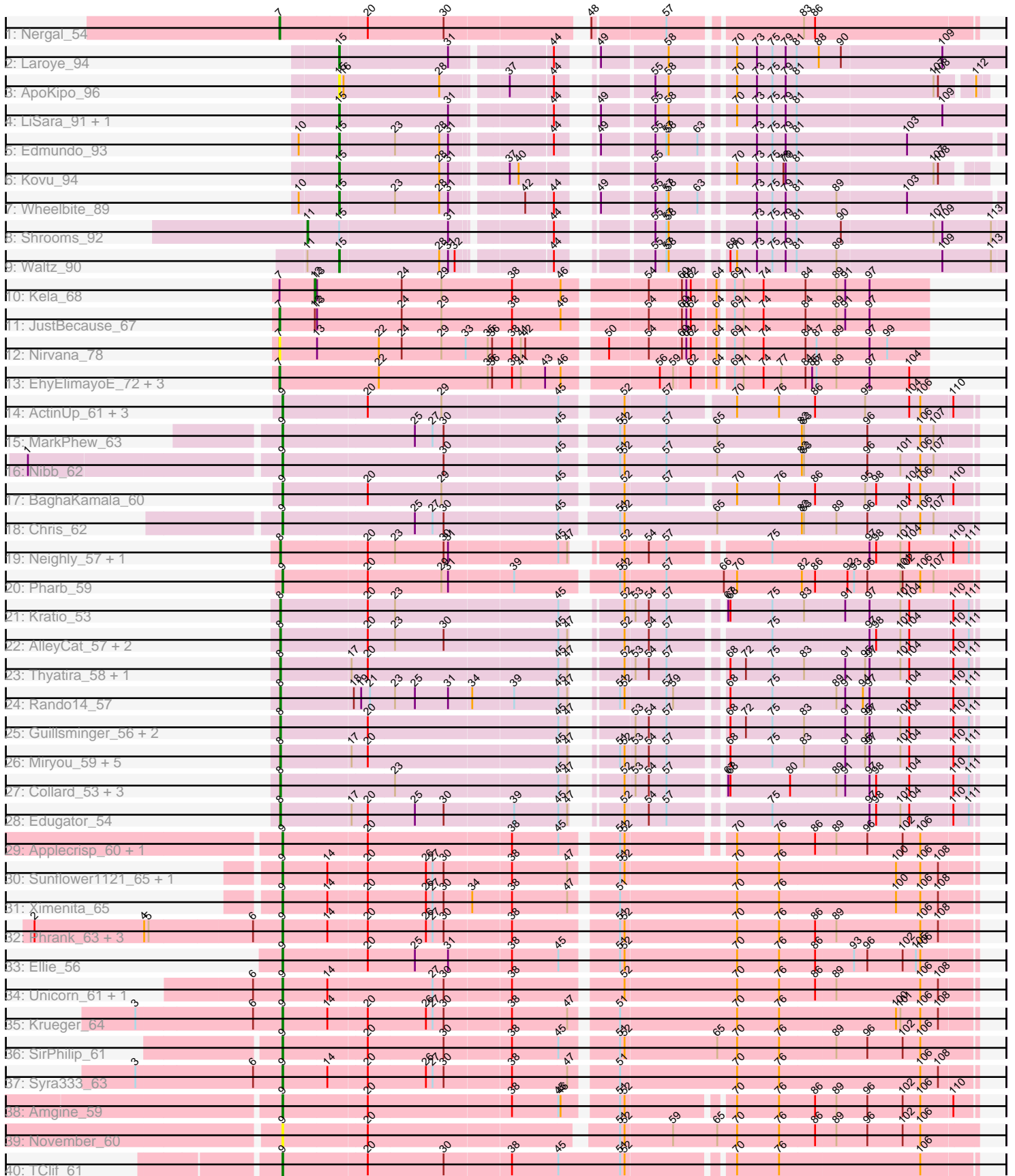


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Note: Tracks are now grouped by subcluster and scaled. Switching in subcluster is indicated by changes in track color. Track scale is now set by default to display the region 30 bp upstream of start 1 to 30 bp downstream of the last possible start. 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 216142 Report

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

Pham number 216142 has 67 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Nergal\_54
- Track 2 : Laroye\_94
- Track 3 : ApoKipo\_96
- Track 4 : LiSara\_91, Salgado\_94
- Track 5 : Edmundo\_93
- Track 6 : Kovu\_94
- Track 7 : Wheelbite\_89
- Track 8 : Shrooms\_92
- Track 9 : Waltz\_90
- Track 10 : Kela\_68
- Track 11 : JustBecause\_67
- Track 12 : Nirvana\_78
- Track 13 : EhyElimayoE\_72, Satis\_72, Quantum\_71, Kradal\_72
- Track 14 : ActinUp\_61, Zabiza\_56, Ramen\_62, HedwigODU\_61
- Track 15 : MarkPhew\_63
- Track 16 : Nibb\_62
- Track 17 : BaghaKamala\_60
- Track 18 : Chris\_62
- Track 19 : Neighly\_57, Larva\_56
- Track 20 : Pharb\_59
- Track 21 : Kratio\_53
- Track 22 : AlleyCat\_57, Psycho\_55, Dadosky\_57
- Track 23 : Thyatira\_58, Feyre\_58
- Track 24 : Rando14\_57
- Track 25 : Guillsminger\_56, Leston\_55, Paola\_55
- Track 26 : Miryou\_59, Gengar\_55, Waterfoul\_57, OkiRoe\_56, SoSeph\_56, Heftyboy\_56
- Track 27 : Collard\_53, ViviJ\_53, InvictusManeo\_53, Agent47\_55
- Track 28 : Edugator\_54
- Track 29 : Applecrisp\_60, Fefferhead\_58
- Track 30 : Sunflower1121\_65, Shadow1\_64
- Track 31 : Ximenita\_65
- Track 32 : Phrank\_63, Tierra\_63, Cain\_63, Bryler\_63
- Track 33 : Ellie\_56
- Track 34 : Unicorn\_61, PhelpsODU\_61
- Track 35 : Krueger\_64
- Track 36 : SirPhilip\_61

- Track 37 : Syra333\_63
- Track 38 : Amgine\_59
- Track 39 : November\_60
- Track 40 : TClif\_61

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

The start number called the most often in the published annotations is 9, it was called in 25 of the 61 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ActinUp\_61, Amgine\_59, Applecrisp\_60, BaghaKamala\_60, Bryler\_63, Cain\_63, Chris\_62, Ellie\_56, Fefferhead\_58, HedwigODU\_61, Krueger\_64, MarkPhew\_63, Nibb\_62, November\_60, Pharb\_59, PhelpsODU\_61, Phrank\_63, Ramen\_62, Shadow1\_64, SirPhilip\_61, Sunflower1121\_65, Syra333\_63, TClif\_61, Tierra\_63, Unicorn\_61, Ximenita\_65, Zabiza\_56,

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

- 

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

- Agent47\_55, AlleyCat\_57, ApoKipo\_96, Collard\_53, Dadosky\_57, Edmundo\_93, Edugator\_54, EhyElimayoE\_72, Feyre\_58, Gengar\_55, Guillsminger\_56, Heftyboy\_56, InvictusManeo\_53, JustBecause\_67, Kela\_68, Kovu\_94, Kradal\_72, Kratio\_53, Laroye\_94, Larva\_56, Leston\_55, LiSara\_91, Miryou\_59, Neighly\_57, Nergal\_54, Nirvana\_78, OkiRoe\_56, Paola\_55, Psycho\_55, Quantum\_71, Rando14\_57, Salgado\_94, Satis\_72, Shrooms\_92, SoSeph\_56, Thyatira\_58, ViviJ\_53, Waltz\_90, Waterfoul\_57, Wheelbite\_89,

### **Summary by start number:**

Start 7:

- Found in 8 of 67 ( 11.9% ) of genes in pham
- Manual Annotations of this start: 6 of 61
- Called 87.5% of time when present
- Phage (with cluster) where this start called: EhyElimayoE\_72 (BM), JustBecause\_67 (BM), Kradal\_72 (BM), Nergal\_54 (AG), Nirvana\_78 (BM), Quantum\_71 (BM), Satis\_72 (BM),

Start 8:

- Found in 23 of 67 ( 34.3% ) of genes in pham
- Manual Annotations of this start: 21 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Agent47\_55 (K5), AlleyCat\_57 (K5), Collard\_53 (K5), Dadosky\_57 (K5), Edugator\_54 (K5), Feyre\_58 (K5), Gengar\_55 (K5), Guillsminger\_56 (K5), Heftyboy\_56 (K5), InvictusManeo\_53 (K5), Kratio\_53 (K5), Larva\_56 (K5), Leston\_55 (K5), Miryou\_59 (K5), Neighly\_57 (K3), OkiRoe\_56 (K5), Paola\_55 (K5), Psycho\_55 (K5), Rando14\_57 (K5), SoSeph\_56 (K5), Thyatira\_58 (K5), ViviJ\_53 (K5), Waterfoul\_57 (K5),

#### Start 9:

- Found in 27 of 67 ( 40.3% ) of genes in pham
- Manual Annotations of this start: 25 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ActinUp\_61 (K1), Amgine\_59 (K6), Applecrisp\_60 (K6), BaghaKamala\_60 (K1), Bryler\_63 (K6), Cain\_63 (K6), Chris\_62 (K1), Ellie\_56 (K6), Fefferhead\_58 (K6), HedwigODU\_61 (K1), Krueger\_64 (K6), MarkPhew\_63 (K1), Nibb\_62 (K1), November\_60 (K6), Pharb\_59 (K3), PhelpsODU\_61 (K6), Phrank\_63 (K6), Ramen\_62 (K1), Shadow1\_64 (K6), SirPhilip\_61 (K6), Sunflower1121\_65 (K6), Syra333\_63 (K6), TClif\_61 (K6), Tierra\_63 (K6), Unicorn\_61 (K6), Ximenita\_65 (K6), Zabiza\_56 (K1),

#### Start 11:

- Found in 2 of 67 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Shrooms\_92 (AL),

#### Start 12:

- Found in 2 of 67 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Kela\_68 (BM),

#### Start 15:

- Found in 9 of 67 ( 13.4% ) of genes in pham
- Manual Annotations of this start: 7 of 61
- Called 88.9% of time when present
- Phage (with cluster) where this start called: ApoKipo\_96 (AL), Edmundo\_93 (AL), Kovu\_94 (AL), Laroye\_94 (AL), LiSara\_91 (AL), Salgado\_94 (AL), Waltz\_90 (AL), Wheelbite\_89 (AL),

### **Summary by clusters:**

There are 7 clusters represented in this pham: AG, BM, AL, K3, K1, K6, K5,

Info for manual annotations of cluster AG:

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

Info for manual annotations of cluster AL:

- Start number 11 was manually annotated 1 time for cluster AL.
- Start number 15 was manually annotated 7 times for cluster AL.

Info for manual annotations of cluster BM:

- Start number 7 was manually annotated 5 times for cluster BM.
- Start number 12 was manually annotated 1 time for cluster BM.

Info for manual annotations of cluster K1:

- Start number 9 was manually annotated 8 times for cluster K1.

Info for manual annotations of cluster K3:

- Start number 9 was manually annotated 1 time for cluster K3.

Info for manual annotations of cluster K5:

- Start number 8 was manually annotated 21 times for cluster K5.

Info for manual annotations of cluster K6:

- Start number 9 was manually annotated 16 times for cluster K6.

### **Gene Information:**

Gene: ActinUp\_61 Start: 41286, Stop: 42173, Start Num: 9

Candidate Starts for ActinUp\_61:

(Start: 9 @41286 has 25 MA's), (20, 41397), (29, 41496), (45, 41646), (52, 41718), (57, 41772), (70, 41856), (76, 41913), (86, 41961), (95, 42027), (104, 42087), (106, 42102), (110, 42144),

Gene: Agent47\_55 Start: 38528, Stop: 39388, Start Num: 8

Candidate Starts for Agent47\_55:

(Start: 8 @38528 has 21 MA's), (23, 38678), (45, 38891), (47, 38903), (52, 38942), (53, 38954), (54, 38972), (57, 38996), (67, 39059), (68, 39062), (80, 39143), (89, 39203), (91, 39215), (97, 39248), (98, 39257), (104, 39302), (110, 39359), (111, 39380),

Gene: AlleyCat\_57 Start: 38832, Stop: 39692, Start Num: 8

Candidate Starts for AlleyCat\_57:

(Start: 8 @38832 has 21 MA's), (20, 38946), (23, 38982), (30, 39048), (45, 39195), (47, 39207), (52, 39246), (54, 39276), (57, 39300), (75, 39423), (97, 39552), (98, 39561), (101, 39594), (104, 39606), (110, 39663), (111, 39684),

Gene: Amgine\_59 Start: 41956, Stop: 42834, Start Num: 9

Candidate Starts for Amgine\_59:

(Start: 9 @41956 has 25 MA's), (20, 42067), (38, 42256), (45, 42316), (46, 42319), (51, 42382), (52, 42388), (70, 42517), (76, 42574), (86, 42622), (89, 42649), (96, 42691), (102, 42739), (106, 42763), (110, 42805),

Gene: ApoKipo\_96 Start: 55915, Stop: 56679, Start Num: 15

Candidate Starts for ApoKipo\_96:

(Start: 15 @55915 has 7 MA's), (16, 55921), (28, 56050), (37, 56122), (44, 56176), (55, 56266), (58, 56284), (70, 56356), (73, 56383), (75, 56404), (79, 56422), (81, 56437), (107, 56620), (108, 56626), (112, 56665),

Gene: Applecrisp\_60 Start: 41096, Stop: 41974, Start Num: 9

Candidate Starts for Applecrisp\_60:

(Start: 9 @41096 has 25 MA's), (20, 41207), (38, 41396), (45, 41456), (51, 41522), (52, 41528), (70, 41657), (76, 41714), (86, 41762), (89, 41789), (96, 41831), (102, 41879), (106, 41903),

Gene: BaghaKamala\_60 Start: 40637, Stop: 41524, Start Num: 9

Candidate Starts for BaghaKamala\_60:

(Start: 9 @40637 has 25 MA's), (20, 40748), (29, 40847), (45, 40997), (52, 41069), (57, 41123), (70, 41207), (76, 41264), (86, 41312), (95, 41378), (98, 41393), (104, 41438), (106, 41453), (110, 41495),

Gene: Bryler\_63 Start: 40754, Stop: 41653, Start Num: 9

Candidate Starts for Bryler\_63:

(2, 40424), (4, 40571), (5, 40577), (6, 40715), (Start: 9 @40754 has 25 MA's), (14, 40814), (20, 40865), (26, 40943), (27, 40952), (30, 40967), (38, 41054), (51, 41180), (52, 41186), (70, 41336), (76, 41393),

(86, 41441), (89, 41468), (106, 41582), (108, 41606),

Gene: Cain\_63 Start: 40742, Stop: 41641, Start Num: 9

Candidate Starts for Cain\_63:

(2, 40412), (4, 40559), (5, 40565), (6, 40703), (Start: 9 @40742 has 25 MA's), (14, 40802), (20, 40853), (26, 40931), (27, 40940), (30, 40955), (38, 41042), (51, 41168), (52, 41174), (70, 41324), (76, 41381), (86, 41429), (89, 41456), (106, 41570), (108, 41594),

Gene: Chris\_62 Start: 41865, Stop: 42770, Start Num: 9

Candidate Starts for Chris\_62:

(Start: 9 @41865 has 25 MA's), (25, 42039), (27, 42063), (30, 42078), (45, 42225), (51, 42294), (52, 42300), (65, 42426), (82, 42540), (83, 42543), (89, 42585), (96, 42627), (101, 42672), (106, 42699), (107, 42717),

Gene: Collard\_53 Start: 38489, Stop: 39349, Start Num: 8

Candidate Starts for Collard\_53:

(Start: 8 @38489 has 21 MA's), (23, 38639), (45, 38852), (47, 38864), (52, 38903), (53, 38915), (54, 38933), (57, 38957), (67, 39020), (68, 39023), (80, 39104), (89, 39164), (91, 39176), (97, 39209), (98, 39218), (104, 39263), (110, 39320), (111, 39341),

Gene: Dadosky\_57 Start: 38834, Stop: 39694, Start Num: 8

Candidate Starts for Dadosky\_57:

(Start: 8 @38834 has 21 MA's), (20, 38948), (23, 38984), (30, 39050), (45, 39197), (47, 39209), (52, 39248), (54, 39278), (57, 39302), (75, 39425), (97, 39554), (98, 39563), (101, 39596), (104, 39608), (110, 39665), (111, 39686),

Gene: Edmundo\_93 Start: 54507, Stop: 55298, Start Num: 15

Candidate Starts for Edmundo\_93:

(10, 54456), (Start: 15 @54507 has 7 MA's), (23, 54579), (28, 54639), (31, 54651), (44, 54765), (49, 54789), (55, 54855), (57, 54870), (58, 54873), (63, 54912), (73, 54972), (75, 54993), (79, 55011), (81, 55026), (103, 55173),

Gene: Edugator\_54 Start: 40255, Stop: 41115, Start Num: 8

Candidate Starts for Edugator\_54:

(Start: 8 @40255 has 21 MA's), (17, 40348), (20, 40369), (25, 40432), (30, 40471), (39, 40561), (45, 40618), (47, 40630), (52, 40669), (54, 40699), (57, 40723), (75, 40846), (97, 40975), (98, 40984), (101, 41017), (104, 41029), (110, 41086), (111, 41107),

Gene: EhyElimayoE\_72 Start: 53494, Stop: 52652, Start Num: 7

Candidate Starts for EhyElimayoE\_72:

(Start: 7 @53494 has 6 MA's), (22, 53359), (35, 53212), (36, 53206), (38, 53179), (41, 53167), (43, 53134), (46, 53113), (56, 52999), (59, 52981), (62, 52960), (64, 52930), (69, 52915), (71, 52903), (74, 52876), (77, 52852), (84, 52819), (85, 52810), (87, 52804), (89, 52777), (97, 52732), (104, 52678),

Gene: Ellie\_56 Start: 40800, Stop: 41699, Start Num: 9

Candidate Starts for Ellie\_56:

(Start: 9 @40800 has 25 MA's), (20, 40911), (25, 40974), (31, 41019), (38, 41100), (45, 41160), (51, 41226), (52, 41232), (70, 41382), (76, 41439), (86, 41487), (93, 41538), (96, 41556), (102, 41604), (105, 41622), (106, 41628),

Gene: Fefferhead\_58 Start: 40735, Stop: 41613, Start Num: 9

Candidate Starts for Fefferhead\_58:

(Start: 9 @40735 has 25 MA's), (20, 40846), (38, 41035), (45, 41095), (51, 41161), (52, 41167), (70, 41296), (76, 41353), (86, 41401), (89, 41428), (96, 41470), (102, 41518), (106, 41542),

Gene: Feyre\_58 Start: 42214, Stop: 43074, Start Num: 8

Candidate Starts for Feyre\_58:

(Start: 8 @42214 has 21 MA's), (17, 42307), (20, 42328), (45, 42577), (47, 42589), (52, 42628), (53, 42640), (54, 42658), (57, 42682), (68, 42748), (72, 42769), (75, 42805), (83, 42847), (91, 42901), (95, 42928), (97, 42934), (101, 42976), (104, 42988), (110, 43045), (111, 43066),

Gene: Gengar\_55 Start: 40233, Stop: 41093, Start Num: 8

Candidate Starts for Gengar\_55:

(Start: 8 @40233 has 21 MA's), (17, 40326), (20, 40347), (45, 40596), (47, 40608), (51, 40641), (52, 40647), (53, 40659), (54, 40677), (57, 40701), (68, 40767), (75, 40824), (83, 40866), (91, 40920), (95, 40947), (97, 40953), (101, 40995), (104, 41007), (110, 41064), (111, 41085),

Gene: Guillsminger\_56 Start: 40204, Stop: 41064, Start Num: 8

Candidate Starts for Guillsminger\_56:

(Start: 8 @40204 has 21 MA's), (20, 40318), (45, 40567), (47, 40579), (53, 40630), (54, 40648), (57, 40672), (68, 40738), (72, 40759), (75, 40795), (83, 40837), (91, 40891), (95, 40918), (97, 40924), (101, 40966), (104, 40978), (110, 41035), (111, 41056),

Gene: HedwigODU\_61 Start: 41286, Stop: 42173, Start Num: 9

Candidate Starts for HedwigODU\_61:

(Start: 9 @41286 has 25 MA's), (20, 41397), (29, 41496), (45, 41646), (52, 41718), (57, 41772), (70, 41856), (76, 41913), (86, 41961), (95, 42027), (104, 42087), (106, 42102), (110, 42144),

Gene: Heftyboy\_56 Start: 40576, Stop: 41436, Start Num: 8

Candidate Starts for Heftyboy\_56:

(Start: 8 @40576 has 21 MA's), (17, 40669), (20, 40690), (45, 40939), (47, 40951), (51, 40984), (52, 40990), (53, 41002), (54, 41020), (57, 41044), (68, 41110), (75, 41167), (83, 41209), (91, 41263), (95, 41290), (97, 41296), (101, 41338), (104, 41350), (110, 41407), (111, 41428),

Gene: InvictusManeo\_53 Start: 38532, Stop: 39392, Start Num: 8

Candidate Starts for InvictusManeo\_53:

(Start: 8 @38532 has 21 MA's), (23, 38682), (45, 38895), (47, 38907), (52, 38946), (53, 38958), (54, 38976), (57, 39000), (67, 39063), (68, 39066), (80, 39147), (89, 39207), (91, 39219), (97, 39252), (98, 39261), (104, 39306), (110, 39363), (111, 39384),

Gene: JustBecause\_67 Start: 50858, Stop: 50016, Start Num: 7

Candidate Starts for JustBecause\_67:

(Start: 7 @50858 has 6 MA's), (Start: 12 @50810 has 1 MA's), (13, 50807), (24, 50693), (29, 50639), (38, 50543), (46, 50477), (54, 50378), (60, 50336), (61, 50330), (62, 50324), (64, 50294), (69, 50279), (71, 50267), (74, 50240), (84, 50183), (89, 50141), (91, 50129), (97, 50096),

Gene: Kela\_68 Start: 50675, Stop: 49881, Start Num: 12

Candidate Starts for Kela\_68:

(Start: 7 @50723 has 6 MA's), (Start: 12 @50675 has 1 MA's), (13, 50672), (24, 50558), (29, 50504), (38, 50408), (46, 50342), (54, 50243), (60, 50201), (61, 50195), (62, 50189), (64, 50159), (69, 50144), (71, 50132), (74, 50105), (84, 50048), (89, 50006), (91, 49994), (97, 49961),

Gene: Kovu\_94 Start: 55384, Stop: 56145, Start Num: 15

Candidate Starts for Kovu\_94:

(Start: 15 @55384 has 7 MA's), (28, 55519), (31, 55531), (37, 55591), (40, 55603), (55, 55735), (70, 55825), (73, 55852), (75, 55873), (78, 55888), (79, 55891), (81, 55906), (107, 56089), (108, 56095),

Gene: Kradal\_72 Start: 53494, Stop: 52652, Start Num: 7

Candidate Starts for Kradal\_72:

(Start: 7 @53494 has 6 MA's), (22, 53359), (35, 53212), (36, 53206), (38, 53179), (41, 53167), (43, 53134), (46, 53113), (56, 52999), (59, 52981), (62, 52960), (64, 52930), (69, 52915), (71, 52903), (74, 52876), (77, 52852), (84, 52819), (85, 52810), (87, 52804), (89, 52777), (97, 52732), (104, 52678),

Gene: Kratio\_53 Start: 38274, Stop: 39134, Start Num: 8

Candidate Starts for Kratio\_53:

(Start: 8 @38274 has 21 MA's), (20, 38388), (23, 38424), (45, 38637), (52, 38688), (53, 38700), (54, 38718), (57, 38742), (67, 38805), (68, 38808), (75, 38865), (83, 38907), (91, 38961), (97, 38994), (101, 39036), (104, 39048), (110, 39105), (111, 39126),

Gene: Krueger\_64 Start: 41010, Stop: 41909, Start Num: 9

Candidate Starts for Krueger\_64:

(3, 40815), (6, 40971), (Start: 9 @41010 has 25 MA's), (14, 41070), (20, 41121), (26, 41199), (27, 41208), (30, 41223), (38, 41310), (47, 41382), (51, 41436), (70, 41592), (76, 41649), (100, 41805), (101, 41811), (106, 41838), (108, 41862),

Gene: Laroye\_94 Start: 54308, Stop: 55111, Start Num: 15

Candidate Starts for Laroye\_94:

(Start: 15 @54308 has 7 MA's), (31, 54452), (44, 54569), (49, 54593), (58, 54677), (70, 54749), (73, 54776), (75, 54797), (79, 54815), (81, 54830), (88, 54860), (90, 54890), (109, 55025),

Gene: Larva\_56 Start: 39706, Stop: 40566, Start Num: 8

Candidate Starts for Larva\_56:

(Start: 8 @39706 has 21 MA's), (20, 39820), (23, 39856), (30, 39922), (31, 39928), (45, 40069), (47, 40081), (52, 40120), (54, 40150), (57, 40174), (75, 40297), (97, 40426), (98, 40435), (101, 40468), (104, 40480), (110, 40537), (111, 40558),

Gene: Leston\_55 Start: 40333, Stop: 41193, Start Num: 8

Candidate Starts for Leston\_55:

(Start: 8 @40333 has 21 MA's), (20, 40447), (45, 40696), (47, 40708), (53, 40759), (54, 40777), (57, 40801), (68, 40867), (72, 40888), (75, 40924), (83, 40966), (91, 41020), (95, 41047), (97, 41053), (101, 41095), (104, 41107), (110, 41164), (111, 41185),

Gene: LiSara\_91 Start: 54440, Stop: 55243, Start Num: 15

Candidate Starts for LiSara\_91:

(Start: 15 @54440 has 7 MA's), (31, 54584), (44, 54701), (49, 54725), (55, 54791), (58, 54809), (70, 54881), (73, 54908), (75, 54929), (79, 54947), (81, 54962), (109, 55157),

Gene: MarkPhew\_63 Start: 41511, Stop: 42416, Start Num: 9

Candidate Starts for MarkPhew\_63:

(Start: 9 @41511 has 25 MA's), (25, 41685), (27, 41709), (30, 41724), (45, 41871), (51, 41940), (52, 41946), (57, 42003), (65, 42072), (82, 42186), (83, 42189), (96, 42273), (106, 42345), (107, 42363),

Gene: Miryou\_59 Start: 42930, Stop: 43790, Start Num: 8

Candidate Starts for Miryou\_59:

(Start: 8 @42930 has 21 MA's), (17, 43023), (20, 43044), (45, 43293), (47, 43305), (51, 43338), (52, 43344), (53, 43356), (54, 43374), (57, 43398), (68, 43464), (75, 43521), (83, 43563), (91, 43617), (95, 43644), (97, 43650), (101, 43692), (104, 43704), (110, 43761), (111, 43782),



Gene: Neighly\_57 Start: 39705, Stop: 40565, Start Num: 8

Candidate Starts for Neighly\_57:

(Start: 8 @39705 has 21 MA's), (20, 39819), (23, 39855), (30, 39921), (31, 39927), (45, 40068), (47, 40080), (52, 40119), (54, 40149), (57, 40173), (75, 40296), (97, 40425), (98, 40434), (101, 40467), (104, 40479), (110, 40536), (111, 40557),

Gene: Nergal\_54 Start: 38056, Stop: 38922, Start Num: 7

Candidate Starts for Nergal\_54:

(Start: 7 @38056 has 6 MA's), (20, 38167), (30, 38269), (48, 38437), (57, 38530), (83, 38695), (86, 38710),

Gene: Nibb\_62 Start: 41203, Stop: 42108, Start Num: 9

Candidate Starts for Nibb\_62:

(1, 40876), (Start: 9 @41203 has 25 MA's), (30, 41416), (45, 41563), (51, 41632), (52, 41638), (57, 41695), (65, 41764), (82, 41878), (83, 41881), (96, 41965), (101, 42010), (106, 42037), (107, 42055),

Gene: Nirvana\_78 Start: 55587, Stop: 54745, Start Num: 7

Candidate Starts for Nirvana\_78:

(Start: 7 @55587 has 6 MA's), (13, 55536), (22, 55452), (24, 55422), (29, 55368), (33, 55335), (35, 55305), (36, 55299), (38, 55272), (41, 55260), (42, 55254), (50, 55158), (54, 55107), (60, 55065), (61, 55059), (62, 55053), (64, 55023), (69, 55008), (71, 54996), (74, 54969), (84, 54912), (87, 54897), (89, 54870), (97, 54825), (99, 54801),

Gene: November\_60 Start: 41306, Stop: 42199, Start Num: 9

Candidate Starts for November\_60:

(Start: 9 @41306 has 25 MA's), (20, 41417), (51, 41726), (52, 41732), (59, 41795), (65, 41855), (70, 41882), (76, 41939), (86, 41987), (89, 42014), (96, 42056), (102, 42104), (106, 42128),

Gene: OkiRoe\_56 Start: 40601, Stop: 41461, Start Num: 8

Candidate Starts for OkiRoe\_56:

(Start: 8 @40601 has 21 MA's), (17, 40694), (20, 40715), (45, 40964), (47, 40976), (51, 41009), (52, 41015), (53, 41027), (54, 41045), (57, 41069), (68, 41135), (75, 41192), (83, 41234), (91, 41288), (95, 41315), (97, 41321), (101, 41363), (104, 41375), (110, 41432), (111, 41453),

Gene: Paola\_55 Start: 40204, Stop: 41064, Start Num: 8

Candidate Starts for Paola\_55:

(Start: 8 @40204 has 21 MA's), (20, 40318), (45, 40567), (47, 40579), (53, 40630), (54, 40648), (57, 40672), (68, 40738), (72, 40759), (75, 40795), (83, 40837), (91, 40891), (95, 40918), (97, 40924), (101, 40966), (104, 40978), (110, 41035), (111, 41056),

Gene: Pharb\_59 Start: 40578, Stop: 41477, Start Num: 9

Candidate Starts for Pharb\_59:

(Start: 9 @40578 has 25 MA's), (20, 40689), (29, 40788), (31, 40797), (39, 40881), (51, 41004), (52, 41010), (57, 41064), (66, 41142), (70, 41160), (82, 41247), (86, 41265), (92, 41307), (93, 41316), (96, 41334), (101, 41379), (102, 41382), (106, 41406), (107, 41424),

Gene: PhelpsODU\_61 Start: 40671, Stop: 41570, Start Num: 9

Candidate Starts for PhelpsODU\_61:

(6, 40632), (Start: 9 @40671 has 25 MA's), (14, 40731), (27, 40869), (30, 40884), (38, 40971), (52, 41103), (70, 41253), (76, 41310), (86, 41358), (89, 41385), (106, 41499), (108, 41523),

Gene: Phrank\_63 Start: 40732, Stop: 41631, Start Num: 9

Candidate Starts for Phrank\_63:

(2, 40402), (4, 40549), (5, 40555), (6, 40693), (Start: 9 @40732 has 25 MA's), (14, 40792), (20, 40843), (26, 40921), (27, 40930), (30, 40945), (38, 41032), (51, 41158), (52, 41164), (70, 41314), (76, 41371), (86, 41419), (89, 41446), (106, 41560), (108, 41584),

Gene: Psycho\_55 Start: 38831, Stop: 39691, Start Num: 8

Candidate Starts for Psycho\_55:

(Start: 8 @38831 has 21 MA's), (20, 38945), (23, 38981), (30, 39047), (45, 39194), (47, 39206), (52, 39245), (54, 39275), (57, 39299), (75, 39422), (97, 39551), (98, 39560), (101, 39593), (104, 39605), (110, 39662), (111, 39683),

Gene: Quantum\_71 Start: 53494, Stop: 52652, Start Num: 7

Candidate Starts for Quantum\_71:

(Start: 7 @53494 has 6 MA's), (22, 53359), (35, 53212), (36, 53206), (38, 53179), (41, 53167), (43, 53134), (46, 53113), (56, 52999), (59, 52981), (62, 52960), (64, 52930), (69, 52915), (71, 52903), (74, 52876), (77, 52852), (84, 52819), (85, 52810), (87, 52804), (89, 52777), (97, 52732), (104, 52678),

Gene: Ramen\_62 Start: 41288, Stop: 42175, Start Num: 9

Candidate Starts for Ramen\_62:

(Start: 9 @41288 has 25 MA's), (20, 41399), (29, 41498), (45, 41648), (52, 41720), (57, 41774), (70, 41858), (76, 41915), (86, 41963), (95, 42029), (104, 42089), (106, 42104), (110, 42146),

Gene: Rando14\_57 Start: 38404, Stop: 39264, Start Num: 8

Candidate Starts for Rando14\_57:

(Start: 8 @38404 has 21 MA's), (18, 38500), (19, 38509), (21, 38521), (23, 38554), (25, 38581), (31, 38626), (34, 38656), (39, 38710), (45, 38767), (47, 38779), (51, 38812), (52, 38818), (57, 38872), (59, 38881), (68, 38938), (75, 38995), (89, 39079), (91, 39091), (94, 39115), (97, 39124), (104, 39178), (110, 39235), (111, 39256),

Gene: Salgado\_94 Start: 54110, Stop: 54913, Start Num: 15

Candidate Starts for Salgado\_94:

(Start: 15 @54110 has 7 MA's), (31, 54254), (44, 54371), (49, 54395), (55, 54461), (58, 54479), (70, 54551), (73, 54578), (75, 54599), (79, 54617), (81, 54632), (109, 54827),

Gene: Satis\_72 Start: 53490, Stop: 52648, Start Num: 7

Candidate Starts for Satis\_72:

(Start: 7 @53490 has 6 MA's), (22, 53355), (35, 53208), (36, 53202), (38, 53175), (41, 53163), (43, 53130), (46, 53109), (56, 52995), (59, 52977), (62, 52956), (64, 52926), (69, 52911), (71, 52899), (74, 52872), (77, 52848), (84, 52815), (85, 52806), (87, 52800), (89, 52773), (97, 52728), (104, 52674),

Gene: Shadow1\_64 Start: 41184, Stop: 42083, Start Num: 9

Candidate Starts for Shadow1\_64:

(Start: 9 @41184 has 25 MA's), (14, 41244), (20, 41295), (26, 41373), (27, 41382), (30, 41397), (38, 41484), (47, 41556), (51, 41610), (52, 41616), (70, 41766), (76, 41823), (100, 41979), (106, 42012), (108, 42036),

Gene: Shrooms\_92 Start: 53698, Stop: 54537, Start Num: 11

Candidate Starts for Shrooms\_92:

(Start: 11 @53698 has 1 MA's), (Start: 15 @53740 has 7 MA's), (31, 53884), (44, 53998), (55, 54088), (57, 54103), (58, 54106), (73, 54205), (75, 54226), (79, 54244), (81, 54259), (90, 54319), (107, 54442), (109, 54454), (113, 54520),

Gene: SirPhilip\_61 Start: 41827, Stop: 42729, Start Num: 9

Candidate Starts for SirPhilip\_61:

(Start: 9 @41827 has 25 MA's), (20, 41938), (30, 42040), (38, 42127), (45, 42187), (51, 42253), (52, 42259), (65, 42382), (70, 42409), (76, 42466), (89, 42541), (96, 42583), (102, 42631), (106, 42655),

Gene: SoSeph\_56 Start: 40576, Stop: 41436, Start Num: 8

Candidate Starts for SoSeph\_56:

(Start: 8 @40576 has 21 MA's), (17, 40669), (20, 40690), (45, 40939), (47, 40951), (51, 40984), (52, 40990), (53, 41002), (54, 41020), (57, 41044), (68, 41110), (75, 41167), (83, 41209), (91, 41263), (95, 41290), (97, 41296), (101, 41338), (104, 41350), (110, 41407), (111, 41428),

Gene: Sunflower1121\_65 Start: 41330, Stop: 42229, Start Num: 9

Candidate Starts for Sunflower1121\_65:

(Start: 9 @41330 has 25 MA's), (14, 41390), (20, 41441), (26, 41519), (27, 41528), (30, 41543), (38, 41630), (47, 41702), (51, 41756), (52, 41762), (70, 41912), (76, 41969), (100, 42125), (106, 42158), (108, 42182),

Gene: Syra333\_63 Start: 41022, Stop: 41921, Start Num: 9

Candidate Starts for Syra333\_63:

(3, 40827), (6, 40983), (Start: 9 @41022 has 25 MA's), (14, 41082), (20, 41133), (26, 41211), (27, 41220), (30, 41235), (38, 41322), (47, 41394), (51, 41448), (70, 41604), (76, 41661), (106, 41850), (108, 41874),

Gene: TClif\_61 Start: 40980, Stop: 41876, Start Num: 9

Candidate Starts for TClif\_61:

(Start: 9 @40980 has 25 MA's), (20, 41091), (30, 41193), (38, 41280), (45, 41340), (51, 41424), (52, 41430), (70, 41559), (76, 41616), (106, 41805),

Gene: Thyatira\_58 Start: 42534, Stop: 43394, Start Num: 8

Candidate Starts for Thyatira\_58:

(Start: 8 @42534 has 21 MA's), (17, 42627), (20, 42648), (45, 42897), (47, 42909), (52, 42948), (53, 42960), (54, 42978), (57, 43002), (68, 43068), (72, 43089), (75, 43125), (83, 43167), (91, 43221), (95, 43248), (97, 43254), (101, 43296), (104, 43308), (110, 43365), (111, 43386),

Gene: Tierra\_63 Start: 41543, Stop: 42442, Start Num: 9

Candidate Starts for Tierra\_63:

(2, 41213), (4, 41360), (5, 41366), (6, 41504), (Start: 9 @41543 has 25 MA's), (14, 41603), (20, 41654), (26, 41732), (27, 41741), (30, 41756), (38, 41843), (51, 41969), (52, 41975), (70, 42125), (76, 42182), (86, 42230), (89, 42257), (106, 42371), (108, 42395),

Gene: Unicorn\_61 Start: 40671, Stop: 41570, Start Num: 9

Candidate Starts for Unicorn\_61:

(6, 40632), (Start: 9 @40671 has 25 MA's), (14, 40731), (27, 40869), (30, 40884), (38, 40971), (52, 41103), (70, 41253), (76, 41310), (86, 41358), (89, 41385), (106, 41499), (108, 41523),

Gene: ViviJ\_53 Start: 38289, Stop: 39149, Start Num: 8

Candidate Starts for ViviJ\_53:

(Start: 8 @38289 has 21 MA's), (23, 38439), (45, 38652), (47, 38664), (52, 38703), (53, 38715), (54, 38733), (57, 38757), (67, 38820), (68, 38823), (80, 38904), (89, 38964), (91, 38976), (97, 39009), (98, 39018), (104, 39063), (110, 39120), (111, 39141),

Gene: Waltz\_90 Start: 52528, Stop: 53325, Start Num: 15

Candidate Starts for Waltz\_90:

(Start: 11 @52486 has 1 MA's), (Start: 15 @52528 has 7 MA's), (28, 52660), (31, 52672), (32, 52681), (44, 52786), (55, 52876), (57, 52891), (58, 52894), (68, 52957), (70, 52966), (73, 52993), (75, 53014), (79, 53032), (81, 53047), (89, 53101), (109, 53242), (113, 53308),

Gene: Waterfoul\_57 Start: 40638, Stop: 41498, Start Num: 8

Candidate Starts for Waterfoul\_57:

(Start: 8 @40638 has 21 MA's), (17, 40731), (20, 40752), (45, 41001), (47, 41013), (51, 41046), (52, 41052), (53, 41064), (54, 41082), (57, 41106), (68, 41172), (75, 41229), (83, 41271), (91, 41325), (95, 41352), (97, 41358), (101, 41400), (104, 41412), (110, 41469), (111, 41490),

Gene: Wheelbite\_89 Start: 54204, Stop: 54995, Start Num: 15

Candidate Starts for Wheelbite\_89:

(10, 54153), (Start: 15 @54204 has 7 MA's), (23, 54276), (28, 54336), (31, 54348), (42, 54429), (44, 54462), (49, 54486), (55, 54552), (57, 54567), (58, 54570), (63, 54609), (73, 54669), (75, 54690), (79, 54708), (81, 54723), (89, 54777), (103, 54870),

Gene: Ximenita\_65 Start: 41348, Stop: 42247, Start Num: 9

Candidate Starts for Ximenita\_65:

(Start: 9 @41348 has 25 MA's), (14, 41408), (20, 41459), (26, 41537), (27, 41546), (30, 41561), (34, 41597), (38, 41648), (47, 41720), (51, 41774), (70, 41930), (76, 41987), (100, 42143), (106, 42176), (108, 42200),

Gene: Zabiza\_56 Start: 37591, Stop: 38478, Start Num: 9

Candidate Starts for Zabiza\_56:

(Start: 9 @37591 has 25 MA's), (20, 37702), (29, 37801), (45, 37951), (52, 38023), (57, 38077), (70, 38161), (76, 38218), (86, 38266), (95, 38332), (104, 38392), (106, 38407), (110, 38449),