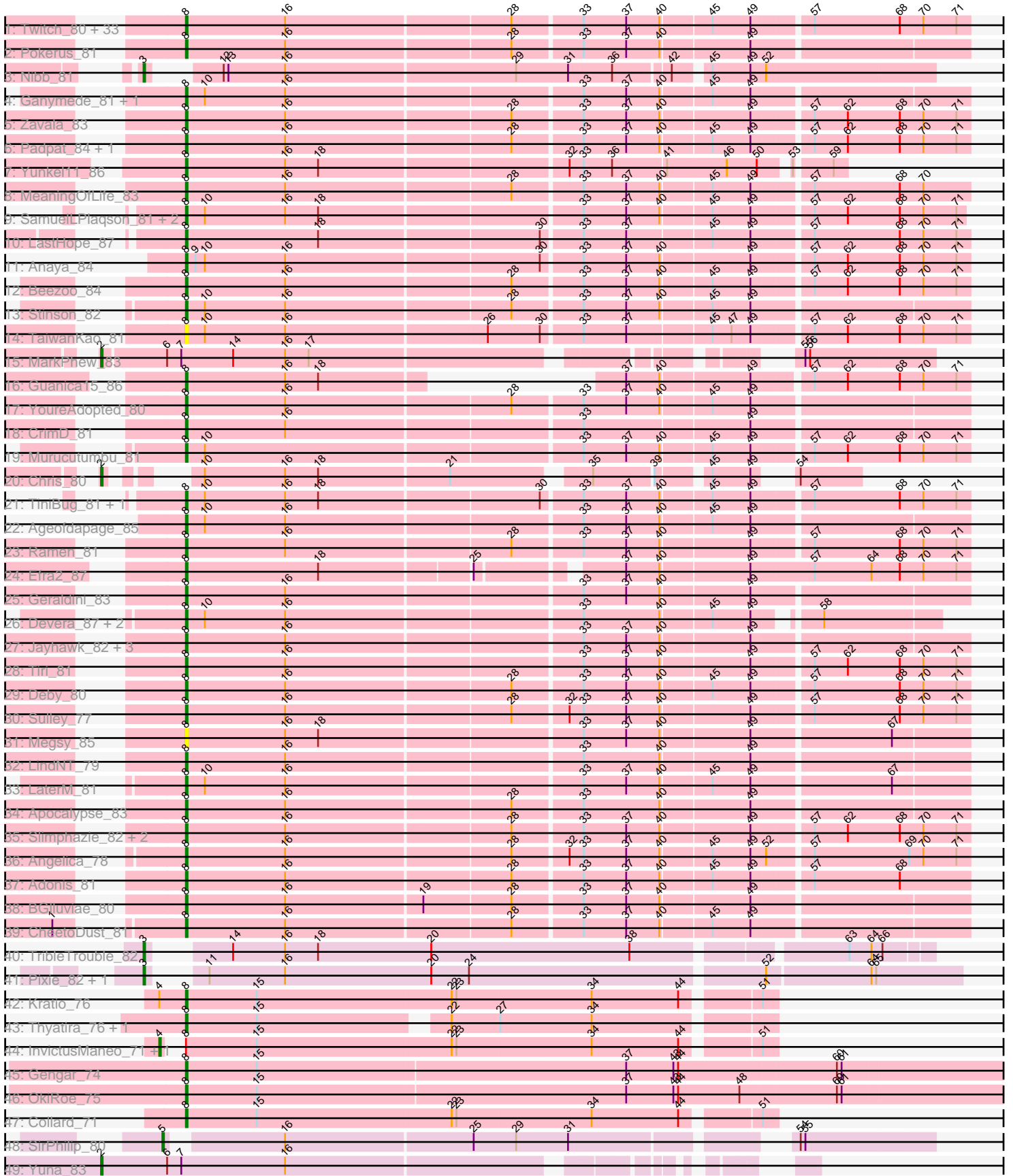


Pham 163500



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 163500 Report

This analysis was run 04/28/24 on database version 559.

Pham number 163500 has 97 members, 6 are drafts.

Phages represented in each track:

- Track 1 : Twitch\_80, ShiaSurprise\_81, Jeckyll\_80, HedwigODU\_80, Zabiza\_76, BaghaKamala\_79, Llorens\_79, Jarvi\_80, Rosmarinus\_80, Blizzard\_80, Lunahalos\_80, Durfee\_80, Boiiii\_80, Adephagia\_79, Hyperbowlee\_79, Atiba\_81, Homura\_79, Spock\_80, ActinUp\_81, CaseJules\_82, Padfoot\_80, BEEST\_80, Dalmuri\_80, TruffulaTree\_82, Inky\_80, Capricorn\_80, Asayake\_80, Joy99\_81, Peel\_80, Piatt\_79, Belladonna\_80, CREW\_79, Topper\_80, Tachez\_80
- Track 2 : Pokerus\_81
- Track 3 : Nibb\_81
- Track 4 : Ganymede\_81, QuincyRose\_79
- Track 5 : Zavala\_83
- Track 6 : Padpat\_84, Emerson\_83
- Track 7 : Yunkel11\_86
- Track 8 : MeaningOfLife\_83
- Track 9 : SamuelLPlaqson\_81, DrHayes\_81, Urkel\_81
- Track 10 : LastHope\_87
- Track 11 : Anaya\_84
- Track 12 : Beezoo\_84
- Track 13 : Stinson\_82
- Track 14 : TaiwanKao\_81
- Track 15 : MarkPhew\_83
- Track 16 : Guanica15\_86
- Track 17 : YoureAdopted\_80
- Track 18 : CrimD\_81
- Track 19 : Murucutumbu\_81
- Track 20 : Chris\_80
- Track 21 : TiniBug\_81, Bella96\_82
- Track 22 : Ageofdapage\_85
- Track 23 : Ramen\_81
- Track 24 : Efra2\_87
- Track 25 : Geraldini\_83
- Track 26 : Devera\_87, Dole\_84, Illumine\_85
- Track 27 : Jayhawk\_82, Rapunzel97\_83, BarrelRoll\_81, Mynx\_82
- Track 28 : Tiri\_81
- Track 29 : Deby\_80
- Track 30 : Sulley\_77
- Track 31 : Megsy\_85
- Track 32 : LindNT\_79

- Track 33 : LaterM\_81
- Track 34 : Apocalypse\_83
- Track 35 : Slimphazie\_82, JAWS\_79, Veliki\_81
- Track 36 : Angelica\_78
- Track 37 : Adonis\_81
- Track 38 : BGlluviae\_80
- Track 39 : CheetoDust\_81
- Track 40 : TribbleTrouble\_82
- Track 41 : Pixie\_82, TBond007\_79
- Track 42 : Kratio\_76
- Track 43 : Thyatira\_76, Waterfoul\_75
- Track 44 : InvictusManeo\_71, Agent47\_71
- Track 45 : Gengar\_74
- Track 46 : OkiRoe\_75
- Track 47 : Collard\_71
- Track 48 : SirPhilip\_80
- Track 49 : Yuna\_83

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

The start number called the most often in the published annotations is 8, it was called in 82 of the 91 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ActinUp\_81, Adephegia\_79, Adonis\_81, Ageofdapage\_85, Anaya\_84, Angelica\_78, Apocalypse\_83, Asayake\_80, Atiba\_81, BEEST\_80, BGlluviae\_80, BaghaKamala\_79, BarrelRoll\_81, Beezoo\_84, Bella96\_82, Belladonna\_80, Blizzard\_80, Boiiii\_80, CREW\_79, Capricorn\_80, CaseJules\_82, CheetoDust\_81, Collard\_71, CrimD\_81, Dalmuri\_80, Deby\_80, Devera\_87, Dole\_84, DrHayes\_81, Durfee\_80, Efra2\_87, Emerson\_83, Ganymede\_81, Gengar\_74, Geraldini\_83, Guanica15\_86, HedwigODU\_80, Homura\_79, Hyperbowlee\_79, Illumine\_85, Inky\_80, JAWS\_79, Jarvi\_80, Jayhawk\_82, Jeckyll\_80, Joy99\_81, Kratio\_76, LastHope\_87, LaterM\_81, LindNT\_79, Llorens\_79, Lunahalos\_80, MeaningOfLife\_83, Megsy\_85, Murucutumbu\_81, Mynx\_82, OkiRoe\_75, Padfoot\_80, Padpat\_84, Peel\_80, Piatt\_79, Pokerus\_81, QuincyRose\_79, Ramen\_81, Rapunzel97\_83, Rosmarinus\_80, SamuelLPlaqson\_81, ShiaSurprise\_81, Slimphazie\_82, Spock\_80, Stinson\_82, Sulley\_77, Tachez\_80, TaiwanKao\_81, Thyatira\_76, TiniBug\_81, Tiri\_81, Topper\_80, TruffulaTree\_82, Twitch\_80, Urkel\_81, Veliki\_81, Waterfoul\_75, YoureAdopted\_80, Yunkel11\_86, Zabiza\_76, Zavala\_83,

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

- Agent47\_71, InvictusManeo\_71,

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

- Chris\_80, MarkPhew\_83, Nibb\_81, Pixie\_82, SirPhilip\_80, TBond007\_79, TribbleTrouble\_82, Yuna\_83,

**Summary by start number:**

Start 2:

- Found in 3 of 97 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 3 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chris\_80 (K1), MarkPhew\_83 (K1), Yuna\_83 (K6),

#### Start 3:

- Found in 4 of 97 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 4 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Nibb\_81 (K1), Pixie\_82 (K3), TBond007\_79 (K3), TripleTrouble\_82 (K3),

#### Start 4:

- Found in 3 of 97 ( 3.1% ) of genes in pham
- Manual Annotations of this start: 1 of 91
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Agent47\_71 (K5), InvictusManeo\_71 (K5),

#### Start 5:

- Found in 1 of 97 ( 1.0% ) of genes in pham
- Manual Annotations of this start: 1 of 91
- Called 100.0% of time when present
- Phage (with cluster) where this start called: SirPhilip\_80 (K6),

#### Start 8:

- Found in 89 of 97 ( 91.8% ) of genes in pham
- Manual Annotations of this start: 82 of 91
- Called 97.8% of time when present
- Phage (with cluster) where this start called: ActinUp\_81 (K1), Adephegia\_79 (K1), Adonis\_81 (K1), Ageofdapage\_85 (K1), Anaya\_84 (K1), Angelica\_78 (K1), Apocalypse\_83 (K1), Asayake\_80 (K1), Atiba\_81 (K1), BEEST\_80 (K1), BGIlluvia\_80 (K1), BaghaKamala\_79 (K1), BarrelRoll\_81 (K1), Beezoo\_84 (K1), Bella96\_82 (K1), Belladonna\_80 (K1), Blizzard\_80 (K1), Boiiii\_80 (K1), CREW\_79 (K1), Capricorn\_80 (K1), CaseJules\_82 (K1), CheetoDust\_81 (K1), Collard\_71 (K5), CrimD\_81 (K1), Dalmuri\_80 (K1), Deby\_80 (K1), Devera\_87 (K1), Dole\_84 (K1), DrHayes\_81 (K1), Durfee\_80 (K1), Efra2\_87 (K1), Emerson\_83 (K1), Ganymede\_81 (K1), Gengar\_74 (K5), Geraldini\_83 (K1), Guanica15\_86 (K1), HedwigODU\_80 (K1), Homura\_79 (K1), Hyperbowlee\_79 (K1), Illumine\_85 (K1), Inky\_80 (K1), JAWS\_79 (K1), Jarvi\_80 (K1), Jayhawk\_82 (K1), Jeckyll\_80 (K1), Joy99\_81 (K1), Kratio\_76 (K5), LastHope\_87 (K1), LaterM\_81 (K1), LindNT\_79 (K1), Llorens\_79 (K1), Lunahalos\_80 (K1), MeaningOfLife\_83 (K1), Megsy\_85 (K1), Murucutumbu\_81 (K1), Mynx\_82 (K1), OkiRoe\_75 (K5), Padfoot\_80 (K1), Padpat\_84 (K1), Peel\_80 (K1), Piatt\_79 (K1), Pokerus\_81 (K1), QuincyRose\_79 (K1), Ramen\_81 (K1), Rapunzel97\_83 (K1), Rosmarinus\_80 (K1), SamuelLPlaqson\_81 (K1), ShiaSurprise\_81 (K1), Slimphazie\_82 (K1), Spock\_80 (K1), Stinson\_82 (K1), Sulley\_77 (K1), Tachez\_80 (K1), TaiwanKao\_81 (K1), Thyatira\_76 (K5), TiniBug\_81 (K1), Tiri\_81 (K1), Topper\_80 (K1), TruffulaTree\_82 (K1), Twitch\_80 (K1), Urkel\_81 (K1), Veliki\_81 (K1), Waterfoul\_75 (K5), YoureAdopted\_80 (K1), Yunkel11\_86 (K1), Zabiza\_76 (K1), Zavala\_83 (K1),

#### Summary by clusters:

There are 4 clusters represented in this pham: K3, K1, K6, K5,

Info for manual annotations of cluster K1:

- Start number 2 was manually annotated 2 times for cluster K1.
- Start number 3 was manually annotated 1 time for cluster K1.
- Start number 8 was manually annotated 76 times for cluster K1.

Info for manual annotations of cluster K3:

- Start number 3 was manually annotated 3 times for cluster K3.

Info for manual annotations of cluster K5:

- Start number 4 was manually annotated 1 time for cluster K5.
- Start number 8 was manually annotated 6 times for cluster K5.

Info for manual annotations of cluster K6:

- Start number 2 was manually annotated 1 time for cluster K6.
- Start number 5 was manually annotated 1 time for cluster K6.

### **Gene Information:**

Gene: ActinUp\_81 Start: 52478, Stop: 52954, Start Num: 8

Candidate Starts for ActinUp\_81:

(Start: 8 @52478 has 82 MA's), (16, 52541), (28, 52679), (33, 52721), (37, 52748), (40, 52769), (45, 52799), (49, 52823), (57, 52856), (68, 52910), (70, 52925), (71, 52946),

Gene: Adephagia\_79 Start: 52315, Stop: 52791, Start Num: 8

Candidate Starts for Adephagia\_79:

(Start: 8 @52315 has 82 MA's), (16, 52378), (28, 52516), (33, 52558), (37, 52585), (40, 52606), (45, 52636), (49, 52660), (57, 52693), (68, 52747), (70, 52762), (71, 52783),

Gene: Adonis\_81 Start: 52782, Stop: 53258, Start Num: 8

Candidate Starts for Adonis\_81:

(Start: 8 @52782 has 82 MA's), (16, 52845), (28, 52983), (33, 53025), (37, 53052), (40, 53073), (45, 53103), (49, 53127), (57, 53160), (68, 53214),

Gene: Agent47\_71 Start: 49173, Stop: 49535, Start Num: 4

Candidate Starts for Agent47\_71:

(Start: 4 @49173 has 1 MA's), (Start: 8 @49176 has 82 MA's), (15, 49221), (22, 49344), (23, 49347), (34, 49431), (44, 49485), (51, 49527),

Gene: Ageofdapage\_85 Start: 53683, Stop: 54159, Start Num: 8

Candidate Starts for Ageofdapage\_85:

(Start: 8 @53683 has 82 MA's), (10, 53695), (16, 53746), (33, 53926), (37, 53953), (40, 53974), (45, 54004), (49, 54028),

Gene: Anaya\_84 Start: 53360, Stop: 53836, Start Num: 8

Candidate Starts for Anaya\_84:

(Start: 8 @53360 has 82 MA's), (9, 53366), (10, 53372), (16, 53423), (30, 53579), (33, 53603), (37, 53630), (40, 53651), (49, 53705), (57, 53738), (62, 53759), (68, 53792), (70, 53807), (71, 53828),

Gene: Angelica\_78 Start: 51899, Stop: 52375, Start Num: 8

Candidate Starts for Angelica\_78:

(Start: 8 @51899 has 82 MA's), (16, 51962), (28, 52100), (32, 52133), (33, 52142), (37, 52169), (40, 52190), (45, 52220), (49, 52244), (52, 52253), (57, 52277), (69, 52337), (70, 52346), (71, 52367),

Gene: Apocalypse\_83 Start: 53113, Stop: 53589, Start Num: 8

Candidate Starts for Apocalypse\_83:

(Start: 8 @53113 has 82 MA's), (16, 53176), (28, 53314), (33, 53356), (40, 53404), (49, 53458),

Gene: Asayake\_80 Start: 52630, Stop: 53106, Start Num: 8

Candidate Starts for Asayake\_80:

(Start: 8 @52630 has 82 MA's), (16, 52693), (28, 52831), (33, 52873), (37, 52900), (40, 52921), (45, 52951), (49, 52975), (57, 53008), (68, 53062), (70, 53077), (71, 53098),

Gene: Atiba\_81 Start: 52278, Stop: 52754, Start Num: 8

Candidate Starts for Atiba\_81:

(Start: 8 @52278 has 82 MA's), (16, 52341), (28, 52479), (33, 52521), (37, 52548), (40, 52569), (45, 52599), (49, 52623), (57, 52656), (68, 52710), (70, 52725), (71, 52746),

Gene: BEEST\_80 Start: 52630, Stop: 53106, Start Num: 8

Candidate Starts for BEEST\_80:

(Start: 8 @52630 has 82 MA's), (16, 52693), (28, 52831), (33, 52873), (37, 52900), (40, 52921), (45, 52951), (49, 52975), (57, 53008), (68, 53062), (70, 53077), (71, 53098),

Gene: BGlluviae\_80 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for BGlluviae\_80:

(Start: 8 @52433 has 82 MA's), (16, 52496), (19, 52580), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (49, 52778),

Gene: BaghaKamala\_79 Start: 51864, Stop: 52340, Start Num: 8

Candidate Starts for BaghaKamala\_79:

(Start: 8 @51864 has 82 MA's), (16, 51927), (28, 52065), (33, 52107), (37, 52134), (40, 52155), (45, 52185), (49, 52209), (57, 52242), (68, 52296), (70, 52311), (71, 52332),

Gene: BarrelRoll\_81 Start: 52830, Stop: 53306, Start Num: 8

Candidate Starts for BarrelRoll\_81:

(Start: 8 @52830 has 82 MA's), (16, 52893), (33, 53073), (37, 53100), (40, 53121), (49, 53175),

Gene: Beezoo\_84 Start: 53443, Stop: 53919, Start Num: 8

Candidate Starts for Beezoo\_84:

(Start: 8 @53443 has 82 MA's), (16, 53506), (28, 53644), (33, 53686), (37, 53713), (40, 53734), (45, 53764), (49, 53788), (57, 53821), (62, 53842), (68, 53875), (70, 53890), (71, 53911),

Gene: Bella96\_82 Start: 52804, Stop: 53280, Start Num: 8

Candidate Starts for Bella96\_82:

(Start: 8 @52804 has 82 MA's), (10, 52816), (16, 52867), (18, 52888), (30, 53023), (33, 53047), (37, 53074), (40, 53095), (45, 53125), (49, 53149), (57, 53182), (68, 53236), (70, 53251), (71, 53272),

Gene: Belladonna\_80 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Belladonna\_80:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: Blizzard\_80 Start: 52630, Stop: 53106, Start Num: 8

Candidate Starts for Blizzard\_80:

(Start: 8 @52630 has 82 MA's), (16, 52693), (28, 52831), (33, 52873), (37, 52900), (40, 52921), (45, 52951), (49, 52975), (57, 53008), (68, 53062), (70, 53077), (71, 53098),

Gene: Boiiii\_80 Start: 52632, Stop: 53108, Start Num: 8

Candidate Starts for Boiiii\_80:

(Start: 8 @52632 has 82 MA's), (16, 52695), (28, 52833), (33, 52875), (37, 52902), (40, 52923), (45, 52953), (49, 52977), (57, 53010), (68, 53064), (70, 53079), (71, 53100),

Gene: CREW\_79 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for CREW\_79:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: Capricorn\_80 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Capricorn\_80:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: CaseJules\_82 Start: 52630, Stop: 53106, Start Num: 8

Candidate Starts for CaseJules\_82:

(Start: 8 @52630 has 82 MA's), (16, 52693), (28, 52831), (33, 52873), (37, 52900), (40, 52921), (45, 52951), (49, 52975), (57, 53008), (68, 53062), (70, 53077), (71, 53098),

Gene: CheetoDust\_81 Start: 52251, Stop: 52727, Start Num: 8

Candidate Starts for CheetoDust\_81:

(1, 52212), (Start: 8 @52251 has 82 MA's), (16, 52314), (28, 52452), (33, 52494), (37, 52521), (40, 52542), (45, 52572), (49, 52596),

Gene: Chris\_80 Start: 52508, Stop: 52897, Start Num: 2

Candidate Starts for Chris\_80:

(Start: 2 @52508 has 3 MA's), (10, 52535), (16, 52586), (18, 52607), (21, 52688), (35, 52763), (39, 52799), (45, 52826), (49, 52850), (54, 52859),

Gene: Collard\_71 Start: 49137, Stop: 49496, Start Num: 8

Candidate Starts for Collard\_71:

(Start: 8 @49137 has 82 MA's), (15, 49182), (22, 49305), (23, 49308), (34, 49392), (44, 49446), (51, 49488),

Gene: CrimD\_81 Start: 52883, Stop: 53359, Start Num: 8

Candidate Starts for CrimD\_81:

(Start: 8 @52883 has 82 MA's), (16, 52946), (33, 53126), (49, 53228),

Gene: Dalmuri\_80 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Dalmuri\_80:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: Deby\_80 Start: 52797, Stop: 53273, Start Num: 8

Candidate Starts for Deby\_80:

(Start: 8 @52797 has 82 MA's), (16, 52860), (28, 52998), (33, 53040), (37, 53067), (40, 53088), (45, 53118), (49, 53142), (57, 53175), (68, 53229), (70, 53244), (71, 53265),

Gene: Devera\_87 Start: 53666, Stop: 54112, Start Num: 8

Candidate Starts for Devera\_87:

(Start: 8 @53666 has 82 MA's), (10, 53678), (16, 53729), (33, 53909), (40, 53957), (45, 53987), (49, 54011), (58, 54041),

Gene: Dole\_84 Start: 53669, Stop: 54115, Start Num: 8

Candidate Starts for Dole\_84:

(Start: 8 @53669 has 82 MA's), (10, 53681), (16, 53732), (33, 53912), (40, 53960), (45, 53990), (49, 54014), (58, 54044),

Gene: DrHayes\_81 Start: 52928, Stop: 53401, Start Num: 8

Candidate Starts for DrHayes\_81:

(Start: 8 @52928 has 82 MA's), (10, 52940), (16, 52991), (18, 53012), (33, 53171), (37, 53198), (40, 53219), (45, 53249), (49, 53273), (57, 53306), (62, 53327), (68, 53360), (70, 53375), (71, 53396),

Gene: Durfee\_80 Start: 52630, Stop: 53106, Start Num: 8

Candidate Starts for Durfee\_80:

(Start: 8 @52630 has 82 MA's), (16, 52693), (28, 52831), (33, 52873), (37, 52900), (40, 52921), (45, 52951), (49, 52975), (57, 53008), (68, 53062), (70, 53077), (71, 53098),

Gene: Efra2\_87 Start: 53234, Stop: 53698, Start Num: 8

Candidate Starts for Efra2\_87:

(Start: 8 @53234 has 82 MA's), (18, 53318), (25, 53408), (37, 53486), (40, 53507), (49, 53561), (57, 53600), (64, 53636), (68, 53654), (70, 53669), (71, 53690),

Gene: Emerson\_83 Start: 52849, Stop: 53325, Start Num: 8

Candidate Starts for Emerson\_83:

(Start: 8 @52849 has 82 MA's), (16, 52912), (28, 53050), (33, 53092), (37, 53119), (40, 53140), (45, 53170), (49, 53194), (57, 53227), (62, 53248), (68, 53281), (70, 53296), (71, 53317),

Gene: Ganymede\_81 Start: 52871, Stop: 53347, Start Num: 8

Candidate Starts for Ganymede\_81:

(Start: 8 @52871 has 82 MA's), (10, 52883), (16, 52934), (33, 53114), (37, 53141), (40, 53162), (45, 53192), (49, 53216),

Gene: Gengar\_74 Start: 51188, Stop: 51751, Start Num: 8

Candidate Starts for Gengar\_74:

(Start: 8 @51188 has 82 MA's), (15, 51233), (37, 51464), (43, 51494), (44, 51497), (60, 51596), (61, 51599),

Gene: Geraldini\_83 Start: 52891, Stop: 53367, Start Num: 8

Candidate Starts for Geraldini\_83:

(Start: 8 @52891 has 82 MA's), (16, 52954), (33, 53134), (37, 53161), (40, 53182), (49, 53236),

Gene: Guanica15\_86 Start: 53021, Stop: 53395, Start Num: 8

Candidate Starts for Guanica15\_86:

(Start: 8 @53021 has 82 MA's), (16, 53084), (18, 53105), (37, 53189), (40, 53210), (49, 53264), (57, 53297), (62, 53318), (68, 53351), (70, 53366), (71, 53387),

Gene: HedwigODU\_80 Start: 52478, Stop: 52954, Start Num: 8

Candidate Starts for HedwigODU\_80:



(Start: 8 @52478 has 82 MA's), (16, 52541), (28, 52679), (33, 52721), (37, 52748), (40, 52769), (45, 52799), (49, 52823), (57, 52856), (68, 52910), (70, 52925), (71, 52946),

Gene: Homura\_79 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Homura\_79:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: Hyperbowlee\_79 Start: 52630, Stop: 53106, Start Num: 8

Candidate Starts for Hyperbowlee\_79:

(Start: 8 @52630 has 82 MA's), (16, 52693), (28, 52831), (33, 52873), (37, 52900), (40, 52921), (45, 52951), (49, 52975), (57, 53008), (68, 53062), (70, 53077), (71, 53098),

Gene: Illumine\_85 Start: 53668, Stop: 54114, Start Num: 8

Candidate Starts for Illumine\_85:

(Start: 8 @53668 has 82 MA's), (10, 53680), (16, 53731), (33, 53911), (40, 53959), (45, 53989), (49, 54013), (58, 54043),

Gene: Inky\_80 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Inky\_80:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: InvictusManeo\_71 Start: 49177, Stop: 49539, Start Num: 4

Candidate Starts for InvictusManeo\_71:

(Start: 4 @49177 has 1 MA's), (Start: 8 @49180 has 82 MA's), (15, 49225), (22, 49348), (23, 49351), (34, 49435), (44, 49489), (51, 49531),

Gene: JAWS\_79 Start: 52395, Stop: 52871, Start Num: 8

Candidate Starts for JAWS\_79:

(Start: 8 @52395 has 82 MA's), (16, 52458), (28, 52596), (33, 52638), (37, 52665), (40, 52686), (49, 52740), (57, 52773), (62, 52794), (68, 52827), (70, 52842), (71, 52863),

Gene: Jarvi\_80 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Jarvi\_80:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: Jayhawk\_82 Start: 52890, Stop: 53366, Start Num: 8

Candidate Starts for Jayhawk\_82:

(Start: 8 @52890 has 82 MA's), (16, 52953), (33, 53133), (37, 53160), (40, 53181), (49, 53235),

Gene: Jeckyll\_80 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Jeckyll\_80:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: Joy99\_81 Start: 52562, Stop: 53038, Start Num: 8

Candidate Starts for Joy99\_81:

(Start: 8 @52562 has 82 MA's), (16, 52625), (28, 52763), (33, 52805), (37, 52832), (40, 52853), (45, 52883), (49, 52907), (57, 52940), (68, 52994), (70, 53009), (71, 53030),

Gene: Kratio\_76 Start: 50738, Stop: 51097, Start Num: 8

Candidate Starts for Kratio\_76:

(Start: 4 @50735 has 1 MA's), (Start: 8 @50738 has 82 MA's), (15, 50783), (22, 50906), (23, 50909), (34, 50993), (44, 51047), (51, 51089),

Gene: LastHope\_87 Start: 53015, Stop: 53491, Start Num: 8

Candidate Starts for LastHope\_87:

(Start: 8 @53015 has 82 MA's), (18, 53099), (30, 53234), (33, 53258), (37, 53285), (45, 53336), (49, 53360), (57, 53393), (68, 53447), (70, 53462), (71, 53483),

Gene: LaterM\_81 Start: 53110, Stop: 53586, Start Num: 8

Candidate Starts for LaterM\_81:

(Start: 8 @53110 has 82 MA's), (10, 53122), (16, 53173), (33, 53353), (37, 53380), (40, 53401), (45, 53431), (49, 53455), (67, 53539),

Gene: LindNT\_79 Start: 52889, Stop: 53365, Start Num: 8

Candidate Starts for LindNT\_79:

(Start: 8 @52889 has 82 MA's), (16, 52952), (33, 53132), (40, 53180), (49, 53234),

Gene: Llorens\_79 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Llorens\_79:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: Lunahalos\_80 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Lunahalos\_80:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: MarkPhew\_83 Start: 52994, Stop: 53452, Start Num: 2

Candidate Starts for MarkPhew\_83:

(Start: 2 @52994 has 3 MA's), (6, 53033), (7, 53042), (14, 53075), (16, 53108), (17, 53123), (55, 53372), (56, 53375),

Gene: MeaningOfLife\_83 Start: 53420, Stop: 53896, Start Num: 8

Candidate Starts for MeaningOfLife\_83:

(Start: 8 @53420 has 82 MA's), (16, 53483), (28, 53621), (33, 53663), (37, 53690), (40, 53711), (45, 53741), (49, 53765), (57, 53798), (68, 53852), (70, 53867),

Gene: Megsy\_85 Start: 53058, Stop: 53534, Start Num: 8

Candidate Starts for Megsy\_85:

(Start: 8 @53058 has 82 MA's), (16, 53121), (18, 53142), (33, 53301), (37, 53328), (40, 53349), (49, 53403), (67, 53487),

Gene: Murucutumbu\_81 Start: 53654, Stop: 54130, Start Num: 8

Candidate Starts for Murucutumbu\_81:

(Start: 8 @53654 has 82 MA's), (10, 53666), (33, 53897), (37, 53924), (40, 53945), (45, 53975), (49, 53999), (57, 54032), (62, 54053), (68, 54086), (70, 54101), (71, 54122),

Gene: Mynx\_82 Start: 53173, Stop: 53649, Start Num: 8

Candidate Starts for Mynx\_82:

(Start: 8 @53173 has 82 MA's), (16, 53236), (33, 53416), (37, 53443), (40, 53464), (49, 53518),

Gene: Nibb\_81 Start: 52309, Stop: 52764, Start Num: 3

Candidate Starts for Nibb\_81:

(Start: 3 @52309 has 4 MA's), (12, 52333), (13, 52336), (16, 52372), (29, 52516), (31, 52549), (36, 52576), (42, 52609), (45, 52627), (49, 52651), (52, 52660),

Gene: OkiRoe\_75 Start: 51530, Stop: 52093, Start Num: 8

Candidate Starts for OkiRoe\_75:

(Start: 8 @51530 has 82 MA's), (15, 51575), (37, 51806), (43, 51836), (44, 51839), (48, 51878), (60, 51938), (61, 51941),

Gene: Padfoot\_80 Start: 52630, Stop: 53106, Start Num: 8

Candidate Starts for Padfoot\_80:

(Start: 8 @52630 has 82 MA's), (16, 52693), (28, 52831), (33, 52873), (37, 52900), (40, 52921), (45, 52951), (49, 52975), (57, 53008), (68, 53062), (70, 53077), (71, 53098),

Gene: Padpat\_84 Start: 52849, Stop: 53325, Start Num: 8

Candidate Starts for Padpat\_84:

(Start: 8 @52849 has 82 MA's), (16, 52912), (28, 53050), (33, 53092), (37, 53119), (40, 53140), (45, 53170), (49, 53194), (57, 53227), (62, 53248), (68, 53281), (70, 53296), (71, 53317),

Gene: Peel\_80 Start: 52435, Stop: 52911, Start Num: 8

Candidate Starts for Peel\_80:

(Start: 8 @52435 has 82 MA's), (16, 52498), (28, 52636), (33, 52678), (37, 52705), (40, 52726), (45, 52756), (49, 52780), (57, 52813), (68, 52867), (70, 52882), (71, 52903),

Gene: Piatt\_79 Start: 52630, Stop: 53106, Start Num: 8

Candidate Starts for Piatt\_79:

(Start: 8 @52630 has 82 MA's), (16, 52693), (28, 52831), (33, 52873), (37, 52900), (40, 52921), (45, 52951), (49, 52975), (57, 53008), (68, 53062), (70, 53077), (71, 53098),

Gene: Pixie\_82 Start: 53179, Stop: 53658, Start Num: 3

Candidate Starts for Pixie\_82:

(Start: 3 @53179 has 4 MA's), (11, 53194), (16, 53242), (20, 53335), (24, 53359), (52, 53539), (64, 53602), (65, 53605),

Gene: Pokerus\_81 Start: 52873, Stop: 53349, Start Num: 8

Candidate Starts for Pokerus\_81:

(Start: 8 @52873 has 82 MA's), (16, 52936), (28, 53074), (33, 53116), (37, 53143), (40, 53164), (49, 53218),

Gene: QuincyRose\_79 Start: 52871, Stop: 53347, Start Num: 8

Candidate Starts for QuincyRose\_79:

(Start: 8 @52871 has 82 MA's), (10, 52883), (16, 52934), (33, 53114), (37, 53141), (40, 53162), (45, 53192), (49, 53216),

Gene: Ramen\_81 Start: 52203, Stop: 52679, Start Num: 8

Candidate Starts for Ramen\_81:

(Start: 8 @52203 has 82 MA's), (16, 52266), (28, 52404), (33, 52446), (37, 52473), (40, 52494), (49, 52548), (57, 52581), (68, 52635), (70, 52650), (71, 52671),

Gene: Rapunzel97\_83 Start: 52845, Stop: 53321, Start Num: 8

Candidate Starts for Rapunzel97\_83:

(Start: 8 @52845 has 82 MA's), (16, 52908), (33, 53088), (37, 53115), (40, 53136), (49, 53190),

Gene: Rosmarinus\_80 Start: 52421, Stop: 52897, Start Num: 8

Candidate Starts for Rosmarinus\_80:

(Start: 8 @52421 has 82 MA's), (16, 52484), (28, 52622), (33, 52664), (37, 52691), (40, 52712), (45, 52742), (49, 52766), (57, 52799), (68, 52853), (70, 52868), (71, 52889),

Gene: SamuelLPlaqson\_81 Start: 52928, Stop: 53401, Start Num: 8

Candidate Starts for SamuelLPlaqson\_81:

(Start: 8 @52928 has 82 MA's), (10, 52940), (16, 52991), (18, 53012), (33, 53171), (37, 53198), (40, 53219), (45, 53249), (49, 53273), (57, 53306), (62, 53327), (68, 53360), (70, 53375), (71, 53396),

Gene: ShiaSurprise\_81 Start: 52630, Stop: 53106, Start Num: 8

Candidate Starts for ShiaSurprise\_81:

(Start: 8 @52630 has 82 MA's), (16, 52693), (28, 52831), (33, 52873), (37, 52900), (40, 52921), (45, 52951), (49, 52975), (57, 53008), (68, 53062), (70, 53077), (71, 53098),

Gene: SirPhilip\_80 Start: 52804, Stop: 53241, Start Num: 5

Candidate Starts for SirPhilip\_80:

(Start: 5 @52804 has 1 MA's), (16, 52867), (25, 52984), (29, 53011), (31, 53044), (54, 53158), (55, 53161),

Gene: Slimphazie\_82 Start: 52845, Stop: 53321, Start Num: 8

Candidate Starts for Slimphazie\_82:

(Start: 8 @52845 has 82 MA's), (16, 52908), (28, 53046), (33, 53088), (37, 53115), (40, 53136), (49, 53190), (57, 53223), (62, 53244), (68, 53277), (70, 53292), (71, 53313),

Gene: Spock\_80 Start: 52434, Stop: 52910, Start Num: 8

Candidate Starts for Spock\_80:

(Start: 8 @52434 has 82 MA's), (16, 52497), (28, 52635), (33, 52677), (37, 52704), (40, 52725), (45, 52755), (49, 52779), (57, 52812), (68, 52866), (70, 52881), (71, 52902),

Gene: Stinson\_82 Start: 53036, Stop: 53512, Start Num: 8

Candidate Starts for Stinson\_82:

(Start: 8 @53036 has 82 MA's), (10, 53048), (16, 53099), (28, 53237), (33, 53279), (37, 53306), (40, 53327), (45, 53357), (49, 53381),

Gene: Sulley\_77 Start: 51894, Stop: 52370, Start Num: 8

Candidate Starts for Sulley\_77:

(Start: 8 @51894 has 82 MA's), (16, 51957), (28, 52095), (32, 52128), (33, 52137), (37, 52164), (40, 52185), (49, 52239), (57, 52272), (68, 52326), (70, 52341), (71, 52362),

Gene: TBond007\_79 Start: 53177, Stop: 53656, Start Num: 3

Candidate Starts for TBond007\_79:

(Start: 3 @53177 has 4 MA's), (11, 53192), (16, 53240), (20, 53333), (24, 53357), (52, 53537), (64, 53600), (65, 53603),

Gene: Tachez\_80 Start: 52278, Stop: 52754, Start Num: 8

Candidate Starts for Tachez\_80:

(Start: 8 @52278 has 82 MA's), (16, 52341), (28, 52479), (33, 52521), (37, 52548), (40, 52569), (45, 52599), (49, 52623), (57, 52656), (68, 52710), (70, 52725), (71, 52746),

Gene: TaiwanKao\_81 Start: 52410, Stop: 52886, Start Num: 8

Candidate Starts for TaiwanKao\_81:

(Start: 8 @52410 has 82 MA's), (10, 52422), (16, 52473), (26, 52596), (30, 52629), (33, 52653), (37, 52680), (45, 52731), (47, 52743), (49, 52755), (57, 52788), (62, 52809), (68, 52842), (70, 52857), (71, 52878),

Gene: Thyatira\_76 Start: 53221, Stop: 53565, Start Num: 8

Candidate Starts for Thyatira\_76:

(Start: 8 @53221 has 82 MA's), (15, 53266), (22, 53374), (27, 53404), (34, 53461),

Gene: TiniBug\_81 Start: 52936, Stop: 53412, Start Num: 8

Candidate Starts for TiniBug\_81:

(Start: 8 @52936 has 82 MA's), (10, 52948), (16, 52999), (18, 53020), (30, 53155), (33, 53179), (37, 53206), (40, 53227), (45, 53257), (49, 53281), (57, 53314), (68, 53368), (70, 53383), (71, 53404),

Gene: Tiri\_81 Start: 52363, Stop: 52839, Start Num: 8

Candidate Starts for Tiri\_81:

(Start: 8 @52363 has 82 MA's), (16, 52426), (33, 52606), (37, 52633), (40, 52654), (49, 52708), (57, 52741), (62, 52762), (68, 52795), (70, 52810), (71, 52831),

Gene: Topper\_80 Start: 52433, Stop: 52909, Start Num: 8

Candidate Starts for Topper\_80:

(Start: 8 @52433 has 82 MA's), (16, 52496), (28, 52634), (33, 52676), (37, 52703), (40, 52724), (45, 52754), (49, 52778), (57, 52811), (68, 52865), (70, 52880), (71, 52901),

Gene: TribelTrouble\_82 Start: 53396, Stop: 53845, Start Num: 3

Candidate Starts for TribelTrouble\_82:

(Start: 3 @53396 has 4 MA's), (14, 53426), (16, 53459), (18, 53480), (20, 53552), (38, 53678), (63, 53798), (64, 53810), (66, 53816),

Gene: TruffulaTree\_82 Start: 52841, Stop: 53317, Start Num: 8

Candidate Starts for TruffulaTree\_82:

(Start: 8 @52841 has 82 MA's), (16, 52904), (28, 53042), (33, 53084), (37, 53111), (40, 53132), (45, 53162), (49, 53186), (57, 53219), (68, 53273), (70, 53288), (71, 53309),

Gene: Twitch\_80 Start: 52435, Stop: 52911, Start Num: 8

Candidate Starts for Twitch\_80:

(Start: 8 @52435 has 82 MA's), (16, 52498), (28, 52636), (33, 52678), (37, 52705), (40, 52726), (45, 52756), (49, 52780), (57, 52813), (68, 52867), (70, 52882), (71, 52903),

Gene: Urkel\_81 Start: 52928, Stop: 53401, Start Num: 8

Candidate Starts for Urkel\_81:

(Start: 8 @52928 has 82 MA's), (10, 52940), (16, 52991), (18, 53012), (33, 53171), (37, 53198), (40, 53219), (45, 53249), (49, 53273), (57, 53306), (62, 53327), (68, 53360), (70, 53375), (71, 53396),

Gene: Veliki\_81 Start: 52386, Stop: 52856, Start Num: 8

Candidate Starts for Veliki\_81:

(Start: 8 @52386 has 82 MA's), (16, 52449), (28, 52581), (33, 52623), (37, 52650), (40, 52671), (49, 52725), (57, 52758), (62, 52779), (68, 52812), (70, 52827), (71, 52848),

Gene: Waterfoul\_75 Start: 51291, Stop: 51635, Start Num: 8

Candidate Starts for Waterfoul\_75:

(Start: 8 @51291 has 82 MA's), (15, 51336), (22, 51444), (27, 51474), (34, 51531),

Gene: YoureAdopted\_80 Start: 52656, Stop: 53132, Start Num: 8

Candidate Starts for YoureAdopted\_80:

(Start: 8 @52656 has 82 MA's), (16, 52719), (28, 52857), (33, 52899), (37, 52926), (40, 52947), (45, 52977), (49, 53001),

Gene: Yuna\_83 Start: 54192, Stop: 54572, Start Num: 2

Candidate Starts for Yuna\_83:

(Start: 2 @54192 has 3 MA's), (6, 54234), (7, 54243), (16, 54309),

Gene: Yunkel11\_86 Start: 52988, Stop: 53380, Start Num: 8

Candidate Starts for Yunkel11\_86:

(Start: 8 @52988 has 82 MA's), (16, 53051), (18, 53072), (32, 53222), (33, 53231), (36, 53249), (41, 53282), (46, 53318), (50, 53336), (53, 53351), (59, 53372),

Gene: Zabiza\_76 Start: 48783, Stop: 49259, Start Num: 8

Candidate Starts for Zabiza\_76:

(Start: 8 @48783 has 82 MA's), (16, 48846), (28, 48984), (33, 49026), (37, 49053), (40, 49074), (45, 49104), (49, 49128), (57, 49161), (68, 49215), (70, 49230), (71, 49251),

Gene: Zavala\_83 Start: 52919, Stop: 53395, Start Num: 8

Candidate Starts for Zavala\_83:

(Start: 8 @52919 has 82 MA's), (16, 52982), (28, 53120), (33, 53162), (37, 53189), (40, 53210), (49, 53264), (57, 53297), (62, 53318), (68, 53351), (70, 53366), (71, 53387),