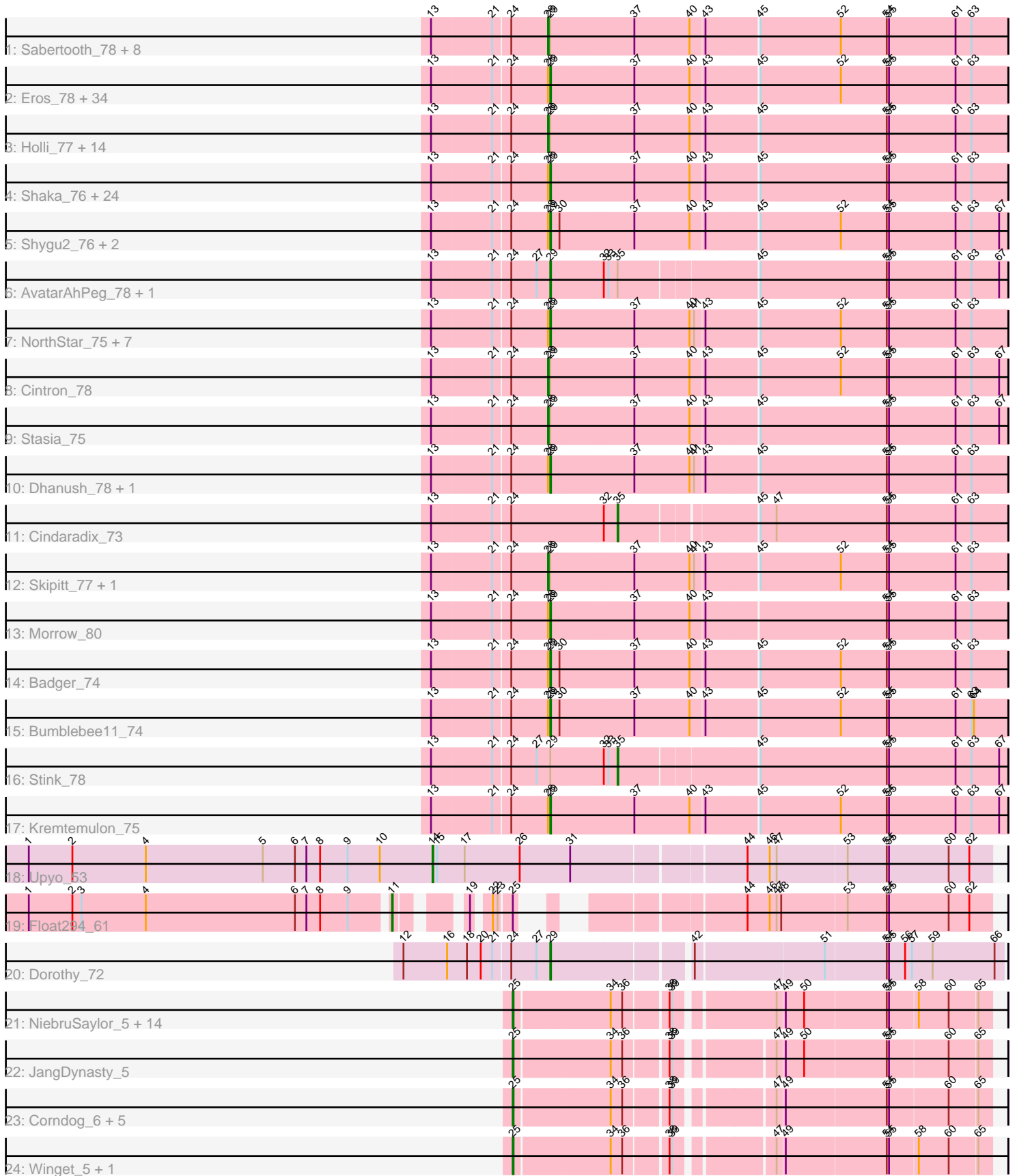


# Pham 192402



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 192402 Report

This analysis was run 11/02/24 on database version 579.

Pham number 192402 has 136 members, 2 are drafts.

Phages represented in each track:

- Track 1 : Sabertooth\_78, Mazhar510\_78, Connomayer\_78, TygerBlood\_78, Polymorphads\_79, Koreni\_77, LHTSCC\_80, Tinybot\_77, Pumbaa\_78
- Track 2 : Eros\_78, OKaNui\_77, Commander\_76, DirtyDunning\_77, MeeZee\_77, Obama12\_79, Maverick\_77, Iceman\_76, Happiness\_77, Peaches\_76, Burger\_76, Phacado\_78, Millski\_77, PeterPeter\_78, Avle17\_78, Broseidon\_78, HamSlice\_74, Lorenzo\_78, Cocoaberry\_78, ICleared\_77, Alberto7\_79, Relief\_77, Kyee\_78, Arturo\_75, LittleGuy\_78, Wander\_78, Scamp\_78, Nemo27\_77, LappelDuVide\_78, Gadost\_78, Eapen\_78, Houdini22\_77, NotAPhaseMom\_77, Annyong\_77, Phighter1804\_78
- Track 3 : Holli\_77, Kingmustik0402\_78, TroyPia\_79, Sparxx\_79, Blackmoor\_77, Maxo\_80, Ohfah\_79, Bartimeaus\_78, JetBlade\_79, Nyxis\_77, BangNhom\_75, YoSam321\_78, Baby16\_78, Rosa24\_74, Eurydice\_79
- Track 4 : Shaka\_76, TiroTheta9\_77, Caelakin\_76, LochMonster\_79, Kamy\_77, Eagle\_77, Iracema64\_78, ChampagnePapi\_81, BellusTerra\_79, Deano\_75, Lunsford\_78, Spino\_77, Roosevelt\_76, Abdiel\_77, SheldonCooper\_78, Taquarus\_77, Cerulean\_80, Phelipe\_79, CentreCat\_78, Citius\_78, Phontbonne\_78, Nebs\_79, Medusa\_77, Ulysses\_77, Druantia\_77
- Track 5 : Shygu2\_76, Cici\_75, Morpher26\_75
- Track 6 : AvatarAhPeg\_78, Miramae\_78
- Track 7 : NorthStar\_75, Romney\_77, Melvin\_80, Wilbur\_78, Pipcraft\_74, Ruin\_78, Lemur\_78, Flux\_79
- Track 8 : Cintron\_78
- Track 9 : Stasia\_75
- Track 10 : Dhanush\_78, Chaph\_78
- Track 11 : Cindaradix\_73
- Track 12 : Skipitt\_77, Bombshell\_78
- Track 13 : Morrow\_80
- Track 14 : Badger\_74
- Track 15 : Bumblebee11\_74
- Track 16 : Stink\_78
- Track 17 : Kremtemulon\_75
- Track 18 : Upyo\_53
- Track 19 : Float294\_61
- Track 20 : Dorothy\_72
- Track 21 : NiebruSaylor\_5, FoulBall\_5, Mori\_5, Familton\_6, Schuy\_5, Ryadel\_7, Idergollasper\_5, Shida\_5, Vorrps\_5, TelAviv\_5, Blessica\_5, Krili\_5, MadKillah\_5, Catdawg\_5, SchoolBus\_5

- Track 22 : JangDynasty\_5
- Track 23 : Corndog\_6, Dylan\_6, YungJamal\_6, Firecracker\_5, Smooch\_6, Zakhe101\_6
- Track 24 : Winget\_5, Alkhayr\_5

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

The start number called the most often in the published annotations is 29, it was called in 80 of the 134 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abdiel\_77, Alberto7\_79, Annyong\_77, Arturo\_75, AvatarAhPeg\_78, Avle17\_78, Badger\_74, BellusTerra\_79, Broseidon\_78, Bumblebee11\_74, Burger\_76, Caelakin\_76, CentreCat\_78, Cerulean\_80, ChampagnePapi\_81, Chaph\_78, Cici\_75, Citius\_78, Cocoaberry\_78, Commander\_76, Deano\_75, Dhanush\_78, DirtyDunning\_77, Dorothy\_72, Druantia\_77, Eagle\_77, Eapen\_78, Eros\_78, Flux\_79, Gadost\_78, HamSlice\_74, Happiness\_77, Houdini22\_77, ICleared\_77, Iceman\_76, Iracema64\_78, Kamy\_77, Kremtemulon\_75, Kyee\_78, LappelDuVide\_78, Lemur\_78, LittleGuy\_78, LochMonster\_79, Lorenzo\_78, Lunsford\_78, Maverick\_77, Medusa\_77, MeeZee\_77, Melvin\_80, Millski\_77, Miramae\_78, Morpher26\_75, Morrow\_80, Nebs\_79, Nemo27\_77, NorthStar\_75, NotAPhaseMom\_77, OKaNui\_77, Obama12\_79, Peaches\_76, PeterPeter\_78, Phacado\_78, Phelipe\_79, Phighter1804\_78, Phontbonne\_78, Pipcraft\_74, Relief\_77, Romney\_77, Roosevelt\_76, Ruin\_78, Scamp\_78, Shaka\_76, SheldonCooper\_78, Shygu2\_76, Spino\_77, Taquarus\_77, TiroTheta9\_77, Ulysses\_77, Wander\_78, Wilbur\_78,

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

- Baby16\_78, BangNhom\_75, Bartimeaus\_78, Blackmoor\_77, Bombshell\_78, Cintron\_78, Connomayer\_78, Eurydice\_79, Holli\_77, JetBlade\_79, Kingmustik0402\_78, Koreni\_77, LHTSCC\_80, Maxo\_80, Mazhar510\_78, Nyxis\_77, Ohfah\_79, Polymorphads\_79, Pumbaa\_78, Rosa24\_74, Sabertooth\_78, Skipitt\_77, Sparxx\_79, Stasia\_75, Stink\_78, Tinybot\_77, TroyPia\_79, TygerBlood\_78, YoSam321\_78,

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

- Alkhayr\_5, Blessica\_5, Catdawg\_5, Cindaradix\_73, Corndog\_6, Dylan\_6, Familton\_6, Firecracker\_5, Float294\_61, FoulBall\_5, Idergollasper\_5, JangDynasty\_5, Krili\_5, MadKillah\_5, Mori\_5, NiebruSaylor\_5, Ryadel\_7, SchoolBus\_5, Schuy\_5, Shida\_5, Smooch\_6, TelAviv\_5, Upyo\_53, Vorrps\_5, Winget\_5, YungJamal\_6, Zakhe101\_6,

**Summary by start number:**

Start 11:

- Found in 1 of 136 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Float294\_61 (CR3),

Start 14:

- Found in 1 of 136 ( 0.7% ) of genes in pham
- Manual Annotations of this start: 1 of 134
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Upyo\_53 (CD),

#### Start 25:

- Found in 25 of 136 ( 18.4% ) of genes in pham
- Manual Annotations of this start: 23 of 134
- Called 96.0% of time when present
- Phage (with cluster) where this start called: Alkhayr\_5 (O), Blessica\_5 (O), Catdawg\_5 (O), Corndog\_6 (O), Dylan\_6 (O), Familton\_6 (O), Firecracker\_5 (O), FoulBall\_5 (O), Idergollasper\_5 (O), JangDynasty\_5 (O), Krili\_5 (O), MadKillah\_5 (O), Mori\_5 (O), NiebruSaylor\_5 (O), Ryadel\_7 (O), SchoolBus\_5 (O), Schuy\_5 (O), Shida\_5 (O), Smooch\_6 (O), TelAviv\_5 (O), Vorrps\_5 (O), Winget\_5 (O), YungJamal\_6 (O), Zakhe101\_6 (O),

#### Start 28:

- Found in 105 of 136 ( 77.2% ) of genes in pham
- Manual Annotations of this start: 27 of 134
- Called 26.7% of time when present
- Phage (with cluster) where this start called: Baby16\_78 (A4), BangNhom\_75 (A4), Bartimeaus\_78 (A4), Blackmoor\_77 (A4), Bombshell\_78 (A4), Cintron\_78 (A4), Connomayer\_78 (A4), Eurydice\_79 (A4), Holli\_77 (A4), JetBlade\_79 (A4), Kingmustik0402\_78 (A4), Koreni\_77 (A4), LHTSCC\_80 (A4), Maxo\_80 (A4), Mazhar510\_78 (A4), Nyxis\_77 (A4), Ohfah\_79 (A4), Polymorphads\_79 (A4), Pumbaa\_78 (A4), Rosa24\_74 (A4), Sabertooth\_78 (A4), Skipitt\_77 (A4), Sparxx\_79 (A4), Stasia\_75 (A4), Tinybot\_77 (A4), TroyPia\_79 (A4), TygerBlood\_78 (A4), YoSam321\_78 (A4),

#### Start 29:

- Found in 109 of 136 ( 80.1% ) of genes in pham
- Manual Annotations of this start: 80 of 134
- Called 73.4% of time when present
- Phage (with cluster) where this start called: Abdiel\_77 (A4), Alberto7\_79 (A4), Annyong\_77 (A4), Arturo\_75 (A4), AvatarAhPeg\_78 (A4), Avle17\_78 (A4), Badger\_74 (A4), BellusTerra\_79 (A4), Broseidon\_78 (A4), Bumblebee11\_74 (A4), Burger\_76 (A4), Caelakin\_76 (A4), CentreCat\_78 (A4), Cerulean\_80 (A4), ChampagnePapi\_81 (A4), Chaph\_78 (A4), Cici\_75 (A4), Citius\_78 (A4), Cocoaberry\_78 (A4), Commander\_76 (A4), Deano\_75 (A4), Dhanush\_78 (A4), DirtyDunning\_77 (A4), Dorothy\_72 (F1), Druantia\_77 (A4), Eagle\_77 (A4), Eapen\_78 (A4), Eros\_78 (A4), Flux\_79 (A4), Gadost\_78 (A4), HamSlice\_74 (A4), Happiness\_77 (A4), Houdini22\_77 (A4), ICleared\_77 (A4), Iceman\_76 (A4), Iracema64\_78 (A4), Kamy\_77 (A4), Kremtemulon\_75 (A4), Kyee\_78 (A4), LappelDuVide\_78 (A4), Lemur\_78 (A4), LittleGuy\_78 (A4), LochMonster\_79 (A4), Lorenzo\_78 (A4), Lunsford\_78 (A4), Maverick\_77 (A4), Medusa\_77 (A4), MeeZee\_77 (A4), Melvin\_80 (A4), Millski\_77 (A4), Miramae\_78 (A4), Morpher26\_75 (A4), Morrow\_80 (A4), Nebs\_79 (A4), Nemo27\_77 (A4), NorthStar\_75 (A4), NotAPhaseMom\_77 (A4), OKaNui\_77 (A4), Obama12\_79 (A4), Peaches\_76 (A4), PeterPeter\_78 (A4), Phacado\_78 (A4), Phelipe\_79 (A4), Phighter1804\_78 (A4), Phontbonne\_78 (A4), Pipcraft\_74 (A4), Relief\_77 (A4), Romney\_77 (A4), Roosevelt\_76 (A4), Ruin\_78 (A4), Scamp\_78 (A4), Shaka\_76 (A4), SheldonCooper\_78 (A4), Shygu2\_76 (A4), Spino\_77 (A4), Taquarus\_77 (A4), TiroTheta9\_77 (A4), Ulysses\_77 (A4), Wander\_78 (A4), Wilbur\_78 (A4),

Start 35:

- Found in 4 of 136 ( 2.9% ) of genes in pham
- Manual Annotations of this start: 2 of 134
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Cindaradix\_73 (A4), Stink\_78 (A4),

### **Summary by clusters:**

There are 5 clusters represented in this pham: CR3, F1, A4, O, CD,

Info for manual annotations of cluster A4:

- Start number 28 was manually annotated 27 times for cluster A4.
- Start number 29 was manually annotated 79 times for cluster A4.
- Start number 35 was manually annotated 2 times for cluster A4.

Info for manual annotations of cluster CD:

- Start number 14 was manually annotated 1 time for cluster CD.

Info for manual annotations of cluster CR3:

- Start number 11 was manually annotated 1 time for cluster CR3.

Info for manual annotations of cluster F1:

- Start number 29 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster O:

- Start number 25 was manually annotated 23 times for cluster O.

### **Gene Information:**

Gene: Abdiel\_77 Start: 46760, Stop: 46176, Start Num: 29

Candidate Starts for Abdiel\_77:

(13, 46910), (21, 46832), (24, 46811), (Start: 28 @46763 has 27 MA's), (Start: 29 @46760 has 80 MA's), (37, 46655), (40, 46583), (43, 46565), (45, 46499), (54, 46334), (55, 46331), (61, 46244), (63, 46223),

Gene: Alberto7\_79 Start: 47085, Stop: 46501, Start Num: 29

Candidate Starts for Alberto7\_79:

(13, 47235), (21, 47157), (24, 47136), (Start: 28 @47088 has 27 MA's), (Start: 29 @47085 has 80 MA's), (37, 46980), (40, 46908), (43, 46890), (45, 46824), (52, 46719), (54, 46659), (55, 46656), (61, 46569), (63, 46548),

Gene: Alkhayr\_5 Start: 1855, Stop: 1286, Start Num: 25

Candidate Starts for Alkhayr\_5:

(Start: 25 @1855 has 23 MA's), (34, 1738), (36, 1723), (38, 1672), (39, 1669), (47, 1555), (49, 1546), (54, 1417), (55, 1414), (58, 1378), (60, 1339), (65, 1303),

Gene: Annyong\_77 Start: 46793, Stop: 46209, Start Num: 29

Candidate Starts for Annyong\_77:

(13, 46943), (21, 46865), (24, 46844), (Start: 28 @46796 has 27 MA's), (Start: 29 @46793 has 80 MA's), (37, 46688), (40, 46616), (43, 46598), (45, 46532), (52, 46427), (54, 46367), (55, 46364), (61,

46277), (63, 46256),

Gene: Arturo\_75 Start: 46876, Stop: 46292, Start Num: 29

Candidate Starts for Arturo\_75:

(13, 47026), (21, 46948), (24, 46927), (Start: 28 @46879 has 27 MA's), (Start: 29 @46876 has 80 MA's), (37, 46771), (40, 46699), (43, 46681), (45, 46615), (52, 46510), (54, 46450), (55, 46447), (61, 46360), (63, 46339),

Gene: AvatarAhPeg\_78 Start: 46909, Stop: 46328, Start Num: 29

Candidate Starts for AvatarAhPeg\_78:

(13, 47059), (21, 46981), (24, 46960), (27, 46927), (Start: 29 @46909 has 80 MA's), (32, 46840), (33, 46834), (Start: 35 @46822 has 2 MA's), (45, 46651), (54, 46486), (55, 46483), (61, 46396), (63, 46375), (67, 46339),

Gene: Avle17\_78 Start: 46742, Stop: 46158, Start Num: 29

Candidate Starts for Avle17\_78:

(13, 46892), (21, 46814), (24, 46793), (Start: 28 @46745 has 27 MA's), (Start: 29 @46742 has 80 MA's), (37, 46637), (40, 46565), (43, 46547), (45, 46481), (52, 46376), (54, 46316), (55, 46313), (61, 46226), (63, 46205),

Gene: Baby16\_78 Start: 46762, Stop: 46175, Start Num: 28

Candidate Starts for Baby16\_78:

(13, 46909), (21, 46831), (24, 46810), (Start: 28 @46762 has 27 MA's), (Start: 29 @46759 has 80 MA's), (37, 46654), (40, 46582), (43, 46564), (45, 46498), (54, 46333), (55, 46330), (61, 46243), (63, 46222),

Gene: Badger\_74 Start: 46542, Stop: 45958, Start Num: 29

Candidate Starts for Badger\_74:

(13, 46692), (21, 46614), (24, 46593), (Start: 28 @46545 has 27 MA's), (Start: 29 @46542 has 80 MA's), (30, 46530), (37, 46437), (40, 46365), (43, 46347), (45, 46281), (52, 46176), (54, 46116), (55, 46113), (61, 46026), (63, 46005),

Gene: BangNhom\_75 Start: 47188, Stop: 46601, Start Num: 28

Candidate Starts for BangNhom\_75:

(13, 47335), (21, 47257), (24, 47236), (Start: 28 @47188 has 27 MA's), (Start: 29 @47185 has 80 MA's), (37, 47080), (40, 47008), (43, 46990), (45, 46924), (54, 46759), (55, 46756), (61, 46669), (63, 46648),

Gene: Bartimeaus\_78 Start: 46753, Stop: 46166, Start Num: 28

Candidate Starts for Bartimeaus\_78:

(13, 46900), (21, 46822), (24, 46801), (Start: 28 @46753 has 27 MA's), (Start: 29 @46750 has 80 MA's), (37, 46645), (40, 46573), (43, 46555), (45, 46489), (54, 46324), (55, 46321), (61, 46234), (63, 46213),

Gene: BellusTerra\_79 Start: 46789, Stop: 46205, Start Num: 29

Candidate Starts for BellusTerra\_79:

(13, 46939), (21, 46861), (24, 46840), (Start: 28 @46792 has 27 MA's), (Start: 29 @46789 has 80 MA's), (37, 46684), (40, 46612), (43, 46594), (45, 46528), (54, 46363), (55, 46360), (61, 46273), (63, 46252),

Gene: Blackmoor\_77 Start: 46753, Stop: 46166, Start Num: 28

Candidate Starts for Blackmoor\_77:

(13, 46900), (21, 46822), (24, 46801), (Start: 28 @46753 has 27 MA's), (Start: 29 @46750 has 80 MA's), (37, 46645), (40, 46573), (43, 46555), (45, 46489), (54, 46324), (55, 46321), (61, 46234), (63, 46213),

Gene: Blessica\_5 Start: 1714, Stop: 1145, Start Num: 25

Candidate Starts for Blessica\_5:

(Start: 25 @1714 has 23 MA's), (34, 1597), (36, 1582), (38, 1531), (39, 1528), (47, 1414), (49, 1405), (50, 1381), (54, 1276), (55, 1273), (58, 1237), (60, 1198), (65, 1162),

Gene: Bombshell\_78 Start: 46748, Stop: 46161, Start Num: 28

Candidate Starts for Bombshell\_78:

(13, 46895), (21, 46817), (24, 46796), (Start: 28 @46748 has 27 MA's), (Start: 29 @46745 has 80 MA's), (37, 46640), (40, 46568), (41, 46562), (43, 46550), (45, 46484), (52, 46379), (54, 46319), (55, 46316), (61, 46229), (63, 46208),

Gene: Broseidon\_78 Start: 46751, Stop: 46167, Start Num: 29

Candidate Starts for Broseidon\_78:

(13, 46901), (21, 46823), (24, 46802), (Start: 28 @46754 has 27 MA's), (Start: 29 @46751 has 80 MA's), (37, 46646), (40, 46574), (43, 46556), (45, 46490), (52, 46385), (54, 46325), (55, 46322), (61, 46235), (63, 46214),

Gene: Bumblebee11\_74 Start: 46542, Stop: 45958, Start Num: 29

Candidate Starts for Bumblebee11\_74:

(13, 46692), (21, 46614), (24, 46593), (Start: 28 @46545 has 27 MA's), (Start: 29 @46542 has 80 MA's), (30, 46530), (37, 46437), (40, 46365), (43, 46347), (45, 46281), (52, 46176), (54, 46116), (55, 46113), (61, 46026), (63, 46005), (64, 46002),

Gene: Burger\_76 Start: 46748, Stop: 46164, Start Num: 29

Candidate Starts for Burger\_76:

(13, 46898), (21, 46820), (24, 46799), (Start: 28 @46751 has 27 MA's), (Start: 29 @46748 has 80 MA's), (37, 46643), (40, 46571), (43, 46553), (45, 46487), (52, 46382), (54, 46322), (55, 46319), (61, 46232), (63, 46211),

Gene: Caelakin\_76 Start: 46748, Stop: 46164, Start Num: 29

Candidate Starts for Caelakin\_76:

(13, 46898), (21, 46820), (24, 46799), (Start: 28 @46751 has 27 MA's), (Start: 29 @46748 has 80 MA's), (37, 46643), (40, 46571), (43, 46553), (45, 46487), (54, 46322), (55, 46319), (61, 46232), (63, 46211),

Gene: Catdawg\_5 Start: 1764, Stop: 1195, Start Num: 25

Candidate Starts for Catdawg\_5:

(Start: 25 @1764 has 23 MA's), (34, 1647), (36, 1632), (38, 1581), (39, 1578), (47, 1464), (49, 1455), (50, 1431), (54, 1326), (55, 1323), (58, 1287), (60, 1248), (65, 1212),

Gene: CentreCat\_78 Start: 46788, Stop: 46204, Start Num: 29

Candidate Starts for CentreCat\_78:

(13, 46938), (21, 46860), (24, 46839), (Start: 28 @46791 has 27 MA's), (Start: 29 @46788 has 80 MA's), (37, 46683), (40, 46611), (43, 46593), (45, 46527), (54, 46362), (55, 46359), (61, 46272), (63, 46251),

Gene: Cerulean\_80 Start: 47186, Stop: 46602, Start Num: 29

Candidate Starts for Cerulean\_80:

(13, 47336), (21, 47258), (24, 47237), (Start: 28 @47189 has 27 MA's), (Start: 29 @47186 has 80 MA's), (37, 47081), (40, 47009), (43, 46991), (45, 46925), (54, 46760), (55, 46757), (61, 46670), (63, 46649),

Gene: ChampagnePapi\_81 Start: 47188, Stop: 46604, Start Num: 29

Candidate Starts for ChampagnePapi\_81:

(13, 47338), (21, 47260), (24, 47239), (Start: 28 @47191 has 27 MA's), (Start: 29 @47188 has 80 MA's), (37, 47083), (40, 47011), (43, 46993), (45, 46927), (54, 46762), (55, 46759), (61, 46672), (63, 46651),

Gene: Chaph\_78 Start: 46759, Stop: 46175, Start Num: 29

Candidate Starts for Chaph\_78:

(13, 46909), (21, 46831), (24, 46810), (Start: 28 @46762 has 27 MA's), (Start: 29 @46759 has 80 MA's), (37, 46654), (40, 46582), (41, 46576), (43, 46564), (45, 46498), (54, 46333), (55, 46330), (61, 46243), (63, 46222),

Gene: Cici\_75 Start: 46555, Stop: 45971, Start Num: 29

Candidate Starts for Cici\_75:

(13, 46705), (21, 46627), (24, 46606), (Start: 28 @46558 has 27 MA's), (Start: 29 @46555 has 80 MA's), (30, 46543), (37, 46450), (40, 46378), (43, 46360), (45, 46294), (52, 46189), (54, 46129), (55, 46126), (61, 46039), (63, 46018), (67, 45982),

Gene: Cindaradix\_73 Start: 46788, Stop: 46300, Start Num: 35

Candidate Starts for Cindaradix\_73:

(13, 47025), (21, 46947), (24, 46926), (32, 46806), (Start: 35 @46788 has 2 MA's), (45, 46623), (47, 46602), (54, 46458), (55, 46455), (61, 46368), (63, 46347),

Gene: Cintron\_78 Start: 46867, Stop: 46280, Start Num: 28

Candidate Starts for Cintron\_78:

(13, 47014), (21, 46936), (24, 46915), (Start: 28 @46867 has 27 MA's), (Start: 29 @46864 has 80 MA's), (37, 46759), (40, 46687), (43, 46669), (45, 46603), (52, 46498), (54, 46438), (55, 46435), (61, 46348), (63, 46327), (67, 46291),

Gene: Citius\_78 Start: 46769, Stop: 46185, Start Num: 29

Candidate Starts for Citius\_78:

(13, 46919), (21, 46841), (24, 46820), (Start: 28 @46772 has 27 MA's), (Start: 29 @46769 has 80 MA's), (37, 46664), (40, 46592), (43, 46574), (45, 46508), (54, 46343), (55, 46340), (61, 46253), (63, 46232),

Gene: Cocoaberry\_78 Start: 46749, Stop: 46165, Start Num: 29

Candidate Starts for Cocoaberry\_78:

(13, 46899), (21, 46821), (24, 46800), (Start: 28 @46752 has 27 MA's), (Start: 29 @46749 has 80 MA's), (37, 46644), (40, 46572), (43, 46554), (45, 46488), (52, 46383), (54, 46323), (55, 46320), (61, 46233), (63, 46212),

Gene: Commander\_76 Start: 46746, Stop: 46162, Start Num: 29

Candidate Starts for Commander\_76:

(13, 46896), (21, 46818), (24, 46797), (Start: 28 @46749 has 27 MA's), (Start: 29 @46746 has 80 MA's), (37, 46641), (40, 46569), (43, 46551), (45, 46485), (52, 46380), (54, 46320), (55, 46317), (61, 46230), (63, 46209),

Gene: Connomayer\_78 Start: 46751, Stop: 46164, Start Num: 28

Candidate Starts for Connomayer\_78:



(13, 46898), (21, 46820), (24, 46799), (Start: 28 @46751 has 27 MA's), (Start: 29 @46748 has 80 MA's), (37, 46643), (40, 46571), (43, 46553), (45, 46487), (52, 46382), (54, 46322), (55, 46319), (61, 46232), (63, 46211),

Gene: Corndog\_6 Start: 2141, Stop: 1578, Start Num: 25

Candidate Starts for Corndog\_6:

(Start: 25 @2141 has 23 MA's), (34, 2024), (36, 2009), (38, 1958), (39, 1955), (47, 1847), (49, 1838), (54, 1709), (55, 1706), (60, 1631), (65, 1595),

Gene: Deano\_75 Start: 46756, Stop: 46172, Start Num: 29

Candidate Starts for Deano\_75:

(13, 46906), (21, 46828), (24, 46807), (Start: 28 @46759 has 27 MA's), (Start: 29 @46756 has 80 MA's), (37, 46651), (40, 46579), (43, 46561), (45, 46495), (54, 46330), (55, 46327), (61, 46240), (63, 46219),

Gene: Dhanush\_78 Start: 46751, Stop: 46167, Start Num: 29

Candidate Starts for Dhanush\_78:

(13, 46901), (21, 46823), (24, 46802), (Start: 28 @46754 has 27 MA's), (Start: 29 @46751 has 80 MA's), (37, 46646), (40, 46574), (41, 46568), (43, 46556), (45, 46490), (54, 46325), (55, 46322), (61, 46235), (63, 46214),

Gene: DirtyDunning\_77 Start: 46760, Stop: 46176, Start Num: 29

Candidate Starts for DirtyDunning\_77:

(13, 46910), (21, 46832), (24, 46811), (Start: 28 @46763 has 27 MA's), (Start: 29 @46760 has 80 MA's), (37, 46655), (40, 46583), (43, 46565), (45, 46499), (52, 46394), (54, 46334), (55, 46331), (61, 46244), (63, 46223),

Gene: Dorothy\_72 Start: 44809, Stop: 45360, Start Num: 29

Candidate Starts for Dorothy\_72:

(12, 44623), (16, 44680), (18, 44704), (20, 44722), (21, 44737), (24, 44758), (27, 44791), (Start: 29 @44809 has 80 MA's), (42, 44968), (51, 45130), (54, 45208), (55, 45211), (56, 45232), (57, 45241), (59, 45268), (66, 45349),

Gene: Druantia\_77 Start: 46751, Stop: 46167, Start Num: 29

Candidate Starts for Druantia\_77:

(13, 46901), (21, 46823), (24, 46802), (Start: 28 @46754 has 27 MA's), (Start: 29 @46751 has 80 MA's), (37, 46646), (40, 46574), (43, 46556), (45, 46490), (54, 46325), (55, 46322), (61, 46235), (63, 46214),

Gene: Dylan\_6 Start: 2163, Stop: 1594, Start Num: 25

Candidate Starts for Dylan\_6:

(Start: 25 @2163 has 23 MA's), (34, 2046), (36, 2031), (38, 1980), (39, 1977), (47, 1863), (49, 1854), (54, 1725), (55, 1722), (60, 1647), (65, 1611),

Gene: Eagle\_77 Start: 46810, Stop: 46226, Start Num: 29

Candidate Starts for Eagle\_77:

(13, 46960), (21, 46882), (24, 46861), (Start: 28 @46813 has 27 MA's), (Start: 29 @46810 has 80 MA's), (37, 46705), (40, 46633), (43, 46615), (45, 46549), (54, 46384), (55, 46381), (61, 46294), (63, 46273),

Gene: Eapen\_78 Start: 46743, Stop: 46159, Start Num: 29

Candidate Starts for Eapen\_78:

(13, 46893), (21, 46815), (24, 46794), (Start: 28 @46746 has 27 MA's), (Start: 29 @46743 has 80 MA's), (37, 46638), (40, 46566), (43, 46548), (45, 46482), (52, 46377), (54, 46317), (55, 46314), (61, 46227), (63, 46206),

Gene: Eros\_78 Start: 46750, Stop: 46166, Start Num: 29

Candidate Starts for Eros\_78:

(13, 46900), (21, 46822), (24, 46801), (Start: 28 @46753 has 27 MA's), (Start: 29 @46750 has 80 MA's), (37, 46645), (40, 46573), (43, 46555), (45, 46489), (52, 46384), (54, 46324), (55, 46321), (61, 46234), (63, 46213),

Gene: Eurydice\_79 Start: 46788, Stop: 46201, Start Num: 28

Candidate Starts for Eurydice\_79:

(13, 46935), (21, 46857), (24, 46836), (Start: 28 @46788 has 27 MA's), (Start: 29 @46785 has 80 MA's), (37, 46680), (40, 46608), (43, 46590), (45, 46524), (54, 46359), (55, 46356), (61, 46269), (63, 46248),

Gene: Familton\_6 Start: 1765, Stop: 1196, Start Num: 25

Candidate Starts for Familton\_6:

(Start: 25 @1765 has 23 MA's), (34, 1648), (36, 1633), (38, 1582), (39, 1579), (47, 1465), (49, 1456), (50, 1432), (54, 1327), (55, 1324), (58, 1288), (60, 1249), (65, 1213),

Gene: Firecracker\_5 Start: 1850, Stop: 1287, Start Num: 25

Candidate Starts for Firecracker\_5:

(Start: 25 @1850 has 23 MA's), (34, 1733), (36, 1718), (38, 1667), (39, 1664), (47, 1556), (49, 1547), (54, 1418), (55, 1415), (60, 1340), (65, 1304),

Gene: Float294\_61 Start: 49716, Stop: 49099, Start Num: 11

Candidate Starts for Float294\_61:

(1, 50178), (2, 50121), (3, 50109), (4, 50025), (6, 49830), (7, 49815), (8, 49797), (9, 49761), (Start: 11 @49716 has 1 MA's), (19, 49653), (22, 49638), (23, 49632), (Start: 25 @49617 has 23 MA's), (44, 49413), (46, 49386), (47, 49377), (48, 49371), (53, 49287), (54, 49236), (55, 49233), (60, 49155), (62, 49128),

Gene: Flux\_79 Start: 46746, Stop: 46162, Start Num: 29

Candidate Starts for Flux\_79:

(13, 46896), (21, 46818), (24, 46797), (Start: 28 @46749 has 27 MA's), (Start: 29 @46746 has 80 MA's), (37, 46641), (40, 46569), (41, 46563), (43, 46551), (45, 46485), (52, 46380), (54, 46320), (55, 46317), (61, 46230), (63, 46209),

Gene: FoulBall\_5 Start: 1765, Stop: 1196, Start Num: 25

Candidate Starts for FoulBall\_5:

(Start: 25 @1765 has 23 MA's), (34, 1648), (36, 1633), (38, 1582), (39, 1579), (47, 1465), (49, 1456), (50, 1432), (54, 1327), (55, 1324), (58, 1288), (60, 1249), (65, 1213),

Gene: Gadost\_78 Start: 46749, Stop: 46165, Start Num: 29

Candidate Starts for Gadost\_78:

(13, 46899), (21, 46821), (24, 46800), (Start: 28 @46752 has 27 MA's), (Start: 29 @46749 has 80 MA's), (37, 46644), (40, 46572), (43, 46554), (45, 46488), (52, 46383), (54, 46323), (55, 46320), (61, 46233), (63, 46212),

Gene: HamSlice\_74 Start: 46747, Stop: 46163, Start Num: 29

Candidate Starts for HamSlice\_74:

(13, 46897), (21, 46819), (24, 46798), (Start: 28 @46750 has 27 MA's), (Start: 29 @46747 has 80 MA's), (37, 46642), (40, 46570), (43, 46552), (45, 46486), (52, 46381), (54, 46321), (55, 46318), (61, 46231), (63, 46210),

Gene: Happiness\_77 Start: 46771, Stop: 46187, Start Num: 29

Candidate Starts for Happiness\_77:

(13, 46921), (21, 46843), (24, 46822), (Start: 28 @46774 has 27 MA's), (Start: 29 @46771 has 80 MA's), (37, 46666), (40, 46594), (43, 46576), (45, 46510), (52, 46405), (54, 46345), (55, 46342), (61, 46255), (63, 46234),

Gene: Holli\_77 Start: 46541, Stop: 45954, Start Num: 28

Candidate Starts for Holli\_77:

(13, 46688), (21, 46610), (24, 46589), (Start: 28 @46541 has 27 MA's), (Start: 29 @46538 has 80 MA's), (37, 46433), (40, 46361), (43, 46343), (45, 46277), (54, 46112), (55, 46109), (61, 46022), (63, 46001),

Gene: Houdini22\_77 Start: 46749, Stop: 46165, Start Num: 29

Candidate Starts for Houdini22\_77:

(13, 46899), (21, 46821), (24, 46800), (Start: 28 @46752 has 27 MA's), (Start: 29 @46749 has 80 MA's), (37, 46644), (40, 46572), (43, 46554), (45, 46488), (52, 46383), (54, 46323), (55, 46320), (61, 46233), (63, 46212),

Gene: ICleared\_77 Start: 46816, Stop: 46232, Start Num: 29

Candidate Starts for ICleared\_77:

(13, 46966), (21, 46888), (24, 46867), (Start: 28 @46819 has 27 MA's), (Start: 29 @46816 has 80 MA's), (37, 46711), (40, 46639), (43, 46621), (45, 46555), (52, 46450), (54, 46390), (55, 46387), (61, 46300), (63, 46279),

Gene: Iceman\_76 Start: 47038, Stop: 46454, Start Num: 29

Candidate Starts for Iceman\_76:

(13, 47188), (21, 47110), (24, 47089), (Start: 28 @47041 has 27 MA's), (Start: 29 @47038 has 80 MA's), (37, 46933), (40, 46861), (43, 46843), (45, 46777), (52, 46672), (54, 46612), (55, 46609), (61, 46522), (63, 46501),

Gene: Idergollasper\_5 Start: 1765, Stop: 1196, Start Num: 25

Candidate Starts for Idergollasper\_5:

(Start: 25 @1765 has 23 MA's), (34, 1648), (36, 1633), (38, 1582), (39, 1579), (47, 1465), (49, 1456), (50, 1432), (54, 1327), (55, 1324), (58, 1288), (60, 1249), (65, 1213),

Gene: Iracema64\_78 Start: 47012, Stop: 46428, Start Num: 29

Candidate Starts for Iracema64\_78:

(13, 47162), (21, 47084), (24, 47063), (Start: 28 @47015 has 27 MA's), (Start: 29 @47012 has 80 MA's), (37, 46907), (40, 46835), (43, 46817), (45, 46751), (54, 46586), (55, 46583), (61, 46496), (63, 46475),

Gene: JangDynasty\_5 Start: 1854, Stop: 1291, Start Num: 25

Candidate Starts for JangDynasty\_5:

(Start: 25 @1854 has 23 MA's), (34, 1737), (36, 1722), (38, 1671), (39, 1668), (47, 1560), (49, 1551), (50, 1527), (54, 1422), (55, 1419), (60, 1344), (65, 1308),

Gene: JetBlade\_79 Start: 46779, Stop: 46192, Start Num: 28

Candidate Starts for JetBlade\_79:

(13, 46926), (21, 46848), (24, 46827), (Start: 28 @46779 has 27 MA's), (Start: 29 @46776 has 80 MA's), (37, 46671), (40, 46599), (43, 46581), (45, 46515), (54, 46350), (55, 46347), (61, 46260), (63, 46239),

Gene: Kamy\_77 Start: 46751, Stop: 46167, Start Num: 29

Candidate Starts for Kamy\_77:

(13, 46901), (21, 46823), (24, 46802), (Start: 28 @46754 has 27 MA's), (Start: 29 @46751 has 80 MA's), (37, 46646), (40, 46574), (43, 46556), (45, 46490), (54, 46325), (55, 46322), (61, 46235), (63, 46214),

Gene: Kingmustik0402\_78 Start: 46740, Stop: 46153, Start Num: 28

Candidate Starts for Kingmustik0402\_78:

(13, 46887), (21, 46809), (24, 46788), (Start: 28 @46740 has 27 MA's), (Start: 29 @46737 has 80 MA's), (37, 46632), (40, 46560), (43, 46542), (45, 46476), (54, 46311), (55, 46308), (61, 46221), (63, 46200),

Gene: Koreni\_77 Start: 46432, Stop: 45845, Start Num: 28

Candidate Starts for Koreni\_77:

(13, 46579), (21, 46501), (24, 46480), (Start: 28 @46432 has 27 MA's), (Start: 29 @46429 has 80 MA's), (37, 46324), (40, 46252), (43, 46234), (45, 46168), (52, 46063), (54, 46003), (55, 46000), (61, 45913), (63, 45892),

Gene: Kremtemulon\_75 Start: 46628, Stop: 46044, Start Num: 29

Candidate Starts for Kremtemulon\_75:

(13, 46778), (21, 46700), (24, 46679), (Start: 28 @46631 has 27 MA's), (Start: 29 @46628 has 80 MA's), (37, 46523), (40, 46451), (43, 46433), (45, 46367), (52, 46262), (54, 46202), (55, 46199), (61, 46112), (63, 46091), (67, 46055),

Gene: Krili\_5 Start: 1716, Stop: 1147, Start Num: 25

Candidate Starts for Krili\_5:

(Start: 25 @1716 has 23 MA's), (34, 1599), (36, 1584), (38, 1533), (39, 1530), (47, 1416), (49, 1407), (50, 1383), (54, 1278), (55, 1275), (58, 1239), (60, 1200), (65, 1164),

Gene: Kyee\_78 Start: 46743, Stop: 46159, Start Num: 29

Candidate Starts for Kyee\_78:

(13, 46893), (21, 46815), (24, 46794), (Start: 28 @46746 has 27 MA's), (Start: 29 @46743 has 80 MA's), (37, 46638), (40, 46566), (43, 46548), (45, 46482), (52, 46377), (54, 46317), (55, 46314), (61, 46227), (63, 46206),

Gene: LHTSCC\_80 Start: 47191, Stop: 46604, Start Num: 28

Candidate Starts for LHTSCC\_80:

(13, 47338), (21, 47260), (24, 47239), (Start: 28 @47191 has 27 MA's), (Start: 29 @47188 has 80 MA's), (37, 47083), (40, 47011), (43, 46993), (45, 46927), (52, 46822), (54, 46762), (55, 46759), (61, 46672), (63, 46651),

Gene: LappelDuVide\_78 Start: 46748, Stop: 46164, Start Num: 29

Candidate Starts for LappelDuVide\_78:

(13, 46898), (21, 46820), (24, 46799), (Start: 28 @46751 has 27 MA's), (Start: 29 @46748 has 80 MA's), (37, 46643), (40, 46571), (43, 46553), (45, 46487), (52, 46382), (54, 46322), (55, 46319), (61, 46232), (63, 46211),

Gene: Lemur\_78 Start: 46745, Stop: 46161, Start Num: 29

Candidate Starts for Lemur\_78:

(13, 46895), (21, 46817), (24, 46796), (Start: 28 @46748 has 27 MA's), (Start: 29 @46745 has 80 MA's), (37, 46640), (40, 46568), (41, 46562), (43, 46550), (45, 46484), (52, 46379), (54, 46319), (55, 46316), (61, 46229), (63, 46208),

Gene: LittleGuy\_78 Start: 46633, Stop: 46049, Start Num: 29

Candidate Starts for LittleGuy\_78:

(13, 46783), (21, 46705), (24, 46684), (Start: 28 @46636 has 27 MA's), (Start: 29 @46633 has 80 MA's), (37, 46528), (40, 46456), (43, 46438), (45, 46372), (52, 46267), (54, 46207), (55, 46204), (61, 46117), (63, 46096),

Gene: LochMonster\_79 Start: 46985, Stop: 46401, Start Num: 29

Candidate Starts for LochMonster\_79:

(13, 47135), (21, 47057), (24, 47036), (Start: 28 @46988 has 27 MA's), (Start: 29 @46985 has 80 MA's), (37, 46880), (40, 46808), (43, 46790), (45, 46724), (54, 46559), (55, 46556), (61, 46469), (63, 46448),

Gene: Lorenzo\_78 Start: 46746, Stop: 46162, Start Num: 29

Candidate Starts for Lorenzo\_78:

(13, 46896), (21, 46818), (24, 46797), (Start: 28 @46749 has 27 MA's), (Start: 29 @46746 has 80 MA's), (37, 46641), (40, 46569), (43, 46551), (45, 46485), (52, 46380), (54, 46320), (55, 46317), (61, 46230), (63, 46209),

Gene: Lunsford\_78 Start: 46741, Stop: 46157, Start Num: 29

Candidate Starts for Lunsford\_78:

(13, 46891), (21, 46813), (24, 46792), (Start: 28 @46744 has 27 MA's), (Start: 29 @46741 has 80 MA's), (37, 46636), (40, 46564), (43, 46546), (45, 46480), (54, 46315), (55, 46312), (61, 46225), (63, 46204),

Gene: MadKillah\_5 Start: 1716, Stop: 1147, Start Num: 25

Candidate Starts for MadKillah\_5:

(Start: 25 @1716 has 23 MA's), (34, 1599), (36, 1584), (38, 1533), (39, 1530), (47, 1416), (49, 1407), (50, 1383), (54, 1278), (55, 1275), (58, 1239), (60, 1200), (65, 1164),

Gene: Maverick\_77 Start: 46745, Stop: 46161, Start Num: 29

Candidate Starts for Maverick\_77:

(13, 46895), (21, 46817), (24, 46796), (Start: 28 @46748 has 27 MA's), (Start: 29 @46745 has 80 MA's), (37, 46640), (40, 46568), (43, 46550), (45, 46484), (52, 46379), (54, 46319), (55, 46316), (61, 46229), (63, 46208),

Gene: Maxo\_80 Start: 46754, Stop: 46167, Start Num: 28

Candidate Starts for Maxo\_80:

(13, 46901), (21, 46823), (24, 46802), (Start: 28 @46754 has 27 MA's), (Start: 29 @46751 has 80 MA's), (37, 46646), (40, 46574), (43, 46556), (45, 46490), (54, 46325), (55, 46322), (61, 46235), (63, 46214),

Gene: Mazhar510\_78 Start: 46749, Stop: 46162, Start Num: 28

Candidate Starts for Mazhar510\_78:

(13, 46896), (21, 46818), (24, 46797), (Start: 28 @46749 has 27 MA's), (Start: 29 @46746 has 80 MA's), (37, 46641), (40, 46569), (43, 46551), (45, 46485), (52, 46380), (54, 46320), (55, 46317), (61, 46230), (63, 46209),

Gene: Medusa\_77 Start: 46761, Stop: 46177, Start Num: 29

Candidate Starts for Medusa\_77:

(13, 46911), (21, 46833), (24, 46812), (Start: 28 @46764 has 27 MA's), (Start: 29 @46761 has 80 MA's), (37, 46656), (40, 46584), (43, 46566), (45, 46500), (54, 46335), (55, 46332), (61, 46245), (63, 46224),

Gene: MeeZee\_77 Start: 46742, Stop: 46158, Start Num: 29

Candidate Starts for MeeZee\_77:

(13, 46892), (21, 46814), (24, 46793), (Start: 28 @46745 has 27 MA's), (Start: 29 @46742 has 80 MA's), (37, 46637), (40, 46565), (43, 46547), (45, 46481), (52, 46376), (54, 46316), (55, 46313), (61, 46226), (63, 46205),

Gene: Melvin\_80 Start: 46743, Stop: 46159, Start Num: 29

Candidate Starts for Melvin\_80:

(13, 46893), (21, 46815), (24, 46794), (Start: 28 @46746 has 27 MA's), (Start: 29 @46743 has 80 MA's), (37, 46638), (40, 46566), (41, 46560), (43, 46548), (45, 46482), (52, 46377), (54, 46317), (55, 46314), (61, 46227), (63, 46206),

Gene: Millski\_77 Start: 46749, Stop: 46165, Start Num: 29

Candidate Starts for Millski\_77:

(13, 46899), (21, 46821), (24, 46800), (Start: 28 @46752 has 27 MA's), (Start: 29 @46749 has 80 MA's), (37, 46644), (40, 46572), (43, 46554), (45, 46488), (52, 46383), (54, 46323), (55, 46320), (61, 46233), (63, 46212),

Gene: Miramae\_78 Start: 46572, Stop: 45991, Start Num: 29

Candidate Starts for Miramae\_78:

(13, 46722), (21, 46644), (24, 46623), (27, 46590), (Start: 29 @46572 has 80 MA's), (32, 46503), (33, 46497), (Start: 35 @46485 has 2 MA's), (45, 46314), (54, 46149), (55, 46146), (61, 46059), (63, 46038), (67, 46002),

Gene: Mori\_5 Start: 1716, Stop: 1147, Start Num: 25

Candidate Starts for Mori\_5:

(Start: 25 @1716 has 23 MA's), (34, 1599), (36, 1584), (38, 1533), (39, 1530), (47, 1416), (49, 1407), (50, 1383), (54, 1278), (55, 1275), (58, 1239), (60, 1200), (65, 1164),

Gene: Morpher26\_75 Start: 46563, Stop: 45979, Start Num: 29

Candidate Starts for Morpher26\_75:

(13, 46713), (21, 46635), (24, 46614), (Start: 28 @46566 has 27 MA's), (Start: 29 @46563 has 80 MA's), (30, 46551), (37, 46458), (40, 46386), (43, 46368), (45, 46302), (52, 46197), (54, 46137), (55, 46134), (61, 46047), (63, 46026), (67, 45990),

Gene: Morrow\_80 Start: 46788, Stop: 46204, Start Num: 29

Candidate Starts for Morrow\_80:

(13, 46938), (21, 46860), (24, 46839), (Start: 28 @46791 has 27 MA's), (Start: 29 @46788 has 80 MA's), (37, 46683), (40, 46611), (43, 46593), (54, 46362), (55, 46359), (61, 46272), (63, 46251),

Gene: Nebs\_79 Start: 46788, Stop: 46204, Start Num: 29

Candidate Starts for Nebs\_79:

(13, 46938), (21, 46860), (24, 46839), (Start: 28 @46791 has 27 MA's), (Start: 29 @46788 has 80 MA's), (37, 46683), (40, 46611), (43, 46593), (45, 46527), (54, 46362), (55, 46359), (61, 46272), (63, 46251),

Gene: Nemo27\_77 Start: 46744, Stop: 46160, Start Num: 29

Candidate Starts for Nemo27\_77:

(13, 46894), (21, 46816), (24, 46795), (Start: 28 @46747 has 27 MA's), (Start: 29 @46744 has 80 MA's), (37, 46639), (40, 46567), (43, 46549), (45, 46483), (52, 46378), (54, 46318), (55, 46315), (61, 46228), (63, 46207),

Gene: NiebruSaylor\_5 Start: 1716, Stop: 1147, Start Num: 25

Candidate Starts for NiebruSaylor\_5:

(Start: 25 @1716 has 23 MA's), (34, 1599), (36, 1584), (38, 1533), (39, 1530), (47, 1416), (49, 1407), (50, 1383), (54, 1278), (55, 1275), (58, 1239), (60, 1200), (65, 1164),

Gene: NorthStar\_75 Start: 46748, Stop: 46164, Start Num: 29

Candidate Starts for NorthStar\_75:

(13, 46898), (21, 46820), (24, 46799), (Start: 28 @46751 has 27 MA's), (Start: 29 @46748 has 80 MA's), (37, 46643), (40, 46571), (41, 46565), (43, 46553), (45, 46487), (52, 46382), (54, 46322), (55, 46319), (61, 46232), (63, 46211),

Gene: NotAPhaseMom\_77 Start: 46749, Stop: 46165, Start Num: 29

Candidate Starts for NotAPhaseMom\_77:

(13, 46899), (21, 46821), (24, 46800), (Start: 28 @46752 has 27 MA's), (Start: 29 @46749 has 80 MA's), (37, 46644), (40, 46572), (43, 46554), (45, 46488), (52, 46383), (54, 46323), (55, 46320), (61, 46233), (63, 46212),

Gene: Nyxis\_77 Start: 46630, Stop: 46043, Start Num: 28

Candidate Starts for Nyxis\_77:

(13, 46777), (21, 46699), (24, 46678), (Start: 28 @46630 has 27 MA's), (Start: 29 @46627 has 80 MA's), (37, 46522), (40, 46450), (43, 46432), (45, 46366), (54, 46201), (55, 46198), (61, 46111), (63, 46090),

Gene: OKaNui\_77 Start: 46799, Stop: 46215, Start Num: 29

Candidate Starts for OKaNui\_77:

(13, 46949), (21, 46871), (24, 46850), (Start: 28 @46802 has 27 MA's), (Start: 29 @46799 has 80 MA's), (37, 46694), (40, 46622), (43, 46604), (45, 46538), (52, 46433), (54, 46373), (55, 46370), (61, 46283), (63, 46262),

Gene: Obama12\_79 Start: 47172, Stop: 46588, Start Num: 29

Candidate Starts for Obama12\_79:

(13, 47322), (21, 47244), (24, 47223), (Start: 28 @47175 has 27 MA's), (Start: 29 @47172 has 80 MA's), (37, 47067), (40, 46995), (43, 46977), (45, 46911), (52, 46806), (54, 46746), (55, 46743), (61, 46656), (63, 46635),

Gene: Ohfah\_79 Start: 46791, Stop: 46204, Start Num: 28

Candidate Starts for Ohfah\_79:

(13, 46938), (21, 46860), (24, 46839), (Start: 28 @46791 has 27 MA's), (Start: 29 @46788 has 80 MA's), (37, 46683), (40, 46611), (43, 46593), (45, 46527), (54, 46362), (55, 46359), (61, 46272), (63, 46251),

Gene: Peaches\_76 Start: 46747, Stop: 46163, Start Num: 29

Candidate Starts for Peaches\_76:

(13, 46897), (21, 46819), (24, 46798), (Start: 28 @46750 has 27 MA's), (Start: 29 @46747 has 80 MA's), (37, 46642), (40, 46570), (43, 46552), (45, 46486), (52, 46381), (54, 46321), (55, 46318), (61, 46231), (63, 46210),

Gene: PeterPeter\_78 Start: 46742, Stop: 46158, Start Num: 29

Candidate Starts for PeterPeter\_78:

(13, 46892), (21, 46814), (24, 46793), (Start: 28 @46745 has 27 MA's), (Start: 29 @46742 has 80 MA's), (37, 46637), (40, 46565), (43, 46547), (45, 46481), (52, 46376), (54, 46316), (55, 46313), (61, 46226), (63, 46205),

Gene: Phacado\_78 Start: 46744, Stop: 46160, Start Num: 29

Candidate Starts for Phacado\_78:

(13, 46894), (21, 46816), (24, 46795), (Start: 28 @46747 has 27 MA's), (Start: 29 @46744 has 80 MA's), (37, 46639), (40, 46567), (43, 46549), (45, 46483), (52, 46378), (54, 46318), (55, 46315), (61, 46228), (63, 46207),

Gene: Phelipe\_79 Start: 46788, Stop: 46204, Start Num: 29

Candidate Starts for Phelipe\_79:

(13, 46938), (21, 46860), (24, 46839), (Start: 28 @46791 has 27 MA's), (Start: 29 @46788 has 80 MA's), (37, 46683), (40, 46611), (43, 46593), (45, 46527), (54, 46362), (55, 46359), (61, 46272), (63, 46251),

Gene: Phighter1804\_78 Start: 46809, Stop: 46225, Start Num: 29

Candidate Starts for Phighter1804\_78:

(13, 46959), (21, 46881), (24, 46860), (Start: 28 @46812 has 27 MA's), (Start: 29 @46809 has 80 MA's), (37, 46704), (40, 46632), (43, 46614), (45, 46548), (52, 46443), (54, 46383), (55, 46380), (61, 46293), (63, 46272),

Gene: Phontbonne\_78 Start: 46643, Stop: 46059, Start Num: 29

Candidate Starts for Phontbonne\_78:

(13, 46793), (21, 46715), (24, 46694), (Start: 28 @46646 has 27 MA's), (Start: 29 @46643 has 80 MA's), (37, 46538), (40, 46466), (43, 46448), (45, 46382), (54, 46217), (55, 46214), (61, 46127), (63, 46106),

Gene: Pipcraft\_74 Start: 46749, Stop: 46165, Start Num: 29

Candidate Starts for Pipcraft\_74:

(13, 46899), (21, 46821), (24, 46800), (Start: 28 @46752 has 27 MA's), (Start: 29 @46749 has 80 MA's), (37, 46644), (40, 46572), (41, 46566), (43, 46554), (45, 46488), (52, 46383), (54, 46323), (55, 46320), (61, 46233), (63, 46212),

Gene: Polymorphads\_79 Start: 46772, Stop: 46185, Start Num: 28

Candidate Starts for Polymorphads\_79:

(13, 46919), (21, 46841), (24, 46820), (Start: 28 @46772 has 27 MA's), (Start: 29 @46769 has 80 MA's), (37, 46664), (40, 46592), (43, 46574), (45, 46508), (52, 46403), (54, 46343), (55, 46340), (61, 46253), (63, 46232),

Gene: Pumbaa\_78 Start: 46696, Stop: 46109, Start Num: 28

Candidate Starts for Pumbaa\_78:

(13, 46843), (21, 46765), (24, 46744), (Start: 28 @46696 has 27 MA's), (Start: 29 @46693 has 80 MA's), (37, 46588), (40, 46516), (43, 46498), (45, 46432), (52, 46327), (54, 46267), (55, 46264), (61, 46177), (63, 46156),

Gene: Relief\_77 Start: 46745, Stop: 46161, Start Num: 29

Candidate Starts for Relief\_77:

(13, 46895), (21, 46817), (24, 46796), (Start: 28 @46748 has 27 MA's), (Start: 29 @46745 has 80 MA's), (37, 46640), (40, 46568), (43, 46550), (45, 46484), (52, 46379), (54, 46319), (55, 46316), (61, 46229), (63, 46208),

Gene: Romney\_77 Start: 46745, Stop: 46161, Start Num: 29



Candidate Starts for Romney\_77:

(13, 46895), (21, 46817), (24, 46796), (Start: 28 @46748 has 27 MA's), (Start: 29 @46745 has 80 MA's), (37, 46640), (40, 46568), (41, 46562), (43, 46550), (45, 46484), (52, 46379), (54, 46319), (55, 46316), (61, 46229), (63, 46208),

Gene: Roosevelt\_76 Start: 46750, Stop: 46166, Start Num: 29

Candidate Starts for Roosevelt\_76:

(13, 46900), (21, 46822), (24, 46801), (Start: 28 @46753 has 27 MA's), (Start: 29 @46750 has 80 MA's), (37, 46645), (40, 46573), (43, 46555), (45, 46489), (54, 46324), (55, 46321), (61, 46234), (63, 46213),

Gene: Rosa24\_74 Start: 46779, Stop: 46192, Start Num: 28

Candidate Starts for Rosa24\_74:

(13, 46926), (21, 46848), (24, 46827), (Start: 28 @46779 has 27 MA's), (Start: 29 @46776 has 80 MA's), (37, 46671), (40, 46599), (43, 46581), (45, 46515), (54, 46350), (55, 46347), (61, 46260), (63, 46239),

Gene: Ruin\_78 Start: 46741, Stop: 46157, Start Num: 29

Candidate Starts for Ruin\_78:

(13, 46891), (21, 46813), (24, 46792), (Start: 28 @46744 has 27 MA's), (Start: 29 @46741 has 80 MA's), (37, 46636), (40, 46564), (41, 46558), (43, 46546), (45, 46480), (52, 46375), (54, 46315), (55, 46312), (61, 46225), (63, 46204),

Gene: Ryadel\_7 Start: 2296, Stop: 1727, Start Num: 25

Candidate Starts for Ryadel\_7:

(Start: 25 @2296 has 23 MA's), (34, 2179), (36, 2164), (38, 2113), (39, 2110), (47, 1996), (49, 1987), (50, 1963), (54, 1858), (55, 1855), (58, 1819), (60, 1780), (65, 1744),

Gene: Sabertooth\_78 Start: 46756, Stop: 46169, Start Num: 28

Candidate Starts for Sabertooth\_78:

(13, 46903), (21, 46825), (24, 46804), (Start: 28 @46756 has 27 MA's), (Start: 29 @46753 has 80 MA's), (37, 46648), (40, 46576), (43, 46558), (45, 46492), (52, 46387), (54, 46327), (55, 46324), (61, 46237), (63, 46216),

Gene: Scamp\_78 Start: 46750, Stop: 46166, Start Num: 29

Candidate Starts for Scamp\_78:

(13, 46900), (21, 46822), (24, 46801), (Start: 28 @46753 has 27 MA's), (Start: 29 @46750 has 80 MA's), (37, 46645), (40, 46573), (43, 46555), (45, 46489), (52, 46384), (54, 46324), (55, 46321), (61, 46234), (63, 46213),

Gene: SchoolBus\_5 Start: 1765, Stop: 1196, Start Num: 25

Candidate Starts for SchoolBus\_5:

(Start: 25 @1765 has 23 MA's), (34, 1648), (36, 1633), (38, 1582), (39, 1579), (47, 1465), (49, 1456), (50, 1432), (54, 1327), (55, 1324), (58, 1288), (60, 1249), (65, 1213),

Gene: Schuy\_5 Start: 1716, Stop: 1147, Start Num: 25

Candidate Starts for Schuy\_5:

(Start: 25 @1716 has 23 MA's), (34, 1599), (36, 1584), (38, 1533), (39, 1530), (47, 1416), (49, 1407), (50, 1383), (54, 1278), (55, 1275), (58, 1239), (60, 1200), (65, 1164),

Gene: Shaka\_76 Start: 46746, Stop: 46162, Start Num: 29

Candidate Starts for Shaka\_76:

(13, 46896), (21, 46818), (24, 46797), (Start: 28 @46749 has 27 MA's), (Start: 29 @46746 has 80 MA's), (37, 46641), (40, 46569), (43, 46551), (45, 46485), (54, 46320), (55, 46317), (61, 46230), (63, 46209),

Gene: SheldonCooper\_78 Start: 47186, Stop: 46602, Start Num: 29

Candidate Starts for SheldonCooper\_78:

(13, 47336), (21, 47258), (24, 47237), (Start: 28 @47189 has 27 MA's), (Start: 29 @47186 has 80 MA's), (37, 47081), (40, 47009), (43, 46991), (45, 46925), (54, 46760), (55, 46757), (61, 46670), (63, 46649),

Gene: Shida\_5 Start: 1765, Stop: 1196, Start Num: 25

Candidate Starts for Shida\_5:

(Start: 25 @1765 has 23 MA's), (34, 1648), (36, 1633), (38, 1582), (39, 1579), (47, 1465), (49, 1456), (50, 1432), (54, 1327), (55, 1324), (58, 1288), (60, 1249), (65, 1213),

Gene: Shygu2\_76 Start: 46692, Stop: 46108, Start Num: 29

Candidate Starts for Shygu2\_76:

(13, 46842), (21, 46764), (24, 46743), (Start: 28 @46695 has 27 MA's), (Start: 29 @46692 has 80 MA's), (30, 46680), (37, 46587), (40, 46515), (43, 46497), (45, 46431), (52, 46326), (54, 46266), (55, 46263), (61, 46176), (63, 46155), (67, 46119),

Gene: Skipitt\_77 Start: 46745, Stop: 46158, Start Num: 28

Candidate Starts for Skipitt\_77:

(13, 46892), (21, 46814), (24, 46793), (Start: 28 @46745 has 27 MA's), (Start: 29 @46742 has 80 MA's), (37, 46637), (40, 46565), (41, 46559), (43, 46547), (45, 46481), (52, 46376), (54, 46316), (55, 46313), (61, 46226), (63, 46205),

Gene: Smooch\_6 Start: 2139, Stop: 1576, Start Num: 25

Candidate Starts for Smooch\_6:

(Start: 25 @2139 has 23 MA's), (34, 2022), (36, 2007), (38, 1956), (39, 1953), (47, 1845), (49, 1836), (54, 1707), (55, 1704), (60, 1629), (65, 1593),

Gene: Sparxx\_79 Start: 46747, Stop: 46160, Start Num: 28

Candidate Starts for Sparxx\_79:

(13, 46894), (21, 46816), (24, 46795), (Start: 28 @46747 has 27 MA's), (Start: 29 @46744 has 80 MA's), (37, 46639), (40, 46567), (43, 46549), (45, 46483), (54, 46318), (55, 46315), (61, 46228), (63, 46207),

Gene: Spino\_77 Start: 46748, Stop: 46164, Start Num: 29

Candidate Starts for Spino\_77:

(13, 46898), (21, 46820), (24, 46799), (Start: 28 @46751 has 27 MA's), (Start: 29 @46748 has 80 MA's), (37, 46643), (40, 46571), (43, 46553), (45, 46487), (54, 46322), (55, 46319), (61, 46232), (63, 46211),

Gene: Stasia\_75 Start: 46708, Stop: 46121, Start Num: 28

Candidate Starts for Stasia\_75:

(13, 46855), (21, 46777), (24, 46756), (Start: 28 @46708 has 27 MA's), (Start: 29 @46705 has 80 MA's), (37, 46600), (40, 46528), (43, 46510), (45, 46444), (54, 46279), (55, 46276), (61, 46189), (63, 46168), (67, 46132),

Gene: Stink\_78 Start: 46793, Stop: 46299, Start Num: 35

Candidate Starts for Stink\_78:

(13, 47030), (21, 46952), (24, 46931), (27, 46898), (Start: 29 @46880 has 80 MA's), (32, 46811), (33, 46805), (Start: 35 @46793 has 2 MA's), (45, 46622), (54, 46457), (55, 46454), (61, 46367), (63, 46346), (67, 46310),

Gene: Taquarus\_77 Start: 46751, Stop: 46167, Start Num: 29

Candidate Starts for Taquarus\_77:

(13, 46901), (21, 46823), (24, 46802), (Start: 28 @46754 has 27 MA's), (Start: 29 @46751 has 80 MA's), (37, 46646), (40, 46574), (43, 46556), (45, 46490), (54, 46325), (55, 46322), (61, 46235), (63, 46214),

Gene: TelAviv\_5 Start: 1762, Stop: 1193, Start Num: 25

Candidate Starts for TelAviv\_5:

(Start: 25 @1762 has 23 MA's), (34, 1645), (36, 1630), (38, 1579), (39, 1576), (47, 1462), (49, 1453), (50, 1429), (54, 1324), (55, 1321), (58, 1285), (60, 1246), (65, 1210),

Gene: Tinybot\_77 Start: 46778, Stop: 46191, Start Num: 28

Candidate Starts for Tinybot\_77:

(13, 46925), (21, 46847), (24, 46826), (Start: 28 @46778 has 27 MA's), (Start: 29 @46775 has 80 MA's), (37, 46670), (40, 46598), (43, 46580), (45, 46514), (52, 46409), (54, 46349), (55, 46346), (61, 46259), (63, 46238),

Gene: TiroTheta9\_77 Start: 46742, Stop: 46158, Start Num: 29

Candidate Starts for TiroTheta9\_77:

(13, 46892), (21, 46814), (24, 46793), (Start: 28 @46745 has 27 MA's), (Start: 29 @46742 has 80 MA's), (37, 46637), (40, 46565), (43, 46547), (45, 46481), (54, 46316), (55, 46313), (61, 46226), (63, 46205),

Gene: TroyPia\_79 Start: 46786, Stop: 46199, Start Num: 28

Candidate Starts for TroyPia\_79:

(13, 46933), (21, 46855), (24, 46834), (Start: 28 @46786 has 27 MA's), (Start: 29 @46783 has 80 MA's), (37, 46678), (40, 46606), (43, 46588), (45, 46522), (54, 46357), (55, 46354), (61, 46267), (63, 46246),

Gene: TygerBlood\_78 Start: 46751, Stop: 46164, Start Num: 28

Candidate Starts for TygerBlood\_78:

(13, 46898), (21, 46820), (24, 46799), (Start: 28 @46751 has 27 MA's), (Start: 29 @46748 has 80 MA's), (37, 46643), (40, 46571), (43, 46553), (45, 46487), (52, 46382), (54, 46322), (55, 46319), (61, 46232), (63, 46211),

Gene: Ulysses\_77 Start: 46431, Stop: 45847, Start Num: 29

Candidate Starts for Ulysses\_77:

(13, 46581), (21, 46503), (24, 46482), (Start: 28 @46434 has 27 MA's), (Start: 29 @46431 has 80 MA's), (37, 46326), (40, 46254), (43, 46236), (45, 46170), (54, 46005), (55, 46002), (61, 45915), (63, 45894),

Gene: Upyo\_53 Start: 39312, Stop: 38611, Start Num: 14

Candidate Starts for Upyo\_53:

(1, 39840), (2, 39783), (4, 39687), (5, 39534), (6, 39492), (7, 39477), (8, 39459), (9, 39423), (10, 39381), (Start: 14 @39312 has 1 MA's), (15, 39306), (17, 39270), (26, 39198), (31, 39132), (44, 38925), (46, 38898), (47, 38889), (53, 38799), (54, 38748), (55, 38745), (60, 38667), (62, 38640),

Gene: Vorrrps\_5 Start: 1716, Stop: 1147, Start Num: 25

Candidate Starts for Vorrrps\_5:

(Start: 25 @1716 has 23 MA's), (34, 1599), (36, 1584), (38, 1533), (39, 1530), (47, 1416), (49, 1407), (50, 1383), (54, 1278), (55, 1275), (58, 1239), (60, 1200), (65, 1164),

Gene: Wander\_78 Start: 46742, Stop: 46158, Start Num: 29

Candidate Starts for Wander\_78:

(13, 46892), (21, 46814), (24, 46793), (Start: 28 @46745 has 27 MA's), (Start: 29 @46742 has 80 MA's), (37, 46637), (40, 46565), (43, 46547), (45, 46481), (52, 46376), (54, 46316), (55, 46313), (61, 46226), (63, 46205),

Gene: Wilbur\_78 Start: 46745, Stop: 46161, Start Num: 29

Candidate Starts for Wilbur\_78:

(13, 46895), (21, 46817), (24, 46796), (Start: 28 @46748 has 27 MA's), (Start: 29 @46745 has 80 MA's), (37, 46640), (40, 46568), (41, 46562), (43, 46550), (45, 46484), (52, 46379), (54, 46319), (55, 46316), (61, 46229), (63, 46208),

Gene: Winget\_5 Start: 1850, Stop: 1287, Start Num: 25

Candidate Starts for Winget\_5:

(Start: 25 @1850 has 23 MA's), (34, 1733), (36, 1718), (38, 1667), (39, 1664), (47, 1556), (49, 1547), (54, 1418), (55, 1415), (58, 1379), (60, 1340), (65, 1304),

Gene: YoSam321\_78 Start: 46746, Stop: 46159, Start Num: 28

Candidate Starts for YoSam321\_78:

(13, 46893), (21, 46815), (24, 46794), (Start: 28 @46746 has 27 MA's), (Start: 29 @46743 has 80 MA's), (37, 46638), (40, 46566), (43, 46548), (45, 46482), (54, 46317), (55, 46314), (61, 46227), (63, 46206),

Gene: YungJamal\_6 Start: 2139, Stop: 1576, Start Num: 25

Candidate Starts for YungJamal\_6:

(Start: 25 @2139 has 23 MA's), (34, 2022), (36, 2007), (38, 1956), (39, 1953), (47, 1845), (49, 1836), (54, 1707), (55, 1704), (60, 1629), (65, 1593),

Gene: Zakhe101\_6 Start: 2163, Stop: 1594, Start Num: 25

Candidate Starts for Zakhe101\_6:

(Start: 25 @2163 has 23 MA's), (34, 2046), (36, 2031), (38, 1980), (39, 1977), (47, 1863), (49, 1854), (54, 1725), (55, 1722), (60, 1647), (65, 1611),