

# Pham 196449



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 196449 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196449 has 90 members, 20 are drafts.

Phages represented in each track:

- Track 1 : Anatole\_40, B3\_39, B22\_42, E1\_40
- Track 2 : E6\_44
- Track 3 : G4\_41
- Track 4 : G4\_48
- Track 5 : Doucette\_43
- Track 6 : PFR2\_39, PFR1\_37
- Track 7 : Astartes\_7, RicoCaldo\_7, PhriedRice\_7, Fullmetal\_7, StagePhright\_7, Moleficent\_7
- Track 8 : Acquire49\_78, MAckerman\_76, Zaria\_79, Wyatt2\_79
- Track 9 : Wamburgrxpress\_78, AvadaKedavra\_78, Rose5\_78, LeBron\_77, UPIE\_77, CicholasNage\_75
- Track 10 : Enceladus\_75
- Track 11 : Appletree2\_77, OhShagHennessy\_75, JoeDirt\_78, DirkDirk\_75
- Track 12 : Tyson\_79, Halena\_76, Silverleaf\_78, Calm\_80
- Track 13 : Gardann\_81, Kahlid\_81, Faith1\_81, Winky\_81, Miley16\_81, Itos\_80, Zakai\_82, Wilder\_82, MkaliMitinis3\_82, Rumpelstiltskin\_78, Breezona\_81
- Track 14 : ZhongYanYuan\_78, DHan\_84, Wigglewiggle\_80, Hafay\_82, Claus\_81
- Track 15 : Loadrie\_80, BobsGarage\_81, Soap141\_81, GuuelaD\_79, DrSeegs\_81, BigCheese\_81, Nicholasp3\_81, Lewan\_82, Crossroads\_81, Sarshaun\_82, Netyap\_82, Gabriela\_80
- Track 16 : Baoshan\_78, DanBing\_81
- Track 17 : Finemlucis\_80
- Track 18 : Archie\_78
- Track 19 : Tourach\_80
- Track 20 : Bazzle\_78
- Track 21 : Vetrix\_80, LilDestine\_80
- Track 22 : Lolly9\_78, MiniMac\_83
- Track 23 : Krypton555\_80, Whirlwind\_80
- Track 24 : DuncansLeg\_79
- Track 25 : KirDoubleO7\_77, BourbonZero\_80, LiyuLake\_78, Ellson\_78
- Track 26 : BrainDrainer\_79, PYPDinur\_78
- Track 27 : Quby\_79
- Track 28 : FarmResident\_80
- Track 29 : Sheng711\_80
- Track 30 : Chaser\_77
- Track 31 : Douge\_78
- Track 32 : Douzhi\_79

- Track 33 : Bromden\_79
- Track 34 : DyoEdafos\_83

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

The start number called the most often in the published annotations is 7, it was called in 25 of the 70 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Acquire49\_78, Appletree2\_77, Archie\_78, Bazzle\_78, Breezona\_81, DirkDirk\_75, DuncansLeg\_79, Faith1\_81, Finemlucis\_80, Gardann\_81, Itos\_80, JoeDirt\_78, Kahlid\_81, Krypton555\_80, MAckerman\_76, Miley16\_81, MkaliMitinis3\_82, OhShagHennessy\_75, Rumpelstiltskin\_78, Whirlwind\_80, Wilder\_82, Winky\_81, Wyatt2\_79, Zakai\_82, Zaria\_79,

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

- AvadaKedavra\_78, Baoshan\_78, BigCheese\_81, BobsGarage\_81, BourbonZero\_80, Calm\_80, CicholasNage\_75, Claus\_81, Crossroads\_81, DHan\_84, DanBing\_81, DrSeegs\_81, Ellson\_78, Enceladus\_75, Gabriela\_80, GuuelaD\_79, Hafay\_82, Halena\_76, KirDoubleO7\_77, LeBron\_77, Lewan\_82, LilDestine\_80, LiyuLake\_78, Loadrie\_80, Lolly9\_78, MiniMac\_83, Netyap\_82, Nicholasp3\_81, Rose5\_78, Sarshaun\_82, Silverleaf\_78, Soap141\_81, Tourach\_80, Tyson\_79, UPIE\_77, Vetrix\_80, Wamburggrxpress\_78, Wigglewiggle\_80, ZhongYanYuan\_78,

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

- Anatole\_40, Astartes\_7, B22\_42, B3\_39, BrainDrainer\_79, Bromden\_79, Chaser\_77, Doucette\_43, Douge\_78, Douzhi\_79, DyoEdafos\_83, E1\_40, E6\_44, FarmResident\_80, Fullmetal\_7, G4\_41, G4\_48, Moleficent\_7, PFR1\_37, PFR2\_39, PYPDinur\_78, PhriedRice\_7, Quby\_79, RicoCaldo\_7, Sheng711\_80, StagePhright\_7,

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

Start 7:

- Found in 64 of 90 ( 71.1% ) of genes in pham
- Manual Annotations of this start: 25 of 70
- Called 39.1% of time when present
- Phage (with cluster) where this start called: Acquire49\_78 (L1), Appletree2\_77 (L1), Archie\_78 (L2), Bazzle\_78 (L2), Breezona\_81 (L2), DirkDirk\_75 (L1), DuncansLeg\_79 (L3), Faith1\_81 (L2), Finemlucis\_80 (L2), Gardann\_81 (L2), Itos\_80 (L2), JoeDirt\_78 (L1), Kahlid\_81 (L2), Krypton555\_80 (L3), MAckerman\_76 (L1), Miley16\_81 (L2), MkaliMitinis3\_82 (L2), OhShagHennessy\_75 (L1), Rumpelstiltskin\_78 (L2), Whirlwind\_80 (L3), Wilder\_82 (L2), Winky\_81 (L2), Wyatt2\_79 (L1), Zakai\_82 (L2), Zaria\_79 (L1),

Start 8:

- Found in 7 of 90 ( 7.8% ) of genes in pham
- Manual Annotations of this start: 7 of 70
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Anatole\_40 (BV), B22\_42 (BW), B3\_39 (BV), Doucette\_43 (BW), E1\_40 (BV), E6\_44 (BW), G4\_41 (BW),

Start 9:

- Found in 10 of 90 ( 11.1% ) of genes in pham
- Manual Annotations of this start: 4 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BrainDrainer\_79 (L4), Bromden\_79 (L4), Chaser\_77 (L4), Douge\_78 (L4), Douzhi\_79 (L4), DyoEdafos\_83 (L4), FarmResident\_80 (L4), PYPDinur\_78 (L4), Quby\_79 (L4), Sheng711\_80 (L4),

Start 10:

- Found in 31 of 90 ( 34.4% ) of genes in pham
- Manual Annotations of this start: 8 of 70
- Called 38.7% of time when present
- Phage (with cluster) where this start called: BourbonZero\_80 (L3), Calm\_80 (L1), Ellson\_78 (L3), Enceladus\_75 (L1), Halena\_76 (L1), KirDoubleO7\_77 (L3), LiyuLake\_78 (L3), Lolly9\_78 (L3), MiniMac\_83 (L3), Silverleaf\_78 (L1), Tourach\_80 (L2), Tyson\_79 (L1),

Start 11:

- Found in 9 of 90 ( 10.0% ) of genes in pham
- Manual Annotations of this start: 7 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Astartes\_7 (EK2), Fullmetal\_7 (EK2), G4\_48 (BW), Moleficient\_7 (EK2), PFR1\_37 (BX), PFR2\_39 (BX), PhriedRice\_7 (EK2), RicoCaldo\_7 (EK2), StagePhright\_7 (EK2),

Start 17:

- Found in 57 of 90 ( 63.3% ) of genes in pham
- Manual Annotations of this start: 19 of 70
- Called 47.4% of time when present
- Phage (with cluster) where this start called: AvadaKedavra\_78 (L1), Baoshan\_78 (L2), BigCheese\_81 (L2), BobsGarage\_81 (L2), CicholasNage\_75 (L1), Claus\_81 (L2), Crossroads\_81 (L2), DHan\_84 (L2), DanBing\_81 (L2), DrSeegs\_81 (L2), Gabriela\_80 (L2), GuuelaD\_79 (L2), Hafay\_82 (L2), LeBron\_77 (L1), Lewan\_82 (L2), LilDestine\_80 (L2), Loadrie\_80 (L2), Netyap\_82 (L2), Nicholasp3\_81 (L2), Rose5\_78 (L1), Sarshaun\_82 (L2), Soap141\_81 (L2), UPIE\_77 (L1), Vetrix\_80 (L2), Wamburgxpress\_78 (L1), Wigglewiggles\_80 (L2), ZhongYanYuan\_78 (L2),

### Summary by clusters:

There are 8 clusters represented in this pham: BV, L4, BW, L2, L3, L1, BX, EK2,

Info for manual annotations of cluster BV:

- Start number 8 was manually annotated 3 times for cluster BV.

Info for manual annotations of cluster BW:

- Start number 8 was manually annotated 4 times for cluster BW.
- Start number 11 was manually annotated 1 time for cluster BW.

Info for manual annotations of cluster EK2:

- Start number 11 was manually annotated 6 times for cluster EK2.

Info for manual annotations of cluster L1:

- Start number 7 was manually annotated 8 times for cluster L1.
- Start number 10 was manually annotated 5 times for cluster L1.
- Start number 17 was manually annotated 6 times for cluster L1.

Info for manual annotations of cluster L2:

- Start number 7 was manually annotated 14 times for cluster L2.
- Start number 10 was manually annotated 1 time for cluster L2.
- Start number 17 was manually annotated 13 times for cluster L2.

Info for manual annotations of cluster L3:

- Start number 7 was manually annotated 3 times for cluster L3.
- Start number 10 was manually annotated 2 times for cluster L3.

Info for manual annotations of cluster L4:

- Start number 9 was manually annotated 4 times for cluster L4.

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

Gene: Acquire49\_78 Start: 52009, Stop: 52314, Start Num: 7

Candidate Starts for Acquire49\_78:

(Start: 7 @52009 has 25 MA's), (Start: 10 @52024 has 8 MA's), (Start: 17 @52084 has 19 MA's), (25, 52147), (28, 52174), (44, 52297), (45, 52300),

Gene: Anatole\_40 Start: 28483, Stop: 28815, Start Num: 8

Candidate Starts for Anatole\_40:

(Start: 8 @28483 has 7 MA's), (12, 28510), (18, 28546), (19, 28558), (20, 28570), (24, 28618), (26, 28627), (38, 28753), (46, 28801),

Gene: Appletree2\_77 Start: 51620, Stop: 51925, Start Num: 7

Candidate Starts for Appletree2\_77:

(Start: 7 @51620 has 25 MA's), (Start: 10 @51635 has 8 MA's), (Start: 17 @51695 has 19 MA's), (25, 51758), (28, 51785), (33, 51839), (44, 51908), (45, 51911),

Gene: Archie\_78 Start: 53502, Stop: 53798, Start Num: 7

Candidate Starts for Archie\_78:

(Start: 7 @53502 has 25 MA's), (22, 53607), (23, 53619), (28, 53655), (34, 53712),

Gene: Astartes\_7 Start: 5219, Stop: 4962, Start Num: 11

Candidate Starts for Astartes\_7:

(5, 5279), (Start: 11 @5219 has 7 MA's), (25, 5105), (33, 5030), (39, 4985),

Gene: AvadaKedavra\_78 Start: 52163, Stop: 52393, Start Num: 17

Candidate Starts for AvadaKedavra\_78:

(Start: 7 @52088 has 25 MA's), (Start: 10 @52103 has 8 MA's), (Start: 17 @52163 has 19 MA's), (25, 52226), (28, 52253), (44, 52376), (45, 52379),

Gene: B22\_42 Start: 28248, Stop: 28580, Start Num: 8

Candidate Starts for B22\_42:

(Start: 8 @28248 has 7 MA's), (12, 28275), (18, 28311), (19, 28323), (20, 28335), (24, 28383), (26, 28392), (38, 28518), (46, 28566),

Gene: B3\_39 Start: 27767, Stop: 28099, Start Num: 8

Candidate Starts for B3\_39:

(Start: 8 @27767 has 7 MA's), (12, 27794), (18, 27830), (19, 27842), (20, 27854), (24, 27902), (26, 27911), (38, 28037), (46, 28085),

Gene: Baoshan\_78 Start: 53848, Stop: 54084, Start Num: 17

Candidate Starts for Baoshan\_78:

(Start: 7 @53788 has 25 MA's), (Start: 17 @53848 has 19 MA's), (22, 53893), (23, 53905), (28, 53941), (32, 53983),

Gene: Bazzle\_78 Start: 53691, Stop: 53987, Start Num: 7

Candidate Starts for Bazzle\_78:

(Start: 7 @53691 has 25 MA's), (Start: 10 @53706 has 8 MA's), (Start: 17 @53751 has 19 MA's), (23, 53808), (25, 53817), (28, 53844), (34, 53901), (36, 53928),

Gene: BigCheese\_81 Start: 53978, Stop: 54214, Start Num: 17

Candidate Starts for BigCheese\_81:

(Start: 7 @53918 has 25 MA's), (Start: 17 @53978 has 19 MA's), (22, 54023), (23, 54035), (28, 54071), (33, 54125), (34, 54128),

Gene: BobsGarage\_81 Start: 53978, Stop: 54214, Start Num: 17

Candidate Starts for BobsGarage\_81:

(Start: 7 @53918 has 25 MA's), (Start: 17 @53978 has 19 MA's), (22, 54023), (23, 54035), (28, 54071), (33, 54125), (34, 54128),

Gene: BourbonZero\_80 Start: 53807, Stop: 54094, Start Num: 10

Candidate Starts for BourbonZero\_80:

(Start: 7 @53792 has 25 MA's), (Start: 10 @53807 has 8 MA's), (28, 53945),

Gene: BrainDrainer\_79 Start: 52733, Stop: 53023, Start Num: 9

Candidate Starts for BrainDrainer\_79:

(Start: 9 @52733 has 4 MA's), (21, 52817), (22, 52832), (23, 52844), (28, 52880), (29, 52898), (31, 52910), (34, 52937),

Gene: Breezona\_81 Start: 53918, Stop: 54214, Start Num: 7

Candidate Starts for Breezona\_81:

(Start: 7 @53918 has 25 MA's), (Start: 17 @53978 has 19 MA's), (22, 54023), (23, 54035), (28, 54071), (33, 54125), (34, 54128),

Gene: Bromden\_79 Start: 53366, Stop: 53650, Start Num: 9

Candidate Starts for Bromden\_79:

(6, 53357), (Start: 9 @53366 has 4 MA's), (Start: 17 @53420 has 19 MA's), (23, 53477), (25, 53486), (28, 53513), (31, 53543), (34, 53570),

Gene: Calm\_80 Start: 52346, Stop: 52636, Start Num: 10

Candidate Starts for Calm\_80:

(Start: 7 @52331 has 25 MA's), (Start: 10 @52346 has 8 MA's), (Start: 17 @52406 has 19 MA's), (25, 52469), (28, 52496), (44, 52619), (45, 52622),

Gene: Chaser\_77 Start: 52365, Stop: 52655, Start Num: 9

Candidate Starts for Chaser\_77:

(Start: 9 @52365 has 4 MA's), (Start: 10 @52374 has 8 MA's), (Start: 17 @52419 has 19 MA's), (22, 52464), (23, 52476), (28, 52512), (29, 52530), (34, 52569),

Gene: CicholasNage\_75 Start: 51748, Stop: 51978, Start Num: 17

Candidate Starts for CicholasNage\_75:

(Start: 7 @51673 has 25 MA's), (Start: 10 @51688 has 8 MA's), (Start: 17 @51748 has 19 MA's), (25, 51811), (28, 51838), (44, 51961), (45, 51964),

Gene: Claus\_81 Start: 53913, Stop: 54149, Start Num: 17

Candidate Starts for Claus\_81:

(Start: 7 @53853 has 25 MA's), (Start: 17 @53913 has 19 MA's), (22, 53958), (23, 53970), (28, 54006), (32, 54048), (33, 54060), (34, 54063),

Gene: Crossroads\_81 Start: 54053, Stop: 54289, Start Num: 17

Candidate Starts for Crossroads\_81:

(Start: 7 @53993 has 25 MA's), (Start: 17 @54053 has 19 MA's), (22, 54098), (23, 54110), (28, 54146), (33, 54200), (34, 54203),

Gene: DHan\_84 Start: 54131, Stop: 54367, Start Num: 17

Candidate Starts for DHan\_84:

(Start: 7 @54071 has 25 MA's), (Start: 17 @54131 has 19 MA's), (22, 54176), (23, 54188), (28, 54224), (32, 54266), (33, 54278), (34, 54281),

Gene: DanBing\_81 Start: 53783, Stop: 54019, Start Num: 17

Candidate Starts for DanBing\_81:

(Start: 7 @53723 has 25 MA's), (Start: 17 @53783 has 19 MA's), (22, 53828), (23, 53840), (28, 53876), (32, 53918),

Gene: DirkDirk\_75 Start: 51200, Stop: 51505, Start Num: 7

Candidate Starts for DirkDirk\_75:

(Start: 7 @51200 has 25 MA's), (Start: 10 @51215 has 8 MA's), (Start: 17 @51275 has 19 MA's), (25, 51338), (28, 51365), (33, 51419), (44, 51488), (45, 51491),

Gene: Doucette\_43 Start: 29654, Stop: 29986, Start Num: 8

Candidate Starts for Doucette\_43:

(Start: 8 @29654 has 7 MA's), (12, 29681), (18, 29717), (19, 29729), (20, 29741), (24, 29789), (26, 29798), (30, 29849), (38, 29924), (46, 29972),

Gene: Douge\_78 Start: 52288, Stop: 52587, Start Num: 9

Candidate Starts for Douge\_78:

(Start: 9 @52288 has 4 MA's), (13, 52318), (Start: 17 @52342 has 19 MA's), (23, 52399), (25, 52408), (28, 52435), (31, 52465),

Gene: Douzhi\_79 Start: 52550, Stop: 52840, Start Num: 9

Candidate Starts for Douzhi\_79:

(Start: 9 @52550 has 4 MA's), (21, 52634), (22, 52649), (23, 52661), (28, 52697), (31, 52727), (34, 52754),

Gene: DrSeegs\_81 Start: 53978, Stop: 54214, Start Num: 17

Candidate Starts for DrSeegs\_81:

(Start: 7 @53918 has 25 MA's), (Start: 17 @53978 has 19 MA's), (22, 54023), (23, 54035), (28, 54071), (33, 54125), (34, 54128),

Gene: DuncansLeg\_79 Start: 53780, Stop: 54082, Start Num: 7  
Candidate Starts for DuncansLeg\_79:  
(Start: 7 @53780 has 25 MA's), (Start: 10 @53795 has 8 MA's), (28, 53933),

Gene: DyoEdafos\_83 Start: 53198, Stop: 53488, Start Num: 9  
Candidate Starts for DyoEdafos\_83:  
(Start: 9 @53198 has 4 MA's), (13, 53228), (Start: 17 @53252 has 19 MA's), (23, 53309), (25, 53318),  
(28, 53345), (31, 53375), (34, 53402),

Gene: E1\_40 Start: 28483, Stop: 28815, Start Num: 8  
Candidate Starts for E1\_40:  
(Start: 8 @28483 has 7 MA's), (12, 28510), (18, 28546), (19, 28558), (20, 28570), (24, 28618), (26,  
28627), (38, 28753), (46, 28801),

Gene: E6\_44 Start: 31064, Stop: 31396, Start Num: 8  
Candidate Starts for E6\_44:  
(Start: 8 @31064 has 7 MA's), (12, 31091), (18, 31127), (19, 31139), (24, 31199), (26, 31208), (38,  
31334), (46, 31382),

Gene: Ellson\_78 Start: 54110, Stop: 54397, Start Num: 10  
Candidate Starts for Ellson\_78:  
(Start: 7 @54095 has 25 MA's), (Start: 10 @54110 has 8 MA's), (28, 54248),

Gene: Enceladus\_75 Start: 51992, Stop: 52282, Start Num: 10  
Candidate Starts for Enceladus\_75:  
(Start: 7 @51977 has 25 MA's), (Start: 10 @51992 has 8 MA's), (Start: 17 @52052 has 19 MA's), (25,  
52115), (28, 52142), (33, 52196), (44, 52265), (45, 52268),

Gene: Faith1\_81 Start: 53918, Stop: 54214, Start Num: 7  
Candidate Starts for Faith1\_81:  
(Start: 7 @53918 has 25 MA's), (Start: 17 @53978 has 19 MA's), (22, 54023), (23, 54035), (28,  
54071), (33, 54125), (34, 54128),

Gene: FarmResident\_80 Start: 52292, Stop: 52576, Start Num: 9  
Candidate Starts for FarmResident\_80:  
(Start: 9 @52292 has 4 MA's), (Start: 17 @52346 has 19 MA's), (22, 52391), (23, 52403), (28, 52439),  
(29, 52457), (34, 52496),

Gene: Finemlucis\_80 Start: 54386, Stop: 54682, Start Num: 7  
Candidate Starts for Finemlucis\_80:  
(Start: 7 @54386 has 25 MA's), (25, 54512), (28, 54539), (31, 54569), (33, 54593),

Gene: Fullmetal\_7 Start: 5216, Stop: 4959, Start Num: 11  
Candidate Starts for Fullmetal\_7:  
(5, 5276), (Start: 11 @5216 has 7 MA's), (25, 5102), (33, 5027), (39, 4982),

Gene: G4\_41 Start: 28598, Stop: 28930, Start Num: 8  
Candidate Starts for G4\_41:  
(Start: 8 @28598 has 7 MA's), (12, 28625), (18, 28661), (19, 28673), (24, 28733), (26, 28742), (38,  
28868), (44, 28907), (46, 28916),

Gene: G4\_48 Start: 30679, Stop: 30978, Start Num: 11



Candidate Starts for G4\_48:

(1, 30469), (2, 30493), (3, 30508), (4, 30535), (Start: 11 @30679 has 7 MA's), (14, 30694), (15, 30697), (16, 30706), (18, 30718), (27, 30802), (28, 30820), (35, 30904), (37, 30916), (40, 30931), (46, 30970),

Gene: Gabriela\_80 Start: 53324, Stop: 53560, Start Num: 17

Candidate Starts for Gabriela\_80:

(Start: 7 @53264 has 25 MA's), (Start: 17 @53324 has 19 MA's), (22, 53369), (23, 53381), (28, 53417), (33, 53471), (34, 53474),

Gene: Gardann\_81 Start: 53753, Stop: 54049, Start Num: 7

Candidate Starts for Gardann\_81:

(Start: 7 @53753 has 25 MA's), (Start: 17 @53813 has 19 MA's), (22, 53858), (23, 53870), (28, 53906), (33, 53960), (34, 53963),

Gene: GuuelaD\_79 Start: 54093, Stop: 54329, Start Num: 17

Candidate Starts for GuuelaD\_79:

(Start: 7 @54033 has 25 MA's), (Start: 17 @54093 has 19 MA's), (22, 54138), (23, 54150), (28, 54186), (33, 54240), (34, 54243),

Gene: Hafay\_82 Start: 53908, Stop: 54144, Start Num: 17

Candidate Starts for Hafay\_82:

(Start: 7 @53848 has 25 MA's), (Start: 17 @53908 has 19 MA's), (22, 53953), (23, 53965), (28, 54001), (32, 54043), (33, 54055), (34, 54058),

Gene: Halena\_76 Start: 51262, Stop: 51552, Start Num: 10

Candidate Starts for Halena\_76:

(Start: 7 @51247 has 25 MA's), (Start: 10 @51262 has 8 MA's), (Start: 17 @51322 has 19 MA's), (25, 51385), (28, 51412), (44, 51535), (45, 51538),

Gene: Itos\_80 Start: 52824, Stop: 53120, Start Num: 7

Candidate Starts for Itos\_80:

(Start: 7 @52824 has 25 MA's), (Start: 17 @52884 has 19 MA's), (22, 52929), (23, 52941), (28, 52977), (33, 53031), (34, 53034),

Gene: JoeDirt\_78 Start: 52575, Stop: 52880, Start Num: 7

Candidate Starts for JoeDirt\_78:

(Start: 7 @52575 has 25 MA's), (Start: 10 @52590 has 8 MA's), (Start: 17 @52650 has 19 MA's), (25, 52713), (28, 52740), (33, 52794), (44, 52863), (45, 52866),

Gene: Kahlid\_81 Start: 53924, Stop: 54220, Start Num: 7

Candidate Starts for Kahlid\_81:

(Start: 7 @53924 has 25 MA's), (Start: 17 @53984 has 19 MA's), (22, 54029), (23, 54041), (28, 54077), (33, 54131), (34, 54134),

Gene: KirDoubleO7\_77 Start: 53797, Stop: 54084, Start Num: 10

Candidate Starts for KirDoubleO7\_77:

(Start: 7 @53782 has 25 MA's), (Start: 10 @53797 has 8 MA's), (28, 53935),

Gene: Krypton555\_80 Start: 54028, Stop: 54342, Start Num: 7

Candidate Starts for Krypton555\_80:

(Start: 7 @54028 has 25 MA's), (Start: 10 @54043 has 8 MA's), (23, 54154), (28, 54190), (43, 54322),

Gene: LeBron\_77 Start: 51321, Stop: 51551, Start Num: 17

Candidate Starts for LeBron\_77:

(Start: 7 @51246 has 25 MA's), (Start: 10 @51261 has 8 MA's), (Start: 17 @51321 has 19 MA's), (25, 51384), (28, 51411), (44, 51534), (45, 51537),

Gene: Lewan\_82 Start: 54036, Stop: 54272, Start Num: 17

Candidate Starts for Lewan\_82:

(Start: 7 @53976 has 25 MA's), (Start: 17 @54036 has 19 MA's), (22, 54081), (23, 54093), (28, 54129), (33, 54183), (34, 54186),

Gene: LilDestine\_80 Start: 53888, Stop: 54124, Start Num: 17

Candidate Starts for LilDestine\_80:

(Start: 7 @53828 has 25 MA's), (Start: 17 @53888 has 19 MA's), (22, 53933), (23, 53945), (28, 53981), (34, 54038),

Gene: LiyuLake\_78 Start: 53870, Stop: 54157, Start Num: 10

Candidate Starts for LiyuLake\_78:

(Start: 7 @53855 has 25 MA's), (Start: 10 @53870 has 8 MA's), (28, 54008),

Gene: Loadrie\_80 Start: 54063, Stop: 54299, Start Num: 17

Candidate Starts for Loadrie\_80:

(Start: 7 @54003 has 25 MA's), (Start: 17 @54063 has 19 MA's), (22, 54108), (23, 54120), (28, 54156), (33, 54210), (34, 54213),

Gene: Lolly9\_78 Start: 53913, Stop: 54164, Start Num: 10

Candidate Starts for Lolly9\_78:

(Start: 7 @53898 has 25 MA's), (Start: 10 @53913 has 8 MA's), (32, 54090), (41, 54150),

Gene: MAckerman\_76 Start: 51240, Stop: 51545, Start Num: 7

Candidate Starts for MAckerman\_76:

(Start: 7 @51240 has 25 MA's), (Start: 10 @51255 has 8 MA's), (Start: 17 @51315 has 19 MA's), (25, 51378), (28, 51405), (44, 51528), (45, 51531),

Gene: Miley16\_81 Start: 53918, Stop: 54214, Start Num: 7

Candidate Starts for Miley16\_81:

(Start: 7 @53918 has 25 MA's), (Start: 17 @53978 has 19 MA's), (22, 54023), (23, 54035), (28, 54071), (33, 54125), (34, 54128),

Gene: MiniMac\_83 Start: 53909, Stop: 54160, Start Num: 10

Candidate Starts for MiniMac\_83:

(Start: 7 @53894 has 25 MA's), (Start: 10 @53909 has 8 MA's), (32, 54086), (41, 54146),

Gene: MkaliMitinis3\_82 Start: 53987, Stop: 54283, Start Num: 7

Candidate Starts for MkaliMitinis3\_82:

(Start: 7 @53987 has 25 MA's), (Start: 17 @54047 has 19 MA's), (22, 54092), (23, 54104), (28, 54140), (33, 54194), (34, 54197),

Gene: Moleficient\_7 Start: 5213, Stop: 4956, Start Num: 11

Candidate Starts for Moleficient\_7:

(5, 5273), (Start: 11 @5213 has 7 MA's), (25, 5099), (33, 5024), (39, 4979),

Gene: Netyap\_82 Start: 53979, Stop: 54215, Start Num: 17

Candidate Starts for Netyap\_82:

(Start: 7 @53919 has 25 MA's), (Start: 17 @53979 has 19 MA's), (22, 54024), (23, 54036), (28, 54072), (33, 54126), (34, 54129),

Gene: Nicholasp3\_81 Start: 53813, Stop: 54049, Start Num: 17

Candidate Starts for Nicholasp3\_81:

(Start: 7 @53753 has 25 MA's), (Start: 17 @53813 has 19 MA's), (22, 53858), (23, 53870), (28, 53906), (33, 53960), (34, 53963),

Gene: OhShagHennessy\_75 Start: 51278, Stop: 51583, Start Num: 7

Candidate Starts for OhShagHennessy\_75:

(Start: 7 @51278 has 25 MA's), (Start: 10 @51293 has 8 MA's), (Start: 17 @51353 has 19 MA's), (25, 51416), (28, 51443), (33, 51497), (44, 51566), (45, 51569),

Gene: PFR1\_37 Start: 28506, Stop: 28805, Start Num: 11

Candidate Starts for PFR1\_37:

(4, 28362), (Start: 11 @28506 has 7 MA's), (14, 28521), (15, 28524), (16, 28533), (18, 28545), (27, 28629), (28, 28647), (30, 28674), (35, 28731), (37, 28743), (40, 28758), (46, 28797),

Gene: PFR2\_39 Start: 30075, Stop: 30374, Start Num: 11

Candidate Starts for PFR2\_39:

(4, 29931), (Start: 11 @30075 has 7 MA's), (14, 30090), (15, 30093), (16, 30102), (18, 30114), (27, 30198), (28, 30216), (30, 30243), (35, 30300), (37, 30312), (40, 30327), (46, 30366),

Gene: PYPDinur\_78 Start: 52985, Stop: 53275, Start Num: 9

Candidate Starts for PYPDinur\_78:

(Start: 9 @52985 has 4 MA's), (21, 53069), (22, 53084), (23, 53096), (28, 53132), (29, 53150), (31, 53162), (34, 53189),

Gene: PhriedRice\_7 Start: 5180, Stop: 4923, Start Num: 11

Candidate Starts for PhriedRice\_7:

(5, 5240), (Start: 11 @5180 has 7 MA's), (25, 5066), (33, 4991), (39, 4946),

Gene: Quby\_79 Start: 52316, Stop: 52600, Start Num: 9

Candidate Starts for Quby\_79:

(Start: 9 @52316 has 4 MA's), (22, 52415), (23, 52427), (28, 52463), (29, 52481), (34, 52520),

Gene: RicoCaldo\_7 Start: 5210, Stop: 4953, Start Num: 11

Candidate Starts for RicoCaldo\_7:

(5, 5270), (Start: 11 @5210 has 7 MA's), (25, 5096), (33, 5021), (39, 4976),

Gene: Rose5\_78 Start: 52495, Stop: 52725, Start Num: 17

Candidate Starts for Rose5\_78:

(Start: 7 @52420 has 25 MA's), (Start: 10 @52435 has 8 MA's), (Start: 17 @52495 has 19 MA's), (25, 52558), (28, 52585), (44, 52708), (45, 52711),

Gene: Rumpelstiltskin\_78 Start: 53546, Stop: 53842, Start Num: 7

Candidate Starts for Rumpelstiltskin\_78:

(Start: 7 @53546 has 25 MA's), (Start: 17 @53606 has 19 MA's), (22, 53651), (23, 53663), (28, 53699), (33, 53753), (34, 53756),

Gene: Sarshaun\_82 Start: 54071, Stop: 54307, Start Num: 17

Candidate Starts for Sarshaun\_82:

(Start: 7 @54011 has 25 MA's), (Start: 17 @54071 has 19 MA's), (22, 54116), (23, 54128), (28, 54164), (33, 54218), (34, 54221),

Gene: Sheng711\_80 Start: 52619, Stop: 52909, Start Num: 9

Candidate Starts for Sheng711\_80:

(Start: 9 @52619 has 4 MA's), (21, 52703), (23, 52730), (28, 52766), (29, 52784), (31, 52796), (34, 52823),

Gene: Silverleaf\_78 Start: 51891, Stop: 52181, Start Num: 10

Candidate Starts for Silverleaf\_78:

(Start: 7 @51876 has 25 MA's), (Start: 10 @51891 has 8 MA's), (Start: 17 @51951 has 19 MA's), (25, 52014), (28, 52041), (44, 52164), (45, 52167),

Gene: Soap141\_81 Start: 54071, Stop: 54307, Start Num: 17

Candidate Starts for Soap141\_81:

(Start: 7 @54011 has 25 MA's), (Start: 17 @54071 has 19 MA's), (22, 54116), (23, 54128), (28, 54164), (33, 54218), (34, 54221),

Gene: StagePhright\_7 Start: 5180, Stop: 4923, Start Num: 11

Candidate Starts for StagePhright\_7:

(5, 5240), (Start: 11 @5180 has 7 MA's), (25, 5066), (33, 4991), (39, 4946),

Gene: Tourach\_80 Start: 54051, Stop: 54332, Start Num: 10

Candidate Starts for Tourach\_80:

(Start: 7 @54036 has 25 MA's), (Start: 10 @54051 has 8 MA's), (25, 54162), (28, 54189), (31, 54219), (42, 54306),

Gene: Tyson\_79 Start: 52361, Stop: 52651, Start Num: 10

Candidate Starts for Tyson\_79:

(Start: 7 @52346 has 25 MA's), (Start: 10 @52361 has 8 MA's), (Start: 17 @52421 has 19 MA's), (25, 52484), (28, 52511), (44, 52634), (45, 52637),

Gene: UPIE\_77 Start: 52017, Stop: 52247, Start Num: 17

Candidate Starts for UPIE\_77:

(Start: 7 @51942 has 25 MA's), (Start: 10 @51957 has 8 MA's), (Start: 17 @52017 has 19 MA's), (25, 52080), (28, 52107), (44, 52230), (45, 52233),

Gene: Vetrix\_80 Start: 53895, Stop: 54131, Start Num: 17

Candidate Starts for Vetrix\_80:

(Start: 7 @53835 has 25 MA's), (Start: 17 @53895 has 19 MA's), (22, 53940), (23, 53952), (28, 53988), (34, 54045),

Gene: Wamburgexpress\_78 Start: 52456, Stop: 52686, Start Num: 17

Candidate Starts for Wamburgexpress\_78:

(Start: 7 @52381 has 25 MA's), (Start: 10 @52396 has 8 MA's), (Start: 17 @52456 has 19 MA's), (25, 52519), (28, 52546), (44, 52669), (45, 52672),

Gene: Whirlwind\_80 Start: 53994, Stop: 54305, Start Num: 7

Candidate Starts for Whirlwind\_80:

(Start: 7 @53994 has 25 MA's), (Start: 10 @54009 has 8 MA's), (23, 54120), (28, 54156), (43, 54285),

Gene: Wigglewobble\_80 Start: 53840, Stop: 54076, Start Num: 17

Candidate Starts for Wigglewobble\_80:

(Start: 7 @53780 has 25 MA's), (Start: 17 @53840 has 19 MA's), (22, 53885), (23, 53897), (28, 53933), (32, 53975), (33, 53987), (34, 53990),

Gene: Wilder\_82 Start: 53924, Stop: 54220, Start Num: 7

Candidate Starts for Wilder\_82:

(Start: 7 @53924 has 25 MA's), (Start: 17 @53984 has 19 MA's), (22, 54029), (23, 54041), (28, 54077), (33, 54131), (34, 54134),

Gene: Winky\_81 Start: 53918, Stop: 54214, Start Num: 7

Candidate Starts for Winky\_81:

(Start: 7 @53918 has 25 MA's), (Start: 17 @53978 has 19 MA's), (22, 54023), (23, 54035), (28, 54071), (33, 54125), (34, 54128),

Gene: Wyatt2\_79 Start: 52344, Stop: 52649, Start Num: 7

Candidate Starts for Wyatt2\_79:

(Start: 7 @52344 has 25 MA's), (Start: 10 @52359 has 8 MA's), (Start: 17 @52419 has 19 MA's), (25, 52482), (28, 52509), (44, 52632), (45, 52635),

Gene: Zakai\_82 Start: 54244, Stop: 54540, Start Num: 7

Candidate Starts for Zakai\_82:

(Start: 7 @54244 has 25 MA's), (Start: 17 @54304 has 19 MA's), (22, 54349), (23, 54361), (28, 54397), (33, 54451), (34, 54454),

Gene: Zaria\_79 Start: 51796, Stop: 52101, Start Num: 7

Candidate Starts for Zaria\_79:

(Start: 7 @51796 has 25 MA's), (Start: 10 @51811 has 8 MA's), (Start: 17 @51871 has 19 MA's), (25, 51934), (28, 51961), (44, 52084), (45, 52087),

Gene: ZhongYanYuan\_78 Start: 53431, Stop: 53667, Start Num: 17

Candidate Starts for ZhongYanYuan\_78:

(Start: 7 @53371 has 25 MA's), (Start: 17 @53431 has 19 MA's), (22, 53476), (23, 53488), (28, 53524), (32, 53566), (33, 53578), (34, 53581),