

Pham 168071



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 168071 Report

This analysis was run 07/09/24 on database version 566.

Pham number 168071 has 126 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Fang\_61, Piglet\_0059, Andre\_62, Orwigg\_60, Serpentine\_0059, Megatron\_60, Quisquilliae\_60, Potter\_58, SassyCat97\_58, IsaacEli\_61, PhrodoBaggins\_60, PG1\_60, Katniss\_60, Gareth\_59, Durga\_62, Charles1\_60, ABU\_60, Harvey\_58, Phipps\_59, Chorkpop\_59, DonSanchon\_57
- Track 2 : Magic8\_60, OSmaximus\_61, Weher20\_59, Dati\_59, UAch1\_59, Apizium\_59, Hetaeria\_59, Melc17\_59, Fozzie\_60
- Track 3 : Squid\_59, Zelda\_60, Thora\_59, Puhltonio\_59, Daffy\_59, Orion\_61, UncleHowie\_58, Childish\_59, Scoot17C\_60, Inchworm\_61, Mosaic\_58, Emiris\_62, Morgushi\_59, Grand2040\_59, Mcshane\_58, CampRoach\_61, Mulan\_59, Fringe\_63, Vortex\_59, LeeLot\_60, JDog\_58, Sophia\_58, Mana\_58, Timmi\_58, Kahve\_59, DelRivs\_58, Usavi\_59, Anderson\_60, Solosis\_58, MitKao\_59, Kikipoo\_61, Cher\_59, Murdoc\_58, LasagnaCat\_61, Skippy\_60, Maru\_59, Slatt\_60, Lulwa\_57, Vista\_59, Serendipity\_59, Xavier\_58, Chah\_61, Held\_59, HenryJackson\_59, Oosterbaan\_59, Badfish\_60, Brilliant\_62, TomBombadil\_59, Lasso\_60, Cosmolli16\_60, TallGrassMM\_59, Giraffe\_60, DaddyDaniels\_61, Hertubise\_59, PhatCats2014\_60, Waterdiva\_59, ThreeOh3D2\_61, Soile\_60, Surely\_59, Morty\_60, PinheadLarry\_60, Scrick\_60, Burr\_59, Hocus\_59, Beaglebox\_59, Kwadwo\_58
- Track 4 : Pherdinand\_61, Swish\_61, Vivaldi\_61, FluffyNinja\_61, Yoshand\_61
- Track 5 : LostAndPhound\_59
- Track 6 : Altwerkus\_57, Jillium\_59
- Track 7 : LeiMonet\_61, Coletti\_61, KingTut\_51, Placalicious\_59, Matalotodo\_58, FugateOSU\_59
- Track 8 : Suffolk\_58, Manad\_59, BlackStallion\_61
- Track 9 : Colbert\_58
- Track 10 : HighStump\_61, Mutante\_59, Squiggle\_60, Craff\_62, MrPhizzler\_60, Rimu\_62, Longacauda\_60
- Track 11 : Telesworld\_57
- Track 12 : Megamind20\_60
- Track 13 : Cornobble\_59
- Track 14 : Saguaro\_57
- Track 15 : PenguinLover67\_55

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

The start number called the most often in the published annotations is 3, it was called in 89 of the 117 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Altwerkus\_57, Anderson\_60, Apizium\_59, Badfish\_60, Beaglebox\_59, Brilliant\_62, Burr\_59, CampRoach\_61, Chah\_61, Cher\_59, Childish\_59, Colbert\_58, Cosmolli16\_60, Craff\_62, DaddyDaniels\_61, Daffy\_59, Dati\_59, DelRivs\_58, Emiris\_62, FluffyNinja\_61, Fozzie\_60, Fringe\_63, Giraffe\_60, Grand2040\_59, Held\_59, HenryJackson\_59, Hertubise\_59, Hetaeria\_59, HighStump\_61, Hocus\_59, Inchworm\_61, JDog\_58, Jillium\_59, Kahve\_59, Kikipoo\_61, Kwadwo\_58, LasagnaCat\_61, Lasso\_60, LeeLot\_60, Longacauda\_60, Lulwa\_57, Magic8\_60, Mana\_58, Maru\_59, Mcshane\_58, Melc17\_59, MitKao\_59, Morgushi\_59, Morty\_60, Mosaic\_58, MrPhizzler\_60, Mulan\_59, Murdoc\_58, Mutante\_59, OSmaximus\_61, Oosterbaan\_59, Orion\_61, PhatCats2014\_60, Pherdinand\_61, PinheadLarry\_60, Puhltonio\_59, Rimu\_62, Scoot17C\_60, Scrick\_60, Serendipity\_59, Skippy\_60, Slatt\_60, Soile\_60, Solosis\_58, Sophia\_58, Squid\_59, Squiggle\_60, Surely\_59, Swish\_61, TallGrassMM\_59, Telesworld\_57, Thora\_59, ThreeOh3D2\_61, Timmi\_58, TomBombadil\_59, UAch1\_59, UncleHowie\_58, Usavi\_59, Vista\_59, Vivaldi\_61, Vortex\_59, Waterdiva\_59, Weher20\_59, Xavier\_58, Yoshand\_61, Zelda\_60,

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

- ABU\_60, Andre\_62, BlackStallion\_61, Charles1\_60, Chorkpop\_59, Cornobble\_59, DonSanchon\_57, Durga\_62, Fang\_61, Gareth\_59, Harvey\_58, IsaacEli\_61, Katniss\_60, Manad\_59, Megamind20\_60, Megatron\_60, Orwigg\_60, PG1\_60, Phipps\_59, PhrodoBaggins\_60, Piglet\_0059, Potter\_58, Quisquilliae\_60, SassyCat97\_58, Serpentine\_0059, Suffolk\_58,

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

- Coletti\_61, FugateOSU\_59, KingTut\_51, LeiMonet\_61, LostAndPhound\_59, Matalotodo\_58, PenguinLover67\_55, Placalicious\_59, Saguario\_57,

### Summary by start number:

Start 2:

- Found in 124 of 126 ( 98.4% ) of genes in pham
- Manual Annotations of this start: 26 of 117
- Called 25.8% of time when present
- Phage (with cluster) where this start called: ABU\_60 (B1), Andre\_62 (B1), BlackStallion\_61 (B1), Charles1\_60 (B1), Chorkpop\_59 (B1), Coletti\_61 (B1), Cornobble\_59 (B1), DonSanchon\_57 (B1), Durga\_62 (B1), Fang\_61 (B1), FugateOSU\_59 (B1), Gareth\_59 (B1), Harvey\_58 (B1), IsaacEli\_61 (B1), Katniss\_60 (B1), KingTut\_51 (B1), LeiMonet\_61 (B1), LostAndPhound\_59 (B1), Manad\_59 (B1), Matalotodo\_58 (B1), Megatron\_60 (B1), Orwigg\_60 (B1), PG1\_60 (B1), Phipps\_59 (B1), PhrodoBaggins\_60 (B1), Piglet\_0059 (B1), Placalicious\_59 (B1), Potter\_58 (B1), Quisquilliae\_60 (B1), SassyCat97\_58 (B1), Serpentine\_0059 (B1), Suffolk\_58 (B1),

Start 3:

- Found in 117 of 126 ( 92.9% ) of genes in pham
- Manual Annotations of this start: 89 of 117
- Called 77.8% of time when present
- Phage (with cluster) where this start called: Altwerkus\_57 (B1), Anderson\_60 (B1), Apizium\_59 (B1), Badfish\_60 (B1), Beaglebox\_59 (B1), Brilliant\_62 (B1), Burr\_59

(B1), CampRoach\_61 (B1), Chah\_61 (B1), Cher\_59 (B1), Childish\_59 (B1), Colbert\_58 (B1), Cosmolli16\_60 (B1), Craff\_62 (B1), DaddyDaniels\_61 (B1), Daffy\_59 (B1), Dati\_59 (B1), DelRivs\_58 (B1), Emiris\_62 (B1), FluffyNinja\_61 (B1), Fozzie\_60 (B1), Fringe\_63 (B1), Giraffe\_60 (B1), Grand2040\_59 (B1), Held\_59 (B1), HenryJackson\_59 (B1), Hertubise\_59 (B1), Hetaeria\_59 (B1), HighStump\_61 (B1), Hocus\_59 (B1), Inchworm\_61 (B1), JDog\_58 (B1), Jillium\_59 (B1), Kahve\_59 (B1), Kikipoo\_61 (B1), Kwadwo\_58 (B1), LasagnaCat\_61 (B1), Lasso\_60 (B1), LeeLot\_60 (B1), Longacauda\_60 (B1), Lulwa\_57 (B1), Magic8\_60 (B1), Mana\_58 (B1), Maru\_59 (B1), Mcshane\_58 (B1), Melc17\_59 (B1), MitKao\_59 (B1), Morgushi\_59 (B1), Morty\_60 (B1), Mosaic\_58 (B1), MrPhizzler\_60 (B1), Mulan\_59 (B1), Murdoc\_58 (B1), Mutante\_59 (B1), OSmaximus\_61 (B1), Oosterbaan\_59 (B1), Orion\_61 (B1), PhatCats2014\_60 (B1), Pherdinand\_61 (B1), PinheadLarry\_60 (B1), Puhlonio\_59 (B1), Rimu\_62 (B1), Scoot17C\_60 (B1), Scrick\_60 (B1), Serendipity\_59 (B1), Skippy\_60 (B1), Slatt\_60 (B1), Soile\_60 (B1), Solosis\_58 (B1), Sophia\_58 (B1), Squid\_59 (B1), Squiggle\_60 (B1), Surely\_59 (B1), Swish\_61 (B1), TallGrassMM\_59 (B1), Telesworld\_57 (B1), Thora\_59 (B1), ThreeOh3D2\_61 (B1), Timmi\_58 (B1), TomBombadil\_59 (B1), UAch1\_59 (B1), UncleHowie\_58 (B1), Usavi\_59 (B1), Vista\_59 (B1), Vivaldi\_61 (B1), Vortex\_59 (B1), Waterdiva\_59 (B1), Weher20\_59 (B1), Xavier\_58 (B1), Yoshand\_61 (B1), Zelda\_60 (B1),

#### Start 6:

- Found in 124 of 126 ( 98.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 0.8% of time when present
- Phage (with cluster) where this start called: Megamind20\_60 (B1),

#### Start 7:

- Found in 1 of 126 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 117
- Called 100.0% of time when present
- Phage (with cluster) where this start called: PenguinLover67\_55 (B9),

#### Start 9:

- Found in 12 of 126 ( 9.5% ) of genes in pham
- Manual Annotations of this start: 1 of 117
- Called 8.3% of time when present
- Phage (with cluster) where this start called: Saguaro\_57 (B7),

### Summary by clusters:

There are 3 clusters represented in this pham: B7, B1, B9,

Info for manual annotations of cluster B1:

- Start number 2 was manually annotated 26 times for cluster B1.
- Start number 3 was manually annotated 89 times for cluster B1.

Info for manual annotations of cluster B7:

- Start number 9 was manually annotated 1 time for cluster B7.

Info for manual annotations of cluster B9:

- Start number 7 was manually annotated 1 time for cluster B9.

### **Gene Information:**

Gene: ABU\_60 Start: 52688, Stop: 52107, Start Num: 2

Candidate Starts for ABU\_60:

(1, 52742), (Start: 2 @52688 has 26 MA's), (Start: 3 @52676 has 89 MA's), (4, 52649), (6, 52631), (10, 52544), (15, 52463), (18, 52301), (19, 52289), (21, 52262), (27, 52139),

Gene: Altwerkus\_57 Start: 51840, Stop: 51271, Start Num: 3

Candidate Starts for Altwerkus\_57:

(1, 51906), (Start: 2 @51852 has 26 MA's), (Start: 3 @51840 has 89 MA's), (4, 51813), (6, 51795), (Start: 9 @51732 has 1 MA's), (10, 51708), (15, 51627), (18, 51465), (19, 51453), (21, 51426), (27, 51303),

Gene: Anderson\_60 Start: 52412, Stop: 51843, Start Num: 3

Candidate Starts for Anderson\_60:

(1, 52478), (Start: 2 @52424 has 26 MA's), (Start: 3 @52412 has 89 MA's), (4, 52385), (6, 52367), (10, 52280), (15, 52199), (18, 52037), (19, 52025), (21, 51998), (27, 51875),

Gene: Andre\_62 Start: 52600, Stop: 52019, Start Num: 2

Candidate Starts for Andre\_62:

(1, 52654), (Start: 2 @52600 has 26 MA's), (Start: 3 @52588 has 89 MA's), (4, 52561), (6, 52543), (10, 52456), (15, 52375), (18, 52213), (19, 52201), (21, 52174), (27, 52051),

Gene: Apizium\_59 Start: 51855, Stop: 51289, Start Num: 3

Candidate Starts for Apizium\_59:

(1, 51921), (Start: 2 @51867 has 26 MA's), (Start: 3 @51855 has 89 MA's), (4, 51828), (6, 51810), (10, 51723), (15, 51642), (18, 51480), (19, 51468), (21, 51441), (22, 51426), (27, 51318),

Gene: Badfish\_60 Start: 52698, Stop: 52129, Start Num: 3

Candidate Starts for Badfish\_60:

(1, 52764), (Start: 2 @52710 has 26 MA's), (Start: 3 @52698 has 89 MA's), (4, 52671), (6, 52653), (10, 52566), (15, 52485), (18, 52323), (19, 52311), (21, 52284), (27, 52161),

Gene: Beaglebox\_59 Start: 52251, Stop: 51682, Start Num: 3

Candidate Starts for Beaglebox\_59:

(1, 52317), (Start: 2 @52263 has 26 MA's), (Start: 3 @52251 has 89 MA's), (4, 52224), (6, 52206), (10, 52119), (15, 52038), (18, 51876), (19, 51864), (21, 51837), (27, 51714),

Gene: BlackStallion\_61 Start: 52467, Stop: 51889, Start Num: 2

Candidate Starts for BlackStallion\_61:

(1, 52521), (Start: 2 @52467 has 26 MA's), (Start: 3 @52455 has 89 MA's), (4, 52428), (6, 52410), (8, 52356), (Start: 9 @52347 has 1 MA's), (10, 52323), (15, 52242), (18, 52080), (19, 52068), (21, 52041), (22, 52026), (27, 51918),

Gene: Brilliant\_62 Start: 52688, Stop: 52119, Start Num: 3

Candidate Starts for Brilliant\_62:

(1, 52754), (Start: 2 @52700 has 26 MA's), (Start: 3 @52688 has 89 MA's), (4, 52661), (6, 52643), (10, 52556), (15, 52475), (18, 52313), (19, 52301), (21, 52274), (27, 52151),

Gene: Burr\_59 Start: 52162, Stop: 51593, Start Num: 3

Candidate Starts for Burr\_59:

(1, 52228), (Start: 2 @52174 has 26 MA's), (Start: 3 @52162 has 89 MA's), (4, 52135), (6, 52117), (10, 52030), (15, 51949), (18, 51787), (19, 51775), (21, 51748), (27, 51625),

Gene: CampRoach\_61 Start: 52592, Stop: 52023, Start Num: 3

Candidate Starts for CampRoach\_61:

(1, 52658), (Start: 2 @52604 has 26 MA's), (Start: 3 @52592 has 89 MA's), (4, 52565), (6, 52547), (10, 52460), (15, 52379), (18, 52217), (19, 52205), (21, 52178), (27, 52055),

Gene: Chah\_61 Start: 52139, Stop: 51570, Start Num: 3

Candidate Starts for Chah\_61:

(1, 52205), (Start: 2 @52151 has 26 MA's), (Start: 3 @52139 has 89 MA's), (4, 52112), (6, 52094), (10, 52007), (15, 51926), (18, 51764), (19, 51752), (21, 51725), (27, 51602),

Gene: Charles1\_60 Start: 52460, Stop: 51879, Start Num: 2

Candidate Starts for Charles1\_60:

(1, 52514), (Start: 2 @52460 has 26 MA's), (Start: 3 @52448 has 89 MA's), (4, 52421), (6, 52403), (10, 52316), (15, 52235), (18, 52073), (19, 52061), (21, 52034), (27, 51911),

Gene: Cher\_59 Start: 52704, Stop: 52135, Start Num: 3

Candidate Starts for Cher\_59:

(1, 52770), (Start: 2 @52716 has 26 MA's), (Start: 3 @52704 has 89 MA's), (4, 52677), (6, 52659), (10, 52572), (15, 52491), (18, 52329), (19, 52317), (21, 52290), (27, 52167),

Gene: Childish\_59 Start: 52715, Stop: 52149, Start Num: 3

Candidate Starts for Childish\_59:

(1, 52781), (Start: 2 @52727 has 26 MA's), (Start: 3 @52715 has 89 MA's), (4, 52688), (6, 52670), (10, 52583), (15, 52502), (18, 52340), (19, 52328), (21, 52301), (27, 52178),

Gene: Chorkpop\_59 Start: 52203, Stop: 51622, Start Num: 2

Candidate Starts for Chorkpop\_59:

(1, 52257), (Start: 2 @52203 has 26 MA's), (Start: 3 @52191 has 89 MA's), (4, 52164), (6, 52146), (10, 52059), (15, 51978), (18, 51816), (19, 51804), (21, 51777), (27, 51654),

Gene: Colbert\_58 Start: 51750, Stop: 51181, Start Num: 3

Candidate Starts for Colbert\_58:

(1, 51816), (Start: 2 @51762 has 26 MA's), (Start: 3 @51750 has 89 MA's), (4, 51723), (6, 51705), (10, 51618), (15, 51537), (18, 51375), (19, 51363), (21, 51336), (22, 51321), (27, 51213), (28, 51198),

Gene: Coletti\_61 Start: 52728, Stop: 52141, Start Num: 2

Candidate Starts for Coletti\_61:

(Start: 2 @52728 has 26 MA's), (4, 52683), (6, 52665), (10, 52578), (15, 52497), (18, 52335), (19, 52323), (21, 52296), (27, 52173),

Gene: Cornobble\_59 Start: 52196, Stop: 51618, Start Num: 2

Candidate Starts for Cornobble\_59:

(1, 52250), (Start: 2 @52196 has 26 MA's), (Start: 3 @52184 has 89 MA's), (4, 52157), (6, 52139), (10, 52052), (15, 51971), (18, 51809), (19, 51797), (21, 51770), (22, 51755), (27, 51647),

Gene: Cosmolli16\_60 Start: 52894, Stop: 52325, Start Num: 3

Candidate Starts for Cosmolli16\_60:

(1, 52960), (Start: 2 @52906 has 26 MA's), (Start: 3 @52894 has 89 MA's), (4, 52867), (6, 52849), (10, 52762), (15, 52681), (18, 52519), (19, 52507), (21, 52480), (27, 52357),

Gene: Craff\_62 Start: 53139, Stop: 52570, Start Num: 3

Candidate Starts for Craff\_62:

(1, 53205), (Start: 2 @53151 has 26 MA's), (Start: 3 @53139 has 89 MA's), (6, 53094), (10, 53007), (15, 52926), (18, 52764), (19, 52752), (21, 52725), (27, 52602),

Gene: DaddyDaniels\_61 Start: 52672, Stop: 52103, Start Num: 3

Candidate Starts for DaddyDaniels\_61:

(1, 52738), (Start: 2 @52684 has 26 MA's), (Start: 3 @52672 has 89 MA's), (4, 52645), (6, 52627), (10, 52540), (15, 52459), (18, 52297), (19, 52285), (21, 52258), (27, 52135),

Gene: Daffy\_59 Start: 52177, Stop: 51608, Start Num: 3

Candidate Starts for Daffy\_59:

(1, 52243), (Start: 2 @52189 has 26 MA's), (Start: 3 @52177 has 89 MA's), (4, 52150), (6, 52132), (10, 52045), (15, 51964), (18, 51802), (19, 51790), (21, 51763), (27, 51640),

Gene: Dati\_59 Start: 52708, Stop: 52139, Start Num: 3

Candidate Starts for Dati\_59:

(1, 52774), (Start: 2 @52720 has 26 MA's), (Start: 3 @52708 has 89 MA's), (4, 52681), (6, 52663), (10, 52576), (15, 52495), (18, 52333), (19, 52321), (21, 52294), (22, 52279), (27, 52171),

Gene: DelRivs\_58 Start: 52155, Stop: 51586, Start Num: 3

Candidate Starts for DelRivs\_58:

(1, 52221), (Start: 2 @52167 has 26 MA's), (Start: 3 @52155 has 89 MA's), (4, 52128), (6, 52110), (10, 52023), (15, 51942), (18, 51780), (19, 51768), (21, 51741), (27, 51618),

Gene: DonSanchon\_57 Start: 51886, Stop: 51305, Start Num: 2

Candidate Starts for DonSanchon\_57:

(1, 51940), (Start: 2 @51886 has 26 MA's), (Start: 3 @51874 has 89 MA's), (4, 51847), (6, 51829), (10, 51742), (15, 51661), (18, 51499), (19, 51487), (21, 51460), (27, 51337),

Gene: Durga\_62 Start: 52936, Stop: 52358, Start Num: 2

Candidate Starts for Durga\_62:

(1, 52990), (Start: 2 @52936 has 26 MA's), (Start: 3 @52924 has 89 MA's), (4, 52897), (6, 52879), (10, 52792), (15, 52711), (18, 52549), (19, 52537), (21, 52510), (27, 52387),

Gene: Emiris\_62 Start: 52891, Stop: 52322, Start Num: 3

Candidate Starts for Emiris\_62:

(1, 52957), (Start: 2 @52903 has 26 MA's), (Start: 3 @52891 has 89 MA's), (4, 52864), (6, 52846), (10, 52759), (15, 52678), (18, 52516), (19, 52504), (21, 52477), (27, 52354),

Gene: Fang\_61 Start: 52448, Stop: 51867, Start Num: 2

Candidate Starts for Fang\_61:

(1, 52502), (Start: 2 @52448 has 26 MA's), (Start: 3 @52436 has 89 MA's), (4, 52409), (6, 52391), (10, 52304), (15, 52223), (18, 52061), (19, 52049), (21, 52022), (27, 51899),

Gene: FluffyNinja\_61 Start: 52456, Stop: 51890, Start Num: 3

Candidate Starts for FluffyNinja\_61:

(1, 52522), (Start: 2 @52468 has 26 MA's), (Start: 3 @52456 has 89 MA's), (4, 52429), (6, 52411), (8, 52357), (Start: 9 @52348 has 1 MA's), (10, 52324), (15, 52243), (18, 52081), (19, 52069), (21, 52042), (22, 52027), (27, 51919),

Gene: Fozzie\_60 Start: 52681, Stop: 52112, Start Num: 3

Candidate Starts for Fozzie\_60:

(1, 52747), (Start: 2 @52693 has 26 MA's), (Start: 3 @52681 has 89 MA's), (4, 52654), (6, 52636), (10, 52549), (15, 52468), (18, 52306), (19, 52294), (21, 52267), (22, 52252), (27, 52144),

Gene: Fringe\_63 Start: 53058, Stop: 52489, Start Num: 3

Candidate Starts for Fringe\_63:

(1, 53124), (Start: 2 @53070 has 26 MA's), (Start: 3 @53058 has 89 MA's), (4, 53031), (6, 53013), (10, 52926), (15, 52845), (18, 52683), (19, 52671), (21, 52644), (27, 52521),

Gene: FugateOSU\_59 Start: 52703, Stop: 52116, Start Num: 2

Candidate Starts for FugateOSU\_59:

(Start: 2 @52703 has 26 MA's), (4, 52658), (6, 52640), (10, 52553), (15, 52472), (18, 52310), (19, 52298), (21, 52271), (27, 52148),

Gene: Gareth\_59 Start: 52692, Stop: 52111, Start Num: 2

Candidate Starts for Gareth\_59:

(1, 52746), (Start: 2 @52692 has 26 MA's), (Start: 3 @52680 has 89 MA's), (4, 52653), (6, 52635), (10, 52548), (15, 52467), (18, 52305), (19, 52293), (21, 52266), (27, 52143),

Gene: Giraffe\_60 Start: 52675, Stop: 52106, Start Num: 3

Candidate Starts for Giraffe\_60:

(1, 52741), (Start: 2 @52687 has 26 MA's), (Start: 3 @52675 has 89 MA's), (4, 52648), (6, 52630), (10, 52543), (15, 52462), (18, 52300), (19, 52288), (21, 52261), (27, 52138),

Gene: Grand2040\_59 Start: 52669, Stop: 52100, Start Num: 3

Candidate Starts for Grand2040\_59:

(1, 52735), (Start: 2 @52681 has 26 MA's), (Start: 3 @52669 has 89 MA's), (4, 52642), (6, 52624), (10, 52537), (15, 52456), (18, 52294), (19, 52282), (21, 52255), (27, 52132),

Gene: Harvey\_58 Start: 52216, Stop: 51635, Start Num: 2

Candidate Starts for Harvey\_58:

(1, 52270), (Start: 2 @52216 has 26 MA's), (Start: 3 @52204 has 89 MA's), (4, 52177), (6, 52159), (10, 52072), (15, 51991), (18, 51829), (19, 51817), (21, 51790), (27, 51667),

Gene: Held\_59 Start: 52178, Stop: 51609, Start Num: 3

Candidate Starts for Held\_59:

(1, 52244), (Start: 2 @52190 has 26 MA's), (Start: 3 @52178 has 89 MA's), (4, 52151), (6, 52133), (10, 52046), (15, 51965), (18, 51803), (19, 51791), (21, 51764), (27, 51641),

Gene: HenryJackson\_59 Start: 52704, Stop: 52138, Start Num: 3

Candidate Starts for HenryJackson\_59:

(1, 52770), (Start: 2 @52716 has 26 MA's), (Start: 3 @52704 has 89 MA's), (4, 52677), (6, 52659), (10, 52572), (15, 52491), (18, 52329), (19, 52317), (21, 52290), (27, 52167),

Gene: Hertubise\_59 Start: 52470, Stop: 51901, Start Num: 3

Candidate Starts for Hertubise\_59:

(1, 52536), (Start: 2 @52482 has 26 MA's), (Start: 3 @52470 has 89 MA's), (4, 52443), (6, 52425), (10, 52338), (15, 52257), (18, 52095), (19, 52083), (21, 52056), (27, 51933),

Gene: Hetaeria\_59 Start: 52409, Stop: 51843, Start Num: 3

Candidate Starts for Hetaeria\_59:

(1, 52475), (Start: 2 @52421 has 26 MA's), (Start: 3 @52409 has 89 MA's), (4, 52382), (6, 52364), (10, 52277), (15, 52196), (18, 52034), (19, 52022), (21, 51995), (22, 51980), (27, 51872),

Gene: HighStump\_61 Start: 52681, Stop: 52112, Start Num: 3

Candidate Starts for HighStump\_61:



(1, 52747), (Start: 2 @52693 has 26 MA's), (Start: 3 @52681 has 89 MA's), (6, 52636), (10, 52549), (15, 52468), (18, 52306), (19, 52294), (21, 52267), (27, 52144),

Gene: Hocus\_59 Start: 52165, Stop: 51596, Start Num: 3

Candidate Starts for Hocus\_59:

(1, 52231), (Start: 2 @52177 has 26 MA's), (Start: 3 @52165 has 89 MA's), (4, 52138), (6, 52120), (10, 52033), (15, 51952), (18, 51790), (19, 51778), (21, 51751), (27, 51628),

Gene: Inchworm\_61 Start: 52552, Stop: 51983, Start Num: 3

Candidate Starts for Inchworm\_61:

(1, 52618), (Start: 2 @52564 has 26 MA's), (Start: 3 @52552 has 89 MA's), (4, 52525), (6, 52507), (10, 52420), (15, 52339), (18, 52177), (19, 52165), (21, 52138), (27, 52015),

Gene: IsaacEli\_61 Start: 52703, Stop: 52122, Start Num: 2

Candidate Starts for IsaacEli\_61:

(1, 52757), (Start: 2 @52703 has 26 MA's), (Start: 3 @52691 has 89 MA's), (4, 52664), (6, 52646), (10, 52559), (15, 52478), (18, 52316), (19, 52304), (21, 52277), (27, 52154),

Gene: JDog\_58 Start: 52707, Stop: 52138, Start Num: 3

Candidate Starts for JDog\_58:

(1, 52773), (Start: 2 @52719 has 26 MA's), (Start: 3 @52707 has 89 MA's), (4, 52680), (6, 52662), (10, 52575), (15, 52494), (18, 52332), (19, 52320), (21, 52293), (27, 52170),

Gene: Jillium\_59 Start: 52699, Stop: 52130, Start Num: 3

Candidate Starts for Jillium\_59:

(1, 52765), (Start: 2 @52711 has 26 MA's), (Start: 3 @52699 has 89 MA's), (4, 52672), (6, 52654), (Start: 9 @52591 has 1 MA's), (10, 52567), (15, 52486), (18, 52324), (19, 52312), (21, 52285), (27, 52162),

Gene: Kahve\_59 Start: 52701, Stop: 52135, Start Num: 3

Candidate Starts for Kahve\_59:

(1, 52767), (Start: 2 @52713 has 26 MA's), (Start: 3 @52701 has 89 MA's), (4, 52674), (6, 52656), (10, 52569), (15, 52488), (18, 52326), (19, 52314), (21, 52287), (27, 52164),

Gene: Katniss\_60 Start: 52151, Stop: 51570, Start Num: 2

Candidate Starts for Katniss\_60:

(1, 52205), (Start: 2 @52151 has 26 MA's), (Start: 3 @52139 has 89 MA's), (4, 52112), (6, 52094), (10, 52007), (15, 51926), (18, 51764), (19, 51752), (21, 51725), (27, 51602),

Gene: Kikipoo\_61 Start: 52691, Stop: 52122, Start Num: 3

Candidate Starts for Kikipoo\_61:

(1, 52757), (Start: 2 @52703 has 26 MA's), (Start: 3 @52691 has 89 MA's), (4, 52664), (6, 52646), (10, 52559), (15, 52478), (18, 52316), (19, 52304), (21, 52277), (27, 52154),

Gene: KingTut\_51 Start: 48382, Stop: 47795, Start Num: 2

Candidate Starts for KingTut\_51:

(Start: 2 @48382 has 26 MA's), (4, 48337), (6, 48319), (10, 48232), (15, 48151), (18, 47989), (19, 47977), (21, 47950), (27, 47827),

Gene: Kwadwo\_58 Start: 52152, Stop: 51583, Start Num: 3

Candidate Starts for Kwadwo\_58:

(1, 52218), (Start: 2 @52164 has 26 MA's), (Start: 3 @52152 has 89 MA's), (4, 52125), (6, 52107), (10, 52020), (15, 51939), (18, 51777), (19, 51765), (21, 51738), (27, 51615),

Gene: LasagnaCat\_61 Start: 52564, Stop: 51995, Start Num: 3

Candidate Starts for LasagnaCat\_61:

(1, 52630), (Start: 2 @52576 has 26 MA's), (Start: 3 @52564 has 89 MA's), (4, 52537), (6, 52519), (10, 52432), (15, 52351), (18, 52189), (19, 52177), (21, 52150), (27, 52027),

Gene: Lasso\_60 Start: 52427, Stop: 51858, Start Num: 3

Candidate Starts for Lasso\_60:

(1, 52493), (Start: 2 @52439 has 26 MA's), (Start: 3 @52427 has 89 MA's), (4, 52400), (6, 52382), (10, 52295), (15, 52214), (18, 52052), (19, 52040), (21, 52013), (27, 51890),

Gene: LeeLot\_60 Start: 52782, Stop: 52213, Start Num: 3

Candidate Starts for LeeLot\_60:

(1, 52848), (Start: 2 @52794 has 26 MA's), (Start: 3 @52782 has 89 MA's), (4, 52755), (6, 52737), (10, 52650), (15, 52569), (18, 52407), (19, 52395), (21, 52368), (27, 52245),

Gene: LeiMonet\_61 Start: 52114, Stop: 51527, Start Num: 2

Candidate Starts for LeiMonet\_61:

(Start: 2 @52114 has 26 MA's), (4, 52069), (6, 52051), (10, 51964), (15, 51883), (18, 51721), (19, 51709), (21, 51682), (27, 51559),

Gene: Longacauda\_60 Start: 52541, Stop: 51972, Start Num: 3

Candidate Starts for Longacauda\_60:

(1, 52607), (Start: 2 @52553 has 26 MA's), (Start: 3 @52541 has 89 MA's), (6, 52496), (10, 52409), (15, 52328), (18, 52166), (19, 52154), (21, 52127), (27, 52004),

Gene: LostAndPhound\_59 Start: 52202, Stop: 51615, Start Num: 2

Candidate Starts for LostAndPhound\_59:

(Start: 2 @52202 has 26 MA's), (4, 52157), (6, 52139), (10, 52052), (15, 51971), (18, 51809), (19, 51797), (21, 51770), (22, 51755), (27, 51647),

Gene: Lulwa\_57 Start: 51484, Stop: 50915, Start Num: 3

Candidate Starts for Lulwa\_57:

(1, 51550), (Start: 2 @51496 has 26 MA's), (Start: 3 @51484 has 89 MA's), (4, 51457), (6, 51439), (10, 51352), (15, 51271), (18, 51109), (19, 51097), (21, 51070), (27, 50947),

Gene: Magic8\_60 Start: 52483, Stop: 51914, Start Num: 3

Candidate Starts for Magic8\_60:

(1, 52549), (Start: 2 @52495 has 26 MA's), (Start: 3 @52483 has 89 MA's), (4, 52456), (6, 52438), (10, 52351), (15, 52270), (18, 52108), (19, 52096), (21, 52069), (22, 52054), (27, 51946),

Gene: Mana\_58 Start: 52167, Stop: 51598, Start Num: 3

Candidate Starts for Mana\_58:

(1, 52233), (Start: 2 @52179 has 26 MA's), (Start: 3 @52167 has 89 MA's), (4, 52140), (6, 52122), (10, 52035), (15, 51954), (18, 51792), (19, 51780), (21, 51753), (27, 51630),

Gene: Manad\_59 Start: 52463, Stop: 51885, Start Num: 2

Candidate Starts for Manad\_59:

(1, 52517), (Start: 2 @52463 has 26 MA's), (Start: 3 @52451 has 89 MA's), (4, 52424), (6, 52406), (8, 52352), (Start: 9 @52343 has 1 MA's), (10, 52319), (15, 52238), (18, 52076), (19, 52064), (21, 52037), (22, 52022), (27, 51914),

Gene: Maru\_59 Start: 52606, Stop: 52037, Start Num: 3

Candidate Starts for Maru\_59:

(1, 52672), (Start: 2 @52618 has 26 MA's), (Start: 3 @52606 has 89 MA's), (4, 52579), (6, 52561), (10, 52474), (15, 52393), (18, 52231), (19, 52219), (21, 52192), (27, 52069),

Gene: Matalotodo\_58 Start: 52195, Stop: 51608, Start Num: 2

Candidate Starts for Matalotodo\_58:

(Start: 2 @52195 has 26 MA's), (4, 52150), (6, 52132), (10, 52045), (15, 51964), (18, 51802), (19, 51790), (21, 51763), (27, 51640),

Gene: Mcshane\_58 Start: 52165, Stop: 51596, Start Num: 3

Candidate Starts for Mcshane\_58:

(1, 52231), (Start: 2 @52177 has 26 MA's), (Start: 3 @52165 has 89 MA's), (4, 52138), (6, 52120), (10, 52033), (15, 51952), (18, 51790), (19, 51778), (21, 51751), (27, 51628),

Gene: Megamind20\_60 Start: 52108, Stop: 51584, Start Num: 6

Candidate Starts for Megamind20\_60:

(1, 52219), (Start: 2 @52165 has 26 MA's), (Start: 3 @52153 has 89 MA's), (4, 52126), (6, 52108), (10, 52021), (15, 51940), (18, 51778), (19, 51766), (21, 51739), (27, 51616),

Gene: Megatron\_60 Start: 52691, Stop: 52110, Start Num: 2

Candidate Starts for Megatron\_60:

(1, 52745), (Start: 2 @52691 has 26 MA's), (Start: 3 @52679 has 89 MA's), (4, 52652), (6, 52634), (10, 52547), (15, 52466), (18, 52304), (19, 52292), (21, 52265), (27, 52142),

Gene: Melc17\_59 Start: 52996, Stop: 52427, Start Num: 3

Candidate Starts for Melc17\_59:

(1, 53062), (Start: 2 @53008 has 26 MA's), (Start: 3 @52996 has 89 MA's), (4, 52969), (6, 52951), (10, 52864), (15, 52783), (18, 52621), (19, 52609), (21, 52582), (22, 52567), (27, 52459),

Gene: MitKao\_59 Start: 52177, Stop: 51608, Start Num: 3

Candidate Starts for MitKao\_59:

(1, 52243), (Start: 2 @52189 has 26 MA's), (Start: 3 @52177 has 89 MA's), (4, 52150), (6, 52132), (10, 52045), (15, 51964), (18, 51802), (19, 51790), (21, 51763), (27, 51640),

Gene: Morgushi\_59 Start: 52166, Stop: 51597, Start Num: 3

Candidate Starts for Morgushi\_59:

(1, 52232), (Start: 2 @52178 has 26 MA's), (Start: 3 @52166 has 89 MA's), (4, 52139), (6, 52121), (10, 52034), (15, 51953), (18, 51791), (19, 51779), (21, 51752), (27, 51629),

Gene: Morty\_60 Start: 52688, Stop: 52119, Start Num: 3

Candidate Starts for Morty\_60:

(1, 52754), (Start: 2 @52700 has 26 MA's), (Start: 3 @52688 has 89 MA's), (4, 52661), (6, 52643), (10, 52556), (15, 52475), (18, 52313), (19, 52301), (21, 52274), (27, 52151),

Gene: Mosaic\_58 Start: 52171, Stop: 51602, Start Num: 3

Candidate Starts for Mosaic\_58:

(1, 52237), (Start: 2 @52183 has 26 MA's), (Start: 3 @52171 has 89 MA's), (4, 52144), (6, 52126), (10, 52039), (15, 51958), (18, 51796), (19, 51784), (21, 51757), (27, 51634),

Gene: MrPhizzler\_60 Start: 52634, Stop: 52065, Start Num: 3

Candidate Starts for MrPhizzler\_60:

(1, 52700), (Start: 2 @52646 has 26 MA's), (Start: 3 @52634 has 89 MA's), (6, 52589), (10, 52502), (15, 52421), (18, 52259), (19, 52247), (21, 52220), (27, 52097),

Gene: Mulan\_59 Start: 52405, Stop: 51836, Start Num: 3

Candidate Starts for Mulan\_59:

(1, 52471), (Start: 2 @52417 has 26 MA's), (Start: 3 @52405 has 89 MA's), (4, 52378), (6, 52360), (10, 52273), (15, 52192), (18, 52030), (19, 52018), (21, 51991), (27, 51868),

Gene: Murdoc\_58 Start: 52167, Stop: 51598, Start Num: 3

Candidate Starts for Murdoc\_58:

(1, 52233), (Start: 2 @52179 has 26 MA's), (Start: 3 @52167 has 89 MA's), (4, 52140), (6, 52122), (10, 52035), (15, 51954), (18, 51792), (19, 51780), (21, 51753), (27, 51630),

Gene: Mutante\_59 Start: 52177, Stop: 51608, Start Num: 3

Candidate Starts for Mutante\_59:

(1, 52243), (Start: 2 @52189 has 26 MA's), (Start: 3 @52177 has 89 MA's), (6, 52132), (10, 52045), (15, 51964), (18, 51802), (19, 51790), (21, 51763), (27, 51640),

Gene: OSmaximus\_61 Start: 52921, Stop: 52352, Start Num: 3

Candidate Starts for OSmaximus\_61:

(1, 52987), (Start: 2 @52933 has 26 MA's), (Start: 3 @52921 has 89 MA's), (4, 52894), (6, 52876), (10, 52789), (15, 52708), (18, 52546), (19, 52534), (21, 52507), (22, 52492), (27, 52384),

Gene: Oosterbaan\_59 Start: 52457, Stop: 51888, Start Num: 3

Candidate Starts for Oosterbaan\_59:

(1, 52523), (Start: 2 @52469 has 26 MA's), (Start: 3 @52457 has 89 MA's), (4, 52430), (6, 52412), (10, 52325), (15, 52244), (18, 52082), (19, 52070), (21, 52043), (27, 51920),

Gene: Orion\_61 Start: 52119, Stop: 51550, Start Num: 3

Candidate Starts for Orion\_61:

(1, 52185), (Start: 2 @52131 has 26 MA's), (Start: 3 @52119 has 89 MA's), (4, 52092), (6, 52074), (10, 51987), (15, 51906), (18, 51744), (19, 51732), (21, 51705), (27, 51582),

Gene: Orwigg\_60 Start: 52111, Stop: 51530, Start Num: 2

Candidate Starts for Orwigg\_60:

(1, 52165), (Start: 2 @52111 has 26 MA's), (Start: 3 @52099 has 89 MA's), (4, 52072), (6, 52054), (10, 51967), (15, 51886), (18, 51724), (19, 51712), (21, 51685), (27, 51562),

Gene: PG1\_60 Start: 52702, Stop: 52121, Start Num: 2

Candidate Starts for PG1\_60:

(1, 52756), (Start: 2 @52702 has 26 MA's), (Start: 3 @52690 has 89 MA's), (4, 52663), (6, 52645), (10, 52558), (15, 52477), (18, 52315), (19, 52303), (21, 52276), (27, 52153),

Gene: PenguinLover67\_55 Start: 52752, Stop: 52183, Start Num: 7

Candidate Starts for PenguinLover67\_55:

(Start: 7 @52752 has 1 MA's), (17, 52500), (19, 52362), (23, 52311), (24, 52305), (25, 52296), (26, 52248),

Gene: PhatCats2014\_60 Start: 52695, Stop: 52129, Start Num: 3

Candidate Starts for PhatCats2014\_60:

(1, 52761), (Start: 2 @52707 has 26 MA's), (Start: 3 @52695 has 89 MA's), (4, 52668), (6, 52650), (10, 52563), (15, 52482), (18, 52320), (19, 52308), (21, 52281), (27, 52158),

Gene: Pherdinand\_61 Start: 52458, Stop: 51892, Start Num: 3

Candidate Starts for Pherdinand\_61:

(1, 52524), (Start: 2 @52470 has 26 MA's), (Start: 3 @52458 has 89 MA's), (4, 52431), (6, 52413), (8, 52359), (Start: 9 @52350 has 1 MA's), (10, 52326), (15, 52245), (18, 52083), (19, 52071), (21, 52044), (22, 52029), (27, 51921),

Gene: Phipps\_59 Start: 51979, Stop: 51398, Start Num: 2

Candidate Starts for Phipps\_59:

(1, 52033), (Start: 2 @51979 has 26 MA's), (Start: 3 @51967 has 89 MA's), (4, 51940), (6, 51922), (10, 51835), (15, 51754), (18, 51592), (19, 51580), (21, 51553), (27, 51430),

Gene: PhrodoBaggins\_60 Start: 52567, Stop: 51986, Start Num: 2

Candidate Starts for PhrodoBaggins\_60:

(1, 52621), (Start: 2 @52567 has 26 MA's), (Start: 3 @52555 has 89 MA's), (4, 52528), (6, 52510), (10, 52423), (15, 52342), (18, 52180), (19, 52168), (21, 52141), (27, 52018),

Gene: Piglet\_0059 Start: 52679, Stop: 52098, Start Num: 2

Candidate Starts for Piglet\_0059:

(1, 52733), (Start: 2 @52679 has 26 MA's), (Start: 3 @52667 has 89 MA's), (4, 52640), (6, 52622), (10, 52535), (15, 52454), (18, 52292), (19, 52280), (21, 52253), (27, 52130),

Gene: PinheadLarry\_60 Start: 52692, Stop: 52123, Start Num: 3

Candidate Starts for PinheadLarry\_60:

(1, 52758), (Start: 2 @52704 has 26 MA's), (Start: 3 @52692 has 89 MA's), (4, 52665), (6, 52647), (10, 52560), (15, 52479), (18, 52317), (19, 52305), (21, 52278), (27, 52155),

Gene: Placalicious\_59 Start: 52700, Stop: 52113, Start Num: 2

Candidate Starts for Placalicious\_59:

(Start: 2 @52700 has 26 MA's), (4, 52655), (6, 52637), (10, 52550), (15, 52469), (18, 52307), (19, 52295), (21, 52268), (27, 52145),

Gene: Potter\_58 Start: 52200, Stop: 51619, Start Num: 2

Candidate Starts for Potter\_58:

(1, 52254), (Start: 2 @52200 has 26 MA's), (Start: 3 @52188 has 89 MA's), (4, 52161), (6, 52143), (10, 52056), (15, 51975), (18, 51813), (19, 51801), (21, 51774), (27, 51651),

Gene: Puhltonio\_59 Start: 52462, Stop: 51893, Start Num: 3

Candidate Starts for Puhltonio\_59:

(1, 52528), (Start: 2 @52474 has 26 MA's), (Start: 3 @52462 has 89 MA's), (4, 52435), (6, 52417), (10, 52330), (15, 52249), (18, 52087), (19, 52075), (21, 52048), (27, 51925),

Gene: Quisquilliae\_60 Start: 52467, Stop: 51886, Start Num: 2

Candidate Starts for Quisquilliae\_60:

(1, 52521), (Start: 2 @52467 has 26 MA's), (Start: 3 @52455 has 89 MA's), (4, 52428), (6, 52410), (10, 52323), (15, 52242), (18, 52080), (19, 52068), (21, 52041), (27, 51918),

Gene: Rimu\_62 Start: 52655, Stop: 52086, Start Num: 3

Candidate Starts for Rimu\_62:

(1, 52721), (Start: 2 @52667 has 26 MA's), (Start: 3 @52655 has 89 MA's), (6, 52610), (10, 52523), (15, 52442), (18, 52280), (19, 52268), (21, 52241), (27, 52118),

Gene: Saguaro\_57 Start: 52820, Stop: 52314, Start Num: 9

Candidate Starts for Saguaro\_57:

(5, 52901), (8, 52829), (Start: 9 @52820 has 1 MA's), (12, 52763), (13, 52721), (14, 52712), (16, 52628), (19, 52481), (20, 52469), (21, 52451), (24, 52424),

Gene: SassyCat97\_58 Start: 52191, Stop: 51610, Start Num: 2

Candidate Starts for SassyCat97\_58:

(1, 52245), (Start: 2 @52191 has 26 MA's), (Start: 3 @52179 has 89 MA's), (4, 52152), (6, 52134), (10, 52047), (15, 51966), (18, 51804), (19, 51792), (21, 51765), (27, 51642),

Gene: Scoot17C\_60 Start: 52121, Stop: 51552, Start Num: 3

Candidate Starts for Scoot17C\_60:

(1, 52187), (Start: 2 @52133 has 26 MA's), (Start: 3 @52121 has 89 MA's), (4, 52094), (6, 52076), (10, 51989), (15, 51908), (18, 51746), (19, 51734), (21, 51707), (27, 51584),

Gene: Scrick\_60 Start: 52193, Stop: 51624, Start Num: 3

Candidate Starts for Scrick\_60:

(1, 52259), (Start: 2 @52205 has 26 MA's), (Start: 3 @52193 has 89 MA's), (4, 52166), (6, 52148), (10, 52061), (15, 51980), (18, 51818), (19, 51806), (21, 51779), (27, 51656),

Gene: Serendipity\_59 Start: 52476, Stop: 51907, Start Num: 3

Candidate Starts for Serendipity\_59:

(1, 52542), (Start: 2 @52488 has 26 MA's), (Start: 3 @52476 has 89 MA's), (4, 52449), (6, 52431), (10, 52344), (15, 52263), (18, 52101), (19, 52089), (21, 52062), (27, 51939),

Gene: Serpentine\_0059 Start: 52571, Stop: 51990, Start Num: 2

Candidate Starts for Serpentine\_0059:

(1, 52625), (Start: 2 @52571 has 26 MA's), (Start: 3 @52559 has 89 MA's), (4, 52532), (6, 52514), (10, 52427), (15, 52346), (18, 52184), (19, 52172), (21, 52145), (27, 52022),

Gene: Skippy\_60 Start: 52412, Stop: 51843, Start Num: 3

Candidate Starts for Skippy\_60:

(1, 52478), (Start: 2 @52424 has 26 MA's), (Start: 3 @52412 has 89 MA's), (4, 52385), (6, 52367), (10, 52280), (15, 52199), (18, 52037), (19, 52025), (21, 51998), (27, 51875),

Gene: Slatt\_60 Start: 52477, Stop: 51908, Start Num: 3

Candidate Starts for Slatt\_60:

(1, 52543), (Start: 2 @52489 has 26 MA's), (Start: 3 @52477 has 89 MA's), (4, 52450), (6, 52432), (10, 52345), (15, 52264), (18, 52102), (19, 52090), (21, 52063), (27, 51940),

Gene: Soile\_60 Start: 52701, Stop: 52132, Start Num: 3

Candidate Starts for Soile\_60:

(1, 52767), (Start: 2 @52713 has 26 MA's), (Start: 3 @52701 has 89 MA's), (4, 52674), (6, 52656), (10, 52569), (15, 52488), (18, 52326), (19, 52314), (21, 52287), (27, 52164),

Gene: Solosis\_58 Start: 52173, Stop: 51604, Start Num: 3

Candidate Starts for Solosis\_58:

(1, 52239), (Start: 2 @52185 has 26 MA's), (Start: 3 @52173 has 89 MA's), (4, 52146), (6, 52128), (10, 52041), (15, 51960), (18, 51798), (19, 51786), (21, 51759), (27, 51636),

Gene: Sophia\_58 Start: 52167, Stop: 51598, Start Num: 3

Candidate Starts for Sophia\_58:

(1, 52233), (Start: 2 @52179 has 26 MA's), (Start: 3 @52167 has 89 MA's), (4, 52140), (6, 52122), (10, 52035), (15, 51954), (18, 51792), (19, 51780), (21, 51753), (27, 51630),

Gene: Squid\_59 Start: 52179, Stop: 51610, Start Num: 3

Candidate Starts for Squid\_59:

(1, 52245), (Start: 2 @52191 has 26 MA's), (Start: 3 @52179 has 89 MA's), (4, 52152), (6, 52134), (10, 52047), (15, 51966), (18, 51804), (19, 51792), (21, 51765), (27, 51642),

Gene: Squiggle\_60 Start: 52187, Stop: 51618, Start Num: 3

Candidate Starts for Squiggle\_60:

(1, 52253), (Start: 2 @52199 has 26 MA's), (Start: 3 @52187 has 89 MA's), (6, 52142), (10, 52055), (15, 51974), (18, 51812), (19, 51800), (21, 51773), (27, 51650),

Gene: Suffolk\_58 Start: 51694, Stop: 51113, Start Num: 2

Candidate Starts for Suffolk\_58:

(1, 51748), (Start: 2 @51694 has 26 MA's), (Start: 3 @51682 has 89 MA's), (4, 51655), (6, 51637), (8, 51583), (Start: 9 @51574 has 1 MA's), (10, 51550), (15, 51469), (18, 51307), (19, 51295), (21, 51268), (22, 51253), (27, 51145),

Gene: Surely\_59 Start: 52469, Stop: 51900, Start Num: 3

Candidate Starts for Surely\_59:

(1, 52535), (Start: 2 @52481 has 26 MA's), (Start: 3 @52469 has 89 MA's), (4, 52442), (6, 52424), (10, 52337), (15, 52256), (18, 52094), (19, 52082), (21, 52055), (27, 51932),

Gene: Swish\_61 Start: 52443, Stop: 51877, Start Num: 3

Candidate Starts for Swish\_61:

(1, 52509), (Start: 2 @52455 has 26 MA's), (Start: 3 @52443 has 89 MA's), (4, 52416), (6, 52398), (8, 52344), (Start: 9 @52335 has 1 MA's), (10, 52311), (15, 52230), (18, 52068), (19, 52056), (21, 52029), (22, 52014), (27, 51906),

Gene: TallGrassMM\_59 Start: 52083, Stop: 51514, Start Num: 3

Candidate Starts for TallGrassMM\_59:

(1, 52149), (Start: 2 @52095 has 26 MA's), (Start: 3 @52083 has 89 MA's), (4, 52056), (6, 52038), (10, 51951), (15, 51870), (18, 51708), (19, 51696), (21, 51669), (27, 51546),

Gene: Telesworld\_57 Start: 52288, Stop: 51677, Start Num: 3

Candidate Starts for Telesworld\_57:

(1, 52354), (Start: 2 @52300 has 26 MA's), (Start: 3 @52288 has 89 MA's), (4, 52261), (6, 52243), (8, 52189), (Start: 9 @52180 has 1 MA's), (10, 52156), (11, 52123), (15, 52033), (18, 51871), (19, 51859), (21, 51832), (22, 51817), (27, 51709),

Gene: Thora\_59 Start: 52465, Stop: 51896, Start Num: 3

Candidate Starts for Thora\_59:

(1, 52531), (Start: 2 @52477 has 26 MA's), (Start: 3 @52465 has 89 MA's), (4, 52438), (6, 52420), (10, 52333), (15, 52252), (18, 52090), (19, 52078), (21, 52051), (27, 51928),

Gene: ThreeOh3D2\_61 Start: 52686, Stop: 52120, Start Num: 3

Candidate Starts for ThreeOh3D2\_61:

(1, 52752), (Start: 2 @52698 has 26 MA's), (Start: 3 @52686 has 89 MA's), (4, 52659), (6, 52641), (10, 52554), (15, 52473), (18, 52311), (19, 52299), (21, 52272), (27, 52149),

Gene: Timmi\_58 Start: 52168, Stop: 51599, Start Num: 3

Candidate Starts for Timmi\_58:

(1, 52234), (Start: 2 @52180 has 26 MA's), (Start: 3 @52168 has 89 MA's), (4, 52141), (6, 52123), (10, 52036), (15, 51955), (18, 51793), (19, 51781), (21, 51754), (27, 51631),

Gene: TomBombadil\_59 Start: 52453, Stop: 51884, Start Num: 3

Candidate Starts for TomBombadil\_59:

(1, 52519), (Start: 2 @52465 has 26 MA's), (Start: 3 @52453 has 89 MA's), (4, 52426), (6, 52408), (10, 52321), (15, 52240), (18, 52078), (19, 52066), (21, 52039), (27, 51916),

Gene: UAch1\_59 Start: 52409, Stop: 51843, Start Num: 3

Candidate Starts for UAch1\_59:

(1, 52475), (Start: 2 @52421 has 26 MA's), (Start: 3 @52409 has 89 MA's), (4, 52382), (6, 52364), (10, 52277), (15, 52196), (18, 52034), (19, 52022), (21, 51995), (22, 51980), (27, 51872),

Gene: UncleHowie\_58 Start: 51880, Stop: 51311, Start Num: 3

Candidate Starts for UncleHowie\_58:

(1, 51946), (Start: 2 @51892 has 26 MA's), (Start: 3 @51880 has 89 MA's), (4, 51853), (6, 51835), (10, 51748), (15, 51667), (18, 51505), (19, 51493), (21, 51466), (27, 51343),

Gene: Usavi\_59 Start: 52548, Stop: 51979, Start Num: 3

Candidate Starts for Usavi\_59:

(1, 52614), (Start: 2 @52560 has 26 MA's), (Start: 3 @52548 has 89 MA's), (4, 52521), (6, 52503), (10, 52416), (15, 52335), (18, 52173), (19, 52161), (21, 52134), (27, 52011),

Gene: Vista\_59 Start: 52181, Stop: 51612, Start Num: 3

Candidate Starts for Vista\_59:

(1, 52247), (Start: 2 @52193 has 26 MA's), (Start: 3 @52181 has 89 MA's), (4, 52154), (6, 52136), (10, 52049), (15, 51968), (18, 51806), (19, 51794), (21, 51767), (27, 51644),

Gene: Vivaldi\_61 Start: 52639, Stop: 52073, Start Num: 3

Candidate Starts for Vivaldi\_61:

(1, 52705), (Start: 2 @52651 has 26 MA's), (Start: 3 @52639 has 89 MA's), (4, 52612), (6, 52594), (8, 52540), (Start: 9 @52531 has 1 MA's), (10, 52507), (15, 52426), (18, 52264), (19, 52252), (21, 52225), (22, 52210), (27, 52102),

Gene: Vortex\_59 Start: 52163, Stop: 51594, Start Num: 3

Candidate Starts for Vortex\_59:

(1, 52229), (Start: 2 @52175 has 26 MA's), (Start: 3 @52163 has 89 MA's), (4, 52136), (6, 52118), (10, 52031), (15, 51950), (18, 51788), (19, 51776), (21, 51749), (27, 51626),

Gene: Waterdiva\_59 Start: 52542, Stop: 51973, Start Num: 3

Candidate Starts for Waterdiva\_59:

(1, 52608), (Start: 2 @52554 has 26 MA's), (Start: 3 @52542 has 89 MA's), (4, 52515), (6, 52497), (10, 52410), (15, 52329), (18, 52167), (19, 52155), (21, 52128), (27, 52005),

Gene: Weher20\_59 Start: 52985, Stop: 52416, Start Num: 3

Candidate Starts for Weher20\_59:

(1, 53051), (Start: 2 @52997 has 26 MA's), (Start: 3 @52985 has 89 MA's), (4, 52958), (6, 52940), (10, 52853), (15, 52772), (18, 52610), (19, 52598), (21, 52571), (22, 52556), (27, 52448),

Gene: Xavier\_58 Start: 52170, Stop: 51601, Start Num: 3

Candidate Starts for Xavier\_58:

(1, 52236), (Start: 2 @52182 has 26 MA's), (Start: 3 @52170 has 89 MA's), (4, 52143), (6, 52125), (10, 52038), (15, 51957), (18, 51795), (19, 51783), (21, 51756), (27, 51633),

Gene: Yoshand\_61 Start: 52456, Stop: 51890, Start Num: 3

Candidate Starts for Yoshand\_61:

(1, 52522), (Start: 2 @52468 has 26 MA's), (Start: 3 @52456 has 89 MA's), (4, 52429), (6, 52411), (8, 52357), (Start: 9 @52348 has 1 MA's), (10, 52324), (15, 52243), (18, 52081), (19, 52069), (21, 52042),



(22, 52027), (27, 51919),

Gene: Zelda\_60 Start: 52810, Stop: 52241, Start Num: 3

Candidate Starts for Zelda\_60:

(1, 52876), (Start: 2 @52822 has 26 MA's), (Start: 3 @52810 has 89 MA's), (4, 52783), (6, 52765),  
(10, 52678), (15, 52597), (18, 52435), (19, 52423), (21, 52396), (27, 52273),