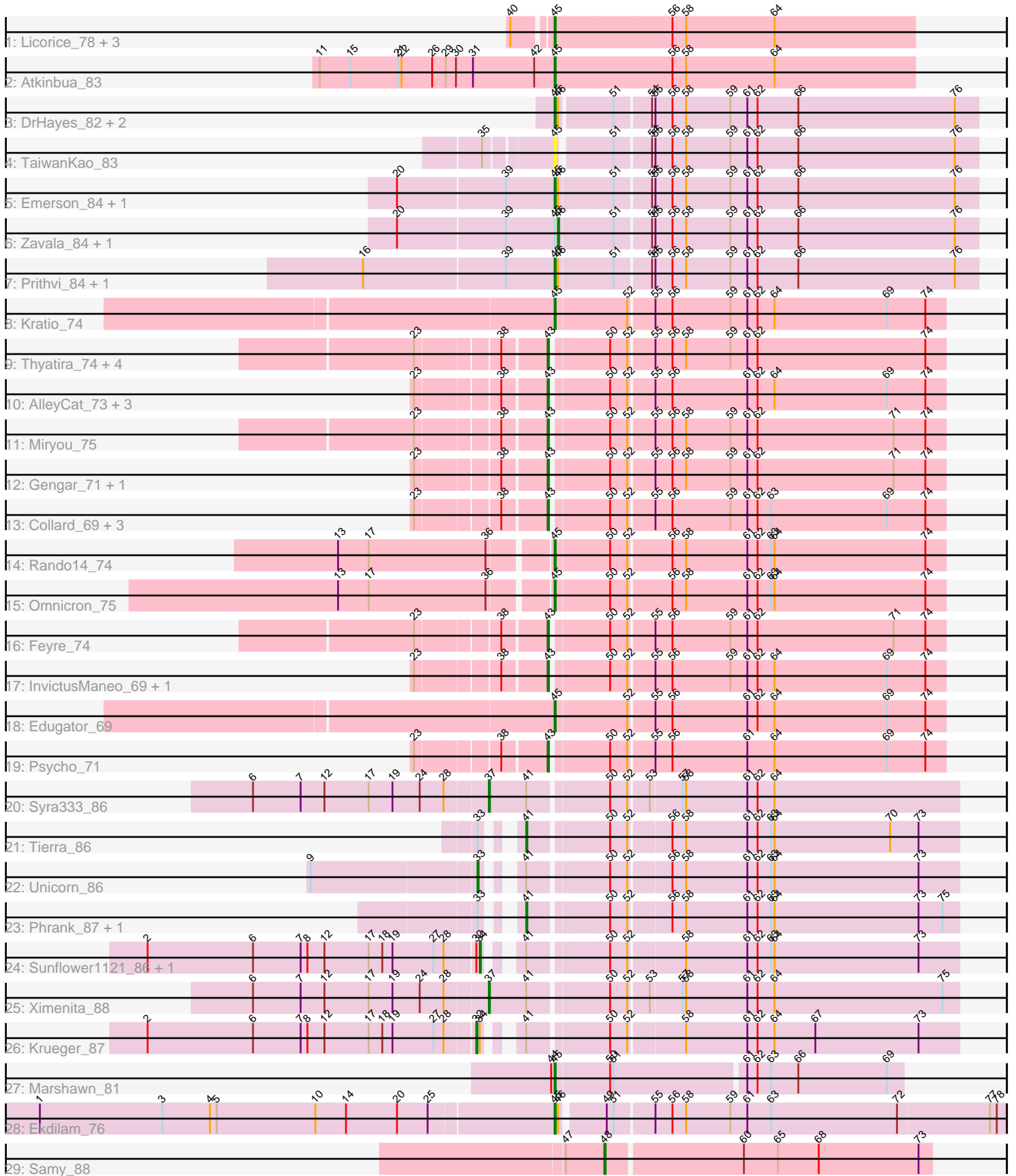


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Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. 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 212682 Report

This analysis was run 02/22/25 on database version 588.

Pham number 212682 has 51 members, 3 are drafts.

Phages represented in each track:

- Track 1 : Licorice\_78, Kanely\_79, ConceptII\_82, Altman\_80
- Track 2 : Atkinbua\_83
- Track 3 : DrHayes\_82, Urkel\_82, SamuelLPlaqson\_82
- Track 4 : TaiwanKao\_83
- Track 5 : Emerson\_84, Padpat\_85
- Track 6 : Zavala\_84, Beezoo\_85
- Track 7 : Prithvi\_84, TreyKay\_84
- Track 8 : Kratio\_74
- Track 9 : Thyatira\_74, Leston\_71, Guillsminger\_72, Paola\_71, Waterfoul\_73
- Track 10 : AlleyCat\_73, Larva\_72, Dadosky\_73, Neighly\_73
- Track 11 : Miryou\_75
- Track 12 : Gengar\_71, OkiRoe\_72
- Track 13 : Collard\_69, SoSeph\_72, Heftyboy\_72, ViviJ\_76
- Track 14 : Rando14\_74
- Track 15 : Omnicron\_75
- Track 16 : Feyre\_74
- Track 17 : InvictusManeo\_69, Agent47\_71
- Track 18 : Edugator\_69
- Track 19 : Psycho\_71
- Track 20 : Syra333\_86
- Track 21 : Tierra\_86
- Track 22 : Unicorn\_86
- Track 23 : Phrank\_87, Cain\_87
- Track 24 : Sunflower1121\_86, Shadow1\_87
- Track 25 : Ximenita\_88
- Track 26 : Krueger\_87
- Track 27 : Marshawn\_81
- Track 28 : Ekdilam\_76
- Track 29 : Samy\_88

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

The start number called the most often in the published annotations is 43, it was called in 18 of the 48 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Agent47\_71, AlleyCat\_73, Collard\_69, Dadosky\_73, Feyre\_74, Gengar\_71, Guillsminger\_72, Heftyboy\_72, InvictusManeo\_69, Larva\_72, Leston\_71, Miryou\_75, Neighly\_73, OkiRoe\_72, Paola\_71, Psycho\_71, SoSeph\_72, Thyatira\_74, ViviJ\_76, Waterfoul\_73,

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

- 

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

- Altman\_80, Atkinbua\_83, Beezoo\_85, Cain\_87, ConceptII\_82, DrHayes\_82, Edugator\_69, Ekdilam\_76, Emerson\_84, Kanely\_79, Kratio\_74, Krueger\_87, Licorice\_78, Marshawn\_81, Omnicron\_75, Padpat\_85, Phrank\_87, Prithvi\_84, Rando14\_74, SamuelLPlaqson\_82, Samy\_88, Shadow1\_87, Sunflower1121\_86, Syra333\_86, TaiwanKao\_83, Tierra\_86, TreyKay\_84, Unicorn\_86, Urkel\_82, Ximenita\_88, Zavala\_84,

### Summary by start number:

Start 32:

- Found in 3 of 51 ( 5.9% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Krueger\_87 (K6),

Start 33:

- Found in 4 of 51 ( 7.8% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Unicorn\_86 (K6),

Start 34:

- Found in 3 of 51 ( 5.9% ) of genes in pham
- Manual Annotations of this start: 2 of 48
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Shadow1\_87 (K6), Sunflower1121\_86 (K6),

Start 37:

- Found in 2 of 51 ( 3.9% ) of genes in pham
- Manual Annotations of this start: 2 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Syra333\_86 (K6), Ximenita\_88 (K6),

Start 41:

- Found in 9 of 51 ( 17.6% ) of genes in pham
- Manual Annotations of this start: 3 of 48
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Cain\_87 (K6), Phrank\_87 (K6), Tierra\_86 (K6),

Start 43:

- Found in 20 of 51 ( 39.2% ) of genes in pham
- Manual Annotations of this start: 18 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Agent47\_71 (K5), AlleyCat\_73 (K5), Collard\_69 (K5), Dadosky\_73 (K5), Feyre\_74 (K5), Gengar\_71 (K5), Guillsminger\_72 (K5), Heftyboy\_72 (K5), InvictusManeo\_69 (K5), Larva\_72 (K5), Leston\_71 (K5), Miryou\_75 (K5), Neighly\_73 (K3), OkiRoe\_72 (K5), Paola\_71 (K5), Psycho\_71 (K5), SoSeph\_72 (K5), Thyatira\_74 (K5), ViviJ\_76 (K5), Waterfoul\_73 (K5),

#### Start 45:

- Found in 21 of 51 ( 41.2% ) of genes in pham
- Manual Annotations of this start: 18 of 48
- Called 90.5% of time when present
- Phage (with cluster) where this start called: Altman\_80 (A1), Atkinbua\_83 (A1), ConceptII\_82 (A1), DrHayes\_82 (K1), Edugator\_69 (K5), Ekdilam\_76 (K6), Emerson\_84 (K1), Kanely\_79 (A1), Kratio\_74 (K5), Licorice\_78 (A1), Marshawn\_81 (K6), Omnicron\_75 (K5), Padpat\_85 (K1), Prithvi\_84 (K1), Rando14\_74 (K5), SamuelLPlaqson\_82 (K1), TaiwanKao\_83 (K1), TreyKay\_84 (K1), Urkel\_82 (K1),

#### Start 46:

- Found in 10 of 51 ( 19.6% ) of genes in pham
- Manual Annotations of this start: 2 of 48
- Called 20.0% of time when present
- Phage (with cluster) where this start called: Beezoo\_85 (K1), Zavala\_84 (K1),

#### Start 48:

- Found in 1 of 51 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 48
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Samy\_88 (singleton),

### Summary by clusters:

There are 6 clusters represented in this pham: K3, singleton, A1, K1, K6, K5,

#### Info for manual annotations of cluster A1:

- Start number 45 was manually annotated 5 times for cluster A1.

#### Info for manual annotations of cluster K1:

- Start number 45 was manually annotated 7 times for cluster K1.
- Start number 46 was manually annotated 2 times for cluster K1.

#### Info for manual annotations of cluster K5:

- Start number 43 was manually annotated 18 times for cluster K5.
- Start number 45 was manually annotated 4 times for cluster K5.

#### Info for manual annotations of cluster K6:

- Start number 32 was manually annotated 1 time for cluster K6.
- Start number 33 was manually annotated 1 time for cluster K6.
- Start number 34 was manually annotated 2 times for cluster K6.
- Start number 37 was manually annotated 2 times for cluster K6.
- Start number 41 was manually annotated 3 times for cluster K6.

- Start number 45 was manually annotated 2 times for cluster K6.

### **Gene Information:**

Gene: Agent47\_71 Start: 48634, Stop: 48969, Start Num: 43

Candidate Starts for Agent47\_71:

(23, 48532), (38, 48598), (Start: 43 @48634 has 18 MA's), (50, 48679), (52, 48694), (55, 48715), (56, 48730), (59, 48781), (61, 48796), (62, 48805), (64, 48820), (69, 48919), (74, 48952),

Gene: AlleyCat\_73 Start: 48977, Stop: 49312, Start Num: 43

Candidate Starts for AlleyCat\_73:

(23, 48875), (38, 48941), (Start: 43 @48977 has 18 MA's), (50, 49022), (52, 49037), (55, 49058), (56, 49073), (61, 49139), (62, 49148), (64, 49163), (69, 49262), (74, 49295),

Gene: Altman\_80 Start: 48154, Stop: 47840, Start Num: 45

Candidate Starts for Altman\_80:

(40, 48184), (Start: 45 @48154 has 18 MA's), (56, 48052), (58, 48040), (64, 47962),

Gene: Atkinbua\_83 Start: 48481, Stop: 48167, Start Num: 45

Candidate Starts for Atkinbua\_83:

(11, 48688), (15, 48661), (21, 48619), (22, 48616), (26, 48589), (29, 48577), (30, 48568), (31, 48553), (42, 48499), (Start: 45 @48481 has 18 MA's), (56, 48379), (58, 48367), (64, 48289),

Gene: Beezoo\_85 Start: 53916, Stop: 54278, Start Num: 46

Candidate Starts for Beezoo\_85:

(20, 53778), (39, 53871), (Start: 45 @53913 has 18 MA's), (Start: 46 @53916 has 2 MA's), (51, 53961), (54, 53991), (55, 53994), (56, 54009), (58, 54021), (59, 54060), (61, 54075), (62, 54084), (66, 54120), (76, 54258),

Gene: Cain\_87 Start: 53307, Stop: 53669, Start Num: 41

Candidate Starts for Cain\_87:

(Start: 33 @53289 has 1 MA's), (Start: 41 @53307 has 3 MA's), (50, 53370), (52, 53385), (56, 53418), (58, 53430), (61, 53484), (62, 53493), (63, 53505), (64, 53508), (73, 53634), (75, 53655),

Gene: Collard\_69 Start: 48595, Stop: 48930, Start Num: 43

Candidate Starts for Collard\_69:

(23, 48493), (38, 48559), (Start: 43 @48595 has 18 MA's), (50, 48640), (52, 48655), (55, 48676), (56, 48691), (59, 48742), (61, 48757), (62, 48766), (63, 48778), (69, 48880), (74, 48913),

Gene: ConceptII\_82 Start: 49255, Stop: 48941, Start Num: 45

Candidate Starts for ConceptII\_82:

(40, 49285), (Start: 45 @49255 has 18 MA's), (56, 49153), (58, 49141), (64, 49063),

Gene: Dadosky\_73 Start: 48979, Stop: 49314, Start Num: 43

Candidate Starts for Dadosky\_73:

(23, 48877), (38, 48943), (Start: 43 @48979 has 18 MA's), (50, 49024), (52, 49039), (55, 49060), (56, 49075), (61, 49141), (62, 49150), (64, 49165), (69, 49264), (74, 49297),

Gene: DrHayes\_82 Start: 53398, Stop: 53760, Start Num: 45

Candidate Starts for DrHayes\_82:

(Start: 45 @53398 has 18 MA's), (Start: 46 @53401 has 2 MA's), (51, 53443), (54, 53473), (55, 53476), (56, 53491), (58, 53503), (59, 53542), (61, 53557), (62, 53566), (66, 53602), (76, 53740),

Gene: Edugator\_69 Start: 50149, Stop: 50484, Start Num: 45

Candidate Starts for Edugator\_69:

(Start: 45 @50149 has 18 MA's), (52, 50209), (55, 50230), (56, 50245), (61, 50311), (62, 50320), (64, 50335), (69, 50434), (74, 50467),

Gene: Ekdilam\_76 Start: 53484, Stop: 53864, Start Num: 45

Candidate Starts for Ekdilam\_76:

(1, 53037), (3, 53145), (4, 53187), (5, 53193), (10, 53280), (14, 53307), (20, 53352), (25, 53379), (Start: 45 @53484 has 18 MA's), (Start: 46 @53487 has 2 MA's), (49, 53520), (51, 53526), (55, 53559), (56, 53574), (58, 53586), (59, 53625), (61, 53640), (63, 53661), (72, 53772), (77, 53850), (78, 53856),

Gene: Emerson\_84 Start: 53319, Stop: 53684, Start Num: 45

Candidate Starts for Emerson\_84:

(20, 53184), (39, 53277), (Start: 45 @53319 has 18 MA's), (Start: 46 @53322 has 2 MA's), (51, 53367), (54, 53397), (55, 53400), (56, 53415), (58, 53427), (59, 53466), (61, 53481), (62, 53490), (66, 53526), (76, 53664),

Gene: Feyre\_74 Start: 52395, Stop: 52730, Start Num: 43

Candidate Starts for Feyre\_74:

(23, 52293), (38, 52359), (Start: 43 @52395 has 18 MA's), (50, 52440), (52, 52455), (55, 52476), (56, 52491), (59, 52542), (61, 52557), (62, 52566), (71, 52686), (74, 52713),

Gene: Gengar\_71 Start: 50405, Stop: 50740, Start Num: 43

Candidate Starts for Gengar\_71:

(23, 50303), (38, 50369), (Start: 43 @50405 has 18 MA's), (50, 50450), (52, 50465), (55, 50486), (56, 50501), (58, 50513), (59, 50552), (61, 50567), (62, 50576), (71, 50696), (74, 50723),

Gene: Guillsminger\_72 Start: 50326, Stop: 50661, Start Num: 43

Candidate Starts for Guillsminger\_72:

(23, 50224), (38, 50290), (Start: 43 @50326 has 18 MA's), (50, 50371), (52, 50386), (55, 50407), (56, 50422), (58, 50434), (59, 50473), (61, 50488), (62, 50497), (74, 50644),

Gene: Heftyboy\_72 Start: 50674, Stop: 51009, Start Num: 43

Candidate Starts for Heftyboy\_72:

(23, 50572), (38, 50638), (Start: 43 @50674 has 18 MA's), (50, 50719), (52, 50734), (55, 50755), (56, 50770), (59, 50821), (61, 50836), (62, 50845), (63, 50857), (69, 50959), (74, 50992),

Gene: InvictusManeo\_69 Start: 48638, Stop: 48973, Start Num: 43

Candidate Starts for InvictusManeo\_69:

(23, 48536), (38, 48602), (Start: 43 @48638 has 18 MA's), (50, 48683), (52, 48698), (55, 48719), (56, 48734), (59, 48785), (61, 48800), (62, 48809), (64, 48824), (69, 48923), (74, 48956),

Gene: Kanely\_79 Start: 47931, Stop: 47617, Start Num: 45

Candidate Starts for Kanely\_79:

(40, 47961), (Start: 45 @47931 has 18 MA's), (56, 47829), (58, 47817), (64, 47739),

Gene: Kratio\_74 Start: 50196, Stop: 50531, Start Num: 45

Candidate Starts for Kratio\_74:

(Start: 45 @50196 has 18 MA's), (52, 50256), (55, 50277), (56, 50292), (59, 50343), (61, 50358), (62, 50367), (64, 50382), (69, 50481), (74, 50514),

Gene: Krueger\_87 Start: 53565, Stop: 53948, Start Num: 32

Candidate Starts for Krueger\_87:

(2, 53280), (6, 53373), (7, 53415), (8, 53421), (12, 53436), (17, 53475), (18, 53487), (19, 53496), (27, 53532), (28, 53541), (Start: 32 @53565 has 1 MA's), (Start: 34 @53568 has 2 MA's), (Start: 41 @53586 has 3 MA's), (50, 53649), (52, 53664), (58, 53709), (61, 53763), (62, 53772), (64, 53787), (67, 53823), (73, 53913),

Gene: Larva\_72 Start: 49851, Stop: 50186, Start Num: 43

Candidate Starts for Larva\_72:

(23, 49749), (38, 49815), (Start: 43 @49851 has 18 MA's), (50, 49896), (52, 49911), (55, 49932), (56, 49947), (61, 50013), (62, 50022), (64, 50037), (69, 50136), (74, 50169),

Gene: Leston\_71 Start: 50443, Stop: 50778, Start Num: 43

Candidate Starts for Leston\_71:

(23, 50341), (38, 50407), (Start: 43 @50443 has 18 MA's), (50, 50488), (52, 50503), (55, 50524), (56, 50539), (58, 50551), (59, 50590), (61, 50605), (62, 50614), (74, 50761),

Gene: Licorice\_78 Start: 49232, Stop: 48918, Start Num: 45

Candidate Starts for Licorice\_78:

(40, 49262), (Start: 45 @49232 has 18 MA's), (56, 49130), (58, 49118), (64, 49040),

Gene: Marshawn\_81 Start: 53759, Stop: 54055, Start Num: 45

Candidate Starts for Marshawn\_81:

(44, 53756), (Start: 45 @53759 has 18 MA's), (50, 53804), (51, 53807), (61, 53918), (62, 53927), (63, 53939), (66, 53963), (69, 54041),

Gene: Miryou\_75 Start: 53062, Stop: 53397, Start Num: 43

Candidate Starts for Miryou\_75:

(23, 52960), (38, 53026), (Start: 43 @53062 has 18 MA's), (50, 53107), (52, 53122), (55, 53143), (56, 53158), (58, 53170), (59, 53209), (61, 53224), (62, 53233), (71, 53353), (74, 53380),

Gene: Neighly\_73 Start: 49850, Stop: 50185, Start Num: 43

Candidate Starts for Neighly\_73:

(23, 49748), (38, 49814), (Start: 43 @49850 has 18 MA's), (50, 49895), (52, 49910), (55, 49931), (56, 49946), (61, 50012), (62, 50021), (64, 50036), (69, 50135), (74, 50168),

Gene: OkiRoe\_72 Start: 50747, Stop: 51082, Start Num: 43

Candidate Starts for OkiRoe\_72:

(23, 50645), (38, 50711), (Start: 43 @50747 has 18 MA's), (50, 50792), (52, 50807), (55, 50828), (56, 50843), (58, 50855), (59, 50894), (61, 50909), (62, 50918), (71, 51038), (74, 51065),

Gene: Omnicron\_75 Start: 51710, Stop: 52045, Start Num: 45

Candidate Starts for Omnicron\_75:

(13, 51533), (17, 51560), (36, 51662), (Start: 45 @51710 has 18 MA's), (50, 51755), (52, 51770), (56, 51806), (58, 51818), (61, 51872), (62, 51881), (63, 51893), (64, 51896), (74, 52028),

Gene: Padpat\_85 Start: 53319, Stop: 53684, Start Num: 45

Candidate Starts for Padpat\_85:

(20, 53184), (39, 53277), (Start: 45 @53319 has 18 MA's), (Start: 46 @53322 has 2 MA's), (51, 53367), (54, 53397), (55, 53400), (56, 53415), (58, 53427), (59, 53466), (61, 53481), (62, 53490), (66, 53526),

(76, 53664),

Gene: Paola\_71 Start: 50326, Stop: 50661, Start Num: 43

Candidate Starts for Paola\_71:

(23, 50224), (38, 50290), (Start: 43 @50326 has 18 MA's), (50, 50371), (52, 50386), (55, 50407), (56, 50422), (58, 50434), (59, 50473), (61, 50488), (62, 50497), (74, 50644),

Gene: Phrank\_87 Start: 53294, Stop: 53656, Start Num: 41

Candidate Starts for Phrank\_87:

(Start: 33 @53276 has 1 MA's), (Start: 41 @53294 has 3 MA's), (50, 53357), (52, 53372), (56, 53405), (58, 53417), (61, 53471), (62, 53480), (63, 53492), (64, 53495), (73, 53621), (75, 53642),

Gene: Prithvi\_84 Start: 53449, Stop: 53814, Start Num: 45

Candidate Starts for Prithvi\_84:

(16, 53284), (39, 53407), (Start: 45 @53449 has 18 MA's), (Start: 46 @53452 has 2 MA's), (51, 53497), (54, 53527), (55, 53530), (56, 53545), (58, 53557), (59, 53596), (61, 53611), (62, 53620), (66, 53656), (76, 53794),

Gene: Psycho\_71 Start: 48976, Stop: 49311, Start Num: 43

Candidate Starts for Psycho\_71:

(23, 48874), (38, 48940), (Start: 43 @48976 has 18 MA's), (50, 49021), (52, 49036), (55, 49057), (56, 49072), (61, 49138), (64, 49162), (69, 49261), (74, 49294),

Gene: Rando14\_74 Start: 50386, Stop: 50721, Start Num: 45

Candidate Starts for Rando14\_74:

(13, 50209), (17, 50236), (36, 50338), (Start: 45 @50386 has 18 MA's), (50, 50431), (52, 50446), (56, 50482), (58, 50494), (61, 50548), (62, 50557), (63, 50569), (64, 50572), (74, 50704),

Gene: SamuelLPlaqson\_82 Start: 53398, Stop: 53760, Start Num: 45

Candidate Starts for SamuelLPlaqson\_82:

(Start: 45 @53398 has 18 MA's), (Start: 46 @53401 has 2 MA's), (51, 53443), (54, 53473), (55, 53476), (56, 53491), (58, 53503), (59, 53542), (61, 53557), (62, 53566), (66, 53602), (76, 53740),

Gene: Samy\_88 Start: 54138, Stop: 54419, Start Num: 48

Candidate Starts for Samy\_88:

(47, 54105), (Start: 48 @54138 has 1 MA's), (60, 54255), (65, 54285), (68, 54321), (73, 54408),

Gene: Shadow1\_87 Start: 53708, Stop: 54088, Start Num: 34

Candidate Starts for Shadow1\_87:

(2, 53420), (6, 53513), (7, 53555), (8, 53561), (12, 53576), (17, 53615), (18, 53627), (19, 53636), (27, 53672), (28, 53681), (Start: 32 @53705 has 1 MA's), (Start: 34 @53708 has 2 MA's), (Start: 41 @53726 has 3 MA's), (50, 53789), (52, 53804), (58, 53849), (61, 53903), (62, 53912), (63, 53924), (64, 53927), (73, 54053),

Gene: SoSeph\_72 Start: 50674, Stop: 51009, Start Num: 43

Candidate Starts for SoSeph\_72:

(23, 50572), (38, 50638), (Start: 43 @50674 has 18 MA's), (50, 50719), (52, 50734), (55, 50755), (56, 50770), (59, 50821), (61, 50836), (62, 50845), (63, 50857), (69, 50959), (74, 50992),

Gene: Sunflower1121\_86 Start: 53252, Stop: 53632, Start Num: 34

Candidate Starts for Sunflower1121\_86:

(2, 52964), (6, 53057), (7, 53099), (8, 53105), (12, 53120), (17, 53159), (18, 53171), (19, 53180), (27, 53216), (28, 53225), (Start: 32 @53249 has 1 MA's), (Start: 34 @53252 has 2 MA's), (Start: 41



@53270 has 3 MA's), (50, 53333), (52, 53348), (58, 53393), (61, 53447), (62, 53456), (63, 53468), (64, 53471), (73, 53597),

Gene: Syra333\_86 Start: 53606, Stop: 54001, Start Num: 37

Candidate Starts for Syra333\_86:

(6, 53402), (7, 53444), (12, 53465), (17, 53504), (19, 53525), (24, 53549), (28, 53570), (Start: 37 @53606 has 2 MA's), (Start: 41 @53639 has 3 MA's), (50, 53702), (52, 53717), (53, 53732), (57, 53759), (58, 53762), (61, 53816), (62, 53825), (64, 53840),

Gene: TaiwanKao\_83 Start: 53164, Stop: 53523, Start Num: 45

Candidate Starts for TaiwanKao\_83:

(35, 53110), (Start: 45 @53164 has 18 MA's), (51, 53206), (54, 53236), (55, 53239), (56, 53254), (58, 53266), (59, 53305), (61, 53320), (62, 53329), (66, 53365), (76, 53503),

Gene: Thyatira\_74 Start: 52678, Stop: 53013, Start Num: 43

Candidate Starts for Thyatira\_74:

(23, 52576), (38, 52642), (Start: 43 @52678 has 18 MA's), (50, 52723), (52, 52738), (55, 52759), (56, 52774), (58, 52786), (59, 52825), (61, 52840), (62, 52849), (74, 52996),

Gene: Tierra\_86 Start: 53708, Stop: 54070, Start Num: 41

Candidate Starts for Tierra\_86:

(Start: 33 @53690 has 1 MA's), (Start: 41 @53708 has 3 MA's), (50, 53771), (52, 53786), (56, 53819), (58, 53831), (61, 53885), (62, 53894), (63, 53906), (64, 53909), (70, 54011), (73, 54035),

Gene: TreyKay\_84 Start: 53449, Stop: 53814, Start Num: 45

Candidate Starts for TreyKay\_84:

(16, 53284), (39, 53407), (Start: 45 @53449 has 18 MA's), (Start: 46 @53452 has 2 MA's), (51, 53497), (54, 53527), (55, 53530), (56, 53545), (58, 53557), (59, 53596), (61, 53611), (62, 53620), (66, 53656), (76, 53794),

Gene: Unicorn\_86 Start: 53416, Stop: 53796, Start Num: 33

Candidate Starts for Unicorn\_86:

(9, 53275), (Start: 33 @53416 has 1 MA's), (Start: 41 @53434 has 3 MA's), (50, 53497), (52, 53512), (56, 53545), (58, 53557), (61, 53611), (62, 53620), (63, 53632), (64, 53635), (73, 53761),

Gene: Urkel\_82 Start: 53398, Stop: 53760, Start Num: 45

Candidate Starts for Urkel\_82:

(Start: 45 @53398 has 18 MA's), (Start: 46 @53401 has 2 MA's), (51, 53443), (54, 53473), (55, 53476), (56, 53491), (58, 53503), (59, 53542), (61, 53557), (62, 53566), (66, 53602), (76, 53740),

Gene: ViviJ\_76 Start: 50683, Stop: 51018, Start Num: 43

Candidate Starts for ViviJ\_76:

(23, 50581), (38, 50647), (Start: 43 @50683 has 18 MA's), (50, 50728), (52, 50743), (55, 50764), (56, 50779), (59, 50830), (61, 50845), (62, 50854), (63, 50866), (69, 50968), (74, 51001),

Gene: Waterfoul\_73 Start: 50748, Stop: 51083, Start Num: 43

Candidate Starts for Waterfoul\_73:

(23, 50646), (38, 50712), (Start: 43 @50748 has 18 MA's), (50, 50793), (52, 50808), (55, 50829), (56, 50844), (58, 50856), (59, 50895), (61, 50910), (62, 50919), (74, 51066),

Gene: Ximenita\_88 Start: 53930, Stop: 54325, Start Num: 37

Candidate Starts for Ximenita\_88:

(6, 53726), (7, 53768), (12, 53789), (17, 53828), (19, 53849), (24, 53873), (28, 53894), (Start: 37 @53930 has 2 MA's), (Start: 41 @53963 has 3 MA's), (50, 54026), (52, 54041), (53, 54056), (57, 54083), (58, 54086), (61, 54140), (62, 54149), (64, 54164), (75, 54311),

Gene: Zavala\_84 Start: 53392, Stop: 53754, Start Num: 46

Candidate Starts for Zavala\_84:

(20, 53254), (39, 53347), (Start: 45 @53389 has 18 MA's), (Start: 46 @53392 has 2 MA's), (51, 53437), (54, 53467), (55, 53470), (56, 53485), (58, 53497), (59, 53536), (61, 53551), (62, 53560), (66, 53596), (76, 53734),