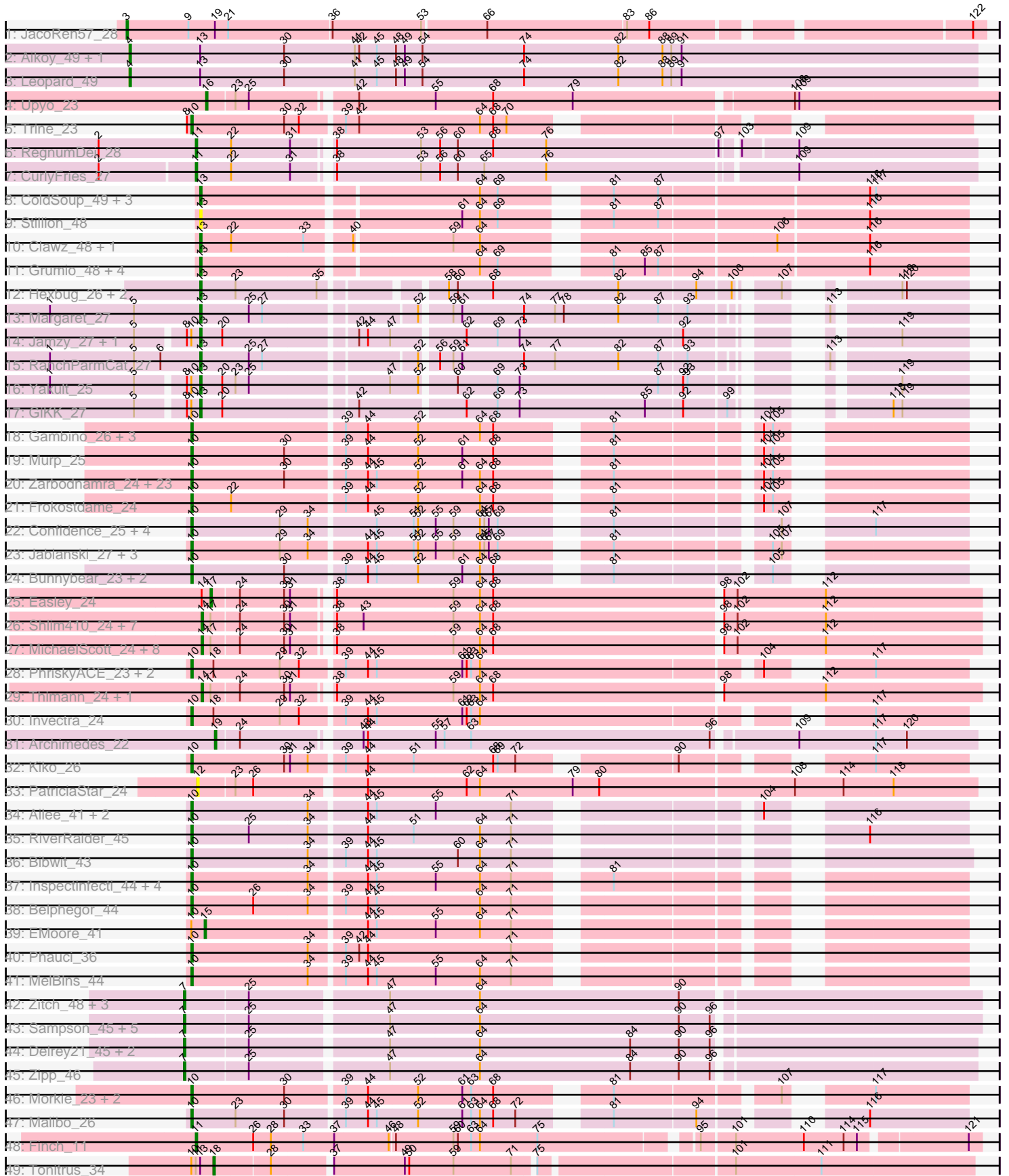


Pham 311350



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 311350 Report

This analysis was run 06/27/26 on database version 652.

Pham number 311350 has 132 members, 12 are drafts.

Phages represented in each track:

- Track 1 : JacoRen57\_28
- Track 2 : Aikoy\_49, Onyinye\_50
- Track 3 : Leopard\_49
- Track 4 : Upyo\_23
- Track 5 : Trine\_23
- Track 6 : RegnumDei\_28
- Track 7 : CurlyFries\_27
- Track 8 : ColdSoup\_49, Jollymon\_48, Purplicious\_47, Amo99\_49
- Track 9 : Stillion\_48
- Track 10 : Clawz\_48, Makar\_49
- Track 11 : Grumio\_48, Sting\_47, DonTron\_48, Soos\_44, KingstonB\_46
- Track 12 : Hexbug\_26, Nodigi\_26, Orla\_26
- Track 13 : Margaret\_27
- Track 14 : Jamzy\_27, Button\_25
- Track 15 : RanchParmCat\_27
- Track 16 : Yakult\_25
- Track 17 : GiKK\_27
- Track 18 : Gambino\_26, Blueberry\_26, MissRona\_26, Azula\_26
- Track 19 : Murp\_25
- Track 20 : Zarbodnamra\_24, Malachai\_25, Jalammah\_26, Zilla\_24, Wisp\_23, Mellie\_23, UmaThurman\_24, JasperJr\_24, PhrostedPhlake\_26, Archis\_25, Samba\_24, BlingBling\_24, Utz\_24, Begonia\_25, Guacamole\_24, Lysidious\_25, CaptainKirk2\_24, Delian\_24, Fenry\_23, Melba\_24, Hitter\_24, Barco\_24, MintFen\_24, Walrus\_26
- Track 21 : Frokostdame\_24
- Track 22 : Confidence\_25, Cashline\_25, BeeGee\_25, ODay\_31, Denise\_21
- Track 23 : Jablanski\_27, Posh\_27, Pytheas\_27, Wrigley\_27
- Track 24 : Bunnybear\_23, Pipp\_24, CheeseSpider\_28
- Track 25 : Easley\_24
- Track 26 : Shlim410\_24, Sekhmet\_24, Adora\_24, Annalisa\_24, Hortense\_24, Twinkle\_24, Howe\_24, Beenie\_24
- Track 27 : MichaelScott\_24, Dolores\_24, Rizz\_27, DobbysSock\_23, WinkNick\_24, Samman98\_24, Oregano\_24, Mcklovin\_24, Clark\_24
- Track 28 : PhriskyACE\_23, Tuti\_24, Dorito\_23
- Track 29 : Thimann\_24, Suerte\_22
- Track 30 : Invectra\_24
- Track 31 : Archimedes\_22

- Track 32 : Kiko\_26
- Track 33 : PatriciaStar\_24
- Track 34 : Ailee\_41, Keitabear\_44, Sedona\_44
- Track 35 : RiverRaider\_45
- Track 36 : Bibwit\_43
- Track 37 : Inspectinfecti\_44, Phinally\_43, Leonard\_43, Hans\_45, Ali17\_41
- Track 38 : Belphegor\_44
- Track 39 : EMOore\_41
- Track 40 : Phauci\_36
- Track 41 : MelBins\_44
- Track 42 : Zitch\_48, APunk\_46, Pumpkiney\_46, BigHunkinEater\_48
- Track 43 : Sampson\_45, Scioto\_46, ViaConlectus\_45, Abblin\_45, Tardus\_46, Natkenzie\_45
- Track 44 : Delrey21\_45, DoctorFroggo\_45, Verity\_45
- Track 45 : Zipp\_46
- Track 46 : Morkie\_23, PhorbessPhlower\_23, InLimbo\_24
- Track 47 : Malibo\_26
- Track 48 : Finch\_11
- Track 49 : Tonitrus\_34

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

The start number called the most often in the published annotations is 10, it was called in 62 of the 120 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Ailee\_41, Ali17\_41, Archis\_25, Azula\_26, Barco\_24, BeeGee\_25, Begonia\_25, Belphegor\_44, Bibwit\_43, BlingBling\_24, Blueberry\_26, Bunnybear\_23, CaptainKirk2\_24, Cashline\_25, CheeseSpider\_28, Confidence\_25, Delian\_24, Denise\_21, Dorito\_23, Fenry\_23, Frokostdame\_24, Gambino\_26, Guacamole\_24, Hans\_45, Hitter\_24, InLimbo\_24, Inspectinfecti\_44, Invectra\_24, Jablanski\_27, Jalammah\_26, JasperJr\_24, Keitabear\_44, Kiko\_26, Leonard\_43, Lysidious\_25, Malachai\_25, Malibo\_26, MelBins\_44, Melba\_24, Mellie\_23, MintFen\_24, MissRona\_26, Morkie\_23, Murp\_25, ODay\_31, Phauci\_36, Phinally\_43, PhorbessPhlower\_23, PhriskyACE\_23, PhrostedPhlake\_26, Pipp\_24, Posh\_27, Pytheas\_27, RiverRaider\_45, Samba\_24, Sedona\_44, Trine\_23, Tuti\_24, UmaThurman\_24, Utz\_24, Walrus\_26, Wisp\_23, Wrigley\_27, Zarbodnamra\_24, Zilla\_24,

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

- Button\_25, EMOore\_41, GiKK\_27, Jamzy\_27, Tonitrus\_34, Yakult\_25,

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

- APunk\_46, Abblin\_45, Adora\_24, Aikoy\_49, Amo99\_49, Annalisa\_24, Archimedes\_22, Beenie\_24, BigHunkinEater\_48, Clark\_24, Clawz\_48, ColdSoup\_49, CurlyFries\_27, Delrey21\_45, DobbysSock\_23, DoctorFroggo\_45, Dolores\_24, DonTron\_48, Easley\_24, Finch\_11, Grumio\_48, Hexbug\_26, Hortense\_24, Howe\_24, JacoRen57\_28, Jollymon\_48, KingstonB\_46, Leopard\_49, Makar\_49, Margaret\_27, Mcklovin\_24, MichaelScott\_24, Natkenzie\_45, Nodigi\_26, Onyinye\_50, Oregano\_24, Orla\_26, PatriciaStar\_24, Pumpkiney\_46, Purplicious\_47, RanchParmCat\_27,

RegnumDei\_28, Rizz\_27, Samman98\_24, Sampson\_45, Scioto\_46, Sekhmet\_24, Shlim410\_24, Soos\_44, Stillion\_48, Sting\_47, Suerte\_22, Tardus\_46, Thimann\_24, Twinkle\_24, Upyo\_23, Verity\_45, ViaConlectus\_45, WinkNick\_24, Zipp\_46, Zitch\_48,

### Summary by start number:

#### Start 3:

- Found in 1 of 132 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 120
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JacoRen57\_28 (AB),

#### Start 4:

- Found in 3 of 132 ( 2.3% ) of genes in pham
- Manual Annotations of this start: 3 of 120
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aikoy\_49 (AE), Leopard\_49 (AE), Onyinye\_50 (AE),

#### Start 7:

- Found in 14 of 132 ( 10.6% ) of genes in pham
- Manual Annotations of this start: 13 of 120
- Called 100.0% of time when present
- Phage (with cluster) where this start called: APunk\_46 (DE4), Abblin\_45 (DE4), BigHunkinEater\_48 (DE4), Delrey21\_45 (DE4), DoctorFroggo\_45 (DE4), Natkenzie\_45 (DE4), Pumpkiney\_46 (DE4), Sampson\_45 (DE4), Scioto\_46 (DE4), Tardus\_46 (DE4), Verity\_45 (DE4), ViaConlectus\_45 (DE4), Zipp\_46 (DE4), Zitch\_48 (DE4),

#### Start 10:

- Found in 71 of 132 ( 53.8% ) of genes in pham
- Manual Annotations of this start: 62 of 120
- Called 91.5% of time when present
- Phage (with cluster) where this start called: Ailee\_41 (DE1), Ali17\_41 (DE2), Archis\_25 (CV), Azula\_26 (CV), Barco\_24 (CV), BeeGee\_25 (CY5), Begonia\_25 (CV), Belphegor\_44 (DE2), Bibwit\_43 (DE1), BlingBling\_24 (CV), Blueberry\_26 (CV), Bunnybear\_23 (CZ), CaptainKirk2\_24 (CV), Cashline\_25 (CY6), CheeseSpider\_28 (CV), Confidence\_25 (CY1), Delian\_24 (CV), Denise\_21 (CZ5), Dorito\_23 (CZ4), Ferry\_23 (CV), Frokostdame\_24 (CV), Gambino\_26 (CV), Guacamole\_24 (CV), Hans\_45 (DE2), Hitter\_24 (CV), InLimbo\_24 (DH), Inspectinfecti\_44 (DE2), Invectra\_24 (CZ4), Jablanski\_27 (CY3), Jalammah\_26 (CV), JasperJr\_24 (CV), Keitabear\_44 (DE1), Kiko\_26 (DB), Leonard\_43 (DE2), Lysidious\_25 (CV), Malachai\_25 (CV), Malibo\_26 (DW), MelBins\_44 (DE2), Melba\_24 (CV), Mellie\_23 (CV), MintFen\_24 (CV), MissRona\_26 (CV), Morkie\_23 (DH), Murp\_25 (CV), ODay\_31 (DN), Phauci\_36 (DE2), Phinally\_43 (DE2), PhorbesPhlower\_23 (DH), PhriskyACE\_23 (CZ4), PhrostedPhlake\_26 (CV), Pipp\_24 (CV), Posh\_27 (CY4), Pytheas\_27 (CY3), RiverRaider\_45 (DE1), Samba\_24 (CV), Sedona\_44 (DE1), Trine\_23 (CD), Tuti\_24 (CZ4), UmaThurman\_24 (CV), Utz\_24 (CV), Walrus\_26 (CV), Wisp\_23 (CV), Wrigley\_27 (CY4), Zarbodnamra\_24 (CV), Zilla\_24 (CV),

#### Start 11:

- Found in 4 of 132 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 3 of 120

- Called 75.0% of time when present
- Phage (with cluster) where this start called: CurlyFries\_27 (CF), Finch\_11 (singleton), RegnumDei\_28 (CF),

#### Start 12:

- Found in 1 of 132 ( 0.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: PatriciaStar\_24 (DB),

#### Start 13:

- Found in 25 of 132 ( 18.9% ) of genes in pham
- Manual Annotations of this start: 15 of 120
- Called 84.0% of time when present
- Phage (with cluster) where this start called: Amo99\_49 (CP), Button\_25 (CT), Clawz\_48 (CP), ColdSoup\_49 (CP), DonTron\_48 (CP), GiKK\_27 (CT), Grumio\_48 (CP), Hexbug\_26 (CT), Jamzy\_27 (CT), Jollymon\_48 (CP), KingstonB\_46 (CP), Makar\_49 (CP), Margaret\_27 (CT), Nodigi\_26 (CT), Orla\_26 (CT), Purplicious\_47 (CP), RanchParmCat\_27 (CT), Soos\_44 (CP), Stillion\_48 (CP), Sting\_47 (CP), Yakult\_25 (CT),

#### Start 14:

- Found in 20 of 132 ( 15.2% ) of genes in pham
- Manual Annotations of this start: 18 of 120
- Called 95.0% of time when present
- Phage (with cluster) where this start called: Adora\_24 (CZ4), Annalisa\_24 (CZ4), Beenie\_24 (CZ4), Clark\_24 (CZ4), DobbysSock\_23 (CZ4), Dolores\_24 (CZ4), Hortense\_24 (CZ4), Howe\_24 (CZ4), Mcklovin\_24 (CZ4), MichaelScott\_24 (CZ4), Oregano\_24 (CZ4), Rizz\_27 (CZ4), Samman98\_24 (CZ4), Sekhmet\_24 (CZ4), Shlim410\_24 (CZ4), Suerte\_22 (CZ4), Thimann\_24 (CZ4), Twinkle\_24 (CZ4), WinkNick\_24 (CZ4),

#### Start 15:

- Found in 1 of 132 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 120
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EMoore\_41 (DE2),

#### Start 16:

- Found in 1 of 132 ( 0.8% ) of genes in pham
- Manual Annotations of this start: 1 of 120
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Upyo\_23 (CD),

#### Start 17:

- Found in 20 of 132 ( 15.2% ) of genes in pham
- Manual Annotations of this start: 1 of 120
- Called 5.0% of time when present
- Phage (with cluster) where this start called: Easley\_24 (CZ4),

#### Start 18:

- Found in 5 of 132 ( 3.8% ) of genes in pham
- Manual Annotations of this start: 1 of 120

- Called 20.0% of time when present
- Phage (with cluster) where this start called: Tonitrus\_34 (singleton),

Start 19:

- Found in 2 of 132 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 120
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Archimedes\_22 (DA),

### **Summary by clusters:**

There are 24 clusters represented in this pham: DN, singleton, DH, DB, CZ4, DA, DW, CZ5, CY3, CY1, AB, AE, CY6, CY5, CY4, CF, CD, CZ, CP, CV, CT, DE1, DE2, DE4,

Info for manual annotations of cluster AB:

- Start number 3 was manually annotated 1 time for cluster AB.

Info for manual annotations of cluster AE:

- Start number 4 was manually annotated 3 times for cluster AE.

Info for manual annotations of cluster CD:

- Start number 10 was manually annotated 1 time for cluster CD.
- Start number 16 was manually annotated 1 time for cluster CD.

Info for manual annotations of cluster CF:

- Start number 11 was manually annotated 2 times for cluster CF.

Info for manual annotations of cluster CP:

- Start number 13 was manually annotated 6 times for cluster CP.

Info for manual annotations of cluster CT:

- Start number 13 was manually annotated 9 times for cluster CT.

Info for manual annotations of cluster CV:

- Start number 10 was manually annotated 30 times for cluster CV.

Info for manual annotations of cluster CY1:

- Start number 10 was manually annotated 1 time for cluster CY1.

Info for manual annotations of cluster CY3:

- Start number 10 was manually annotated 2 times for cluster CY3.

Info for manual annotations of cluster CY4:

- Start number 10 was manually annotated 2 times for cluster CY4.

Info for manual annotations of cluster CY5:

- Start number 10 was manually annotated 1 time for cluster CY5.

Info for manual annotations of cluster CY6:

- Start number 10 was manually annotated 1 time for cluster CY6.

Info for manual annotations of cluster CZ:

- Start number 10 was manually annotated 1 time for cluster CZ.

Info for manual annotations of cluster CZ4:

- Start number 10 was manually annotated 4 times for cluster CZ4.
- Start number 14 was manually annotated 18 times for cluster CZ4.
- Start number 17 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster CZ5:

- Start number 10 was manually annotated 1 time for cluster CZ5.

Info for manual annotations of cluster DA:

- Start number 19 was manually annotated 1 time for cluster DA.

Info for manual annotations of cluster DB:

- Start number 10 was manually annotated 1 time for cluster DB.

Info for manual annotations of cluster DE1:

- Start number 10 was manually annotated 5 times for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 10 was manually annotated 8 times for cluster DE2.
- Start number 15 was manually annotated 1 time for cluster DE2.

Info for manual annotations of cluster DE4:

- Start number 7 was manually annotated 13 times for cluster DE4.

Info for manual annotations of cluster DH:

- Start number 10 was manually annotated 2 times for cluster DH.

Info for manual annotations of cluster DN:

- Start number 10 was manually annotated 1 time for cluster DN.

Info for manual annotations of cluster DW:

- Start number 10 was manually annotated 1 time for cluster DW.

**Gene Information:**

Gene: APunk\_46 Start: 39623, Stop: 40141, Start Num: 7

Candidate Starts for APunk\_46:

(Start: 7 @39623 has 13 MA's), (25, 39665), (47, 39752), (64, 39812), (90, 39947),

Gene: Abblin\_45 Start: 40160, Stop: 40678, Start Num: 7

Candidate Starts for Abblin\_45:

(Start: 7 @40160 has 13 MA's), (25, 40202), (47, 40289), (64, 40349), (90, 40484), (96, 40505),

Gene: Adora\_24 Start: 21281, Stop: 21787, Start Num: 14

Candidate Starts for Adora\_24:

(Start: 14 @21281 has 18 MA's), (Start: 17 @21287 has 1 MA's), (24, 21305), (30, 21335), (31, 21338), (38, 21359), (43, 21377), (59, 21437), (64, 21455), (68, 21464), (98, 21614), (102, 21623), (112, 21683),

Gene: Aikoy\_49 Start: 37935, Stop: 38507, Start Num: 4

Candidate Starts for Aikoy\_49:

(Start: 4 @37935 has 3 MA's), (Start: 13 @37983 has 15 MA's), (30, 38040), (41, 38088), (42, 38091), (45, 38103), (48, 38115), (49, 38121), (54, 38133), (74, 38202), (82, 38265), (88, 38295), (89, 38301), (91, 38307),

Gene: Ailee\_41 Start: 38585, Stop: 39043, Start Num: 10

Candidate Starts for Ailee\_41:

(Start: 10 @38585 has 62 MA's), (34, 38663), (44, 38699), (45, 38705), (55, 38744), (71, 38795), (104, 38930),

Gene: Ali17\_41 Start: 37879, Stop: 38337, Start Num: 10

Candidate Starts for Ali17\_41:

(Start: 10 @37879 has 62 MA's), (34, 37957), (44, 37993), (45, 37999), (55, 38038), (64, 38068), (71, 38089), (81, 38137),

Gene: Amo99\_49 Start: 26503, Stop: 26979, Start Num: 13

Candidate Starts for Amo99\_49:

(Start: 13 @26503 has 15 MA's), (64, 26680), (69, 26692), (81, 26749), (87, 26779), (116, 26914), (117, 26917),

Gene: Annalisa\_24 Start: 20743, Stop: 21249, Start Num: 14

Candidate Starts for Annalisa\_24:

(Start: 14 @20743 has 18 MA's), (Start: 17 @20749 has 1 MA's), (24, 20767), (30, 20797), (31, 20800), (38, 20821), (43, 20839), (59, 20899), (64, 20917), (68, 20926), (98, 21076), (102, 21085), (112, 21145),

Gene: Archimedes\_22 Start: 19353, Stop: 19844, Start Num: 19

Candidate Starts for Archimedes\_22:

(Start: 19 @19353 has 1 MA's), (24, 19368), (43, 19440), (44, 19443), (55, 19488), (57, 19494), (63, 19512), (96, 19674), (109, 19725), (117, 19776), (120, 19797),

Gene: Archis\_25 Start: 20911, Stop: 21369, Start Num: 10

Candidate Starts for Archis\_25:

(Start: 10 @20911 has 62 MA's), (30, 20974), (39, 21010), (44, 21025), (45, 21031), (52, 21058), (61, 21088), (64, 21100), (68, 21109), (81, 21169), (104, 21256), (105, 21262),

Gene: Azula\_26 Start: 21012, Stop: 21470, Start Num: 10

Candidate Starts for Azula\_26:

(Start: 10 @21012 has 62 MA's), (39, 21111), (44, 21126), (52, 21159), (64, 21201), (68, 21210), (81, 21270), (104, 21357), (105, 21363),

Gene: Barco\_24 Start: 20700, Stop: 21158, Start Num: 10

Candidate Starts for Barco\_24:

(Start: 10 @20700 has 62 MA's), (30, 20763), (39, 20799), (44, 20814), (45, 20820), (52, 20847), (61, 20877), (64, 20889), (68, 20898), (81, 20958), (104, 21045), (105, 21051),

Gene: BeeGee\_25 Start: 21331, Stop: 21789, Start Num: 10

Candidate Starts for BeeGee\_25:

(Start: 10 @21331 has 62 MA's), (29, 21391), (34, 21409), (45, 21451), (51, 21475), (52, 21478), (55, 21490), (59, 21502), (64, 21520), (65, 21523), (67, 21526), (69, 21532), (81, 21589), (107, 21688), (117, 21727),

Gene: Beenie\_24 Start: 21100, Stop: 21606, Start Num: 14

Candidate Starts for Beenie\_24:

(Start: 14 @21100 has 18 MA's), (Start: 17 @21106 has 1 MA's), (24, 21124), (30, 21154), (31, 21157), (38, 21178), (43, 21196), (59, 21256), (64, 21274), (68, 21283), (98, 21433), (102, 21442), (112, 21502),

Gene: Begonia\_25 Start: 21181, Stop: 21639, Start Num: 10

Candidate Starts for Begonia\_25:

(Start: 10 @21181 has 62 MA's), (30, 21244), (39, 21280), (44, 21295), (45, 21301), (52, 21328), (61, 21358), (64, 21370), (68, 21379), (81, 21439), (104, 21526), (105, 21532),

Gene: Belphegor\_44 Start: 39930, Stop: 40388, Start Num: 10

Candidate Starts for Belphegor\_44:

(Start: 10 @39930 has 62 MA's), (26, 39972), (34, 40008), (39, 40029), (44, 40044), (45, 40050), (64, 40119), (71, 40140),

Gene: Bibwit\_43 Start: 38519, Stop: 38980, Start Num: 10

Candidate Starts for Bibwit\_43:

(Start: 10 @38519 has 62 MA's), (34, 38597), (39, 38618), (44, 38633), (45, 38639), (60, 38693), (64, 38708), (71, 38729),

Gene: BigHunkinEater\_48 Start: 39401, Stop: 39919, Start Num: 7

Candidate Starts for BigHunkinEater\_48:

(Start: 7 @39401 has 13 MA's), (25, 39443), (47, 39530), (64, 39590), (90, 39725),

Gene: BlingBling\_24 Start: 20700, Stop: 21158, Start Num: 10

Candidate Starts for BlingBling\_24:

(Start: 10 @20700 has 62 MA's), (30, 20763), (39, 20799), (44, 20814), (45, 20820), (52, 20847), (61, 20877), (64, 20889), (68, 20898), (81, 20958), (104, 21045), (105, 21051),

Gene: Blueberry\_26 Start: 21012, Stop: 21470, Start Num: 10

Candidate Starts for Blueberry\_26:

(Start: 10 @21012 has 62 MA's), (39, 21111), (44, 21126), (52, 21159), (64, 21201), (68, 21210), (81, 21270), (104, 21357), (105, 21363),

Gene: Bunnybear\_23 Start: 21777, Stop: 22235, Start Num: 10

Candidate Starts for Bunnybear\_23:

(Start: 10 @21777 has 62 MA's), (30, 21840), (39, 21876), (44, 21891), (45, 21897), (52, 21924), (61, 21954), (64, 21966), (68, 21975), (81, 22035), (105, 22128),

Gene: Button\_25 Start: 19038, Stop: 19490, Start Num: 13

Candidate Starts for Button\_25:

(5, 18999), (8, 19029), (Start: 10 @19032 has 62 MA's), (Start: 13 @19038 has 15 MA's), (20, 19053), (42, 19137), (44, 19143), (47, 19158), (62, 19203), (69, 19224), (73, 19239), (92, 19347), (119, 19446),

Gene: CaptainKirk2\_24 Start: 20721, Stop: 21179, Start Num: 10

Candidate Starts for CaptainKirk2\_24:

(Start: 10 @20721 has 62 MA's), (30, 20784), (39, 20820), (44, 20835), (45, 20841), (52, 20868), (61, 20898), (64, 20910), (68, 20919), (81, 20979), (104, 21066), (105, 21072),

Gene: Cashline\_25 Start: 21198, Stop: 21656, Start Num: 10

Candidate Starts for Cashline\_25:

(Start: 10 @21198 has 62 MA's), (29, 21258), (34, 21276), (45, 21318), (51, 21342), (52, 21345), (55, 21357), (59, 21369), (64, 21387), (65, 21390), (67, 21393), (69, 21399), (81, 21456), (107, 21555),

(117, 21594),

Gene: CheeseSpider\_28 Start: 21266, Stop: 21724, Start Num: 10

Candidate Starts for CheeseSpider\_28:

(Start: 10 @21266 has 62 MA's), (30, 21329), (39, 21365), (44, 21380), (45, 21386), (52, 21413), (61, 21443), (64, 21455), (68, 21464), (81, 21524), (105, 21617),

Gene: Clark\_24 Start: 20743, Stop: 21249, Start Num: 14

Candidate Starts for Clark\_24:

(Start: 14 @20743 has 18 MA's), (Start: 17 @20749 has 1 MA's), (24, 20767), (30, 20797), (31, 20800), (38, 20821), (59, 20899), (64, 20917), (68, 20926), (98, 21076), (102, 21085), (112, 21145),

Gene: Clawz\_48 Start: 26409, Stop: 26885, Start Num: 13

Candidate Starts for Clawz\_48:

(Start: 13 @26409 has 15 MA's), (22, 26430), (33, 26478), (40, 26505), (59, 26568), (64, 26586), (106, 26760), (116, 26820),

Gene: ColdSoup\_49 Start: 26503, Stop: 26979, Start Num: 13

Candidate Starts for ColdSoup\_49:

(Start: 13 @26503 has 15 MA's), (64, 26680), (69, 26692), (81, 26749), (87, 26779), (116, 26914), (117, 26917),

Gene: Confidence\_25 Start: 21361, Stop: 21819, Start Num: 10

Candidate Starts for Confidence\_25:

(Start: 10 @21361 has 62 MA's), (29, 21421), (34, 21439), (45, 21481), (51, 21505), (52, 21508), (55, 21520), (59, 21532), (64, 21550), (65, 21553), (67, 21556), (69, 21562), (81, 21619), (107, 21718), (117, 21757),

Gene: CurlyFries\_27 Start: 25600, Stop: 26106, Start Num: 11

Candidate Starts for CurlyFries\_27:

(2, 25537), (Start: 11 @25600 has 3 MA's), (22, 25624), (31, 25663), (38, 25684), (53, 25741), (56, 25753), (60, 25765), (65, 25783), (76, 25825), (109, 25987),

Gene: Delian\_24 Start: 20721, Stop: 21179, Start Num: 10

Candidate Starts for Delian\_24:

(Start: 10 @20721 has 62 MA's), (30, 20784), (39, 20820), (44, 20835), (45, 20841), (52, 20868), (61, 20898), (64, 20910), (68, 20919), (81, 20979), (104, 21066), (105, 21072),

Gene: Delrey21\_45 Start: 40925, Stop: 41440, Start Num: 7

Candidate Starts for Delrey21\_45:

(Start: 7 @40925 has 13 MA's), (25, 40967), (47, 41054), (64, 41114), (84, 41216), (90, 41249), (96, 41270),

Gene: Denise\_21 Start: 18426, Stop: 18884, Start Num: 10

Candidate Starts for Denise\_21:

(Start: 10 @18426 has 62 MA's), (29, 18486), (34, 18504), (45, 18546), (51, 18570), (52, 18573), (55, 18585), (59, 18597), (64, 18615), (65, 18618), (67, 18621), (69, 18627), (81, 18684), (107, 18783), (117, 18822),

Gene: DobbysSock\_23 Start: 20217, Stop: 20723, Start Num: 14

Candidate Starts for DobbysSock\_23:

(Start: 14 @20217 has 18 MA's), (Start: 17 @20223 has 1 MA's), (24, 20241), (30, 20271), (31, 20274), (38, 20295), (59, 20373), (64, 20391), (68, 20400), (98, 20550), (102, 20559), (112, 20619),

Gene: DoctorFroggo\_45 Start: 40925, Stop: 41440, Start Num: 7

Candidate Starts for DoctorFroggo\_45:

(Start: 7 @40925 has 13 MA's), (25, 40967), (47, 41054), (64, 41114), (84, 41216), (90, 41249), (96, 41270),

Gene: Dolores\_24 Start: 20719, Stop: 21225, Start Num: 14

Candidate Starts for Dolores\_24:

(Start: 14 @20719 has 18 MA's), (Start: 17 @20725 has 1 MA's), (24, 20743), (30, 20773), (31, 20776), (38, 20797), (59, 20875), (64, 20893), (68, 20902), (98, 21052), (102, 21061), (112, 21121),

Gene: DonTron\_48 Start: 26543, Stop: 27019, Start Num: 13

Candidate Starts for DonTron\_48:

(Start: 13 @26543 has 15 MA's), (64, 26720), (69, 26732), (81, 26789), (85, 26810), (87, 26819), (116, 26954),

Gene: Dorito\_23 Start: 20203, Stop: 20682, Start Num: 10

Candidate Starts for Dorito\_23:

(Start: 10 @20203 has 62 MA's), (Start: 18 @20218 has 1 MA's), (29, 20263), (32, 20275), (39, 20302), (44, 20317), (45, 20323), (61, 20380), (62, 20383), (63, 20386), (64, 20392), (104, 20569), (117, 20620),

Gene: EMoore\_41 Start: 39068, Stop: 39517, Start Num: 15

Candidate Starts for EMoore\_41:

(Start: 10 @39059 has 62 MA's), (Start: 15 @39068 has 1 MA's), (44, 39173), (45, 39179), (55, 39218), (64, 39248), (71, 39269),

Gene: Easley\_24 Start: 20735, Stop: 21235, Start Num: 17

Candidate Starts for Easley\_24:

(Start: 14 @20729 has 18 MA's), (Start: 17 @20735 has 1 MA's), (24, 20753), (30, 20783), (31, 20786), (38, 20807), (59, 20885), (64, 20903), (68, 20912), (98, 21062), (102, 21071), (112, 21131),

Gene: Fenry\_23 Start: 20419, Stop: 20877, Start Num: 10

Candidate Starts for Fenry\_23:

(Start: 10 @20419 has 62 MA's), (30, 20482), (39, 20518), (44, 20533), (45, 20539), (52, 20566), (61, 20596), (64, 20608), (68, 20617), (81, 20677), (104, 20764), (105, 20770),

Gene: Finch\_11 Start: 5519, Stop: 6019, Start Num: 11

Candidate Starts for Finch\_11:

(Start: 11 @5519 has 3 MA's), (26, 5558), (28, 5570), (33, 5591), (37, 5612), (46, 5648), (48, 5651), (59, 5690), (60, 5693), (63, 5702), (64, 5708), (75, 5747), (95, 5843), (101, 5864), (110, 5909), (114, 5936), (115, 5945), (121, 6011),

Gene: Frokostdame\_24 Start: 20666, Stop: 21124, Start Num: 10

Candidate Starts for Frokostdame\_24:

(Start: 10 @20666 has 62 MA's), (22, 20693), (39, 20765), (44, 20780), (52, 20813), (64, 20855), (68, 20864), (81, 20924), (104, 21011), (105, 21017),

Gene: Gambino\_26 Start: 21012, Stop: 21470, Start Num: 10

Candidate Starts for Gambino\_26:

(Start: 10 @21012 has 62 MA's), (39, 21111), (44, 21126), (52, 21159), (64, 21201), (68, 21210), (81, 21270), (104, 21357), (105, 21363),

Gene: GiKK\_27 Start: 19337, Stop: 19789, Start Num: 13

Candidate Starts for GiKK\_27:

(5, 19298), (8, 19328), (Start: 10 @19331 has 62 MA's), (Start: 13 @19337 has 15 MA's), (20, 19352), (42, 19436), (62, 19502), (69, 19523), (73, 19538), (85, 19622), (92, 19646), (99, 19673), (118, 19739), (119, 19745),

Gene: Grumio\_48 Start: 25981, Stop: 26457, Start Num: 13

Candidate Starts for Grumio\_48:

(Start: 13 @25981 has 15 MA's), (64, 26158), (69, 26170), (81, 26227), (85, 26248), (87, 26257), (116, 26392),

Gene: Guacamole\_24 Start: 20704, Stop: 21162, Start Num: 10

Candidate Starts for Guacamole\_24:

(Start: 10 @20704 has 62 MA's), (30, 20767), (39, 20803), (44, 20818), (45, 20824), (52, 20851), (61, 20881), (64, 20893), (68, 20902), (81, 20962), (104, 21049), (105, 21055),

Gene: Hans\_45 Start: 38519, Stop: 38977, Start Num: 10

Candidate Starts for Hans\_45:

(Start: 10 @38519 has 62 MA's), (34, 38597), (44, 38633), (45, 38639), (55, 38678), (64, 38708), (71, 38729), (81, 38777),

Gene: Hexbug\_26 Start: 20025, Stop: 20471, Start Num: 13

Candidate Starts for Hexbug\_26:

(Start: 13 @20025 has 15 MA's), (23, 20049), (35, 20103), (58, 20172), (60, 20178), (68, 20202), (82, 20286), (94, 20337), (100, 20358), (107, 20379), (119, 20427), (120, 20430),

Gene: Hitter\_24 Start: 20700, Stop: 21158, Start Num: 10

Candidate Starts for Hitter\_24:

(Start: 10 @20700 has 62 MA's), (30, 20763), (39, 20799), (44, 20814), (45, 20820), (52, 20847), (61, 20877), (64, 20889), (68, 20898), (81, 20958), (104, 21045), (105, 21051),

Gene: Hortense\_24 Start: 21328, Stop: 21834, Start Num: 14

Candidate Starts for Hortense\_24:

(Start: 14 @21328 has 18 MA's), (Start: 17 @21334 has 1 MA's), (24, 21352), (30, 21382), (31, 21385), (38, 21406), (43, 21424), (59, 21484), (64, 21502), (68, 21511), (98, 21661), (102, 21670), (112, 21730),

Gene: Howe\_24 Start: 21328, Stop: 21834, Start Num: 14

Candidate Starts for Howe\_24:

(Start: 14 @21328 has 18 MA's), (Start: 17 @21334 has 1 MA's), (24, 21352), (30, 21382), (31, 21385), (38, 21406), (43, 21424), (59, 21484), (64, 21502), (68, 21511), (98, 21661), (102, 21670), (112, 21730),

Gene: InLimbo\_24 Start: 18982, Stop: 19440, Start Num: 10

Candidate Starts for InLimbo\_24:

(Start: 10 @18982 has 62 MA's), (30, 19045), (39, 19081), (44, 19096), (52, 19129), (61, 19159), (63, 19165), (68, 19180), (81, 19240), (107, 19339), (117, 19378),

Gene: Inspectinfecti\_44 Start: 38965, Stop: 39423, Start Num: 10

Candidate Starts for Inspectinfecti\_44:

(Start: 10 @38965 has 62 MA's), (34, 39043), (44, 39079), (45, 39085), (55, 39124), (64, 39154), (71, 39175), (81, 39223),

Gene: Invecetra\_24 Start: 21068, Stop: 21547, Start Num: 10

Candidate Starts for Invecetra\_24:

(Start: 10 @21068 has 62 MA's), (Start: 18 @21083 has 1 MA's), (29, 21128), (32, 21140), (39, 21167), (44, 21182), (45, 21188), (61, 21245), (62, 21248), (63, 21251), (64, 21257), (117, 21485),

Gene: Jablanski\_27 Start: 22440, Stop: 22898, Start Num: 10

Candidate Starts for Jablanski\_27:

(Start: 10 @22440 has 62 MA's), (29, 22500), (34, 22518), (44, 22554), (45, 22560), (51, 22584), (52, 22587), (55, 22599), (59, 22611), (64, 22629), (65, 22632), (67, 22635), (69, 22641), (81, 22698), (105, 22791), (107, 22797),

Gene: JacoRen57\_28 Start: 25768, Stop: 26319, Start Num: 3

Candidate Starts for JacoRen57\_28:

(Start: 3 @25768 has 1 MA's), (9, 25810), (Start: 19 @25828 has 1 MA's), (21, 25837), (36, 25906), (53, 25966), (66, 26008), (83, 26101), (86, 26116), (122, 26311),

Gene: Jalammah\_26 Start: 21494, Stop: 21952, Start Num: 10

Candidate Starts for Jalammah\_26:

(Start: 10 @21494 has 62 MA's), (30, 21557), (39, 21593), (44, 21608), (45, 21614), (52, 21641), (61, 21671), (64, 21683), (68, 21692), (81, 21752), (104, 21839), (105, 21845),

Gene: Jamzy\_27 Start: 19351, Stop: 19803, Start Num: 13

Candidate Starts for Jamzy\_27:

(5, 19312), (8, 19342), (Start: 10 @19345 has 62 MA's), (Start: 13 @19351 has 15 MA's), (20, 19366), (42, 19450), (44, 19456), (47, 19471), (62, 19516), (69, 19537), (73, 19552), (92, 19660), (119, 19759),

Gene: JasperJr\_24 Start: 20704, Stop: 21162, Start Num: 10

Candidate Starts for JasperJr\_24:

(Start: 10 @20704 has 62 MA's), (30, 20767), (39, 20803), (44, 20818), (45, 20824), (52, 20851), (61, 20881), (64, 20893), (68, 20902), (81, 20962), (104, 21049), (105, 21055),

Gene: Jollymon\_48 Start: 26503, Stop: 26979, Start Num: 13

Candidate Starts for Jollymon\_48:

(Start: 13 @26503 has 15 MA's), (64, 26680), (69, 26692), (81, 26749), (87, 26779), (116, 26914), (117, 26917),

Gene: Keitabear\_44 Start: 40216, Stop: 40674, Start Num: 10

Candidate Starts for Keitabear\_44:

(Start: 10 @40216 has 62 MA's), (34, 40294), (44, 40330), (45, 40336), (55, 40375), (71, 40426), (104, 40561),

Gene: Kiko\_26 Start: 20953, Stop: 21411, Start Num: 10

Candidate Starts for Kiko\_26:

(Start: 10 @20953 has 62 MA's), (30, 21016), (31, 21019), (34, 21031), (39, 21052), (44, 21067), (51, 21097), (68, 21151), (69, 21154), (72, 21166), (90, 21253), (117, 21349),

Gene: KingstonB\_46 Start: 25981, Stop: 26457, Start Num: 13

Candidate Starts for KingstonB\_46:

(Start: 13 @25981 has 15 MA's), (64, 26158), (69, 26170), (81, 26227), (85, 26248), (87, 26257), (116, 26392),

Gene: Leonard\_43 Start: 38604, Stop: 39062, Start Num: 10

Candidate Starts for Leonard\_43:

(Start: 10 @38604 has 62 MA's), (34, 38682), (44, 38718), (45, 38724), (55, 38763), (64, 38793), (71, 38814), (81, 38862),

Gene: Leopard\_49 Start: 38220, Stop: 38792, Start Num: 4

Candidate Starts for Leopard\_49:

(Start: 4 @38220 has 3 MA's), (Start: 13 @38268 has 15 MA's), (30, 38325), (41, 38373), (45, 38388), (48, 38400), (49, 38406), (54, 38418), (74, 38487), (82, 38550), (88, 38580), (89, 38586), (91, 38592),

Gene: Lysidious\_25 Start: 21224, Stop: 21682, Start Num: 10

Candidate Starts for Lysidious\_25:

(Start: 10 @21224 has 62 MA's), (30, 21287), (39, 21323), (44, 21338), (45, 21344), (52, 21371), (61, 21401), (64, 21413), (68, 21422), (81, 21482), (104, 21569), (105, 21575),

Gene: Makar\_49 Start: 26436, Stop: 26912, Start Num: 13

Candidate Starts for Makar\_49:

(Start: 13 @26436 has 15 MA's), (22, 26457), (33, 26505), (40, 26532), (59, 26595), (64, 26613), (106, 26787), (116, 26847),

Gene: Malachai\_25 Start: 21181, Stop: 21639, Start Num: 10

Candidate Starts for Malachai\_25:

(Start: 10 @21181 has 62 MA's), (30, 21244), (39, 21280), (44, 21295), (45, 21301), (52, 21328), (61, 21358), (64, 21370), (68, 21379), (81, 21439), (104, 21526), (105, 21532),

Gene: Malibo\_26 Start: 20919, Stop: 21377, Start Num: 10

Candidate Starts for Malibo\_26:

(Start: 10 @20919 has 62 MA's), (23, 20949), (30, 20982), (39, 21018), (44, 21033), (45, 21039), (52, 21066), (61, 21096), (63, 21102), (64, 21108), (68, 21117), (72, 21132), (81, 21177), (94, 21231), (116, 21312),

Gene: Margaret\_27 Start: 19721, Stop: 20167, Start Num: 13

Candidate Starts for Margaret\_27:

(1, 19619), (5, 19676), (Start: 13 @19721 has 15 MA's), (25, 19754), (27, 19763), (52, 19856), (59, 19874), (61, 19880), (74, 19922), (77, 19943), (78, 19949), (82, 19985), (87, 20012), (93, 20030), (113, 20084),

Gene: Mcklovin\_24 Start: 23497, Stop: 24003, Start Num: 14

Candidate Starts for Mcklovin\_24:

(Start: 14 @23497 has 18 MA's), (Start: 17 @23503 has 1 MA's), (24, 23521), (30, 23551), (31, 23554), (38, 23575), (59, 23653), (64, 23671), (68, 23680), (98, 23830), (102, 23839), (112, 23899),

Gene: MelBins\_44 Start: 38751, Stop: 39209, Start Num: 10

Candidate Starts for MelBins\_44:

(Start: 10 @38751 has 62 MA's), (34, 38829), (39, 38850), (44, 38865), (45, 38871), (55, 38910), (64, 38940), (71, 38961),

Gene: Melba\_24 Start: 20700, Stop: 21158, Start Num: 10

Candidate Starts for Melba\_24:

(Start: 10 @20700 has 62 MA's), (30, 20763), (39, 20799), (44, 20814), (45, 20820), (52, 20847), (61, 20877), (64, 20889), (68, 20898), (81, 20958), (104, 21045), (105, 21051),

Gene: Mellie\_23 Start: 20461, Stop: 20919, Start Num: 10

Candidate Starts for Mellie\_23:

(Start: 10 @20461 has 62 MA's), (30, 20524), (39, 20560), (44, 20575), (45, 20581), (52, 20608), (61, 20638), (64, 20650), (68, 20659), (81, 20719), (104, 20806), (105, 20812),

Gene: MichaelScott\_24 Start: 21100, Stop: 21606, Start Num: 14

Candidate Starts for MichaelScott\_24:

(Start: 14 @21100 has 18 MA's), (Start: 17 @21106 has 1 MA's), (24, 21124), (30, 21154), (31, 21157), (38, 21178), (59, 21256), (64, 21274), (68, 21283), (98, 21433), (102, 21442), (112, 21502),

Gene: MintFen\_24 Start: 20700, Stop: 21158, Start Num: 10

Candidate Starts for MintFen\_24:

(Start: 10 @20700 has 62 MA's), (30, 20763), (39, 20799), (44, 20814), (45, 20820), (52, 20847), (61, 20877), (64, 20889), (68, 20898), (81, 20958), (104, 21045), (105, 21051),

Gene: MissRona\_26 Start: 21012, Stop: 21470, Start Num: 10

Candidate Starts for MissRona\_26:

(Start: 10 @21012 has 62 MA's), (39, 21111), (44, 21126), (52, 21159), (64, 21201), (68, 21210), (81, 21270), (104, 21357), (105, 21363),

Gene: Morkie\_23 Start: 18982, Stop: 19440, Start Num: 10

Candidate Starts for Morkie\_23:

(Start: 10 @18982 has 62 MA's), (30, 19045), (39, 19081), (44, 19096), (52, 19129), (61, 19159), (63, 19165), (68, 19180), (81, 19240), (107, 19339), (117, 19378),

Gene: Murp\_25 Start: 20968, Stop: 21426, Start Num: 10

Candidate Starts for Murp\_25:

(Start: 10 @20968 has 62 MA's), (30, 21031), (39, 21067), (44, 21082), (52, 21115), (61, 21145), (68, 21166), (81, 21226), (104, 21313), (105, 21319),

Gene: Natkenzie\_45 Start: 40160, Stop: 40678, Start Num: 7

Candidate Starts for Natkenzie\_45:

(Start: 7 @40160 has 13 MA's), (25, 40202), (47, 40289), (64, 40349), (90, 40484), (96, 40505),

Gene: Nodigi\_26 Start: 19994, Stop: 20440, Start Num: 13

Candidate Starts for Nodigi\_26:

(Start: 13 @19994 has 15 MA's), (23, 20018), (35, 20072), (58, 20141), (60, 20147), (68, 20171), (82, 20255), (94, 20306), (100, 20327), (107, 20348), (119, 20396), (120, 20399),

Gene: ODay\_31 Start: 22917, Stop: 23375, Start Num: 10

Candidate Starts for ODay\_31:

(Start: 10 @22917 has 62 MA's), (29, 22977), (34, 22995), (45, 23037), (51, 23061), (52, 23064), (55, 23076), (59, 23088), (64, 23106), (65, 23109), (67, 23112), (69, 23118), (81, 23175), (107, 23274), (117, 23313),

Gene: Onyinye\_50 Start: 38102, Stop: 38674, Start Num: 4

Candidate Starts for Onyinye\_50:

(Start: 4 @38102 has 3 MA's), (Start: 13 @38150 has 15 MA's), (30, 38207), (41, 38255), (42, 38258), (45, 38270), (48, 38282), (49, 38288), (54, 38300), (74, 38369), (82, 38432), (88, 38462), (89, 38468), (91, 38474),

Gene: Oregano\_24 Start: 20765, Stop: 21271, Start Num: 14

Candidate Starts for Oregano\_24:

(Start: 14 @20765 has 18 MA's), (Start: 17 @20771 has 1 MA's), (24, 20789), (30, 20819), (31, 20822), (38, 20843), (59, 20921), (64, 20939), (68, 20948), (98, 21098), (102, 21107), (112, 21167),

Gene: Orla\_26 Start: 19998, Stop: 20444, Start Num: 13

Candidate Starts for Orla\_26:

(Start: 13 @19998 has 15 MA's), (23, 20022), (35, 20076), (58, 20145), (60, 20151), (68, 20175), (82, 20259), (94, 20310), (100, 20331), (107, 20352), (119, 20400), (120, 20403),

Gene: PatriciaStar\_24 Start: 21374, Stop: 21886, Start Num: 12

Candidate Starts for PatriciaStar\_24:

(12, 21374), (23, 21398), (26, 21410), (44, 21479), (62, 21545), (64, 21554), (79, 21617), (80, 21635), (108, 21764), (114, 21797), (118, 21830),

Gene: Phauci\_36 Start: 35454, Stop: 35912, Start Num: 10

Candidate Starts for Phauci\_36:

(Start: 10 @35454 has 62 MA's), (34, 35532), (39, 35553), (42, 35562), (44, 35568), (71, 35664),

Gene: Phinally\_43 Start: 38601, Stop: 39059, Start Num: 10

Candidate Starts for Phinally\_43:

(Start: 10 @38601 has 62 MA's), (34, 38679), (44, 38715), (45, 38721), (55, 38760), (64, 38790), (71, 38811), (81, 38859),

Gene: PhorbesPhlower\_23 Start: 18982, Stop: 19440, Start Num: 10

Candidate Starts for PhorbesPhlower\_23:

(Start: 10 @18982 has 62 MA's), (30, 19045), (39, 19081), (44, 19096), (52, 19129), (61, 19159), (63, 19165), (68, 19180), (81, 19240), (107, 19339), (117, 19378),

Gene: PhriskyACE\_23 Start: 20203, Stop: 20682, Start Num: 10

Candidate Starts for PhriskyACE\_23:

(Start: 10 @20203 has 62 MA's), (Start: 18 @20218 has 1 MA's), (29, 20263), (32, 20275), (39, 20302), (44, 20317), (45, 20323), (61, 20380), (62, 20383), (63, 20386), (64, 20392), (104, 20569), (117, 20620),

Gene: PhrostedPhlake\_26 Start: 21393, Stop: 21851, Start Num: 10

Candidate Starts for PhrostedPhlake\_26:

(Start: 10 @21393 has 62 MA's), (30, 21456), (39, 21492), (44, 21507), (45, 21513), (52, 21540), (61, 21570), (64, 21582), (68, 21591), (81, 21651), (104, 21738), (105, 21744),

Gene: Pipp\_24 Start: 20694, Stop: 21152, Start Num: 10

Candidate Starts for Pipp\_24:

(Start: 10 @20694 has 62 MA's), (30, 20757), (39, 20793), (44, 20808), (45, 20814), (52, 20841), (61, 20871), (64, 20883), (68, 20892), (81, 20952), (105, 21045),

Gene: Posh\_27 Start: 22293, Stop: 22751, Start Num: 10

Candidate Starts for Posh\_27:

(Start: 10 @22293 has 62 MA's), (29, 22353), (34, 22371), (44, 22407), (45, 22413), (51, 22437), (52, 22440), (55, 22452), (59, 22464), (64, 22482), (65, 22485), (67, 22488), (69, 22494), (81, 22551), (105, 22644), (107, 22650),

Gene: Pumpkiney\_46 Start: 37481, Stop: 37999, Start Num: 7

Candidate Starts for Pumpkiney\_46:

(Start: 7 @37481 has 13 MA's), (25, 37523), (47, 37610), (64, 37670), (90, 37805),

Gene: Purplicious\_47 Start: 25749, Stop: 26225, Start Num: 13

Candidate Starts for Purplicious\_47:

(Start: 13 @25749 has 15 MA's), (64, 25926), (69, 25938), (81, 25995), (87, 26025), (116, 26160), (117, 26163),

Gene: Pytheas\_27 Start: 22439, Stop: 22897, Start Num: 10

Candidate Starts for Pytheas\_27:

(Start: 10 @22439 has 62 MA's), (29, 22499), (34, 22517), (44, 22553), (45, 22559), (51, 22583), (52, 22586), (55, 22598), (59, 22610), (64, 22628), (65, 22631), (67, 22634), (69, 22640), (81, 22697), (105, 22790), (107, 22796),

Gene: RanchParmCat\_27 Start: 19721, Stop: 20167, Start Num: 13

Candidate Starts for RanchParmCat\_27:

(1, 19619), (5, 19676), (6, 19694), (Start: 13 @19721 has 15 MA's), (25, 19754), (27, 19763), (52, 19856), (56, 19865), (59, 19874), (61, 19880), (74, 19922), (77, 19943), (82, 19985), (87, 20012), (93, 20030), (113, 20084),

Gene: RegnumDei\_28 Start: 26352, Stop: 26855, Start Num: 11

Candidate Starts for RegnumDei\_28:

(2, 26286), (Start: 11 @26352 has 3 MA's), (22, 26376), (31, 26415), (38, 26436), (53, 26493), (56, 26505), (60, 26517), (68, 26541), (76, 26577), (97, 26691), (103, 26700), (109, 26736),

Gene: RiverRaider\_45 Start: 38134, Stop: 38592, Start Num: 10

Candidate Starts for RiverRaider\_45:

(Start: 10 @38134 has 62 MA's), (25, 38173), (34, 38212), (44, 38248), (51, 38278), (64, 38323), (71, 38344), (116, 38527),

Gene: Rizz\_27 Start: 21100, Stop: 21606, Start Num: 14

Candidate Starts for Rizz\_27:

(Start: 14 @21100 has 18 MA's), (Start: 17 @21106 has 1 MA's), (24, 21124), (30, 21154), (31, 21157), (38, 21178), (59, 21256), (64, 21274), (68, 21283), (98, 21433), (102, 21442), (112, 21502),

Gene: Samba\_24 Start: 20778, Stop: 21236, Start Num: 10

Candidate Starts for Samba\_24:

(Start: 10 @20778 has 62 MA's), (30, 20841), (39, 20877), (44, 20892), (45, 20898), (52, 20925), (61, 20955), (64, 20967), (68, 20976), (81, 21036), (104, 21123), (105, 21129),

Gene: Samman98\_24 Start: 20734, Stop: 21240, Start Num: 14

Candidate Starts for Samman98\_24:

(Start: 14 @20734 has 18 MA's), (Start: 17 @20740 has 1 MA's), (24, 20758), (30, 20788), (31, 20791), (38, 20812), (59, 20890), (64, 20908), (68, 20917), (98, 21067), (102, 21076), (112, 21136),

Gene: Sampson\_45 Start: 40105, Stop: 40623, Start Num: 7

Candidate Starts for Sampson\_45:

(Start: 7 @40105 has 13 MA's), (25, 40147), (47, 40234), (64, 40294), (90, 40429), (96, 40450),

Gene: Scioto\_46 Start: 40161, Stop: 40679, Start Num: 7

Candidate Starts for Scioto\_46:

(Start: 7 @40161 has 13 MA's), (25, 40203), (47, 40290), (64, 40350), (90, 40485), (96, 40506),

Gene: Sedona\_44 Start: 39952, Stop: 40410, Start Num: 10

Candidate Starts for Sedona\_44:

(Start: 10 @39952 has 62 MA's), (34, 40030), (44, 40066), (45, 40072), (55, 40111), (71, 40162), (104, 40297),

Gene: Sekhmet\_24 Start: 21094, Stop: 21600, Start Num: 14

Candidate Starts for Sekhmet\_24:

(Start: 14 @21094 has 18 MA's), (Start: 17 @21100 has 1 MA's), (24, 21118), (30, 21148), (31, 21151), (38, 21172), (43, 21190), (59, 21250), (64, 21268), (68, 21277), (98, 21427), (102, 21436), (112, 21496),

Gene: Shlim410\_24 Start: 21328, Stop: 21834, Start Num: 14

Candidate Starts for Shlim410\_24:

(Start: 14 @21328 has 18 MA's), (Start: 17 @21334 has 1 MA's), (24, 21352), (30, 21382), (31, 21385), (38, 21406), (43, 21424), (59, 21484), (64, 21502), (68, 21511), (98, 21661), (102, 21670), (112, 21730),

Gene: Soos\_44 Start: 25710, Stop: 26186, Start Num: 13

Candidate Starts for Soos\_44:

(Start: 13 @25710 has 15 MA's), (64, 25887), (69, 25899), (81, 25956), (85, 25977), (87, 25986), (116, 26121),

Gene: Stillion\_48 Start: 26295, Stop: 26771, Start Num: 13

Candidate Starts for Stillion\_48:

(Start: 13 @26295 has 15 MA's), (61, 26460), (64, 26472), (69, 26484), (81, 26541), (87, 26571), (116, 26706),

Gene: Sting\_47 Start: 26149, Stop: 26625, Start Num: 13

Candidate Starts for Sting\_47:

(Start: 13 @26149 has 15 MA's), (64, 26326), (69, 26338), (81, 26395), (85, 26416), (87, 26425), (116, 26560),

Gene: Suerte\_22 Start: 20218, Stop: 20724, Start Num: 14

Candidate Starts for Suerte\_22:

(Start: 14 @20218 has 18 MA's), (Start: 17 @20224 has 1 MA's), (24, 20242), (30, 20272), (31, 20275), (38, 20296), (59, 20374), (64, 20392), (68, 20401), (98, 20551), (112, 20620),

Gene: Tardus\_46 Start: 39515, Stop: 40033, Start Num: 7

Candidate Starts for Tardus\_46:

(Start: 7 @39515 has 13 MA's), (25, 39557), (47, 39644), (64, 39704), (90, 39839), (96, 39860),

Gene: Thimann\_24 Start: 20686, Stop: 21192, Start Num: 14

Candidate Starts for Thimann\_24:

(Start: 14 @20686 has 18 MA's), (Start: 17 @20692 has 1 MA's), (24, 20710), (30, 20740), (31, 20743), (38, 20764), (59, 20842), (64, 20860), (68, 20869), (98, 21019), (112, 21088),

Gene: Tonitrus\_34 Start: 22668, Stop: 23153, Start Num: 18

Candidate Starts for Tonitrus\_34:

(Start: 10 @22653 has 62 MA's), (Start: 11 @22656 has 3 MA's), (Start: 13 @22659 has 15 MA's), (Start: 18 @22668 has 1 MA's), (28, 22704), (37, 22740), (49, 22788), (50, 22791), (59, 22821), (71, 22860), (75, 22872), (101, 22995), (111, 23052),

Gene: Trine\_23 Start: 18593, Stop: 19054, Start Num: 10

Candidate Starts for Trine\_23:

(8, 18590), (Start: 10 @18593 has 62 MA's), (30, 18656), (32, 18665), (39, 18692), (42, 18701), (64, 18782), (68, 18791), (70, 18800),

Gene: Tuti\_24 Start: 21090, Stop: 21569, Start Num: 10

Candidate Starts for Tuti\_24:

(Start: 10 @21090 has 62 MA's), (Start: 18 @21105 has 1 MA's), (29, 21150), (32, 21162), (39, 21189), (44, 21204), (45, 21210), (61, 21267), (62, 21270), (63, 21273), (64, 21279), (104, 21456), (117, 21507),

Gene: Twinkle\_24 Start: 22387, Stop: 22893, Start Num: 14

Candidate Starts for Twinkle\_24:

(Start: 14 @22387 has 18 MA's), (Start: 17 @22393 has 1 MA's), (24, 22411), (30, 22441), (31, 22444), (38, 22465), (43, 22483), (59, 22543), (64, 22561), (68, 22570), (98, 22720), (102, 22729), (112, 22789),

Gene: UmaThurman\_24 Start: 20825, Stop: 21283, Start Num: 10

Candidate Starts for UmaThurman\_24:

(Start: 10 @20825 has 62 MA's), (30, 20888), (39, 20924), (44, 20939), (45, 20945), (52, 20972), (61, 21002), (64, 21014), (68, 21023), (81, 21083), (104, 21170), (105, 21176),

Gene: Upyo\_23 Start: 18792, Stop: 19304, Start Num: 16

Candidate Starts for Upyo\_23:

(Start: 16 @18792 has 1 MA's), (23, 18810), (25, 18819), (42, 18882), (55, 18933), (68, 18972), (79, 19026), (108, 19167), (109, 19170),

Gene: Utz\_24 Start: 20695, Stop: 21153, Start Num: 10

Candidate Starts for Utz\_24:

(Start: 10 @20695 has 62 MA's), (30, 20758), (39, 20794), (44, 20809), (45, 20815), (52, 20842), (61, 20872), (64, 20884), (68, 20893), (81, 20953), (104, 21040), (105, 21046),

Gene: Verity\_45 Start: 40925, Stop: 41440, Start Num: 7

Candidate Starts for Verity\_45:

(Start: 7 @40925 has 13 MA's), (25, 40967), (47, 41054), (64, 41114), (84, 41216), (90, 41249), (96, 41270),

Gene: ViaConlectus\_45 Start: 38795, Stop: 39313, Start Num: 7

Candidate Starts for ViaConlectus\_45:

(Start: 7 @38795 has 13 MA's), (25, 38837), (47, 38924), (64, 38984), (90, 39119), (96, 39140),

Gene: Walrus\_26 Start: 21240, Stop: 21698, Start Num: 10

Candidate Starts for Walrus\_26:

(Start: 10 @21240 has 62 MA's), (30, 21303), (39, 21339), (44, 21354), (45, 21360), (52, 21387), (61, 21417), (64, 21429), (68, 21438), (81, 21498), (104, 21585), (105, 21591),

Gene: WinkNick\_24 Start: 20719, Stop: 21225, Start Num: 14

Candidate Starts for WinkNick\_24:

(Start: 14 @20719 has 18 MA's), (Start: 17 @20725 has 1 MA's), (24, 20743), (30, 20773), (31, 20776), (38, 20797), (59, 20875), (64, 20893), (68, 20902), (98, 21052), (102, 21061), (112, 21121),

Gene: Wisp\_23 Start: 20410, Stop: 20868, Start Num: 10

Candidate Starts for Wisp\_23:

(Start: 10 @20410 has 62 MA's), (30, 20473), (39, 20509), (44, 20524), (45, 20530), (52, 20557), (61, 20587), (64, 20599), (68, 20608), (81, 20668), (104, 20755), (105, 20761),

Gene: Wrigley\_27 Start: 22190, Stop: 22648, Start Num: 10

Candidate Starts for Wrigley\_27:

(Start: 10 @22190 has 62 MA's), (29, 22250), (34, 22268), (44, 22304), (45, 22310), (51, 22334), (52, 22337), (55, 22349), (59, 22361), (64, 22379), (65, 22382), (67, 22385), (69, 22391), (81, 22448), (105, 22541), (107, 22547),

Gene: Yakult\_25 Start: 19569, Stop: 20021, Start Num: 13

Candidate Starts for Yakult\_25:

(1, 19473), (5, 19530), (8, 19560), (Start: 10 @19563 has 62 MA's), (Start: 13 @19569 has 15 MA's), (20, 19584), (23, 19593), (25, 19602), (47, 19689), (52, 19707), (60, 19728), (69, 19755), (73, 19770), (87, 19863), (92, 19878), (93, 19881), (119, 19977),

Gene: Zarbodnamra\_24 Start: 20699, Stop: 21157, Start Num: 10

Candidate Starts for Zarbodnamra\_24:

(Start: 10 @20699 has 62 MA's), (30, 20762), (39, 20798), (44, 20813), (45, 20819), (52, 20846), (61, 20876), (64, 20888), (68, 20897), (81, 20957), (104, 21044), (105, 21050),

Gene: Zilla\_24 Start: 20717, Stop: 21175, Start Num: 10

Candidate Starts for Zilla\_24:

(Start: 10 @20717 has 62 MA's), (30, 20780), (39, 20816), (44, 20831), (45, 20837), (52, 20864), (61, 20894), (64, 20906), (68, 20915), (81, 20975), (104, 21062), (105, 21068),

Gene: Zipp\_46 Start: 40840, Stop: 41355, Start Num: 7

Candidate Starts for Zipp\_46:

(Start: 7 @40840 has 13 MA's), (25, 40882), (47, 40969), (64, 41029), (84, 41131), (90, 41164), (96, 41185),

Gene: Zitch\_48 Start: 38950, Stop: 39468, Start Num: 7

Candidate Starts for Zitch\_48:

(Start: 7 @38950 has 13 MA's), (25, 38992), (47, 39079), (64, 39139), (90, 39274),