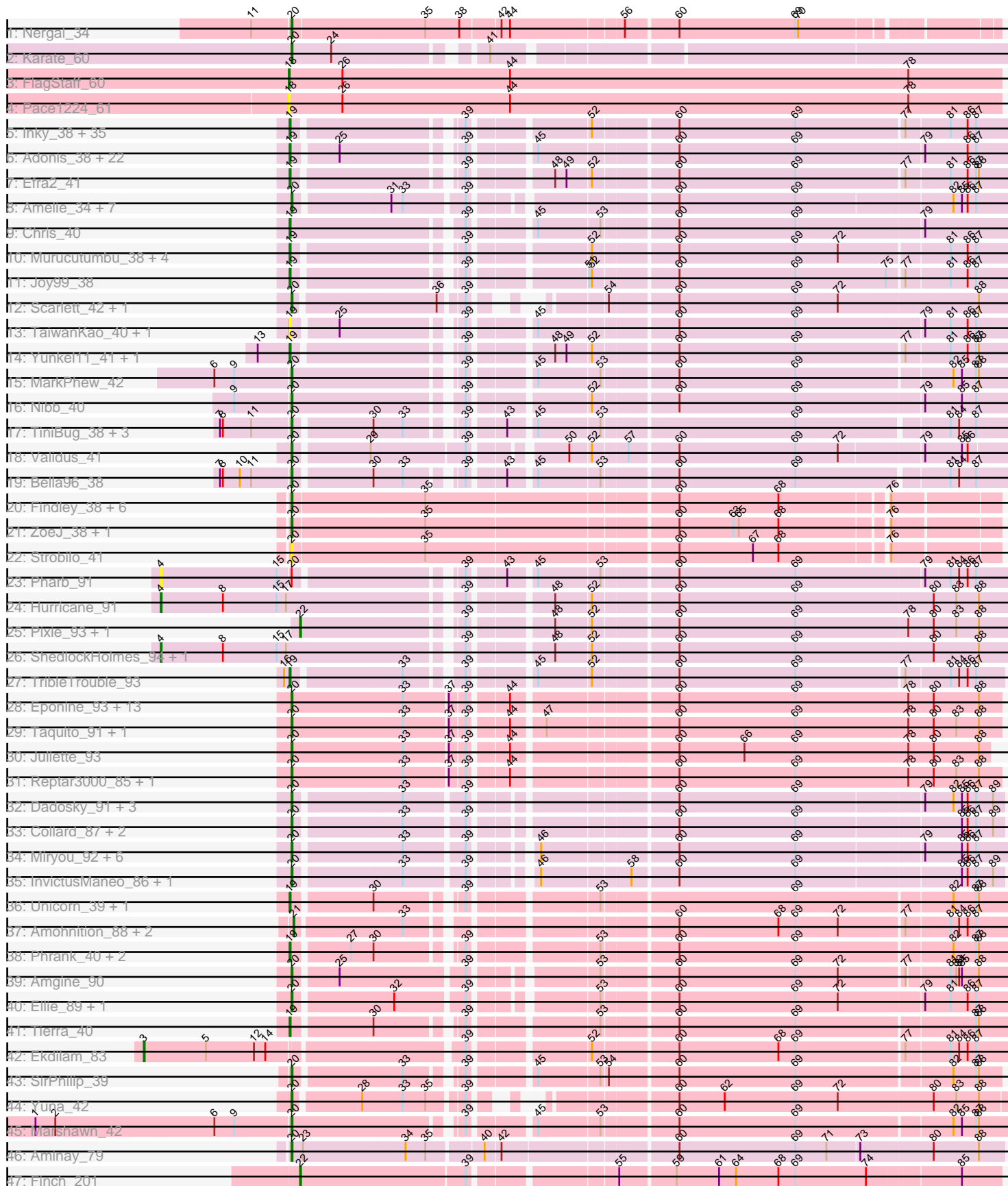


Pham 157635



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 157635 Report

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

Pham number 157635 has 163 members, 9 are drafts.

Phages represented in each track:

- Track 1 : Nergal\_34
- Track 2 : Karate\_60
- Track 3 : FlagStaff\_60
- Track 4 : Pace1224\_61
- Track 5 : Inky\_38, Sunflower1121\_41, Spock\_38, BarrelRoll\_38, Jayhawk\_39, Slimphazie\_38, Tiri\_39, Belladonna\_38, Peel\_38, Capricorn\_38, BGlluviae\_38, CREW\_38, Tachez\_38, Topper\_38, Krueger\_42, Dalmuri\_38, Syra333\_42, Jeckyll\_38, Twitch\_38, HedwigODU\_38, Beezoo\_38, Emerson\_39, ActinUp\_38, Veliki\_38, Atiba\_38, Rosmarinus\_38, Rapunzel97\_38, Padpat\_39, TruffulaTree\_38, Ximenita\_43, Lunahalos\_38, Llorens\_38, Shadow1\_41, Jarvi\_38, Homura\_38, Adephagia\_38
- Track 6 : Adonis\_38, QuincyRose\_37, Deby\_38, Piatt\_38, Padfoot\_38, Sulley\_38, Asayake\_38, JAWS\_38, Apocalypse\_39, Geraldini\_38, BEEST\_38, ShiaSurprise\_39, Angelica\_38, Boiiii\_38, Ganymede\_39, AlishaPH\_38, MeaningOfLife\_38, CaseJules\_39, Ramen\_38, Pokerus\_37, Blizzard\_38, Durfee\_38, Hyperbowlee\_38
- Track 7 : Efra2\_41
- Track 8 : Amelie\_34, Enkosi\_34, Biglebops\_34, SgtBeansprout\_34, Nikao\_34, LilPharaoh\_34, Mdavu\_34, Nutello\_34
- Track 9 : Chris\_40
- Track 10 : Murucutumbu\_38, Stinson\_39, LaterM\_38, Ageofdapage\_39, CrimD\_38
- Track 11 : Joy99\_38
- Track 12 : Scarlett\_42, Oscar\_42
- Track 13 : TaiwanKao\_40, Megsy\_40
- Track 14 : Yunkel11\_41, Guanica15\_41
- Track 15 : MarkPhew\_42
- Track 16 : Nibb\_40
- Track 17 : TiniBug\_38, SamuelLPlaqson\_38, DrHayes\_38, Urkel\_38
- Track 18 : Validus\_41
- Track 19 : Bella96\_38
- Track 20 : Findley\_38, DismalStressor\_38, Mufasa\_39, Milly\_38, DismalFunk\_38, Marcoliusprime\_38, BoostSeason\_39
- Track 21 : ZoeJ\_38, TM4\_40
- Track 22 : Strobilo\_41
- Track 23 : Pharb\_91
- Track 24 : Hurricane\_91
- Track 25 : Pixie\_93, TBond007\_90
- Track 26 : ShedlockHolmes\_94, Keshu\_95

- Track 27 : TribbleTrouble\_93
- Track 28 : Eponine\_93, JF1\_91, OmniCritical\_91, Wintermute\_91, Slarp\_89, Mitti\_91, Ruthiejr\_93, Y2\_87, Chancellor\_91, Malthus\_92, SamScheppers\_90, Cheetobro\_89, Fionnbharth\_91, Y10\_87
- Track 29 : Taquito\_91, MissDaisy\_85
- Track 30 : Juliette\_93
- Track 31 : Reptar3000\_85, Patt\_84
- Track 32 : Dadosky\_91, Psycho\_89, Larva\_90, AlleyCat\_91
- Track 33 : Collard\_87, Kratio\_91, Edugator\_85
- Track 34 : Miryou\_92, SoSeph\_90, Heftyboy\_90, OkiRoe\_89, Gengar\_88, Leston\_88, Waterfoul\_88
- Track 35 : InvictusManeo\_86, Agent47\_86
- Track 36 : Unicorn\_39, PhelpsODU\_39
- Track 37 : Amohnition\_88, DarthP\_88, Hammy\_88
- Track 38 : Phrank\_40, Bryler\_40, Cain\_40
- Track 39 : Amgine\_90
- Track 40 : Ellie\_89, Fefferhead\_91
- Track 41 : Tierra\_40
- Track 42 : Ekdilam\_83
- Track 43 : SirPhilip\_39
- Track 44 : Yuna\_42
- Track 45 : Marshawn\_42
- Track 46 : Aminay\_79
- Track 47 : Finch\_201

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

The start number called the most often in the published annotations is 19, it was called in 74 of the 154 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ActinUp\_38, Adephegia\_38, Adonis\_38, Ageofdapage\_39, AlishaPH\_38, Angelica\_38, Apocalypse\_39, Asayake\_38, Atiba\_38, BEEST\_38, BGIlluviae\_38, BarrelRoll\_38, Beezoo\_38, Belladonna\_38, Blizzard\_38, Boiiii\_38, Bryler\_40, CREW\_38, Cain\_40, Capricorn\_38, CaseJules\_39, Chris\_40, CrimD\_38, Dalmuri\_38, Deby\_38, Durfee\_38, Efra2\_41, Emerson\_39, Ganymede\_39, Geraldini\_38, Guanica15\_41, HedwigODU\_38, Homura\_38, Hyperbowlee\_38, Inky\_38, JAWS\_38, Jarvi\_38, Jayhawk\_39, Jeckyll\_38, Joy99\_38, Krueger\_42, LaterM\_38, Llorens\_38, Lunahalos\_38, MeaningOfLife\_38, Megsy\_40, Murucutumbu\_38, Padfoot\_38, Padpat\_39, Peel\_38, PhelpsODU\_39, Phrank\_40, Piatt\_38, Pokerus\_37, QuincyRose\_37, Ramen\_38, Rapunzel97\_38, Rosmarinus\_38, Shadow1\_41, ShiaSurprise\_39, Slimphazie\_38, Spock\_38, Stinson\_39, Sulley\_38, Sunflower1121\_41, Syra333\_42, Tachez\_38, TaiwanKao\_40, Tierra\_40, Tiri\_39, Topper\_38, TribbleTrouble\_93, TruffulaTree\_38, Twitch\_38, Unicorn\_39, Veliki\_38, Ximenita\_43, Yunkel11\_41,

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

- 

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

- Agent47\_86, AlleyCat\_91, Amelie\_34, Amgine\_90, Aminay\_79, Amohnition\_88, Bella96\_38, Binglebops\_34, BoostSeason\_39, Chancellor\_91, Cheetobro\_89, Collard\_87, Dadosky\_91, DarthP\_88, DismalFunk\_38, DismalStressor\_38, DrHayes\_38, Edugator\_85, Ekdilam\_83, Ellie\_89, Enkosi\_34, Eponine\_93, Fefferhead\_91, Finch\_201, Findley\_38, Fionnbharth\_91, FlagStaff\_60, Gengar\_88, Hammy\_88, Heftyboy\_90, Hurricane\_91, InvictusManeo\_86, JF1\_91, Juliette\_93, Karate\_60, Keshu\_95, Kratio\_91, Larva\_90, Leston\_88, LilPharaoh\_34, Malthus\_92, Marcoliusprime\_38, MarkPhew\_42, Marshawn\_42, Mdavu\_34, Milly\_38, Miryou\_92, MissDaisy\_85, Mitti\_91, Mufasa\_39, Nergal\_34, Nibb\_40, Nikao\_34, Nutello\_34, OkiRoe\_89, OmniCritical\_91, Oscar\_42, Pace1224\_61, Patt\_84, Pharb\_91, Pixie\_93, Psycho\_89, Reptar3000\_85, Ruthiejr\_93, SamScheppers\_90, SamuelLPlaqson\_38, Scarlett\_42, SgtBeansprout\_34, ShedlockHolmes\_94, SirPhilip\_39, Slarp\_89, SoSeph\_90, Strobilo\_41, TBond007\_90, TM4\_40, Taquito\_91, TiniBug\_38, Urkel\_38, Validus\_41, Waterfoul\_88, Wintermute\_91, Y10\_87, Y2\_87, Yuna\_42, ZoeJ\_38,

### Summary by start number:

#### Start 3:

- Found in 1 of 163 ( 0.6% ) of genes in pham
- Manual Annotations of this start: 1 of 154
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ekdilam\_83 (K6),

#### Start 4:

- Found in 4 of 163 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 3 of 154
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hurricane\_91 (K3), Keshu\_95 (K3), Pharb\_91 (K3), ShedlockHolmes\_94 (K3),

#### Start 18:

- Found in 2 of 163 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 154
- Called 100.0% of time when present
- Phage (with cluster) where this start called: FlagStaff\_60 (G2), Pace1224\_61 (G2),

#### Start 19:

- Found in 78 of 163 ( 47.9% ) of genes in pham
- Manual Annotations of this start: 74 of 154
- Called 100.0% of time when present
- Phage (with cluster) where this start called: ActinUp\_38 (K1), Adephegia\_38 (K1), Adonis\_38 (K1), Ageofdapage\_39 (K1), AlishaPH\_38 (K1), Angelica\_38 (K1), Apocalypse\_39 (K1), Asayake\_38 (K1), Atiba\_38 (K1), BEEST\_38 (K1), BGIluviae\_38 (K1), BarrelRoll\_38 (K1), Beezoo\_38 (K1), Belladonna\_38 (K1), Blizzard\_38 (K1), Boiiii\_38 (K1), Bryler\_40 (K6), CREW\_38 (K1), Cain\_40 (K6), Capricorn\_38 (K1), CaseJules\_39 (K1), Chris\_40 (K1), CrimD\_38 (K1), Dalmuri\_38 (K1), Deby\_38 (K1), Durfee\_38 (K1), Efra2\_41 (K1), Emerson\_39 (K1), Ganymede\_39 (K1), Geraldini\_38 (K1), Guanica15\_41 (K1), HedwigODU\_38 (K1), Homura\_38 (K1), Hyperbowlee\_38 (K1), Inky\_38 (K1), JAWS\_38 (K1), Jarvi\_38 (K1), Jayhawk\_39 (K1), Jeckyll\_38 (K1), Joy99\_38 (K1), Krueger\_42 (K6), LaterM\_38 (K1), Llorens\_38 (K1), Lunahalos\_38 (K1), MeaningOfLife\_38 (K1), Megsy\_40 (K1), Murucutumbu\_38 (K1), Padfoot\_38 (K1), Padpat\_39 (K1), Peel\_38 (K1), PhelpsODU\_39 (K6), Phrank\_40 (K6), Piatt\_38 (K1), Pokerus\_37 (K1),

QuincyRose\_37 (K1), Ramen\_38 (K1), Rapunzel97\_38 (K1), Rosmarinus\_38 (K1), Shadow1\_41 (K6), ShiaSurprise\_39 (K1), Slimphazie\_38 (K1), Spock\_38 (K1), Stinson\_39 (K1), Sulley\_38 (K1), Sunflower1121\_41 (K6), Syra333\_42 (K6), Tachez\_38 (K1), TaiwanKao\_40 (K1), Tierra\_40 (K6), Tiri\_39 (K1), Topper\_38 (K1), TribbleTrouble\_93 (K3), TruffulaTree\_38 (K1), Twitch\_38 (K1), Unicorn\_39 (K6), Veliki\_38 (K1), Ximenita\_43 (K6), Yunkel11\_41 (K1),

Start 20:

- Found in 73 of 163 ( 44.8% ) of genes in pham
- Manual Annotations of this start: 69 of 154
- Called 98.6% of time when present
- Phage (with cluster) where this start called: Agent47\_86 (K5), AlleyCat\_91 (K5), Amelie\_34 (K1), Amgine\_90 (K6), Aminay\_79 (K7), Bella96\_38 (K1), Binglebops\_34 (K1), BoostSeason\_39 (K2), Chancellor\_91 (K4), Cheetobro\_89 (K4), Collard\_87 (K5), Dadosky\_91 (K5), DismalFunk\_38 (K2), DismalStressor\_38 (K2), DrHayes\_38 (K1), Edugator\_85 (K5), Ellie\_89 (K6), Enkosi\_34 (K1), Eponine\_93 (K4), Fefferhead\_91 (K6), Findley\_38 (K2), Fionnbharth\_91 (K4), Gengar\_88 (K5), Heftyboy\_90 (K5), InvictusManeo\_86 (K5), JF1\_91 (K4), Juliette\_93 (K4), Karate\_60 (EF), Kratio\_91 (K5), Larva\_90 (K5), Leston\_88 (K5), LilPharaoh\_34 (K1), Malthus\_92 (K4), Marcoliusprime\_38 (K2), MarkPhew\_42 (K1), Marshawn\_42 (K6), Mdavu\_34 (K1), Milly\_38 (K2), Miryou\_92 (K5), MissDaisy\_85 (K4), Mitti\_91 (K4), Mufasa\_39 (K2), Nergal\_34 (AG), Nibb\_40 (K1), Nikao\_34 (K1), Nutello\_34 (K1), OkiRoe\_89 (K5), OmniCritical\_91 (K4), Oscar\_42 (K1), Patt\_84 (K4), Psycho\_89 (K5), Reptar3000\_85 (K4), Ruthiejr\_93 (K4), SamScheppers\_90 (K4), SamuelLPlaqson\_38 (K1), Scarlett\_42 (K1), SgtBeansprout\_34 (K1), SirPhilip\_39 (K6), Slarp\_89 (K4), SoSeph\_90 (K5), Strobilo\_41 (K2), TM4\_40 (K2), Taquito\_91 (K4), TiniBug\_38 (K1), Urkel\_38 (K1), Validus\_41 (K1), Waterfoul\_88 (K5), Wintermute\_91 (K4), Y10\_87 (K4), Y2\_87 (K4), Yuna\_42 (K6), ZoeJ\_38 (K2),

Start 21:

- Found in 3 of 163 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 3 of 154
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Amohnition\_88 (K6), DARTH\_P\_88 (K6), Hammy\_88 (K6),

Start 22:

- Found in 3 of 163 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 3 of 154
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Finch\_201 (singleton), Pixie\_93 (K3), TBond007\_90 (K3),

### Summary by clusters:

There are 11 clusters represented in this pham: singleton, G2, AG, EF, K3, K2, K1, K7, K6, K5, K4,

Info for manual annotations of cluster AG:

- Start number 20 was manually annotated 1 time for cluster AG.

Info for manual annotations of cluster EF:

- Start number 20 was manually annotated 1 time for cluster EF.

Info for manual annotations of cluster G2:

- Start number 18 was manually annotated 1 time for cluster G2.

Info for manual annotations of cluster K1:

- Start number 19 was manually annotated 62 times for cluster K1.
- Start number 20 was manually annotated 18 times for cluster K1.

Info for manual annotations of cluster K2:

- Start number 20 was manually annotated 9 times for cluster K2.

Info for manual annotations of cluster K3:

- Start number 4 was manually annotated 3 times for cluster K3.
- Start number 19 was manually annotated 1 time for cluster K3.
- Start number 22 was manually annotated 2 times for cluster K3.

Info for manual annotations of cluster K4:

- Start number 20 was manually annotated 19 times for cluster K4.

Info for manual annotations of cluster K5:

- Start number 20 was manually annotated 14 times for cluster K5.

Info for manual annotations of cluster K6:

- Start number 3 was manually annotated 1 time for cluster K6.
- Start number 19 was manually annotated 11 times for cluster K6.
- Start number 20 was manually annotated 6 times for cluster K6.
- Start number 21 was manually annotated 3 times for cluster K6.

Info for manual annotations of cluster K7:

- Start number 20 was manually annotated 1 time for cluster K7.

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

Gene: ActinUp\_38 Start: 30545, Stop: 31231, Start Num: 19

Candidate Starts for ActinUp\_38:

(Start: 19 @30545 has 74 MA's), (39, 30698), (52, 30809), (60, 30890), (69, 31013), (77, 31124), (81, 31169), (86, 31187), (87, 31196),

Gene: Adephagia\_38 Start: 30542, Stop: 31228, Start Num: 19

Candidate Starts for Adephagia\_38:

(Start: 19 @30542 has 74 MA's), (39, 30695), (52, 30806), (60, 30887), (69, 31010), (77, 31121), (81, 31166), (86, 31184), (87, 31193),

Gene: Adonis\_38 Start: 30557, Stop: 31246, Start Num: 19

Candidate Starts for Adonis\_38:

(Start: 19 @30557 has 74 MA's), (25, 30599), (39, 30710), (45, 30767), (60, 30902), (69, 31025), (79, 31157), (86, 31202), (87, 31211),

Gene: Agent47\_86 Start: 55865, Stop: 56548, Start Num: 20

Candidate Starts for Agent47\_86:

(Start: 20 @55865 has 69 MA's), (33, 55973), (39, 56030), (46, 56081), (58, 56168), (60, 56213), (69, 56336), (85, 56504), (86, 56510), (87, 56519), (89, 56537),

Gene: Ageofdapage\_39 Start: 30504, Stop: 31190, Start Num: 19

Candidate Starts for Ageofdapage\_39:

(Start: 19 @30504 has 74 MA's), (39, 30657), (52, 30768), (60, 30849), (69, 30972), (72, 31017), (81, 31128), (86, 31146), (87, 31155),

Gene: AlishaPH\_38 Start: 30535, Stop: 31224, Start Num: 19

Candidate Starts for AlishaPH\_38:

(Start: 19 @30535 has 74 MA's), (25, 30577), (39, 30688), (45, 30745), (60, 30880), (69, 31003), (79, 31135), (86, 31180), (87, 31189),

Gene: AlleyCat\_91 Start: 57150, Stop: 57836, Start Num: 20

Candidate Starts for AlleyCat\_91:

(Start: 20 @57150 has 69 MA's), (33, 57258), (39, 57315), (60, 57501), (69, 57624), (79, 57753), (82, 57783), (85, 57792), (86, 57798), (87, 57807), (89, 57825),

Gene: Amelie\_34 Start: 29822, Stop: 30511, Start Num: 20

Candidate Starts for Amelie\_34:

(Start: 20 @29822 has 69 MA's), (31, 29918), (33, 29930), (39, 29987), (60, 30170), (69, 30293), (82, 30452), (85, 30461), (86, 30467), (87, 30476),

Gene: Amgine\_90 Start: 58501, Stop: 59190, Start Num: 20

Candidate Starts for Amgine\_90:

(Start: 20 @58501 has 69 MA's), (25, 58543), (39, 58666), (53, 58777), (60, 58849), (69, 58972), (72, 59017), (77, 59083), (81, 59125), (83, 59131), (84, 59134), (85, 59137), (88, 59155),

Gene: Aminay\_79 Start: 50480, Stop: 51199, Start Num: 20

Candidate Starts for Aminay\_79:

(Start: 20 @50480 has 69 MA's), (23, 50492), (34, 50600), (35, 50621), (40, 50675), (42, 50690), (60, 50861), (69, 50984), (71, 51017), (73, 51050), (80, 51125), (88, 51173),

Gene: Amohnition\_88 Start: 57523, Stop: 58212, Start Num: 21

Candidate Starts for Amohnition\_88:

(Start: 21 @57523 has 3 MA's), (33, 57631), (60, 57871), (68, 57976), (69, 57994), (72, 58039), (77, 58105), (81, 58150), (84, 58159), (86, 58168), (87, 58177),

Gene: Angelica\_38 Start: 30492, Stop: 31181, Start Num: 19

Candidate Starts for Angelica\_38:

(Start: 19 @30492 has 74 MA's), (25, 30534), (39, 30645), (45, 30702), (60, 30837), (69, 30960), (79, 31092), (86, 31137), (87, 31146),

Gene: Apocalypse\_39 Start: 30512, Stop: 31201, Start Num: 19

Candidate Starts for Apocalypse\_39:

(Start: 19 @30512 has 74 MA's), (25, 30554), (39, 30665), (45, 30722), (60, 30857), (69, 30980), (79, 31112), (86, 31157), (87, 31166),

Gene: Asayake\_38 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for Asayake\_38:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: Atiba\_38 Start: 30505, Stop: 31191, Start Num: 19

Candidate Starts for Atiba\_38:

(Start: 19 @30505 has 74 MA's), (39, 30658), (52, 30769), (60, 30850), (69, 30973), (77, 31084), (81, 31129), (86, 31147), (87, 31156),

Gene: BEEST\_38 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for BEEST\_38:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: BGlluviae\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for BGlluviae\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: BarrelRoll\_38 Start: 30528, Stop: 31214, Start Num: 19

Candidate Starts for BarrelRoll\_38:

(Start: 19 @30528 has 74 MA's), (39, 30681), (52, 30792), (60, 30873), (69, 30996), (77, 31107), (81, 31152), (86, 31170), (87, 31179),

Gene: Beezoo\_38 Start: 30552, Stop: 31238, Start Num: 19

Candidate Starts for Beezoo\_38:

(Start: 19 @30552 has 74 MA's), (39, 30705), (52, 30816), (60, 30897), (69, 31020), (77, 31131), (81, 31176), (86, 31194), (87, 31203),

Gene: Bella96\_38 Start: 30448, Stop: 31131, Start Num: 20

Candidate Starts for Bella96\_38:

(7, 30376), (8, 30379), (10, 30397), (11, 30409), (Start: 20 @30448 has 69 MA's), (30, 30526), (33, 30556), (39, 30601), (43, 30634), (45, 30658), (53, 30721), (60, 30793), (69, 30916), (81, 31069), (84, 31078), (87, 31096),

Gene: Belladonna\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Belladonna\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: Biglebops\_34 Start: 29822, Stop: 30511, Start Num: 20

Candidate Starts for Biglebops\_34:

(Start: 20 @29822 has 69 MA's), (31, 29918), (33, 29930), (39, 29987), (60, 30170), (69, 30293), (82, 30452), (85, 30461), (86, 30467), (87, 30476),

Gene: Blizzard\_38 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for Blizzard\_38:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: Boiiii\_38 Start: 30578, Stop: 31267, Start Num: 19

Candidate Starts for Boiiii\_38:

(Start: 19 @30578 has 74 MA's), (25, 30620), (39, 30731), (45, 30788), (60, 30923), (69, 31046), (79, 31178), (86, 31223), (87, 31232),

Gene: BoostSeason\_39 Start: 30244, Stop: 30951, Start Num: 20

Candidate Starts for BoostSeason\_39:



(Start: 20 @30244 has 69 MA's), (35, 30385), (60, 30637), (68, 30742), (76, 30847),

Gene: Bryler\_40 Start: 30409, Stop: 31095, Start Num: 19

Candidate Starts for Bryler\_40:

(Start: 19 @30409 has 74 MA's), (27, 30463), (30, 30487), (39, 30562), (53, 30682), (60, 30754), (69, 30877), (82, 31036), (87, 31060), (88, 31063),

Gene: CREW\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for CREW\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: Cain\_40 Start: 30397, Stop: 31083, Start Num: 19

Candidate Starts for Cain\_40:

(Start: 19 @30397 has 74 MA's), (27, 30451), (30, 30475), (39, 30550), (53, 30670), (60, 30742), (69, 30865), (82, 31024), (87, 31048), (88, 31051),

Gene: Capricorn\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Capricorn\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: CaseJules\_39 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for CaseJules\_39:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: Chancellor\_91 Start: 54897, Stop: 55604, Start Num: 20

Candidate Starts for Chancellor\_91:

(Start: 20 @54897 has 69 MA's), (33, 55014), (37, 55059), (39, 55074), (44, 55110), (60, 55266), (69, 55389), (78, 55506), (80, 55533), (88, 55581),

Gene: Cheetobro\_89 Start: 54451, Stop: 55158, Start Num: 20

Candidate Starts for Cheetobro\_89:

(Start: 20 @54451 has 69 MA's), (33, 54568), (37, 54613), (39, 54628), (44, 54664), (60, 54820), (69, 54943), (78, 55060), (80, 55087), (88, 55135),

Gene: Chris\_40 Start: 30964, Stop: 31665, Start Num: 19

Candidate Starts for Chris\_40:

(Start: 19 @30964 has 74 MA's), (39, 31129), (45, 31186), (53, 31249), (60, 31321), (69, 31444), (79, 31576),

Gene: Collard\_87 Start: 56114, Stop: 56800, Start Num: 20

Candidate Starts for Collard\_87:

(Start: 20 @56114 has 69 MA's), (33, 56222), (39, 56279), (60, 56465), (69, 56588), (85, 56756), (86, 56762), (87, 56771), (89, 56789),

Gene: CrimD\_38 Start: 30512, Stop: 31198, Start Num: 19

Candidate Starts for CrimD\_38:

(Start: 19 @30512 has 74 MA's), (39, 30665), (52, 30776), (60, 30857), (69, 30980), (72, 31025), (81, 31136), (86, 31154), (87, 31163),

Gene: Dadosky\_91 Start: 57151, Stop: 57837, Start Num: 20

Candidate Starts for Dadosky\_91:

(Start: 20 @57151 has 69 MA's), (33, 57259), (39, 57316), (60, 57502), (69, 57625), (79, 57754), (82, 57784), (85, 57793), (86, 57799), (87, 57808), (89, 57826),

Gene: Dalmuri\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Dalmuri\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: DarthP\_88 Start: 57376, Stop: 58065, Start Num: 21

Candidate Starts for DarthP\_88:

(Start: 21 @57376 has 3 MA's), (33, 57484), (60, 57724), (68, 57829), (69, 57847), (72, 57892), (77, 57958), (81, 58003), (84, 58012), (86, 58021), (87, 58030),

Gene: Deby\_38 Start: 30510, Stop: 31199, Start Num: 19

Candidate Starts for Deby\_38:

(Start: 19 @30510 has 74 MA's), (25, 30552), (39, 30663), (45, 30720), (60, 30855), (69, 30978), (79, 31110), (86, 31155), (87, 31164),

Gene: DismalFunk\_38 Start: 30342, Stop: 31046, Start Num: 20

Candidate Starts for DismalFunk\_38:

(Start: 20 @30342 has 69 MA's), (35, 30480), (60, 30732), (68, 30837), (76, 30942),

Gene: DismalStressor\_38 Start: 30342, Stop: 31046, Start Num: 20

Candidate Starts for DismalStressor\_38:

(Start: 20 @30342 has 69 MA's), (35, 30480), (60, 30732), (68, 30837), (76, 30942),

Gene: DrHayes\_38 Start: 30614, Stop: 31297, Start Num: 20

Candidate Starts for DrHayes\_38:

(7, 30542), (8, 30545), (11, 30575), (Start: 20 @30614 has 69 MA's), (30, 30692), (33, 30722), (39, 30767), (43, 30800), (45, 30824), (53, 30887), (69, 31082), (81, 31235), (84, 31244), (87, 31262),

Gene: Durfee\_38 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for Durfee\_38:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: Edugator\_85 Start: 58350, Stop: 59036, Start Num: 20

Candidate Starts for Edugator\_85:

(Start: 20 @58350 has 69 MA's), (33, 58458), (39, 58515), (60, 58701), (69, 58824), (85, 58992), (86, 58998), (87, 59007), (89, 59025),

Gene: Efra2\_41 Start: 30355, Stop: 31041, Start Num: 19

Candidate Starts for Efra2\_41:

(Start: 19 @30355 has 74 MA's), (39, 30508), (48, 30583), (49, 30595), (52, 30619), (60, 30700), (69, 30823), (77, 30934), (81, 30979), (86, 30997), (87, 31006), (88, 31009),

Gene: Ekdilam\_83 Start: 57075, Stop: 57926, Start Num: 3

Candidate Starts for Ekdilam\_83:

(Start: 3 @57075 has 1 MA's), (5, 57141), (12, 57192), (14, 57204), (39, 57393), (52, 57504), (60, 57585), (68, 57690), (69, 57708), (77, 57819), (81, 57864), (84, 57873), (86, 57882), (87, 57891),

Gene: Ellie\_89 Start: 57673, Stop: 58368, Start Num: 20

Candidate Starts for Ellie\_89:

(Start: 20 @57673 has 69 MA's), (32, 57772), (39, 57838), (53, 57949), (60, 58021), (69, 58144), (72, 58189), (79, 58276), (81, 58303), (86, 58321), (87, 58330),

Gene: Emerson\_39 Start: 30536, Stop: 31222, Start Num: 19

Candidate Starts for Emerson\_39:

(Start: 19 @30536 has 74 MA's), (39, 30689), (52, 30800), (60, 30881), (69, 31004), (77, 31115), (81, 31160), (86, 31178), (87, 31187),

Gene: Enkosi\_34 Start: 29822, Stop: 30511, Start Num: 20

Candidate Starts for Enkosi\_34:

(Start: 20 @29822 has 69 MA's), (31, 29918), (33, 29930), (39, 29987), (60, 30170), (69, 30293), (82, 30452), (85, 30461), (86, 30467), (87, 30476),

Gene: Eponine\_93 Start: 55877, Stop: 56584, Start Num: 20

Candidate Starts for Eponine\_93:

(Start: 20 @55877 has 69 MA's), (33, 55994), (37, 56039), (39, 56054), (44, 56090), (60, 56246), (69, 56369), (78, 56486), (80, 56513), (88, 56561),

Gene: Fefferhead\_91 Start: 57464, Stop: 58159, Start Num: 20

Candidate Starts for Fefferhead\_91:

(Start: 20 @57464 has 69 MA's), (32, 57563), (39, 57629), (53, 57740), (60, 57812), (69, 57935), (72, 57980), (79, 58067), (81, 58094), (86, 58112), (87, 58121),

Gene: Finch\_201 Start: 116833, Stop: 117528, Start Num: 22

Candidate Starts for Finch\_201:

(Start: 22 @116833 has 3 MA's), (39, 117004), (55, 117139), (59, 117193), (61, 117238), (64, 117256), (68, 117301), (69, 117319), (74, 117394), (85, 117487),

Gene: Findley\_38 Start: 30335, Stop: 31039, Start Num: 20

Candidate Starts for Findley\_38:

(Start: 20 @30335 has 69 MA's), (35, 30473), (60, 30725), (68, 30830), (76, 30935),

Gene: Fionnbharth\_91 Start: 55275, Stop: 55982, Start Num: 20

Candidate Starts for Fionnbharth\_91:

(Start: 20 @55275 has 69 MA's), (33, 55392), (37, 55437), (39, 55452), (44, 55488), (60, 55644), (69, 55767), (78, 55884), (80, 55911), (88, 55959),

Gene: FlagStaff\_60 Start: 41465, Stop: 42217, Start Num: 18

Candidate Starts for FlagStaff\_60:

(Start: 18 @41465 has 1 MA's), (26, 41522), (44, 41699), (78, 42119),

Gene: Ganymede\_39 Start: 30565, Stop: 31254, Start Num: 19

Candidate Starts for Ganymede\_39:

(Start: 19 @30565 has 74 MA's), (25, 30607), (39, 30718), (45, 30775), (60, 30910), (69, 31033), (79, 31165), (86, 31210), (87, 31219),

Gene: Gengar\_88 Start: 57248, Stop: 57934, Start Num: 20

Candidate Starts for Gengar\_88:

(Start: 20 @57248 has 69 MA's), (33, 57356), (39, 57413), (46, 57464), (60, 57596), (69, 57719), (79, 57848), (85, 57887), (86, 57893), (87, 57902),

Gene: Geraldini\_38 Start: 30636, Stop: 31325, Start Num: 19

Candidate Starts for Geraldini\_38:

(Start: 19 @30636 has 74 MA's), (25, 30678), (39, 30789), (45, 30846), (60, 30981), (69, 31104), (79, 31236), (86, 31281), (87, 31290),

Gene: Guanica15\_41 Start: 30311, Stop: 30997, Start Num: 19

Candidate Starts for Guanica15\_41:

(13, 30281), (Start: 19 @30311 has 74 MA's), (39, 30464), (48, 30539), (49, 30551), (52, 30575), (60, 30656), (69, 30779), (77, 30890), (81, 30935), (86, 30953), (87, 30962), (88, 30965),

Gene: Hammy\_88 Start: 57366, Stop: 58055, Start Num: 21

Candidate Starts for Hammy\_88:

(Start: 21 @57366 has 3 MA's), (33, 57474), (60, 57714), (68, 57819), (69, 57837), (72, 57882), (77, 57948), (81, 57993), (84, 58002), (86, 58011), (87, 58020),

Gene: HedwigODU\_38 Start: 30545, Stop: 31231, Start Num: 19

Candidate Starts for HedwigODU\_38:

(Start: 19 @30545 has 74 MA's), (39, 30698), (52, 30809), (60, 30890), (69, 31013), (77, 31124), (81, 31169), (86, 31187), (87, 31196),

Gene: Heftyboy\_90 Start: 58017, Stop: 58703, Start Num: 20

Candidate Starts for Heftyboy\_90:

(Start: 20 @58017 has 69 MA's), (33, 58125), (39, 58182), (46, 58233), (60, 58365), (69, 58488), (79, 58617), (85, 58656), (86, 58662), (87, 58671),

Gene: Homura\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Homura\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: Hurricane\_91 Start: 56971, Stop: 57810, Start Num: 4

Candidate Starts for Hurricane\_91:

(Start: 4 @56971 has 3 MA's), (8, 57037), (15, 57094), (17, 57103), (39, 57274), (48, 57349), (52, 57385), (60, 57466), (69, 57589), (80, 57733), (83, 57757), (88, 57781),

Gene: Hyperbowlee\_38 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for Hyperbowlee\_38:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: Inky\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Inky\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: InvictusManeo\_86 Start: 55869, Stop: 56552, Start Num: 20

Candidate Starts for InvictusManeo\_86:

(Start: 20 @55869 has 69 MA's), (33, 55977), (39, 56034), (46, 56085), (58, 56172), (60, 56217), (69, 56340), (85, 56508), (86, 56514), (87, 56523), (89, 56541),

Gene: JAWS\_38 Start: 30529, Stop: 31218, Start Num: 19

Candidate Starts for JAWS\_38:

(Start: 19 @30529 has 74 MA's), (25, 30571), (39, 30682), (45, 30739), (60, 30874), (69, 30997), (79, 31129), (86, 31174), (87, 31183),

Gene: JF1\_91 Start: 55199, Stop: 55906, Start Num: 20

Candidate Starts for JF1\_91:

(Start: 20 @55199 has 69 MA's), (33, 55316), (37, 55361), (39, 55376), (44, 55412), (60, 55568), (69, 55691), (78, 55808), (80, 55835), (88, 55883),

Gene: Jarvi\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Jarvi\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: Jayhawk\_39 Start: 30543, Stop: 31229, Start Num: 19

Candidate Starts for Jayhawk\_39:

(Start: 19 @30543 has 74 MA's), (39, 30696), (52, 30807), (60, 30888), (69, 31011), (77, 31122), (81, 31167), (86, 31185), (87, 31194),

Gene: Jeckyll\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Jeckyll\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: Joy99\_38 Start: 30590, Stop: 31276, Start Num: 19

Candidate Starts for Joy99\_38:

(Start: 19 @30590 has 74 MA's), (39, 30743), (51, 30851), (52, 30854), (60, 30935), (69, 31058), (75, 31154), (77, 31169), (81, 31214), (86, 31232), (87, 31241),

Gene: Juliette\_93 Start: 55291, Stop: 55986, Start Num: 20

Candidate Starts for Juliette\_93:

(Start: 20 @55291 has 69 MA's), (33, 55408), (37, 55453), (39, 55468), (44, 55504), (60, 55660), (66, 55729), (69, 55783), (78, 55900), (80, 55927), (88, 55975),

Gene: Karate\_60 Start: 46963, Stop: 47652, Start Num: 20

Candidate Starts for Karate\_60:

(Start: 20 @46963 has 69 MA's), (24, 47005), (41, 47143),

Gene: Keshu\_95 Start: 57373, Stop: 58212, Start Num: 4

Candidate Starts for Keshu\_95:

(Start: 4 @57373 has 3 MA's), (8, 57439), (15, 57496), (17, 57505), (39, 57676), (48, 57751), (52, 57787), (60, 57868), (69, 57991), (80, 58135), (88, 58183),

Gene: Kratio\_91 Start: 57046, Stop: 57732, Start Num: 20

Candidate Starts for Kratio\_91:

(Start: 20 @57046 has 69 MA's), (33, 57154), (39, 57211), (60, 57397), (69, 57520), (85, 57688), (86, 57694), (87, 57703), (89, 57721),

Gene: Krueger\_42 Start: 30580, Stop: 31269, Start Num: 19

Candidate Starts for Krueger\_42:

(Start: 19 @30580 has 74 MA's), (39, 30736), (52, 30847), (60, 30928), (69, 31051), (77, 31162), (81, 31207), (86, 31225), (87, 31234),

Gene: Larva\_90 Start: 58023, Stop: 58709, Start Num: 20

Candidate Starts for Larva\_90:

(Start: 20 @58023 has 69 MA's), (33, 58131), (39, 58188), (60, 58374), (69, 58497), (79, 58626), (82, 58656), (85, 58665), (86, 58671), (87, 58680), (89, 58698),

Gene: LaterM\_38 Start: 30491, Stop: 31177, Start Num: 19

Candidate Starts for LaterM\_38:

(Start: 19 @30491 has 74 MA's), (39, 30644), (52, 30755), (60, 30836), (69, 30959), (72, 31004), (81, 31115), (86, 31133), (87, 31142),

Gene: Leston\_88 Start: 57198, Stop: 57884, Start Num: 20

Candidate Starts for Leston\_88:

(Start: 20 @57198 has 69 MA's), (33, 57306), (39, 57363), (46, 57414), (60, 57546), (69, 57669), (79, 57798), (85, 57837), (86, 57843), (87, 57852),

Gene: LilPharaoh\_34 Start: 29822, Stop: 30511, Start Num: 20

Candidate Starts for LilPharaoh\_34:

(Start: 20 @29822 has 69 MA's), (31, 29918), (33, 29930), (39, 29987), (60, 30170), (69, 30293), (82, 30452), (85, 30461), (86, 30467), (87, 30476),

Gene: Llorens\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Llorens\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: Lunahalos\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Lunahalos\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: Malthus\_92 Start: 55000, Stop: 55707, Start Num: 20

Candidate Starts for Malthus\_92:

(Start: 20 @55000 has 69 MA's), (33, 55117), (37, 55162), (39, 55177), (44, 55213), (60, 55369), (69, 55492), (78, 55609), (80, 55636), (88, 55684),

Gene: Marcoliusprime\_38 Start: 30342, Stop: 31046, Start Num: 20

Candidate Starts for Marcoliusprime\_38:

(Start: 20 @30342 has 69 MA's), (35, 30480), (60, 30732), (68, 30837), (76, 30942),

Gene: MarkPhew\_42 Start: 31094, Stop: 31789, Start Num: 20

Candidate Starts for MarkPhew\_42:

(6, 31016), (9, 31037), (Start: 20 @31094 has 69 MA's), (39, 31256), (45, 31313), (53, 31376), (60, 31448), (69, 31571), (82, 31730), (85, 31739), (87, 31754), (88, 31757),

Gene: Marshawn\_42 Start: 31382, Stop: 32077, Start Num: 20

Candidate Starts for Marshawn\_42:

(1, 31115), (2, 31136), (6, 31304), (9, 31325), (Start: 20 @31382 has 69 MA's), (39, 31544), (45, 31601), (53, 31664), (60, 31736), (69, 31859), (82, 32018), (85, 32027), (87, 32042), (88, 32045),

Gene: Mdavu\_34 Start: 29810, Stop: 30499, Start Num: 20

Candidate Starts for Mdavu\_34:

(Start: 20 @29810 has 69 MA's), (31, 29906), (33, 29918), (39, 29975), (60, 30158), (69, 30281), (82, 30440), (85, 30449), (86, 30455), (87, 30464),

Gene: MeaningOfLife\_38 Start: 30521, Stop: 31210, Start Num: 19

Candidate Starts for MeaningOfLife\_38:

(Start: 19 @30521 has 74 MA's), (25, 30563), (39, 30674), (45, 30731), (60, 30866), (69, 30989), (79, 31121), (86, 31166), (87, 31175),

Gene: Megsy\_40 Start: 30509, Stop: 31198, Start Num: 19

Candidate Starts for Megsy\_40:

(Start: 19 @30509 has 74 MA's), (25, 30551), (39, 30662), (45, 30719), (60, 30854), (69, 30977), (79, 31109), (81, 31136), (86, 31154), (87, 31163),

Gene: Milly\_38 Start: 30315, Stop: 31019, Start Num: 20

Candidate Starts for Milly\_38:

(Start: 20 @30315 has 69 MA's), (35, 30453), (60, 30705), (68, 30810), (76, 30915),

Gene: Miryou\_92 Start: 59258, Stop: 59944, Start Num: 20

Candidate Starts for Miryou\_92:

(Start: 20 @59258 has 69 MA's), (33, 59366), (39, 59423), (46, 59474), (60, 59606), (69, 59729), (79, 59858), (85, 59897), (86, 59903), (87, 59912),

Gene: MissDaisy\_85 Start: 51594, Stop: 52301, Start Num: 20

Candidate Starts for MissDaisy\_85:

(Start: 20 @51594 has 69 MA's), (33, 51711), (37, 51756), (39, 51771), (44, 51807), (47, 51837), (60, 51963), (69, 52086), (78, 52203), (80, 52230), (83, 52254), (88, 52278),

Gene: Mitti\_91 Start: 55093, Stop: 55800, Start Num: 20

Candidate Starts for Mitti\_91:

(Start: 20 @55093 has 69 MA's), (33, 55210), (37, 55255), (39, 55270), (44, 55306), (60, 55462), (69, 55585), (78, 55702), (80, 55729), (88, 55777),

Gene: Mufasa\_39 Start: 30236, Stop: 30940, Start Num: 20

Candidate Starts for Mufasa\_39:

(Start: 20 @30236 has 69 MA's), (35, 30374), (60, 30626), (68, 30731), (76, 30836),

Gene: Murucutumbu\_38 Start: 30585, Stop: 31271, Start Num: 19

Candidate Starts for Murucutumbu\_38:

(Start: 19 @30585 has 74 MA's), (39, 30738), (52, 30849), (60, 30930), (69, 31053), (72, 31098), (81, 31209), (86, 31227), (87, 31236),

Gene: Nergal\_34 Start: 28204, Stop: 28902, Start Num: 20

Candidate Starts for Nergal\_34:

(11, 28165), (Start: 20 @28204 has 69 MA's), (35, 28342), (38, 28378), (42, 28417), (44, 28426), (56, 28540), (60, 28591), (69, 28714), (70, 28717),

Gene: Nibb\_40 Start: 30496, Stop: 31197, Start Num: 20

Candidate Starts for Nibb\_40:

(9, 30439), (Start: 20 @30496 has 69 MA's), (39, 30661), (52, 30772), (60, 30853), (69, 30976), (79, 31108), (85, 31147), (87, 31162),

Gene: Nikao\_34 Start: 29822, Stop: 30511, Start Num: 20

Candidate Starts for Nikao\_34:

(Start: 20 @29822 has 69 MA's), (31, 29918), (33, 29930), (39, 29987), (60, 30170), (69, 30293), (82, 30452), (85, 30461), (86, 30467), (87, 30476),

Gene: Nutello\_34 Start: 29822, Stop: 30511, Start Num: 20

Candidate Starts for Nutello\_34:

(Start: 20 @29822 has 69 MA's), (31, 29918), (33, 29930), (39, 29987), (60, 30170), (69, 30293), (82, 30452), (85, 30461), (86, 30467), (87, 30476),

Gene: OkiRoe\_89 Start: 58212, Stop: 58898, Start Num: 20

Candidate Starts for OkiRoe\_89:

(Start: 20 @58212 has 69 MA's), (33, 58320), (39, 58377), (46, 58428), (60, 58560), (69, 58683), (79, 58812), (85, 58851), (86, 58857), (87, 58866),

Gene: OmniCritical\_91 Start: 55173, Stop: 55880, Start Num: 20

Candidate Starts for OmniCritical\_91:

(Start: 20 @55173 has 69 MA's), (33, 55290), (37, 55335), (39, 55350), (44, 55386), (60, 55542), (69, 55665), (78, 55782), (80, 55809), (88, 55857),

Gene: Oscar\_42 Start: 31235, Stop: 31894, Start Num: 20

Candidate Starts for Oscar\_42:

(Start: 20 @31235 has 69 MA's), (36, 31379), (39, 31400), (54, 31481), (60, 31547), (69, 31670), (72, 31715), (88, 31862),

Gene: Pace1224\_61 Start: 41491, Stop: 42243, Start Num: 18

Candidate Starts for Pace1224\_61:

(Start: 18 @41491 has 1 MA's), (26, 41548), (44, 41725), (78, 42145),

Gene: Padfoot\_38 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for Padfoot\_38:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: Padpat\_39 Start: 30536, Stop: 31222, Start Num: 19

Candidate Starts for Padpat\_39:

(Start: 19 @30536 has 74 MA's), (39, 30689), (52, 30800), (60, 30881), (69, 31004), (77, 31115), (81, 31160), (86, 31178), (87, 31187),

Gene: Patt\_84 Start: 51741, Stop: 52448, Start Num: 20

Candidate Starts for Patt\_84:

(Start: 20 @51741 has 69 MA's), (33, 51858), (37, 51903), (39, 51918), (44, 51954), (60, 52110), (69, 52233), (78, 52350), (80, 52377), (83, 52401), (88, 52425),

Gene: Peel\_38 Start: 30663, Stop: 31349, Start Num: 19

Candidate Starts for Peel\_38:

(Start: 19 @30663 has 74 MA's), (39, 30816), (52, 30927), (60, 31008), (69, 31131), (77, 31242), (81, 31287), (86, 31305), (87, 31314),

Gene: Pharb\_91 Start: 56993, Stop: 57817, Start Num: 4

Candidate Starts for Pharb\_91:

(Start: 4 @56993 has 3 MA's), (15, 57116), (Start: 20 @57128 has 69 MA's), (39, 57281), (43, 57314), (45, 57338), (53, 57401), (60, 57473), (69, 57596), (79, 57728), (81, 57755), (84, 57764), (86, 57773), (87, 57782),

Gene: PhelpsODU\_39 Start: 30435, Stop: 31121, Start Num: 19

Candidate Starts for PhelpsODU\_39:

(Start: 19 @30435 has 74 MA's), (30, 30513), (39, 30588), (53, 30708), (69, 30903), (82, 31062), (87, 31086), (88, 31089),



Gene: Phrank\_40 Start: 30386, Stop: 31072, Start Num: 19

Candidate Starts for Phrank\_40:

(Start: 19 @30386 has 74 MA's), (27, 30440), (30, 30464), (39, 30539), (53, 30659), (60, 30731), (69, 30854), (82, 31013), (87, 31037), (88, 31040),

Gene: Piatt\_38 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for Piatt\_38:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: Pixie\_93 Start: 57420, Stop: 58109, Start Num: 22

Candidate Starts for Pixie\_93:

(Start: 22 @57420 has 3 MA's), (39, 57573), (48, 57648), (52, 57684), (60, 57765), (69, 57888), (78, 58005), (80, 58032), (83, 58056), (88, 58080),

Gene: Pokerus\_37 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for Pokerus\_37:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: Psycho\_89 Start: 57148, Stop: 57834, Start Num: 20

Candidate Starts for Psycho\_89:

(Start: 20 @57148 has 69 MA's), (33, 57256), (39, 57313), (60, 57499), (69, 57622), (79, 57751), (82, 57781), (85, 57790), (86, 57796), (87, 57805), (89, 57823),

Gene: QuincyRose\_37 Start: 30565, Stop: 31254, Start Num: 19

Candidate Starts for QuincyRose\_37:

(Start: 19 @30565 has 74 MA's), (25, 30607), (39, 30718), (45, 30775), (60, 30910), (69, 31033), (79, 31165), (86, 31210), (87, 31219),

Gene: Ramen\_38 Start: 30541, Stop: 31230, Start Num: 19

Candidate Starts for Ramen\_38:

(Start: 19 @30541 has 74 MA's), (25, 30583), (39, 30694), (45, 30751), (60, 30886), (69, 31009), (79, 31141), (86, 31186), (87, 31195),

Gene: Rapunzel97\_38 Start: 30543, Stop: 31229, Start Num: 19

Candidate Starts for Rapunzel97\_38:

(Start: 19 @30543 has 74 MA's), (39, 30696), (52, 30807), (60, 30888), (69, 31011), (77, 31122), (81, 31167), (86, 31185), (87, 31194),

Gene: Reptar3000\_85 Start: 51731, Stop: 52438, Start Num: 20

Candidate Starts for Reptar3000\_85:

(Start: 20 @51731 has 69 MA's), (33, 51848), (37, 51893), (39, 51908), (44, 51944), (60, 52100), (69, 52223), (78, 52340), (80, 52367), (83, 52391), (88, 52415),

Gene: Rosmarinus\_38 Start: 30649, Stop: 31335, Start Num: 19

Candidate Starts for Rosmarinus\_38:

(Start: 19 @30649 has 74 MA's), (39, 30802), (52, 30913), (60, 30994), (69, 31117), (77, 31228), (81, 31273), (86, 31291), (87, 31300),

Gene: Ruthiejr\_93 Start: 55066, Stop: 55773, Start Num: 20

Candidate Starts for Ruthiejr\_93:

(Start: 20 @55066 has 69 MA's), (33, 55183), (37, 55228), (39, 55243), (44, 55279), (60, 55435), (69, 55558), (78, 55675), (80, 55702), (88, 55750),

Gene: SamScheppers\_90 Start: 55551, Stop: 56258, Start Num: 20

Candidate Starts for SamScheppers\_90:

(Start: 20 @55551 has 69 MA's), (33, 55668), (37, 55713), (39, 55728), (44, 55764), (60, 55920), (69, 56043), (78, 56160), (80, 56187), (88, 56235),

Gene: SamuelLPlaqson\_38 Start: 30614, Stop: 31297, Start Num: 20

Candidate Starts for SamuelLPlaqson\_38:

(7, 30542), (8, 30545), (11, 30575), (Start: 20 @30614 has 69 MA's), (30, 30692), (33, 30722), (39, 30767), (43, 30800), (45, 30824), (53, 30887), (69, 31082), (81, 31235), (84, 31244), (87, 31262),

Gene: Scarlett\_42 Start: 31226, Stop: 31885, Start Num: 20

Candidate Starts for Scarlett\_42:

(Start: 20 @31226 has 69 MA's), (36, 31370), (39, 31391), (54, 31472), (60, 31538), (69, 31661), (72, 31706), (88, 31853),

Gene: SgtBeansprout\_34 Start: 29822, Stop: 30511, Start Num: 20

Candidate Starts for SgtBeansprout\_34:

(Start: 20 @29822 has 69 MA's), (31, 29918), (33, 29930), (39, 29987), (60, 30170), (69, 30293), (82, 30452), (85, 30461), (86, 30467), (87, 30476),

Gene: Shadow1\_41 Start: 30489, Stop: 31178, Start Num: 19

Candidate Starts for Shadow1\_41:

(Start: 19 @30489 has 74 MA's), (39, 30645), (52, 30756), (60, 30837), (69, 30960), (77, 31071), (81, 31116), (86, 31134), (87, 31143),

Gene: ShedlockHolmes\_94 Start: 57204, Stop: 58043, Start Num: 4

Candidate Starts for ShedlockHolmes\_94:

(Start: 4 @57204 has 3 MA's), (8, 57270), (15, 57327), (17, 57336), (39, 57507), (48, 57582), (52, 57618), (60, 57699), (69, 57822), (80, 57966), (88, 58014),

Gene: ShiaSurprise\_39 Start: 30576, Stop: 31265, Start Num: 19

Candidate Starts for ShiaSurprise\_39:

(Start: 19 @30576 has 74 MA's), (25, 30618), (39, 30729), (45, 30786), (60, 30921), (69, 31044), (79, 31176), (86, 31221), (87, 31230),

Gene: SirPhilip\_39 Start: 29794, Stop: 30471, Start Num: 20

Candidate Starts for SirPhilip\_39:

(Start: 20 @29794 has 69 MA's), (33, 29902), (39, 29947), (45, 30004), (53, 30067), (54, 30073), (60, 30139), (69, 30262), (82, 30421), (87, 30445), (88, 30448),

Gene: Slarp\_89 Start: 54454, Stop: 55161, Start Num: 20

Candidate Starts for Slarp\_89:

(Start: 20 @54454 has 69 MA's), (33, 54571), (37, 54616), (39, 54631), (44, 54667), (60, 54823), (69, 54946), (78, 55063), (80, 55090), (88, 55138),

Gene: Slimphazie\_38 Start: 30543, Stop: 31229, Start Num: 19

Candidate Starts for Slimphazie\_38:

(Start: 19 @30543 has 74 MA's), (39, 30696), (52, 30807), (60, 30888), (69, 31011), (77, 31122), (81, 31167), (86, 31185), (87, 31194),

Gene: SoSeph\_90 Start: 58017, Stop: 58703, Start Num: 20

Candidate Starts for SoSeph\_90:

(Start: 20 @58017 has 69 MA's), (33, 58125), (39, 58182), (46, 58233), (60, 58365), (69, 58488), (79, 58617), (85, 58656), (86, 58662), (87, 58671),

Gene: Spock\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Spock\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: Stinson\_39 Start: 30779, Stop: 31465, Start Num: 19

Candidate Starts for Stinson\_39:

(Start: 19 @30779 has 74 MA's), (39, 30932), (52, 31043), (60, 31124), (69, 31247), (72, 31292), (81, 31403), (86, 31421), (87, 31430),

Gene: Strobilo\_41 Start: 30316, Stop: 31020, Start Num: 20

Candidate Starts for Strobilo\_41:

(Start: 20 @30316 has 69 MA's), (35, 30454), (60, 30706), (67, 30784), (68, 30811), (76, 30916),

Gene: Sulley\_38 Start: 30509, Stop: 31198, Start Num: 19

Candidate Starts for Sulley\_38:

(Start: 19 @30509 has 74 MA's), (25, 30551), (39, 30662), (45, 30719), (60, 30854), (69, 30977), (79, 31109), (86, 31154), (87, 31163),

Gene: Sunflower1121\_41 Start: 30582, Stop: 31271, Start Num: 19

Candidate Starts for Sunflower1121\_41:

(Start: 19 @30582 has 74 MA's), (39, 30738), (52, 30849), (60, 30930), (69, 31053), (77, 31164), (81, 31209), (86, 31227), (87, 31236),

Gene: Syra333\_42 Start: 30508, Stop: 31197, Start Num: 19

Candidate Starts for Syra333\_42:

(Start: 19 @30508 has 74 MA's), (39, 30664), (52, 30775), (60, 30856), (69, 30979), (77, 31090), (81, 31135), (86, 31153), (87, 31162),

Gene: TBond007\_90 Start: 57419, Stop: 58108, Start Num: 22

Candidate Starts for TBond007\_90:

(Start: 22 @57419 has 3 MA's), (39, 57572), (48, 57647), (52, 57683), (60, 57764), (69, 57887), (78, 58004), (80, 58031), (83, 58055), (88, 58079),

Gene: TM4\_40 Start: 29985, Stop: 30689, Start Num: 20

Candidate Starts for TM4\_40:

(Start: 20 @29985 has 69 MA's), (35, 30123), (60, 30375), (63, 30432), (65, 30438), (68, 30480), (76, 30585),

Gene: Tachez\_38 Start: 30505, Stop: 31191, Start Num: 19

Candidate Starts for Tachez\_38:

(Start: 19 @30505 has 74 MA's), (39, 30658), (52, 30769), (60, 30850), (69, 30973), (77, 31084), (81, 31129), (86, 31147), (87, 31156),

Gene: TaiwanKao\_40 Start: 30506, Stop: 31195, Start Num: 19

Candidate Starts for TaiwanKao\_40:

(Start: 19 @30506 has 74 MA's), (25, 30548), (39, 30659), (45, 30716), (60, 30851), (69, 30974), (79, 31106), (81, 31133), (86, 31151), (87, 31160),

Gene: Taquito\_91 Start: 55520, Stop: 56227, Start Num: 20

Candidate Starts for Taquito\_91:

(Start: 20 @55520 has 69 MA's), (33, 55637), (37, 55682), (39, 55697), (44, 55733), (47, 55763), (60, 55889), (69, 56012), (78, 56129), (80, 56156), (83, 56180), (88, 56204),

Gene: Tierra\_40 Start: 31106, Stop: 31792, Start Num: 19

Candidate Starts for Tierra\_40:

(Start: 19 @31106 has 74 MA's), (30, 31184), (39, 31259), (53, 31379), (60, 31451), (69, 31574), (87, 31757), (88, 31760),

Gene: TiniBug\_38 Start: 30610, Stop: 31293, Start Num: 20

Candidate Starts for TiniBug\_38:

(7, 30538), (8, 30541), (11, 30571), (Start: 20 @30610 has 69 MA's), (30, 30688), (33, 30718), (39, 30763), (43, 30796), (45, 30820), (53, 30883), (69, 31078), (81, 31231), (84, 31240), (87, 31258),

Gene: Tiri\_39 Start: 30557, Stop: 31243, Start Num: 19

Candidate Starts for Tiri\_39:

(Start: 19 @30557 has 74 MA's), (39, 30710), (52, 30821), (60, 30902), (69, 31025), (77, 31136), (81, 31181), (86, 31199), (87, 31208),

Gene: Topper\_38 Start: 30661, Stop: 31347, Start Num: 19

Candidate Starts for Topper\_38:

(Start: 19 @30661 has 74 MA's), (39, 30814), (52, 30925), (60, 31006), (69, 31129), (77, 31240), (81, 31285), (86, 31303), (87, 31312),

Gene: TribbleTrouble\_93 Start: 58789, Stop: 59472, Start Num: 19

Candidate Starts for TribbleTrouble\_93:

(16, 58786), (Start: 19 @58789 has 74 MA's), (33, 58897), (39, 58945), (45, 59002), (52, 59056), (60, 59137), (69, 59260), (77, 59371), (81, 59416), (84, 59425), (86, 59434), (87, 59443),

Gene: TruffulaTree\_38 Start: 30539, Stop: 31225, Start Num: 19

Candidate Starts for TruffulaTree\_38:

(Start: 19 @30539 has 74 MA's), (39, 30692), (52, 30803), (60, 30884), (69, 31007), (77, 31118), (81, 31163), (86, 31181), (87, 31190),

Gene: Twitch\_38 Start: 30663, Stop: 31349, Start Num: 19

Candidate Starts for Twitch\_38:

(Start: 19 @30663 has 74 MA's), (39, 30816), (52, 30927), (60, 31008), (69, 31131), (77, 31242), (81, 31287), (86, 31305), (87, 31314),

Gene: Unicorn\_39 Start: 30435, Stop: 31121, Start Num: 19

Candidate Starts for Unicorn\_39:

(Start: 19 @30435 has 74 MA's), (30, 30513), (39, 30588), (53, 30708), (69, 30903), (82, 31062), (87, 31086), (88, 31089),

Gene: Urkel\_38 Start: 30614, Stop: 31297, Start Num: 20

Candidate Starts for Urkel\_38:

(7, 30542), (8, 30545), (11, 30575), (Start: 20 @30614 has 69 MA's), (30, 30692), (33, 30722), (39, 30767), (43, 30800), (45, 30824), (53, 30887), (69, 31082), (81, 31235), (84, 31244), (87, 31262),

Gene: Validus\_41 Start: 30418, Stop: 31113, Start Num: 20

Candidate Starts for Validus\_41:

(Start: 20 @30418 has 69 MA's), (29, 30493), (39, 30589), (50, 30670), (52, 30691), (57, 30724), (60, 30772), (69, 30895), (72, 30940), (79, 31024), (85, 31063), (86, 31069),

Gene: Veliki\_38 Start: 30579, Stop: 31265, Start Num: 19

Candidate Starts for Veliki\_38:

(Start: 19 @30579 has 74 MA's), (39, 30732), (52, 30843), (60, 30924), (69, 31047), (77, 31158), (81, 31203), (86, 31221), (87, 31230),

Gene: Waterfoul\_88 Start: 56866, Stop: 57552, Start Num: 20

Candidate Starts for Waterfoul\_88:

(Start: 20 @56866 has 69 MA's), (33, 56974), (39, 57031), (46, 57082), (60, 57214), (69, 57337), (79, 57466), (85, 57505), (86, 57511), (87, 57520),

Gene: Wintermute\_91 Start: 55255, Stop: 55962, Start Num: 20

Candidate Starts for Wintermute\_91:

(Start: 20 @55255 has 69 MA's), (33, 55372), (37, 55417), (39, 55432), (44, 55468), (60, 55624), (69, 55747), (78, 55864), (80, 55891), (88, 55939),

Gene: Ximenita\_43 Start: 30693, Stop: 31382, Start Num: 19

Candidate Starts for Ximenita\_43:

(Start: 19 @30693 has 74 MA's), (39, 30849), (52, 30960), (60, 31041), (69, 31164), (77, 31275), (81, 31320), (86, 31338), (87, 31347),

Gene: Y10\_87 Start: 55199, Stop: 55906, Start Num: 20

Candidate Starts for Y10\_87:

(Start: 20 @55199 has 69 MA's), (33, 55316), (37, 55361), (39, 55376), (44, 55412), (60, 55568), (69, 55691), (78, 55808), (80, 55835), (88, 55883),

Gene: Y2\_87 Start: 55199, Stop: 55906, Start Num: 20

Candidate Starts for Y2\_87:

(Start: 20 @55199 has 69 MA's), (33, 55316), (37, 55361), (39, 55376), (44, 55412), (60, 55568), (69, 55691), (78, 55808), (80, 55835), (88, 55883),

Gene: Yuna\_42 Start: 31344, Stop: 32000, Start Num: 20

Candidate Starts for Yuna\_42:

(Start: 20 @31344 has 69 MA's), (28, 31410), (33, 31452), (35, 31476), (39, 31509), (60, 31656), (62, 31704), (69, 31779), (72, 31824), (80, 31923), (83, 31947), (88, 31971),

Gene: Yunkel11\_41 Start: 30309, Stop: 30995, Start Num: 19

Candidate Starts for Yunkel11\_41:

(13, 30279), (Start: 19 @30309 has 74 MA's), (39, 30462), (48, 30537), (49, 30549), (52, 30573), (60, 30654), (69, 30777), (77, 30888), (81, 30933), (86, 30951), (87, 30960), (88, 30963),

Gene: ZoeJ\_38 Start: 30003, Stop: 30707, Start Num: 20

Candidate Starts for ZoeJ\_38:

(Start: 20 @30003 has 69 MA's), (35, 30141), (60, 30393), (63, 30450), (65, 30456), (68, 30498), (76, 30603),