Num: 9

Candidate Starts for James\_40:

(1, 31436), (2, 31427), (Start: 7 @31334 has 15 MA's), (Start: 8 @31325 has 13 MA's), (Start: 9 @31316 has 64 MA's), (10, 31259), (11, 31238), (12, 31217),

Gene: Jacob\_40 Start: 31352, Stop: 31230, Start Num: 9

Candidate Starts for Jacob\_40:

(1, 31472), (2, 31463), (Start: 7 @31370 has 15 MA's), (Start: 8 @31361 has 13 MA's), (Start: 9 @31352 has 64 MA's), (10, 31295), (11, 31274), (12, 31253),

Gene: JoeyJr\_38 Start: 30937, Stop: 30803, Start Num: 9

Candidate Starts for JoeyJr\_38:

(1, 31057), (2, 31048), (Start: 7 @30955 has 15 MA's), (Start: 8 @30946 has 13 MA's), (Start: 9 @30937 has 64 MA's), (10, 30880), (11, 30859),

Gene: Kimberlium\_41 Start: 32155, Stop: 32033, Start Num: 9

Candidate Starts for Kimberlium\_41:

(1, 32275), (2, 32266), (Start: 7 @32173 has 15 MA's), (Start: 8 @32164 has 13 MA's), (Start: 9 @32155 has 64 MA's), (10, 32098), (11, 32077), (12, 32056),

Gene: KingMidas\_40 Start: 32631, Stop: 32497, Start Num: 9

Candidate Starts for KingMidas\_40:

(1, 32751), (2, 32742), (Start: 7 @32649 has 15 MA's), (Start: 8 @32640 has 13 MA's), (Start: 9 @32631 has 64 MA's), (10, 32574), (11, 32553),

Gene: Koella\_34 Start: 27275, Stop: 27153, Start Num: 9



Candidate Starts for Koella\_34:

(1, 27395), (2, 27386), (Start: 7 @27293 has 15 MA's), (Start: 8 @27284 has 13 MA's), (Start: 9 @27275 has 64 MA's), (10, 27218), (11, 27197), (12, 27176),

Gene: LastJedi\_32 Start: 27025, Stop: 26879, Start Num: 9

Candidate Starts for LastJedi\_32:

(Start: 7 @27043 has 15 MA's), (Start: 8 @27034 has 13 MA's), (Start: 9 @27025 has 64 MA's), (11, 26947),

Gene: LilMoolah\_40 Start: 31399, Stop: 31277, Start Num: 9

Candidate Starts for LilMoolah\_40:

(Start: 7 @31417 has 15 MA's), (Start: 8 @31408 has 13 MA's), (Start: 9 @31399 has 64 MA's), (11, 31321),

Gene: Lizziana\_40 Start: 31292, Stop: 31152, Start Num: 7

Candidate Starts for Lizziana\_40:

(1, 31394), (2, 31385), (Start: 7 @31292 has 15 MA's), (Start: 8 @31283 has 13 MA's), (Start: 9 @31274 has 64 MA's), (10, 31217), (11, 31196), (12, 31175),

Gene: Llij\_38 Start: 30835, Stop: 30680, Start Num: 8

Candidate Starts for Llij\_38:

(Start: 7 @30844 has 15 MA's), (Start: 8 @30835 has 13 MA's), (Start: 9 @30826 has 64 MA's), (11, 30748),

Gene: Madiba\_37 Start: 29752, Stop: 29606, Start Num: 9

Candidate Starts for Madiba\_37:

(Start: 7 @29770 has 15 MA's), (Start: 8 @29761 has 13 MA's), (Start: 9 @29752 has 64 MA's), (11, 29674),

Gene: Maravista\_38 Start: 30775, Stop: 30629, Start Num: 9

Candidate Starts for Maravista\_38:

(1, 30895), (2, 30886), (Start: 7 @30793 has 15 MA's), (Start: 8 @30784 has 13 MA's), (Start: 9 @30775 has 64 MA's), (10, 30718), (11, 30697),

Gene: Marker\_41 Start: 30746, Stop: 30573, Start Num: 9

Candidate Starts for Marker\_41:

(Start: 7 @30764 has 15 MA's), (Start: 8 @30755 has 13 MA's), (Start: 9 @30746 has 64 MA's), (11, 30668), (13, 30626), (14, 30602),

Gene: Martik\_41 Start: 31301, Stop: 31179, Start Num: 9

Candidate Starts for Martik\_41:

(1, 31421), (2, 31412), (Start: 7 @31319 has 15 MA's), (Start: 8 @31310 has 13 MA's), (Start: 9 @31301 has 64 MA's), (10, 31244), (11, 31223), (12, 31202),

Gene: Mattes\_40 Start: 31316, Stop: 31194, Start Num: 9

Candidate Starts for Mattes\_40:

(1, 31436), (2, 31427), (Start: 7 @31334 has 15 MA's), (Start: 8 @31325 has 13 MA's), (Start: 9 @31316 has 64 MA's), (10, 31259), (11, 31238), (12, 31217),

Gene: Minnie\_41 Start: 32155, Stop: 31946, Start Num: 7

Candidate Starts for Minnie\_41:

(Start: 7 @32155 has 15 MA's), (Start: 8 @32146 has 13 MA's), (Start: 9 @32137 has 64 MA's), (10, 32080), (11, 32059), (12, 32038),

Gene: MisterCuddles\_40 Start: 31823, Stop: 31671, Start Num: 7

Candidate Starts for MisterCuddles\_40:

(1, 31925), (2, 31916), (Start: 7 @31823 has 15 MA's), (Start: 8 @31814 has 13 MA's), (Start: 9 @31805 has 64 MA's), (10, 31748), (11, 31727),

Gene: Nivrat\_40 Start: 31273, Stop: 31151, Start Num: 9

Candidate Starts for Nivrat\_40:

(Start: 7 @31291 has 15 MA's), (Start: 8 @31282 has 13 MA's), (Start: 9 @31273 has 64 MA's), (11, 31195),

Gene: NormanBulbieJr\_41 Start: 31288, Stop: 31166, Start Num: 9

Candidate Starts for NormanBulbieJr\_41:

(1, 31408), (2, 31399), (Start: 7 @31306 has 15 MA's), (Start: 8 @31297 has 13 MA's), (Start: 9 @31288 has 64 MA's), (10, 31231), (11, 31210), (12, 31189),

Gene: Ogopogo\_40 Start: 30481, Stop: 30359, Start Num: 9

Candidate Starts for Ogopogo\_40:

(1, 30601), (2, 30592), (Start: 7 @30499 has 15 MA's), (Start: 8 @30490 has 13 MA's), (Start: 9 @30481 has 64 MA's), (10, 30424), (11, 30403), (12, 30382),

Gene: OldBen\_38 Start: 30803, Stop: 30669, Start Num: 9

Candidate Starts for OldBen\_38:

(1, 30923), (2, 30914), (Start: 7 @30821 has 15 MA's), (Start: 8 @30812 has 13 MA's), (Start: 9 @30803 has 64 MA's), (10, 30746), (11, 30725),

Gene: OlympiaSaint\_38 Start: 31218, Stop: 31084, Start Num: 9

Candidate Starts for OlympiaSaint\_38:

(1, 31338), (2, 31329), (Start: 7 @31236 has 15 MA's), (Start: 8 @31227 has 13 MA's), (Start: 9 @31218 has 64 MA's), (10, 31161), (11, 31140),

Gene: PHappiness\_38 Start: 30745, Stop: 30611, Start Num: 9

Candidate Starts for PHappiness\_38:

(1, 30865), (2, 30856), (Start: 7 @30763 has 15 MA's), (Start: 8 @30754 has 13 MA's), (Start: 9 @30745 has 64 MA's), (10, 30688), (11, 30667),

Gene: Pacc40\_38 Start: 31017, Stop: 30871, Start Num: 9

Candidate Starts for Pacc40\_38:

(Start: 7 @31035 has 15 MA's), (Start: 8 @31026 has 13 MA's), (Start: 9 @31017 has 64 MA's), (11, 30939),

Gene: Phasih\_39 Start: 31411, Stop: 31256, Start Num: 8

Candidate Starts for Phasih\_39:

(Start: 7 @31420 has 15 MA's), (Start: 8 @31411 has 13 MA's), (Start: 9 @31402 has 64 MA's), (11, 31324),

Gene: Phatniss\_39 Start: 31343, Stop: 31197, Start Num: 9

Candidate Starts for Phatniss\_39:

(Start: 7 @31361 has 15 MA's), (Start: 8 @31352 has 13 MA's), (Start: 9 @31343 has 64 MA's), (11, 31265),

Gene: Phayeta\_6 Start: 4473, Stop: 4300, Start Num: 7

Candidate Starts for Phayeta\_6:

(Start: 7 @4473 has 15 MA's), (Start: 9 @4455 has 64 MA's), (10, 4398), (11, 4377),

Gene: Philus\_40 Start: 31219, Stop: 31079, Start Num: 7

Candidate Starts for Philus\_40:

(1, 31321), (2, 31312), (Start: 7 @31219 has 15 MA's), (Start: 8 @31210 has 13 MA's), (Start: 9 @31201 has 64 MA's), (10, 31144), (11, 31123), (12, 31102),

Gene: Pippy\_34 Start: 27282, Stop: 27142, Start Num: 7

Candidate Starts for Pippy\_34:

(1, 27384), (2, 27375), (Start: 7 @27282 has 15 MA's), (Start: 8 @27273 has 13 MA's), (Start: 9 @27264 has 64 MA's), (10, 27207), (11, 27186), (12, 27165),

Gene: Plumbus\_40 Start: 30922, Stop: 30776, Start Num: 9

Candidate Starts for Plumbus\_40:

(Start: 7 @30940 has 15 MA's), (Start: 8 @30931 has 13 MA's), (Start: 9 @30922 has 64 MA's), (11, 30844),

Gene: Priscilla\_39 Start: 31387, Stop: 31265, Start Num: 9

Candidate Starts for Priscilla\_39:

(1, 31507), (2, 31498), (Start: 7 @31405 has 15 MA's), (Start: 8 @31396 has 13 MA's), (Start: 9 @31387 has 64 MA's), (10, 31330), (11, 31309), (12, 31288),

Gene: QuickMath\_40 Start: 32378, Stop: 32256, Start Num: 9

Candidate Starts for QuickMath\_40:

(1, 32498), (2, 32489), (Start: 7 @32396 has 15 MA's), (Start: 8 @32387 has 13 MA's), (Start: 9 @32378 has 64 MA's), (10, 32321), (11, 32300), (12, 32279),

Gene: Quico\_42 Start: 31320, Stop: 31201, Start Num: 9

Candidate Starts for Quico\_42:

(1, 31440), (2, 31431), (Start: 7 @31338 has 15 MA's), (Start: 8 @31329 has 13 MA's), (Start: 9 @31320 has 64 MA's), (10, 31263), (11, 31242), (12, 31221),

Gene: Radiance\_39 Start: 30940, Stop: 30806, Start Num: 9

Candidate Starts for Radiance\_39:

(1, 31060), (2, 31051), (Start: 7 @30958 has 15 MA's), (Start: 8 @30949 has 13 MA's), (Start: 9 @30940 has 64 MA's), (10, 30883), (11, 30862),

Gene: Ramsey\_41 Start: 31609, Stop: 31466, Start Num: 8

Candidate Starts for Ramsey\_41:

(1, 31720), (2, 31711), (Start: 7 @31618 has 15 MA's), (Start: 8 @31609 has 13 MA's), (Start: 9 @31600 has 64 MA's), (10, 31543), (11, 31522),

Gene: Rita\_41 Start: 31401, Stop: 31210, Start Num: 9

Candidate Starts for Rita\_41:

(1, 31521), (2, 31512), (Start: 7 @31419 has 15 MA's), (Start: 8 @31410 has 13 MA's), (Start: 9 @31401 has 64 MA's), (10, 31344), (11, 31323), (12, 31302),

Gene: RitaG\_39 Start: 31307, Stop: 31143, Start Num: 7

Candidate Starts for RitaG\_39:

(Start: 7 @31307 has 15 MA's), (Start: 8 @31298 has 13 MA's), (Start: 9 @31289 has 64 MA's), (11, 31211),

Gene: RockyHorror\_39 Start: 30692, Stop: 30558, Start Num: 9

Candidate Starts for RockyHorror\_39:

(Start: 7 @30710 has 15 MA's), (Start: 8 @30701 has 13 MA's), (Start: 9 @30692 has 64 MA's), (10, 30635), (11, 30614),

Gene: Royals2015\_40 Start: 31235, Stop: 31104, Start Num: 8

Candidate Starts for Royals2015\_40:

(1, 31346), (2, 31337), (Start: 7 @31244 has 15 MA's), (Start: 8 @31235 has 13 MA's), (Start: 9 @31226 has 64 MA's), (10, 31169), (11, 31148), (12, 31127),

Gene: Ruby\_39 Start: 31823, Stop: 31671, Start Num: 7

Candidate Starts for Ruby\_39:

(1, 31925), (2, 31916), (Start: 7 @31823 has 15 MA's), (Start: 8 @31814 has 13 MA's), (Start: 9 @31805 has 64 MA's), (10, 31748), (11, 31727),

Gene: Saal\_40 Start: 31179, Stop: 31057, Start Num: 9

Candidate Starts for Saal\_40:

(1, 31299), (2, 31290), (Start: 7 @31197 has 15 MA's), (Start: 8 @31188 has 13 MA's), (Start: 9 @31179 has 64 MA's), (10, 31122), (11, 31101), (12, 31080),

Gene: Sandalphon\_41 Start: 31909, Stop: 31787, Start Num: 9

Candidate Starts for Sandalphon\_41:

(1, 32029), (2, 32020), (Start: 7 @31927 has 15 MA's), (Start: 8 @31918 has 13 MA's), (Start: 9 @31909 has 64 MA's), (10, 31852), (11, 31831), (12, 31810),

Gene: Sarma624\_35 Start: 27361, Stop: 27170, Start Num: 9

Candidate Starts for Sarma624\_35:

(1, 27481), (2, 27472), (Start: 7 @27379 has 15 MA's), (Start: 8 @27370 has 13 MA's), (Start: 9 @27361 has 64 MA's), (10, 27304), (11, 27283), (12, 27262),

Gene: Scottish\_39 Start: 32070, Stop: 31936, Start Num: 9

Candidate Starts for Scottish\_39:

(1, 32190), (2, 32181), (Start: 7 @32088 has 15 MA's), (Start: 8 @32079 has 13 MA's), (Start: 9 @32070 has 64 MA's), (10, 32013), (11, 31992),

Gene: ShiLan\_40 Start: 31342, Stop: 31220, Start Num: 9

Candidate Starts for ShiLan\_40:

(1, 31462), (2, 31453), (Start: 7 @31360 has 15 MA's), (Start: 8 @31351 has 13 MA's), (Start: 9 @31342 has 64 MA's), (10, 31285), (11, 31264), (12, 31243),

Gene: ShowerHandel\_41 Start: 31301, Stop: 31179, Start Num: 9

Candidate Starts for ShowerHandel\_41:

(1, 31421), (2, 31412), (Start: 7 @31319 has 15 MA's), (Start: 8 @31310 has 13 MA's), (Start: 9 @31301 has 64 MA's), (10, 31244), (11, 31223), (12, 31202),

Gene: SiSi\_38 Start: 30826, Stop: 30680, Start Num: 9

Candidate Starts for SiSi\_38:

(Start: 7 @30844 has 15 MA's), (Start: 8 @30835 has 13 MA's), (Start: 9 @30826 has 64 MA's), (11, 30748),

Gene: SimranZ1\_41 Start: 31084, Stop: 30932, Start Num: 7

Candidate Starts for SimranZ1\_41:

(4, 31135), (5, 31120), (Start: 6 @31099 has 1 MA's), (Start: 7 @31084 has 15 MA's), (Start: 8 @31075 has 13 MA's), (Start: 9 @31066 has 64 MA's), (10, 31009), (11, 30988), (12, 30967),

Gene: Spoonbill\_38 Start: 31047, Stop: 30895, Start Num: 7

Candidate Starts for Spoonbill\_38:

(1, 31149), (2, 31140), (Start: 7 @31047 has 15 MA's), (Start: 8 @31038 has 13 MA's), (Start: 9 @31029 has 64 MA's), (10, 30972), (11, 30951),

Gene: Stap\_39 Start: 30929, Stop: 30786, Start Num: 8

Candidate Starts for Stap\_39:

(1, 31040), (2, 31031), (Start: 7 @30938 has 15 MA's), (Start: 8 @30929 has 13 MA's), (Start: 9 @30920 has 64 MA's), (10, 30863), (11, 30842),

Gene: SwagPiggett\_41 Start: 31121, Stop: 30990, Start Num: 8

Candidate Starts for SwagPiggett\_41:

(1, 31232), (2, 31223), (Start: 7 @31130 has 15 MA's), (Start: 8 @31121 has 13 MA's), (Start: 9 @31112 has 64 MA's), (10, 31055), (11, 31034), (12, 31013),

Gene: Tootsieroll\_42 Start: 31178, Stop: 31056, Start Num: 9

Candidate Starts for Tootsieroll\_42:

(1, 31298), (2, 31289), (Start: 7 @31196 has 15 MA's), (Start: 8 @31187 has 13 MA's), (Start: 9 @31178 has 64 MA's), (10, 31121), (11, 31100), (12, 31079),

Gene: Totinger\_43 Start: 31155, Stop: 30946, Start Num: 7

Candidate Starts for Totinger\_43:

(1, 31257), (2, 31248), (Start: 7 @31155 has 15 MA's), (Start: 8 @31146 has 13 MA's), (Start: 9 @31137 has 64 MA's), (10, 31080), (11, 31059), (12, 31038),

Gene: UncleRicky\_41 Start: 32159, Stop: 32013, Start Num: 9

Candidate Starts for UncleRicky\_41:

(Start: 7 @32177 has 15 MA's), (Start: 8 @32168 has 13 MA's), (Start: 9 @32159 has 64 MA's), (11, 32081),

Gene: VRedHorse\_39 Start: 31323, Stop: 31132, Start Num: 9

Candidate Starts for VRedHorse\_39:

(Start: 7 @31341 has 15 MA's), (Start: 8 @31332 has 13 MA's), (Start: 9 @31323 has 64 MA's), (10, 31266), (11, 31245), (12, 31224),

Gene: Velveteen\_34 Start: 27370, Stop: 27170, Start Num: 8

Candidate Starts for Velveteen\_34:

(1, 27481), (2, 27472), (Start: 7 @27379 has 15 MA's), (Start: 8 @27370 has 13 MA's), (Start: 9 @27361 has 64 MA's), (10, 27304), (11, 27283), (12, 27262),

Gene: Veteran\_38 Start: 30788, Stop: 30654, Start Num: 9

Candidate Starts for Veteran\_38:

(1, 30908), (2, 30899), (Start: 7 @30806 has 15 MA's), (Start: 8 @30797 has 13 MA's), (Start: 9 @30788 has 64 MA's), (10, 30731), (11, 30710), (12, 30689),

Gene: Wachhund\_40 Start: 31301, Stop: 31179, Start Num: 9

Candidate Starts for Wachhund\_40:

(1, 31421), (2, 31412), (Start: 7 @31319 has 15 MA's), (Start: 8 @31310 has 13 MA's), (Start: 9 @31301 has 64 MA's), (10, 31244), (11, 31223), (12, 31202),

Gene: Whouxphf\_40 Start: 31342, Stop: 31187, Start Num: 8

Candidate Starts for Whouxphf\_40:

(Start: 7 @31351 has 15 MA's), (Start: 8 @31342 has 13 MA's), (Start: 9 @31333 has 64 MA's), (11, 31255),

Gene: Zapner\_47 Start: 31467, Stop: 31345, Start Num: 9

Candidate Starts for Zapner\_47:

(1, 31587), (2, 31578), (Start: 7 @31485 has 15 MA's), (Start: 8 @31476 has 13 MA's), (Start: 9 @31467 has 64 MA's), (10, 31410), (11, 31389), (12, 31368),

Gene: Zerg\_38 Start: 30801, Stop: 30667, Start Num: 9

Candidate Starts for Zerg\_38:

(Start: 7 @30819 has 15 MA's), (Start: 8 @30810 has 13 MA's), (Start: 9 @30801 has 64 MA's), (10, 30744), (11, 30723),

Gene: Zizzle\_40 Start: 31243, Stop: 31121, Start Num: 9

Candidate Starts for Zizzle\_40:

(Start: 7 @31261 has 15 MA's), (Start: 8 @31252 has 13 MA's), (Start: 9 @31243 has 64 MA's), (10, 31186), (11, 31165), (12, 31144),