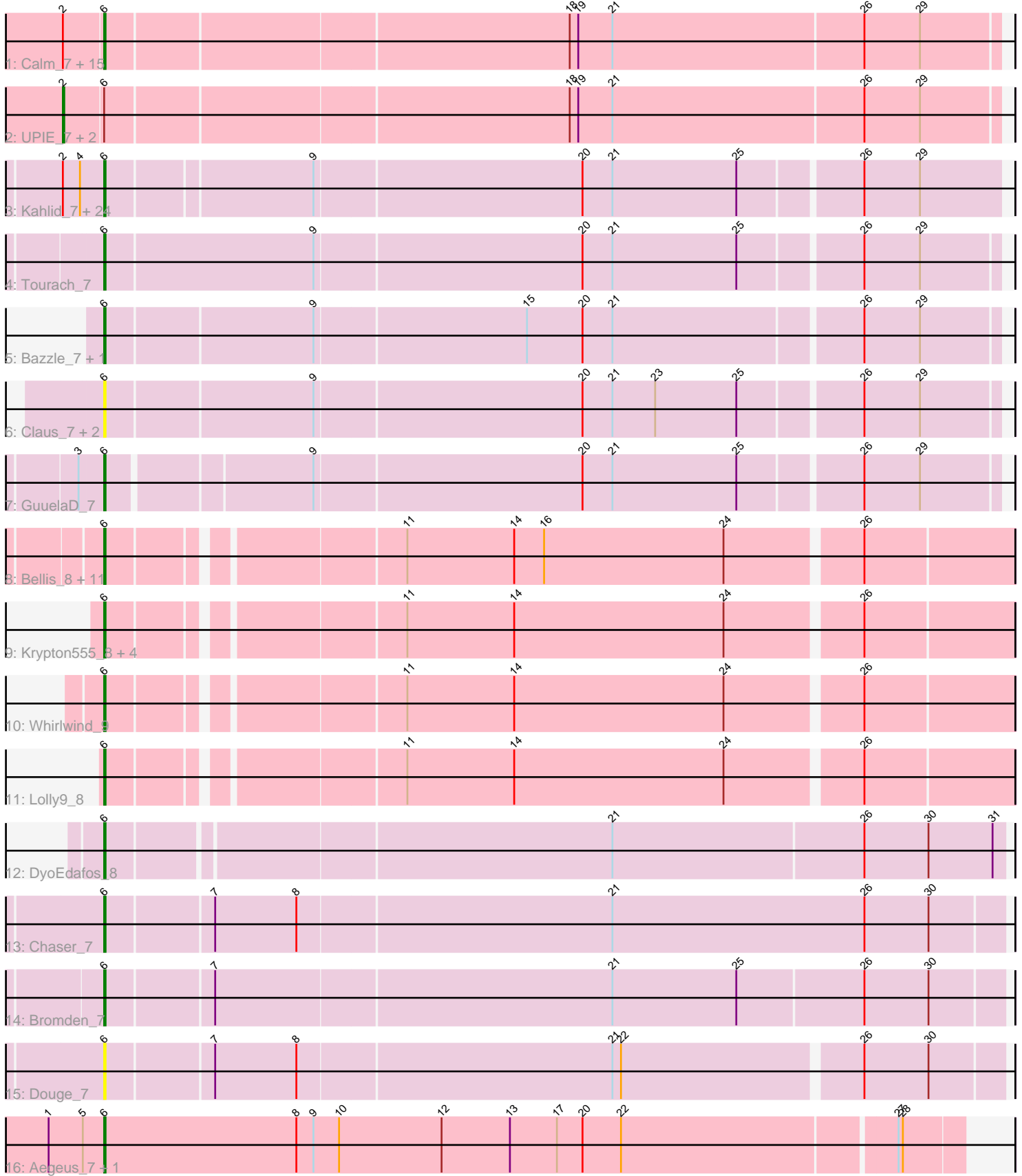


Pham 171418



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 171418 Report

This analysis was run 07/10/24 on database version 566.

Pham number 171418 has 76 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Calm\_7, Silverleaf\_7, Appletree2\_7, Enceladus\_7, Wyatt2\_7, JoeDirt\_7, Zaria\_7, Wamburgexpress\_7, MAckerman\_7, Halena\_7, AvadaKedavra\_7, DirkDirk\_7, Acquire49\_7, OhShagHennessy\_7, Rose5\_7, CicholasNage\_7
- Track 2 : UPIE\_7, Tyson\_7, LeBron\_7
- Track 3 : Kahlid\_7, DrSeegs\_7, Netyap\_7, Wilder\_7, Breezona\_7, Miley16\_7, Vetric\_7, Finemlucis\_7, Gabriela\_7, LilDestine\_7, Zakai\_7, Faith1\_7, MkaliMitinis3\_7, Hafay\_7, Itos\_7, Lewan\_7, Loadrie\_7, BigCheese\_7, Crossroads\_7, Winky\_7, Wigglewiggles\_7, BobsGarage\_7, Nicholasp3\_7, Rumpelstiltskin\_7, Gardann\_7
- Track 4 : Tourach\_7
- Track 5 : Bazzle\_7, Archie\_7
- Track 6 : Claus\_7, Baoshan\_6, ZhongYanYuan\_6
- Track 7 : GuelaD\_7
- Track 8 : Bellis\_8, Samty\_8, Lumos\_8, MsGreen\_8, Clautastrophe\_8, Snenia\_8, Jobypre\_8, Finnry\_8, Nicholas\_8, Jubie\_8, Kingsolomon\_8, Moostard\_8
- Track 9 : Krypton555\_8, MiniLon\_8, Ellson\_8, DuncansLeg\_8, MiniMac\_8
- Track 10 : Whirlwind\_9
- Track 11 : Lolly9\_8
- Track 12 : DyoEdafos\_8
- Track 13 : Chaser\_7
- Track 14 : Bromden\_7
- Track 15 : Douge\_7
- Track 16 : Aegeus\_7, Baudelaire\_7

### ***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 64 of the 67 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acquire49\_7, Aegeus\_7, Appletree2\_7, Archie\_7, AvadaKedavra\_7, Baoshan\_6, Baudelaire\_7, Bazzle\_7, Bellis\_8, BigCheese\_7, BobsGarage\_7, Breezona\_7, Bromden\_7, Calm\_7, Chaser\_7, CicholasNage\_7, Claus\_7, Clautastrophe\_8, Crossroads\_7, DirkDirk\_7, Douge\_7, DrSeegs\_7, DuncansLeg\_8, DyoEdafos\_8, Ellson\_8, Enceladus\_7, Faith1\_7, Finemlucis\_7, Finnry\_8, Gabriela\_7, Gardann\_7,

GuuelaD\_7, Hafay\_7, Halena\_7, Itos\_7, Jobypre\_8, JoeDirt\_7, Jubie\_8, Kahlid\_7, Kingsolomon\_8, Krypton555\_8, Lewan\_7, LilDestine\_7, Loadrie\_7, Lolly9\_8, Lumos\_8, MAckerman\_7, Miley16\_7, MiniLon\_8, MiniMac\_8, MkaliMitinis3\_7, Moostard\_8, MsGreen\_8, Netyap\_7, Nicholas\_8, Nicholasp3\_7, OhShagHennessy\_7, Rose5\_7, Rumpelstiltskin\_7, Samty\_8, Silverleaf\_7, Snenia\_8, Tourach\_7, Vetrix\_7, Wamburggrxpress\_7, Whirlwind\_9, Wigglewiggles\_7, Wilder\_7, Winky\_7, Wyatt2\_7, Zakai\_7, Zaria\_7, ZhongYanYuan\_6,

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

- LeBron\_7, Tyson\_7, UPIE\_7,

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

- 

### Summary by start number:

Start 2:

- Found in 44 of 76 ( 57.9% ) of genes in pham
- Manual Annotations of this start: 3 of 67
- Called 6.8% of time when present
- Phage (with cluster) where this start called: LeBron\_7 (L1), Tyson\_7 (L1), UPIE\_7 (L1),

Start 6:

- Found in 76 of 76 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 64 of 67
- Called 96.1% of time when present
- Phage (with cluster) where this start called: Acquire49\_7 (L1), Aegeus\_7 (L5), Appletree2\_7 (L1), Archie\_7 (L2), AvadaKedavra\_7 (L1), Baoshan\_6 (L2), Baudelaire\_7 (L5), Bazzle\_7 (L2), Bellis\_8 (L3), BigCheese\_7 (L2), BobsGarage\_7 (L2), Breezona\_7 (L2), Bromden\_7 (L4), Calm\_7 (L1), Chaser\_7 (L4), CicholasNage\_7 (L1), Claus\_7 (L2), Clautastrophe\_8 (L3), Crossroads\_7 (L2), DirkDirk\_7 (L1), Douge\_7 (L4), DrSeegs\_7 (L2), DuncansLeg\_8 (L3), DyoEdafos\_8 (L4), Ellson\_8 (L3), Enceladus\_7 (L1), Faith1\_7 (L2), Finemlucis\_7 (L2), Finnry\_8 (L3), Gabriela\_7 (L2), Gardann\_7 (L2), GuuelaD\_7 (L2), Hafay\_7 (L2), Halena\_7 (L1), Itos\_7 (L2), Jobypre\_8 (L3), JoeDirt\_7 (L1), Jubie\_8 (L3), Kahlid\_7 (L2), Kingsolomon\_8 (L3), Krypton555\_8 (L3), Lewan\_7 (L2), LilDestine\_7 (L2), Loadrie\_7 (L2), Lolly9\_8 (L3), Lumos\_8 (L3), MAckerman\_7 (L1), Miley16\_7 (L2), MiniLon\_8 (L3), MiniMac\_8 (L3), MkaliMitinis3\_7 (L2), Moostard\_8 (L3), MsGreen\_8 (L3), Netyap\_7 (L2), Nicholas\_8 (L3), Nicholasp3\_7 (L2), OhShagHennessy\_7 (L1), Rose5\_7 (L1), Rumpelstiltskin\_7 (L2), Samty\_8 (L3), Silverleaf\_7 (L1), Snenia\_8 (L3), Tourach\_7 (L2), Vetrix\_7 (L2), Wamburggrxpress\_7 (L1), Whirlwind\_9 (L3), Wigglewiggles\_7 (L2), Wilder\_7 (L2), Winky\_7 (L2), Wyatt2\_7 (L1), Zakai\_7 (L2), Zaria\_7 (L1), ZhongYanYuan\_6 (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 2 was manually annotated 3 times for cluster L1.
- Start number 6 was manually annotated 15 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 6 was manually annotated 28 times for cluster L2.

Info for manual annotations of cluster L3:

- Start number 6 was manually annotated 16 times for cluster L3.

Info for manual annotations of cluster L4:

- Start number 6 was manually annotated 3 times for cluster L4.

Info for manual annotations of cluster L5:

- Start number 6 was manually annotated 2 times for cluster L5.

### ***Gene Information:***

Gene: Acquire49\_7 Start: 5429, Stop: 6040, Start Num: 6

Candidate Starts for Acquire49\_7:

(Start: 2 @5402 has 3 MA's), (Start: 6 @5429 has 64 MA's), (18, 5744), (19, 5750), (21, 5774), (26, 5948), (29, 5987),

Gene: Aegeus\_7 Start: 5028, Stop: 5621, Start Num: 6

Candidate Starts for Aegeus\_7:

(1, 4989), (5, 5013), (Start: 6 @5028 has 64 MA's), (8, 5163), (9, 5175), (10, 5193), (12, 5265), (13, 5313), (17, 5346), (20, 5364), (22, 5391), (27, 5577), (28, 5580),

Gene: Appletree2\_7 Start: 5403, Stop: 6014, Start Num: 6

Candidate Starts for Appletree2\_7:

(Start: 2 @5376 has 3 MA's), (Start: 6 @5403 has 64 MA's), (18, 5718), (19, 5724), (21, 5748), (26, 5922), (29, 5961),

Gene: Archie\_7 Start: 5396, Stop: 6001, Start Num: 6

Candidate Starts for Archie\_7:

(Start: 6 @5396 has 64 MA's), (9, 5537), (15, 5681), (20, 5720), (21, 5741), (26, 5909), (29, 5948),

Gene: AvadaKedavra\_7 Start: 5429, Stop: 6040, Start Num: 6

Candidate Starts for AvadaKedavra\_7:

(Start: 2 @5402 has 3 MA's), (Start: 6 @5429 has 64 MA's), (18, 5744), (19, 5750), (21, 5774), (26, 5948), (29, 5987),

Gene: Baoshan\_6 Start: 5250, Stop: 5855, Start Num: 6

Candidate Starts for Baoshan\_6:

(Start: 6 @5250 has 64 MA's), (9, 5391), (20, 5574), (21, 5595), (23, 5625), (25, 5682), (26, 5763), (29, 5802),

Gene: Baudelaire\_7 Start: 5028, Stop: 5621, Start Num: 6

Candidate Starts for Baudelaire\_7:

(1, 4989), (5, 5013), (Start: 6 @5028 has 64 MA's), (8, 5163), (9, 5175), (10, 5193), (12, 5265), (13, 5313), (17, 5346), (20, 5364), (22, 5391), (27, 5577), (28, 5580),

Gene: Bazzle\_7 Start: 5372, Stop: 5977, Start Num: 6

Candidate Starts for Bazzle\_7:

(Start: 6 @5372 has 64 MA's), (9, 5513), (15, 5657), (20, 5696), (21, 5717), (26, 5885), (29, 5924),

Gene: Bellis\_8 Start: 5538, Stop: 6137, Start Num: 6

Candidate Starts for Bellis\_8:

(Start: 6 @5538 has 64 MA's), (11, 5724), (14, 5799), (16, 5820), (24, 5946), (26, 6036),

Gene: BigCheese\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for BigCheese\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: BobsGarage\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for BobsGarage\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Breezona\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Breezona\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Bromden\_7 Start: 5140, Stop: 5754, Start Num: 6

Candidate Starts for Bromden\_7:

(Start: 6 @5140 has 64 MA's), (7, 5212), (21, 5485), (25, 5572), (26, 5659), (30, 5704),

Gene: Calm\_7 Start: 5430, Stop: 6041, Start Num: 6

Candidate Starts for Calm\_7:

(Start: 2 @5403 has 3 MA's), (Start: 6 @5430 has 64 MA's), (18, 5745), (19, 5751), (21, 5775), (26, 5949), (29, 5988),

Gene: Chaser\_7 Start: 5142, Stop: 5759, Start Num: 6

Candidate Starts for Chaser\_7:

(Start: 6 @5142 has 64 MA's), (7, 5214), (8, 5271), (21, 5487), (26, 5664), (30, 5709),

Gene: CicholasNage\_7 Start: 5430, Stop: 6041, Start Num: 6

Candidate Starts for CicholasNage\_7:

(Start: 2 @5403 has 3 MA's), (Start: 6 @5430 has 64 MA's), (18, 5745), (19, 5751), (21, 5775), (26, 5949), (29, 5988),

Gene: Claus\_7 Start: 5430, Stop: 6035, Start Num: 6

Candidate Starts for Claus\_7:

(Start: 6 @5430 has 64 MA's), (9, 5571), (20, 5754), (21, 5775), (23, 5805), (25, 5862), (26, 5943), (29, 5982),

Gene: Clautastrophe\_8 Start: 5542, Stop: 6141, Start Num: 6

Candidate Starts for Clautastrophe\_8:

(Start: 6 @5542 has 64 MA's), (11, 5728), (14, 5803), (16, 5824), (24, 5950), (26, 6040),

Gene: Crossroads\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Crossroads\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: DirkDirk\_7 Start: 5431, Stop: 6042, Start Num: 6

Candidate Starts for DirkDirk\_7:

(Start: 2 @5404 has 3 MA's), (Start: 6 @5431 has 64 MA's), (18, 5746), (19, 5752), (21, 5776), (26, 5950), (29, 5989),

Gene: Douge\_7 Start: 5097, Stop: 5705, Start Num: 6

Candidate Starts for Douge\_7:

(Start: 6 @5097 has 64 MA's), (7, 5169), (8, 5226), (21, 5442), (22, 5448), (26, 5610), (30, 5655),

Gene: DrSeegs\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for DrSeegs\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: DuncansLeg\_8 Start: 5545, Stop: 6144, Start Num: 6

Candidate Starts for DuncansLeg\_8:

(Start: 6 @5545 has 64 MA's), (11, 5731), (14, 5806), (24, 5953), (26, 6043),

Gene: DyoEdafos\_8 Start: 5282, Stop: 5893, Start Num: 6

Candidate Starts for DyoEdafos\_8:

(Start: 6 @5282 has 64 MA's), (21, 5621), (26, 5795), (30, 5840), (31, 5885),

Gene: Ellson\_8 Start: 5554, Stop: 6153, Start Num: 6

Candidate Starts for Ellson\_8:

(Start: 6 @5554 has 64 MA's), (11, 5740), (14, 5815), (24, 5962), (26, 6052),

Gene: Enceladus\_7 Start: 5431, Stop: 6042, Start Num: 6

Candidate Starts for Enceladus\_7:

(Start: 2 @5404 has 3 MA's), (Start: 6 @5431 has 64 MA's), (18, 5746), (19, 5752), (21, 5776), (26, 5950), (29, 5989),

Gene: Faith1\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Faith1\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Finemlucis\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Finemlucis\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Finnry\_8 Start: 5539, Stop: 6138, Start Num: 6

Candidate Starts for Finnry\_8:

(Start: 6 @5539 has 64 MA's), (11, 5725), (14, 5800), (16, 5821), (24, 5947), (26, 6037),

Gene: Gabriela\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Gabriela\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Gardann\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Gardann\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: GuuelaD\_7 Start: 5462, Stop: 6061, Start Num: 6

Candidate Starts for GuuelaD\_7:

(3, 5447), (Start: 6 @5462 has 64 MA's), (9, 5597), (20, 5780), (21, 5801), (25, 5888), (26, 5969), (29, 6008),

Gene: Hafay\_7 Start: 5455, Stop: 6060, Start Num: 6

Candidate Starts for Hafay\_7:

(Start: 2 @5428 has 3 MA's), (4, 5440), (Start: 6 @5455 has 64 MA's), (9, 5593), (20, 5776), (21, 5797), (25, 5884), (26, 5965), (29, 6004),

Gene: Halena\_7 Start: 5430, Stop: 6041, Start Num: 6

Candidate Starts for Halena\_7:

(Start: 2 @5403 has 3 MA's), (Start: 6 @5430 has 64 MA's), (18, 5745), (19, 5751), (21, 5775), (26, 5949), (29, 5988),

Gene: Itos\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Itos\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Jobypre\_8 Start: 5542, Stop: 6141, Start Num: 6

Candidate Starts for Jobypre\_8:

(Start: 6 @5542 has 64 MA's), (11, 5728), (14, 5803), (16, 5824), (24, 5950), (26, 6040),

Gene: JoeDirt\_7 Start: 5430, Stop: 6041, Start Num: 6

Candidate Starts for JoeDirt\_7:

(Start: 2 @5403 has 3 MA's), (Start: 6 @5430 has 64 MA's), (18, 5745), (19, 5751), (21, 5775), (26, 5949), (29, 5988),

Gene: Jubie\_8 Start: 5542, Stop: 6141, Start Num: 6

Candidate Starts for Jubie\_8:

(Start: 6 @5542 has 64 MA's), (11, 5728), (14, 5803), (16, 5824), (24, 5950), (26, 6040),

Gene: Kahlid\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Kahlid\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Kingsolomon\_8 Start: 5542, Stop: 6141, Start Num: 6

Candidate Starts for Kingsolomon\_8:

(Start: 6 @5542 has 64 MA's), (11, 5728), (14, 5803), (16, 5824), (24, 5950), (26, 6040),

Gene: Krypton555\_8 Start: 5533, Stop: 6132, Start Num: 6

Candidate Starts for Krypton555\_8:

(Start: 6 @5533 has 64 MA's), (11, 5719), (14, 5794), (24, 5941), (26, 6031),

Gene: LeBron\_7 Start: 5403, Stop: 6041, Start Num: 2

Candidate Starts for LeBron\_7:

(Start: 2 @5403 has 3 MA's), (Start: 6 @5430 has 64 MA's), (18, 5745), (19, 5751), (21, 5775), (26, 5949), (29, 5988),

Gene: Lewan\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Lewan\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: LilDestine\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for LilDestine\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Loadrie\_7 Start: 5455, Stop: 6060, Start Num: 6

Candidate Starts for Loadrie\_7:

(Start: 2 @5428 has 3 MA's), (4, 5440), (Start: 6 @5455 has 64 MA's), (9, 5593), (20, 5776), (21, 5797), (25, 5884), (26, 5965), (29, 6004),

Gene: Lolly9\_8 Start: 5548, Stop: 6147, Start Num: 6

Candidate Starts for Lolly9\_8:

(Start: 6 @5548 has 64 MA's), (11, 5734), (14, 5809), (24, 5956), (26, 6046),

Gene: Lumos\_8 Start: 5542, Stop: 6141, Start Num: 6

Candidate Starts for Lumos\_8:

(Start: 6 @5542 has 64 MA's), (11, 5728), (14, 5803), (16, 5824), (24, 5950), (26, 6040),

Gene: MAckerman\_7 Start: 5429, Stop: 6040, Start Num: 6

Candidate Starts for MAckerman\_7:

(Start: 2 @5402 has 3 MA's), (Start: 6 @5429 has 64 MA's), (18, 5744), (19, 5750), (21, 5774), (26, 5948), (29, 5987),

Gene: Miley16\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Miley16\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: MiniLon\_8 Start: 5548, Stop: 6147, Start Num: 6

Candidate Starts for MiniLon\_8:

(Start: 6 @5548 has 64 MA's), (11, 5734), (14, 5809), (24, 5956), (26, 6046),

Gene: MiniMac\_8 Start: 5548, Stop: 6147, Start Num: 6

Candidate Starts for MiniMac\_8:

(Start: 6 @5548 has 64 MA's), (11, 5734), (14, 5809), (24, 5956), (26, 6046),

Gene: MkaliMitinis3\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for MkaliMitinis3\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Moostard\_8 Start: 5538, Stop: 6137, Start Num: 6

Candidate Starts for Moostard\_8:

(Start: 6 @5538 has 64 MA's), (11, 5724), (14, 5799), (16, 5820), (24, 5946), (26, 6036),

Gene: MsGreen\_8 Start: 5542, Stop: 6141, Start Num: 6

Candidate Starts for MsGreen\_8:

(Start: 6 @5542 has 64 MA's), (11, 5728), (14, 5803), (16, 5824), (24, 5950), (26, 6040),



Gene: Netyap\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Netyap\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Nicholas\_8 Start: 5542, Stop: 6141, Start Num: 6

Candidate Starts for Nicholas\_8:

(Start: 6 @5542 has 64 MA's), (11, 5728), (14, 5803), (16, 5824), (24, 5950), (26, 6040),

Gene: Nicholasp3\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Nicholasp3\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: OhShagHennessy\_7 Start: 5403, Stop: 6014, Start Num: 6

Candidate Starts for OhShagHennessy\_7:

(Start: 2 @5376 has 3 MA's), (Start: 6 @5403 has 64 MA's), (18, 5718), (19, 5724), (21, 5748), (26, 5922), (29, 5961),

Gene: Rose5\_7 Start: 5429, Stop: 6040, Start Num: 6

Candidate Starts for Rose5\_7:

(Start: 2 @5402 has 3 MA's), (Start: 6 @5429 has 64 MA's), (18, 5744), (19, 5750), (21, 5774), (26, 5948), (29, 5987),

Gene: Rumpelstiltskin\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Rumpelstiltskin\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Samty\_8 Start: 5538, Stop: 6137, Start Num: 6

Candidate Starts for Samty\_8:

(Start: 6 @5538 has 64 MA's), (11, 5724), (14, 5799), (16, 5820), (24, 5946), (26, 6036),

Gene: Silverleaf\_7 Start: 5429, Stop: 6040, Start Num: 6

Candidate Starts for Silverleaf\_7:

(Start: 2 @5402 has 3 MA's), (Start: 6 @5429 has 64 MA's), (18, 5744), (19, 5750), (21, 5774), (26, 5948), (29, 5987),

Gene: Snenia\_8 Start: 5542, Stop: 6141, Start Num: 6

Candidate Starts for Snenia\_8:

(Start: 6 @5542 has 64 MA's), (11, 5728), (14, 5803), (16, 5824), (24, 5950), (26, 6040),

Gene: Tourach\_7 Start: 5433, Stop: 6041, Start Num: 6

Candidate Starts for Tourach\_7:

(Start: 6 @5433 has 64 MA's), (9, 5577), (20, 5760), (21, 5781), (25, 5868), (26, 5949), (29, 5988),

Gene: Tyson\_7 Start: 5402, Stop: 6040, Start Num: 2

Candidate Starts for Tyson\_7:

(Start: 2 @5402 has 3 MA's), (Start: 6 @5429 has 64 MA's), (18, 5744), (19, 5750), (21, 5774), (26, 5948), (29, 5987),

Gene: UPIE\_7 Start: 5400, Stop: 6038, Start Num: 2

Candidate Starts for UPIE\_7:

(Start: 2 @5400 has 3 MA's), (Start: 6 @5427 has 64 MA's), (18, 5742), (19, 5748), (21, 5772), (26, 5946), (29, 5985),

Gene: Vetric\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Vetric\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Wamburgrxpress\_7 Start: 5429, Stop: 6040, Start Num: 6

Candidate Starts for Wamburgrxpress\_7:

(Start: 2 @5402 has 3 MA's), (Start: 6 @5429 has 64 MA's), (18, 5744), (19, 5750), (21, 5774), (26, 5948), (29, 5987),

Gene: Whirlwind\_9 Start: 5535, Stop: 6134, Start Num: 6

Candidate Starts for Whirlwind\_9:

(Start: 6 @5535 has 64 MA's), (11, 5721), (14, 5796), (24, 5943), (26, 6033),

Gene: Wigglewigggle\_7 Start: 5455, Stop: 6060, Start Num: 6

Candidate Starts for Wigglewigggle\_7:

(Start: 2 @5428 has 3 MA's), (4, 5440), (Start: 6 @5455 has 64 MA's), (9, 5593), (20, 5776), (21, 5797), (25, 5884), (26, 5965), (29, 6004),

Gene: Wilder\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Wilder\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Winky\_7 Start: 5422, Stop: 6027, Start Num: 6

Candidate Starts for Winky\_7:

(Start: 2 @5395 has 3 MA's), (4, 5407), (Start: 6 @5422 has 64 MA's), (9, 5560), (20, 5743), (21, 5764), (25, 5851), (26, 5932), (29, 5971),

Gene: Wyatt2\_7 Start: 5429, Stop: 6040, Start Num: 6

Candidate Starts for Wyatt2\_7:

(Start: 2 @5402 has 3 MA's), (Start: 6 @5429 has 64 MA's), (18, 5744), (19, 5750), (21, 5774), (26, 5948), (29, 5987),

Gene: Zakai\_7 Start: 5410, Stop: 6015, Start Num: 6

Candidate Starts for Zakai\_7:

(Start: 2 @5383 has 3 MA's), (4, 5395), (Start: 6 @5410 has 64 MA's), (9, 5548), (20, 5731), (21, 5752), (25, 5839), (26, 5920), (29, 5959),

Gene: Zaria\_7 Start: 5430, Stop: 6041, Start Num: 6

Candidate Starts for Zaria\_7:

(Start: 2 @5403 has 3 MA's), (Start: 6 @5430 has 64 MA's), (18, 5745), (19, 5751), (21, 5775), (26, 5949), (29, 5988),

Gene: ZhongYanYuan\_6 Start: 5250, Stop: 5855, Start Num: 6

Candidate Starts for ZhongYanYuan\_6:

(Start: 6 @5250 has 64 MA's), (9, 5391), (20, 5574), (21, 5595), (23, 5625), (25, 5682), (26, 5763), (29, 5802),