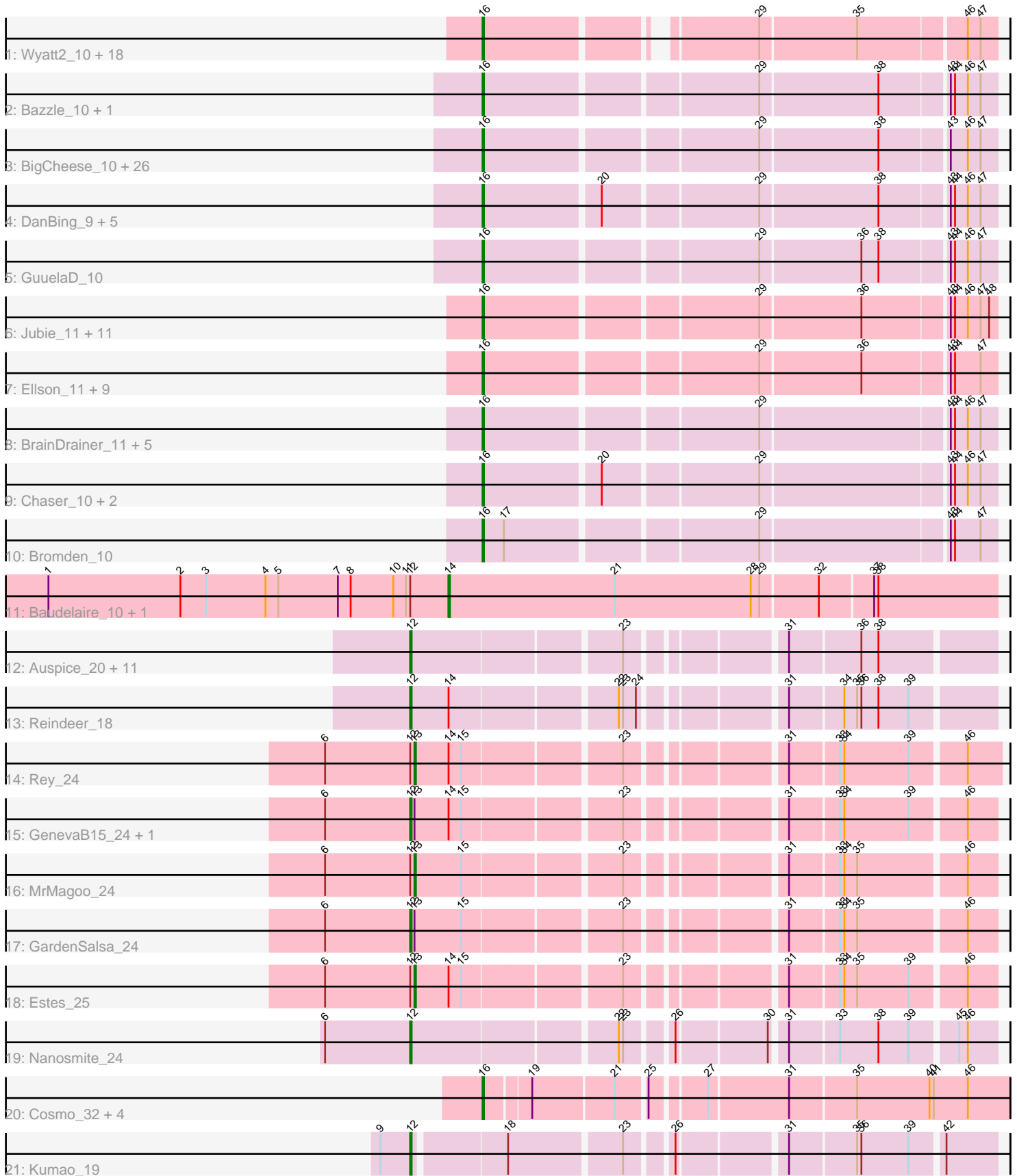


# Pham 193859



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 193859 Report

This analysis was run 11/02/24 on database version 579.

Pham number 193859 has 115 members, 20 are drafts.

Phages represented in each track:

- Track 1 : Wyatt2\_10, Zaria\_10, Silverleaf\_10, Appletree2\_10, AvadaKedavra\_10, Rose5\_10, Acquire49\_10, Tyson\_10, LeBron\_10, UPIE\_10, Halena\_10, CicholasNage\_10, Enceladus\_10, MAckerman\_10, JoeDirt\_10, DirkDirk\_10, OhShagHennessy\_10, Wamburggrxpress\_10, Calm\_10
- Track 2 : Bazzle\_10, Archie\_10
- Track 3 : BigCheese\_10, Loadrie\_10, LilDestine\_10, MkaliMitinis3\_10, Faith1\_10, Miley16\_10, DrSeegs\_10, Lewan\_10, Sarshaun\_10, Wigglewiggle\_10, Kahlid\_10, Zakai\_10, Gabriela\_10, Hafay\_10, Vetrrix\_10, Soap141\_10, Nicholasp3\_10, Crossroads\_10, Winky\_10, Breezona\_10, Finemlucis\_10, Itos\_10, BobsGarage\_10, Gardann\_10, Rumpelstiltskin\_10, Wilder\_10, Netyap\_10
- Track 4 : DanBing\_9, ZhongYanYuan\_9, Tourach\_10, Baoshan\_9, DHan\_10, Claus\_10
- Track 5 : GuuelaD\_10
- Track 6 : Jubie\_11, Kingsolomon\_11, MsGreen\_11, Snenia\_11, Finnry\_11, Moostard\_11, Jobypre\_11, Nicholas\_11, Bellis\_11, Clautastrophe\_11, Samty\_11, Lumos\_11
- Track 7 : Ellson\_11, Krypton555\_11, BourbonZero\_10, LiyuLake\_11, DuncansLeg\_11, MiniMac\_11, Lolly9\_11, KirDoubleO7\_9, MiniLon\_11, Whirlwind\_12
- Track 8 : BrainDrainer\_11, FarmResident\_10, Douzhi\_10, Sheng711\_10, PYPDinur\_10, DyoEdafos\_11
- Track 9 : Chaser\_10, Douge\_10, Quby\_10
- Track 10 : Bromden\_10
- Track 11 : Baudelaire\_10, Aegeus\_10
- Track 12 : Auspice\_20, TyDawg\_20, IPhane7\_20, Skinny\_21, Glaske16\_21, LilhomieP\_19, Bongo\_20, PegLeg\_20, Bricole\_20, SlimJimmy\_19, Dulcita\_21, Diminimus\_21
- Track 13 : Reindeer\_18
- Track 14 : Rey\_24
- Track 15 : GenevaB15\_24, Aziz\_24
- Track 16 : MrMagoo\_24
- Track 17 : GardenSalsa\_24
- Track 18 : Estes\_25
- Track 19 : Nanosmite\_24
- Track 20 : Cosmo\_32, MaryV\_32, Wildcat\_32, Azrael100\_31, EniyanLRS\_29
- Track 21 : Kumao\_19

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

The start number called the most often in the published annotations is 16, it was called in 72 of the 95 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acquire49\_10, Appletree2\_10, Archie\_10, AvadaKedavra\_10, Azrael100\_31, Baoshan\_9, Bazzle\_10, Bellis\_11, BigCheese\_10, BobsGarage\_10, BourbonZero\_10, BrainDrainer\_11, Breezonia\_10, Bromden\_10, Calm\_10, Chaser\_10, CicholasNage\_10, Claus\_10, Clautastrophe\_11, Cosmo\_32, Crossroads\_10, DHan\_10, DanBing\_9, DirkDirk\_10, Douge\_10, Douzhi\_10, DrSeegs\_10, DuncansLeg\_11, DyoEdafos\_11, Ellson\_11, Enceladus\_10, EniyanLRS\_29, Faith1\_10, FarmResident\_10, Finemlucis\_10, Finnry\_11, Gabriela\_10, Gardann\_10, GuuelaD\_10, Hafay\_10, Halena\_10, Itos\_10, Jobypre\_11, JoeDirt\_10, Jubie\_11, Kahlid\_10, Kingsolomon\_11, KirDoubleO7\_9, Krypton555\_11, LeBron\_10, Lewan\_10, LilDestine\_10, LiyuLake\_11, Loadrie\_10, Lolly9\_11, Lumos\_11, MAckerman\_10, MaryV\_32, Miley16\_10, MiniLon\_11, MiniMac\_11, MkaliMitinis3\_10, Moostard\_11, MsGreen\_11, Netyap\_10, Nicholas\_11, Nicholasp3\_10, OhShagHennessy\_10, PYPDinur\_10, Quby\_10, Rose5\_10, Rumpelstiltskin\_10, Samty\_11, Sarshaun\_10, Sheng711\_10, Silverleaf\_10, Snenia\_11, Soap141\_10, Tourach\_10, Tyson\_10, UPIE\_10, Vetric\_10, Wamburgexpress\_10, Whirlwind\_12, Wigglewiggle\_10, Wildcat\_32, Wilder\_10, Winky\_10, Wyatt2\_10, Zakai\_10, Zaria\_10, ZhongYanYuan\_9,

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

- 

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

- Aegeus\_10, Auspice\_20, Aziz\_24, Baudelaire\_10, Bongo\_20, Bricole\_20, Diminimus\_21, Dulcita\_21, Estes\_25, GardenSalsa\_24, GenevaB15\_24, Glaske16\_21, IPhone7\_20, Kumao\_19, LilhomieP\_19, MrMagoo\_24, Nanosmite\_24, PegLeg\_20, Reindeer\_18, Rey\_24, Skinny\_21, SlimJimmy\_19, TyDawg\_20,

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

Start 12:

- Found in 23 of 115 ( 20.0% ) of genes in pham
- Manual Annotations of this start: 18 of 95
- Called 78.3% of time when present
- Phage (with cluster) where this start called: Auspice\_20 (M1), Aziz\_24 (M2), Bongo\_20 (M1), Bricole\_20 (M1), Diminimus\_21 (M1), Dulcita\_21 (M1), GardenSalsa\_24 (M2), GenevaB15\_24 (M2), Glaske16\_21 (M1), IPhone7\_20 (M1), Kumao\_19 (singleton), LilhomieP\_19 (M1), Nanosmite\_24 (M3), PegLeg\_20 (M1), Reindeer\_18 (M1), Skinny\_21 (M1), SlimJimmy\_19 (M1), TyDawg\_20 (M1),

Start 13:

- Found in 6 of 115 ( 5.2% ) of genes in pham
- Manual Annotations of this start: 3 of 95
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Estes\_25 (M2), MrMagoo\_24 (M2), Rey\_24 (M2),

#### Start 14:

- Found in 7 of 115 ( 6.1% ) of genes in pham
- Manual Annotations of this start: 2 of 95
- Called 28.6% of time when present
- Phage (with cluster) where this start called: Aegeus\_10 (L5), Baudelaire\_10 (L5),

#### Start 16:

- Found in 92 of 115 ( 80.0% ) of genes in pham
- Manual Annotations of this start: 72 of 95
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acquire49\_10 (L1), Appletree2\_10 (L1), Archie\_10 (L2), AvadaKedavra\_10 (L1), Azrael100\_31 (V), Baoshan\_9 (L2), Bazzle\_10 (L2), Bellis\_11 (L3), BigCheese\_10 (L2), BobsGarage\_10 (L2), BourbonZero\_10 (L3), BrainDrainer\_11 (L4), Breezona\_10 (L2), Bromden\_10 (L4), Calm\_10 (L1), Chaser\_10 (L4), CicholasNage\_10 (L1), Claus\_10 (L2), Clautastrophe\_11 (L3), Cosmo\_32 (V), Crossroads\_10 (L2), DHan\_10 (L2), DanBing\_9 (L2), DirkDirk\_10 (L1), Douge\_10 (L4), Douzhi\_10 (L4), DrSeegs\_10 (L2), DuncansLeg\_11 (L3), DyoEdafos\_11 (L4), Ellson\_11 (L3), Enceladus\_10 (L1), EniyanLRS\_29 (V), Faith1\_10 (L2), FarmResident\_10 (L4), Finemlucis\_10 (L2), Finnry\_11 (L3), Gabriela\_10 (L2), Gardann\_10 (L2), GuuelaD\_10 (L2), Hafay\_10 (L2), Halena\_10 (L1), Itos\_10 (L2), Jobypre\_11 (L3), JoeDirt\_10 (L1), Jubie\_11 (L3), Kahlid\_10 (L2), Kingsolomon\_11 (L3), KirDoubleO7\_9 (L3), Krypton555\_11 (L3), LeBron\_10 (L1), Lewan\_10 (L2), LilDestine\_10 (L2), LiyuLake\_11 (L3), Loadrie\_10 (L2), Lolly9\_11 (L3), Lumos\_11 (L3), MAckerman\_10 (L1), MaryV\_32 (V), Miley16\_10 (L2), MiniLon\_11 (L3), MiniMac\_11 (L3), MkaliMitinis3\_10 (L2), Moostard\_11 (L3), MsGreen\_11 (L3), Netyap\_10 (L2), Nicholas\_11 (L3), Nicholasp3\_10 (L2), OhShagHennessy\_10 (L1), PYPDinur\_10 (L4), Quby\_10 (L4), Rose5\_10 (L1), Rumpelstiltskin\_10 (L2), Samty\_11 (L3), Sarshaun\_10 (L2), Sheng711\_10 (L4), Silverleaf\_10 (L1), Snenia\_11 (L3), Soap141\_10 (L2), Tourach\_10 (L2), Tyson\_10 (L1), UPIE\_10 (L1), Vetric\_10 (L2), Wamburggrxpress\_10 (L1), Whirlwind\_12 (L3), Wigglewiggles\_10 (L2), Wildcat\_32 (V), Wilder\_10 (L2), Winky\_10 (L2), Wyatt2\_10 (L1), Zakai\_10 (L2), Zaria\_10 (L1), ZhongYanYuan\_9 (L2),

#### Summary by clusters:

There are 10 clusters represented in this pham: V, L1, singleton, L4, L5, L2, L3, M3, M2, M1,

Info for manual annotations of cluster L1:

- Start number 16 was manually annotated 19 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 16 was manually annotated 28 times for cluster L2.

Info for manual annotations of cluster L3:

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

Info for manual annotations of cluster L4:

- Start number 16 was manually annotated 4 times for cluster L4.

Info for manual annotations of cluster L5:

- Start number 14 was manually annotated 2 times for cluster L5.

Info for manual annotations of cluster M1:

- Start number 12 was manually annotated 13 times for cluster M1.

Info for manual annotations of cluster M2:

- Start number 12 was manually annotated 3 times for cluster M2.
- Start number 13 was manually annotated 3 times for cluster M2.

Info for manual annotations of cluster M3:

- Start number 12 was manually annotated 1 time for cluster M3.

Info for manual annotations of cluster V:

- Start number 16 was manually annotated 5 times for cluster V.

### **Gene Information:**

Gene: Acquire49\_10 Start: 7710, Stop: 8033, Start Num: 16

Candidate Starts for Acquire49\_10:

(Start: 16 @7710 has 72 MA's), (29, 7875), (35, 7941), (46, 8013), (47, 8022),

Gene: Aegeus\_10 Start: 7298, Stop: 7678, Start Num: 14

Candidate Starts for Aegeus\_10:

(1, 7016), (2, 7109), (3, 7127), (4, 7169), (5, 7178), (7, 7220), (8, 7229), (10, 7259), (11, 7268), (Start: 12 @7271 has 18 MA's), (Start: 14 @7298 has 2 MA's), (21, 7415), (28, 7511), (29, 7517), (32, 7556), (37, 7592), (38, 7595),

Gene: Appletree2\_10 Start: 7684, Stop: 8007, Start Num: 16

Candidate Starts for Appletree2\_10:

(Start: 16 @7684 has 72 MA's), (29, 7849), (35, 7915), (46, 7987), (47, 7996),

Gene: Archie\_10 Start: 7665, Stop: 8003, Start Num: 16

Candidate Starts for Archie\_10:

(Start: 16 @7665 has 72 MA's), (29, 7845), (38, 7926), (43, 7971), (44, 7974), (46, 7983), (47, 7992),

Gene: Auspice\_20 Start: 11510, Stop: 11878, Start Num: 12

Candidate Starts for Auspice\_20:

(Start: 12 @11510 has 18 MA's), (23, 11648), (31, 11741), (36, 11789), (38, 11801),

Gene: AvadaKedavra\_10 Start: 7710, Stop: 8033, Start Num: 16

Candidate Starts for AvadaKedavra\_10:

(Start: 16 @7710 has 72 MA's), (29, 7875), (35, 7941), (46, 8013), (47, 8022),

Gene: Aziz\_24 Start: 12073, Stop: 12441, Start Num: 12

Candidate Starts for Aziz\_24:

(6, 12013), (Start: 12 @12073 has 18 MA's), (Start: 13 @12076 has 3 MA's), (Start: 14 @12100 has 2 MA's), (15, 12109), (23, 12211), (31, 12304), (33, 12337), (34, 12340), (39, 12385), (46, 12421),

Gene: Azrael100\_31 Start: 14635, Stop: 14976, Start Num: 16

Candidate Starts for Azrael100\_31:

(Start: 16 @14635 has 72 MA's), (19, 14665), (21, 14719), (25, 14737), (27, 14770), (31, 14824), (35, 14869), (40, 14920), (41, 14923), (46, 14947),

Gene: Baoshan\_9 Start: 7520, Stop: 7858, Start Num: 16

Candidate Starts for Baoshan\_9:

(Start: 16 @7520 has 72 MA's), (20, 7598), (29, 7700), (38, 7781), (43, 7826), (44, 7829), (46, 7838), (47, 7847),

Gene: Baudelaire\_10 Start: 7298, Stop: 7678, Start Num: 14

Candidate Starts for Baudelaire\_10:

(1, 7016), (2, 7109), (3, 7127), (4, 7169), (5, 7178), (7, 7220), (8, 7229), (10, 7259), (11, 7268), (Start: 12 @7271 has 18 MA's), (Start: 14 @7298 has 2 MA's), (21, 7415), (28, 7511), (29, 7517), (32, 7556), (37, 7592), (38, 7595),

Gene: Bazzle\_10 Start: 7641, Stop: 7979, Start Num: 16

Candidate Starts for Bazzle\_10:

(Start: 16 @7641 has 72 MA's), (29, 7821), (38, 7902), (43, 7947), (44, 7950), (46, 7959), (47, 7968),

Gene: Bellis\_11 Start: 7840, Stop: 8178, Start Num: 16

Candidate Starts for Bellis\_11:

(Start: 16 @7840 has 72 MA's), (29, 8020), (36, 8089), (43, 8146), (44, 8149), (46, 8158), (47, 8167), (48, 8173),

Gene: BigCheese\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for BigCheese\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: BobsGarage\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for BobsGarage\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Bongo\_20 Start: 11510, Stop: 11878, Start Num: 12

Candidate Starts for Bongo\_20:

(Start: 12 @11510 has 18 MA's), (23, 11648), (31, 11741), (36, 11789), (38, 11801),

Gene: BourbonZero\_10 Start: 7846, Stop: 8184, Start Num: 16

Candidate Starts for BourbonZero\_10:

(Start: 16 @7846 has 72 MA's), (29, 8026), (36, 8095), (43, 8152), (44, 8155), (47, 8173),

Gene: BrainDrainer\_11 Start: 7511, Stop: 7849, Start Num: 16

Candidate Starts for BrainDrainer\_11:

(Start: 16 @7511 has 72 MA's), (29, 7691), (43, 7817), (44, 7820), (46, 7829), (47, 7838),

Gene: Breezona\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Breezona\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Bricole\_20 Start: 11509, Stop: 11877, Start Num: 12

Candidate Starts for Bricole\_20:

(Start: 12 @11509 has 18 MA's), (23, 11647), (31, 11740), (36, 11788), (38, 11800),

Gene: Bromden\_10 Start: 7421, Stop: 7759, Start Num: 16

Candidate Starts for Bromden\_10:

(Start: 16 @7421 has 72 MA's), (17, 7436), (29, 7601), (43, 7727), (44, 7730), (47, 7748),

Gene: Calm\_10 Start: 7711, Stop: 8034, Start Num: 16

Candidate Starts for Calm\_10:

(Start: 16 @7711 has 72 MA's), (29, 7876), (35, 7942), (46, 8014), (47, 8023),

Gene: Chaser\_10 Start: 7426, Stop: 7764, Start Num: 16

Candidate Starts for Chaser\_10:

(Start: 16 @7426 has 72 MA's), (20, 7504), (29, 7606), (43, 7732), (44, 7735), (46, 7744), (47, 7753),

Gene: CicholasNage\_10 Start: 7711, Stop: 8034, Start Num: 16

Candidate Starts for CicholasNage\_10:

(Start: 16 @7711 has 72 MA's), (29, 7876), (35, 7942), (46, 8014), (47, 8023),

Gene: Claus\_10 Start: 7700, Stop: 8038, Start Num: 16

Candidate Starts for Claus\_10:

(Start: 16 @7700 has 72 MA's), (20, 7778), (29, 7880), (38, 7961), (43, 8006), (44, 8009), (46, 8018), (47, 8027),

Gene: Clautastrophe\_11 Start: 7844, Stop: 8182, Start Num: 16

Candidate Starts for Clautastrophe\_11:

(Start: 16 @7844 has 72 MA's), (29, 8024), (36, 8093), (43, 8150), (44, 8153), (46, 8162), (47, 8171), (48, 8177),

Gene: Cosmo\_32 Start: 14642, Stop: 14983, Start Num: 16

Candidate Starts for Cosmo\_32:

(Start: 16 @14642 has 72 MA's), (19, 14672), (21, 14726), (25, 14744), (27, 14777), (31, 14831), (35, 14876), (40, 14927), (41, 14930), (46, 14954),

Gene: Crossroads\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Crossroads\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: DHan\_10 Start: 7636, Stop: 7974, Start Num: 16

Candidate Starts for DHan\_10:

(Start: 16 @7636 has 72 MA's), (20, 7714), (29, 7816), (38, 7897), (43, 7942), (44, 7945), (46, 7954), (47, 7963),

Gene: DanBing\_9 Start: 7519, Stop: 7857, Start Num: 16

Candidate Starts for DanBing\_9:

(Start: 16 @7519 has 72 MA's), (20, 7597), (29, 7699), (38, 7780), (43, 7825), (44, 7828), (46, 7837), (47, 7846),

Gene: Diminimus\_21 Start: 11509, Stop: 11877, Start Num: 12

Candidate Starts for Diminimus\_21:

(Start: 12 @11509 has 18 MA's), (23, 11647), (31, 11740), (36, 11788), (38, 11800),

Gene: DirkDirk\_10 Start: 7712, Stop: 8035, Start Num: 16

Candidate Starts for DirkDirk\_10:

(Start: 16 @7712 has 72 MA's), (29, 7877), (35, 7943), (46, 8015), (47, 8024),

Gene: Douge\_10 Start: 7372, Stop: 7710, Start Num: 16

Candidate Starts for Douge\_10:

(Start: 16 @7372 has 72 MA's), (20, 7450), (29, 7552), (43, 7678), (44, 7681), (46, 7690), (47, 7699),

Gene: Douzhi\_10 Start: 7372, Stop: 7710, Start Num: 16

Candidate Starts for Douzhi\_10:

(Start: 16 @7372 has 72 MA's), (29, 7552), (43, 7678), (44, 7681), (46, 7690), (47, 7699),

Gene: DrSeegs\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for DrSeegs\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Dulcita\_21 Start: 11509, Stop: 11877, Start Num: 12

Candidate Starts for Dulcita\_21:

(Start: 12 @11509 has 18 MA's), (23, 11647), (31, 11740), (36, 11788), (38, 11800),

Gene: DuncansLeg\_11 Start: 7848, Stop: 8186, Start Num: 16

Candidate Starts for DuncansLeg\_11:

(Start: 16 @7848 has 72 MA's), (29, 8028), (36, 8097), (43, 8154), (44, 8157), (47, 8175),

Gene: DyoEdafos\_11 Start: 7582, Stop: 7920, Start Num: 16

Candidate Starts for DyoEdafos\_11:

(Start: 16 @7582 has 72 MA's), (29, 7762), (43, 7888), (44, 7891), (46, 7900), (47, 7909),

Gene: Ellson\_11 Start: 7856, Stop: 8194, Start Num: 16

Candidate Starts for Ellson\_11:

(Start: 16 @7856 has 72 MA's), (29, 8036), (36, 8105), (43, 8162), (44, 8165), (47, 8183),

Gene: Enceladus\_10 Start: 7712, Stop: 8035, Start Num: 16

Candidate Starts for Enceladus\_10:

(Start: 16 @7712 has 72 MA's), (29, 7877), (35, 7943), (46, 8015), (47, 8024),

Gene: EniyanLRS\_29 Start: 14336, Stop: 14677, Start Num: 16

Candidate Starts for EniyanLRS\_29:

(Start: 16 @14336 has 72 MA's), (19, 14366), (21, 14420), (25, 14438), (27, 14471), (31, 14525), (35, 14570), (40, 14621), (41, 14624), (46, 14648),

Gene: Estes\_25 Start: 12213, Stop: 12578, Start Num: 13

Candidate Starts for Estes\_25:

(6, 12150), (Start: 12 @12210 has 18 MA's), (Start: 13 @12213 has 3 MA's), (Start: 14 @12237 has 2 MA's), (15, 12246), (23, 12348), (31, 12441), (33, 12474), (34, 12477), (35, 12486), (39, 12522), (46, 12558),

Gene: Faith1\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Faith1\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: FarmResident\_10 Start: 7417, Stop: 7755, Start Num: 16

Candidate Starts for FarmResident\_10:

(Start: 16 @7417 has 72 MA's), (29, 7597), (43, 7723), (44, 7726), (46, 7735), (47, 7744),

Gene: Finemlucis\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Finemlucis\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Finnry\_11 Start: 7841, Stop: 8179, Start Num: 16

Candidate Starts for Finnry\_11:



(Start: 16 @7841 has 72 MA's), (29, 8021), (36, 8090), (43, 8147), (44, 8150), (46, 8159), (47, 8168), (48, 8174),

Gene: Gabriela\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Gabriela\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Gardann\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Gardann\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: GardenSalsa\_24 Start: 12046, Stop: 12414, Start Num: 12

Candidate Starts for GardenSalsa\_24:

(6, 11986), (Start: 12 @12046 has 18 MA's), (Start: 13 @12049 has 3 MA's), (15, 12082), (23, 12184), (31, 12277), (33, 12310), (34, 12313), (35, 12322), (46, 12394),

Gene: GenevaB15\_24 Start: 12073, Stop: 12441, Start Num: 12

Candidate Starts for GenevaB15\_24:

(6, 12013), (Start: 12 @12073 has 18 MA's), (Start: 13 @12076 has 3 MA's), (Start: 14 @12100 has 2 MA's), (15, 12109), (23, 12211), (31, 12304), (33, 12337), (34, 12340), (39, 12385), (46, 12421),

Gene: Glaske16\_21 Start: 11509, Stop: 11877, Start Num: 12

Candidate Starts for Glaske16\_21:

(Start: 12 @11509 has 18 MA's), (23, 11647), (31, 11740), (36, 11788), (38, 11800),

Gene: GuuelaD\_10 Start: 7725, Stop: 8063, Start Num: 16

Candidate Starts for GuuelaD\_10:

(Start: 16 @7725 has 72 MA's), (29, 7905), (36, 7974), (38, 7986), (43, 8031), (44, 8034), (46, 8043), (47, 8052),

Gene: Hafay\_10 Start: 7725, Stop: 8063, Start Num: 16

Candidate Starts for Hafay\_10:

(Start: 16 @7725 has 72 MA's), (29, 7905), (38, 7986), (43, 8031), (46, 8043), (47, 8052),

Gene: Halena\_10 Start: 7711, Stop: 8034, Start Num: 16

Candidate Starts for Halena\_10:

(Start: 16 @7711 has 72 MA's), (29, 7876), (35, 7942), (46, 8014), (47, 8023),

Gene: IPhane7\_20 Start: 11510, Stop: 11878, Start Num: 12

Candidate Starts for IPhane7\_20:

(Start: 12 @11510 has 18 MA's), (23, 11648), (31, 11741), (36, 11789), (38, 11801),

Gene: Itos\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Itos\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Jobypre\_11 Start: 7844, Stop: 8182, Start Num: 16

Candidate Starts for Jobypre\_11:

(Start: 16 @7844 has 72 MA's), (29, 8024), (36, 8093), (43, 8150), (44, 8153), (46, 8162), (47, 8171), (48, 8177),

Gene: JoeDirt\_10 Start: 7711, Stop: 8034, Start Num: 16

Candidate Starts for JoeDirt\_10:

(Start: 16 @7711 has 72 MA's), (29, 7876), (35, 7942), (46, 8014), (47, 8023),

Gene: Jubie\_11 Start: 7844, Stop: 8182, Start Num: 16

Candidate Starts for Jubie\_11:

(Start: 16 @7844 has 72 MA's), (29, 8024), (36, 8093), (43, 8150), (44, 8153), (46, 8162), (47, 8171), (48, 8177),

Gene: Kahlid\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Kahlid\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Kingsolomon\_11 Start: 7844, Stop: 8182, Start Num: 16

Candidate Starts for Kingsolomon\_11:

(Start: 16 @7844 has 72 MA's), (29, 8024), (36, 8093), (43, 8150), (44, 8153), (46, 8162), (47, 8171), (48, 8177),

Gene: KirDoubleO7\_9 Start: 7857, Stop: 8195, Start Num: 16

Candidate Starts for KirDoubleO7\_9:

(Start: 16 @7857 has 72 MA's), (29, 8037), (36, 8106), (43, 8163), (44, 8166), (47, 8184),

Gene: Krypton555\_11 Start: 7833, Stop: 8171, Start Num: 16

Candidate Starts for Krypton555\_11:

(Start: 16 @7833 has 72 MA's), (29, 8013), (36, 8082), (43, 8139), (44, 8142), (47, 8160),

Gene: Kumao\_19 Start: 10846, Stop: 11211, Start Num: 12

Candidate Starts for Kumao\_19:

(9, 10825), (Start: 12 @10846 has 18 MA's), (18, 10906), (23, 10981), (26, 11008), (31, 11074), (35, 11119), (36, 11122), (39, 11155), (42, 11176),

Gene: LeBron\_10 Start: 7711, Stop: 8034, Start Num: 16

Candidate Starts for LeBron\_10:

(Start: 16 @7711 has 72 MA's), (29, 7876), (35, 7942), (46, 8014), (47, 8023),

Gene: Lewan\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Lewan\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: LilDestine\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for LilDestine\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: LilhomieP\_19 Start: 11510, Stop: 11878, Start Num: 12

Candidate Starts for LilhomieP\_19:

(Start: 12 @11510 has 18 MA's), (23, 11648), (31, 11741), (36, 11789), (38, 11801),

Gene: LiyuLake\_11 Start: 7848, Stop: 8186, Start Num: 16

Candidate Starts for LiyuLake\_11:

(Start: 16 @7848 has 72 MA's), (29, 8028), (36, 8097), (43, 8154), (44, 8157), (47, 8175),

Gene: Loadrie\_10 Start: 7725, Stop: 8063, Start Num: 16

Candidate Starts for Loadrie\_10:

(Start: 16 @7725 has 72 MA's), (29, 7905), (38, 7986), (43, 8031), (46, 8043), (47, 8052),

Gene: Lolly9\_11 Start: 7851, Stop: 8189, Start Num: 16

Candidate Starts for Lolly9\_11:

(Start: 16 @7851 has 72 MA's), (29, 8031), (36, 8100), (43, 8157), (44, 8160), (47, 8178),

Gene: Lumos\_11 Start: 7844, Stop: 8182, Start Num: 16

Candidate Starts for Lumos\_11:

(Start: 16 @7844 has 72 MA's), (29, 8024), (36, 8093), (43, 8150), (44, 8153), (46, 8162), (47, 8171), (48, 8177),

Gene: MAckerman\_10 Start: 7710, Stop: 8033, Start Num: 16

Candidate Starts for MAckerman\_10:

(Start: 16 @7710 has 72 MA's), (29, 7875), (35, 7941), (46, 8013), (47, 8022),

Gene: MaryV\_32 Start: 14608, Stop: 14949, Start Num: 16

Candidate Starts for MaryV\_32:

(Start: 16 @14608 has 72 MA's), (19, 14638), (21, 14692), (25, 14710), (27, 14743), (31, 14797), (35, 14842), (40, 14893), (41, 14896), (46, 14920),

Gene: Miley16\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Miley16\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: MiniLon\_11 Start: 7851, Stop: 8189, Start Num: 16

Candidate Starts for MiniLon\_11:

(Start: 16 @7851 has 72 MA's), (29, 8031), (36, 8100), (43, 8157), (44, 8160), (47, 8178),

Gene: MiniMac\_11 Start: 7852, Stop: 8190, Start Num: 16

Candidate Starts for MiniMac\_11:

(Start: 16 @7852 has 72 MA's), (29, 8032), (36, 8101), (43, 8158), (44, 8161), (47, 8179),

Gene: MkaliMitinis3\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for MkaliMitinis3\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Moostard\_11 Start: 7840, Stop: 8178, Start Num: 16

Candidate Starts for Moostard\_11:

(Start: 16 @7840 has 72 MA's), (29, 8020), (36, 8089), (43, 8146), (44, 8149), (46, 8158), (47, 8167), (48, 8173),

Gene: MrMagoo\_24 Start: 12049, Stop: 12414, Start Num: 13

Candidate Starts for MrMagoo\_24:

(6, 11986), (Start: 12 @12046 has 18 MA's), (Start: 13 @12049 has 3 MA's), (15, 12082), (23, 12184), (31, 12277), (33, 12310), (34, 12313), (35, 12322), (46, 12394),

Gene: MsGreen\_11 Start: 7844, Stop: 8182, Start Num: 16

Candidate Starts for MsGreen\_11:

(Start: 16 @7844 has 72 MA's), (29, 8024), (36, 8093), (43, 8150), (44, 8153), (46, 8162), (47, 8171), (48, 8177),

Gene: Nanosmite\_24 Start: 12264, Stop: 12632, Start Num: 12

Candidate Starts for Nanosmite\_24:

(6, 12204), (Start: 12 @12264 has 18 MA's), (22, 12399), (23, 12402), (26, 12429), (30, 12486), (31, 12495), (33, 12528), (38, 12555), (39, 12576), (45, 12606), (46, 12612),

Gene: Netyap\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Netyap\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Nicholas\_11 Start: 7844, Stop: 8182, Start Num: 16

Candidate Starts for Nicholas\_11:

(Start: 16 @7844 has 72 MA's), (29, 8024), (36, 8093), (43, 8150), (44, 8153), (46, 8162), (47, 8171), (48, 8177),

Gene: Nicholasp3\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Nicholasp3\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: OhShagHennessy\_10 Start: 7684, Stop: 8007, Start Num: 16

Candidate Starts for OhShagHennessy\_10:

(Start: 16 @7684 has 72 MA's), (29, 7849), (35, 7915), (46, 7987), (47, 7996),

Gene: PYPDinur\_10 Start: 7372, Stop: 7710, Start Num: 16

Candidate Starts for PYPDinur\_10:

(Start: 16 @7372 has 72 MA's), (29, 7552), (43, 7678), (44, 7681), (46, 7690), (47, 7699),

Gene: PegLeg\_20 Start: 11509, Stop: 11877, Start Num: 12

Candidate Starts for PegLeg\_20:

(Start: 12 @11509 has 18 MA's), (23, 11647), (31, 11740), (36, 11788), (38, 11800),

Gene: Quby\_10 Start: 7371, Stop: 7709, Start Num: 16

Candidate Starts for Quby\_10:

(Start: 16 @7371 has 72 MA's), (20, 7449), (29, 7551), (43, 7677), (44, 7680), (46, 7689), (47, 7698),

Gene: Reindeer\_18 Start: 11362, Stop: 11730, Start Num: 12

Candidate Starts for Reindeer\_18:

(Start: 12 @11362 has 18 MA's), (Start: 14 @11389 has 2 MA's), (22, 11497), (23, 11500), (24, 11509), (31, 11593), (34, 11629), (35, 11638), (36, 11641), (38, 11653), (39, 11674),

Gene: Rey\_24 Start: 12284, Stop: 12652, Start Num: 13

Candidate Starts for Rey\_24:

(6, 12221), (Start: 12 @12281 has 18 MA's), (Start: 13 @12284 has 3 MA's), (Start: 14 @12308 has 2 MA's), (15, 12317), (23, 12419), (31, 12512), (33, 12545), (34, 12548), (39, 12593), (46, 12629),

Gene: Rose5\_10 Start: 7710, Stop: 8033, Start Num: 16

Candidate Starts for Rose5\_10:

(Start: 16 @7710 has 72 MA's), (29, 7875), (35, 7941), (46, 8013), (47, 8022),

Gene: Rumpelstiltskin\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Rumpelstiltskin\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Samty\_11 Start: 7840, Stop: 8178, Start Num: 16

Candidate Starts for Samty\_11:

(Start: 16 @7840 has 72 MA's), (29, 8020), (36, 8089), (43, 8146), (44, 8149), (46, 8158), (47, 8167), (48, 8173),

Gene: Sarshaun\_10 Start: 7725, Stop: 8063, Start Num: 16  
Candidate Starts for Sarshaun\_10:  
(Start: 16 @7725 has 72 MA's), (29, 7905), (38, 7986), (43, 8031), (46, 8043), (47, 8052),

Gene: Sheng711\_10 Start: 7372, Stop: 7710, Start Num: 16  
Candidate Starts for Sheng711\_10:  
(Start: 16 @7372 has 72 MA's), (29, 7552), (43, 7678), (44, 7681), (46, 7690), (47, 7699),

Gene: Silverleaf\_10 Start: 7710, Stop: 8033, Start Num: 16  
Candidate Starts for Silverleaf\_10:  
(Start: 16 @7710 has 72 MA's), (29, 7875), (35, 7941), (46, 8013), (47, 8022),

Gene: Skinny\_21 Start: 11510, Stop: 11878, Start Num: 12  
Candidate Starts for Skinny\_21:  
(Start: 12 @11510 has 18 MA's), (23, 11648), (31, 11741), (36, 11789), (38, 11801),

Gene: SlimJimmy\_19 Start: 11509, Stop: 11877, Start Num: 12  
Candidate Starts for SlimJimmy\_19:  
(Start: 12 @11509 has 18 MA's), (23, 11647), (31, 11740), (36, 11788), (38, 11800),

Gene: Snenia\_11 Start: 7845, Stop: 8183, Start Num: 16  
Candidate Starts for Snenia\_11:  
(Start: 16 @7845 has 72 MA's), (29, 8025), (36, 8094), (43, 8151), (44, 8154), (46, 8163), (47, 8172),  
(48, 8178),

Gene: Soap141\_10 Start: 7725, Stop: 8063, Start Num: 16  
Candidate Starts for Soap141\_10:  
(Start: 16 @7725 has 72 MA's), (29, 7905), (38, 7986), (43, 8031), (46, 8043), (47, 8052),

Gene: Tourach\_10 Start: 7705, Stop: 8043, Start Num: 16  
Candidate Starts for Tourach\_10:  
(Start: 16 @7705 has 72 MA's), (20, 7783), (29, 7885), (38, 7966), (43, 8011), (44, 8014), (46, 8023),  
(47, 8032),

Gene: TyDawg\_20 Start: 11510, Stop: 11878, Start Num: 12  
Candidate Starts for TyDawg\_20:  
(Start: 12 @11510 has 18 MA's), (23, 11648), (31, 11741), (36, 11789), (38, 11801),

Gene: Tyson\_10 Start: 7710, Stop: 8033, Start Num: 16  
Candidate Starts for Tyson\_10:  
(Start: 16 @7710 has 72 MA's), (29, 7875), (35, 7941), (46, 8013), (47, 8022),

Gene: UPIE\_10 Start: 7708, Stop: 8031, Start Num: 16  
Candidate Starts for UPIE\_10:  
(Start: 16 @7708 has 72 MA's), (29, 7873), (35, 7939), (46, 8011), (47, 8020),

Gene: Vetrix\_10 Start: 7692, Stop: 8030, Start Num: 16  
Candidate Starts for Vetrix\_10:  
(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Wamburgrexpress\_10 Start: 7710, Stop: 8033, Start Num: 16  
Candidate Starts for Wamburgrexpress\_10:  
(Start: 16 @7710 has 72 MA's), (29, 7875), (35, 7941), (46, 8013), (47, 8022),

Gene: Whirlwind\_12 Start: 7838, Stop: 8176, Start Num: 16

Candidate Starts for Whirlwind\_12:

(Start: 16 @7838 has 72 MA's), (29, 8018), (36, 8087), (43, 8144), (44, 8147), (47, 8165),

Gene: Wigglewigggle\_10 Start: 7725, Stop: 8063, Start Num: 16

Candidate Starts for Wigglewigggle\_10:

(Start: 16 @7725 has 72 MA's), (29, 7905), (38, 7986), (43, 8031), (46, 8043), (47, 8052),

Gene: Wildcat\_32 Start: 14618, Stop: 14959, Start Num: 16

Candidate Starts for Wildcat\_32:

(Start: 16 @14618 has 72 MA's), (19, 14648), (21, 14702), (25, 14720), (27, 14753), (31, 14807), (35, 14852), (40, 14903), (41, 14906), (46, 14930),

Gene: Wilder\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Wilder\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Winky\_10 Start: 7692, Stop: 8030, Start Num: 16

Candidate Starts for Winky\_10:

(Start: 16 @7692 has 72 MA's), (29, 7872), (38, 7953), (43, 7998), (46, 8010), (47, 8019),

Gene: Wyatt2\_10 Start: 7710, Stop: 8033, Start Num: 16

Candidate Starts for Wyatt2\_10:

(Start: 16 @7710 has 72 MA's), (29, 7875), (35, 7941), (46, 8013), (47, 8022),

Gene: Zakai\_10 Start: 7680, Stop: 8018, Start Num: 16

Candidate Starts for Zakai\_10:

(Start: 16 @7680 has 72 MA's), (29, 7860), (38, 7941), (43, 7986), (46, 7998), (47, 8007),

Gene: Zaria\_10 Start: 7711, Stop: 8034, Start Num: 16

Candidate Starts for Zaria\_10:

(Start: 16 @7711 has 72 MA's), (29, 7876), (35, 7942), (46, 8014), (47, 8023),

Gene: ZhongYanYuan\_9 Start: 7520, Stop: 7858, Start Num: 16

Candidate Starts for ZhongYanYuan\_9:

(Start: 16 @7520 has 72 MA's), (20, 7598), (29, 7700), (38, 7781), (43, 7826), (44, 7829), (46, 7838), (47, 7847),