

Pham 224601



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 224601 Report

This analysis was run 03/28/25 on database version 593.

Pham number 224601 has 59 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Taj14\_9, Saphira\_9
- Track 2 : Guntur\_9, Inspire2\_9, Sandman\_9, TinoCrisci\_9, LouisXIV\_9, Sourignavong\_10, Muttie\_9, Copper\_9, Moloch\_9, Courtney3\_9, Jessica\_10, TymAbreu\_9, Chestnut\_9, Hunnie\_9, Toulouse\_8, Yank\_9, Ronnie\_9, Maggie\_9, Stratus\_9, Seume\_9, CGermain\_9, Massimo\_9, Link\_9, Decurro\_9, Mariposa\_9, Dewayne\_9, Prospero\_9, Azathoth\_9
- Track 3 : SerialPhiller\_7, Arielagos\_7, Kels\_7
- Track 4 : Elkhorn\_9, Blair\_9, Lore\_9, Laila\_10, StewieGriff\_9
- Track 5 : Swenson\_9
- Track 6 : KylieMac\_10
- Track 7 : ElectricPheel\_10
- Track 8 : Arby\_9
- Track 9 : Sputnik\_7, Atraxa\_7
- Track 10 : MooKitty\_7
- Track 11 : Adaia\_7
- Track 12 : McGonagall\_9, Jeanie\_9
- Track 13 : Coeur\_9, Rahul\_9
- Track 14 : GRU3\_8
- Track 15 : GMA5\_8
- Track 16 : Schiebs\_10
- Track 17 : Emperor\_12
- Track 18 : SallySpecial\_10
- Track 19 : Penoan\_8
- Track 20 : RRH1\_09
- Track 21 : Root\_8
- Track 22 : CyranoPS\_9

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

The start number called the most often in the published annotations is 16, it was called in 37 of the 53 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Azathoth\_9, Blair\_9, CGermain\_9, Chestnut\_9, Copper\_9, Courtney3\_9, Decurro\_9, Dewayne\_9, ElectricPheel\_10, Elkhorn\_9, Guntur\_9, Hunnie\_9, Inspire2\_9, Jessica\_10, KylieMac\_10, Laila\_10, Link\_9, Lore\_9, LouisXIV\_9, Maggie\_9, Mariposa\_9, Massimo\_9, Moloch\_9, Muttie\_9, Prospero\_9, Ronnie\_9, Sandman\_9, Saphira\_9, Seume\_9, Sourignavong\_10, StewieGriff\_9, Stratus\_9, Swenson\_9, Taj14\_9, TinoCrisci\_9, Toulouse\_8, TymAbreu\_9, Yank\_9,

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

- Arby\_9,

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

- Adaia\_7, Arielagos\_7, Atraxa\_7, Coeur\_9, CyranoPS\_9, Emperor\_12, GMA5\_8, GRU3\_8, Jeanie\_9, Kels\_7, McGonagall\_9, MooKitty\_7, Penoan\_8, RRH1\_09, Rahul\_9, Root\_8, SallySpecial\_10, Schiebs\_10, SerialPhiller\_7, Sputnik\_7,

### Summary by start number:

Start 13:

- Found in 5 of 59 ( 8.5% ) of genes in pham
- Manual Annotations of this start: 5 of 53
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arielagos\_7 (AN), Jeanie\_9 (CW1), Kels\_7 (AN), McGonagall\_9 (CW1), SerialPhiller\_7 (AN),

Start 14:

- Found in 13 of 59 ( 22.0% ) of genes in pham
- Manual Annotations of this start: 9 of 53
- Called 92.3% of time when present
- Phage (with cluster) where this start called: Adaia\_7 (AX), Atraxa\_7 (AX), Coeur\_9 (CW2), CyranoPS\_9 (singleton), GMA5\_8 (CW2), MooKitty\_7 (AX), Penoan\_8 (UNK), Rahul\_9 (CW2), Root\_8 (singleton), SallySpecial\_10 (DM), Schiebs\_10 (CW3), Sputnik\_7 (AX),

Start 15:

- Found in 1 of 59 ( 1.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: GRU3\_8 (CW2),

Start 16:

- Found in 39 of 59 ( 66.1% ) of genes in pham
- Manual Annotations of this start: 37 of 53
- Called 97.4% of time when present
- Phage (with cluster) where this start called: Azathoth\_9 (AN), Blair\_9 (AN), CGermain\_9 (AN), Chestnut\_9 (AN), Copper\_9 (AN), Courtney3\_9 (AN), Decurro\_9 (AN), Dewayne\_9 (AN), ElectricPheel\_10 (AN), Elkhorn\_9 (AN), Guntur\_9 (AN), Hunnie\_9 (AN), Inspire2\_9 (AN), Jessica\_10 (AN), KylieMac\_10 (AN), Laila\_10 (AN), Link\_9 (AN), Lore\_9 (AN), LouisXIV\_9 (AN), Maggie\_9 (AN), Mariposa\_9 (AN), Massimo\_9 (AN), Moloch\_9 (AN), Muttie\_9 (AN), Prospero\_9 (AN), Ronnie\_9 (AN), Sandman\_9 (AN), Saphira\_9 (AN), Seume\_9 (AN), Sourignavong\_10 (AN), StewieGriff\_9 (AN), Stratus\_9 (AN), Swenson\_9 (AN), Taj14\_9 (AN), TinoCrisci\_9 (AN), Toulouse\_8 (AN), TymAbreu\_9 (AN), Yank\_9 (AN),

Start 17:

- Found in 1 of 59 ( 1.7% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: RRH1\_09 (singleton),

Start 18:

- Found in 1 of 59 ( 1.7% ) of genes in pham
- Manual Annotations of this start: 1 of 53
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Emperor\_12 (DM),

Start 19:

- Found in 40 of 59 ( 67.8% ) of genes in pham
- Manual Annotations of this start: 1 of 53
- Called 2.5% of time when present
- Phage (with cluster) where this start called: Arby\_9 (AN),

**Summary by clusters:**

There are 8 clusters represented in this pham: singleton, DM, CW1, CW3, CW2, AN, AX, UNK,

Info for manual annotations of cluster AN:

- Start number 13 was manually annotated 3 times for cluster AN.
- Start number 16 was manually annotated 37 times for cluster AN.
- Start number 19 was manually annotated 1 time for cluster AN.

Info for manual annotations of cluster AX:

- Start number 14 was manually annotated 4 times for cluster AX.

Info for manual annotations of cluster CW1:

- Start number 13 was manually annotated 2 times for cluster CW1.

Info for manual annotations of cluster CW2:

- Start number 14 was manually annotated 2 times for cluster CW2.

Info for manual annotations of cluster CW3:

- Start number 14 was manually annotated 1 time for cluster CW3.

Info for manual annotations of cluster DM:

- Start number 14 was manually annotated 1 time for cluster DM.
- Start number 18 was manually annotated 1 time for cluster DM.

**Gene Information:**

Gene: Adaia\_7 Start: 5193, Stop: 5576, Start Num: 14

Candidate Starts for Adaia\_7:

(Start: 14 @5193 has 9 MA's), (27, 5268), (28, 5283), (37, 5352), (41, 5376), (45, 5400), (50, 5427), (55, 5460), (64, 5511), (66, 5535), (72, 5568),

Gene: Arby\_9 Start: 5661, Stop: 6008, Start Num: 19

Candidate Starts for Arby\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Arielagos\_7 Start: 5288, Stop: 5650, Start Num: 13

Candidate Starts for Arielagos\_7:

(Start: 13 @5288 has 5 MA's), (23, 5333), (25, 5351), (29, 5384), (33, 5414), (34, 5426), (38, 5450), (46, 5492), (50, 5519), (58, 5549), (61, 5570),

Gene: Atraxa\_7 Start: 5283, Stop: 5663, Start Num: 14

Candidate Starts for Atraxa\_7:

(Start: 14 @5283 has 9 MA's), (28, 5370), (41, 5463), (43, 5475), (50, 5514), (52, 5526), (57, 5556), (62, 5583), (63, 5592), (64, 5598), (67, 5631), (70, 5649),

Gene: Azathoth\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Azathoth\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Blair\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Blair\_9:

(Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (27, 5721), (29, 5742), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (60, 5925), (61, 5928), (62, 5931), (66, 5961),

Gene: CGermain\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for CGermain\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Chestnut\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Chestnut\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Coeur\_9 Start: 6537, Stop: 6878, Start Num: 14

Candidate Starts for Coeur\_9:

(Start: 14 @6537 has 9 MA's), (22, 6570), (34, 6672), (35, 6675), (50, 6762), (65, 6834),

Gene: Copper\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Copper\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Courtney3\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Courtney3\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: CyranoPS\_9 Start: 5958, Stop: 6326, Start Num: 14

Candidate Starts for CyranoPS\_9:

(Start: 14 @5958 has 9 MA's), (32, 6066), (40, 6123), (41, 6132), (50, 6177), (56, 6213), (58, 6219), (66, 6276), (68, 6291),

Gene: Decurro\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Decurro\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Dewayne\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Dewayne\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: ElectricPheel\_10 Start: 5726, Stop: 6082, Start Num: 16

Candidate Starts for ElectricPheel\_10:

(Start: 16 @5726 has 37 MA's), (Start: 19 @5735 has 1 MA's), (23, 5765), (25, 5783), (27, 5795), (29, 5816), (31, 5831), (34, 5858), (36, 5867), (38, 5882), (50, 5951), (51, 5954), (58, 5981), (59, 5993), (60, 5999), (61, 6002), (62, 6005), (66, 6035),

Gene: Elkhorn\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Elkhorn\_9:

(Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (27, 5721), (29, 5742), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (60, 5925), (61, 5928), (62, 5931), (66, 5961),

Gene: Emperor\_12 Start: 7759, Stop: 8106, Start Num: 18

Candidate Starts for Emperor\_12:

(6, 7543), (8, 7615), (Start: 18 @7759 has 1 MA's), (20, 7777), (49, 7966),

Gene: GMA5\_8 Start: 6391, Stop: 6732, Start Num: 14

Candidate Starts for GMA5\_8:

(4, 6178), (9, 6328), (Start: 14 @6391 has 9 MA's), (31, 6499), (33, 6514), (40, 6559), (44, 6586), (50, 6616), (60, 6667),

Gene: GRU3\_8 Start: 6449, Stop: 6787, Start Num: 15

Candidate Starts for GRU3\_8:

(15, 6449), (31, 6554), (40, 6614), (60, 6722),

Gene: Guntur\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Guntur\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Hunnie\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Hunnie\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Inspire2\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Inspire2\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Jeanie\_9 Start: 6346, Stop: 6684, Start Num: 13

Candidate Starts for Jeanie\_9:

(Start: 13 @6346 has 5 MA's), (31, 6451), (33, 6466), (38, 6499), (40, 6511), (60, 6619),

Gene: Jessica\_10 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Jessica\_10:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Kels\_7 Start: 5213, Stop: 5575, Start Num: 13

Candidate Starts for Kels\_7:

(Start: 13 @5213 has 5 MA's), (23, 5258), (25, 5276), (29, 5309), (33, 5339), (34, 5351), (38, 5375), (46, 5417), (50, 5444), (58, 5474), (61, 5495),

Gene: KylieMac\_10 Start: 5639, Stop: 5995, Start Num: 16

Candidate Starts for KylieMac\_10:

(Start: 16 @5639 has 37 MA's), (Start: 19 @5648 has 1 MA's), (23, 5678), (25, 5696), (27, 5708), (29, 5729), (31, 5744), (34, 5771), (36, 5780), (38, 5795), (46, 5837), (50, 5864), (51, 5867), (59, 5906), (60, 5912), (61, 5915), (62, 5918), (66, 5948),

Gene: Laila\_10 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Laila\_10:

(Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (27, 5721), (29, 5742), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (60, 5925), (61, 5928), (62, 5931), (66, 5961),

Gene: Link\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Link\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Lore\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Lore\_9:

(Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (27, 5721), (29, 5742), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (60, 5925), (61, 5928), (62, 5931), (66, 5961),

Gene: LouisXIV\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for LouisXIV\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Maggie\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Maggie\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Mariposa\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Mariposa\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Massimo\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Massimo\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: McGonagall\_9 Start: 6346, Stop: 6684, Start Num: 13

Candidate Starts for McGonagall\_9:

(Start: 13 @6346 has 5 MA's), (31, 6451), (33, 6466), (38, 6499), (40, 6511), (60, 6619),

Gene: Moloch\_9 Start: 5726, Stop: 6082, Start Num: 16

Candidate Starts for Moloch\_9:

(10, 5690), (12, 5699), (Start: 16 @5726 has 37 MA's), (Start: 19 @5735 has 1 MA's), (23, 5765), (25, 5783), (28, 5810), (31, 5831), (34, 5858), (36, 5867), (38, 5882), (50, 5951), (51, 5954), (59, 5993), (61, 6002), (62, 6005), (66, 6035),

Gene: MooKitty\_7 Start: 5193, Stop: 5561, Start Num: 14

Candidate Starts for MooKitty\_7:

(Start: 14 @5193 has 9 MA's), (28, 5283), (42, 5385), (50, 5427), (53, 5442), (54, 5454), (70, 5547),

Gene: Muttlie\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Muttlie\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Penoan\_8 Start: 5992, Stop: 6363, Start Num: 14

Candidate Starts for Penoan\_8:

(Start: 14 @5992 has 9 MA's), (23, 6025), (39, 6148), (46, 6184), (47, 6193), (50, 6211), (58, 6244), (69, 6319),

Gene: Prospero\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Prospero\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),



Gene: RRH1\_09 Start: 6793, Stop: 7125, Start Num: 17

Candidate Starts for RRH1\_09:

(1, 5875), (2, 6211), (3, 6562), (Start: 14 @6784 has 9 MA's), (17, 6793), (20, 6805), (26, 6850), (30, 6883), (38, 6937), (40, 6949), (56, 7036), (67, 7102),

Gene: Rahul\_9 Start: 6552, Stop: 6893, Start Num: 14

Candidate Starts for Rahul\_9:

(Start: 14 @6552 has 9 MA's), (22, 6585), (34, 6687), (35, 6690), (50, 6777), (65, 6849),

Gene: Ronnie\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Ronnie\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Root\_8 Start: 6064, Stop: 6417, Start Num: 14

Candidate Starts for Root\_8:

(Start: 14 @6064 has 9 MA's), (23, 6097), (31, 6163), (35, 6193), (38, 6214), (46, 6256), (47, 6265), (50, 6283), (58, 6316), (71, 6397),

Gene: SallySpecial\_10 Start: 6686, Stop: 7039, Start Num: 14

Candidate Starts for SallySpecial\_10:

(6, 6476), (7, 6506), (8, 6554), (Start: 14 @6686 has 9 MA's), (Start: 19 @6701 has 1 MA's), (22, 6722), (30, 6791), (38, 6842), (48, 6896), (50, 6911), (54, 6932), (62, 6971), (66, 6998),

Gene: Sandman\_9 Start: 5726, Stop: 6082, Start Num: 16

Candidate Starts for Sandman\_9:

(10, 5690), (12, 5699), (Start: 16 @5726 has 37 MA's), (Start: 19 @5735 has 1 MA's), (23, 5765), (25, 5783), (28, 5810), (31, 5831), (34, 5858), (36, 5867), (38, 5882), (50, 5951), (51, 5954), (59, 5993), (61, 6002), (62, 6005), (66, 6035),

Gene: Saphira\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Saphira\_9:

(Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (24, 5694), (25, 5709), (29, 5742), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (60, 5925), (61, 5928), (62, 5931), (66, 5961),

Gene: Schiebs\_10 Start: 6128, Stop: 6487, Start Num: 14

Candidate Starts for Schiebs\_10:

(5, 5915), (6, 5918), (11, 6104), (Start: 14 @6128 has 9 MA's), (20, 6155), (21, 6158), (31, 6239), (35, 6269), (40, 6299), (44, 6326), (47, 6338), (55, 6383), (62, 6419),

Gene: SerialPhiller\_7 Start: 5288, Stop: 5650, Start Num: 13

Candidate Starts for SerialPhiller\_7:

(Start: 13 @5288 has 5 MA's), (23, 5333), (25, 5351), (29, 5384), (33, 5414), (34, 5426), (38, 5450), (46, 5492), (50, 5519), (58, 5549), (61, 5570),

Gene: Seume\_9 Start: 5448, Stop: 5804, Start Num: 16

Candidate Starts for Seume\_9:

(10, 5412), (12, 5421), (Start: 16 @5448 has 37 MA's), (Start: 19 @5457 has 1 MA's), (23, 5487), (25, 5505), (28, 5532), (31, 5553), (34, 5580), (36, 5589), (38, 5604), (50, 5673), (51, 5676), (59, 5715), (61, 5724), (62, 5727), (66, 5757),

Gene: Sourignavong\_10 Start: 5753, Stop: 6109, Start Num: 16

Candidate Starts for Sourignavong\_10:

(10, 5717), (12, 5726), (Start: 16 @5753 has 37 MA's), (Start: 19 @5762 has 1 MA's), (23, 5792), (25, 5810), (28, 5837), (31, 5858), (34, 5885), (36, 5894), (38, 5909), (50, 5978), (51, 5981), (59, 6020), (61, 6029), (62, 6032), (66, 6062),

Gene: Sputnik\_7 Start: 5283, Stop: 5663, Start Num: 14

Candidate Starts for Sputnik\_7:

(Start: 14 @5283 has 9 MA's), (28, 5370), (41, 5463), (43, 5475), (50, 5514), (52, 5526), (57, 5556), (62, 5583), (63, 5592), (64, 5598), (67, 5631), (70, 5649),

Gene: StewieGriff\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for StewieGriff\_9:

(Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (27, 5721), (29, 5742), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (60, 5925), (61, 5928), (62, 5931), (66, 5961),

Gene: Stratus\_9 Start: 5726, Stop: 6082, Start Num: 16

Candidate Starts for Stratus\_9:

(10, 5690), (12, 5699), (Start: 16 @5726 has 37 MA's), (Start: 19 @5735 has 1 MA's), (23, 5765), (25, 5783), (28, 5810), (31, 5831), (34, 5858), (36, 5867), (38, 5882), (50, 5951), (51, 5954), (59, 5993), (61, 6002), (62, 6005), (66, 6035),

Gene: Swenson\_9 Start: 5775, Stop: 6131, Start Num: 16

Candidate Starts for Swenson\_9:

(Start: 16 @5775 has 37 MA's), (Start: 19 @5784 has 1 MA's), (23, 5814), (25, 5832), (29, 5865), (31, 5880), (34, 5907), (36, 5916), (38, 5931), (50, 6000), (51, 6003), (59, 6042), (61, 6051), (62, 6054), (66, 6084),

Gene: Taj14\_9 Start: 5631, Stop: 5987, Start Num: 16

Candidate Starts for Taj14\_9:

(Start: 16 @5631 has 37 MA's), (Start: 19 @5640 has 1 MA's), (23, 5670), (24, 5673), (25, 5688), (29, 5721), (31, 5736), (34, 5763), (36, 5772), (38, 5787), (50, 5856), (51, 5859), (59, 5898), (60, 5904), (61, 5907), (62, 5910), (66, 5940),

Gene: TinoCrisci\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for TinoCrisci\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Toulouse\_8 Start: 5448, Stop: 5804, Start Num: 16

Candidate Starts for Toulouse\_8:

(10, 5412), (12, 5421), (Start: 16 @5448 has 37 MA's), (Start: 19 @5457 has 1 MA's), (23, 5487), (25, 5505), (28, 5532), (31, 5553), (34, 5580), (36, 5589), (38, 5604), (50, 5673), (51, 5676), (59, 5715), (61, 5724), (62, 5727), (66, 5757),

Gene: TymAbreu\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for TymAbreu\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),

Gene: Yank\_9 Start: 5652, Stop: 6008, Start Num: 16

Candidate Starts for Yank\_9:

(10, 5616), (12, 5625), (Start: 16 @5652 has 37 MA's), (Start: 19 @5661 has 1 MA's), (23, 5691), (25, 5709), (28, 5736), (31, 5757), (34, 5784), (36, 5793), (38, 5808), (50, 5877), (51, 5880), (59, 5919), (61, 5928), (62, 5931), (66, 5961),