



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 224592 Report

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

Pham number 224592 has 61 members, 7 are drafts.

Phages represented in each track:

- Track 1 : BlueCrab\_69
- Track 2 : ShroomBoi\_69
- Track 3 : KingJulian\_69, Corium\_69, Malithi\_56
- Track 4 : Philus\_71, DRBy19\_72
- Track 5 : Royals2015\_72
- Track 6 : Polka14\_67, Daenerys\_63, Leperchaun\_61, PHappiness\_64, OwlsT2W\_68, Renaud18\_78, JoeyJr\_64, RitaG\_64, Spoonbill\_67
- Track 7 : FreddyB\_69, Martik\_68, ShiLan\_67
- Track 8 : Kingsley\_76
- Track 9 : EleanorGeorge\_69
- Track 10 : Brushbloom\_82
- Track 11 : Harley\_70
- Track 12 : PhesterPhotato\_69
- Track 13 : Megiddo\_55, Bobi\_75, Ksquared\_58, GreaseLightnin\_61, Bunnies\_60
- Track 14 : Bogie\_59, Dynamo\_55, Pygmy\_59, Glaske\_54, Phineas\_57, Sonah\_56, CactusJack\_55, StressBall\_55, Phalm\_55, HUHilltop\_58
- Track 15 : Techage\_61, Seagreen\_74
- Track 16 : Zilizebeth\_66
- Track 17 : Brusacoram\_57, Thespis\_57
- Track 18 : KilKor\_55, Donovan\_60, Willsammy\_55
- Track 19 : Etoile\_59, Kari\_59
- Track 20 : Gavriela\_55, Necropolis\_54, Shipwreck\_59, Jebeks\_56
- Track 21 : Camster\_57
- Track 22 : StevieRay\_60, Bhagsy\_61, Atcoo\_57
- Track 23 : Langerak\_61
- Track 24 : Fishburne\_60
- Track 25 : Vidya\_54

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

The start number called the most often in the published annotations is 5, it was called in 38 of the 54 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Bobi\_75, Bogie\_59, Bunnies\_60, CactusJack\_55, Camster\_57, DRBy19\_72, Daenerys\_63, Donovan\_60, Dynamo\_55, FreddyB\_69, Glaske\_54, GreaseLightnin\_61, HUHilltop\_58, JoeyJr\_64, KilKor\_55, Ksquared\_58, Leperchaun\_61, Martik\_68, Megiddo\_55, OwlsT2W\_68, PHappiness\_64, Phalm\_55, PhesterPhotato\_69, Philus\_71, Phineas\_57, Polka14\_67, Pygmy\_59, Renaud18\_78, RitaG\_64, Seagreen\_74, ShiLan\_67, ShroomBoi\_69, Sonah\_56, Spoonbill\_67, StressBall\_55, Techage\_61, Willsammy\_55, Zilizebeth\_66,

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

- Atcoo\_57, Bhagsy\_61, BlueCrab\_69, Brusacoram\_57, Corium\_69, Etoile\_59, Fishburne\_60, Gavriela\_55, Harley\_70, Jebeks\_56, Kari\_59, KingJulian\_69, Langerak\_61, Malithi\_56, Necropolis\_54, Royals2015\_72, Shipwreck\_59, StevieRay\_60, Thespis\_57, Vidya\_54,

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

- Brushbloom\_82, EleanorGeorge\_69, Kingsley\_76,

### Summary by start number:

Start 3:

- Found in 1 of 61 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 54
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Kingsley\_76 (F1),

Start 5:

- Found in 58 of 61 ( 95.1% ) of genes in pham
- Manual Annotations of this start: 38 of 54
- Called 65.5% of time when present
- Phage (with cluster) where this start called: Bobi\_75 (F1), Bogie\_59 (P1), Bunnies\_60 (P1), CactusJack\_55 (P1), Camster\_57 (P1), DRBy19\_72 (F1), Daenerys\_63 (F1), Donovan\_60 (P1), Dynamo\_55 (P1), FreddyB\_69 (F1), Glaske\_54 (P1), GreaseLightnin\_61 (P1), HUHilltop\_58 (P1), JoeyJr\_64 (F1), KilKor\_55 (P1), Ksquared\_58 (P1), Leperchaun\_61 (F1), Martik\_68 (F1), Megiddo\_55 (P1), OwlsT2W\_68 (F1), PHappiness\_64 (F1), Phalm\_55 (P1), PhesterPhotato\_69 (F1), Philus\_71 (F1), Phineas\_57 (P1), Polka14\_67 (F1), Pygmy\_59 (P1), Renaud18\_78 (F4), RitaG\_64 (F1), Seagreen\_74 (F1), ShiLan\_67 (F1), ShroomBoi\_69 (F1), Sonah\_56 (P1), Spoonbill\_67 (F1), StressBall\_55 (P1), Techage\_61 (P1), Willsammy\_55 (P1), Zilizebeth\_66 (P1),

Start 7:

- Found in 61 of 61 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 15 of 54
- Called 31.1% of time when present
- Phage (with cluster) where this start called: Atcoo\_57 (P1), Bhagsy\_61 (P1), BlueCrab\_69 (F1), Brusacoram\_57 (P1), Brushbloom\_82 (F1), Corium\_69 (F1), EleanorGeorge\_69 (F1), Fishburne\_60 (P1), Gavriela\_55 (P1), Harley\_70 (F1), Jebeks\_56 (P1), KingJulian\_69 (F1), Langerak\_61 (P1), Malithi\_56 (P1), Necropolis\_54 (P1), Royals2015\_72 (F1), Shipwreck\_59 (P1), StevieRay\_60 (P1), Thespis\_57 (P1),

Start 8:

- Found in 61 of 61 ( 100.0% ) of genes in pham

- No Manual Annotations of this start.
- Called 4.9% of time when present
- Phage (with cluster) where this start called: Etoile\_59 (P1), Kari\_59 (P1), Vidya\_54 (P1),

### **Summary by clusters:**

There are 3 clusters represented in this pham: F1, P1, F4,

Info for manual annotations of cluster F1:

- Start number 3 was manually annotated 1 time for cluster F1.
- Start number 5 was manually annotated 17 times for cluster F1.
- Start number 7 was manually annotated 4 times for cluster F1.

Info for manual annotations of cluster F4:

- Start number 5 was manually annotated 1 time for cluster F4.

Info for manual annotations of cluster P1:

- Start number 5 was manually annotated 20 times for cluster P1.
- Start number 7 was manually annotated 11 times for cluster P1.

### **Gene Information:**

Gene: Atcoo\_57 Start: 40012, Stop: 40215, Start Num: 7

Candidate Starts for Atcoo\_57:

(1, 39916), (2, 39919), (Start: 5 @39964 has 38 MA's), (Start: 7 @40012 has 15 MA's), (8, 40024), (11, 40054), (12, 40168), (13, 40180),

Gene: Bhagsy\_61 Start: 39820, Stop: 40023, Start Num: 7

Candidate Starts for Bhagsy\_61:

(1, 39724), (2, 39727), (Start: 5 @39772 has 38 MA's), (Start: 7 @39820 has 15 MA's), (8, 39832), (11, 39862), (12, 39976), (13, 39988),

Gene: BlueCrab\_69 Start: 46345, Stop: 46548, Start Num: 7

Candidate Starts for BlueCrab\_69:

(1, 46249), (2, 46252), (Start: 5 @46297 has 38 MA's), (Start: 7 @46345 has 15 MA's), (8, 46357), (9, 46366), (10, 46384),

Gene: Bobi\_75 Start: 46900, Stop: 47151, Start Num: 5

Candidate Starts for Bobi\_75:

(1, 46852), (2, 46855), (Start: 5 @46900 has 38 MA's), (Start: 7 @46948 has 15 MA's), (8, 46960), (11, 46990), (12, 47104), (13, 47116),

Gene: Bogie\_59 Start: 39724, Stop: 39975, Start Num: 5

Candidate Starts for Bogie\_59:

(1, 39676), (2, 39679), (Start: 5 @39724 has 38 MA's), (Start: 7 @39772 has 15 MA's), (8, 39784), (12, 39928),

Gene: Brusacoram\_57 Start: 38555, Stop: 38758, Start Num: 7

Candidate Starts for Brusacoram\_57:

(1, 38459), (2, 38462), (Start: 5 @38507 has 38 MA's), (Start: 7 @38555 has 15 MA's), (8, 38567), (9, 38576), (10, 38594), (12, 38711), (13, 38723),

Gene: Brushbloom\_82 Start: 47986, Stop: 48192, Start Num: 7

Candidate Starts for Brushbloom\_82:

(Start: 7 @47986 has 15 MA's), (8, 47998), (12, 48142),

Gene: Bunnies\_60 Start: 39854, Stop: 40105, Start Num: 5

Candidate Starts for Bunnies\_60:

(1, 39806), (2, 39809), (Start: 5 @39854 has 38 MA's), (Start: 7 @39902 has 15 MA's), (8, 39914), (11, 39944), (12, 40058), (13, 40070),

Gene: CactusJack\_55 Start: 38722, Stop: 38973, Start Num: 5

Candidate Starts for CactusJack\_55:

(1, 38674), (2, 38677), (Start: 5 @38722 has 38 MA's), (Start: 7 @38770 has 15 MA's), (8, 38782), (12, 38926),

Gene: Camster\_57 Start: 38185, Stop: 38436, Start Num: 5

Candidate Starts for Camster\_57:

(1, 38137), (2, 38140), (Start: 5 @38185 has 38 MA's), (Start: 7 @38233 has 15 MA's), (8, 38245), (11, 38275), (12, 38389),

Gene: Corium\_69 Start: 46999, Stop: 47205, Start Num: 7

Candidate Starts for Corium\_69:

(1, 46903), (2, 46906), (Start: 5 @46951 has 38 MA's), (Start: 7 @46999 has 15 MA's), (8, 47011), (11, 47041), (12, 47155),

Gene: DRBy19\_72 Start: 46946, Stop: 47197, Start Num: 5

Candidate Starts for DRBy19\_72:

(1, 46898), (2, 46901), (4, 46931), (Start: 5 @46946 has 38 MA's), (Start: 7 @46994 has 15 MA's), (8, 47006),

Gene: Daenerys\_63 Start: 43336, Stop: 43587, Start Num: 5

Candidate Starts for Daenerys\_63:

(1, 43288), (2, 43291), (Start: 5 @43336 has 38 MA's), (Start: 7 @43384 has 15 MA's), (8, 43396), (11, 43426),

Gene: Donovan\_60 Start: 39971, Stop: 40225, Start Num: 5

Candidate Starts for Donovan\_60:

(2, 39926), (Start: 5 @39971 has 38 MA's), (6, 40016), (Start: 7 @40019 has 15 MA's), (8, 40031), (9, 40040), (11, 40061), (12, 40175),

Gene: Dynamo\_55 Start: 37758, Stop: 38009, Start Num: 5

Candidate Starts for Dynamo\_55:

(1, 37710), (2, 37713), (Start: 5 @37758 has 38 MA's), (Start: 7 @37806 has 15 MA's), (8, 37818), (12, 37962),

Gene: EleanorGeorge\_69 Start: 45124, Stop: 45327, Start Num: 7

Candidate Starts for EleanorGeorge\_69:

(Start: 7 @45124 has 15 MA's), (8, 45136), (11, 45166),

Gene: Etoile\_59 Start: 39857, Stop: 40051, Start Num: 8

Candidate Starts for Etoile\_59:

(2, 39752), (Start: 5 @39797 has 38 MA's), (6, 39842), (Start: 7 @39845 has 15 MA's), (8, 39857), (9, 39866), (11, 39887), (12, 40001),

Gene: Fishburne\_60 Start: 39845, Stop: 40051, Start Num: 7

Candidate Starts for Fishburne\_60:

(2, 39752), (Start: 5 @39797 has 38 MA's), (6, 39842), (Start: 7 @39845 has 15 MA's), (8, 39857), (9, 39866), (11, 39887), (12, 40001),

Gene: FreddyB\_69 Start: 44092, Stop: 44343, Start Num: 5

Candidate Starts for FreddyB\_69:

(1, 44044), (2, 44047), (Start: 5 @44092 has 38 MA's), (Start: 7 @44140 has 15 MA's), (8, 44152), (9, 44161), (10, 44179),

Gene: Gavriela\_55 Start: 38770, Stop: 38973, Start Num: 7

Candidate Starts for Gavriela\_55:

(1, 38674), (2, 38677), (Start: 5 @38722 has 38 MA's), (Start: 7 @38770 has 15 MA's), (8, 38782), (12, 38926),

Gene: Glaske\_54 Start: 38722, Stop: 38973, Start Num: 5

Candidate Starts for Glaske\_54:

(1, 38674), (2, 38677), (Start: 5 @38722 has 38 MA's), (Start: 7 @38770 has 15 MA's), (8, 38782), (12, 38926),

Gene: GreaseLightnin\_61 Start: 40088, Stop: 40339, Start Num: 5

Candidate Starts for GreaseLightnin\_61:

(1, 40040), (2, 40043), (Start: 5 @40088 has 38 MA's), (Start: 7 @40136 has 15 MA's), (8, 40148), (11, 40178), (12, 40292), (13, 40304),

Gene: HUHilltop\_58 Start: 37981, Stop: 38232, Start Num: 5

Candidate Starts for HUHilltop\_58:

(1, 37933), (2, 37936), (Start: 5 @37981 has 38 MA's), (Start: 7 @38029 has 15 MA's), (8, 38041), (12, 38185),

Gene: Harley\_70 Start: 44993, Stop: 45196, Start Num: 7

Candidate Starts for Harley\_70:

(1, 44897), (2, 44900), (Start: 5 @44945 has 38 MA's), (Start: 7 @44993 has 15 MA's), (8, 45005), (9, 45014), (11, 45035),

Gene: Jebeks\_56 Start: 37326, Stop: 37529, Start Num: 7

Candidate Starts for Jebeks\_56:

(1, 37230), (2, 37233), (Start: 5 @37278 has 38 MA's), (Start: 7 @37326 has 15 MA's), (8, 37338), (12, 37482),

Gene: JoeyJr\_64 Start: 43504, Stop: 43755, Start Num: 5

Candidate Starts for JoeyJr\_64:

(1, 43456), (2, 43459), (Start: 5 @43504 has 38 MA's), (Start: 7 @43552 has 15 MA's), (8, 43564), (11, 43594),

Gene: Kari\_59 Start: 39854, Stop: 40048, Start Num: 8

Candidate Starts for Kari\_59:

(2, 39749), (Start: 5 @39794 has 38 MA's), (6, 39839), (Start: 7 @39842 has 15 MA's), (8, 39854), (9, 39863), (11, 39884), (12, 39998),

Gene: KilKor\_55 Start: 39415, Stop: 39666, Start Num: 5

Candidate Starts for KilKor\_55:

(2, 39370), (Start: 5 @39415 has 38 MA's), (6, 39460), (Start: 7 @39463 has 15 MA's), (8, 39475), (9, 39484), (11, 39505), (12, 39619),

Gene: KingJulian\_69 Start: 46999, Stop: 47205, Start Num: 7

Candidate Starts for KingJulian\_69:

(1, 46903), (2, 46906), (Start: 5 @46951 has 38 MA's), (Start: 7 @46999 has 15 MA's), (8, 47011), (11, 47041), (12, 47155),

Gene: Kingsley\_76 Start: 48554, Stop: 48835, Start Num: 3

Candidate Starts for Kingsley\_76:

(Start: 3 @48554 has 1 MA's), (Start: 7 @48629 has 15 MA's), (8, 48641), (9, 48650), (12, 48785),

Gene: Ksquared\_58 Start: 39854, Stop: 40105, Start Num: 5

Candidate Starts for Ksquared\_58:

(1, 39806), (2, 39809), (Start: 5 @39854 has 38 MA's), (Start: 7 @39902 has 15 MA's), (8, 39914), (11, 39944), (12, 40058), (13, 40070),

Gene: Langerak\_61 Start: 39822, Stop: 40028, Start Num: 7

Candidate Starts for Langerak\_61:

(2, 39729), (Start: 5 @39774 has 38 MA's), (6, 39819), (Start: 7 @39822 has 15 MA's), (8, 39834), (9, 39843), (10, 39861), (12, 39978),

Gene: Leperchaun\_61 Start: 42734, Stop: 42985, Start Num: 5

Candidate Starts for Leperchaun\_61:

(1, 42686), (2, 42689), (Start: 5 @42734 has 38 MA's), (Start: 7 @42782 has 15 MA's), (8, 42794), (11, 42824),

Gene: Malithi\_56 Start: 37944, Stop: 38147, Start Num: 7

Candidate Starts for Malithi\_56:

(1, 37848), (2, 37851), (Start: 5 @37896 has 38 MA's), (Start: 7 @37944 has 15 MA's), (8, 37956), (11, 37986), (12, 38100),

Gene: Martik\_68 Start: 45195, Stop: 45446, Start Num: 5

Candidate Starts for Martik\_68:

(1, 45147), (2, 45150), (Start: 5 @45195 has 38 MA's), (Start: 7 @45243 has 15 MA's), (8, 45255), (9, 45264), (10, 45282),

Gene: Megiddo\_55 Start: 38746, Stop: 38997, Start Num: 5

Candidate Starts for Megiddo\_55:

(1, 38698), (2, 38701), (Start: 5 @38746 has 38 MA's), (Start: 7 @38794 has 15 MA's), (8, 38806), (11, 38836), (12, 38950), (13, 38962),

Gene: Necropolis\_54 Start: 37395, Stop: 37598, Start Num: 7

Candidate Starts for Necropolis\_54:

(1, 37299), (2, 37302), (Start: 5 @37347 has 38 MA's), (Start: 7 @37395 has 15 MA's), (8, 37407), (12, 37551),

Gene: OwlsT2W\_68 Start: 44429, Stop: 44680, Start Num: 5

Candidate Starts for OwlsT2W\_68:

(1, 44381), (2, 44384), (Start: 5 @44429 has 38 MA's), (Start: 7 @44477 has 15 MA's), (8, 44489), (11, 44519),

Gene: PHappiness\_64 Start: 43280, Stop: 43531, Start Num: 5

Candidate Starts for PHappiness\_64:

(1, 43232), (2, 43235), (Start: 5 @43280 has 38 MA's), (Start: 7 @43328 has 15 MA's), (8, 43340), (11, 43370),

Gene: Phalm\_55 Start: 38722, Stop: 38973, Start Num: 5

Candidate Starts for Phalm\_55:

(1, 38674), (2, 38677), (Start: 5 @38722 has 38 MA's), (Start: 7 @38770 has 15 MA's), (8, 38782), (12, 38926),

Gene: PhesterPhotato\_69 Start: 43468, Stop: 43719, Start Num: 5

Candidate Starts for PhesterPhotato\_69:

(1, 43420), (2, 43423), (4, 43453), (Start: 5 @43468 has 38 MA's), (Start: 7 @43516 has 15 MA's), (8, 43528), (9, 43537), (10, 43555),

Gene: Philus\_71 Start: 46922, Stop: 47173, Start Num: 5

Candidate Starts for Philus\_71:

(1, 46874), (2, 46877), (4, 46907), (Start: 5 @46922 has 38 MA's), (Start: 7 @46970 has 15 MA's), (8, 46982),

Gene: Phineas\_57 Start: 38316, Stop: 38567, Start Num: 5

Candidate Starts for Phineas\_57:

(1, 38268), (2, 38271), (Start: 5 @38316 has 38 MA's), (Start: 7 @38364 has 15 MA's), (8, 38376), (12, 38520),

Gene: Polka14\_67 Start: 44344, Stop: 44595, Start Num: 5

Candidate Starts for Polka14\_67:

(1, 44296), (2, 44299), (Start: 5 @44344 has 38 MA's), (Start: 7 @44392 has 15 MA's), (8, 44404), (11, 44434),

Gene: Pygmy\_59 Start: 39780, Stop: 40031, Start Num: 5

Candidate Starts for Pygmy\_59:

(1, 39732), (2, 39735), (Start: 5 @39780 has 38 MA's), (Start: 7 @39828 has 15 MA's), (8, 39840), (12, 39984),

Gene: Renaud18\_78 Start: 46232, Stop: 46483, Start Num: 5

Candidate Starts for Renaud18\_78:

(1, 46184), (2, 46187), (Start: 5 @46232 has 38 MA's), (Start: 7 @46280 has 15 MA's), (8, 46292), (11, 46322),

Gene: RitaG\_64 Start: 43625, Stop: 43876, Start Num: 5

Candidate Starts for RitaG\_64:

(1, 43577), (2, 43580), (Start: 5 @43625 has 38 MA's), (Start: 7 @43673 has 15 MA's), (8, 43685), (11, 43715),

Gene: Royals2015\_72 Start: 44494, Stop: 44697, Start Num: 7

Candidate Starts for Royals2015\_72:

(1, 44398), (2, 44401), (Start: 5 @44446 has 38 MA's), (Start: 7 @44494 has 15 MA's), (8, 44506), (11, 44536),

Gene: Seagreen\_74 Start: 47273, Stop: 47527, Start Num: 5

Candidate Starts for Seagreen\_74:



(2, 47228), (Start: 5 @47273 has 38 MA's), (6, 47318), (Start: 7 @47321 has 15 MA's), (8, 47333), (9, 47342), (10, 47360), (12, 47477),

Gene: ShiLan\_67 Start: 45807, Stop: 46058, Start Num: 5

Candidate Starts for ShiLan\_67:

(1, 45759), (2, 45762), (Start: 5 @45807 has 38 MA's), (Start: 7 @45855 has 15 MA's), (8, 45867), (9, 45876), (10, 45894),

Gene: Shipwreck\_59 Start: 39803, Stop: 40006, Start Num: 7

Candidate Starts for Shipwreck\_59:

(1, 39707), (2, 39710), (Start: 5 @39755 has 38 MA's), (Start: 7 @39803 has 15 MA's), (8, 39815), (12, 39959),

Gene: ShroomBoi\_69 Start: 44807, Stop: 45058, Start Num: 5

Candidate Starts for ShroomBoi\_69:

(1, 44759), (2, 44762), (Start: 5 @44807 has 38 MA's), (Start: 7 @44855 has 15 MA's), (8, 44867), (9, 44876), (11, 44897), (14, 45050),

Gene: Sonah\_56 Start: 37452, Stop: 37703, Start Num: 5

Candidate Starts for Sonah\_56:

(1, 37404), (2, 37407), (Start: 5 @37452 has 38 MA's), (Start: 7 @37500 has 15 MA's), (8, 37512), (12, 37656),

Gene: Spoonbill\_67 Start: 43351, Stop: 43602, Start Num: 5

Candidate Starts for Spoonbill\_67:

(1, 43303), (2, 43306), (Start: 5 @43351 has 38 MA's), (Start: 7 @43399 has 15 MA's), (8, 43411), (11, 43441),

Gene: StevieRay\_60 Start: 39821, Stop: 40024, Start Num: 7

Candidate Starts for StevieRay\_60:

(1, 39725), (2, 39728), (Start: 5 @39773 has 38 MA's), (Start: 7 @39821 has 15 MA's), (8, 39833), (11, 39863), (12, 39977), (13, 39989),

Gene: StressBall\_55 Start: 38722, Stop: 38973, Start Num: 5

Candidate Starts for StressBall\_55:

(1, 38674), (2, 38677), (Start: 5 @38722 has 38 MA's), (Start: 7 @38770 has 15 MA's), (8, 38782), (12, 38926),

Gene: Techage\_61 Start: 39861, Stop: 40115, Start Num: 5

Candidate Starts for Techage\_61:

(2, 39816), (Start: 5 @39861 has 38 MA's), (6, 39906), (Start: 7 @39909 has 15 MA's), (8, 39921), (9, 39930), (10, 39948), (12, 40065),

Gene: Thespis\_57 Start: 38555, Stop: 38758, Start Num: 7

Candidate Starts for Thespis\_57:

(1, 38459), (2, 38462), (Start: 5 @38507 has 38 MA's), (Start: 7 @38555 has 15 MA's), (8, 38567), (9, 38576), (10, 38594), (12, 38711), (13, 38723),

Gene: Vidya\_54 Start: 37311, Stop: 37502, Start Num: 8

Candidate Starts for Vidya\_54:

(1, 37203), (2, 37206), (Start: 5 @37251 has 38 MA's), (Start: 7 @37299 has 15 MA's), (8, 37311), (12, 37455),

Gene: Willsammy\_55 Start: 38898, Stop: 39149, Start Num: 5

Candidate Starts for Willsammy\_55:

(2, 38853), (Start: 5 @38898 has 38 MA's), (6, 38943), (Start: 7 @38946 has 15 MA's), (8, 38958), (9, 38967), (11, 38988), (12, 39102),

Gene: Zilizebeth\_66 Start: 40635, Stop: 40889, Start Num: 5

Candidate Starts for Zilizebeth\_66:

(1, 40587), (2, 40590), (Start: 5 @40635 has 38 MA's), (Start: 7 @40683 has 15 MA's), (8, 40695), (10, 40722), (12, 40839),