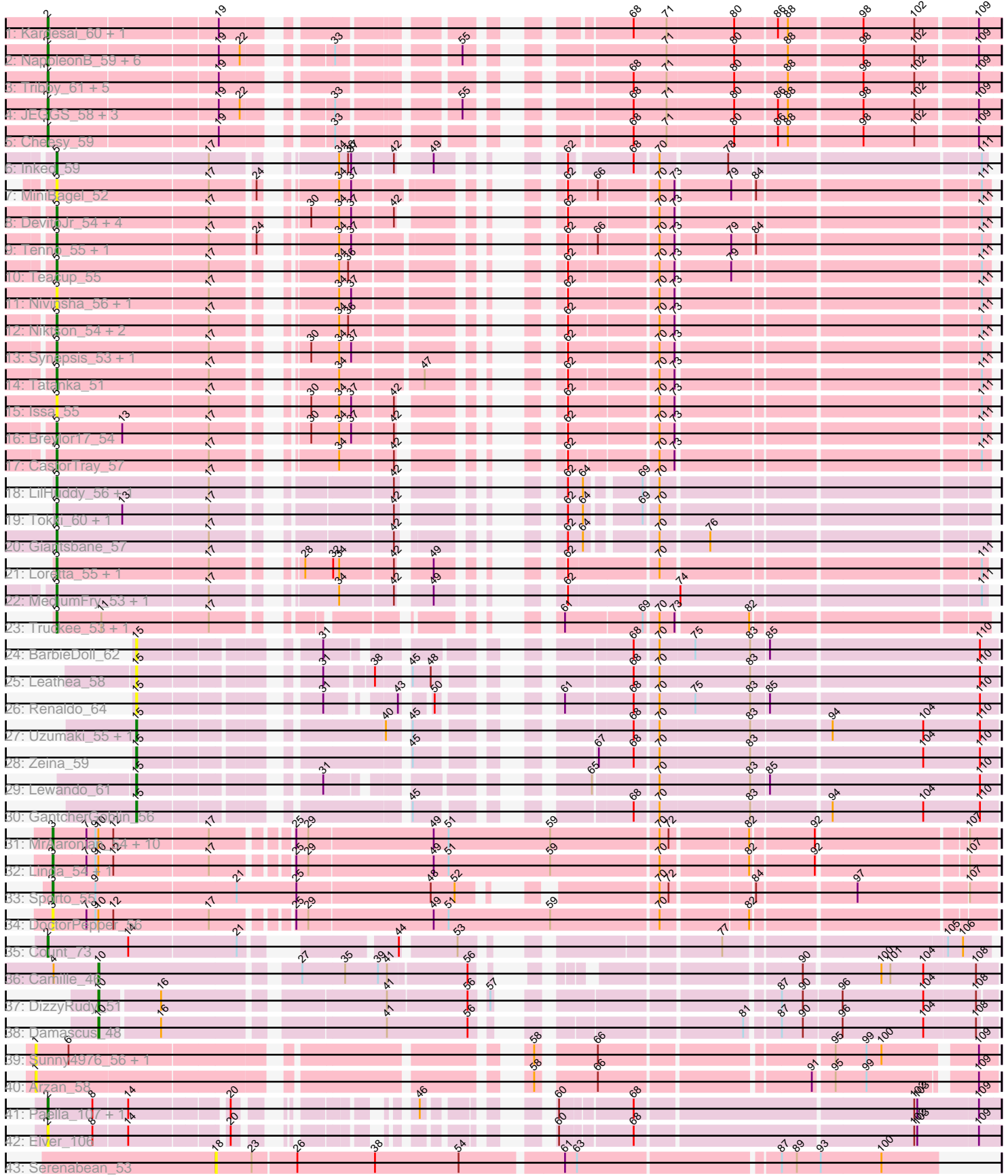


Pham 157786



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 157786 Report

This analysis was run 04/13/24 on database version 558.

Pham number 157786 has 86 members, 19 are drafts.

Phages represented in each track:

- Track 1 : Kardesai\_60, Mooshroom\_59
- Track 2 : NapoleonB\_59, GoCrazy\_58, Hankly\_58, KeaneyLin\_58, Benllo\_60, Circum\_61, Dynamite\_59
- Track 3 : Tribby\_61, Elsa\_59, Arcadia\_59, Correa\_56, Xenomorph\_56, Nason\_59
- Track 4 : JEGGS\_58, BenitoAntonio\_59, Heisenberger\_58, Mudcat\_56
- Track 5 : Cheesy\_59
- Track 6 : Inked\_59
- Track 7 : MiniBagel\_52
- Track 8 : DevitoJr\_54, Trustiboi\_54, Gordon\_52, Nightmare\_56, ScienceWizSam\_55
- Track 9 : Tenno\_55, CapnMurica\_52
- Track 10 : Teacup\_55
- Track 11 : Nivinsha\_56, AreFloNak\_57
- Track 12 : Niktson\_54, ElephantMan\_54, Brunswick\_54
- Track 13 : Synopsis\_53, Darby\_53
- Track 14 : Tatanka\_51
- Track 15 : Issa\_55
- Track 16 : Breylor17\_54
- Track 17 : CastorTray\_57
- Track 18 : LilHuddy\_56, Shepard\_57
- Track 19 : Tokki\_60, Phaby\_56
- Track 20 : Giantsbane\_57
- Track 21 : Loretta\_55, Ingrid\_58
- Track 22 : MediumFry\_53, Caterpillar\_52
- Track 23 : Truckee\_53, Makai\_55
- Track 24 : BarbieDoll\_62
- Track 25 : Leathea\_58
- Track 26 : Renaldo\_64
- Track 27 : Uzumaki\_55, Argan\_56
- Track 28 : Zeina\_59
- Track 29 : Lewando\_61
- Track 30 : GantcherGoblin\_56
- Track 31 : MrAaronian\_54, Egad\_54, Stayer\_54, Sloopyjoe\_54, BronxBay\_54, Djungelskog\_53, Raunak\_57, StarLord\_54, Shiba\_53, ProfFrink\_57, Michelle\_54
- Track 32 : Linda\_54, Salk\_54
- Track 33 : Sporto\_55
- Track 34 : DoctorPepper\_56

- Track 35 : Count\_73
- Track 36 : Camille\_46
- Track 37 : DizzyRudy\_51
- Track 38 : Damascus\_48
- Track 39 : Sunny4976\_56, Jazzy4900\_57
- Track 40 : Arzan\_58
- Track 41 : Paella\_107, Qui\_107
- Track 42 : Elver\_106
- Track 43 : Serenabean\_53

**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 26 of the 67 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AreFloNak\_57, Breylor17\_54, Brunswick\_54, CapnMurica\_52, CastorTray\_57, Caterpillar\_52, Darby\_53, DevitoJr\_54, ElephantMan\_54, Giantsbane\_57, Gordon\_52, Ingrid\_58, Inked\_59, Issa\_55, LilHuddy\_56, Loretta\_55, Makai\_55, MediumFry\_53, MiniBagel\_52, Nightmare\_56, Niktson\_54, Nivinsha\_56, Phaby\_56, ScienceWizSam\_55, Shepard\_57, Synopsis\_53, Tatanka\_51, Teacup\_55, Tenno\_55, Tokki\_60, Truckee\_53, Trustiboi\_54,

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

- 

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

- Arcadia\_59, Argan\_56, Arzan\_58, BarbieDoll\_62, BenitoAntonio\_59, Benllo\_60, BronxBay\_54, Camille\_46, Cheesy\_59, Circum\_61, Correa\_56, Count\_73, Damascus\_48, DizzyRudy\_51, Djungelskog\_53, DoctorPepper\_56, Dynamite\_59, Egad\_54, Elsa\_59, Elver\_106, GantcherGoblin\_56, GoCrazy\_58, Hankly\_58, Heisenberger\_58, JEGGS\_58, Jazzy4900\_57, Kardesai\_60, KeaneyLin\_58, Leathea\_58, Lewando\_61, Linda\_54, Michelle\_54, Mooshroom\_59, MrAaronian\_54, Mudcat\_56, NapoleonB\_59, Nason\_59, Paella\_107, ProfFrink\_57, Qui\_107, Raunak\_57, Renaldo\_64, Salk\_54, Serenabean\_53, Shiba\_53, Sloopyjoe\_54, Sporto\_55, StarLord\_54, Stayer\_54, Sunny4976\_56, Tribby\_61, Uzumaki\_55, Xenomorph\_56, Zeina\_59,

**Summary by start number:**

Start 1:

- Found in 3 of 86 ( 3.5% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arzan\_58 (FI), Jazzy4900\_57 (FI), Sunny4976\_56 (FI),

Start 2:

- Found in 24 of 86 ( 27.9% ) of genes in pham
- Manual Annotations of this start: 21 of 67

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Arcadia\_59 (AM), BenitoAntonio\_59 (AM), Benllo\_60 (AM), Cheesy\_59 (AM), Circum\_61 (AM), Correa\_56 (AM), Count\_73 (EL), Dynamite\_59 (AM), Elsa\_59 (AM), Elver\_106 (FK), GoCrazy\_58 (AM), Hankly\_58 (AM), Heisenberger\_58 (AM), JEGGS\_58 (AM), Kardesai\_60 (AM), KeaneyLin\_58 (AM), Mooshroom\_59 (AM), Mudcat\_56 (AM), NapoleonB\_59 (AM), Nason\_59 (AM), Paella\_107 (FK), Qui\_107 (FK), Tribby\_61 (AM), Xenomorph\_56 (AM),

#### Start 3:

- Found in 15 of 86 ( 17.4% ) of genes in pham
- Manual Annotations of this start: 12 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BronxBay\_54 (AW), Djungelskog\_53 (AW), DoctorPepper\_56 (AW), Egad\_54 (AW), Linda\_54 (AW), Michelle\_54 (AW), MrAaronian\_54 (AW), ProfFrink\_57 (AW), Raunak\_57 (AW), Salk\_54 (AW), Shiba\_53 (AW), Sloopyjoe\_54 (AW), Sporto\_55 (AW), StarLord\_54 (AW), Stayer\_54 (AW),

#### Start 5:

- Found in 32 of 86 ( 37.2% ) of genes in pham
- Manual Annotations of this start: 26 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AreFloNak\_57 (AU1), Breylor17\_54 (AU1), Brunswick\_54 (AU1), CapnMurica\_52 (AU1), CastorTray\_57 (AU1), Caterpillar\_52 (AU4), Darby\_53 (AU1), DevitoJr\_54 (AU1), ElephantMan\_54 (AU1), Giantsbane\_57 (AU2), Gordon\_52 (AU1), Ingrid\_58 (AU3), Inked\_59 (AU), Issa\_55 (AU1), LilHuddy\_56 (AU2), Loretta\_55 (AU3), Makai\_55 (AU5), MediumFry\_53 (AU4), MiniBagel\_52 (AU1), Nightmare\_56 (AU1), Niktson\_54 (AU1), Nivinsha\_56 (AU1), Phaby\_56 (AU2), ScienceWizSam\_55 (AU1), Shepard\_57 (AU2), Synopsis\_53 (AU1), Tatanka\_51 (AU1), Teacup\_55 (AU1), Tenno\_55 (AU1), Tokki\_60 (AU2), Truckee\_53 (AU5), Trustiboi\_54 (AU1),

#### Start 10:

- Found in 17 of 86 ( 19.8% ) of genes in pham
- Manual Annotations of this start: 3 of 67
- Called 17.6% of time when present
- Phage (with cluster) where this start called: Camille\_46 (EL), Damascus\_48 (EL), DizzyRudy\_51 (EL),

#### Start 15:

- Found in 8 of 86 ( 9.3% ) of genes in pham
- Manual Annotations of this start: 5 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Argan\_56 (AU6), BarbieDoll\_62 (AU6), GantcherGoblin\_56 (AU6), Leatheia\_58 (AU6), Lewando\_61 (AU6), Renaldo\_64 (AU6), Uzumaki\_55 (AU6), Zeina\_59 (AU6),

#### Start 18:

- Found in 1 of 86 ( 1.2% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Serenabean\_53 (singleton),

## Summary by clusters:

There are 13 clusters represented in this pham: EL, singleton, AU5, AM, AU1, AU3, AU2, AU, AU4, AW, AU6, FI, FK,

Info for manual annotations of cluster AM:

- Start number 2 was manually annotated 18 times for cluster AM.

Info for manual annotations of cluster AU:

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

Info for manual annotations of cluster AU1:

- Start number 5 was manually annotated 15 times for cluster AU1.

Info for manual annotations of cluster AU2:

- Start number 5 was manually annotated 4 times for cluster AU2.

Info for manual annotations of cluster AU3:

- Start number 5 was manually annotated 2 times for cluster AU3.

Info for manual annotations of cluster AU4:

- Start number 5 was manually annotated 2 times for cluster AU4.

Info for manual annotations of cluster AU5:

- Start number 5 was manually annotated 2 times for cluster AU5.

Info for manual annotations of cluster AU6:

- Start number 15 was manually annotated 5 times for cluster AU6.

Info for manual annotations of cluster AW:

- Start number 3 was manually annotated 12 times for cluster AW.

Info for manual annotations of cluster EL:

- Start number 2 was manually annotated 1 time for cluster EL.
- Start number 10 was manually annotated 3 times for cluster EL.

Info for manual annotations of cluster FK:

- Start number 2 was manually annotated 2 times for cluster FK.

## Gene Information:

Gene: Arcadia\_59 Start: 35986, Stop: 36783, Start Num: 2

Candidate Starts for Arcadia\_59:

(Start: 2 @35986 has 21 MA's), (19, 36148), (68, 36439), (71, 36472), (80, 36538), (88, 36586), (98, 36655), (102, 36706), (109, 36763),

Gene: AreFloNak\_57 Start: 37264, Stop: 38031, Start Num: 5

Candidate Starts for AreFloNak\_57:

(Start: 5 @37264 has 26 MA's), (17, 37414), (34, 37504), (37, 37516), (62, 37645), (70, 37729), (73, 37744), (111, 38023),

Gene: Argan\_56 Start: 35931, Stop: 36647, Start Num: 15

Candidate Starts for Argan\_56:

(Start: 15 @35931 has 5 MA's), (40, 36135), (45, 36150), (68, 36303), (70, 36324), (83, 36411), (94, 36483), (104, 36573), (110, 36630),

Gene: Arzan\_58 Start: 36809, Stop: 37624, Start Num: 1

Candidate Starts for Arzan\_58:

(1, 36809), (58, 37223), (66, 37271), (91, 37463), (95, 37481), (99, 37511), (109, 37607),

Gene: BarbieDoll\_62 Start: 37638, Stop: 38342, Start Num: 15

Candidate Starts for BarbieDoll\_62:

(Start: 15 @37638 has 5 MA's), (31, 37782), (68, 37998), (70, 38019), (75, 38052), (83, 38106), (85, 38121), (110, 38325),

Gene: BenitoAntonio\_59 Start: 35510, Stop: 36310, Start Num: 2

Candidate Starts for BenitoAntonio\_59:

(Start: 2 @35510 has 21 MA's), (19, 35672), (22, 35693), (33, 35753), (55, 35852), (68, 35966), (71, 35999), (80, 36065), (86, 36104), (88, 36113), (98, 36182), (102, 36233), (109, 36290),

Gene: Benllo\_60 Start: 36188, Stop: 36988, Start Num: 2

Candidate Starts for Benllo\_60:

(Start: 2 @36188 has 21 MA's), (19, 36350), (22, 36371), (33, 36431), (55, 36530), (71, 36677), (80, 36743), (88, 36791), (98, 36860), (102, 36911), (109, 36968),

Gene: Breylor17\_54 Start: 37846, Stop: 38604, Start Num: 5

Candidate Starts for Breylor17\_54:

(Start: 5 @37846 has 26 MA's), (13, 37912), (17, 37996), (30, 38059), (34, 38086), (37, 38098), (42, 38137), (62, 38218), (70, 38302), (73, 38317), (111, 38596),

Gene: BronxBay\_54 Start: 34994, Stop: 35869, Start Num: 3

Candidate Starts for BronxBay\_54:

(Start: 3 @34994 has 12 MA's), (7, 35027), (9, 35036), (Start: 10 @35039 has 3 MA's), (12, 35054), (17, 35147), (25, 35210), (29, 35222), (49, 35345), (51, 35360), (59, 35462), (70, 35567), (72, 35576), (82, 35648), (92, 35705), (107, 35843),

Gene: Brunswick\_54 Start: 37137, Stop: 37901, Start Num: 5

Candidate Starts for Brunswick\_54:

(Start: 5 @37137 has 26 MA's), (17, 37287), (34, 37377), (36, 37386), (62, 37518), (70, 37599), (73, 37614), (111, 37893),

Gene: Camille\_46 Start: 32245, Stop: 32997, Start Num: 10

Candidate Starts for Camille\_46:

(4, 32200), (Start: 10 @32245 has 3 MA's), (27, 32425), (35, 32467), (39, 32500), (41, 32509), (56, 32584), (90, 32812), (100, 32884), (101, 32893), (104, 32926), (108, 32977),

Gene: CapnMurica\_52 Start: 38039, Stop: 38800, Start Num: 5

Candidate Starts for CapnMurica\_52:

(Start: 5 @38039 has 26 MA's), (17, 38189), (24, 38228), (34, 38279), (37, 38291), (62, 38417), (66, 38444), (70, 38498), (73, 38513), (79, 38564), (84, 38585), (111, 38792),

Gene: CastorTray\_57 Start: 37910, Stop: 38665, Start Num: 5

Candidate Starts for CastorTray\_57:

(Start: 5 @37910 has 26 MA's), (17, 38060), (34, 38150), (42, 38201), (62, 38282), (70, 38363), (73, 38378), (111, 38657),

Gene: Caterpillar\_52 Start: 36399, Stop: 37157, Start Num: 5

Candidate Starts for Caterpillar\_52:

(Start: 5 @36399 has 26 MA's), (17, 36549), (34, 36639), (42, 36690), (49, 36714), (62, 36771), (74, 36873), (111, 37152),

Gene: Cheesy\_59 Start: 35695, Stop: 36489, Start Num: 2

Candidate Starts for Cheesy\_59:

(Start: 2 @35695 has 21 MA's), (19, 35857), (33, 35938), (68, 36145), (71, 36178), (80, 36244), (86, 36283), (88, 36292), (98, 36361), (102, 36412), (109, 36469),

Gene: Circum\_61 Start: 36379, Stop: 37179, Start Num: 2

Candidate Starts for Circum\_61:

(Start: 2 @36379 has 21 MA's), (19, 36541), (22, 36562), (33, 36622), (55, 36721), (71, 36868), (80, 36934), (88, 36982), (98, 37051), (102, 37102), (109, 37159),

Gene: Correa\_56 Start: 34853, Stop: 35650, Start Num: 2

Candidate Starts for Correa\_56:

(Start: 2 @34853 has 21 MA's), (19, 35015), (68, 35306), (71, 35339), (80, 35405), (88, 35453), (98, 35522), (102, 35573), (109, 35630),

Gene: Count\_73 Start: 48676, Stop: 49458, Start Num: 2

Candidate Starts for Count\_73:

(Start: 2 @48676 has 21 MA's), (14, 48757), (21, 48862), (44, 48973), (53, 49021), (77, 49213), (105, 49417), (106, 49432),

Gene: Damascus\_48 Start: 33623, Stop: 34393, Start Num: 10

Candidate Starts for Damascus\_48:

(Start: 10 @33623 has 3 MA's), (16, 33680), (41, 33878), (56, 33959), (81, 34160), (87, 34187), (90, 34208), (96, 34244), (104, 34325), (108, 34376),

Gene: Darby\_53 Start: 37084, Stop: 37848, Start Num: 5

Candidate Starts for Darby\_53:

(Start: 5 @37084 has 26 MA's), (17, 37234), (30, 37297), (34, 37324), (37, 37336), (62, 37462), (70, 37546), (73, 37561), (111, 37840),

Gene: DevitoJr\_54 Start: 37476, Stop: 38234, Start Num: 5

Candidate Starts for DevitoJr\_54:

(Start: 5 @37476 has 26 MA's), (17, 37626), (30, 37689), (34, 37716), (37, 37728), (42, 37767), (62, 37848), (70, 37932), (73, 37947), (111, 38226),

Gene: DizzyRudy\_51 Start: 33510, Stop: 34280, Start Num: 10

Candidate Starts for DizzyRudy\_51:

(Start: 10 @33510 has 3 MA's), (16, 33567), (41, 33765), (56, 33843), (57, 33855), (87, 34074), (90, 34095), (96, 34131), (104, 34212), (108, 34263),

Gene: Djungelskog\_53 Start: 34993, Stop: 35868, Start Num: 3

Candidate Starts for Djungelskog\_53:

(Start: 3 @34993 has 12 MA's), (7, 35026), (9, 35035), (Start: 10 @35038 has 3 MA's), (12, 35053), (17, 35146), (25, 35209), (29, 35221), (49, 35344), (51, 35359), (59, 35461), (70, 35566), (72, 35575), (82, 35647), (92, 35704), (107, 35842),

Gene: DoctorPepper\_56 Start: 34698, Stop: 35573, Start Num: 3  
Candidate Starts for DoctorPepper\_56:  
(Start: 3 @34698 has 12 MA's), (7, 34731), (9, 34740), (Start: 10 @34743 has 3 MA's), (12, 34758),  
(17, 34851), (25, 34914), (29, 34926), (49, 35049), (51, 35064), (59, 35166), (70, 35271), (82, 35352),

Gene: Dynamite\_59 Start: 35903, Stop: 36703, Start Num: 2  
Candidate Starts for Dynamite\_59:  
(Start: 2 @35903 has 21 MA's), (19, 36065), (22, 36086), (33, 36146), (55, 36245), (71, 36392), (80,  
36458), (88, 36506), (98, 36575), (102, 36626), (109, 36683),

Gene: Egad\_54 Start: 34995, Stop: 35870, Start Num: 3  
Candidate Starts for Egad\_54:  
(Start: 3 @34995 has 12 MA's), (7, 35028), (9, 35037), (Start: 10 @35040 has 3 MA's), (12, 35055),  
(17, 35148), (25, 35211), (29, 35223), (49, 35346), (51, 35361), (59, 35463), (70, 35568), (72, 35577),  
(82, 35649), (92, 35706), (107, 35844),

Gene: ElephantMan\_54 Start: 37760, Stop: 38524, Start Num: 5  
Candidate Starts for ElephantMan\_54:  
(Start: 5 @37760 has 26 MA's), (17, 37910), (34, 38000), (36, 38009), (62, 38141), (70, 38222), (73,  
38237), (111, 38516),

Gene: Elsa\_59 Start: 35986, Stop: 36783, Start Num: 2  
Candidate Starts for Elsa\_59:  
(Start: 2 @35986 has 21 MA's), (19, 36148), (68, 36439), (71, 36472), (80, 36538), (88, 36586), (98,  
36655), (102, 36706), (109, 36763),

Gene: Elver\_106 Start: 57707, Stop: 58456, Start Num: 2  
Candidate Starts for Elver\_106:  
(Start: 2 @57707 has 21 MA's), (8, 57752), (14, 57785), (20, 57872), (60, 58043), (68, 58109), (102,  
58373), (103, 58376), (109, 58436),

Gene: GantcherGoblin\_56 Start: 36006, Stop: 36722, Start Num: 15  
Candidate Starts for GantcherGoblin\_56:  
(Start: 15 @36006 has 5 MA's), (45, 36225), (68, 36378), (70, 36399), (83, 36486), (94, 36558), (104,  
36648), (110, 36705),

Gene: Giantsbane\_57 Start: 36358, Stop: 37107, Start Num: 5  
Candidate Starts for Giantsbane\_57:  
(Start: 5 @36358 has 26 MA's), (17, 36508), (42, 36649), (62, 36733), (64, 36748), (70, 36805), (76,  
36850),

Gene: GoCrazy\_58 Start: 35844, Stop: 36644, Start Num: 2  
Candidate Starts for GoCrazy\_58:  
(Start: 2 @35844 has 21 MA's), (19, 36006), (22, 36027), (33, 36087), (55, 36186), (71, 36333), (80,  
36399), (88, 36447), (98, 36516), (102, 36567), (109, 36624),

Gene: Gordon\_52 Start: 37901, Stop: 38656, Start Num: 5  
Candidate Starts for Gordon\_52:  
(Start: 5 @37901 has 26 MA's), (17, 38051), (30, 38114), (34, 38141), (37, 38153), (42, 38192), (62,  
38273), (70, 38357), (73, 38372), (111, 38651),

Gene: Hankly\_58 Start: 35118, Stop: 35918, Start Num: 2



Candidate Starts for Hankly\_58:

(Start: 2 @35118 has 21 MA's), (19, 35280), (22, 35301), (33, 35361), (55, 35460), (71, 35607), (80, 35673), (88, 35721), (98, 35790), (102, 35841), (109, 35898),

Gene: Heisenberger\_58 Start: 35412, Stop: 36188, Start Num: 2

Candidate Starts for Heisenberger\_58:

(Start: 2 @35412 has 21 MA's), (19, 35574), (22, 35595), (33, 35655), (55, 35730), (68, 35844), (71, 35877), (80, 35943), (86, 35982), (88, 35991), (98, 36060), (102, 36111), (109, 36168),

Gene: Ingrid\_58 Start: 37183, Stop: 37938, Start Num: 5

Candidate Starts for Ingrid\_58:

(Start: 5 @37183 has 26 MA's), (17, 37333), (28, 37390), (32, 37417), (34, 37423), (42, 37474), (49, 37498), (62, 37555), (70, 37639), (111, 37933),

Gene: Inked\_59 Start: 38306, Stop: 39055, Start Num: 5

Candidate Starts for Inked\_59:

(Start: 5 @38306 has 26 MA's), (17, 38456), (34, 38546), (36, 38555), (37, 38558), (42, 38597), (49, 38621), (62, 38678), (68, 38735), (70, 38756), (78, 38819), (111, 39050),

Gene: Issa\_55 Start: 37136, Stop: 37894, Start Num: 5

Candidate Starts for Issa\_55:

(Start: 5 @37136 has 26 MA's), (17, 37286), (30, 37349), (34, 37376), (37, 37388), (42, 37427), (62, 37508), (70, 37592), (73, 37607), (111, 37886),

Gene: JEGGS\_58 Start: 35467, Stop: 36267, Start Num: 2

Candidate Starts for JEGGS\_58:

(Start: 2 @35467 has 21 MA's), (19, 35629), (22, 35650), (33, 35710), (55, 35809), (68, 35923), (71, 35956), (80, 36022), (86, 36061), (88, 36070), (98, 36139), (102, 36190), (109, 36247),

Gene: Jazzy4900\_57 Start: 37585, Stop: 38403, Start Num: 1

Candidate Starts for Jazzy4900\_57:

(1, 37585), (6, 37618), (58, 37999), (66, 38047), (95, 38257), (99, 38287), (100, 38302), (109, 38386),

Gene: Kardesai\_60 Start: 36088, Stop: 36885, Start Num: 2

Candidate Starts for Kardesai\_60:

(Start: 2 @36088 has 21 MA's), (19, 36250), (68, 36541), (71, 36574), (80, 36640), (86, 36679), (88, 36688), (98, 36757), (102, 36808), (109, 36865),

Gene: KeaneyLin\_58 Start: 35844, Stop: 36644, Start Num: 2

Candidate Starts for KeaneyLin\_58:

(Start: 2 @35844 has 21 MA's), (19, 36006), (22, 36027), (33, 36087), (55, 36186), (71, 36333), (80, 36399), (88, 36447), (98, 36516), (102, 36567), (109, 36624),

Gene: Leathea\_58 Start: 35757, Stop: 36464, Start Num: 15

Candidate Starts for Leathea\_58:

(Start: 15 @35757 has 5 MA's), (31, 35901), (38, 35943), (45, 35967), (48, 35985), (68, 36120), (70, 36141), (83, 36228), (110, 36447),

Gene: Lewando\_61 Start: 37710, Stop: 38414, Start Num: 15

Candidate Starts for Lewando\_61:

(Start: 15 @37710 has 5 MA's), (31, 37854), (65, 38034), (70, 38091), (83, 38178), (85, 38193), (110, 38397),

Gene: LilHuddy\_56 Start: 37293, Stop: 38045, Start Num: 5

Candidate Starts for LilHuddy\_56:

(Start: 5 @37293 has 26 MA's), (17, 37443), (42, 37584), (62, 37671), (64, 37686), (69, 37731), (70, 37743),

Gene: Linda\_54 Start: 34991, Stop: 35866, Start Num: 3

Candidate Starts for Linda\_54:

(Start: 3 @34991 has 12 MA's), (7, 35024), (9, 35033), (Start: 10 @35036 has 3 MA's), (12, 35051), (17, 35144), (25, 35207), (29, 35219), (49, 35342), (51, 35357), (59, 35459), (70, 35564), (82, 35645), (92, 35702), (107, 35840),

Gene: Loretta\_55 Start: 37183, Stop: 37938, Start Num: 5

Candidate Starts for Loretta\_55:

(Start: 5 @37183 has 26 MA's), (17, 37333), (28, 37390), (32, 37417), (34, 37423), (42, 37474), (49, 37498), (62, 37555), (70, 37639), (111, 37933),

Gene: Makai\_55 Start: 37391, Stop: 38140, Start Num: 5

Candidate Starts for Makai\_55:

(Start: 5 @37391 has 26 MA's), (11, 37436), (17, 37541), (61, 37751), (69, 37826), (70, 37838), (73, 37853), (82, 37922),

Gene: MediumFry\_53 Start: 36688, Stop: 37446, Start Num: 5

Candidate Starts for MediumFry\_53:

(Start: 5 @36688 has 26 MA's), (17, 36838), (34, 36928), (42, 36979), (49, 37003), (62, 37060), (74, 37162), (111, 37441),

Gene: Michelle\_54 Start: 34993, Stop: 35868, Start Num: 3

Candidate Starts for Michelle\_54:

(Start: 3 @34993 has 12 MA's), (7, 35026), (9, 35035), (Start: 10 @35038 has 3 MA's), (12, 35053), (17, 35146), (25, 35209), (29, 35221), (49, 35344), (51, 35359), (59, 35461), (70, 35566), (72, 35575), (82, 35647), (92, 35704), (107, 35842),

Gene: MiniBagel\_52 Start: 38021, Stop: 38782, Start Num: 5

Candidate Starts for MiniBagel\_52:

(Start: 5 @38021 has 26 MA's), (17, 38171), (24, 38210), (34, 38261), (37, 38273), (62, 38399), (66, 38426), (70, 38480), (73, 38495), (79, 38546), (84, 38567), (111, 38774),

Gene: Mooshroom\_59 Start: 36088, Stop: 36885, Start Num: 2

Candidate Starts for Mooshroom\_59:

(Start: 2 @36088 has 21 MA's), (19, 36250), (68, 36541), (71, 36574), (80, 36640), (86, 36679), (88, 36688), (98, 36757), (102, 36808), (109, 36865),

Gene: MrAaronian\_54 Start: 34993, Stop: 35868, Start Num: 3

Candidate Starts for MrAaronian\_54:

(Start: 3 @34993 has 12 MA's), (7, 35026), (9, 35035), (Start: 10 @35038 has 3 MA's), (12, 35053), (17, 35146), (25, 35209), (29, 35221), (49, 35344), (51, 35359), (59, 35461), (70, 35566), (72, 35575), (82, 35647), (92, 35704), (107, 35842),

Gene: Mudcat\_56 Start: 36825, Stop: 37625, Start Num: 2

Candidate Starts for Mudcat\_56:

(Start: 2 @36825 has 21 MA's), (19, 36987), (22, 37008), (33, 37068), (55, 37167), (68, 37281), (71, 37314), (80, 37380), (86, 37419), (88, 37428), (98, 37497), (102, 37548), (109, 37605),

Gene: NapoleonB\_59 Start: 35903, Stop: 36703, Start Num: 2

Candidate Starts for NapoleonB\_59:

(Start: 2 @35903 has 21 MA's), (19, 36065), (22, 36086), (33, 36146), (55, 36245), (71, 36392), (80, 36458), (88, 36506), (98, 36575), (102, 36626), (109, 36683),

Gene: Nason\_59 Start: 35986, Stop: 36783, Start Num: 2

Candidate Starts for Nason\_59:

(Start: 2 @35986 has 21 MA's), (19, 36148), (68, 36439), (71, 36472), (80, 36538), (88, 36586), (98, 36655), (102, 36706), (109, 36763),

Gene: Nightmare\_56 Start: 38318, Stop: 39076, Start Num: 5

Candidate Starts for Nightmare\_56:

(Start: 5 @38318 has 26 MA's), (17, 38468), (30, 38531), (34, 38558), (37, 38570), (42, 38609), (62, 38690), (70, 38774), (73, 38789), (111, 39068),

Gene: Niktson\_54 Start: 37760, Stop: 38524, Start Num: 5

Candidate Starts for Niktson\_54:

(Start: 5 @37760 has 26 MA's), (17, 37910), (34, 38000), (36, 38009), (62, 38141), (70, 38222), (73, 38237), (111, 38516),

Gene: Nivinsha\_56 Start: 37264, Stop: 38031, Start Num: 5

Candidate Starts for Nivinsha\_56:

(Start: 5 @37264 has 26 MA's), (17, 37414), (34, 37504), (37, 37516), (62, 37645), (70, 37729), (73, 37744), (111, 38023),

Gene: Paella\_107 Start: 58297, Stop: 59046, Start Num: 2

Candidate Starts for Paella\_107:

(Start: 2 @58297 has 21 MA's), (8, 58342), (14, 58375), (20, 58462), (46, 58564), (60, 58633), (68, 58699), (102, 58963), (103, 58966), (109, 59026),

Gene: Phaby\_56 Start: 37911, Stop: 38663, Start Num: 5

Candidate Starts for Phaby\_56:

(Start: 5 @37911 has 26 MA's), (13, 37977), (17, 38061), (42, 38202), (62, 38289), (64, 38304), (69, 38349), (70, 38361),

Gene: ProfFrink\_57 Start: 34994, Stop: 35869, Start Num: 3

Candidate Starts for ProfFrink\_57:

(Start: 3 @34994 has 12 MA's), (7, 35027), (9, 35036), (Start: 10 @35039 has 3 MA's), (12, 35054), (17, 35147), (25, 35210), (29, 35222), (49, 35345), (51, 35360), (59, 35462), (70, 35567), (72, 35576), (82, 35648), (92, 35705), (107, 35843),

Gene: Qui\_107 Start: 58297, Stop: 59046, Start Num: 2

Candidate Starts for Qui\_107:

(Start: 2 @58297 has 21 MA's), (8, 58342), (14, 58375), (20, 58462), (46, 58564), (60, 58633), (68, 58699), (102, 58963), (103, 58966), (109, 59026),

Gene: Raunak\_57 Start: 34691, Stop: 35566, Start Num: 3

Candidate Starts for Raunak\_57:

(Start: 3 @34691 has 12 MA's), (7, 34724), (9, 34733), (Start: 10 @34736 has 3 MA's), (12, 34751), (17, 34844), (25, 34907), (29, 34919), (49, 35042), (51, 35057), (59, 35159), (70, 35264), (72, 35273), (82, 35345), (92, 35402), (107, 35540),

Gene: Renaldo\_64 Start: 37949, Stop: 38638, Start Num: 15

Candidate Starts for Renaldo\_64:

(Start: 15 @37949 has 5 MA's), (31, 38093), (43, 38144), (50, 38162), (61, 38231), (68, 38294), (70, 38315), (75, 38348), (83, 38402), (85, 38417), (110, 38621),

Gene: Salk\_54 Start: 34991, Stop: 35866, Start Num: 3

Candidate Starts for Salk\_54:

(Start: 3 @34991 has 12 MA's), (7, 35024), (9, 35033), (Start: 10 @35036 has 3 MA's), (12, 35051), (17, 35144), (25, 35207), (29, 35219), (49, 35342), (51, 35357), (59, 35459), (70, 35564), (82, 35645), (92, 35702), (107, 35840),

Gene: ScienceWizSam\_55 Start: 37372, Stop: 38130, Start Num: 5

Candidate Starts for ScienceWizSam\_55:

(Start: 5 @37372 has 26 MA's), (17, 37522), (30, 37585), (34, 37612), (37, 37624), (42, 37663), (62, 37744), (70, 37828), (73, 37843), (111, 38122),

Gene: Serenabeen\_53 Start: 34832, Stop: 35524, Start Num: 18

Candidate Starts for Serenabeen\_53:

(18, 34832), (23, 34868), (26, 34910), (38, 34988), (54, 35072), (61, 35168), (63, 35180), (87, 35369), (89, 35384), (93, 35408), (100, 35468),

Gene: Shepard\_57 Start: 37134, Stop: 37886, Start Num: 5

Candidate Starts for Shepard\_57:

(Start: 5 @37134 has 26 MA's), (17, 37284), (42, 37425), (62, 37512), (64, 37527), (69, 37572), (70, 37584),

Gene: Shiba\_53 Start: 34691, Stop: 35566, Start Num: 3

Candidate Starts for Shiba\_53:

(Start: 3 @34691 has 12 MA's), (7, 34724), (9, 34733), (Start: 10 @34736 has 3 MA's), (12, 34751), (17, 34844), (25, 34907), (29, 34919), (49, 35042), (51, 35057), (59, 35159), (70, 35264), (72, 35273), (82, 35345), (92, 35402), (107, 35540),

Gene: Sloopyjoe\_54 Start: 34995, Stop: 35870, Start Num: 3

Candidate Starts for Sloopyjoe\_54:

(Start: 3 @34995 has 12 MA's), (7, 35028), (9, 35037), (Start: 10 @35040 has 3 MA's), (12, 35055), (17, 35148), (25, 35211), (29, 35223), (49, 35346), (51, 35361), (59, 35463), (70, 35568), (72, 35577), (82, 35649), (92, 35706), (107, 35844),

Gene: Sporto\_55 Start: 36496, Stop: 37332, Start Num: 3

Candidate Starts for Sporto\_55:

(Start: 3 @36496 has 12 MA's), (9, 36538), (21, 36676), (25, 36736), (48, 36868), (52, 36892), (70, 37027), (72, 37036), (84, 37111), (97, 37201), (107, 37306),

Gene: StarLord\_54 Start: 34994, Stop: 35869, Start Num: 3

Candidate Starts for StarLord\_54:

(Start: 3 @34994 has 12 MA's), (7, 35027), (9, 35036), (Start: 10 @35039 has 3 MA's), (12, 35054), (17, 35147), (25, 35210), (29, 35222), (49, 35345), (51, 35360), (59, 35462), (70, 35567), (72, 35576), (82, 35648), (92, 35705), (107, 35843),

Gene: Stayer\_54 Start: 34991, Stop: 35866, Start Num: 3

Candidate Starts for Stayer\_54:

(Start: 3 @34991 has 12 MA's), (7, 35024), (9, 35033), (Start: 10 @35036 has 3 MA's), (12, 35051), (17, 35144), (25, 35207), (29, 35219), (49, 35342), (51, 35357), (59, 35459), (70, 35564), (72, 35573), (82, 35645), (92, 35702), (107, 35840),

Gene: Sunny4976\_56 Start: 37585, Stop: 38403, Start Num: 1

Candidate Starts for Sunny4976\_56:

(1, 37585), (6, 37618), (58, 37999), (66, 38047), (95, 38257), (99, 38287), (100, 38302), (109, 38386),

Gene: Synopsis\_53 Start: 37431, Stop: 38198, Start Num: 5

Candidate Starts for Synopsis\_53:

(Start: 5 @37431 has 26 MA's), (17, 37581), (30, 37644), (34, 37671), (37, 37683), (62, 37812), (70, 37896), (73, 37911), (111, 38190),

Gene: Tatanka\_51 Start: 37563, Stop: 38327, Start Num: 5

Candidate Starts for Tatanka\_51:

(Start: 5 @37563 has 26 MA's), (17, 37713), (34, 37803), (47, 37878), (62, 37944), (70, 38025), (73, 38040), (111, 38319),

Gene: Teacup\_55 Start: 37789, Stop: 38553, Start Num: 5

Candidate Starts for Teacup\_55:

(Start: 5 @37789 has 26 MA's), (17, 37939), (34, 38029), (36, 38038), (62, 38170), (70, 38251), (73, 38266), (79, 38317), (111, 38545),

Gene: Tenno\_55 Start: 38094, Stop: 38855, Start Num: 5

Candidate Starts for Tenno\_55:

(Start: 5 @38094 has 26 MA's), (17, 38244), (24, 38283), (34, 38334), (37, 38346), (62, 38472), (66, 38499), (70, 38553), (73, 38568), (79, 38619), (84, 38640), (111, 38847),

Gene: Tokki\_60 Start: 37524, Stop: 38276, Start Num: 5

Candidate Starts for Tokki\_60:

(Start: 5 @37524 has 26 MA's), (13, 37590), (17, 37674), (42, 37815), (62, 37902), (64, 37917), (69, 37962), (70, 37974),

Gene: Tribby\_61 Start: 36239, Stop: 37036, Start Num: 2

Candidate Starts for Tribby\_61:

(Start: 2 @36239 has 21 MA's), (19, 36401), (68, 36692), (71, 36725), (80, 36791), (88, 36839), (98, 36908), (102, 36959), (109, 37016),

Gene: Truckee\_53 Start: 37181, Stop: 37930, Start Num: 5

Candidate Starts for Truckee\_53:

(Start: 5 @37181 has 26 MA's), (11, 37226), (17, 37331), (61, 37541), (69, 37616), (70, 37628), (73, 37643), (82, 37712),

Gene: Trustiboi\_54 Start: 37632, Stop: 38390, Start Num: 5

Candidate Starts for Trustiboi\_54:

(Start: 5 @37632 has 26 MA's), (17, 37782), (30, 37845), (34, 37872), (37, 37884), (42, 37923), (62, 38004), (70, 38088), (73, 38103), (111, 38382),

Gene: Uzumaki\_55 Start: 36107, Stop: 36823, Start Num: 15

Candidate Starts for Uzumaki\_55:

(Start: 15 @36107 has 5 MA's), (40, 36311), (45, 36326), (68, 36479), (70, 36500), (83, 36587), (94, 36659), (104, 36749), (110, 36806),

Gene: Xenomorph\_56 Start: 35657, Stop: 36454, Start Num: 2

Candidate Starts for Xenomorph\_56:

(Start: 2 @35657 has 21 MA's), (19, 35819), (68, 36110), (71, 36143), (80, 36209), (88, 36257), (98, 36326), (102, 36377), (109, 36434),

Gene: Zeina\_59 Start: 36674, Stop: 37390, Start Num: 15

Candidate Starts for Zeina\_59:

(Start: 15 @36674 has 5 MA's), (45, 36893), (67, 37013), (68, 37046), (70, 37067), (83, 37154), (104, 37316), (110, 37373),