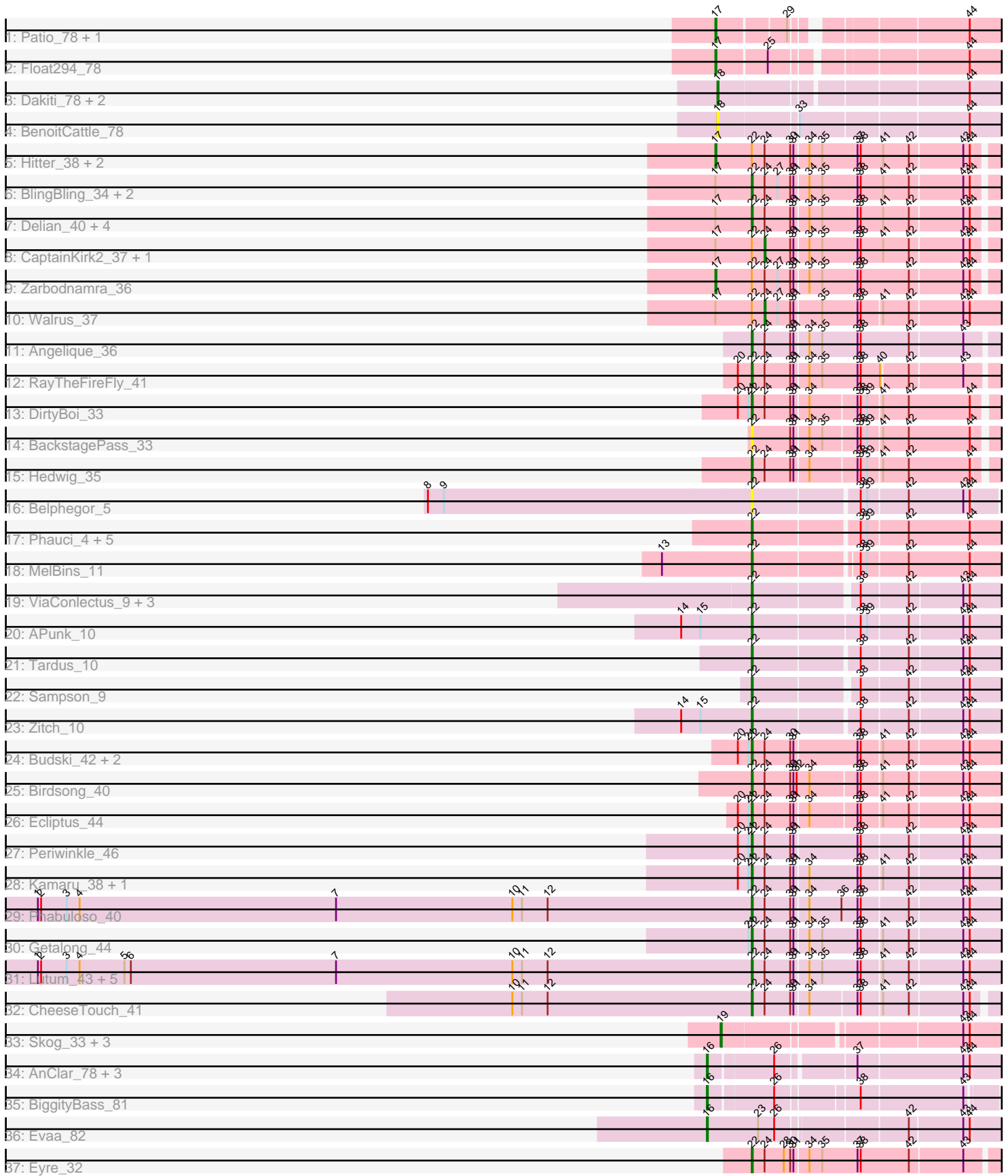


Pham 157835



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 157835 Report

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

Pham number 157835 has 71 members, 10 are drafts.

Phages represented in each track:

- Track 1 : Patio\_78, Skysand\_80
- Track 2 : Float294\_78
- Track 3 : Dakiti\_78, PierreThree\_76, Linetti\_77
- Track 4 : BenoitCattle\_78
- Track 5 : Hitter\_38, Guacamole\_35, MintFen\_37
- Track 6 : BlingBling\_34, Archis\_40, Melba\_36
- Track 7 : Delian\_40, Mellie\_34, JasperJr\_35, Obliviate\_33, PhrostedPhlake\_40
- Track 8 : CaptainKirk2\_37, UmaThurman\_32
- Track 9 : Zarbodnamra\_36
- Track 10 : Walrus\_37
- Track 11 : Angelique\_36
- Track 12 : RayTheFireFly\_41
- Track 13 : DirtyBoi\_33
- Track 14 : BackstagePass\_33
- Track 15 : Hedwig\_35
- Track 16 : Belphegor\_5
- Track 17 : Phauci\_4, Leonard\_11, Ali17\_9, Inspectinfecti\_12, Hans\_13, Phinally\_11
- Track 18 : MelBins\_11
- Track 19 : ViaConlectus\_9, Scioto\_9, Natkenzie\_9, Abblin\_9
- Track 20 : APunk\_10
- Track 21 : Tardus\_10
- Track 22 : Sampson\_9
- Track 23 : Zitch\_10
- Track 24 : Budski\_42, BENtherdunthat\_42, Whitney\_45
- Track 25 : Birdsong\_40
- Track 26 : Ecliptus\_44
- Track 27 : Periwinkle\_46
- Track 28 : Kamaru\_38, LitninMcQueen\_37
- Track 29 : Phabuloso\_40
- Track 30 : Getalong\_44
- Track 31 : Lutum\_43, Frickyeah\_43, Phistory\_43, Kenna\_42, Holliday\_42, Crater\_40
- Track 32 : CheeseTouch\_41
- Track 33 : Skog\_33, Pupper\_204, SCentae\_203, CherryTomatoes\_211
- Track 34 : AnClar\_78, Sisko\_81, LittleMunchkin\_81, Yago84\_80
- Track 35 : BiggityBass\_81
- Track 36 : Evaa\_82

- Track 37 : Eyre\_32

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

The start number called the most often in the published annotations is 22, it was called in 39 of the 61 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- APunk\_10, Abblin\_9, Ali17\_9, Angelique\_36, Archis\_40, BENtherdunthat\_42, BackstagePass\_33, Belphegor\_5, Birdsong\_40, BlingBling\_34, Budski\_42, CheeseTouch\_41, Crater\_40, Delian\_40, DirtyBoi\_33, Ecliptus\_44, Eyre\_32, Frickyeah\_43, Getalong\_44, Hans\_13, Hedwig\_35, Holliday\_42, Inspectinfecti\_12, JasperJr\_35, Kamaru\_38, Kenna\_42, Leonard\_11, LitninMcQueen\_37, Lutum\_43, MelBins\_11, Melba\_36, Mellie\_34, Natkenzie\_9, Oblivate\_33, Periwinkle\_46, Phabuloso\_40, Phauci\_4, Phinally\_11, Phistory\_43, PhrostedPhlake\_40, RayTheFireFly\_41, Sampson\_9, Scioto\_9, Tardus\_10, ViaConlectus\_9, Whitney\_45, Zitch\_10,

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

- CaptainKirk2\_37, Guacamole\_35, Hitter\_38, MintFen\_37, UmaThurman\_32, Walrus\_37, Zarbodnamra\_36,

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

- AnClar\_78, BenoitCattle\_78, BiggityBass\_81, CherryTomatoes\_211, Dakiti\_78, Evaa\_82, Float294\_78, Linetti\_77, LittleMunchkin\_81, Patio\_78, PierreThree\_76, Pupper\_204, SCentae\_203, Sisko\_81, Skog\_33, Skysand\_80, Yago84\_80,

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

Start 16:

- Found in 6 of 71 ( 8.5% ) of genes in pham
- Manual Annotations of this start: 6 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AnClar\_78 (DR), BiggityBass\_81 (DR), Evaa\_82 (DR), LittleMunchkin\_81 (DR), Sisko\_81 (DR), Yago84\_80 (DR),

Start 17:

- Found in 18 of 71 ( 25.4% ) of genes in pham
- Manual Annotations of this start: 7 of 61
- Called 38.9% of time when present
- Phage (with cluster) where this start called: Float294\_78 (CR3), Guacamole\_35 (CV), Hitter\_38 (CV), MintFen\_37 (CV), Patio\_78 (CR3), Skysand\_80 (CR3), Zarbodnamra\_36 (CV),

Start 18:

- Found in 4 of 71 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 3 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BenoitCattle\_78 (CS2), Dakiti\_78 (CS2), Linetti\_77 (CS2), PierreThree\_76 (CS2),

Start 19:

- Found in 4 of 71 ( 5.6% ) of genes in pham
- Manual Annotations of this start: 3 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CherryTomatoes\_211 (DO), Pupper\_204 (DO), SCentae\_203 (DO), Skog\_33 (DO),

Start 22:

- Found in 54 of 71 ( 76.1% ) of genes in pham
- Manual Annotations of this start: 39 of 61
- Called 87.0% of time when present
- Phage (with cluster) where this start called: APunk\_10 (DE4), Abblin\_9 (DE4), Ali17\_9 (DE2), Angelique\_36 (CY1), Archis\_40 (CV), BENtherdunthat\_42 (DN1), BackstagePass\_33 (DB), Belphegor\_5 (DE), Birdsong\_40 (DN), BlingBling\_34 (CV), Budski\_42 (DN), CheeseTouch\_41 (DN1), Crater\_40 (DN3), Delian\_40 (CV), DirtyBoi\_33 (DB), Ecliptus\_44 (DN), Eyre\_32 (singleton), Frickyeah\_43 (DN1), Getalong\_44 (DN1), Hans\_13 (DE2), Hedwig\_35 (DB), Holliday\_42 (DN1), Inspectinfecti\_12 (DE2), JasperJr\_35 (CV), Kamaru\_38 (DN1), Kenna\_42 (DN1), Leonard\_11 (DE2), LitninMcQueen\_37 (DN1), Lutum\_43 (DN1), MelBins\_11 (DE2), Melba\_36 (CV), Mellie\_34 (CV), Natkenzie\_9 (DE4), Obliviate\_33 (CV), Periwinkle\_46 (DN1), Phabuloso\_40 (DN1), Phauci\_4 (DE2), Phinally\_11 (DE2), Phistory\_43 (DN1), PhrostedPhlake\_40 (CV), RayTheFireFly\_41 (DB), Sampson\_9 (DE4), Scioto\_9 (DE4), Tardus\_10 (DE4), ViaConlectus\_9 (DE4), Whitney\_45 (DN1), Zitch\_10 (DE4),

Start 24:

- Found in 37 of 71 ( 52.1% ) of genes in pham
- Manual Annotations of this start: 3 of 61
- Called 8.1% of time when present
- Phage (with cluster) where this start called: CaptainKirk2\_37 (CV), UmaThurman\_32 (CV), Walrus\_37 (CV),

**Summary by clusters:**

There are 14 clusters represented in this pham: DN, CR3, CY1, DO, DB, DE2, DE, DE4, singleton, DN1, DN3, DR, CV, CS2,

Info for manual annotations of cluster CR3:

- Start number 17 was manually annotated 3 times for cluster CR3.

Info for manual annotations of cluster CS2:

- Start number 18 was manually annotated 3 times for cluster CS2.

Info for manual annotations of cluster CV:

- Start number 17 was manually annotated 4 times for cluster CV.
- Start number 22 was manually annotated 8 times for cluster CV.
- Start number 24 was manually annotated 3 times for cluster CV.

Info for manual annotations of cluster CY1:

- Start number 22 was manually annotated 1 time for cluster CY1.

Info for manual annotations of cluster DB:

- Start number 22 was manually annotated 3 times for cluster DB.

Info for manual annotations of cluster DE2:

- Start number 22 was manually annotated 6 times for cluster DE2.

Info for manual annotations of cluster DE4:

- Start number 22 was manually annotated 5 times for cluster DE4.

Info for manual annotations of cluster DN:

- Start number 22 was manually annotated 3 times for cluster DN.

Info for manual annotations of cluster DN1:

- Start number 22 was manually annotated 11 times for cluster DN1.

Info for manual annotations of cluster DN3:

- Start number 22 was manually annotated 1 time for cluster DN3.

Info for manual annotations of cluster DO:

- Start number 19 was manually annotated 3 times for cluster DO.

Info for manual annotations of cluster DR:

- Start number 16 was manually annotated 6 times for cluster DR.

### ***Gene Information:***

Gene: APunk\_10 Start: 5832, Stop: 6140, Start Num: 22

Candidate Starts for APunk\_10:

(14, 5769), (15, 5787), (Start: 22 @5832 has 39 MA's), (38, 5928), (39, 5934), (42, 5970), (43, 6018), (44, 6024),

Gene: Abblin\_9 Start: 5353, Stop: 5655, Start Num: 22

Candidate Starts for Abblin\_9:

(Start: 22 @5353 has 39 MA's), (38, 5443), (42, 5485), (43, 5533), (44, 5539),

Gene: Ali17\_9 Start: 5663, Stop: 5983, Start Num: 22

Candidate Starts for Ali17\_9:

(Start: 22 @5663 has 39 MA's), (38, 5753), (39, 5759), (42, 5795), (44, 5852),

Gene: AnClar\_78 Start: 60612, Stop: 60265, Start Num: 16

Candidate Starts for AnClar\_78:

(Start: 16 @60612 has 6 MA's), (26, 60555), (37, 60489), (43, 60393), (44, 60387),

Gene: Angelique\_36 Start: 29622, Stop: 29323, Start Num: 22

Candidate Starts for Angelique\_36:

(Start: 22 @29622 has 39 MA's), (Start: 24 @29610 has 3 MA's), (30, 29586), (31, 29583), (34, 29571), (35, 29559), (37, 29526), (38, 29523), (42, 29478), (43, 29430),

Gene: Archis\_40 Start: 30536, Stop: 30222, Start Num: 22

Candidate Starts for Archis\_40:

(Start: 17 @30569 has 7 MA's), (Start: 22 @30536 has 39 MA's), (Start: 24 @30524 has 3 MA's), (27, 30512), (30, 30500), (31, 30497), (34, 30485), (35, 30473), (37, 30440), (38, 30437), (41, 30416), (42, 30392), (43, 30344), (44, 30338),

Gene: BENtherdunthat\_42 Start: 29776, Stop: 29441, Start Num: 22

Candidate Starts for BENtherdunthat\_42:

(20, 29788), (21, 29779), (Start: 22 @29776 has 39 MA's), (Start: 24 @29764 has 3 MA's), (30, 29740), (31, 29737), (37, 29680), (38, 29677), (41, 29659), (42, 29635), (43, 29587), (44, 29581),

Gene: BackstagePass\_33 Start: 28562, Stop: 28269, Start Num: 22

Candidate Starts for BackstagePass\_33:

(Start: 22 @28562 has 39 MA's), (30, 28526), (31, 28523), (34, 28511), (35, 28499), (37, 28469), (38, 28466), (39, 28460), (41, 28448), (42, 28424), (44, 28367),

Gene: Belphegor\_5 Start: 2778, Stop: 3092, Start Num: 22

Candidate Starts for Belphegor\_5:

(8, 2478), (9, 2493), (Start: 22 @2778 has 39 MA's), (38, 2871), (39, 2877), (42, 2913), (43, 2964), (44, 2970),

Gene: BenoitCattle\_78 Start: 60565, Stop: 60242, Start Num: 18

Candidate Starts for BenoitCattle\_78:

(Start: 18 @60565 has 3 MA's), (33, 60496), (44, 60346),

Gene: BiggityBass\_81 Start: 62080, Stop: 61751, Start Num: 16

Candidate Starts for BiggityBass\_81:

(Start: 16 @62080 has 6 MA's), (26, 62023), (38, 61954), (43, 61861),

Gene: Birdsong\_40 Start: 30587, Stop: 30261, Start Num: 22

Candidate Starts for Birdsong\_40:

(Start: 22 @30587 has 39 MA's), (Start: 24 @30575 has 3 MA's), (30, 30551), (31, 30548), (32, 30545), (34, 30533), (37, 30491), (38, 30488), (41, 30470), (42, 30446), (43, 30398), (44, 30392),

Gene: BlingBling\_34 Start: 30550, Stop: 30248, Start Num: 22

Candidate Starts for BlingBling\_34:

(Start: 17 @30583 has 7 MA's), (Start: 22 @30550 has 39 MA's), (Start: 24 @30538 has 3 MA's), (27, 30526), (30, 30514), (31, 30511), (34, 30499), (35, 30487), (37, 30454), (38, 30451), (41, 30430), (42, 30406), (43, 30358), (44, 30352),

Gene: Budski\_42 Start: 31521, Stop: 31192, Start Num: 22

Candidate Starts for Budski\_42:

(20, 31533), (21, 31524), (Start: 22 @31521 has 39 MA's), (Start: 24 @31509 has 3 MA's), (30, 31485), (31, 31482), (37, 31425), (38, 31422), (41, 31404), (42, 31380), (43, 31332), (44, 31326),

Gene: CaptainKirk2\_37 Start: 29823, Stop: 29527, Start Num: 24

Candidate Starts for CaptainKirk2\_37:

(Start: 17 @29868 has 7 MA's), (Start: 22 @29835 has 39 MA's), (Start: 24 @29823 has 3 MA's), (30, 29799), (31, 29796), (34, 29784), (35, 29772), (37, 29739), (38, 29736), (41, 29715), (42, 29691), (43, 29643), (44, 29637),

Gene: CheeseTouch\_41 Start: 28097, Stop: 27792, Start Num: 22

Candidate Starts for CheeseTouch\_41:

(10, 28319), (11, 28310), (12, 28286), (Start: 22 @28097 has 39 MA's), (Start: 24 @28085 has 3 MA's), (30, 28061), (31, 28058), (34, 28046), (37, 28004), (38, 28001), (41, 27983), (42, 27959), (43,

27911), (44, 27905),

Gene: CherryTomatoes\_211 Start: 140218, Stop: 140541, Start Num: 19

Candidate Starts for CherryTomatoes\_211:

(Start: 19 @140218 has 3 MA's), (43, 140422), (44, 140428),

Gene: Crater\_40 Start: 29695, Stop: 29378, Start Num: 22

Candidate Starts for Crater\_40:

(1, 30361), (2, 30358), (3, 30334), (4, 30322), (5, 30280), (6, 30274), (7, 30082), (10, 29917), (11, 29908), (12, 29884), (Start: 22 @29695 has 39 MA's), (Start: 24 @29683 has 3 MA's), (30, 29659), (31, 29656), (34, 29644), (35, 29632), (37, 29599), (38, 29596), (41, 29578), (42, 29554), (43, 29506), (44, 29500),

Gene: Dakiti\_78 Start: 61535, Stop: 61218, Start Num: 18

Candidate Starts for Dakiti\_78:

(Start: 18 @61535 has 3 MA's), (44, 61322),

Gene: Delian\_40 Start: 29833, Stop: 29525, Start Num: 22

Candidate Starts for Delian\_40:

(Start: 17 @29866 has 7 MA's), (Start: 22 @29833 has 39 MA's), (Start: 24 @29821 has 3 MA's), (30, 29797), (31, 29794), (34, 29782), (35, 29770), (37, 29737), (38, 29734), (41, 29713), (42, 29689), (43, 29641), (44, 29635),

Gene: DirtyBoi\_33 Start: 28465, Stop: 28172, Start Num: 22

Candidate Starts for DirtyBoi\_33:

(20, 28477), (21, 28468), (Start: 22 @28465 has 39 MA's), (Start: 24 @28453 has 3 MA's), (30, 28429), (31, 28426), (34, 28414), (37, 28372), (38, 28369), (39, 28363), (41, 28351), (42, 28327), (44, 28270),

Gene: Ecliptus\_44 Start: 32044, Stop: 31706, Start Num: 22

Candidate Starts for Ecliptus\_44:

(20, 32056), (21, 32047), (Start: 22 @32044 has 39 MA's), (Start: 24 @32032 has 3 MA's), (30, 32008), (31, 32005), (34, 31993), (37, 31951), (38, 31948), (41, 31930), (42, 31906), (43, 31858), (44, 31852),

Gene: Evaa\_82 Start: 60219, Stop: 59869, Start Num: 16

Candidate Starts for Evaa\_82:

(Start: 16 @60219 has 6 MA's), (23, 60171), (26, 60156), (42, 60045), (43, 59997), (44, 59991),

Gene: Eyre\_32 Start: 25507, Stop: 25208, Start Num: 22

Candidate Starts for Eyre\_32:

(Start: 22 @25507 has 39 MA's), (Start: 24 @25495 has 3 MA's), (28, 25477), (30, 25471), (31, 25468), (34, 25456), (35, 25444), (37, 25411), (38, 25408), (42, 25363), (43, 25315),

Gene: Float294\_78 Start: 58928, Stop: 58614, Start Num: 17

Candidate Starts for Float294\_78:

(Start: 17 @58928 has 7 MA's), (25, 58883), (44, 58721),

Gene: Frickyeah\_43 Start: 29647, Stop: 29330, Start Num: 22

Candidate Starts for Frickyeah\_43:

(1, 30313), (2, 30310), (3, 30286), (4, 30274), (5, 30232), (6, 30226), (7, 30034), (10, 29869), (11, 29860), (12, 29836), (Start: 22 @29647 has 39 MA's), (Start: 24 @29635 has 3 MA's), (30, 29611), (31, 29608), (34, 29596), (35, 29584), (37, 29551), (38, 29548), (41, 29530), (42, 29506), (43, 29458),

(44, 29452),

Gene: Getalong\_44 Start: 32367, Stop: 32050, Start Num: 22

Candidate Starts for Getalong\_44:

(21, 32370), (Start: 22 @32367 has 39 MA's), (Start: 24 @32355 has 3 MA's), (30, 32331), (31, 32328), (34, 32316), (35, 32304), (37, 32271), (38, 32268), (41, 32250), (42, 32226), (43, 32178), (44, 32172),

Gene: Guacamole\_35 Start: 30431, Stop: 30090, Start Num: 17

Candidate Starts for Guacamole\_35:

(Start: 17 @30431 has 7 MA's), (Start: 22 @30398 has 39 MA's), (Start: 24 @30386 has 3 MA's), (30, 30362), (31, 30359), (34, 30347), (35, 30335), (37, 30302), (38, 30299), (41, 30278), (42, 30254), (43, 30206), (44, 30200),

Gene: Hans\_13 Start: 6198, Stop: 6524, Start Num: 22

Candidate Starts for Hans\_13:

(Start: 22 @6198 has 39 MA's), (38, 6291), (39, 6297), (42, 6333), (44, 6390),

Gene: Hedwig\_35 Start: 28932, Stop: 28639, Start Num: 22

Candidate Starts for Hedwig\_35:

(Start: 22 @28932 has 39 MA's), (Start: 24 @28920 has 3 MA's), (30, 28896), (31, 28893), (34, 28881), (37, 28839), (38, 28836), (39, 28830), (41, 28818), (42, 28794), (44, 28737),

Gene: Hitter\_38 Start: 30165, Stop: 29812, Start Num: 17

Candidate Starts for Hitter\_38:

(Start: 17 @30165 has 7 MA's), (Start: 22 @30132 has 39 MA's), (Start: 24 @30120 has 3 MA's), (30, 30096), (31, 30093), (34, 30081), (35, 30069), (37, 30036), (38, 30033), (41, 30012), (42, 29988), (43, 29940), (44, 29934),

Gene: Holliday\_42 Start: 30222, Stop: 29905, Start Num: 22

Candidate Starts for Holliday\_42:

(1, 30888), (2, 30885), (3, 30861), (4, 30849), (5, 30807), (6, 30801), (7, 30609), (10, 30444), (11, 30435), (12, 30411), (Start: 22 @30222 has 39 MA's), (Start: 24 @30210 has 3 MA's), (30, 30186), (31, 30183), (34, 30171), (35, 30159), (37, 30126), (38, 30123), (41, 30105), (42, 30081), (43, 30033), (44, 30027),

Gene: Inspectinfecti\_12 Start: 6720, Stop: 7040, Start Num: 22

Candidate Starts for Inspectinfecti\_12:

(Start: 22 @6720 has 39 MA's), (38, 6810), (39, 6816), (42, 6852), (44, 6909),

Gene: JasperJr\_35 Start: 30398, Stop: 30090, Start Num: 22

Candidate Starts for JasperJr\_35:

(Start: 17 @30431 has 7 MA's), (Start: 22 @30398 has 39 MA's), (Start: 24 @30386 has 3 MA's), (30, 30362), (31, 30359), (34, 30347), (35, 30335), (37, 30302), (38, 30299), (41, 30278), (42, 30254), (43, 30206), (44, 30200),

Gene: Kamaru\_38 Start: 29300, Stop: 28986, Start Num: 22

Candidate Starts for Kamaru\_38:

(20, 29312), (21, 29303), (Start: 22 @29300 has 39 MA's), (Start: 24 @29288 has 3 MA's), (30, 29264), (31, 29261), (34, 29249), (37, 29204), (38, 29201), (41, 29183), (42, 29159), (43, 29111), (44, 29105),

Gene: Kenna\_42 Start: 30558, Stop: 30241, Start Num: 22



Candidate Starts for Kenna\_42:

(1, 31224), (2, 31221), (3, 31197), (4, 31185), (5, 31143), (6, 31137), (7, 30945), (10, 30780), (11, 30771), (12, 30747), (Start: 22 @30558 has 39 MA's), (Start: 24 @30546 has 3 MA's), (30, 30522), (31, 30519), (34, 30507), (35, 30495), (37, 30462), (38, 30459), (41, 30441), (42, 30417), (43, 30369), (44, 30363),

Gene: Leonard\_11 Start: 6315, Stop: 6635, Start Num: 22

Candidate Starts for Leonard\_11:

(Start: 22 @6315 has 39 MA's), (38, 6405), (39, 6411), (42, 6447), (44, 6504),

Gene: Linetti\_77 Start: 61689, Stop: 61372, Start Num: 18

Candidate Starts for Linetti\_77:

(Start: 18 @61689 has 3 MA's), (44, 61476),

Gene: LitninMcQueen\_37 Start: 29049, Stop: 28729, Start Num: 22

Candidate Starts for LitninMcQueen\_37:

(20, 29061), (21, 29052), (Start: 22 @29049 has 39 MA's), (Start: 24 @29037 has 3 MA's), (30, 29013), (31, 29010), (34, 28998), (37, 28953), (38, 28950), (41, 28932), (42, 28908), (43, 28860), (44, 28854),

Gene: LittleMunchkin\_81 Start: 61979, Stop: 61644, Start Num: 16

Candidate Starts for LittleMunchkin\_81:

(Start: 16 @61979 has 6 MA's), (26, 61922), (37, 61856), (43, 61760), (44, 61754),

Gene: Lutum\_43 Start: 30558, Stop: 30241, Start Num: 22

Candidate Starts for Lutum\_43:

(1, 31224), (2, 31221), (3, 31197), (4, 31185), (5, 31143), (6, 31137), (7, 30945), (10, 30780), (11, 30771), (12, 30747), (Start: 22 @30558 has 39 MA's), (Start: 24 @30546 has 3 MA's), (30, 30522), (31, 30519), (34, 30507), (35, 30495), (37, 30462), (38, 30459), (41, 30441), (42, 30417), (43, 30369), (44, 30363),

Gene: MelBins\_11 Start: 6093, Stop: 6413, Start Num: 22

Candidate Starts for MelBins\_11:

(13, 6012), (Start: 22 @6093 has 39 MA's), (38, 6183), (39, 6189), (42, 6225), (44, 6282),

Gene: Melba\_36 Start: 30375, Stop: 30085, Start Num: 22

Candidate Starts for Melba\_36:

(Start: 17 @30408 has 7 MA's), (Start: 22 @30375 has 39 MA's), (Start: 24 @30363 has 3 MA's), (27, 30351), (30, 30339), (31, 30336), (34, 30324), (35, 30312), (37, 30279), (38, 30276), (41, 30255), (42, 30231), (43, 30183), (44, 30177),

Gene: Mellie\_34 Start: 28646, Stop: 28332, Start Num: 22

Candidate Starts for Mellie\_34:

(Start: 17 @28679 has 7 MA's), (Start: 22 @28646 has 39 MA's), (Start: 24 @28634 has 3 MA's), (30, 28610), (31, 28607), (34, 28595), (35, 28583), (37, 28550), (38, 28547), (41, 28529), (42, 28505), (43, 28457), (44, 28451),

Gene: MintFen\_37 Start: 30482, Stop: 30147, Start Num: 17

Candidate Starts for MintFen\_37:

(Start: 17 @30482 has 7 MA's), (Start: 22 @30449 has 39 MA's), (Start: 24 @30437 has 3 MA's), (30, 30413), (31, 30410), (34, 30398), (35, 30386), (37, 30353), (38, 30350), (41, 30329), (42, 30305), (43, 30257), (44, 30251),

Gene: Natkenzie\_9 Start: 5353, Stop: 5655, Start Num: 22  
Candidate Starts for Natkenzie\_9:  
(Start: 22 @5353 has 39 MA's), (38, 5443), (42, 5485), (43, 5533), (44, 5539),

Gene: Obliviate\_33 Start: 28822, Stop: 28514, Start Num: 22  
Candidate Starts for Obliviate\_33:  
(Start: 17 @28855 has 7 MA's), (Start: 22 @28822 has 39 MA's), (Start: 24 @28810 has 3 MA's), (30, 28786), (31, 28783), (34, 28771), (35, 28759), (37, 28726), (38, 28723), (41, 28702), (42, 28678), (43, 28630), (44, 28624),

Gene: Patio\_78 Start: 57925, Stop: 57620, Start Num: 17  
Candidate Starts for Patio\_78:  
(Start: 17 @57925 has 7 MA's), (29, 57865), (44, 57727),

Gene: Periwinkle\_46 Start: 32013, Stop: 31696, Start Num: 22  
Candidate Starts for Periwinkle\_46:  
(20, 32025), (21, 32016), (Start: 22 @32013 has 39 MA's), (Start: 24 @32001 has 3 MA's), (30, 31977), (31, 31974), (37, 31917), (38, 31914), (42, 31872), (43, 31824), (44, 31818),

Gene: Phabuloso\_40 Start: 30274, Stop: 29954, Start Num: 22  
Candidate Starts for Phabuloso\_40:  
(1, 30940), (2, 30937), (3, 30913), (4, 30901), (7, 30661), (10, 30496), (11, 30487), (12, 30463), (Start: 22 @30274 has 39 MA's), (Start: 24 @30262 has 3 MA's), (30, 30238), (31, 30235), (34, 30223), (36, 30193), (37, 30178), (38, 30175), (42, 30133), (43, 30085), (44, 30079),

Gene: Phauci\_4 Start: 2839, Stop: 3165, Start Num: 22  
Candidate Starts for Phauci\_4:  
(Start: 22 @2839 has 39 MA's), (38, 2932), (39, 2938), (42, 2974), (44, 3031),

Gene: Phinally\_11 Start: 6312, Stop: 6632, Start Num: 22  
Candidate Starts for Phinally\_11:  
(Start: 22 @6312 has 39 MA's), (38, 6402), (39, 6408), (42, 6444), (44, 6501),

Gene: Phistory\_43 Start: 30909, Stop: 30592, Start Num: 22  
Candidate Starts for Phistory\_43:  
(1, 31575), (2, 31572), (3, 31548), (4, 31536), (5, 31494), (6, 31488), (7, 31296), (10, 31131), (11, 31122), (12, 31098), (Start: 22 @30909 has 39 MA's), (Start: 24 @30897 has 3 MA's), (30, 30873), (31, 30870), (34, 30858), (35, 30846), (37, 30813), (38, 30810), (41, 30792), (42, 30768), (43, 30720), (44, 30714),

Gene: PhrostedPhlake\_40 Start: 30630, Stop: 30334, Start Num: 22  
Candidate Starts for PhrostedPhlake\_40:  
(Start: 17 @30663 has 7 MA's), (Start: 22 @30630 has 39 MA's), (Start: 24 @30618 has 3 MA's), (30, 30594), (31, 30591), (34, 30579), (35, 30567), (37, 30534), (38, 30531), (41, 30510), (42, 30486), (43, 30438), (44, 30432),

Gene: PierreThree\_76 Start: 61166, Stop: 60849, Start Num: 18  
Candidate Starts for PierreThree\_76:  
(Start: 18 @61166 has 3 MA's), (44, 60953),

Gene: Pupper\_204 Start: 140080, Stop: 140403, Start Num: 19  
Candidate Starts for Pupper\_204:  
(Start: 19 @140080 has 3 MA's), (43, 140284), (44, 140290),

Gene: RayTheFireFly\_41 Start: 30859, Stop: 30572, Start Num: 22

Candidate Starts for RayTheFireFly\_41:

(20, 30871), (Start: 22 @30859 has 39 MA's), (Start: 24 @30847 has 3 MA's), (30, 30823), (31, 30820), (34, 30808), (35, 30796), (37, 30763), (38, 30760), (40, 30742), (42, 30718), (43, 30670),

Gene: SCentae\_203 Start: 140271, Stop: 140594, Start Num: 19

Candidate Starts for SCentae\_203:

(Start: 19 @140271 has 3 MA's), (43, 140475), (44, 140481),

Gene: Sampson\_9 Start: 5298, Stop: 5600, Start Num: 22

Candidate Starts for Sampson\_9:

(Start: 22 @5298 has 39 MA's), (38, 5388), (42, 5430), (43, 5478), (44, 5484),

Gene: Scioto\_9 Start: 5353, Stop: 5655, Start Num: 22

Candidate Starts for Scioto\_9:

(Start: 22 @5353 has 39 MA's), (38, 5443), (42, 5485), (43, 5533), (44, 5539),

Gene: Sisko\_81 Start: 60938, Stop: 60591, Start Num: 16

Candidate Starts for Sisko\_81:

(Start: 16 @60938 has 6 MA's), (26, 60881), (37, 60815), (43, 60719), (44, 60713),

Gene: Skog\_33 Start: 15580, Stop: 15906, Start Num: 19

Candidate Starts for Skog\_33:

(Start: 19 @15580 has 3 MA's), (43, 15784), (44, 15790),

Gene: Skysand\_80 Start: 58588, Stop: 58283, Start Num: 17

Candidate Starts for Skysand\_80:

(Start: 17 @58588 has 7 MA's), (29, 58528), (44, 58390),

Gene: Tardus\_10 Start: 4552, Stop: 4857, Start Num: 22

Candidate Starts for Tardus\_10:

(Start: 22 @4552 has 39 MA's), (38, 4645), (42, 4687), (43, 4735), (44, 4741),

Gene: UmaThurman\_32 Start: 29419, Stop: 29123, Start Num: 24

Candidate Starts for UmaThurman\_32:

(Start: 17 @29464 has 7 MA's), (Start: 22 @29431 has 39 MA's), (Start: 24 @29419 has 3 MA's), (30, 29395), (31, 29392), (34, 29380), (35, 29368), (37, 29335), (38, 29332), (41, 29311), (42, 29287), (43, 29239), (44, 29233),

Gene: ViaConlectus\_9 Start: 5353, Stop: 5655, Start Num: 22

Candidate Starts for ViaConlectus\_9:

(Start: 22 @5353 has 39 MA's), (38, 5443), (42, 5485), (43, 5533), (44, 5539),

Gene: Walrus\_37 Start: 30012, Stop: 29710, Start Num: 24

Candidate Starts for Walrus\_37:

(Start: 17 @30057 has 7 MA's), (Start: 22 @30024 has 39 MA's), (Start: 24 @30012 has 3 MA's), (27, 30000), (30, 29988), (31, 29985), (35, 29961), (37, 29928), (38, 29925), (41, 29907), (42, 29883), (43, 29835), (44, 29829),

Gene: Whitney\_45 Start: 33551, Stop: 33234, Start Num: 22

Candidate Starts for Whitney\_45:

(20, 33563), (21, 33554), (Start: 22 @33551 has 39 MA's), (Start: 24 @33539 has 3 MA's), (30, 33515), (31, 33512), (37, 33455), (38, 33452), (41, 33434), (42, 33410), (43, 33362), (44, 33356),

Gene: Yago84\_80 Start: 60646, Stop: 60299, Start Num: 16

Candidate Starts for Yago84\_80:

(Start: 16 @60646 has 6 MA's), (26, 60589), (37, 60523), (43, 60427), (44, 60421),

Gene: Zarbodnamra\_36 Start: 29888, Stop: 29547, Start Num: 17

Candidate Starts for Zarbodnamra\_36:

(Start: 17 @29888 has 7 MA's), (Start: 22 @29855 has 39 MA's), (Start: 24 @29843 has 3 MA's), (27, 29831), (30, 29819), (31, 29816), (34, 29804), (35, 29792), (37, 29759), (38, 29756), (42, 29711), (43, 29663), (44, 29657),

Gene: Zitch\_10 Start: 5089, Stop: 5394, Start Num: 22

Candidate Starts for Zitch\_10:

(14, 5026), (15, 5044), (Start: 22 @5089 has 39 MA's), (38, 5182), (42, 5224), (43, 5272), (44, 5278),