





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 196394 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196394 has 114 members, 2 are drafts.

Phages represented in each track:

- Track 1 : WalterMcMickey\_77
- Track 2 : OKCentral2016\_77
- Track 3 : KittenMittens\_74, Drake94\_75
- Track 4 : Kristoff\_76
- Track 5 : Goose\_79
- Track 6 : DarthPhader\_79, Refuge\_81
- Track 7 : Zimmer\_80
- Track 8 : Pharaoh\_78
- Track 9 : Steamy\_76
- Track 10 : 40AC\_83
- Track 11 : BabyBack\_82
- Track 12 : GaugeLDP\_81
- Track 13 : Kratak\_77
- Track 14 : Jaykayelowell\_75, Florean\_78, Bruiser\_77, TinaFeyge\_76
- Track 15 : JoongJeon\_77, Clarenza\_77, BubbleTrouble\_77, KFPoly\_77, Palestino\_77, Albee\_78, Thanksgivukkah\_77, LittleB\_78, Eris\_77, Funston\_77
- Track 16 : Miramae\_78, AvatarAhPeg\_78
- Track 17 : Noelle\_76
- Track 18 : Stasia\_75
- Track 19 : Cindaradix\_73
- Track 20 : Stink\_78
- Track 21 : Camperdownii\_75
- Track 22 : Mundrea\_77
- Track 23 : Medusa\_77
- Track 24 : TygerBlood\_78
- Track 25 : Achebe\_74
- Track 26 : CloudWang3\_90, Roksolana\_90, Hexamo\_89, Rifter\_90, Artemis2UCLA\_89
- Track 27 : Hammer\_90, ToneTone\_87, Tucker\_90
- Track 28 : Yokurt\_89, Koko\_91
- Track 29 : Kazan\_89, SmellyB\_88, Cookiedough\_88
- Track 30 : Zaka\_90, Wiks\_89
- Track 31 : Dorothea\_88, Hoot\_83, Jordennis\_86, Isiphiwo\_84, BABullseye\_81, JewelBug\_80
- Track 32 : Gruunaga\_89, Gladiator\_86
- Track 33 : Blue7\_91
- Track 34 : LoneWolf\_84, Vanisoa\_79, Arissanae\_79

- Track 35 : Yecey3\_85
- Track 36 : Darrell\_82
- Track 37 : Keziacharles14\_81
- Track 38 : Maminiaina\_83, BogosyJay\_83
- Track 39 : Spouty\_82, Priya\_82
- Track 40 : Charm\_79
- Track 41 : Rahalelujah\_83
- Track 42 : SheaKeira\_79
- Track 43 : Toaka\_82
- Track 44 : Elephantoon\_84
- Track 45 : Eesa\_40
- Track 46 : Camerico\_39
- Track 47 : Empress\_69, Doomphist\_74, Poenanya\_74, RedBird\_72
- Track 48 : Dorothy\_72
- Track 49 : GigiOuiOui\_66
- Track 50 : Phanphagia\_66
- Track 51 : FoulBall\_5, Mori\_5, Familton\_6, Vorrrps\_5, Schuy\_5, Ryadel\_7, Idergollasper\_5, Shida\_5, TelAviv\_5, Blessica\_5, Krili\_5, MadKillah\_5, NiebruSaylor\_5, Catdawg\_5, SchoolBus\_5
- Track 52 : JangDynasty\_5
- Track 53 : Corndog\_6, Dylan\_6, YungJamal\_6, Firecracker\_5, Smooch\_6, Zakhe101\_6
- Track 54 : Ashwin\_6, Wildflower\_5
- Track 55 : 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 5, it was called in 45 of the 112 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Achebe\_74, Albee\_78, Artemis2UCLA\_89, BABullseye\_81, Bruiser\_77, BubbleTrouble\_77, Camperdownii\_75, Charm\_79, Clarenza\_77, CloudWang3\_90, Dorothea\_88, Drake94\_75, Elephantoon\_84, Eris\_77, Florean\_78, Funston\_77, Gladiator\_86, Goose\_79, Gruunaga\_89, Hexamo\_89, Hoot\_83, Isiphiwo\_84, Jaykayelowell\_75, JewelBug\_80, JoongJeon\_77, Jordennis\_86, KFPoly\_77, KittenMittens\_74, Kratark\_77, Kristoff\_76, LittleB\_78, Noelle\_76, Palestino\_77, Pharaoh\_78, Priya\_82, Rahalelujah\_83, Rifter\_90, Roksolana\_90, Spouty\_82, Steamy\_76, Thanksgivukkah\_77, TinaFeyge\_76, Wiks\_89, Zaka\_90, Zimmer\_80,

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

- 40AC\_83, Arissanae\_79, AvatarAhPeg\_78, BabyBack\_82, Blue7\_91, BogosyJay\_83, Cindaradix\_73, Cookiedough\_88, Darrell\_82, DarthPhader\_79, GaugeLDP\_81, Hammer\_90, Kazan\_89, Keziacharles14\_81, Koko\_91, LoneWolf\_84, Maminiaina\_83, Medusa\_77, Miramae\_78, Mundrea\_77, OKCentral2016\_77, Refuge\_81, SheaKeira\_79, SmellyB\_88, Stasia\_75, Stink\_78, Toaka\_82, ToneTone\_87, Tucker\_90, TygerBlood\_78, Vanisoa\_79, WalterMcMickey\_77, Yecey3\_85, Yokurt\_89,

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

- Alkhayr\_5, Ashwin\_6, Blessica\_5, Camerico\_39, Catdawg\_5, Corndog\_6, Doomphist\_74, Dorothy\_72, Dylan\_6, Eesa\_40, Empress\_69, Familton\_6, Firecracker\_5, FoulBall\_5, GigiOuiOui\_66, Idergollasper\_5, JangDynasty\_5, Krili\_5, MadKillah\_5, Mori\_5, NiebruSaylor\_5, Phanphagia\_66, Poenanya\_74, RedBird\_72, Ryadel\_7, SchoolBus\_5, Schuy\_5, Shida\_5, Smooch\_6, TelAviv\_5, Vorrps\_5, Wildflower\_5, Winget\_5, YungJamal\_6, Zakhe101\_6,

### Summary by start number:

#### Start 2:

- Found in 7 of 114 ( 6.1% ) of genes in pham
- Manual Annotations of this start: 5 of 112
- Called 71.4% of time when present
- Phage (with cluster) where this start called: Doomphist\_74 (F1), Empress\_69 (F1), GigiOuiOui\_66 (F1), Poenanya\_74 (F1), RedBird\_72 (F1),

#### Start 3:

- Found in 26 of 114 ( 22.8% ) of genes in pham
- Manual Annotations of this start: 23 of 112
- Called 92.3% 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 5:

- Found in 79 of 114 ( 69.3% ) of genes in pham
- Manual Annotations of this start: 45 of 112
- Called 57.0% of time when present
- Phage (with cluster) where this start called: Achebe\_74 (A4), Albee\_78 (A4), Artemis2UCLA\_89 (A6), BABullseye\_81 (A6), Bruiser\_77 (A4), BubbleTrouble\_77 (A4), Camperdownii\_75 (A4), Charm\_79 (A9), Clarenza\_77 (A4), CloudWang3\_90 (A6), Dorothea\_88 (A6), Drake94\_75 (A10), Elephantoon\_84 (A9), Eris\_77 (A4), Florean\_78 (A4), Funston\_77 (A4), Gladiator\_86 (A6), Goose\_79 (A10), Gruunaga\_89 (A6), Hexamo\_89 (A6), Hoot\_83 (A6), Isiphiwo\_84 (A6), Jaykayelowell\_75 (A4), JewelBug\_80 (A6), JoongJeon\_77 (A4), Jordennis\_86 (A6), KFPoly\_77 (A4), KittenMittens\_74 (A10), Kratak\_77 (A4), Kristoff\_76 (A10), LittleB\_78 (A4), Noelle\_76 (A4), Palestino\_77 (A4), Pharaoh\_78 (A12), Priya\_82 (A9), Rahalelujah\_83 (A9), Rifter\_90 (A6), Roksolana\_90 (A6), Spouty\_82 (A9), Steamy\_76 (A12), Thanksgivukkah\_77 (A4), TinaFeyge\_76 (A4), Wiks\_89 (A6), Zaka\_90 (A6), Zimmer\_80 (A12),

#### Start 6:

- Found in 9 of 114 ( 7.9% ) of genes in pham
- Manual Annotations of this start: 1 of 112
- Called 11.1% of time when present
- Phage (with cluster) where this start called: Phanphagia\_66 (F1),

#### Start 7:

- Found in 55 of 114 ( 48.2% ) of genes in pham
- Manual Annotations of this start: 5 of 112

- Called 9.1% of time when present
- Phage (with cluster) where this start called: Blue7\_91 (A6), Cookiedough\_88 (A6), Kazan\_89 (A6), OKCentral2016\_77 (A10), SmellyB\_88 (A6),

#### Start 12:

- Found in 81 of 114 ( 71.1% ) of genes in pham
- Manual Annotations of this start: 13 of 112
- Called 16.0% of time when present
- Phage (with cluster) where this start called: Arissanae\_79 (A9), BogosyJay\_83 (A9), Darrell\_82 (A9), DarthPhader\_79 (A12), Keziacharles14\_81 (A9), LoneWolf\_84 (A9), Maminiaina\_83 (A9), Refuge\_81 (A12), SheaKeira\_79 (A9), Toaka\_82 (A9), Vanisoa\_79 (A9), WalterMcMickey\_77 (A10), Yecy3\_85 (A9),

#### Start 14:

- Found in 47 of 114 ( 41.2% ) of genes in pham
- Manual Annotations of this start: 3 of 112
- Called 6.4% of time when present
- Phage (with cluster) where this start called: Koko\_91 (A6), Mundrea\_77 (A4), Yokurt\_89 (A6),

#### Start 15:

- Found in 10 of 114 ( 8.8% ) of genes in pham
- Manual Annotations of this start: 3 of 112
- Called 30.0% of time when present
- Phage (with cluster) where this start called: Hammer\_90 (A6), ToneTone\_87 (A6), Tucker\_90 (A6),

#### Start 18:

- Found in 45 of 114 ( 39.5% ) of genes in pham
- Manual Annotations of this start: 2 of 112
- Called 4.4% of time when present
- Phage (with cluster) where this start called: Stasia\_75 (A4), TygerBlood\_78 (A4),

#### Start 19:

- Found in 54 of 114 ( 47.4% ) of genes in pham
- Manual Annotations of this start: 6 of 112
- Called 11.1% of time when present
- Phage (with cluster) where this start called: Ashwin\_6 (O), AvatarAhPeg\_78 (A4), Dorothy\_72 (F1), Medusa\_77 (A4), Miramae\_78 (A4), Wildflower\_5 (O),

#### Start 24:

- Found in 3 of 114 ( 2.6% ) of genes in pham
- Manual Annotations of this start: 2 of 112
- Called 66.7% of time when present
- Phage (with cluster) where this start called: BabyBack\_82 (A2), GaugeLDP\_81 (A2),

#### Start 25:

- Found in 3 of 114 ( 2.6% ) of genes in pham
- No Manual Annotations of this start.
- Called 33.3% of time when present
- Phage (with cluster) where this start called: 40AC\_83 (A17),

#### Start 26:

- Found in 1 of 114 ( 0.9% ) of genes in pham
- Manual Annotations of this start: 1 of 112
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Eesa\_40 (AS1),

Start 34:

- Found in 4 of 114 ( 3.5% ) of genes in pham
- Manual Annotations of this start: 2 of 112
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Cindaradix\_73 (A4), Stink\_78 (A4),

Start 45:

- Found in 2 of 114 ( 1.8% ) of genes in pham
- Manual Annotations of this start: 1 of 112
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Camerico\_39 (DF),

### **Summary by clusters:**

There are 11 clusters represented in this pham: F1, A17, A10, A12, DF, AS1, O, A2, A4, A6, A9,

Info for manual annotations of cluster A10:

- Start number 5 was manually annotated 4 times for cluster A10.
- Start number 7 was manually annotated 1 time for cluster A10.
- Start number 12 was manually annotated 1 time for cluster A10.

Info for manual annotations of cluster A12:

- Start number 5 was manually annotated 3 times for cluster A12.
- Start number 12 was manually annotated 2 times for cluster A12.

Info for manual annotations of cluster A2:

- Start number 24 was manually annotated 2 times for cluster A2.

Info for manual annotations of cluster A4:

- Start number 5 was manually annotated 18 times for cluster A4.
- Start number 14 was manually annotated 1 time for cluster A4.
- Start number 18 was manually annotated 2 times for cluster A4.
- Start number 19 was manually annotated 3 times for cluster A4.
- Start number 34 was manually annotated 2 times for cluster A4.

Info for manual annotations of cluster A6:

- Start number 5 was manually annotated 15 times for cluster A6.
- Start number 7 was manually annotated 4 times for cluster A6.
- Start number 14 was manually annotated 2 times for cluster A6.
- Start number 15 was manually annotated 3 times for cluster A6.

Info for manual annotations of cluster A9:

- Start number 5 was manually annotated 5 times for cluster A9.
- Start number 12 was manually annotated 10 times for cluster A9.

Info for manual annotations of cluster AS1:

- Start number 26 was manually annotated 1 time for cluster AS1.

Info for manual annotations of cluster DF:

- Start number 45 was manually annotated 1 time for cluster DF.

Info for manual annotations of cluster F1:

- Start number 2 was manually annotated 5 times for cluster F1.
- Start number 6 was manually annotated 1 time for cluster F1.
- Start number 19 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster O:

- Start number 3 was manually annotated 23 times for cluster O.
- Start number 19 was manually annotated 2 times for cluster O.

### **Gene Information:**

Gene: 40AC\_83 Start: 49035, Stop: 48499, Start Num: 25

Candidate Starts for 40AC\_83:

(Start: 5 @49257 has 45 MA's), (Start: 7 @49233 has 5 MA's), (Start: 12 @49176 has 13 MA's), (Start: 24 @49083 has 2 MA's), (25, 49035), (27, 49005), (28, 48996), (51, 48810), (55, 48786), (66, 48663), (67, 48660), (78, 48564), (79, 48561), (84, 48522),

Gene: Achebe\_74 Start: 46689, Stop: 45955, Start Num: 5

Candidate Starts for Achebe\_74:

(Start: 5 @46689 has 45 MA's), (11, 46611), (Start: 14 @46590 has 3 MA's), (Start: 18 @46542 has 2 MA's), (Start: 19 @46539 has 6 MA's), (20, 46527), (37, 46434), (41, 46362), (46, 46344), (49, 46278), (60, 46173), (66, 46113), (67, 46110), (77, 46023), (80, 46002), (85, 45966),

Gene: Albee\_78 Start: 46898, Stop: 46164, Start Num: 5

Candidate Starts for Albee\_78:

(Start: 5 @46898 has 45 MA's), (11, 46820), (Start: 14 @46799 has 3 MA's), (Start: 18 @46751 has 2 MA's), (Start: 19 @46748 has 6 MA's), (37, 46643), (41, 46571), (46, 46553), (49, 46487), (60, 46382), (66, 46322), (67, 46319), (77, 46232), (80, 46211),

Gene: Alkhayr\_5 Start: 1855, Stop: 1286, Start Num: 3

Candidate Starts for Alkhayr\_5:

(Start: 3 @1855 has 23 MA's), (Start: 12 @1738 has 13 MA's), (13, 1723), (Start: 18 @1672 has 2 MA's), (Start: 19 @1669 has 6 MA's), (52, 1555), (53, 1546), (66, 1417), (67, 1414), (71, 1378), (76, 1339), (83, 1303),

Gene: Arissanae\_79 Start: 46740, Stop: 46174, Start Num: 12

Candidate Starts for Arissanae\_79:

(Start: 5 @46821 has 45 MA's), (Start: 7 @46797 has 5 MA's), (11, 46743), (Start: 12 @46740 has 13 MA's), (51, 46482), (54, 46461), (66, 46335), (67, 46332), (77, 46245),

Gene: Artemis2UCLA\_89 Start: 47205, Stop: 46558, Start Num: 5

Candidate Starts for Artemis2UCLA\_89:

(Start: 5 @47205 has 45 MA's), (Start: 7 @47181 has 5 MA's), (11, 47127), (Start: 12 @47124 has 13 MA's), (Start: 15 @47094 has 3 MA's), (57, 46800), (66, 46719), (67, 46716), (78, 46623), (79, 46620),

Gene: Ashwin\_6 Start: 1973, Stop: 1590, Start Num: 19



Candidate Starts for Ashwin\_6:

(Start: 3 @2159 has 23 MA's), (Start: 12 @2042 has 13 MA's), (13, 2027), (Start: 18 @1976 has 2 MA's), (Start: 19 @1973 has 6 MA's), (52, 1859), (53, 1850), (66, 1721), (67, 1718), (76, 1643), (83, 1607),

Gene: AvatarAhPeg\_78 Start: 46909, Stop: 46328, Start Num: 19

Candidate Starts for AvatarAhPeg\_78:

(Start: 5 @47059 has 45 MA's), (11, 46981), (Start: 14 @46960 has 3 MA's), (16, 46927), (Start: 19 @46909 has 6 MA's), (31, 46840), (32, 46834), (Start: 34 @46822 has 2 MA's), (49, 46651), (66, 46486), (67, 46483), (77, 46396), (80, 46375), (85, 46339),

Gene: BABullseye\_81 Start: 45537, Stop: 44887, Start Num: 5

Candidate Starts for BABullseye\_81:

(Start: 5 @45537 has 45 MA's), (Start: 7 @45513 has 5 MA's), (11, 45459), (Start: 12 @45456 has 13 MA's), (Start: 14 @45438 has 3 MA's), (51, 45198), (55, 45174), (58, 45129), (66, 45051), (67, 45048), (68, 45027), (78, 44952), (79, 44949),

Gene: BabyBack\_82 Start: 48998, Stop: 48291, Start Num: 24

Candidate Starts for BabyBack\_82:

(Start: 5 @49172 has 45 MA's), (Start: 7 @49148 has 5 MA's), (Start: 12 @49091 has 13 MA's), (Start: 24 @48998 has 2 MA's), (25, 48950), (36, 48821), (39, 48764), (50, 48611), (58, 48533), (66, 48455), (67, 48452), (78, 48356), (79, 48353),

Gene: Blessica\_5 Start: 1714, Stop: 1145, Start Num: 3

Candidate Starts for Blessica\_5:

(Start: 3 @1714 has 23 MA's), (Start: 12 @1597 has 13 MA's), (13, 1582), (Start: 18 @1531 has 2 MA's), (Start: 19 @1528 has 6 MA's), (52, 1414), (53, 1405), (56, 1381), (66, 1276), (67, 1273), (71, 1237), (76, 1198), (83, 1162),

Gene: Blue7\_91 Start: 47412, Stop: 46786, Start Num: 7

Candidate Starts for Blue7\_91:

(Start: 5 @47436 has 45 MA's), (Start: 7 @47412 has 5 MA's), (11, 47358), (Start: 12 @47355 has 13 MA's), (Start: 14 @47337 has 3 MA's), (57, 47031), (66, 46950), (67, 46947), (68, 46926), (78, 46851), (79, 46848),

Gene: BogosyJay\_83 Start: 46896, Stop: 46318, Start Num: 12

Candidate Starts for BogosyJay\_83:

(Start: 5 @46977 has 45 MA's), (Start: 6 @46956 has 1 MA's), (Start: 7 @46953 has 5 MA's), (Start: 12 @46896 has 13 MA's), (16, 46845), (51, 46638), (54, 46617), (66, 46491), (67, 46488), (77, 46401), (80, 46380), (87, 46335),

Gene: Bruiser\_77 Start: 46898, Stop: 46164, Start Num: 5

Candidate Starts for Bruiser\_77:

(Start: 5 @46898 has 45 MA's), (11, 46820), (Start: 14 @46799 has 3 MA's), (Start: 18 @46751 has 2 MA's), (Start: 19 @46748 has 6 MA's), (37, 46643), (41, 46571), (46, 46553), (49, 46487), (66, 46322), (67, 46319), (77, 46232), (80, 46211),

Gene: BubbleTrouble\_77 Start: 46925, Stop: 46191, Start Num: 5

Candidate Starts for BubbleTrouble\_77:

(Start: 5 @46925 has 45 MA's), (11, 46847), (Start: 14 @46826 has 3 MA's), (Start: 18 @46778 has 2 MA's), (Start: 19 @46775 has 6 MA's), (37, 46670), (41, 46598), (46, 46580), (49, 46514), (60, 46409), (66, 46349), (67, 46346), (77, 46259), (80, 46238),

Gene: Camerico\_39 Start: 42850, Stop: 43254, Start Num: 45

Candidate Starts for Camerico\_39:

(4, 42643), (23, 42814), (Start: 45 @42850 has 1 MA's), (56, 42979), (62, 43048), (64, 43072), (65, 43075), (72, 43135), (74, 43156),

Gene: Camperdownii\_75 Start: 46323, Stop: 45583, Start Num: 5

Candidate Starts for Camperdownii\_75:

(Start: 5 @46323 has 45 MA's), (Start: 7 @46299 has 5 MA's), (Start: 12 @46242 has 13 MA's), (52, 45870), (58, 45807), (66, 45729), (67, 45726), (78, 45645), (80, 45630),

Gene: Catdawg\_5 Start: 1764, Stop: 1195, Start Num: 3

Candidate Starts for Catdawg\_5:

(Start: 3 @1764 has 23 MA's), (Start: 12 @1647 has 13 MA's), (13, 1632), (Start: 18 @1581 has 2 MA's), (Start: 19 @1578 has 6 MA's), (52, 1464), (53, 1455), (56, 1431), (66, 1326), (67, 1323), (71, 1287), (76, 1248), (83, 1212),

Gene: Charm\_79 Start: 46368, Stop: 45709, Start Num: 5

Candidate Starts for Charm\_79:

(Start: 5 @46368 has 45 MA's), (Start: 7 @46344 has 5 MA's), (11, 46290), (Start: 12 @46287 has 13 MA's), (51, 46029), (54, 46008), (63, 45921), (66, 45882), (67, 45879), (75, 45813), (77, 45792), (80, 45771), (87, 45726),

Gene: Cindaradix\_73 Start: 46788, Stop: 46300, Start Num: 34

Candidate Starts for Cindaradix\_73:

(Start: 5 @47025 has 45 MA's), (11, 46947), (Start: 14 @46926 has 3 MA's), (31, 46806), (Start: 34 @46788 has 2 MA's), (49, 46623), (52, 46602), (66, 46458), (67, 46455), (77, 46368), (80, 46347),

Gene: Clarenza\_77 Start: 46895, Stop: 46161, Start Num: 5

Candidate Starts for Clarenza\_77:

(Start: 5 @46895 has 45 MA's), (11, 46817), (Start: 14 @46796 has 3 MA's), (Start: 18 @46748 has 2 MA's), (Start: 19 @46745 has 6 MA's), (37, 46640), (41, 46568), (46, 46550), (49, 46484), (60, 46379), (66, 46319), (67, 46316), (77, 46229), (80, 46208),

Gene: CloudWang3\_90 Start: 47734, Stop: 47087, Start Num: 5

Candidate Starts for CloudWang3\_90:

(Start: 5 @47734 has 45 MA's), (Start: 7 @47710 has 5 MA's), (11, 47656), (Start: 12 @47653 has 13 MA's), (Start: 15 @47623 has 3 MA's), (57, 47329), (66, 47248), (67, 47245), (78, 47152), (79, 47149),

Gene: Cookiedough\_88 Start: 47826, Stop: 47200, Start Num: 7

Candidate Starts for Cookiedough\_88:

(Start: 5 @47850 has 45 MA's), (Start: 7 @47826 has 5 MA's), (11, 47772), (Start: 12 @47769 has 13 MA's), (Start: 14 @47751 has 3 MA's), (51, 47511), (55, 47487), (58, 47442), (66, 47364), (67, 47361), (68, 47340), (78, 47265), (79, 47262),

Gene: Corndog\_6 Start: 2141, Stop: 1578, Start Num: 3

Candidate Starts for Corndog\_6:

(Start: 3 @2141 has 23 MA's), (Start: 12 @2024 has 13 MA's), (13, 2009), (Start: 18 @1958 has 2 MA's), (Start: 19 @1955 has 6 MA's), (52, 1847), (53, 1838), (66, 1709), (67, 1706), (76, 1631), (83, 1595),

Gene: Darrell\_82 Start: 46051, Stop: 45485, Start Num: 12

Candidate Starts for Darrell\_82:

(Start: 5 @46132 has 45 MA's), (Start: 7 @46108 has 5 MA's), (Start: 12 @46051 has 13 MA's), (33, 45898), (51, 45793), (54, 45772), (66, 45646), (67, 45643), (77, 45556),

Gene: DARTHPhader\_79 Start: 47620, Stop: 47048, Start Num: 12

Candidate Starts for DARTHPhader\_79:

(Start: 5 @47701 has 45 MA's), (Start: 7 @47677 has 5 MA's), (Start: 12 @47620 has 13 MA's), (33, 47464), (54, 47338), (66, 47212), (67, 47209), (78, 47116), (79, 47113), (84, 47074),

Gene: Doomphist\_74 Start: 45998, Stop: 46735, Start Num: 2

Candidate Starts for Doomphist\_74:

(Start: 2 @45998 has 5 MA's), (Start: 6 @46055 has 1 MA's), (9, 46079), (10, 46097), (11, 46112), (Start: 14 @46133 has 3 MA's), (16, 46166), (Start: 19 @46184 has 6 MA's), (43, 46343), (58, 46505), (66, 46583), (67, 46586), (68, 46607), (69, 46616), (73, 46643), (86, 46724),

Gene: Dorothea\_88 Start: 47842, Stop: 47192, Start Num: 5

Candidate Starts for Dorothea\_88:

(Start: 5 @47842 has 45 MA's), (Start: 7 @47818 has 5 MA's), (11, 47764), (Start: 12 @47761 has 13 MA's), (Start: 14 @47743 has 3 MA's), (51, 47503), (55, 47479), (58, 47434), (66, 47356), (67, 47353), (68, 47332), (78, 47257), (79, 47254),

Gene: Dorothy\_72 Start: 44809, Stop: 45360, Start Num: 19

Candidate Starts for Dorothy\_72:

(Start: 2 @44623 has 5 MA's), (Start: 6 @44680 has 1 MA's), (9, 44704), (10, 44722), (11, 44737), (Start: 14 @44758 has 3 MA's), (16, 44791), (Start: 19 @44809 has 6 MA's), (43, 44968), (58, 45130), (66, 45208), (67, 45211), (68, 45232), (69, 45241), (73, 45268), (86, 45349),

Gene: Drake94\_75 Start: 45844, Stop: 45209, Start Num: 5

Candidate Starts for Drake94\_75:

(Start: 5 @45844 has 45 MA's), (Start: 7 @45820 has 5 MA's), (Start: 12 @45763 has 13 MA's), (30, 45628), (58, 45439), (66, 45361), (67, 45358), (68, 45337), (70, 45325), (78, 45271),

Gene: Dylan\_6 Start: 2163, Stop: 1594, Start Num: 3

Candidate Starts for Dylan\_6:

(Start: 3 @2163 has 23 MA's), (Start: 12 @2046 has 13 MA's), (13, 2031), (Start: 18 @1980 has 2 MA's), (Start: 19 @1977 has 6 MA's), (52, 1863), (53, 1854), (66, 1725), (67, 1722), (76, 1647), (83, 1611),

Gene: Eesa\_40 Start: 28668, Stop: 29270, Start Num: 26

Candidate Starts for Eesa\_40:

(1, 28389), (8, 28470), (11, 28506), (17, 28572), (20, 28593), (22, 28596), (Start: 26 @28668 has 1 MA's), (29, 28734), (42, 28869), (44, 28881), (Start: 45 @28887 has 1 MA's), (48, 28953), (59, 29055), (66, 29130), (67, 29133), (82, 29250),

Gene: Elephantoon\_84 Start: 46848, Stop: 46192, Start Num: 5

Candidate Starts for Elephantoon\_84:

(Start: 5 @46848 has 45 MA's), (Start: 7 @46824 has 5 MA's), (11, 46770), (Start: 12 @46767 has 13 MA's), (33, 46614), (51, 46509), (54, 46488), (66, 46362), (67, 46359), (77, 46272), (80, 46251), (87, 46206),

Gene: Empress\_69 Start: 44809, Stop: 45546, Start Num: 2

Candidate Starts for Empress\_69:

(Start: 2 @44809 has 5 MA's), (Start: 6 @44866 has 1 MA's), (9, 44890), (10, 44908), (11, 44923), (Start: 14 @44944 has 3 MA's), (16, 44977), (Start: 19 @44995 has 6 MA's), (43, 45154), (58, 45316),

(66, 45394), (67, 45397), (68, 45418), (69, 45427), (73, 45454), (86, 45535),

Gene: Eris\_77 Start: 46910, Stop: 46176, Start Num: 5

Candidate Starts for Eris\_77:

(Start: 5 @46910 has 45 MA's), (11, 46832), (Start: 14 @46811 has 3 MA's), (Start: 18 @46763 has 2 MA's), (Start: 19 @46760 has 6 MA's), (37, 46655), (41, 46583), (46, 46565), (49, 46499), (60, 46394), (66, 46334), (67, 46331), (77, 46244), (80, 46223),

Gene: Familton\_6 Start: 1765, Stop: 1196, Start Num: 3

Candidate Starts for Familton\_6:

(Start: 3 @1765 has 23 MA's), (Start: 12 @1648 has 13 MA's), (13, 1633), (Start: 18 @1582 has 2 MA's), (Start: 19 @1579 has 6 MA's), (52, 1465), (53, 1456), (56, 1432), (66, 1327), (67, 1324), (71, 1288), (76, 1249), (83, 1213),

Gene: Firecracker\_5 Start: 1850, Stop: 1287, Start Num: 3

Candidate Starts for Firecracker\_5:

(Start: 3 @1850 has 23 MA's), (Start: 12 @1733 has 13 MA's), (13, 1718), (Start: 18 @1667 has 2 MA's), (Start: 19 @1664 has 6 MA's), (52, 1556), (53, 1547), (66, 1418), (67, 1415), (76, 1340), (83, 1304),

Gene: Florean\_78 Start: 46897, Stop: 46163, Start Num: 5

Candidate Starts for Florean\_78:

(Start: 5 @46897 has 45 MA's), (11, 46819), (Start: 14 @46798 has 3 MA's), (Start: 18 @46750 has 2 MA's), (Start: 19 @46747 has 6 MA's), (37, 46642), (41, 46570), (46, 46552), (49, 46486), (66, 46321), (67, 46318), (77, 46231), (80, 46210),

Gene: FoulBall\_5 Start: 1765, Stop: 1196, Start Num: 3

Candidate Starts for FoulBall\_5:

(Start: 3 @1765 has 23 MA's), (Start: 12 @1648 has 13 MA's), (13, 1633), (Start: 18 @1582 has 2 MA's), (Start: 19 @1579 has 6 MA's), (52, 1465), (53, 1456), (56, 1432), (66, 1327), (67, 1324), (71, 1288), (76, 1249), (83, 1213),

Gene: Funston\_77 Start: 46895, Stop: 46161, Start Num: 5

Candidate Starts for Funston\_77:

(Start: 5 @46895 has 45 MA's), (11, 46817), (Start: 14 @46796 has 3 MA's), (Start: 18 @46748 has 2 MA's), (Start: 19 @46745 has 6 MA's), (37, 46640), (41, 46568), (46, 46550), (49, 46484), (60, 46379), (66, 46319), (67, 46316), (77, 46229), (80, 46208),

Gene: GaugeLDP\_81 Start: 48551, Stop: 47844, Start Num: 24

Candidate Starts for GaugeLDP\_81:

(Start: 5 @48725 has 45 MA's), (Start: 7 @48701 has 5 MA's), (Start: 12 @48644 has 13 MA's), (Start: 24 @48551 has 2 MA's), (25, 48503), (35, 48380), (36, 48374), (39, 48317), (40, 48302), (50, 48164), (58, 48086), (66, 48008), (67, 48005), (78, 47909), (79, 47906),

Gene: GigiOuiOui\_66 Start: 44414, Stop: 45145, Start Num: 2

Candidate Starts for GigiOuiOui\_66:

(Start: 2 @44414 has 5 MA's), (Start: 6 @44471 has 1 MA's), (10, 44513), (11, 44528), (Start: 14 @44549 has 3 MA's), (38, 44729), (58, 44921), (66, 45002), (67, 45005), (73, 45062), (81, 45110), (86, 45134),

Gene: Gladiator\_86 Start: 47390, Stop: 46743, Start Num: 5

Candidate Starts for Gladiator\_86:

(Start: 5 @47390 has 45 MA's), (Start: 7 @47366 has 5 MA's), (11, 47312), (Start: 12 @47309 has 13 MA's), (Start: 14 @47291 has 3 MA's), (Start: 15 @47279 has 3 MA's), (57, 46985), (66, 46904), (67, 46901), (78, 46808), (79, 46805),

Gene: Goose\_79 Start: 46498, Stop: 45863, Start Num: 5

Candidate Starts for Goose\_79:

(Start: 5 @46498 has 45 MA's), (Start: 7 @46474 has 5 MA's), (Start: 12 @46417 has 13 MA's), (30, 46282), (58, 46093), (66, 46015), (67, 46012), (70, 45979), (78, 45925),

Gene: Gruunaga\_89 Start: 47345, Stop: 46698, Start Num: 5

Candidate Starts for Gruunaga\_89:

(Start: 5 @47345 has 45 MA's), (Start: 7 @47321 has 5 MA's), (11, 47267), (Start: 12 @47264 has 13 MA's), (Start: 14 @47246 has 3 MA's), (Start: 15 @47234 has 3 MA's), (57, 46940), (66, 46859), (67, 46856), (78, 46763), (79, 46760),

Gene: Hammer\_90 Start: 46941, Stop: 46405, Start Num: 15

Candidate Starts for Hammer\_90:

(Start: 5 @47052 has 45 MA's), (Start: 7 @47028 has 5 MA's), (11, 46974), (Start: 12 @46971 has 13 MA's), (Start: 15 @46941 has 3 MA's), (57, 46647), (66, 46566), (67, 46563), (78, 46470), (79, 46467),

Gene: Hexamo\_89 Start: 47220, Stop: 46573, Start Num: 5

Candidate Starts for Hexamo\_89:

(Start: 5 @47220 has 45 MA's), (Start: 7 @47196 has 5 MA's), (11, 47142), (Start: 12 @47139 has 13 MA's), (Start: 15 @47109 has 3 MA's), (57, 46815), (66, 46734), (67, 46731), (78, 46638), (79, 46635),

Gene: Hoot\_83 Start: 45056, Stop: 44406, Start Num: 5

Candidate Starts for Hoot\_83:

(Start: 5 @45056 has 45 MA's), (Start: 7 @45032 has 5 MA's), (11, 44978), (Start: 12 @44975 has 13 MA's), (Start: 14 @44957 has 3 MA's), (51, 44717), (55, 44693), (58, 44648), (66, 44570), (67, 44567), (68, 44546), (78, 44471), (79, 44468),

Gene: Idergollasper\_5 Start: 1765, Stop: 1196, Start Num: 3

Candidate Starts for Idergollasper\_5:

(Start: 3 @1765 has 23 MA's), (Start: 12 @1648 has 13 MA's), (13, 1633), (Start: 18 @1582 has 2 MA's), (Start: 19 @1579 has 6 MA's), (52, 1465), (53, 1456), (56, 1432), (66, 1327), (67, 1324), (71, 1288), (76, 1249), (83, 1213),

Gene: Isiphiwo\_84 Start: 46767, Stop: 46117, Start Num: 5

Candidate Starts for Isiphiwo\_84:

(Start: 5 @46767 has 45 MA's), (Start: 7 @46743 has 5 MA's), (11, 46689), (Start: 12 @46686 has 13 MA's), (Start: 14 @46668 has 3 MA's), (51, 46428), (55, 46404), (58, 46359), (66, 46281), (67, 46278), (68, 46257), (78, 46182), (79, 46179),

Gene: JangDynasty\_5 Start: 1854, Stop: 1291, Start Num: 3

Candidate Starts for JangDynasty\_5:

(Start: 3 @1854 has 23 MA's), (Start: 12 @1737 has 13 MA's), (13, 1722), (Start: 18 @1671 has 2 MA's), (Start: 19 @1668 has 6 MA's), (52, 1560), (53, 1551), (56, 1527), (66, 1422), (67, 1419), (76, 1344), (83, 1308),

Gene: Jaykayelowell\_75 Start: 46891, Stop: 46157, Start Num: 5

Candidate Starts for Jaykayelowell\_75:

(Start: 5 @46891 has 45 MA's), (11, 46813), (Start: 14 @46792 has 3 MA's), (Start: 18 @46744 has 2 MA's), (Start: 19 @46741 has 6 MA's), (37, 46636), (41, 46564), (46, 46546), (49, 46480), (66, 46315),

(67, 46312), (77, 46225), (80, 46204),

Gene: JewelBug\_80 Start: 45535, Stop: 44885, Start Num: 5

Candidate Starts for JewelBug\_80:

(Start: 5 @45535 has 45 MA's), (Start: 7 @45511 has 5 MA's), (11, 45457), (Start: 12 @45454 has 13 MA's), (Start: 14 @45436 has 3 MA's), (51, 45196), (55, 45172), (58, 45127), (66, 45049), (67, 45046), (68, 45025), (78, 44950), (79, 44947),

Gene: JoongJeon\_77 Start: 46892, Stop: 46158, Start Num: 5

Candidate Starts for JoongJeon\_77:

(Start: 5 @46892 has 45 MA's), (11, 46814), (Start: 14 @46793 has 3 MA's), (Start: 18 @46745 has 2 MA's), (Start: 19 @46742 has 6 MA's), (37, 46637), (41, 46565), (46, 46547), (49, 46481), (60, 46376), (66, 46316), (67, 46313), (77, 46226), (80, 46205),

Gene: Jordennis\_86 Start: 47439, Stop: 46789, Start Num: 5

Candidate Starts for Jordennis\_86:

(Start: 5 @47439 has 45 MA's), (Start: 7 @47415 has 5 MA's), (11, 47361), (Start: 12 @47358 has 13 MA's), (Start: 14 @47340 has 3 MA's), (51, 47100), (55, 47076), (58, 47031), (66, 46953), (67, 46950), (68, 46929), (78, 46854), (79, 46851),

Gene: KFPoly\_77 Start: 46892, Stop: 46158, Start Num: 5

Candidate Starts for KFPoly\_77:

(Start: 5 @46892 has 45 MA's), (11, 46814), (Start: 14 @46793 has 3 MA's), (Start: 18 @46745 has 2 MA's), (Start: 19 @46742 has 6 MA's), (37, 46637), (41, 46565), (46, 46547), (49, 46481), (60, 46376), (66, 46316), (67, 46313), (77, 46226), (80, 46205),

Gene: Kazan\_89 Start: 47187, Stop: 46561, Start Num: 7

Candidate Starts for Kazan\_89:

(Start: 5 @47211 has 45 MA's), (Start: 7 @47187 has 5 MA's), (11, 47133), (Start: 12 @47130 has 13 MA's), (Start: 14 @47112 has 3 MA's), (51, 46872), (55, 46848), (58, 46803), (66, 46725), (67, 46722), (68, 46701), (78, 46626), (79, 46623),

Gene: Keziacharles14\_81 Start: 47447, Stop: 46881, Start Num: 12

Candidate Starts for Keziacharles14\_81:

(Start: 5 @47528 has 45 MA's), (Start: 7 @47504 has 5 MA's), (11, 47450), (Start: 12 @47447 has 13 MA's), (16, 47396), (51, 47189), (54, 47168), (58, 47120), (66, 47042), (67, 47039), (77, 46952),

Gene: KittenMittens\_74 Start: 45854, Stop: 45219, Start Num: 5

Candidate Starts for KittenMittens\_74:

(Start: 5 @45854 has 45 MA's), (Start: 7 @45830 has 5 MA's), (Start: 12 @45773 has 13 MA's), (30, 45638), (58, 45449), (66, 45371), (67, 45368), (68, 45347), (70, 45335), (78, 45281),

Gene: Koko\_91 Start: 47970, Stop: 47419, Start Num: 14

Candidate Starts for Koko\_91:

(Start: 5 @48069 has 45 MA's), (Start: 7 @48045 has 5 MA's), (11, 47991), (Start: 12 @47988 has 13 MA's), (Start: 14 @47970 has 3 MA's), (57, 47664), (66, 47583), (67, 47580), (68, 47559), (78, 47484), (79, 47481),

Gene: Kratark\_77 Start: 46932, Stop: 46198, Start Num: 5

Candidate Starts for Kratark\_77:

(Start: 5 @46932 has 45 MA's), (11, 46854), (Start: 14 @46833 has 3 MA's), (Start: 18 @46785 has 2 MA's), (Start: 19 @46782 has 6 MA's), (37, 46677), (41, 46605), (46, 46587), (47, 46566), (49, 46521), (60, 46416), (66, 46356), (67, 46353), (77, 46266), (80, 46245),

Gene: Krili\_5 Start: 1716, Stop: 1147, Start Num: 3

Candidate Starts for Krili\_5:

(Start: 3 @1716 has 23 MA's), (Start: 12 @1599 has 13 MA's), (13, 1584), (Start: 18 @1533 has 2 MA's), (Start: 19 @1530 has 6 MA's), (52, 1416), (53, 1407), (56, 1383), (66, 1278), (67, 1275), (71, 1239), (76, 1200), (83, 1164),

Gene: Kristoff\_76 Start: 47122, Stop: 46487, Start Num: 5

Candidate Starts for Kristoff\_76:

(Start: 5 @47122 has 45 MA's), (Start: 7 @47098 has 5 MA's), (Start: 12 @47041 has 13 MA's), (16, 46990), (30, 46906), (58, 46717), (66, 46639), (67, 46636), (70, 46603), (78, 46549),

Gene: LittleB\_78 Start: 46899, Stop: 46165, Start Num: 5

Candidate Starts for LittleB\_78:

(Start: 5 @46899 has 45 MA's), (11, 46821), (Start: 14 @46800 has 3 MA's), (Start: 18 @46752 has 2 MA's), (Start: 19 @46749 has 6 MA's), (37, 46644), (41, 46572), (46, 46554), (49, 46488), (60, 46383), (66, 46323), (67, 46320), (77, 46233), (80, 46212),

Gene: LoneWolf\_84 Start: 46963, Stop: 46397, Start Num: 12

Candidate Starts for LoneWolf\_84:

(Start: 5 @47044 has 45 MA's), (Start: 7 @47020 has 5 MA's), (11, 46966), (Start: 12 @46963 has 13 MA's), (51, 46705), (54, 46684), (66, 46558), (67, 46555), (77, 46468),

Gene: MadKillah\_5 Start: 1716, Stop: 1147, Start Num: 3

Candidate Starts for MadKillah\_5:

(Start: 3 @1716 has 23 MA's), (Start: 12 @1599 has 13 MA's), (13, 1584), (Start: 18 @1533 has 2 MA's), (Start: 19 @1530 has 6 MA's), (52, 1416), (53, 1407), (56, 1383), (66, 1278), (67, 1275), (71, 1239), (76, 1200), (83, 1164),

Gene: Maminiaina\_83 Start: 46878, Stop: 46300, Start Num: 12

Candidate Starts for Maminiaina\_83:

(Start: 5 @46959 has 45 MA's), (Start: 6 @46938 has 1 MA's), (Start: 7 @46935 has 5 MA's), (Start: 12 @46878 has 13 MA's), (16, 46827), (51, 46620), (54, 46599), (66, 46473), (67, 46470), (77, 46383), (80, 46362), (87, 46317),

Gene: Medusa\_77 Start: 46761, Stop: 46177, Start Num: 19

Candidate Starts for Medusa\_77:

(Start: 5 @46911 has 45 MA's), (11, 46833), (Start: 14 @46812 has 3 MA's), (Start: 18 @46764 has 2 MA's), (Start: 19 @46761 has 6 MA's), (37, 46656), (41, 46584), (46, 46566), (49, 46500), (66, 46335), (67, 46332), (77, 46245), (80, 46224),

Gene: Miramae\_78 Start: 46572, Stop: 45991, Start Num: 19

Candidate Starts for Miramae\_78:

(Start: 5 @46722 has 45 MA's), (11, 46644), (Start: 14 @46623 has 3 MA's), (16, 46590), (Start: 19 @46572 has 6 MA's), (31, 46503), (32, 46497), (Start: 34 @46485 has 2 MA's), (49, 46314), (66, 46149), (67, 46146), (77, 46059), (80, 46038), (85, 46002),

Gene: Mori\_5 Start: 1716, Stop: 1147, Start Num: 3

Candidate Starts for Mori\_5:

(Start: 3 @1716 has 23 MA's), (Start: 12 @1599 has 13 MA's), (13, 1584), (Start: 18 @1533 has 2 MA's), (Start: 19 @1530 has 6 MA's), (52, 1416), (53, 1407), (56, 1383), (66, 1278), (67, 1275), (71, 1239), (76, 1200), (83, 1164),

Gene: Mundrea\_77 Start: 46850, Stop: 46224, Start Num: 14

Candidate Starts for Mundrea\_77:

(Start: 5 @46949 has 45 MA's), (11, 46871), (Start: 14 @46850 has 3 MA's), (31, 46730), (49, 46547), (52, 46526), (66, 46382), (67, 46379), (77, 46292), (80, 46271),

Gene: NiebruSaylor\_5 Start: 1716, Stop: 1147, Start Num: 3

Candidate Starts for NiebruSaylor\_5:

(Start: 3 @1716 has 23 MA's), (Start: 12 @1599 has 13 MA's), (13, 1584), (Start: 18 @1533 has 2 MA's), (Start: 19 @1530 has 6 MA's), (52, 1416), (53, 1407), (56, 1383), (66, 1278), (67, 1275), (71, 1239), (76, 1200), (83, 1164),

Gene: Noelle\_76 Start: 46925, Stop: 46305, Start Num: 5

Candidate Starts for Noelle\_76:

(Start: 5 @46925 has 45 MA's), (Start: 7 @46901 has 5 MA's), (Start: 12 @46844 has 13 MA's), (52, 46592), (58, 46529), (66, 46451), (67, 46448), (78, 46367), (80, 46352), (85, 46316),

Gene: OKCentral2016\_77 Start: 45901, Stop: 45290, Start Num: 7

Candidate Starts for OKCentral2016\_77:

(Start: 5 @45925 has 45 MA's), (Start: 7 @45901 has 5 MA's), (Start: 12 @45844 has 13 MA's), (30, 45709), (58, 45520), (66, 45442), (67, 45439), (70, 45406), (78, 45352),

Gene: Palestino\_77 Start: 46895, Stop: 46161, Start Num: 5

Candidate Starts for Palestino\_77:

(Start: 5 @46895 has 45 MA's), (11, 46817), (Start: 14 @46796 has 3 MA's), (Start: 18 @46748 has 2 MA's), (Start: 19 @46745 has 6 MA's), (37, 46640), (41, 46568), (46, 46550), (49, 46484), (60, 46379), (66, 46319), (67, 46316), (77, 46229), (80, 46208),

Gene: Phanphagia\_66 Start: 43660, Stop: 44277, Start Num: 6

Candidate Starts for Phanphagia\_66:

(Start: 2 @43603 has 5 MA's), (Start: 6 @43660 has 1 MA's), (9, 43684), (11, 43717), (Start: 14 @43738 has 3 MA's), (16, 43771), (Start: 19 @43789 has 6 MA's), (21, 43798), (43, 43876), (66, 44125), (67, 44128), (69, 44158), (73, 44185), (86, 44266),

Gene: Pharaoh\_78 Start: 47942, Stop: 47292, Start Num: 5

Candidate Starts for Pharaoh\_78:

(Start: 5 @47942 has 45 MA's), (Start: 7 @47918 has 5 MA's), (Start: 12 @47861 has 13 MA's), (51, 47600), (54, 47579), (66, 47456), (67, 47453), (68, 47432), (78, 47360), (79, 47357),

Gene: Poenanya\_74 Start: 45998, Stop: 46735, Start Num: 2

Candidate Starts for Poenanya\_74:

(Start: 2 @45998 has 5 MA's), (Start: 6 @46055 has 1 MA's), (9, 46079), (10, 46097), (11, 46112), (Start: 14 @46133 has 3 MA's), (16, 46166), (Start: 19 @46184 has 6 MA's), (43, 46343), (58, 46505), (66, 46583), (67, 46586), (68, 46607), (69, 46616), (73, 46643), (86, 46724),

Gene: Priya\_82 Start: 46693, Stop: 46046, Start Num: 5

Candidate Starts for Priya\_82:

(Start: 5 @46693 has 45 MA's), (Start: 7 @46669 has 5 MA's), (11, 46615), (Start: 12 @46612 has 13 MA's), (16, 46561), (51, 46354), (54, 46333), (58, 46285), (66, 46207), (67, 46204), (77, 46117),

Gene: Rahalelujah\_83 Start: 46456, Stop: 45809, Start Num: 5

Candidate Starts for Rahalelujah\_83:

(Start: 5 @46456 has 45 MA's), (Start: 7 @46432 has 5 MA's), (11, 46378), (Start: 12 @46375 has 13 MA's), (51, 46117), (54, 46096), (59, 46045), (61, 46024), (66, 45970), (67, 45967), (77, 45880),



Gene: RedBird\_72 Start: 44502, Stop: 45227, Start Num: 2

Candidate Starts for RedBird\_72:

(Start: 2 @44502 has 5 MA's), (Start: 6 @44559 has 1 MA's), (9, 44583), (10, 44589), (11, 44604), (Start: 14 @44625 has 3 MA's), (16, 44658), (Start: 19 @44676 has 6 MA's), (43, 44835), (58, 44997), (66, 45075), (67, 45078), (68, 45099), (69, 45108), (73, 45135), (86, 45216),

Gene: Refuge\_81 Start: 48475, Stop: 47903, Start Num: 12

Candidate Starts for Refuge\_81:

(Start: 5 @48556 has 45 MA's), (Start: 7 @48532 has 5 MA's), (Start: 12 @48475 has 13 MA's), (33, 48319), (54, 48193), (66, 48067), (67, 48064), (78, 47971), (79, 47968), (84, 47929),

Gene: Rifter\_90 Start: 46847, Stop: 46200, Start Num: 5

Candidate Starts for Rifter\_90:

(Start: 5 @46847 has 45 MA's), (Start: 7 @46823 has 5 MA's), (11, 46769), (Start: 12 @46766 has 13 MA's), (Start: 15 @46736 has 3 MA's), (57, 46442), (66, 46361), (67, 46358), (78, 46265), (79, 46262),

Gene: Roksolana\_90 Start: 47563, Stop: 46916, Start Num: 5

Candidate Starts for Roksolana\_90:

(Start: 5 @47563 has 45 MA's), (Start: 7 @47539 has 5 MA's), (11, 47485), (Start: 12 @47482 has 13 MA's), (Start: 15 @47452 has 3 MA's), (57, 47158), (66, 47077), (67, 47074), (78, 46981), (79, 46978),

Gene: Ryadel\_7 Start: 2296, Stop: 1727, Start Num: 3

Candidate Starts for Ryadel\_7:

(Start: 3 @2296 has 23 MA's), (Start: 12 @2179 has 13 MA's), (13, 2164), (Start: 18 @2113 has 2 MA's), (Start: 19 @2110 has 6 MA's), (52, 1996), (53, 1987), (56, 1963), (66, 1858), (67, 1855), (71, 1819), (76, 1780), (83, 1744),

Gene: SchoolBus\_5 Start: 1765, Stop: 1196, Start Num: 3

Candidate Starts for SchoolBus\_5:

(Start: 3 @1765 has 23 MA's), (Start: 12 @1648 has 13 MA's), (13, 1633), (Start: 18 @1582 has 2 MA's), (Start: 19 @1579 has 6 MA's), (52, 1465), (53, 1456), (56, 1432), (66, 1327), (67, 1324), (71, 1288), (76, 1249), (83, 1213),

Gene: Schuy\_5 Start: 1716, Stop: 1147, Start Num: 3

Candidate Starts for Schuy\_5:

(Start: 3 @1716 has 23 MA's), (Start: 12 @1599 has 13 MA's), (13, 1584), (Start: 18 @1533 has 2 MA's), (Start: 19 @1530 has 6 MA's), (52, 1416), (53, 1407), (56, 1383), (66, 1278), (67, 1275), (71, 1239), (76, 1200), (83, 1164),

Gene: SheaKeira\_79 Start: 46163, Stop: 45585, Start Num: 12

Candidate Starts for SheaKeira\_79:

(Start: 5 @46244 has 45 MA's), (Start: 7 @46220 has 5 MA's), (11, 46166), (Start: 12 @46163 has 13 MA's), (51, 45905), (54, 45884), (58, 45836), (63, 45797), (66, 45758), (67, 45755), (75, 45689), (77, 45668), (80, 45647), (87, 45602),

Gene: Shida\_5 Start: 1765, Stop: 1196, Start Num: 3

Candidate Starts for Shida\_5:

(Start: 3 @1765 has 23 MA's), (Start: 12 @1648 has 13 MA's), (13, 1633), (Start: 18 @1582 has 2 MA's), (Start: 19 @1579 has 6 MA's), (52, 1465), (53, 1456), (56, 1432), (66, 1327), (67, 1324), (71, 1288), (76, 1249), (83, 1213),

Gene: SmellyB\_88 Start: 47181, Stop: 46555, Start Num: 7

Candidate Starts for SmellyB\_88:

(Start: 5 @47205 has 45 MA's), (Start: 7 @47181 has 5 MA's), (11, 47127), (Start: 12 @47124 has 13 MA's), (Start: 14 @47106 has 3 MA's), (51, 46866), (55, 46842), (58, 46797), (66, 46719), (67, 46716), (68, 46695), (78, 46620), (79, 46617),

Gene: Smooch\_6 Start: 2139, Stop: 1576, Start Num: 3

Candidate Starts for Smooch\_6:

(Start: 3 @2139 has 23 MA's), (Start: 12 @2022 has 13 MA's), (13, 2007), (Start: 18 @1956 has 2 MA's), (Start: 19 @1953 has 6 MA's), (52, 1845), (53, 1836), (66, 1707), (67, 1704), (76, 1629), (83, 1593),

Gene: Spouty\_82 Start: 46692, Stop: 46045, Start Num: 5

Candidate Starts for Spouty\_82:

(Start: 5 @46692 has 45 MA's), (Start: 7 @46668 has 5 MA's), (11, 46614), (Start: 12 @46611 has 13 MA's), (16, 46560), (51, 46353), (54, 46332), (58, 46284), (66, 46206), (67, 46203), (77, 46116),

Gene: Stasia\_75 Start: 46708, Stop: 46121, Start Num: 18

Candidate Starts for Stasia\_75:

(Start: 5 @46855 has 45 MA's), (11, 46777), (Start: 14 @46756 has 3 MA's), (Start: 18 @46708 has 2 MA's), (Start: 19 @46705 has 6 MA's), (37, 46600), (41, 46528), (46, 46510), (49, 46444), (66, 46279), (67, 46276), (77, 46189), (80, 46168), (85, 46132),

Gene: Steamy\_76 Start: 47037, Stop: 46378, Start Num: 5

Candidate Starts for Steamy\_76:

(Start: 5 @47037 has 45 MA's), (Start: 7 @47013 has 5 MA's), (Start: 12 @46956 has 13 MA's), (54, 46674), (66, 46548), (67, 46545), (68, 46524), (78, 46452), (84, 46410),

Gene: Stink\_78 Start: 46793, Stop: 46299, Start Num: 34

Candidate Starts for Stink\_78:

(Start: 5 @47030 has 45 MA's), (11, 46952), (Start: 14 @46931 has 3 MA's), (16, 46898), (Start: 19 @46880 has 6 MA's), (31, 46811), (32, 46805), (Start: 34 @46793 has 2 MA's), (49, 46622), (66, 46457), (67, 46454), (77, 46367), (80, 46346), (85, 46310),

Gene: TelAviv\_5 Start: 1762, Stop: 1193, Start Num: 3

Candidate Starts for TelAviv\_5:

(Start: 3 @1762 has 23 MA's), (Start: 12 @1645 has 13 MA's), (13, 1630), (Start: 18 @1579 has 2 MA's), (Start: 19 @1576 has 6 MA's), (52, 1462), (53, 1453), (56, 1429), (66, 1324), (67, 1321), (71, 1285), (76, 1246), (83, 1210),

Gene: Thanksgivukkah\_77 Start: 46896, Stop: 46162, Start Num: 5

Candidate Starts for Thanksgivukkah\_77:

(Start: 5 @46896 has 45 MA's), (11, 46818), (Start: 14 @46797 has 3 MA's), (Start: 18 @46749 has 2 MA's), (Start: 19 @46746 has 6 MA's), (37, 46641), (41, 46569), (46, 46551), (49, 46485), (60, 46380), (66, 46320), (67, 46317), (77, 46230), (80, 46209),

Gene: TinaFeyge\_76 Start: 46893, Stop: 46159, Start Num: 5

Candidate Starts for TinaFeyge\_76:

(Start: 5 @46893 has 45 MA's), (11, 46815), (Start: 14 @46794 has 3 MA's), (Start: 18 @46746 has 2 MA's), (Start: 19 @46743 has 6 MA's), (37, 46638), (41, 46566), (46, 46548), (49, 46482), (66, 46317), (67, 46314), (77, 46227), (80, 46206),

Gene: Toaka\_82 Start: 46732, Stop: 46166, Start Num: 12

Candidate Starts for Toaka\_82:

(Start: 5 @46813 has 45 MA's), (Start: 7 @46789 has 5 MA's), (Start: 12 @46732 has 13 MA's), (51, 46474), (54, 46453), (58, 46405), (66, 46327), (67, 46324), (77, 46237),

Gene: ToneTone\_87 Start: 47116, Stop: 46580, Start Num: 15

Candidate Starts for ToneTone\_87:

(Start: 5 @47227 has 45 MA's), (Start: 7 @47203 has 5 MA's), (11, 47149), (Start: 12 @47146 has 13 MA's), (Start: 15 @47116 has 3 MA's), (57, 46822), (66, 46741), (67, 46738), (78, 46645), (79, 46642),

Gene: Tucker\_90 Start: 47319, Stop: 46783, Start Num: 15

Candidate Starts for Tucker\_90:

(Start: 5 @47430 has 45 MA's), (Start: 7 @47406 has 5 MA's), (11, 47352), (Start: 12 @47349 has 13 MA's), (Start: 15 @47319 has 3 MA's), (57, 47025), (66, 46944), (67, 46941), (78, 46848), (79, 46845),

Gene: TygerBlood\_78 Start: 46751, Stop: 46164, Start Num: 18

Candidate Starts for TygerBlood\_78:

(Start: 5 @46898 has 45 MA's), (11, 46820), (Start: 14 @46799 has 3 MA's), (Start: 18 @46751 has 2 MA's), (Start: 19 @46748 has 6 MA's), (37, 46643), (41, 46571), (46, 46553), (49, 46487), (60, 46382), (66, 46322), (67, 46319), (77, 46232), (80, 46211),

Gene: Vanisoa\_79 Start: 47062, Stop: 46496, Start Num: 12

Candidate Starts for Vanisoa\_79:

(Start: 5 @47143 has 45 MA's), (Start: 7 @47119 has 5 MA's), (11, 47065), (Start: 12 @47062 has 13 MA's), (51, 46804), (54, 46783), (66, 46657), (67, 46654), (77, 46567),

Gene: Vorrps\_5 Start: 1716, Stop: 1147, Start Num: 3

Candidate Starts for Vorrps\_5:

(Start: 3 @1716 has 23 MA's), (Start: 12 @1599 has 13 MA's), (13, 1584), (Start: 18 @1533 has 2 MA's), (Start: 19 @1530 has 6 MA's), (52, 1416), (53, 1407), (56, 1383), (66, 1278), (67, 1275), (71, 1239), (76, 1200), (83, 1164),

Gene: WalterMcMickey\_77 Start: 46600, Stop: 46046, Start Num: 12

Candidate Starts for WalterMcMickey\_77:

(Start: 5 @46681 has 45 MA's), (Start: 7 @46657 has 5 MA's), (Start: 12 @46600 has 13 MA's), (16, 46549), (30, 46465), (58, 46276), (66, 46198), (67, 46195), (70, 46162), (78, 46108),

Gene: Wiks\_89 Start: 47310, Stop: 46660, Start Num: 5

Candidate Starts for Wiks\_89:

(Start: 5 @47310 has 45 MA's), (Start: 7 @47286 has 5 MA's), (11, 47232), (Start: 12 @47229 has 13 MA's), (Start: 14 @47211 has 3 MA's), (57, 46905), (66, 46824), (67, 46821), (68, 46800), (78, 46725), (79, 46722),

Gene: Wildflower\_5 Start: 1625, Stop: 1242, Start Num: 19

Candidate Starts for Wildflower\_5:

(Start: 3 @1811 has 23 MA's), (Start: 12 @1694 has 13 MA's), (13, 1679), (Start: 18 @1628 has 2 MA's), (Start: 19 @1625 has 6 MA's), (52, 1511), (53, 1502), (66, 1373), (67, 1370), (76, 1295), (83, 1259),

Gene: Winget\_5 Start: 1850, Stop: 1287, Start Num: 3

Candidate Starts for Winget\_5:

(Start: 3 @1850 has 23 MA's), (Start: 12 @1733 has 13 MA's), (13, 1718), (Start: 18 @1667 has 2 MA's), (Start: 19 @1664 has 6 MA's), (52, 1556), (53, 1547), (66, 1418), (67, 1415), (71, 1379), (76, 1340), (83, 1304),

Gene: Yecey3\_85 Start: 46628, Stop: 46062, Start Num: 12

Candidate Starts for Yecey3\_85:

(Start: 5 @46709 has 45 MA's), (Start: 7 @46685 has 5 MA's), (Start: 12 @46628 has 13 MA's), (54, 46349), (66, 46223), (67, 46220), (85, 46076),

Gene: Yokurt\_89 Start: 47211, Stop: 46660, Start Num: 14

Candidate Starts for Yokurt\_89:

(Start: 5 @47310 has 45 MA's), (Start: 7 @47286 has 5 MA's), (11, 47232), (Start: 12 @47229 has 13 MA's), (Start: 14 @47211 has 3 MA's), (57, 46905), (66, 46824), (67, 46821), (68, 46800), (78, 46725), (79, 46722),

Gene: YungJamal\_6 Start: 2139, Stop: 1576, Start Num: 3

Candidate Starts for YungJamal\_6:

(Start: 3 @2139 has 23 MA's), (Start: 12 @2022 has 13 MA's), (13, 2007), (Start: 18 @1956 has 2 MA's), (Start: 19 @1953 has 6 MA's), (52, 1845), (53, 1836), (66, 1707), (67, 1704), (76, 1629), (83, 1593),

Gene: Zaka\_90 Start: 47310, Stop: 46660, Start Num: 5

Candidate Starts for Zaka\_90:

(Start: 5 @47310 has 45 MA's), (Start: 7 @47286 has 5 MA's), (11, 47232), (Start: 12 @47229 has 13 MA's), (Start: 14 @47211 has 3 MA's), (57, 46905), (66, 46824), (67, 46821), (68, 46800), (78, 46725), (79, 46722),

Gene: Zakhe101\_6 Start: 2163, Stop: 1594, Start Num: 3

Candidate Starts for Zakhe101\_6:

(Start: 3 @2163 has 23 MA's), (Start: 12 @2046 has 13 MA's), (13, 2031), (Start: 18 @1980 has 2 MA's), (Start: 19 @1977 has 6 MA's), (52, 1863), (53, 1854), (66, 1725), (67, 1722), (76, 1647), (83, 1611),

Gene: Zimmer\_80 Start: 47793, Stop: 47140, Start Num: 5

Candidate Starts for Zimmer\_80:

(Start: 5 @47793 has 45 MA's), (Start: 7 @47769 has 5 MA's), (Start: 12 @47712 has 13 MA's), (51, 47451), (55, 47427), (66, 47304), (67, 47301), (78, 47208), (79, 47205), (84, 47166),