

Pham 203013



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 203013 Report

This analysis was run 01/18/25 on database version 583.

Pham number 203013 has 51 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Frokostdame\_73
- Track 2 : Bunnybear\_66
- Track 3 : Hyzer\_85
- Track 4 : Madeline\_65
- Track 5 : WelcomeAyanna\_71, ThankyouJordi\_71
- Track 6 : Maridalia\_71
- Track 7 : Yeezy\_73
- Track 8 : RavenCo17\_67
- Track 9 : PhorbesPhlower\_64
- Track 10 : Morkie\_66, Kuwabara\_84, OneDirection\_60, Lton\_63
- Track 11 : Lutum\_89, Kenna\_83, BotCity\_91, Phabuloso\_95, BENtherdunthat\_88, Getalong\_91
- Track 12 : Zodiariah\_67
- Track 13 : OBUpride\_68, Gravaillia\_64, Amochick\_70, Gancho\_68, Daegal\_72
- Track 14 : Amymech\_69, Ein37\_69, HH92\_68, Ubuntu\_69, Kinbote\_67, Luna22\_63, LilHazelnut\_69, Evanesce\_68, Webster2\_69, DeepSoil15\_69
- Track 15 : Forge\_63, Luke\_67, Dewey\_63, Wishmaker\_63, Hail\_63, Hadrien\_67, Giles\_63
- Track 16 : LilSpotty\_80, TootsiePop\_84, Misha28\_84, Awesomesauce\_85, Aloeri\_88, ChickenDinner\_88, DocMcStuffins\_82
- Track 17 : Sleepyhead\_58

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

The start number called the most often in the published annotations is 13, it was called in 15 of the 46 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Amochick\_70, Amymech\_69, Daegal\_72, DeepSoil15\_69, Ein37\_69, Evanesce\_68, Gancho\_68, Gravaillia\_64, HH92\_68, Kinbote\_67, LilHazelnut\_69, Luna22\_63, OBUpride\_68, Ubuntu\_69, Webster2\_69,

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

- Dewey\_63, Forge\_63, Giles\_63, Hadrien\_67, Hail\_63, Luke\_67, Wishmaker\_63,

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

- Aleri\_88, Awesomesauce\_85, BENtherdunthat\_88, BotCity\_91, Bunnybear\_66, ChickenDinner\_88, DocMcStuffins\_82, Frokostdame\_73, Getalong\_91, Hyzer\_85, Kenna\_83, Kuwabara\_84, LilSpotty\_80, Lton\_63, Lutum\_89, Madeline\_65, Maridalia\_71, Misha28\_84, Morkie\_66, OneDirection\_60, Phabuloso\_95, PhorbesPhlower\_64, RavenCo17\_67, Sleepyhead\_58, ThankyouJordi\_71, TootsiePop\_84, WelcomeAyanna\_71, Yeezy\_73, Zodiariah\_67,

### Summary by start number:

Start 2:

- Found in 17 of 51 ( 33.3% ) of genes in pham
- Manual Annotations of this start: 7 of 46
- Called 41.2% of time when present
- Phage (with cluster) where this start called: Dewey\_63 (Q), Forge\_63 (Q), Giles\_63 (Q), Hadrien\_67 (Q), Hail\_63 (Q), Luke\_67 (Q), Wishmaker\_63 (Q),

Start 8:

- Found in 1 of 51 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 46
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Frokostdame\_73 (CV),

Start 10:

- Found in 5 of 51 ( 9.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Zodiariah\_67 (DW),

Start 11:

- Found in 3 of 51 ( 5.9% ) of genes in pham
- Manual Annotations of this start: 1 of 46
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Hyzer\_85 (CZ1), Yeezy\_73 (CZ3),

Start 12:

- Found in 5 of 51 ( 9.8% ) of genes in pham
- Manual Annotations of this start: 4 of 46
- Called 80.0% of time when present
- Phage (with cluster) where this start called: Bunnybear\_66 (CZ), Maridalia\_71 (CZ1), ThankyouJordi\_71 (CZ1), WelcomeAyanna\_71 (CZ1),

Start 13:

- Found in 22 of 51 ( 43.1% ) of genes in pham
- Manual Annotations of this start: 15 of 46
- Called 68.2% of time when present
- Phage (with cluster) where this start called: Amochick\_70 (Q), Amymech\_69 (Q), Daegal\_72 (Q), DeepSoil15\_69 (Q), Ein37\_69 (Q), Evanesce\_68 (Q), Gancho\_68 (Q), Gravailia\_64 (Q), HH92\_68 (Q), Kinbote\_67 (Q), LilHazelNut\_69 (Q), Luna22\_63 (Q), OBUpride\_68 (Q), Ubuntu\_69 (Q), Webster2\_69 (Q),

Start 15:

- Found in 7 of 51 ( 13.7% ) of genes in pham
- Manual Annotations of this start: 5 of 46
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aloeri\_88 (F1), Awesomesauce\_85 (F1), ChickenDinner\_88 (F1), DocMcStuffins\_82 (F1), LilSpotty\_80 (singleton), Misha28\_84 (F1), TootsiePop\_84 (F1),

Start 17:

- Found in 2 of 51 ( 3.9% ) of genes in pham
- Manual Annotations of this start: 2 of 46
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Madeline\_65 (CZ1), RavenCo17\_67 (CZ8),

Start 23:

- Found in 11 of 51 ( 21.6% ) of genes in pham
- Manual Annotations of this start: 10 of 46
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BENtherdunthat\_88 (DN1), BotCity\_91 (DN), Getalong\_91 (DN1), Kenna\_83 (DN1), Kuwabara\_84 (DN4), Lton\_63 (CZ), Lutum\_89 (DN1), Morkie\_66 (DH), OneDirection\_60 (CZ6), Phabuloso\_95 (DN1), PhorbesPhlower\_64 (DH),

Start 28:

- Found in 1 of 51 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 46
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sleepyhead\_58 (singleton),

### **Summary by clusters:**

There are 14 clusters represented in this pham: DN, F1, singleton, DH, CZ, CZ3, CZ1, CZ6, CZ8, Q, DN4, DN1, DW, CV,

Info for manual annotations of cluster CV:

- Start number 8 was manually annotated 1 time for cluster CV.

Info for manual annotations of cluster CZ:

- Start number 12 was manually annotated 1 time for cluster CZ.
- Start number 23 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ1:

- Start number 12 was manually annotated 3 times for cluster CZ1.
- Start number 17 was manually annotated 1 time for cluster CZ1.

Info for manual annotations of cluster CZ3:

- Start number 11 was manually annotated 1 time for cluster CZ3.

Info for manual annotations of cluster CZ6:

- Start number 23 was manually annotated 1 time for cluster CZ6.

Info for manual annotations of cluster CZ8:

- Start number 17 was manually annotated 1 time for cluster CZ8.

Info for manual annotations of cluster DH:

- Start number 23 was manually annotated 2 times for cluster DH.

Info for manual annotations of cluster DN1:

- Start number 23 was manually annotated 5 times for cluster DN1.

Info for manual annotations of cluster DN4:

- Start number 23 was manually annotated 1 time for cluster DN4.

Info for manual annotations of cluster F1:

- Start number 15 was manually annotated 4 times for cluster F1.

Info for manual annotations of cluster Q:

- Start number 2 was manually annotated 7 times for cluster Q.
- Start number 13 was manually annotated 15 times for cluster Q.

### **Gene Information:**

Gene: Aloeri\_88 Start: 50555, Stop: 51472, Start Num: 15

Candidate Starts for Aloeri\_88:

(Start: 15 @50555 has 5 MA's), (21, 50600), (22, 50603), (30, 50648), (40, 50693), (51, 50738), (52, 50747), (53, 50750), (59, 50813), (71, 50963), (74, 51011), (81, 51194), (87, 51230),

Gene: Amochick\_70 Start: 46259, Stop: 47293, Start Num: 13

Candidate Starts for Amochick\_70:

(Start: 13 @46259 has 15 MA's), (16, 46289), (27, 46355), (29, 46361), (31, 46370), (37, 46397), (40, 46412), (42, 46427), (53, 46469), (60, 46550), (66, 46577), (73, 46745), (75, 46766), (76, 46898), (78, 46910), (81, 46970), (82, 46973), (83, 46982), (88, 47033), (89, 47036), (93, 47096), (94, 47114), (95, 47174),

Gene: Amymech\_69 Start: 45763, Stop: 46746, Start Num: 13

Candidate Starts for Amymech\_69:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Awesomesauce\_85 Start: 50791, Stop: 51708, Start Num: 15

Candidate Starts for Awesomesauce\_85:

(Start: 15 @50791 has 5 MA's), (21, 50836), (22, 50839), (30, 50884), (40, 50929), (51, 50974), (52, 50983), (53, 50986), (59, 51049), (71, 51199), (74, 51247), (81, 51430), (87, 51466),

Gene: BENtherdunthat\_88 Start: 48114, Stop: 48911, Start Num: 23

Candidate Starts for BENtherdunthat\_88:

(Start: 23 @48114 has 10 MA's), (34, 48165), (41, 48198), (63, 48345), (70, 48411),

Gene: BotCity\_91 Start: 49643, Stop: 50440, Start Num: 23

Candidate Starts for BotCity\_91:

(Start: 23 @49643 has 10 MA's), (34, 49694), (41, 49727), (63, 49874), (70, 49940),

Gene: Bunnybear\_66 Start: 46245, Stop: 47213, Start Num: 12

Candidate Starts for Bunnybear\_66:

(10, 46236), (Start: 12 @46245 has 4 MA's), (19, 46302), (25, 46347), (48, 46452), (50, 46455), (55, 46485), (71, 46683), (80, 46848), (91, 46974),

Gene: ChickenDinner\_88 Start: 50555, Stop: 51472, Start Num: 15

Candidate Starts for ChickenDinner\_88:

(Start: 15 @50555 has 5 MA's), (21, 50600), (22, 50603), (30, 50648), (40, 50693), (51, 50738), (52, 50747), (53, 50750), (59, 50813), (71, 50963), (74, 51011), (81, 51194), (87, 51230),

Gene: Daegal\_72 Start: 46821, Stop: 47852, Start Num: 13

Candidate Starts for Daegal\_72:

(Start: 13 @46821 has 15 MA's), (16, 46851), (27, 46917), (29, 46923), (31, 46932), (37, 46959), (40, 46974), (42, 46989), (53, 47031), (60, 47112), (66, 47139), (73, 47307), (75, 47328), (76, 47460), (78, 47472), (81, 47532), (82, 47535), (83, 47544), (88, 47595), (89, 47598), (93, 47658), (94, 47676), (95, 47736),

Gene: DeepSoil15\_69 Start: 45763, Stop: 46746, Start Num: 13

Candidate Starts for DeepSoil15\_69:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Dewey\_63 Start: 45667, Stop: 46746, Start Num: 2

Candidate Starts for Dewey\_63:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: DocMcStuffins\_82 Start: 52185, Stop: 53102, Start Num: 15

Candidate Starts for DocMcStuffins\_82:

(Start: 15 @52185 has 5 MA's), (21, 52230), (22, 52233), (30, 52278), (40, 52323), (51, 52368), (52, 52377), (53, 52380), (59, 52443), (71, 52593), (74, 52641), (81, 52824), (87, 52860),

Gene: Ein37\_69 Start: 45763, Stop: 46746, Start Num: 13

Candidate Starts for Ein37\_69:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Evanesce\_68 Start: 45763, Stop: 46746, Start Num: 13

Candidate Starts for Evanesce\_68:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Forge\_63 Start: 45667, Stop: 46746, Start Num: 2

Candidate Starts for Forge\_63:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Frokostdame\_73 Start: 46067, Stop: 47071, Start Num: 8

Candidate Starts for Frokostdame\_73:

(7, 46049), (Start: 8 @46067 has 1 MA's), (Start: 11 @46082 has 1 MA's), (25, 46181), (36, 46229), (38, 46232), (54, 46310), (79, 46760), (85, 46823), (90, 46874),

Gene: Gancho\_68 Start: 45490, Stop: 46521, Start Num: 13

Candidate Starts for Gancho\_68:

(Start: 13 @45490 has 15 MA's), (16, 45520), (27, 45586), (29, 45592), (31, 45601), (37, 45628), (40, 45643), (42, 45658), (53, 45700), (60, 45781), (66, 45808), (73, 45976), (75, 45997), (76, 46129), (78, 46141), (81, 46201), (82, 46204), (83, 46213), (88, 46264), (89, 46267), (93, 46327), (94, 46345), (95, 46405),

Gene: Getalong\_91 Start: 50569, Stop: 51366, Start Num: 23

Candidate Starts for Getalong\_91:

(Start: 23 @50569 has 10 MA's), (34, 50620), (41, 50653), (63, 50800), (70, 50866),

Gene: Giles\_63 Start: 45667, Stop: 46746, Start Num: 2

Candidate Starts for Giles\_63:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Gravaillia\_64 Start: 45771, Stop: 46802, Start Num: 13

Candidate Starts for Gravaillia\_64:

(Start: 13 @45771 has 15 MA's), (16, 45801), (27, 45867), (29, 45873), (31, 45882), (37, 45909), (40, 45924), (42, 45939), (53, 45981), (60, 46062), (66, 46089), (73, 46257), (75, 46278), (76, 46410), (78, 46422), (81, 46482), (82, 46485), (83, 46494), (88, 46545), (89, 46548), (93, 46608), (94, 46626), (95, 46686),

Gene: HH92\_68 Start: 45763, Stop: 46746, Start Num: 13

Candidate Starts for HH92\_68:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Hadrien\_67 Start: 45667, Stop: 46746, Start Num: 2

Candidate Starts for Hadrien\_67:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Hail\_63 Start: 45667, Stop: 46746, Start Num: 2

Candidate Starts for Hail\_63:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Hyzer\_85 Start: 54475, Stop: 55455, Start Num: 11

Candidate Starts for Hyzer\_85:

(Start: 11 @54475 has 1 MA's), (24, 54562), (47, 54676), (65, 54808), (68, 54823), (72, 54937),

Gene: Kenna\_83 Start: 47387, Stop: 48184, Start Num: 23

Candidate Starts for Kenna\_83:

(Start: 23 @47387 has 10 MA's), (34, 47438), (41, 47471), (63, 47618), (70, 47684),

Gene: Kinbote\_67 Start: 45763, Stop: 46746, Start Num: 13

Candidate Starts for Kinbote\_67:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Kuwabara\_84 Start: 49956, Stop: 50762, Start Num: 23

Candidate Starts for Kuwabara\_84:

(Start: 23 @49956 has 10 MA's), (34, 50007), (41, 50040), (63, 50187), (70, 50253), (71, 50298), (86, 50523),

Gene: LilHazelnut\_69 Start: 45763, Stop: 46746, Start Num: 13

Candidate Starts for LilHazelnut\_69:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: LilSpotty\_80 Start: 46231, Stop: 47148, Start Num: 15

Candidate Starts for LilSpotty\_80:

(Start: 15 @46231 has 5 MA's), (21, 46276), (22, 46279), (30, 46324), (40, 46369), (51, 46414), (52, 46423), (53, 46426), (59, 46489), (71, 46639), (74, 46687), (81, 46870), (87, 46906),

Gene: Lton\_63 Start: 37109, Stop: 37915, Start Num: 23

Candidate Starts for Lton\_63:

(Start: 23 @37109 has 10 MA's), (34, 37160), (41, 37193), (63, 37340), (70, 37406), (71, 37451), (86, 37676),

Gene: Luke\_67 Start: 45622, Stop: 46701, Start Num: 2

Candidate Starts for Luke\_67:

(1, 45613), (Start: 2 @45622 has 7 MA's), (3, 45646), (5, 45661), (6, 45664), (9, 45691), (Start: 13 @45718 has 15 MA's), (20, 45772), (21, 45775), (29, 45814), (31, 45823), (40, 45865), (45, 45886), (46, 45889), (56, 45946), (58, 45985), (61, 46012), (64, 46027), (76, 46309), (78, 46321), (79, 46345), (81, 46381), (82, 46384), (83, 46393), (88, 46444), (89, 46447), (93, 46507), (94, 46525), (95, 46585),

Gene: Luna22\_63 Start: 45747, Stop: 46730, Start Num: 13

Candidate Starts for Luna22\_63:

(1, 45642), (Start: 2 @45651 has 7 MA's), (3, 45675), (5, 45690), (6, 45693), (9, 45720), (Start: 13 @45747 has 15 MA's), (20, 45801), (21, 45804), (29, 45843), (31, 45852), (40, 45894), (45, 45915),



(46, 45918), (56, 45975), (58, 46014), (61, 46041), (64, 46056), (76, 46338), (78, 46350), (79, 46374), (81, 46410), (82, 46413), (83, 46422), (88, 46473), (89, 46476), (93, 46536), (94, 46554), (95, 46614),

Gene: Lutum\_89 Start: 48549, Stop: 49346, Start Num: 23

Candidate Starts for Lutum\_89:

(Start: 23 @48549 has 10 MA's), (34, 48600), (41, 48633), (63, 48780), (70, 48846),

Gene: Madeline\_65 Start: 47024, Stop: 47905, Start Num: 17

Candidate Starts for Madeline\_65:

(Start: 17 @47024 has 2 MA's), (26, 47078), (32, 47099), (43, 47150), (49, 47174), (57, 47234), (80, 47540),

Gene: Maridalia\_71 Start: 46257, Stop: 47225, Start Num: 12

Candidate Starts for Maridalia\_71:

(10, 46248), (Start: 12 @46257 has 4 MA's), (19, 46314), (25, 46359), (48, 46464), (50, 46467), (55, 46497), (71, 46695), (80, 46860),

Gene: Misha28\_84 Start: 51490, Stop: 52407, Start Num: 15

Candidate Starts for Misha28\_84:

(Start: 15 @51490 has 5 MA's), (21, 51535), (22, 51538), (30, 51583), (40, 51628), (51, 51673), (52, 51682), (53, 51685), (59, 51748), (71, 51898), (74, 51946), (81, 52129), (87, 52165),

Gene: Morkie\_66 Start: 38257, Stop: 39063, Start Num: 23

Candidate Starts for Morkie\_66:

(Start: 23 @38257 has 10 MA's), (34, 38308), (41, 38341), (63, 38488), (70, 38554), (71, 38599), (86, 38824),

Gene: OBUpride\_68 Start: 45759, Stop: 46790, Start Num: 13

Candidate Starts for OBUpride\_68:

(Start: 13 @45759 has 15 MA's), (16, 45789), (27, 45855), (29, 45861), (31, 45870), (37, 45897), (40, 45912), (42, 45927), (53, 45969), (60, 46050), (66, 46077), (73, 46245), (75, 46266), (76, 46398), (78, 46410), (81, 46470), (82, 46473), (83, 46482), (88, 46533), (89, 46536), (93, 46596), (94, 46614), (95, 46674),

Gene: OneDirection\_60 Start: 35671, Stop: 36477, Start Num: 23

Candidate Starts for OneDirection\_60:

(Start: 23 @35671 has 10 MA's), (34, 35722), (41, 35755), (63, 35902), (70, 35968), (71, 36013), (86, 36238),

Gene: Phabuloso\_95 Start: 50041, Stop: 50838, Start Num: 23

Candidate Starts for Phabuloso\_95:

(Start: 23 @50041 has 10 MA's), (34, 50092), (41, 50125), (63, 50272), (70, 50338),

Gene: PhorbesPhlower\_64 Start: 37661, Stop: 38458, Start Num: 23

Candidate Starts for PhorbesPhlower\_64:

(Start: 23 @37661 has 10 MA's), (34, 37712), (41, 37745), (48, 37781), (67, 37904), (86, 38228),

Gene: RavenCo17\_67 Start: 46154, Stop: 47035, Start Num: 17

Candidate Starts for RavenCo17\_67:

(Start: 17 @46154 has 2 MA's), (32, 46229), (43, 46280), (49, 46304), (57, 46364), (71, 46514), (80, 46670),

Gene: Sleepyhead\_58 Start: 38152, Stop: 39009, Start Num: 28

Candidate Starts for Sleepyhead\_58:

(4, 37978), (18, 38086), (Start: 28 @38152 has 1 MA's), (33, 38167), (35, 38185), (39, 38197), (46, 38227), (55, 38278), (62, 38359), (69, 38428), (84, 38734), (86, 38749), (92, 38830),

Gene: ThankyouJordi\_71 Start: 48385, Stop: 49353, Start Num: 12

Candidate Starts for ThankyouJordi\_71:

(10, 48376), (Start: 12 @48385 has 4 MA's), (14, 48403), (19, 48442), (44, 48568), (48, 48592), (55, 48625), (71, 48823), (80, 48988),

Gene: TootsiePop\_84 Start: 51490, Stop: 52407, Start Num: 15

Candidate Starts for TootsiePop\_84:

(Start: 15 @51490 has 5 MA's), (21, 51535), (22, 51538), (30, 51583), (40, 51628), (51, 51673), (52, 51682), (53, 51685), (59, 51748), (71, 51898), (74, 51946), (81, 52129), (87, 52165),

Gene: Ubuntu\_69 Start: 45763, Stop: 46746, Start Num: 13

Candidate Starts for Ubuntu\_69:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Webster2\_69 Start: 45763, Stop: 46746, Start Num: 13

Candidate Starts for Webster2\_69:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: WelcomeAyanna\_71 Start: 48532, Stop: 49500, Start Num: 12

Candidate Starts for WelcomeAyanna\_71:

(10, 48523), (Start: 12 @48532 has 4 MA's), (14, 48550), (19, 48589), (44, 48715), (48, 48739), (55, 48772), (71, 48970), (80, 49135),

Gene: Wishmaker\_63 Start: 45667, Stop: 46746, Start Num: 2

Candidate Starts for Wishmaker\_63:

(1, 45658), (Start: 2 @45667 has 7 MA's), (3, 45691), (5, 45706), (6, 45709), (9, 45736), (Start: 13 @45763 has 15 MA's), (20, 45817), (21, 45820), (29, 45859), (31, 45868), (40, 45910), (45, 45931), (46, 45934), (56, 45991), (58, 46030), (61, 46057), (64, 46072), (76, 46354), (78, 46366), (79, 46390), (81, 46426), (82, 46429), (83, 46438), (88, 46489), (89, 46492), (93, 46552), (94, 46570), (95, 46630),

Gene: Yeezy\_73 Start: 45740, Stop: 46720, Start Num: 11

Candidate Starts for Yeezy\_73:

(Start: 11 @45740 has 1 MA's), (47, 45941), (65, 46073), (68, 46088), (77, 46373),

Gene: Zodiariah\_67 Start: 47534, Stop: 48511, Start Num: 10

Candidate Starts for Zodiariah\_67:

(10, 47534), (Start: 12 @47543 has 4 MA's), (14, 47561), (19, 47600), (44, 47726), (48, 47750), (50, 47753), (55, 47783), (71, 47981), (80, 48146),