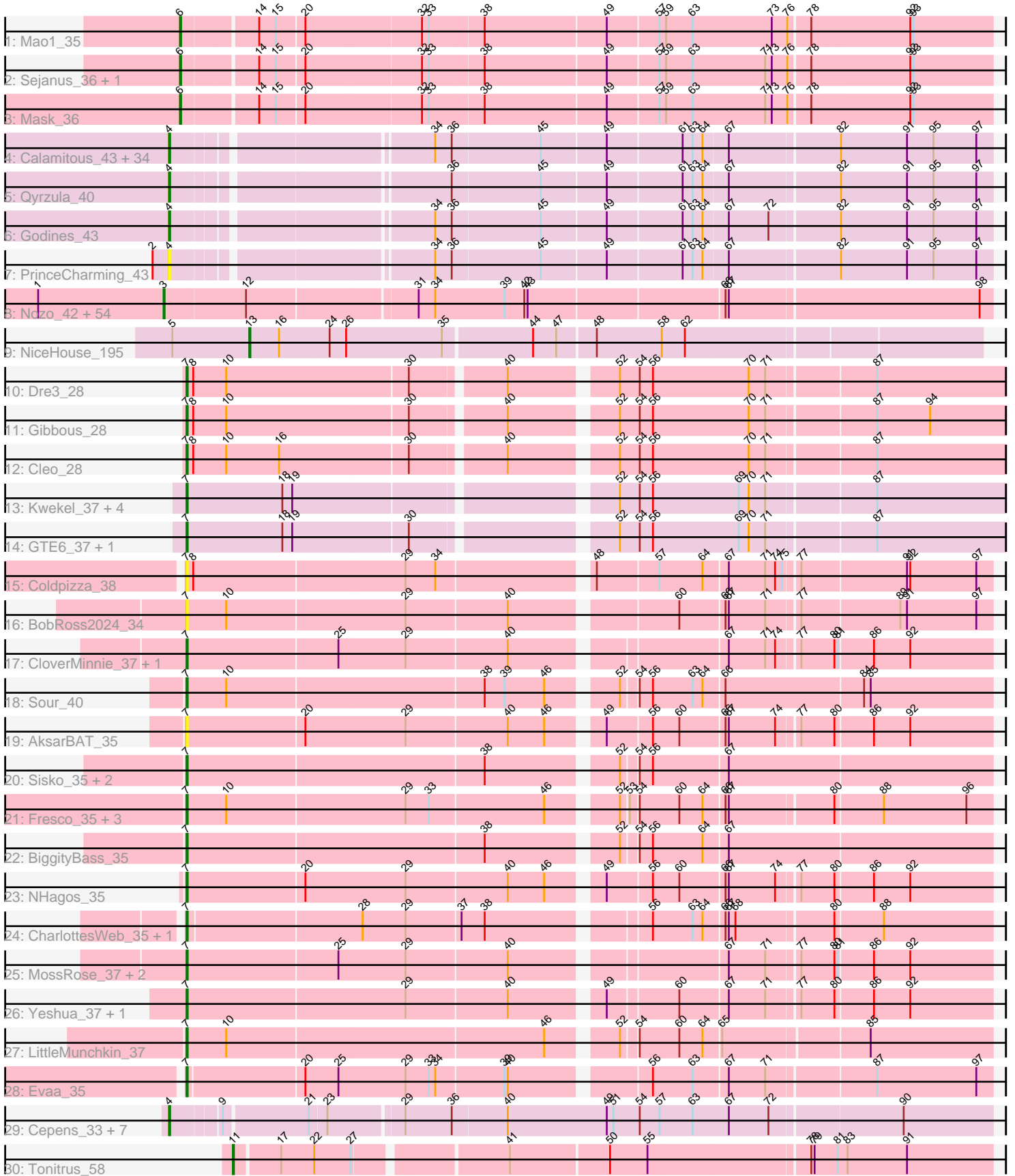


Pham 221224



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 221224 Report

This analysis was run 03/28/25 on database version 593.

Pham number 221224 has 141 members, 20 are drafts.

Phages represented in each track:

- Track 1 : Mao1\_35
- Track 2 : Sejanus\_36, Dori\_37
- Track 3 : Mask\_36
- Track 4 : Calamitous\_43, Lars\_43, Faze9\_42, Lephleur\_43, ItsyBitsy1\_43, FrenchFry\_43, Allegro\_43, Tinciduntolum\_44, Bananafish\_43, Hedgerow\_43, TA17A\_44, West99\_43, Coffee\_43, Kheth\_43, Blocker23\_43, Tres\_43, Holeinone\_43, Kaleb\_43, Phantasmagoria\_43, Sabella\_42, Kolhan\_43, Rhinoforte\_43, LilSmirk\_43, LizLemon\_43, Brownie5\_43, Eaglehorse\_43, Boyle\_43, Arbiter\_42, Vic9\_00042, Rosebush\_42, Laurie\_42, Opia\_43, Ares\_43, MasterPo\_43, Glass\_43
- Track 5 : Qyrzula\_40
- Track 6 : Godines\_43
- Track 7 : PrinceCharming\_43
- Track 8 : Nozo\_42, Halfpint\_41, Yahalom\_42, GlenHope\_43, Pipefish\_44, Phayeta\_43, Chandler\_42, Briakila\_43, MmasiCarm\_42, SwainyDoc\_42, Daisy\_42, Deenasa\_42, Abinghost\_42, Chalmers\_42, Devonte\_42, Casbah\_41, Glubnar\_42, Rita1961\_42, Kamiyu\_42, Neos5\_42, Obutu\_42, Bernardo\_43, Phaedrus\_40, Athena\_43, Gervas\_42, Philly\_41, HarveySr\_42, RomaT\_42, Marlia\_42, Phlyer\_42, Shenandoah\_42, Yinz\_42, Compostia\_43, ChaChing\_42, Mortcellus\_41, Corofin\_42, Akoma\_42, LestyG\_42, Ben11\_41, TinyTerror\_42, Jackstina\_39, Marley1013\_42, Olivio\_41, Heathcliff\_42, SynergyX\_42, OrangeOswald\_42, RagingRooster\_42, Tydolla\_42, SlippinJimmy\_42, Baloo\_42, Chentzyk\_42, Audrey\_42, Gadjet\_43, Morty007\_42, Kronus\_41
- Track 9 : NiceHouse\_195
- Track 10 : Dre3\_28
- Track 11 : Gibbous\_28
- Track 12 : Cleo\_28
- Track 13 : Kwekel\_37, EdmundFerry\_36, RoadKill\_35, Chickadee\_37, Twonlo\_35
- Track 14 : GTE6\_37, Tiamoceli\_38
- Track 15 : Coldpizza\_38
- Track 16 : BobRoss2024\_34
- Track 17 : CloverMinnie\_37, CaiB\_37
- Track 18 : Sour\_40
- Track 19 : AksarBAT\_35
- Track 20 : Sisko\_35, AnClar\_36, Yago84\_35
- Track 21 : Fresco\_35, Axumite\_35, Shatter\_35, Ligma\_35
- Track 22 : BiggityBass\_35

- Track 23 : NHagos\_35
- Track 24 : CharlottesWeb\_35, Mariokart\_35
- Track 25 : MossRose\_37, AnarQue\_37, MakoManhole\_37
- Track 26 : Yeshua\_37, Wooper\_37
- Track 27 : LittleMunchkin\_37
- Track 28 : Evaa\_35
- Track 29 : Cepens\_33, D12\_32, Argie\_34, PR\_33, GodPhather\_34, Taptic\_33, Jeon\_33, Megabear\_33
- Track 30 : Tonitrus\_58

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

The start number called the most often in the published annotations is 3, it was called in 45 of the 121 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abinghost\_42, Akoma\_42, Athena\_43, Audrey\_42, Baloo\_42, Ben11\_41, Bernardo\_43, Briakila\_43, Casbah\_41, ChaChing\_42, Chalmers\_42, Chandler\_42, Chentzyk\_42, Compostia\_43, Corofin\_42, Daisy\_42, Deenasa\_42, Devonte\_42, Gadget\_43, Gervas\_42, GlenHope\_43, Glubnar\_42, Halfpint\_41, HarveySr\_42, Heathcliff\_42, Jackstina\_39, Kamiyu\_42, Kronus\_41, LestyG\_42, Marley1013\_42, Marlia\_42, MmasiCarm\_42, Mortcellus\_41, Morty007\_42, Neos5\_42, Nozo\_42, Obutu\_42, Olivio\_41, OrangeOswald\_42, Phaedrus\_40, Phayeta\_43, Philly\_41, Phlyer\_42, Pipefish\_44, RagingRooster\_42, Rita1961\_42, RomaT\_42, Shenandoah\_42, SlippinJimmy\_42, SwainyDoc\_42, SynergyX\_42, TinyTerror\_42, Tydolla\_42, Yahalom\_42, Yinz\_42,

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

- 

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

- AksarBAT\_35, Allegro\_43, AnClar\_36, AnarQue\_37, Arbiter\_42, Ares\_43, Argie\_34, Axumite\_35, Bananafish\_43, BiggityBass\_35, Blocker23\_43, BobRoss2024\_34, Boyle\_43, Brownie5\_43, CaiB\_37, Calamitous\_43, Cepens\_33, CharlottesWeb\_35, Chickadee\_37, Cleo\_28, CloverMinnie\_37, Coffee\_43, Coldpizza\_38, D12\_32, Dori\_37, Dre3\_28, Eaglehorse\_43, EdmundFerry\_36, Evaa\_35, Faze9\_42, FrenchFry\_43, Fresco\_35, GTE6\_37, Gibbous\_28, Glass\_43, GodPhather\_34, Godines\_43, Hedgerow\_43, Holeinone\_43, ItsyBitsy1\_43, Jeon\_33, Kaleb\_43, Kheth\_43, Kolhan\_43, Kwekel\_37, Lars\_43, Laurie\_42, Lephleur\_43, Ligma\_35, LilSmirk\_43, LittleMunchkin\_37, LizLemon\_43, MakoManhole\_37, Mao1\_35, Mariokart\_35, Mask\_36, MasterPo\_43, Megabear\_33, MossRose\_37, NHagos\_35, NiceHouse\_195, Opia\_43, PR\_33, Phantasmagoria\_43, PrinceCharming\_43, Qyrzula\_40, Rhinoforte\_43, RoadKill\_35, Rosebush\_42, Sabella\_42, Sejanus\_36, Shatter\_35, Sisko\_35, Sour\_40, TA17A\_44, Taptic\_33, Tiamoceli\_38, Tinciduntolum\_44, Tonitrus\_58, Tres\_43, Twonlo\_35, Vic9\_00042, West99\_43, Wooper\_37, Yago84\_35, Yeshua\_37,

**Summary by start number:**

Start 3:

- Found in 55 of 141 ( 39.0% ) of genes in pham
- Manual Annotations of this start: 45 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abinghost\_42 (B3), Akoma\_42 (B3), Athena\_43 (B3), Audrey\_42 (B3), Baloo\_42 (B3), Ben11\_41 (B3), Bernardo\_43 (B3), Briakila\_43 (B3), Casbah\_41 (B3), ChaChing\_42 (B3), Chalmers\_42 (B3), Chandler\_42 (B3), Chentzyk\_42 (B3), Compostia\_43 (B3), Corofin\_42 (B3), Daisy\_42 (B3), Deenasa\_42 (B3), Devonte\_42 (B3), Gadjet\_43 (B3), Gervas\_42 (B3), GlenHope\_43 (B3), Glubnar\_42 (B3), Halfpint\_41 (B3), HarveySr\_42 (B3), Heathcliff\_42 (B3), Jackstina\_39 (B3), Kamiyu\_42 (B3), Kronus\_41 (B3), LestyG\_42 (B3), Marley1013\_42 (B3), Marlia\_42 (B3), MmasiCarm\_42 (B3), Mortcellus\_41 (B3), Morty007\_42 (B3), Neos5\_42 (B3), Nozo\_42 (B3), Obutu\_42 (B3), Olivio\_41 (B3), OrangeOswald\_42 (B3), Phaedrus\_40 (B3), Phayeta\_43 (B3), Philly\_41 (B3), Phlyer\_42 (B3), Pipefish\_44 (B3), RagingRooster\_42 (B3), Rita1961\_42 (B3), RomaT\_42 (B3), Shenandoah\_42 (B3), SlippinJimmy\_42 (B3), SwainyDoc\_42 (B3), SynergyX\_42 (B3), TinyTerror\_42 (B3), Tydolla\_42 (B3), Yahalom\_42 (B3), Yinz\_42 (B3),

#### Start 4:

- Found in 46 of 141 ( 32.6% ) of genes in pham
- Manual Annotations of this start: 42 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Allegro\_43 (B2), Arbiter\_42 (B2), Ares\_43 (B2), Argie\_34 (W), Bananafish\_43 (B2), Blocker23\_43 (B2), Boyle\_43 (B2), Brownie5\_43 (B2), Calamitous\_43 (B2), Cepens\_33 (W), Coffee\_43 (B2), D12\_32 (W), Eaglehorse\_43 (B2), Faze9\_42 (B2), FrenchFry\_43 (B2), Glass\_43 (B2), GodPhather\_34 (W), Godines\_43 (B2), Hedgerow\_43 (B2), Holeinone\_43 (B2), ItsyBitsy1\_43 (B2), Jeon\_33 (W), Kaleb\_43 (B2), Kheth\_43 (B2), Kolhan\_43 (B2), Lars\_43 (B2), Laurie\_42 (B2), Lephleur\_43 (B2), LilSmirk\_43 (B2), LizLemon\_43 (B2), MasterPo\_43 (B2), Megabear\_33 (W), Opia\_43 (B2), PR\_33 (W), Phantasmagoria\_43 (B2), PrinceCharming\_43 (B2), Qyrzula\_40 (B2), Rhinoforte\_43 (B2), Rosebush\_42 (B2), Sabella\_42 (B2), TA17A\_44 (B2), Taptic\_33 (W), Tinciduntolum\_44 (B2), Tres\_43 (B2), Vic9\_00042 (B2), West99\_43 (B2),

#### Start 6:

- Found in 4 of 141 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 4 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Dori\_37 (AD), Mao1\_35 (AD), Mask\_36 (AD), Sejanus\_36 (AD),

#### Start 7:

- Found in 34 of 141 ( 24.1% ) of genes in pham
- Manual Annotations of this start: 28 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AksarBAT\_35 (DR), AnClar\_36 (DR), AnarQue\_37 (DR), Axumite\_35 (DR), BiggityBass\_35 (DR), BobRoss2024\_34 (DR), CaiB\_37 (DR), CharlottesWeb\_35 (DR), Chickadee\_37 (DE3), Cleo\_28 (CT), CloverMinnie\_37 (DR), Coldpizza\_38 (DR), Dre3\_28 (CT), EdmundFerry\_36 (DE3), Evaa\_35 (DR), Fresco\_35 (DR), GTE6\_37 (DE3), Gibbous\_28 (CT), Kwekel\_37 (DE3), Ligma\_35 (DR), LittleMunchkin\_37 (DR), MakoManhole\_37 (DR), Mariokart\_35 (DR), MossRose\_37 (DR), NHagos\_35 (DR), RoadKill\_35 (DE3), Shatter\_35 (DR), Sisko\_35 (DR), Sour\_40 (DR), Tiamoceli\_38 (DE3), Twonlo\_35

(DE3), Wooper\_37 (DR), Yago84\_35 (DR), Yeshua\_37 (DR),

Start 11:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Tonitrus\_58 (singleton),

Start 13:

- Found in 1 of 141 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 121
- Called 100.0% of time when present
- Phage (with cluster) where this start called: NiceHouse\_195 (CE),

### **Summary by clusters:**

There are 9 clusters represented in this pham: singleton, AD, DE3, CE, W, B2, B3, DR, CT,

Info for manual annotations of cluster AD:

- Start number 6 was manually annotated 4 times for cluster AD.

Info for manual annotations of cluster B2:

- Start number 4 was manually annotated 34 times for cluster B2.

Info for manual annotations of cluster B3:

- Start number 3 was manually annotated 45 times for cluster B3.

Info for manual annotations of cluster CE:

- Start number 13 was manually annotated 1 time for cluster CE.

Info for manual annotations of cluster CT:

- Start number 7 was manually annotated 3 times for cluster CT.

Info for manual annotations of cluster DE3:

- Start number 7 was manually annotated 6 times for cluster DE3.

Info for manual annotations of cluster DR:

- Start number 7 was manually annotated 19 times for cluster DR.

Info for manual annotations of cluster W:

- Start number 4 was manually annotated 8 times for cluster W.

### **Gene Information:**

Gene: Abinghost\_42 Start: 38010, Stop: 38735, Start Num: 3

Candidate Starts for Abinghost\_42:

(1, 37896), (Start: 3 @38010 has 45 MA's), (12, 38082), (31, 38229), (34, 38244), (39, 38307), (42, 38325), (43, 38328), (66, 38499), (67, 38502), (98, 38724),

Gene: Akoma\_42 Start: 38014, Stop: 38739, Start Num: 3

Candidate Starts for Akoma\_42:

(1, 37900), (Start: 3 @38014 has 45 MA's), (12, 38086), (31, 38233), (34, 38248), (39, 38311), (42, 38329), (43, 38332), (66, 38503), (67, 38506), (98, 38728),

Gene: AksarBAT\_35 Start: 30939, Stop: 31634, Start Num: 7

Candidate Starts for AksarBAT\_35:

(Start: 7 @30939 has 28 MA's), (20, 31044), (29, 31134), (40, 31224), (46, 31257), (49, 31299), (56, 31338), (60, 31362), (66, 31401), (67, 31404), (74, 31446), (77, 31464), (80, 31494), (86, 31527), (92, 31560),

Gene: Allegro\_43 Start: 38534, Stop: 39229, Start Num: 4

Candidate Starts for Allegro\_43:

(Start: 4 @38534 has 42 MA's), (34, 38744), (36, 38759), (45, 38837), (49, 38894), (61, 38960), (63, 38969), (64, 38978), (67, 38999), (82, 39092), (91, 39152), (95, 39176), (97, 39215),

Gene: AnClar\_36 Start: 33290, Stop: 33988, Start Num: 7

Candidate Starts for AnClar\_36:

(Start: 7 @33290 has 28 MA's), (38, 33554), (52, 33662), (54, 33674), (56, 33686), (67, 33752),

Gene: AnarQue\_37 Start: 32400, Stop: 33092, Start Num: 7

Candidate Starts for AnarQue\_37:

(Start: 7 @32400 has 28 MA's), (25, 32535), (29, 32595), (40, 32685), (67, 32862), (71, 32895), (77, 32922), (80, 32952), (81, 32955), (86, 32985), (92, 33018),

Gene: Arbiter\_42 Start: 38620, Stop: 39315, Start Num: 4

Candidate Starts for Arbiter\_42:

(Start: 4 @38620 has 42 MA's), (34, 38830), (36, 38845), (45, 38923), (49, 38980), (61, 39046), (63, 39055), (64, 39064), (67, 39085), (82, 39178), (91, 39238), (95, 39262), (97, 39301),

Gene: Ares\_43 Start: 38604, Stop: 39299, Start Num: 4

Candidate Starts for Ares\_43:

(Start: 4 @38604 has 42 MA's), (34, 38814), (36, 38829), (45, 38907), (49, 38964), (61, 39030), (63, 39039), (64, 39048), (67, 39069), (82, 39162), (91, 39222), (95, 39246), (97, 39285),

Gene: Argie\_34 Start: 34873, Stop: 35583, Start Num: 4

Candidate Starts for Argie\_34:

(Start: 4 @34873 has 42 MA's), (9, 34912), (21, 34984), (23, 34999), (29, 35062), (36, 35104), (40, 35152), (49, 35242), (51, 35248), (54, 35272), (57, 35290), (63, 35320), (67, 35353), (72, 35389), (90, 35503),

Gene: Athena\_43 Start: 38761, Stop: 39486, Start Num: 3

Candidate Starts for Athena\_43:

(1, 38647), (Start: 3 @38761 has 45 MA's), (12, 38833), (31, 38980), (34, 38995), (39, 39058), (42, 39076), (43, 39079), (66, 39250), (67, 39253), (98, 39475),

Gene: Audrey\_42 Start: 38010, Stop: 38735, Start Num: 3

Candidate Starts for Audrey\_42:

(1, 37896), (Start: 3 @38010 has 45 MA's), (12, 38082), (31, 38229), (34, 38244), (39, 38307), (42, 38325), (43, 38328), (66, 38499), (67, 38502), (98, 38724),

Gene: Axumite\_35 Start: 30447, Stop: 31139, Start Num: 7

Candidate Starts for Axumite\_35:

(Start: 7 @30447 has 28 MA's), (10, 30483), (29, 30642), (33, 30663), (46, 30765), (52, 30819), (53, 30825), (54, 30831), (60, 30867), (64, 30888), (66, 30906), (67, 30909), (80, 30999), (88, 31041), (96, 31116),

Gene: Baloo\_42 Start: 38013, Stop: 38738, Start Num: 3

Candidate Starts for Baloo\_42:

(1, 37899), (Start: 3 @38013 has 45 MA's), (12, 38085), (31, 38232), (34, 38247), (39, 38310), (42, 38328), (43, 38331), (66, 38502), (67, 38505), (98, 38727),

Gene: Bananafish\_43 Start: 38540, Stop: 39235, Start Num: 4

Candidate Starts for Bananafish\_43:

(Start: 4 @38540 has 42 MA's), (34, 38750), (36, 38765), (45, 38843), (49, 38900), (61, 38966), (63, 38975), (64, 38984), (67, 39005), (82, 39098), (91, 39158), (95, 39182), (97, 39221),

Gene: Ben11\_41 Start: 37832, Stop: 38557, Start Num: 3

Candidate Starts for Ben11\_41:

(1, 37718), (Start: 3 @37832 has 45 MA's), (12, 37904), (31, 38051), (34, 38066), (39, 38129), (42, 38147), (43, 38150), (66, 38321), (67, 38324), (98, 38546),

Gene: Bernardo\_43 Start: 38558, Stop: 39283, Start Num: 3

Candidate Starts for Bernardo\_43:

(1, 38444), (Start: 3 @38558 has 45 MA's), (12, 38630), (31, 38777), (34, 38792), (39, 38855), (42, 38873), (43, 38876), (66, 39047), (67, 39050), (98, 39272),

Gene: BiggityBass\_35 Start: 32697, Stop: 33395, Start Num: 7

Candidate Starts for BiggityBass\_35:

(Start: 7 @32697 has 28 MA's), (38, 32961), (52, 33069), (54, 33081), (56, 33093), (64, 33138), (67, 33159),

Gene: Blocker23\_43 Start: 38658, Stop: 39353, Start Num: 4

Candidate Starts for Blocker23\_43:

(Start: 4 @38658 has 42 MA's), (34, 38868), (36, 38883), (45, 38961), (49, 39018), (61, 39084), (63, 39093), (64, 39102), (67, 39123), (82, 39216), (91, 39276), (95, 39300), (97, 39339),

Gene: BobRoss2024\_34 Start: 30450, Stop: 31145, Start Num: 7

Candidate Starts for BobRoss2024\_34:

(Start: 7 @30450 has 28 MA's), (10, 30486), (29, 30645), (40, 30735), (60, 30873), (66, 30912), (67, 30915), (71, 30948), (77, 30975), (89, 31062), (91, 31068), (97, 31131),

Gene: Boyle\_43 Start: 38659, Stop: 39354, Start Num: 4

Candidate Starts for Boyle\_43:

(Start: 4 @38659 has 42 MA's), (34, 38869), (36, 38884), (45, 38962), (49, 39019), (61, 39085), (63, 39094), (64, 39103), (67, 39124), (82, 39217), (91, 39277), (95, 39301), (97, 39340),

Gene: Briakila\_43 Start: 38780, Stop: 39505, Start Num: 3

Candidate Starts for Briakila\_43:

(1, 38666), (Start: 3 @38780 has 45 MA's), (12, 38852), (31, 38999), (34, 39014), (39, 39077), (42, 39095), (43, 39098), (66, 39269), (67, 39272), (98, 39494),

Gene: Brownie5\_43 Start: 38665, Stop: 39360, Start Num: 4

Candidate Starts for Brownie5\_43:

(Start: 4 @38665 has 42 MA's), (34, 38875), (36, 38890), (45, 38968), (49, 39025), (61, 39091), (63, 39100), (64, 39109), (67, 39130), (82, 39223), (91, 39283), (95, 39307), (97, 39346),

Gene: CaiB\_37 Start: 32386, Stop: 33078, Start Num: 7

Candidate Starts for CaiB\_37:

(Start: 7 @32386 has 28 MA's), (25, 32521), (29, 32581), (40, 32671), (67, 32848), (71, 32881), (74, 32890), (77, 32908), (80, 32938), (81, 32941), (86, 32971), (92, 33004),

Gene: Calamitous\_43 Start: 38545, Stop: 39240, Start Num: 4

Candidate Starts for Calamitous\_43:

(Start: 4 @38545 has 42 MA's), (34, 38755), (36, 38770), (45, 38848), (49, 38905), (61, 38971), (63, 38980), (64, 38989), (67, 39010), (82, 39103), (91, 39163), (95, 39187), (97, 39226),

Gene: Casbah\_41 Start: 37862, Stop: 38587, Start Num: 3

Candidate Starts for Casbah\_41:

(1, 37748), (Start: 3 @37862 has 45 MA's), (12, 37934), (31, 38081), (34, 38096), (39, 38159), (42, 38177), (43, 38180), (66, 38351), (67, 38354), (98, 38576),

Gene: Cepens\_33 Start: 34588, Stop: 35298, Start Num: 4

Candidate Starts for Cepens\_33:

(Start: 4 @34588 has 42 MA's), (9, 34627), (21, 34699), (23, 34714), (29, 34777), (36, 34819), (40, 34867), (49, 34957), (51, 34963), (54, 34987), (57, 35005), (63, 35035), (67, 35068), (72, 35104), (90, 35218),

Gene: ChaChing\_42 Start: 38025, Stop: 38750, Start Num: 3

Candidate Starts for ChaChing\_42:

(1, 37911), (Start: 3 @38025 has 45 MA's), (12, 38097), (31, 38244), (34, 38259), (39, 38322), (42, 38340), (43, 38343), (66, 38514), (67, 38517), (98, 38739),

Gene: Chalmers\_42 Start: 38817, Stop: 39542, Start Num: 3

Candidate Starts for Chalmers\_42:

(1, 38703), (Start: 3 @38817 has 45 MA's), (12, 38889), (31, 39036), (34, 39051), (39, 39114), (42, 39132), (43, 39135), (66, 39306), (67, 39309), (98, 39531),

Gene: Chandler\_42 Start: 38793, Stop: 39518, Start Num: 3

Candidate Starts for Chandler\_42:

(1, 38679), (Start: 3 @38793 has 45 MA's), (12, 38865), (31, 39012), (34, 39027), (39, 39090), (42, 39108), (43, 39111), (66, 39282), (67, 39285), (98, 39507),

Gene: CharlottesWeb\_35 Start: 30386, Stop: 31075, Start Num: 7

Candidate Starts for CharlottesWeb\_35:

(Start: 7 @30386 has 28 MA's), (28, 30539), (29, 30578), (37, 30626), (38, 30647), (56, 30779), (63, 30815), (64, 30824), (66, 30842), (67, 30845), (68, 30851), (80, 30935), (88, 30977),

Gene: Chentzyk\_42 Start: 38374, Stop: 39099, Start Num: 3

Candidate Starts for Chentzyk\_42:

(1, 38260), (Start: 3 @38374 has 45 MA's), (12, 38446), (31, 38593), (34, 38608), (39, 38671), (42, 38689), (43, 38692), (66, 38863), (67, 38866), (98, 39088),

Gene: Chickadee\_37 Start: 33101, Stop: 33805, Start Num: 7

Candidate Starts for Chickadee\_37:

(Start: 7 @33101 has 28 MA's), (18, 33188), (19, 33197), (52, 33464), (54, 33482), (56, 33494), (69, 33572), (70, 33581), (71, 33596), (87, 33689),

Gene: Cleo\_28 Start: 23262, Stop: 23966, Start Num: 7



Candidate Starts for Cleo\_28:

(Start: 7 @23262 has 28 MA's), (8, 23268), (10, 23298), (16, 23346), (30, 23460), (40, 23538), (52, 23625), (54, 23643), (56, 23655), (70, 23742), (71, 23757), (87, 23850),

Gene: CloverMinnie\_37 Start: 32326, Stop: 33018, Start Num: 7

Candidate Starts for CloverMinnie\_37:

(Start: 7 @32326 has 28 MA's), (25, 32461), (29, 32521), (40, 32611), (67, 32788), (71, 32821), (74, 32830), (77, 32848), (80, 32878), (81, 32881), (86, 32911), (92, 32944),

Gene: Coffee\_43 Start: 38648, Stop: 39343, Start Num: 4

Candidate Starts for Coffee\_43:

(Start: 4 @38648 has 42 MA's), (34, 38858), (36, 38873), (45, 38951), (49, 39008), (61, 39074), (63, 39083), (64, 39092), (67, 39113), (82, 39206), (91, 39266), (95, 39290), (97, 39329),

Gene: Coldpizza\_38 Start: 34838, Stop: 35533, Start Num: 7

Candidate Starts for Coldpizza\_38:

(Start: 7 @34838 has 28 MA's), (8, 34844), (29, 35033), (34, 35060), (48, 35189), (57, 35243), (64, 35282), (67, 35303), (71, 35336), (74, 35345), (75, 35351), (77, 35363), (91, 35456), (92, 35459), (97, 35519),

Gene: Compostia\_43 Start: 38441, Stop: 39166, Start Num: 3

Candidate Starts for Compostia\_43:

(1, 38327), (Start: 3 @38441 has 45 MA's), (12, 38513), (31, 38660), (34, 38675), (39, 38738), (42, 38756), (43, 38759), (66, 38930), (67, 38933), (98, 39155),

Gene: Corofin\_42 Start: 38036, Stop: 38761, Start Num: 3

Candidate Starts for Corofin\_42:

(1, 37922), (Start: 3 @38036 has 45 MA's), (12, 38108), (31, 38255), (34, 38270), (39, 38333), (42, 38351), (43, 38354), (66, 38525), (67, 38528), (98, 38750),

Gene: D12\_32 Start: 35158, Stop: 35868, Start Num: 4

Candidate Starts for D12\_32:

(Start: 4 @35158 has 42 MA's), (9, 35197), (21, 35269), (23, 35284), (29, 35347), (36, 35389), (40, 35437), (49, 35527), (51, 35533), (54, 35557), (57, 35575), (63, 35605), (67, 35638), (72, 35674), (90, 35788),

Gene: Daisy\_42 Start: 38037, Stop: 38762, Start Num: 3

Candidate Starts for Daisy\_42:

(1, 37923), (Start: 3 @38037 has 45 MA's), (12, 38109), (31, 38256), (34, 38271), (39, 38334), (42, 38352), (43, 38355), (66, 38526), (67, 38529), (98, 38751),

Gene: Deenasa\_42 Start: 38772, Stop: 39497, Start Num: 3

Candidate Starts for Deenasa\_42:

(1, 38658), (Start: 3 @38772 has 45 MA's), (12, 38844), (31, 38991), (34, 39006), (39, 39069), (42, 39087), (43, 39090), (66, 39261), (67, 39264), (98, 39486),

Gene: Devonte\_42 Start: 38001, Stop: 38726, Start Num: 3

Candidate Starts for Devonte\_42:

(1, 37887), (Start: 3 @38001 has 45 MA's), (12, 38073), (31, 38220), (34, 38235), (39, 38298), (42, 38316), (43, 38319), (66, 38490), (67, 38493), (98, 38715),

Gene: Dori\_37 Start: 34528, Stop: 35232, Start Num: 6

Candidate Starts for Dori\_37:

(Start: 6 @34528 has 4 MA's), (14, 34591), (15, 34606), (20, 34630), (32, 34732), (33, 34738), (38, 34786), (49, 34894), (57, 34939), (59, 34945), (63, 34969), (71, 35035), (73, 35041), (76, 35053), (78, 35071), (92, 35158), (93, 35161),

Gene: Dre3\_28 Start: 23188, Stop: 23892, Start Num: 7

Candidate Starts for Dre3\_28:

(Start: 7 @23188 has 28 MA's), (8, 23194), (10, 23224), (30, 23386), (40, 23464), (52, 23551), (54, 23569), (56, 23581), (70, 23668), (71, 23683), (87, 23776),

Gene: Eaglehorse\_43 Start: 38572, Stop: 39267, Start Num: 4

Candidate Starts for Eaglehorse\_43:

(Start: 4 @38572 has 42 MA's), (34, 38782), (36, 38797), (45, 38875), (49, 38932), (61, 38998), (63, 39007), (64, 39016), (67, 39037), (82, 39130), (91, 39190), (95, 39214), (97, 39253),

Gene: EdmundFerry\_36 Start: 33130, Stop: 33834, Start Num: 7

Candidate Starts for EdmundFerry\_36:

(Start: 7 @33130 has 28 MA's), (18, 33217), (19, 33226), (52, 33493), (54, 33511), (56, 33523), (69, 33601), (70, 33610), (71, 33625), (87, 33718),

Gene: Evaa\_35 Start: 31206, Stop: 31898, Start Num: 7

Candidate Starts for Evaa\_35:

(Start: 7 @31206 has 28 MA's), (20, 31308), (25, 31338), (29, 31398), (33, 31419), (34, 31425), (39, 31485), (40, 31488), (56, 31602), (63, 31638), (67, 31668), (71, 31701), (87, 31794), (97, 31884),

Gene: Faze9\_42 Start: 38668, Stop: 39363, Start Num: 4

Candidate Starts for Faze9\_42:

(Start: 4 @38668 has 42 MA's), (34, 38878), (36, 38893), (45, 38971), (49, 39028), (61, 39094), (63, 39103), (64, 39112), (67, 39133), (82, 39226), (91, 39286), (95, 39310), (97, 39349),

Gene: FrenchFry\_43 Start: 38662, Stop: 39357, Start Num: 4

Candidate Starts for FrenchFry\_43:

(Start: 4 @38662 has 42 MA's), (34, 38872), (36, 38887), (45, 38965), (49, 39022), (61, 39088), (63, 39097), (64, 39106), (67, 39127), (82, 39220), (91, 39280), (95, 39304), (97, 39343),

Gene: Fresco\_35 Start: 30447, Stop: 31139, Start Num: 7

Candidate Starts for Fresco\_35:

(Start: 7 @30447 has 28 MA's), (10, 30483), (29, 30642), (33, 30663), (46, 30765), (52, 30819), (53, 30825), (54, 30831), (60, 30867), (64, 30888), (66, 30906), (67, 30909), (80, 30999), (88, 31041), (96, 31116),

Gene: GTE6\_37 Start: 33622, Stop: 34326, Start Num: 7

Candidate Starts for GTE6\_37:

(Start: 7 @33622 has 28 MA's), (18, 33709), (19, 33718), (30, 33820), (52, 33985), (54, 34003), (56, 34015), (69, 34093), (70, 34102), (71, 34117), (87, 34210),

Gene: Gadget\_43 Start: 38024, Stop: 38749, Start Num: 3

Candidate Starts for Gadget\_43:

(1, 37910), (Start: 3 @38024 has 45 MA's), (12, 38096), (31, 38243), (34, 38258), (39, 38321), (42, 38339), (43, 38342), (66, 38513), (67, 38516), (98, 38738),

Gene: Gervas\_42 Start: 37991, Stop: 38716, Start Num: 3

Candidate Starts for Gervas\_42:

(1, 37877), (Start: 3 @37991 has 45 MA's), (12, 38063), (31, 38210), (34, 38225), (39, 38288), (42, 38306), (43, 38309), (66, 38480), (67, 38483), (98, 38705),

Gene: Gibbous\_28 Start: 23188, Stop: 23892, Start Num: 7

Candidate Starts for Gibbous\_28:

(Start: 7 @23188 has 28 MA's), (8, 23194), (10, 23224), (30, 23386), (40, 23464), (52, 23551), (54, 23569), (56, 23581), (70, 23668), (71, 23683), (87, 23776), (94, 23824),

Gene: Glass\_43 Start: 38662, Stop: 39357, Start Num: 4

Candidate Starts for Glass\_43:

(Start: 4 @38662 has 42 MA's), (34, 38872), (36, 38887), (45, 38965), (49, 39022), (61, 39088), (63, 39097), (64, 39106), (67, 39127), (82, 39220), (91, 39280), (95, 39304), (97, 39343),

Gene: GlenHope\_43 Start: 38004, Stop: 38729, Start Num: 3

Candidate Starts for GlenHope\_43:

(1, 37890), (Start: 3 @38004 has 45 MA's), (12, 38076), (31, 38223), (34, 38238), (39, 38301), (42, 38319), (43, 38322), (66, 38493), (67, 38496), (98, 38718),

Gene: Glubnar\_42 Start: 38003, Stop: 38728, Start Num: 3

Candidate Starts for Glubnar\_42:

(1, 37889), (Start: 3 @38003 has 45 MA's), (12, 38075), (31, 38222), (34, 38237), (39, 38300), (42, 38318), (43, 38321), (66, 38492), (67, 38495), (98, 38717),

Gene: GodPhather\_34 Start: 35352, Stop: 36062, Start Num: 4

Candidate Starts for GodPhather\_34:

(Start: 4 @35352 has 42 MA's), (9, 35391), (21, 35463), (23, 35478), (29, 35541), (36, 35583), (40, 35631), (49, 35721), (51, 35727), (54, 35751), (57, 35769), (63, 35799), (67, 35832), (72, 35868), (90, 35982),

Gene: Godines\_43 Start: 38604, Stop: 39299, Start Num: 4

Candidate Starts for Godines\_43:

(Start: 4 @38604 has 42 MA's), (34, 38814), (36, 38829), (45, 38907), (49, 38964), (61, 39030), (63, 39039), (64, 39048), (67, 39069), (72, 39105), (82, 39162), (91, 39222), (95, 39246), (97, 39285),

Gene: Halfpint\_41 Start: 37830, Stop: 38555, Start Num: 3

Candidate Starts for Halfpint\_41:

(1, 37716), (Start: 3 @37830 has 45 MA's), (12, 37902), (31, 38049), (34, 38064), (39, 38127), (42, 38145), (43, 38148), (66, 38319), (67, 38322), (98, 38544),

Gene: HarveySr\_42 Start: 37997, Stop: 38722, Start Num: 3

Candidate Starts for HarveySr\_42:

(1, 37883), (Start: 3 @37997 has 45 MA's), (12, 38069), (31, 38216), (34, 38231), (39, 38294), (42, 38312), (43, 38315), (66, 38486), (67, 38489), (98, 38711),

Gene: Heathcliff\_42 Start: 37975, Stop: 38700, Start Num: 3

Candidate Starts for Heathcliff\_42:

(1, 37861), (Start: 3 @37975 has 45 MA's), (12, 38047), (31, 38194), (34, 38209), (39, 38272), (42, 38290), (43, 38293), (66, 38464), (67, 38467), (98, 38689),

Gene: Hedgerow\_43 Start: 38644, Stop: 39339, Start Num: 4

Candidate Starts for Hedgerow\_43:

(Start: 4 @38644 has 42 MA's), (34, 38854), (36, 38869), (45, 38947), (49, 39004), (61, 39070), (63, 39079), (64, 39088), (67, 39109), (82, 39202), (91, 39262), (95, 39286), (97, 39325),

Gene: Holeinone\_43 Start: 38524, Stop: 39219, Start Num: 4

Candidate Starts for Holeinone\_43:

(Start: 4 @38524 has 42 MA's), (34, 38734), (36, 38749), (45, 38827), (49, 38884), (61, 38950), (63, 38959), (64, 38968), (67, 38989), (82, 39082), (91, 39142), (95, 39166), (97, 39205),

Gene: ItsyBitsy1\_43 Start: 38526, Stop: 39221, Start Num: 4

Candidate Starts for ItsyBitsy1\_43:

(Start: 4 @38526 has 42 MA's), (34, 38736), (36, 38751), (45, 38829), (49, 38886), (61, 38952), (63, 38961), (64, 38970), (67, 38991), (82, 39084), (91, 39144), (95, 39168), (97, 39207),

Gene: Jackstina\_39 Start: 37934, Stop: 38659, Start Num: 3

Candidate Starts for Jackstina\_39:

(1, 37820), (Start: 3 @37934 has 45 MA's), (12, 38006), (31, 38153), (34, 38168), (39, 38231), (42, 38249), (43, 38252), (66, 38423), (67, 38426), (98, 38648),

Gene: Jeon\_33 Start: 35094, Stop: 35804, Start Num: 4

Candidate Starts for Jeon\_33:

(Start: 4 @35094 has 42 MA's), (9, 35133), (21, 35205), (23, 35220), (29, 35283), (36, 35325), (40, 35373), (49, 35463), (51, 35469), (54, 35493), (57, 35511), (63, 35541), (67, 35574), (72, 35610), (90, 35724),

Gene: Kaleb\_43 Start: 38659, Stop: 39354, Start Num: 4

Candidate Starts for Kaleb\_43:

(Start: 4 @38659 has 42 MA's), (34, 38869), (36, 38884), (45, 38962), (49, 39019), (61, 39085), (63, 39094), (64, 39103), (67, 39124), (82, 39217), (91, 39277), (95, 39301), (97, 39340),

Gene: Kamiyu\_42 Start: 37983, Stop: 38708, Start Num: 3

Candidate Starts for Kamiyu\_42:

(1, 37869), (Start: 3 @37983 has 45 MA's), (12, 38055), (31, 38202), (34, 38217), (39, 38280), (42, 38298), (43, 38301), (66, 38472), (67, 38475), (98, 38697),

Gene: Kheth\_43 Start: 38547, Stop: 39242, Start Num: 4

Candidate Starts for Kheth\_43:

(Start: 4 @38547 has 42 MA's), (34, 38757), (36, 38772), (45, 38850), (49, 38907), (61, 38973), (63, 38982), (64, 38991), (67, 39012), (82, 39105), (91, 39165), (95, 39189), (97, 39228),

Gene: Kolhan\_43 Start: 38538, Stop: 39233, Start Num: 4

Candidate Starts for Kolhan\_43:

(Start: 4 @38538 has 42 MA's), (34, 38748), (36, 38763), (45, 38841), (49, 38898), (61, 38964), (63, 38973), (64, 38982), (67, 39003), (82, 39096), (91, 39156), (95, 39180), (97, 39219),

Gene: Kronus\_41 Start: 38593, Stop: 39318, Start Num: 3

Candidate Starts for Kronus\_41:

(1, 38479), (Start: 3 @38593 has 45 MA's), (12, 38665), (31, 38812), (34, 38827), (39, 38890), (42, 38908), (43, 38911), (66, 39082), (67, 39085), (98, 39307),

Gene: Kwekel\_37 Start: 33062, Stop: 33766, Start Num: 7

Candidate Starts for Kwekel\_37:

(Start: 7 @33062 has 28 MA's), (18, 33149), (19, 33158), (52, 33425), (54, 33443), (56, 33455), (69, 33533), (70, 33542), (71, 33557), (87, 33650),

Gene: Lars\_43 Start: 38649, Stop: 39344, Start Num: 4

Candidate Starts for Lars\_43:

(Start: 4 @38649 has 42 MA's), (34, 38859), (36, 38874), (45, 38952), (49, 39009), (61, 39075), (63, 39084), (64, 39093), (67, 39114), (82, 39207), (91, 39267), (95, 39291), (97, 39330),

Gene: Laurie\_42 Start: 38048, Stop: 38743, Start Num: 4

Candidate Starts for Laurie\_42:

(Start: 4 @38048 has 42 MA's), (34, 38258), (36, 38273), (45, 38351), (49, 38408), (61, 38474), (63, 38483), (64, 38492), (67, 38513), (82, 38606), (91, 38666), (95, 38690), (97, 38729),

Gene: Lephleur\_43 Start: 38542, Stop: 39237, Start Num: 4

Candidate Starts for Lephleur\_43:

(Start: 4 @38542 has 42 MA's), (34, 38752), (36, 38767), (45, 38845), (49, 38902), (61, 38968), (63, 38977), (64, 38986), (67, 39007), (82, 39100), (91, 39160), (95, 39184), (97, 39223),

Gene: LestyG\_42 Start: 38014, Stop: 38739, Start Num: 3

Candidate Starts for LestyG\_42:

(1, 37900), (Start: 3 @38014 has 45 MA's), (12, 38086), (31, 38233), (34, 38248), (39, 38311), (42, 38329), (43, 38332), (66, 38503), (67, 38506), (98, 38728),

Gene: Ligma\_35 Start: 30447, Stop: 31139, Start Num: 7

Candidate Starts for Ligma\_35:

(Start: 7 @30447 has 28 MA's), (10, 30483), (29, 30642), (33, 30663), (46, 30765), (52, 30819), (53, 30825), (54, 30831), (60, 30867), (64, 30888), (66, 30906), (67, 30909), (80, 30999), (88, 31041), (96, 31116),

Gene: LilSmirk\_43 Start: 38536, Stop: 39231, Start Num: 4

Candidate Starts for LilSmirk\_43:

(Start: 4 @38536 has 42 MA's), (34, 38746), (36, 38761), (45, 38839), (49, 38896), (61, 38962), (63, 38971), (64, 38980), (67, 39001), (82, 39094), (91, 39154), (95, 39178), (97, 39217),

Gene: LittleMunchkin\_37 Start: 33864, Stop: 34556, Start Num: 7

Candidate Starts for LittleMunchkin\_37:

(Start: 7 @33864 has 28 MA's), (10, 33900), (46, 34182), (52, 34236), (54, 34248), (60, 34284), (64, 34305), (65, 34320), (85, 34446),

Gene: LizLemon\_43 Start: 38658, Stop: 39353, Start Num: 4

Candidate Starts for LizLemon\_43:

(Start: 4 @38658 has 42 MA's), (34, 38868), (36, 38883), (45, 38961), (49, 39018), (61, 39084), (63, 39093), (64, 39102), (67, 39123), (82, 39216), (91, 39276), (95, 39300), (97, 39339),

Gene: MakoManhole\_37 Start: 32404, Stop: 33096, Start Num: 7

Candidate Starts for MakoManhole\_37:

(Start: 7 @32404 has 28 MA's), (25, 32539), (29, 32599), (40, 32689), (67, 32866), (71, 32899), (77, 32926), (80, 32956), (81, 32959), (86, 32989), (92, 33022),

Gene: Mao1\_35 Start: 34444, Stop: 35148, Start Num: 6

Candidate Starts for Mao1\_35:

(Start: 6 @34444 has 4 MA's), (14, 34507), (15, 34522), (20, 34546), (32, 34648), (33, 34654), (38, 34702), (49, 34810), (57, 34855), (59, 34861), (63, 34885), (73, 34957), (76, 34969), (78, 34987), (92, 35074), (93, 35077),

Gene: Mariokart\_35 Start: 30385, Stop: 31074, Start Num: 7

Candidate Starts for Mariokart\_35:

(Start: 7 @30385 has 28 MA's), (28, 30538), (29, 30577), (37, 30625), (38, 30646), (56, 30778), (63, 30814), (64, 30823), (66, 30841), (67, 30844), (68, 30850), (80, 30934), (88, 30976),

Gene: Marley1013\_42 Start: 38792, Stop: 39517, Start Num: 3

Candidate Starts for Marley1013\_42:

(1, 38678), (Start: 3 @38792 has 45 MA's), (12, 38864), (31, 39011), (34, 39026), (39, 39089), (42, 39107), (43, 39110), (66, 39281), (67, 39284), (98, 39506),

Gene: Marlia\_42 Start: 37995, Stop: 38720, Start Num: 3

Candidate Starts for Marlia\_42:

(1, 37881), (Start: 3 @37995 has 45 MA's), (12, 38067), (31, 38214), (34, 38229), (39, 38292), (42, 38310), (43, 38313), (66, 38484), (67, 38487), (98, 38709),

Gene: Mask\_36 Start: 34437, Stop: 35141, Start Num: 6

Candidate Starts for Mask\_36:

(Start: 6 @34437 has 4 MA's), (14, 34500), (15, 34515), (20, 34539), (32, 34641), (33, 34647), (38, 34695), (49, 34803), (57, 34848), (59, 34854), (63, 34878), (71, 34944), (73, 34950), (76, 34962), (78, 34980), (92, 35067), (93, 35070),

Gene: MasterPo\_43 Start: 38545, Stop: 39240, Start Num: 4

Candidate Starts for MasterPo\_43:

(Start: 4 @38545 has 42 MA's), (34, 38755), (36, 38770), (45, 38848), (49, 38905), (61, 38971), (63, 38980), (64, 38989), (67, 39010), (82, 39103), (91, 39163), (95, 39187), (97, 39226),

Gene: Megabear\_33 Start: 34531, Stop: 35241, Start Num: 4

Candidate Starts for Megabear\_33:

(Start: 4 @34531 has 42 MA's), (9, 34570), (21, 34642), (23, 34657), (29, 34720), (36, 34762), (40, 34810), (49, 34900), (51, 34906), (54, 34930), (57, 34948), (63, 34978), (67, 35011), (72, 35047), (90, 35161),

Gene: MmasiCarm\_42 Start: 37996, Stop: 38721, Start Num: 3

Candidate Starts for MmasiCarm\_42:

(1, 37882), (Start: 3 @37996 has 45 MA's), (12, 38068), (31, 38215), (34, 38230), (39, 38293), (42, 38311), (43, 38314), (66, 38485), (67, 38488), (98, 38710),

Gene: Mortcellus\_41 Start: 38648, Stop: 39373, Start Num: 3

Candidate Starts for Mortcellus\_41:

(1, 38534), (Start: 3 @38648 has 45 MA's), (12, 38720), (31, 38867), (34, 38882), (39, 38945), (42, 38963), (43, 38966), (66, 39137), (67, 39140), (98, 39362),

Gene: Morty007\_42 Start: 38792, Stop: 39517, Start Num: 3

Candidate Starts for Morty007\_42:

(1, 38678), (Start: 3 @38792 has 45 MA's), (12, 38864), (31, 39011), (34, 39026), (39, 39089), (42, 39107), (43, 39110), (66, 39281), (67, 39284), (98, 39506),

Gene: MossRose\_37 Start: 32383, Stop: 33075, Start Num: 7

Candidate Starts for MossRose\_37:

(Start: 7 @32383 has 28 MA's), (25, 32518), (29, 32578), (40, 32668), (67, 32845), (71, 32878), (77, 32905), (80, 32935), (81, 32938), (86, 32968), (92, 33001),

Gene: NHagos\_35 Start: 30942, Stop: 31637, Start Num: 7

Candidate Starts for NHagos\_35:

(Start: 7 @30942 has 28 MA's), (20, 31047), (29, 31137), (40, 31227), (46, 31260), (49, 31302), (56, 31341), (60, 31365), (66, 31404), (67, 31407), (74, 31449), (77, 31467), (80, 31497), (86, 31530), (92, 31563),

Gene: Neos5\_42 Start: 38807, Stop: 39532, Start Num: 3

Candidate Starts for Neos5\_42:

(1, 38693), (Start: 3 @38807 has 45 MA's), (12, 38879), (31, 39026), (34, 39041), (39, 39104), (42, 39122), (43, 39125), (66, 39296), (67, 39299), (98, 39521),

Gene: NiceHouse\_195 Start: 108486, Stop: 107845, Start Num: 13

Candidate Starts for NiceHouse\_195:

(5, 108555), (Start: 13 @108486 has 1 MA's), (16, 108459), (24, 108414), (26, 108399), (35, 108312), (44, 108234), (47, 108213), (48, 108180), (58, 108123), (62, 108102),

Gene: Nozo\_42 Start: 38772, Stop: 39497, Start Num: 3

Candidate Starts for Nozo\_42:

(1, 38658), (Start: 3 @38772 has 45 MA's), (12, 38844), (31, 38991), (34, 39006), (39, 39069), (42, 39087), (43, 39090), (66, 39261), (67, 39264), (98, 39486),

Gene: Obutu\_42 Start: 37996, Stop: 38721, Start Num: 3

Candidate Starts for Obutu\_42:

(1, 37882), (Start: 3 @37996 has 45 MA's), (12, 38068), (31, 38215), (34, 38230), (39, 38293), (42, 38311), (43, 38314), (66, 38485), (67, 38488), (98, 38710),

Gene: Olivio\_41 Start: 37865, Stop: 38590, Start Num: 3

Candidate Starts for Olivio\_41:

(1, 37751), (Start: 3 @37865 has 45 MA's), (12, 37937), (31, 38084), (34, 38099), (39, 38162), (42, 38180), (43, 38183), (66, 38354), (67, 38357), (98, 38579),

Gene: Opia\_43 Start: 38531, Stop: 39226, Start Num: 4

Candidate Starts for Opia\_43:

(Start: 4 @38531 has 42 MA's), (34, 38741), (36, 38756), (45, 38834), (49, 38891), (61, 38957), (63, 38966), (64, 38975), (67, 38996), (82, 39089), (91, 39149), (95, 39173), (97, 39212),

Gene: OrangeOswald\_42 Start: 38013, Stop: 38738, Start Num: 3

Candidate Starts for OrangeOswald\_42:

(1, 37899), (Start: 3 @38013 has 45 MA's), (12, 38085), (31, 38232), (34, 38247), (39, 38310), (42, 38328), (43, 38331), (66, 38502), (67, 38505), (98, 38727),

Gene: PR\_33 Start: 35135, Stop: 35845, Start Num: 4

Candidate Starts for PR\_33:

(Start: 4 @35135 has 42 MA's), (9, 35174), (21, 35246), (23, 35261), (29, 35324), (36, 35366), (40, 35414), (49, 35504), (51, 35510), (54, 35534), (57, 35552), (63, 35582), (67, 35615), (72, 35651), (90, 35765),

Gene: Phaedrus\_40 Start: 37933, Stop: 38658, Start Num: 3

Candidate Starts for Phaedrus\_40:

(1, 37819), (Start: 3 @37933 has 45 MA's), (12, 38005), (31, 38152), (34, 38167), (39, 38230), (42, 38248), (43, 38251), (66, 38422), (67, 38425), (98, 38647),

Gene: Phantasmagoria\_43 Start: 38543, Stop: 39238, Start Num: 4

Candidate Starts for Phantasmagoria\_43:

(Start: 4 @38543 has 42 MA's), (34, 38753), (36, 38768), (45, 38846), (49, 38903), (61, 38969), (63, 38978), (64, 38987), (67, 39008), (82, 39101), (91, 39161), (95, 39185), (97, 39224),

Gene: Phayeta\_43 Start: 37878, Stop: 38603, Start Num: 3

Candidate Starts for Phayeta\_43:

(1, 37764), (Start: 3 @37878 has 45 MA's), (12, 37950), (31, 38097), (34, 38112), (39, 38175), (42, 38193), (43, 38196), (66, 38367), (67, 38370), (98, 38592),

Gene: Philly\_41 Start: 37864, Stop: 38589, Start Num: 3

Candidate Starts for Philly\_41:

(1, 37750), (Start: 3 @37864 has 45 MA's), (12, 37936), (31, 38083), (34, 38098), (39, 38161), (42, 38179), (43, 38182), (66, 38353), (67, 38356), (98, 38578),

Gene: Phlyer\_42 Start: 38752, Stop: 39477, Start Num: 3

Candidate Starts for Phlyer\_42:

(1, 38638), (Start: 3 @38752 has 45 MA's), (12, 38824), (31, 38971), (34, 38986), (39, 39049), (42, 39067), (43, 39070), (66, 39241), (67, 39244), (98, 39466),

Gene: Pipefish\_44 Start: 39405, Stop: 40130, Start Num: 3

Candidate Starts for Pipefish\_44:

(1, 39291), (Start: 3 @39405 has 45 MA's), (12, 39477), (31, 39624), (34, 39639), (39, 39702), (42, 39720), (43, 39723), (66, 39894), (67, 39897), (98, 40119),

Gene: PrinceCharming\_43 Start: 38651, Stop: 39346, Start Num: 4

Candidate Starts for PrinceCharming\_43:

(2, 38636), (Start: 4 @38651 has 42 MA's), (34, 38861), (36, 38876), (45, 38954), (49, 39011), (61, 39077), (63, 39086), (64, 39095), (67, 39116), (82, 39209), (91, 39269), (95, 39293), (97, 39332),

Gene: Qyrzula\_40 Start: 38689, Stop: 39384, Start Num: 4

Candidate Starts for Qyrzula\_40:

(Start: 4 @38689 has 42 MA's), (36, 38914), (45, 38992), (49, 39049), (61, 39115), (63, 39124), (64, 39133), (67, 39154), (82, 39247), (91, 39307), (95, 39331), (97, 39370),

Gene: RagingRooster\_42 Start: 38014, Stop: 38739, Start Num: 3

Candidate Starts for RagingRooster\_42:

(1, 37900), (Start: 3 @38014 has 45 MA's), (12, 38086), (31, 38233), (34, 38248), (39, 38311), (42, 38329), (43, 38332), (66, 38503), (67, 38506), (98, 38728),

Gene: Rhinoforte\_43 Start: 38652, Stop: 39347, Start Num: 4

Candidate Starts for Rhinoforte\_43:

(Start: 4 @38652 has 42 MA's), (34, 38862), (36, 38877), (45, 38955), (49, 39012), (61, 39078), (63, 39087), (64, 39096), (67, 39117), (82, 39210), (91, 39270), (95, 39294), (97, 39333),

Gene: Rita1961\_42 Start: 37997, Stop: 38722, Start Num: 3

Candidate Starts for Rita1961\_42:

(1, 37883), (Start: 3 @37997 has 45 MA's), (12, 38069), (31, 38216), (34, 38231), (39, 38294), (42, 38312), (43, 38315), (66, 38486), (67, 38489), (98, 38711),

Gene: RoadKill\_35 Start: 32625, Stop: 33329, Start Num: 7

Candidate Starts for RoadKill\_35:

(Start: 7 @32625 has 28 MA's), (18, 32712), (19, 32721), (52, 32988), (54, 33006), (56, 33018), (69, 33096), (70, 33105), (71, 33120), (87, 33213),



Gene: RomaT\_42 Start: 38787, Stop: 39512, Start Num: 3

Candidate Starts for RomaT\_42:

(1, 38673), (Start: 3 @38787 has 45 MA's), (12, 38859), (31, 39006), (34, 39021), (39, 39084), (42, 39102), (43, 39105), (66, 39276), (67, 39279), (98, 39501),

Gene: Rosebush\_42 Start: 38659, Stop: 39354, Start Num: 4

Candidate Starts for Rosebush\_42:

(Start: 4 @38659 has 42 MA's), (34, 38869), (36, 38884), (45, 38962), (49, 39019), (61, 39085), (63, 39094), (64, 39103), (67, 39124), (82, 39217), (91, 39277), (95, 39301), (97, 39340),

Gene: Sabella\_42 Start: 38536, Stop: 39231, Start Num: 4

Candidate Starts for Sabella\_42:

(Start: 4 @38536 has 42 MA's), (34, 38746), (36, 38761), (45, 38839), (49, 38896), (61, 38962), (63, 38971), (64, 38980), (67, 39001), (82, 39094), (91, 39154), (95, 39178), (97, 39217),

Gene: Sejanus\_36 Start: 35378, Stop: 36082, Start Num: 6

Candidate Starts for Sejanus\_36:

(Start: 6 @35378 has 4 MA's), (14, 35441), (15, 35456), (20, 35480), (32, 35582), (33, 35588), (38, 35636), (49, 35744), (57, 35789), (59, 35795), (63, 35819), (71, 35885), (73, 35891), (76, 35903), (78, 35921), (92, 36008), (93, 36011),

Gene: Shatter\_35 Start: 30447, Stop: 31139, Start Num: 7

Candidate Starts for Shatter\_35:

(Start: 7 @30447 has 28 MA's), (10, 30483), (29, 30642), (33, 30663), (46, 30765), (52, 30819), (53, 30825), (54, 30831), (60, 30867), (64, 30888), (66, 30906), (67, 30909), (80, 30999), (88, 31041), (96, 31116),

Gene: Shenandoah\_42 Start: 37986, Stop: 38711, Start Num: 3

Candidate Starts for Shenandoah\_42:

(1, 37872), (Start: 3 @37986 has 45 MA's), (12, 38058), (31, 38205), (34, 38220), (39, 38283), (42, 38301), (43, 38304), (66, 38475), (67, 38478), (98, 38700),

Gene: Sisko\_35 Start: 31297, Stop: 31995, Start Num: 7

Candidate Starts for Sisko\_35:

(Start: 7 @31297 has 28 MA's), (38, 31561), (52, 31669), (54, 31681), (56, 31693), (67, 31759),

Gene: SlippinJimmy\_42 Start: 38779, Stop: 39504, Start Num: 3

Candidate Starts for SlippinJimmy\_42:

(1, 38665), (Start: 3 @38779 has 45 MA's), (12, 38851), (31, 38998), (34, 39013), (39, 39076), (42, 39094), (43, 39097), (66, 39268), (67, 39271), (98, 39493),

Gene: Sour\_40 Start: 35182, Stop: 35880, Start Num: 7

Candidate Starts for Sour\_40:

(Start: 7 @35182 has 28 MA's), (10, 35218), (38, 35446), (39, 35464), (46, 35500), (52, 35554), (54, 35566), (56, 35578), (63, 35614), (64, 35623), (66, 35641), (84, 35764), (85, 35770),

Gene: SwainyDoc\_42 Start: 38008, Stop: 38733, Start Num: 3

Candidate Starts for SwainyDoc\_42:

(1, 37894), (Start: 3 @38008 has 45 MA's), (12, 38080), (31, 38227), (34, 38242), (39, 38305), (42, 38323), (43, 38326), (66, 38497), (67, 38500), (98, 38722),

Gene: SynergyX\_42 Start: 38014, Stop: 38739, Start Num: 3

Candidate Starts for SynergyX\_42:

(1, 37900), (Start: 3 @38014 has 45 MA's), (12, 38086), (31, 38233), (34, 38248), (39, 38311), (42, 38329), (43, 38332), (66, 38503), (67, 38506), (98, 38728),

Gene: TA17A\_44 Start: 38526, Stop: 39221, Start Num: 4

Candidate Starts for TA17A\_44:

(Start: 4 @38526 has 42 MA's), (34, 38736), (36, 38751), (45, 38829), (49, 38886), (61, 38952), (63, 38961), (64, 38970), (67, 38991), (82, 39084), (91, 39144), (95, 39168), (97, 39207),

Gene: Taptic\_33 Start: 34531, Stop: 35241, Start Num: 4

Candidate Starts for Taptic\_33:

(Start: 4 @34531 has 42 MA's), (9, 34570), (21, 34642), (23, 34657), (29, 34720), (36, 34762), (40, 34810), (49, 34900), (51, 34906), (54, 34930), (57, 34948), (63, 34978), (67, 35011), (72, 35047), (90, 35161),

Gene: Tiamoceli\_38 Start: 33958, Stop: 34662, Start Num: 7

Candidate Starts for Tiamoceli\_38:

(Start: 7 @33958 has 28 MA's), (18, 34045), (19, 34054), (30, 34156), (52, 34321), (54, 34339), (56, 34351), (69, 34429), (70, 34438), (71, 34453), (87, 34546),

Gene: Tinciduntolum\_44 Start: 38664, Stop: 39359, Start Num: 4

Candidate Starts for Tinciduntolum\_44:

(Start: 4 @38664 has 42 MA's), (34, 38874), (36, 38889), (45, 38967), (49, 39024), (61, 39090), (63, 39099), (64, 39108), (67, 39129), (82, 39222), (91, 39282), (95, 39306), (97, 39345),

Gene: TinyTerror\_42 Start: 37999, Stop: 38724, Start Num: 3

Candidate Starts for TinyTerror\_42:

(1, 37885), (Start: 3 @37999 has 45 MA's), (12, 38071), (31, 38218), (34, 38233), (39, 38296), (42, 38314), (43, 38317), (66, 38488), (67, 38491), (98, 38713),

Gene: Tonitrus\_58 Start: 43532, Stop: 44185, Start Num: 11

Candidate Starts for Tonitrus\_58:

(Start: 11 @43532 has 1 MA's), (17, 43571), (22, 43601), (27, 43634), (41, 43760), (50, 43847), (55, 43880), (78, 44021), (79, 44024), (81, 44045), (83, 44054), (91, 44108),

Gene: Tres\_43 Start: 38539, Stop: 39234, Start Num: 4

Candidate Starts for Tres\_43:

(Start: 4 @38539 has 42 MA's), (34, 38749), (36, 38764), (45, 38842), (49, 38899), (61, 38965), (63, 38974), (64, 38983), (67, 39004), (82, 39097), (91, 39157), (95, 39181), (97, 39220),

Gene: Twonlo\_35 Start: 32576, Stop: 33280, Start Num: 7

Candidate Starts for Twonlo\_35:

(Start: 7 @32576 has 28 MA's), (18, 32663), (19, 32672), (52, 32939), (54, 32957), (56, 32969), (69, 33047), (70, 33056), (71, 33071), (87, 33164),

Gene: Tydolla\_42 Start: 38748, Stop: 39473, Start Num: 3

Candidate Starts for Tydolla\_42:

(1, 38634), (Start: 3 @38748 has 45 MA's), (12, 38820), (31, 38967), (34, 38982), (39, 39045), (42, 39063), (43, 39066), (66, 39237), (67, 39240), (98, 39462),

Gene: Vic9\_00042 Start: 39045, Stop: 39740, Start Num: 4

Candidate Starts for Vic9\_00042:

(Start: 4 @39045 has 42 MA's), (34, 39255), (36, 39270), (45, 39348), (49, 39405), (61, 39471), (63, 39480), (64, 39489), (67, 39510), (82, 39603), (91, 39663), (95, 39687), (97, 39726),

Gene: West99\_43 Start: 38659, Stop: 39354, Start Num: 4

Candidate Starts for West99\_43:

(Start: 4 @38659 has 42 MA's), (34, 38869), (36, 38884), (45, 38962), (49, 39019), (61, 39085), (63, 39094), (64, 39103), (67, 39124), (82, 39217), (91, 39277), (95, 39301), (97, 39340),

Gene: Wooper\_37 Start: 32392, Stop: 33084, Start Num: 7

Candidate Starts for Wooper\_37:

(Start: 7 @32392 has 28 MA's), (29, 32587), (40, 32677), (49, 32752), (60, 32812), (67, 32854), (71, 32887), (77, 32914), (80, 32944), (86, 32977), (92, 33010),

Gene: Yago84\_35 Start: 31371, Stop: 32069, Start Num: 7

Candidate Starts for Yago84\_35:

(Start: 7 @31371 has 28 MA's), (38, 31635), (52, 31743), (54, 31755), (56, 31767), (67, 31833),

Gene: Yahalom\_42 Start: 38024, Stop: 38749, Start Num: 3

Candidate Starts for Yahalom\_42:

(1, 37910), (Start: 3 @38024 has 45 MA's), (12, 38096), (31, 38243), (34, 38258), (39, 38321), (42, 38339), (43, 38342), (66, 38513), (67, 38516), (98, 38738),

Gene: Yeshua\_37 Start: 32369, Stop: 33061, Start Num: 7

Candidate Starts for Yeshua\_37:

(Start: 7 @32369 has 28 MA's), (29, 32564), (40, 32654), (49, 32729), (60, 32789), (67, 32831), (71, 32864), (77, 32891), (80, 32921), (86, 32954), (92, 32987),

Gene: Yinz\_42 Start: 38050, Stop: 38775, Start Num: 3

Candidate Starts for Yinz\_42:

(1, 37936), (Start: 3 @38050 has 45 MA's), (12, 38122), (31, 38269), (34, 38284), (39, 38347), (42, 38365), (43, 38368), (66, 38539), (67, 38542), (98, 38764),