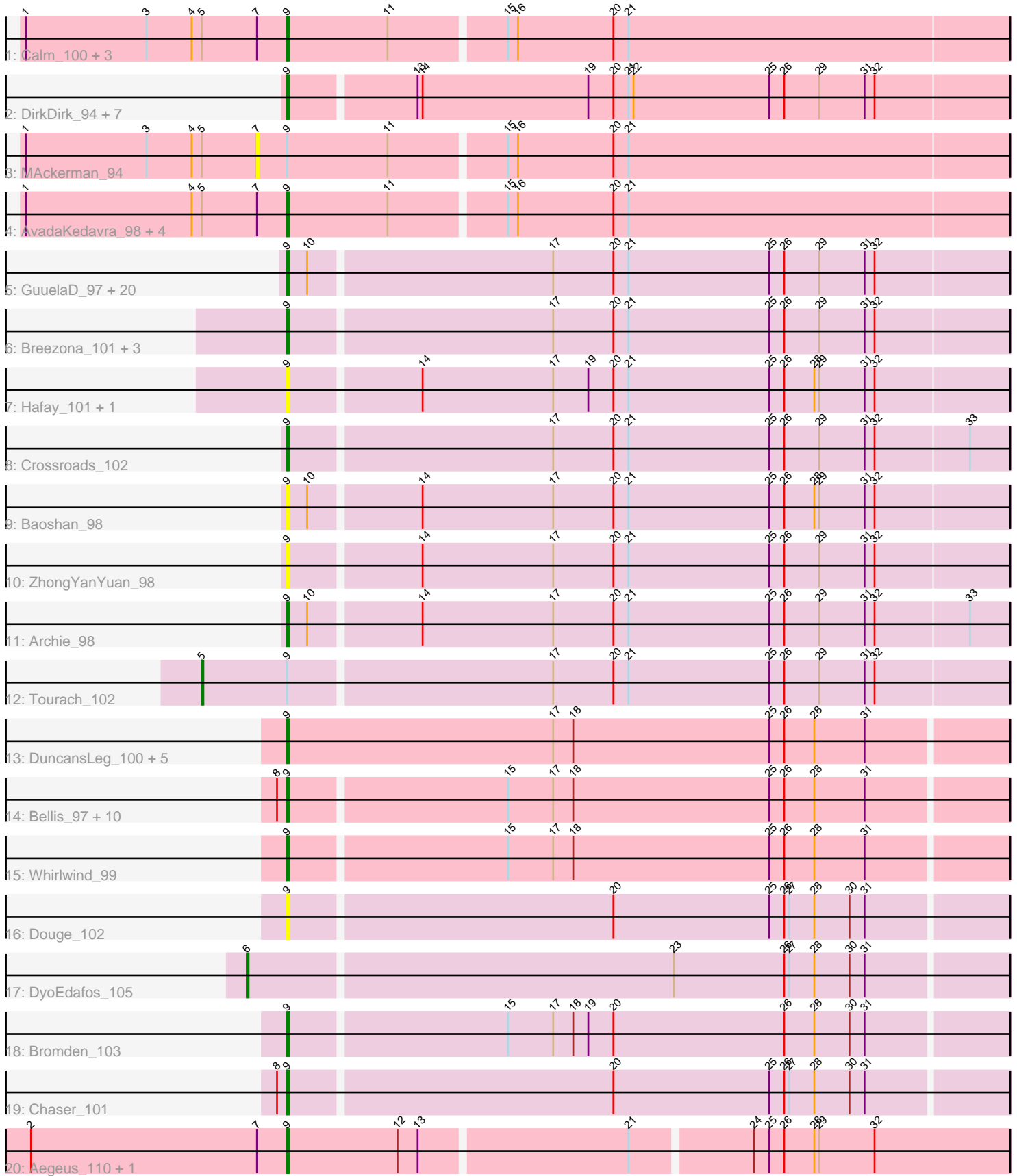


Pham 163568



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 163568 Report

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

Pham number 163568 has 74 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Calm\_100, LeBron\_97, Zaria\_99, Halena\_96
- Track 2 : DirkDirk\_94, Enceladus\_94, OhShagHennessy\_93, CicholasNage\_94, Appletree2\_96, Rose5\_99, Wamburgxpress\_96, Silverleaf\_96
- Track 3 : MAckerman\_94
- Track 4 : AvadaKedavra\_98, Tyson\_100, Acquire49\_98, UPIE\_97, Wyatt2\_99
- Track 5 : GuuelaD\_97, Wilder\_101, Itos\_101, Netyap\_99, Kahlid\_100, Finemlucis\_102, Loadrie\_99, BobsGarage\_100, Zakai\_102, Gabriela\_101, Rumpelstiltskin\_97, MkaliMitinis3\_102, BigCheese\_100, Nicholasp3\_101, Gardann\_100, LilDestine\_99, Lewan\_101, Vetrix\_99, Faith1\_100, Wigglewiggle\_100, Bazzle\_98
- Track 6 : Breezona\_101, Miley16\_101, DrSeegs\_100, Winky\_101
- Track 7 : Hafay\_101, Claus\_100
- Track 8 : Crossroads\_102
- Track 9 : Baoshan\_98
- Track 10 : ZhongYanYuan\_98
- Track 11 : Archie\_98
- Track 12 : Tourach\_102
- Track 13 : DuncansLeg\_100, MiniLon\_102, Lolly9\_97, MiniMac\_102, Ellson\_98, Krypton555\_101
- Track 14 : Bellis\_97, Kingsolomon\_96, Jubie\_98, Jobypre\_99, Clautastrophe\_97, Moostard\_95, MsGreen\_99, Snenia\_97, Lumos\_98, Finnry\_99, Nicholas\_96
- Track 15 : Whirlwind\_99
- Track 16 : Douge\_102
- Track 17 : DyoEdafos\_105
- Track 18 : Bromden\_103
- Track 19 : Chaser\_101
- Track 20 : Aegeus\_110, Baudelaire\_110

### ***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 63 of the 65 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acquire49\_98, Aegeus\_110, Appletree2\_96, Archie\_98, AvadaKedavra\_98, Baoshan\_98, Baudelaire\_110, Bazzle\_98, Bellis\_97, BigCheese\_100, BobsGarage\_100, Breezona\_101, Bromden\_103, Calm\_100, Chaser\_101, CicholasNage\_94, Claus\_100, Clautastrophe\_97, Crossroads\_102, DirkDirk\_94, Douge\_102, DrSeegs\_100, DuncansLeg\_100, Ellson\_98, Enceladus\_94, Faith1\_100, Finemlucis\_102, Finnry\_99, Gabriela\_101, Gardann\_100, GuuelaD\_97, Hafay\_101, Halena\_96, Itos\_101, Jobypre\_99, Jubie\_98, Kahlid\_100, Kingsolomon\_96, Krypton555\_101, LeBron\_97, Lewan\_101, LilDestine\_99, Loadrie\_99, Lolly9\_97, Lumos\_98, Miley16\_101, MiniLon\_102, MiniMac\_102, MkaliMitinis3\_102, Moostard\_95, MsGreen\_99, Netyap\_99, Nicholas\_96, Nicholasp3\_101, OhShagHennessy\_93, Rose5\_99, Rumpelstiltskin\_97, Silverleaf\_96, Snenia\_97, Tyson\_100, UPIE\_97, Vetrix\_99, Wamburggrxpress\_96, Whirlwind\_99, Wigglewiggles\_100, Wilder\_101, Winky\_101, Wyatt2\_99, Zakai\_102, Zaria\_99, ZhongYanYuan\_98,

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

- MAckerman\_94, Tourach\_102,

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

- DyoEdafos\_105,

### Summary by start number:

Start 5:

- Found in 11 of 74 ( 14.9% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 9.1% of time when present
- Phage (with cluster) where this start called: Tourach\_102 (L2),

Start 6:

- Found in 1 of 74 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 65
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DyoEdafos\_105 (L4),

Start 7:

- Found in 12 of 74 ( 16.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 8.3% of time when present
- Phage (with cluster) where this start called: MAckerman\_94 (L1),

Start 9:

- Found in 73 of 74 ( 98.6% ) of genes in pham
- Manual Annotations of this start: 63 of 65
- Called 97.3% of time when present
- Phage (with cluster) where this start called: Acquire49\_98 (L1), Aegeus\_110 (L5), Appletree2\_96 (L1), Archie\_98 (L2), AvadaKedavra\_98 (L1), Baoshan\_98 (L2), Baudelaire\_110 (L5), Bazzle\_98 (L2), Bellis\_97 (L3), BigCheese\_100 (L2), BobsGarage\_100 (L2), Breezona\_101 (L2), Bromden\_103 (L4), Calm\_100 (L1), Chaser\_101 (L4), CicholasNage\_94 (L1), Claus\_100 (L2), Clautastrophe\_97 (L3), Crossroads\_102 (L2), DirkDirk\_94 (L1), Douge\_102 (L4), DrSeegs\_100 (L2), DuncansLeg\_100 (L3), Ellson\_98 (L3), Enceladus\_94 (L1), Faith1\_100 (L2), Finemlucis\_102 (L2), Finnry\_99 (L3), Gabriela\_101 (L2), Gardann\_100 (L2),

GuuelaD\_97 (L2), Hafay\_101 (L2), Halena\_96 (L1), Itos\_101 (L2), Jobypre\_99 (L3), Jubie\_98 (L3), Kahlid\_100 (L2), Kingsolomon\_96 (L3), Krypton555\_101 (L3), LeBron\_97 (L1), Lewan\_101 (L2), LilDestine\_99 (L2), Loadrie\_99 (L2), Lolly9\_97 (L3), Lumos\_98 (L3), Miley16\_101 (L2), MiniLon\_102 (L3), MiniMac\_102 (L3), MkaliMitinis3\_102 (L2), Moostard\_95 (L3), MsGreen\_99 (L3), Netyap\_99 (L2), Nicholas\_96 (L3), Nicholasp3\_101 (L2), OhShagHennessy\_93 (L1), Rose5\_99 (L1), Rumpelstiltskin\_97 (L2), Silverleaf\_96 (L1), Snenia\_97 (L3), Tyson\_100 (L1), UPIE\_97 (L1), Vetrix\_99 (L2), Wamburggrxpress\_96 (L1), Whirlwind\_99 (L3), Wigglewiggles\_100 (L2), Wilder\_101 (L2), Winky\_101 (L2), Wyatt2\_99 (L1), Zakai\_102 (L2), Zaria\_99 (L1), ZhongYanYuan\_98 (L2),

### **Summary by clusters:**

There are 5 clusters represented in this pham: L4, L5, L2, L3, L1,

Info for manual annotations of cluster L1:

- Start number 9 was manually annotated 17 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 5 was manually annotated 1 time for cluster L2.
- Start number 9 was manually annotated 27 times for cluster L2.

Info for manual annotations of cluster L3:

- Start number 9 was manually annotated 15 times for cluster L3.

Info for manual annotations of cluster L4:

- Start number 6 was manually annotated 1 time for cluster L4.
- Start number 9 was manually annotated 2 times for cluster L4.

Info for manual annotations of cluster L5:

- Start number 9 was manually annotated 2 times for cluster L5.

### **Gene Information:**

Gene: Acquire49\_98 Start: 60121, Stop: 60543, Start Num: 9

Candidate Starts for Acquire49\_98:

(1, 59965), (4, 60064), (Start: 5 @60070 has 1 MA's), (7, 60103), (Start: 9 @60121 has 63 MA's), (11, 60181), (15, 60247), (16, 60253), (20, 60310), (21, 60319),

Gene: Aegeus\_110 Start: 63361, Stop: 63780, Start Num: 9

Candidate Starts for Aegeus\_110:

(2, 63208), (7, 63343), (Start: 9 @63361 has 63 MA's), (12, 63427), (13, 63439), (21, 63559), (24, 63628), (25, 63637), (26, 63646), (28, 63664), (29, 63667), (32, 63700),

Gene: Appletree2\_96 Start: 59711, Stop: 60133, Start Num: 9

Candidate Starts for Appletree2\_96:

(Start: 9 @59711 has 63 MA's), (13, 59783), (14, 59786), (19, 59885), (20, 59900), (21, 59909), (22, 59912), (25, 59993), (26, 60002), (29, 60023), (31, 60050), (32, 60056),

Gene: Archie\_98 Start: 61295, Stop: 61717, Start Num: 9

Candidate Starts for Archie\_98:

(Start: 9 @61295 has 63 MA's), (10, 61307), (14, 61370), (17, 61448), (20, 61484), (21, 61493), (25, 61577), (26, 61586), (29, 61607), (31, 61634), (32, 61640), (33, 61694),

Gene: AvadaKedavra\_98 Start: 60233, Stop: 60655, Start Num: 9

Candidate Starts for AvadaKedavra\_98:

(1, 60077), (4, 60176), (Start: 5 @60182 has 1 MA's), (7, 60215), (Start: 9 @60233 has 63 MA's), (11, 60293), (15, 60359), (16, 60365), (20, 60422), (21, 60431),

Gene: Baoshan\_98 Start: 62080, Stop: 62502, Start Num: 9

Candidate Starts for Baoshan\_98:

(Start: 9 @62080 has 63 MA's), (10, 62092), (14, 62155), (17, 62233), (20, 62269), (21, 62278), (25, 62362), (26, 62371), (28, 62389), (29, 62392), (31, 62419), (32, 62425),

Gene: Baudelaire\_110 Start: 63361, Stop: 63780, Start Num: 9

Candidate Starts for Baudelaire\_110:

(2, 63208), (7, 63343), (Start: 9 @63361 has 63 MA's), (12, 63427), (13, 63439), (21, 63559), (24, 63628), (25, 63637), (26, 63646), (28, 63664), (29, 63667), (32, 63700),

Gene: Bazzle\_98 Start: 61851, Stop: 62273, Start Num: 9

Candidate Starts for Bazzle\_98:

(Start: 9 @61851 has 63 MA's), (10, 61863), (17, 62004), (20, 62040), (21, 62049), (25, 62133), (26, 62142), (29, 62163), (31, 62190), (32, 62196),

Gene: Bellis\_97 Start: 61628, Stop: 62047, Start Num: 9

Candidate Starts for Bellis\_97:

(8, 61622), (Start: 9 @61628 has 63 MA's), (15, 61754), (17, 61781), (18, 61793), (25, 61910), (26, 61919), (28, 61937), (31, 61967),

Gene: BigCheese\_100 Start: 62069, Stop: 62491, Start Num: 9

Candidate Starts for BigCheese\_100:

(Start: 9 @62069 has 63 MA's), (10, 62081), (17, 62222), (20, 62258), (21, 62267), (25, 62351), (26, 62360), (29, 62381), (31, 62408), (32, 62414),

Gene: BobsGarage\_100 Start: 62069, Stop: 62491, Start Num: 9

Candidate Starts for BobsGarage\_100:

(Start: 9 @62069 has 63 MA's), (10, 62081), (17, 62222), (20, 62258), (21, 62267), (25, 62351), (26, 62360), (29, 62381), (31, 62408), (32, 62414),

Gene: Breezona\_101 Start: 62404, Stop: 62826, Start Num: 9

Candidate Starts for Breezona\_101:

(Start: 9 @62404 has 63 MA's), (17, 62557), (20, 62593), (21, 62602), (25, 62686), (26, 62695), (29, 62716), (31, 62743), (32, 62749),

Gene: Bromden\_103 Start: 62854, Stop: 63273, Start Num: 9

Candidate Starts for Bromden\_103:

(Start: 9 @62854 has 63 MA's), (15, 62980), (17, 63007), (18, 63019), (19, 63028), (20, 63043), (26, 63145), (28, 63163), (30, 63184), (31, 63193),

Gene: Calm\_100 Start: 60500, Stop: 60922, Start Num: 9

Candidate Starts for Calm\_100:

(1, 60344), (3, 60416), (4, 60443), (Start: 5 @60449 has 1 MA's), (7, 60482), (Start: 9 @60500 has 63 MA's), (11, 60560), (15, 60626), (16, 60632), (20, 60689), (21, 60698),

Gene: Chaser\_101 Start: 61467, Stop: 61886, Start Num: 9

Candidate Starts for Chaser\_101:

(8, 61461), (Start: 9 @61467 has 63 MA's), (20, 61656), (25, 61749), (26, 61758), (27, 61761), (28, 61776), (30, 61797), (31, 61806),

Gene: CicholasNage\_94 Start: 59615, Stop: 60037, Start Num: 9

Candidate Starts for CicholasNage\_94:

(Start: 9 @59615 has 63 MA's), (13, 59687), (14, 59690), (19, 59789), (20, 59804), (21, 59813), (22, 59816), (25, 59897), (26, 59906), (29, 59927), (31, 59954), (32, 59960),

Gene: Claus\_100 Start: 61890, Stop: 62312, Start Num: 9

Candidate Starts for Claus\_100:

(Start: 9 @61890 has 63 MA's), (14, 61965), (17, 62043), (19, 62064), (20, 62079), (21, 62088), (25, 62172), (26, 62181), (28, 62199), (29, 62202), (31, 62229), (32, 62235),

Gene: Clautastrophe\_97 Start: 61623, Stop: 62042, Start Num: 9

Candidate Starts for Clautastrophe\_97:

(8, 61617), (Start: 9 @61623 has 63 MA's), (15, 61749), (17, 61776), (18, 61788), (25, 61905), (26, 61914), (28, 61932), (31, 61962),

Gene: Crossroads\_102 Start: 61956, Stop: 62378, Start Num: 9

Candidate Starts for Crossroads\_102:

(Start: 9 @61956 has 63 MA's), (17, 62109), (20, 62145), (21, 62154), (25, 62238), (26, 62247), (29, 62268), (31, 62295), (32, 62301), (33, 62355),

Gene: DirkDirk\_94 Start: 59326, Stop: 59748, Start Num: 9

Candidate Starts for DirkDirk\_94:

(Start: 9 @59326 has 63 MA's), (13, 59398), (14, 59401), (19, 59500), (20, 59515), (21, 59524), (22, 59527), (25, 59608), (26, 59617), (29, 59638), (31, 59665), (32, 59671),

Gene: Douge\_102 Start: 61538, Stop: 61957, Start Num: 9

Candidate Starts for Douge\_102:

(Start: 9 @61538 has 63 MA's), (20, 61727), (25, 61820), (26, 61829), (27, 61832), (28, 61847), (30, 61868), (31, 61877),

Gene: DrSeegs\_100 Start: 62404, Stop: 62826, Start Num: 9

Candidate Starts for DrSeegs\_100:

(Start: 9 @62404 has 63 MA's), (17, 62557), (20, 62593), (21, 62602), (25, 62686), (26, 62695), (29, 62716), (31, 62743), (32, 62749),

Gene: DuncansLeg\_100 Start: 61789, Stop: 62214, Start Num: 9

Candidate Starts for DuncansLeg\_100:

(Start: 9 @61789 has 63 MA's), (17, 61948), (18, 61960), (25, 62077), (26, 62086), (28, 62104), (31, 62134),

Gene: DyoEdafos\_105 Start: 62092, Stop: 62535, Start Num: 6

Candidate Starts for DyoEdafos\_105:

(Start: 6 @62092 has 1 MA's), (23, 62341), (26, 62407), (27, 62410), (28, 62425), (30, 62446), (31, 62455),

Gene: Ellson\_98 Start: 62104, Stop: 62529, Start Num: 9

Candidate Starts for Ellson\_98:

(Start: 9 @62104 has 63 MA's), (17, 62263), (18, 62275), (25, 62392), (26, 62401), (28, 62419), (31, 62449),

Gene: Enceladus\_94 Start: 59624, Stop: 60046, Start Num: 9

Candidate Starts for Enceladus\_94:

(Start: 9 @59624 has 63 MA's), (13, 59696), (14, 59699), (19, 59798), (20, 59813), (21, 59822), (22, 59825), (25, 59906), (26, 59915), (29, 59936), (31, 59963), (32, 59969),

Gene: Faith1\_100 Start: 61712, Stop: 62134, Start Num: 9

Candidate Starts for Faith1\_100:

(Start: 9 @61712 has 63 MA's), (10, 61724), (17, 61865), (20, 61901), (21, 61910), (25, 61994), (26, 62003), (29, 62024), (31, 62051), (32, 62057),

Gene: Finemlucis\_102 Start: 62772, Stop: 63194, Start Num: 9

Candidate Starts for Finemlucis\_102:

(Start: 9 @62772 has 63 MA's), (10, 62784), (17, 62925), (20, 62961), (21, 62970), (25, 63054), (26, 63063), (29, 63084), (31, 63111), (32, 63117),

Gene: Finnry\_99 Start: 61976, Stop: 62395, Start Num: 9

Candidate Starts for Finnry\_99:

(8, 61970), (Start: 9 @61976 has 63 MA's), (15, 62102), (17, 62129), (18, 62141), (25, 62258), (26, 62267), (28, 62285), (31, 62315),

Gene: Gabriela\_101 Start: 61058, Stop: 61480, Start Num: 9

Candidate Starts for Gabriela\_101:

(Start: 9 @61058 has 63 MA's), (10, 61070), (17, 61211), (20, 61247), (21, 61256), (25, 61340), (26, 61349), (29, 61370), (31, 61397), (32, 61403),

Gene: Gardann\_100 Start: 61505, Stop: 61927, Start Num: 9

Candidate Starts for Gardann\_100:

(Start: 9 @61505 has 63 MA's), (10, 61517), (17, 61658), (20, 61694), (21, 61703), (25, 61787), (26, 61796), (29, 61817), (31, 61844), (32, 61850),

Gene: GuuelaD\_97 Start: 61671, Stop: 62093, Start Num: 9

Candidate Starts for GuuelaD\_97:

(Start: 9 @61671 has 63 MA's), (10, 61683), (17, 61824), (20, 61860), (21, 61869), (25, 61953), (26, 61962), (29, 61983), (31, 62010), (32, 62016),

Gene: Hafay\_101 Start: 61885, Stop: 62307, Start Num: 9

Candidate Starts for Hafay\_101:

(Start: 9 @61885 has 63 MA's), (14, 61960), (17, 62038), (19, 62059), (20, 62074), (21, 62083), (25, 62167), (26, 62176), (28, 62194), (29, 62197), (31, 62224), (32, 62230),

Gene: Halena\_96 Start: 59416, Stop: 59838, Start Num: 9

Candidate Starts for Halena\_96:

(1, 59260), (3, 59332), (4, 59359), (Start: 5 @59365 has 1 MA's), (7, 59398), (Start: 9 @59416 has 63 MA's), (11, 59476), (15, 59542), (16, 59548), (20, 59605), (21, 59614),

Gene: Itos\_101 Start: 60618, Stop: 61040, Start Num: 9

Candidate Starts for Itos\_101:

(Start: 9 @60618 has 63 MA's), (10, 60630), (17, 60771), (20, 60807), (21, 60816), (25, 60900), (26, 60909), (29, 60930), (31, 60957), (32, 60963),

Gene: Jobypre\_99 Start: 61623, Stop: 62042, Start Num: 9

Candidate Starts for Jobypre\_99:

(8, 61617), (Start: 9 @61623 has 63 MA's), (15, 61749), (17, 61776), (18, 61788), (25, 61905), (26, 61914), (28, 61932), (31, 61962),

Gene: Jubie\_98 Start: 61758, Stop: 62177, Start Num: 9

Candidate Starts for Jubie\_98:

(8, 61752), (Start: 9 @61758 has 63 MA's), (15, 61884), (17, 61911), (18, 61923), (25, 62040), (26, 62049), (28, 62067), (31, 62097),

Gene: Kahlid\_100 Start: 61423, Stop: 61845, Start Num: 9

Candidate Starts for Kahlid\_100:

(Start: 9 @61423 has 63 MA's), (10, 61435), (17, 61576), (20, 61612), (21, 61621), (25, 61705), (26, 61714), (29, 61735), (31, 61762), (32, 61768),

Gene: Kingsolomon\_96 Start: 61732, Stop: 62151, Start Num: 9

Candidate Starts for Kingsolomon\_96:

(8, 61726), (Start: 9 @61732 has 63 MA's), (15, 61858), (17, 61885), (18, 61897), (25, 62014), (26, 62023), (28, 62041), (31, 62071),

Gene: Krypton555\_101 Start: 62044, Stop: 62463, Start Num: 9

Candidate Starts for Krypton555\_101:

(Start: 9 @62044 has 63 MA's), (17, 62197), (18, 62209), (25, 62326), (26, 62335), (28, 62353), (31, 62383),

Gene: LeBron\_97 Start: 59723, Stop: 60145, Start Num: 9

Candidate Starts for LeBron\_97:

(1, 59567), (3, 59639), (4, 59666), (Start: 5 @59672 has 1 MA's), (7, 59705), (Start: 9 @59723 has 63 MA's), (11, 59783), (15, 59849), (16, 59855), (20, 59912), (21, 59921),

Gene: Lewan\_101 Start: 61711, Stop: 62133, Start Num: 9

Candidate Starts for Lewan\_101:

(Start: 9 @61711 has 63 MA's), (10, 61723), (17, 61864), (20, 61900), (21, 61909), (25, 61993), (26, 62002), (29, 62023), (31, 62050), (32, 62056),

Gene: LilDestine\_99 Start: 61382, Stop: 61804, Start Num: 9

Candidate Starts for LilDestine\_99:

(Start: 9 @61382 has 63 MA's), (10, 61394), (17, 61535), (20, 61571), (21, 61580), (25, 61664), (26, 61673), (29, 61694), (31, 61721), (32, 61727),

Gene: Loadrie\_99 Start: 61873, Stop: 62295, Start Num: 9

Candidate Starts for Loadrie\_99:

(Start: 9 @61873 has 63 MA's), (10, 61885), (17, 62026), (20, 62062), (21, 62071), (25, 62155), (26, 62164), (29, 62185), (31, 62212), (32, 62218),

Gene: Lolly9\_97 Start: 61717, Stop: 62136, Start Num: 9

Candidate Starts for Lolly9\_97:

(Start: 9 @61717 has 63 MA's), (17, 61870), (18, 61882), (25, 61999), (26, 62008), (28, 62026), (31, 62056),

Gene: Lumos\_98 Start: 61620, Stop: 62039, Start Num: 9

Candidate Starts for Lumos\_98:



(8, 61614), (Start: 9 @61620 has 63 MA's), (15, 61746), (17, 61773), (18, 61785), (25, 61902), (26, 61911), (28, 61929), (31, 61959),

Gene: MAckerman\_94 Start: 59391, Stop: 59831, Start Num: 7

Candidate Starts for MAckerman\_94:

(1, 59253), (3, 59325), (4, 59352), (Start: 5 @59358 has 1 MA's), (7, 59391), (Start: 9 @59409 has 63 MA's), (11, 59469), (15, 59535), (16, 59541), (20, 59598), (21, 59607),

Gene: Miley16\_101 Start: 62404, Stop: 62826, Start Num: 9

Candidate Starts for Miley16\_101:

(Start: 9 @62404 has 63 MA's), (17, 62557), (20, 62593), (21, 62602), (25, 62686), (26, 62695), (29, 62716), (31, 62743), (32, 62749),

Gene: MiniLon\_102 Start: 61718, Stop: 62137, Start Num: 9

Candidate Starts for MiniLon\_102:

(Start: 9 @61718 has 63 MA's), (17, 61871), (18, 61883), (25, 62000), (26, 62009), (28, 62027), (31, 62057),

Gene: MiniMac\_102 Start: 61713, Stop: 62132, Start Num: 9

Candidate Starts for MiniMac\_102:

(Start: 9 @61713 has 63 MA's), (17, 61866), (18, 61878), (25, 61995), (26, 62004), (28, 62022), (31, 62052),

Gene: MkaliMitinis3\_102 Start: 61837, Stop: 62259, Start Num: 9

Candidate Starts for MkaliMitinis3\_102:

(Start: 9 @61837 has 63 MA's), (10, 61849), (17, 61990), (20, 62026), (21, 62035), (25, 62119), (26, 62128), (29, 62149), (31, 62176), (32, 62182),

Gene: Moostard\_95 Start: 61727, Stop: 62146, Start Num: 9

Candidate Starts for Moostard\_95:

(8, 61721), (Start: 9 @61727 has 63 MA's), (15, 61853), (17, 61880), (18, 61892), (25, 62009), (26, 62018), (28, 62036), (31, 62066),

Gene: MsGreen\_99 Start: 61622, Stop: 62041, Start Num: 9

Candidate Starts for MsGreen\_99:

(8, 61616), (Start: 9 @61622 has 63 MA's), (15, 61748), (17, 61775), (18, 61787), (25, 61904), (26, 61913), (28, 61931), (31, 61961),

Gene: Netyap\_99 Start: 61713, Stop: 62135, Start Num: 9

Candidate Starts for Netyap\_99:

(Start: 9 @61713 has 63 MA's), (10, 61725), (17, 61866), (20, 61902), (21, 61911), (25, 61995), (26, 62004), (29, 62025), (31, 62052), (32, 62058),

Gene: Nicholas\_96 Start: 61732, Stop: 62151, Start Num: 9

Candidate Starts for Nicholas\_96:

(8, 61726), (Start: 9 @61732 has 63 MA's), (15, 61858), (17, 61885), (18, 61897), (25, 62014), (26, 62023), (28, 62041), (31, 62071),

Gene: Nicholasp3\_101 Start: 61505, Stop: 61927, Start Num: 9

Candidate Starts for Nicholasp3\_101:

(Start: 9 @61505 has 63 MA's), (10, 61517), (17, 61658), (20, 61694), (21, 61703), (25, 61787), (26, 61796), (29, 61817), (31, 61844), (32, 61850),

Gene: OhShagHennessy\_93 Start: 59128, Stop: 59550, Start Num: 9

Candidate Starts for OhShagHennessy\_93:

(Start: 9 @59128 has 63 MA's), (13, 59200), (14, 59203), (19, 59302), (20, 59317), (21, 59326), (22, 59329), (25, 59410), (26, 59419), (29, 59440), (31, 59467), (32, 59473),

Gene: Rose5\_99 Start: 60395, Stop: 60817, Start Num: 9

Candidate Starts for Rose5\_99:

(Start: 9 @60395 has 63 MA's), (13, 60467), (14, 60470), (19, 60569), (20, 60584), (21, 60593), (22, 60596), (25, 60677), (26, 60686), (29, 60707), (31, 60734), (32, 60740),

Gene: Rumpelstiltskin\_97 Start: 61298, Stop: 61720, Start Num: 9

Candidate Starts for Rumpelstiltskin\_97:

(Start: 9 @61298 has 63 MA's), (10, 61310), (17, 61451), (20, 61487), (21, 61496), (25, 61580), (26, 61589), (29, 61610), (31, 61637), (32, 61643),

Gene: Silverleaf\_96 Start: 59535, Stop: 59957, Start Num: 9

Candidate Starts for Silverleaf\_96:

(Start: 9 @59535 has 63 MA's), (13, 59607), (14, 59610), (19, 59709), (20, 59724), (21, 59733), (22, 59736), (25, 59817), (26, 59826), (29, 59847), (31, 59874), (32, 59880),

Gene: Snenia\_97 Start: 61624, Stop: 62043, Start Num: 9

Candidate Starts for Snenia\_97:

(8, 61618), (Start: 9 @61624 has 63 MA's), (15, 61750), (17, 61777), (18, 61789), (25, 61906), (26, 61915), (28, 61933), (31, 61963),

Gene: Tourach\_102 Start: 62713, Stop: 63186, Start Num: 5

Candidate Starts for Tourach\_102:

(Start: 5 @62713 has 1 MA's), (Start: 9 @62764 has 63 MA's), (17, 62917), (20, 62953), (21, 62962), (25, 63046), (26, 63055), (29, 63076), (31, 63103), (32, 63109),

Gene: Tyson\_100 Start: 60826, Stop: 61248, Start Num: 9

Candidate Starts for Tyson\_100:

(1, 60670), (4, 60769), (Start: 5 @60775 has 1 MA's), (7, 60808), (Start: 9 @60826 has 63 MA's), (11, 60886), (15, 60952), (16, 60958), (20, 61015), (21, 61024),

Gene: UPIE\_97 Start: 60066, Stop: 60488, Start Num: 9

Candidate Starts for UPIE\_97:

(1, 59910), (4, 60009), (Start: 5 @60015 has 1 MA's), (7, 60048), (Start: 9 @60066 has 63 MA's), (11, 60126), (15, 60192), (16, 60198), (20, 60255), (21, 60264),

Gene: Vetrix\_99 Start: 61538, Stop: 61960, Start Num: 9

Candidate Starts for Vetrix\_99:

(Start: 9 @61538 has 63 MA's), (10, 61550), (17, 61691), (20, 61727), (21, 61736), (25, 61820), (26, 61829), (29, 61850), (31, 61877), (32, 61883),

Gene: Wamburgrexpress\_96 Start: 60012, Stop: 60434, Start Num: 9

Candidate Starts for Wamburgrexpress\_96:

(Start: 9 @60012 has 63 MA's), (13, 60084), (14, 60087), (19, 60186), (20, 60201), (21, 60210), (22, 60213), (25, 60294), (26, 60303), (29, 60324), (31, 60351), (32, 60357),

Gene: Whirlwind\_99 Start: 61872, Stop: 62291, Start Num: 9

Candidate Starts for Whirlwind\_99:

(Start: 9 @61872 has 63 MA's), (15, 61998), (17, 62025), (18, 62037), (25, 62154), (26, 62163), (28, 62181), (31, 62211),

Gene: Wigglewigggle\_100 Start: 61635, Stop: 62057, Start Num: 9

Candidate Starts for Wigglewigggle\_100:

(Start: 9 @61635 has 63 MA's), (10, 61647), (17, 61788), (20, 61824), (21, 61833), (25, 61917), (26, 61926), (29, 61947), (31, 61974), (32, 61980),

Gene: Wilder\_101 Start: 61682, Stop: 62104, Start Num: 9

Candidate Starts for Wilder\_101:

(Start: 9 @61682 has 63 MA's), (10, 61694), (17, 61835), (20, 61871), (21, 61880), (25, 61964), (26, 61973), (29, 61994), (31, 62021), (32, 62027),

Gene: Winky\_101 Start: 62404, Stop: 62826, Start Num: 9

Candidate Starts for Winky\_101:

(Start: 9 @62404 has 63 MA's), (17, 62557), (20, 62593), (21, 62602), (25, 62686), (26, 62695), (29, 62716), (31, 62743), (32, 62749),

Gene: Wyatt2\_99 Start: 60489, Stop: 60911, Start Num: 9

Candidate Starts for Wyatt2\_99:

(1, 60333), (4, 60432), (Start: 5 @60438 has 1 MA's), (7, 60471), (Start: 9 @60489 has 63 MA's), (11, 60549), (15, 60615), (16, 60621), (20, 60678), (21, 60687),

Gene: Zakai\_102 Start: 62114, Stop: 62536, Start Num: 9

Candidate Starts for Zakai\_102:

(Start: 9 @62114 has 63 MA's), (10, 62126), (17, 62267), (20, 62303), (21, 62312), (25, 62396), (26, 62405), (29, 62426), (31, 62453), (32, 62459),

Gene: Zaria\_99 Start: 59965, Stop: 60387, Start Num: 9

Candidate Starts for Zaria\_99:

(1, 59809), (3, 59881), (4, 59908), (Start: 5 @59914 has 1 MA's), (7, 59947), (Start: 9 @59965 has 63 MA's), (11, 60025), (15, 60091), (16, 60097), (20, 60154), (21, 60163),

Gene: ZhongYanYuan\_98 Start: 61828, Stop: 62250, Start Num: 9

Candidate Starts for ZhongYanYuan\_98:

(Start: 9 @61828 has 63 MA's), (14, 61903), (17, 61981), (20, 62017), (21, 62026), (25, 62110), (26, 62119), (29, 62140), (31, 62167), (32, 62173),