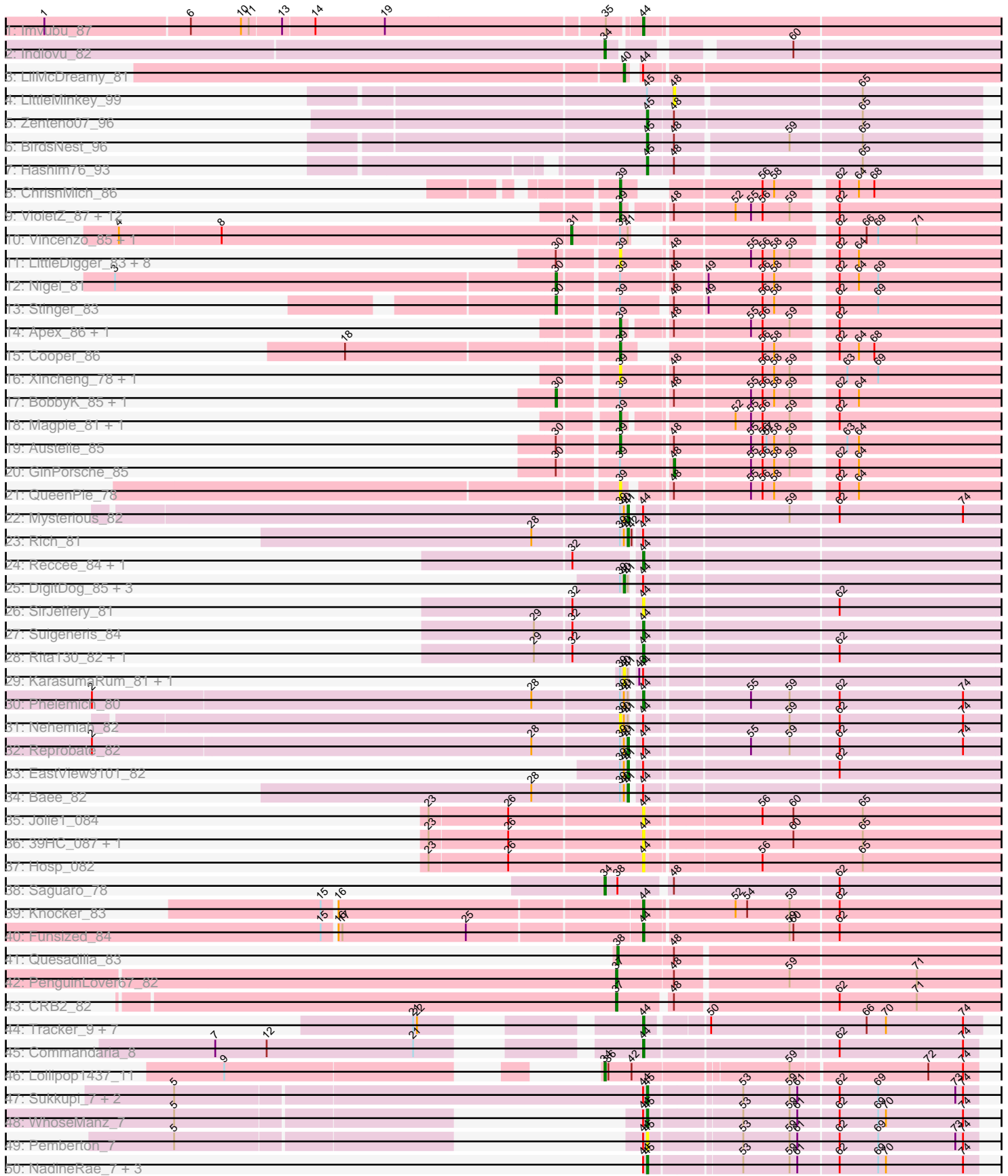
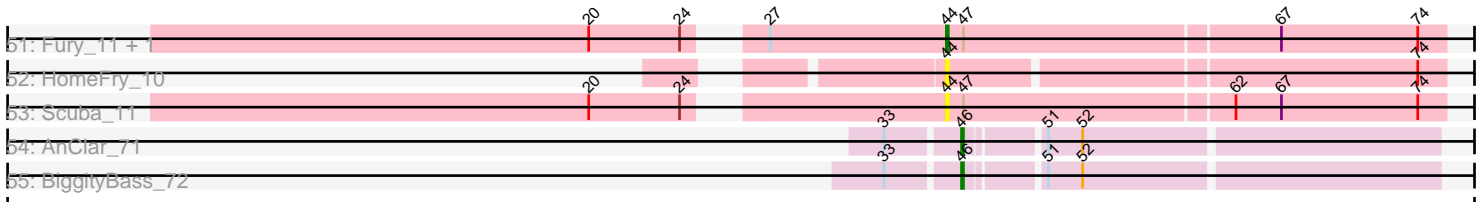


Pham 294593



Pham 294593



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 294593 Report

This analysis was run 04/18/26 on database version 643.

Pham number 294593 has 100 members, 31 are drafts.

Phages represented in each track:

- Track 1 : Imvubu\_87
- Track 2 : Indlovu\_82
- Track 3 : LilMcDreamy\_81
- Track 4 : LittleMinkey\_99
- Track 5 : Zenteno07\_96
- Track 6 : BirdsNest\_96
- Track 7 : Hashim76\_93
- Track 8 : ChrisnMich\_86
- Track 9 : VioletZ\_87, Fortunato\_83, RawrgerThat\_84, Hydro\_85, JoyceMaria\_84, Hangman\_85, Waleliano\_84, Lolalove\_86, Zemanar\_84, Mudslide\_85, Frederick\_86, Mithril\_84, BrownCNA\_86
- Track 10 : Vincenzo\_85, AlanGrant\_86
- Track 11 : LittleDigger\_83, Lambano\_81, Nanao\_83, Poster\_82, Renkei\_83, Epah\_83, Hally898\_81, Antihero\_83, Ahwei\_83
- Track 12 : Nigel\_81
- Track 13 : Stinger\_83
- Track 14 : Apex\_86, Prince\_84
- Track 15 : Cooper\_86
- Track 16 : Xincheng\_78, JaguarMi\_79
- Track 17 : BobbyK\_85, JAMaL\_84
- Track 18 : Magpie\_81, Fanaw\_80
- Track 19 : Austelle\_85
- Track 20 : GinPorsche\_85
- Track 21 : QueenPie\_78
- Track 22 : Mysterious\_82
- Track 23 : Rich\_81
- Track 24 : Reccee\_84, Donny\_83
- Track 25 : DigitDog\_85, Serendipitous\_83, Nangang\_84, Shenyu\_84
- Track 26 : SirJeffery\_81
- Track 27 : Suigeneris\_84
- Track 28 : Rita130\_82, Acadian\_83
- Track 29 : KarasumaRum\_81, StinkyVeggy\_81
- Track 30 : Phelemich\_80
- Track 31 : Nehemiah\_82
- Track 32 : Reprobate\_82
- Track 33 : EastView9101\_82
- Track 34 : Bae\_82

- Track 35 : Jolie1\_084
- Track 36 : 39HC\_087, 40BC\_087
- Track 37 : Hosp\_082
- Track 38 : Saguaro\_78
- Track 39 : Knocker\_83
- Track 40 : Funsized\_84
- Track 41 : Quesadilla\_83
- Track 42 : PenguinLover67\_82
- Track 43 : CRB2\_82
- Track 44 : Tracker\_9, KidneyBean\_9, Phomeo\_8, Kurt\_9, NatB6\_9, Foxboro\_9, Emianna\_9, Jifall16\_8
- Track 45 : Commandaria\_8
- Track 46 : Lollipop1437\_11
- Track 47 : Sukkupi\_7, BiPauneto\_7, Yndexa\_7
- Track 48 : WhoseManz\_7
- Track 49 : Pemberton\_7
- Track 50 : NadineRae\_7, HubbaBubba\_7, IDyn\_8, Marietta\_7
- Track 51 : Fury\_11, Pleakley\_11
- Track 52 : HomeFry\_10
- Track 53 : Scuba\_11
- Track 54 : AnClar\_71
- Track 55 : BiggityBass\_72

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

The start number called the most often in the published annotations is 44, it was called in 18 of the 69 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- 39HC\_087, 40BC\_087, Acadian\_83, Commandaria\_8, Donny\_83, Emianna\_9, Foxboro\_9, Funsized\_84, Fury\_11, HomeFry\_10, Hosp\_082, Imvubu\_87, Jifall16\_8, Jolie1\_084, KidneyBean\_9, Knocker\_83, Kurt\_9, NatB6\_9, Phelemich\_80, Phomeo\_8, Pleakley\_11, Reccee\_84, Rita130\_82, Scuba\_11, SirJeffery\_81, Suigeneris\_84, Tracker\_9,

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

- Bae\_82, BiPauneto\_7, DigitDog\_85, EastView9101\_82, HubbaBubba\_7, IDyn\_8, KarasumaRum\_81, LilMcDreamy\_81, Marietta\_7, Mysterious\_82, NadineRae\_7, Nangang\_84, Nehemiah\_82, Pemberton\_7, Reprobate\_82, Rich\_81, Serendipitous\_83, Shenyu\_84, StinkyVeggy\_81, Sukkupi\_7, WhoseManz\_7, Yndexa\_7,

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

- Ahwei\_83, AlanGrant\_86, AnClar\_71, Antihero\_83, Apex\_86, Austelle\_85, BiggityBass\_72, BirdsNest\_96, BobbyK\_85, BrownCNA\_86, CRB2\_82, ChrisnMich\_86, Cooper\_86, Epah\_83, Fanaw\_80, Fortunato\_83, Frederick\_86, GinPorsche\_85, Hally898\_81, Hangman\_85, Hashim76\_93, Hydro\_85, Indlovu\_82, JAMaL\_84, JaguarMi\_79, JoyceMaria\_84, Lambano\_81, LittleDigger\_83, LittleMinkey\_99, Lolalove\_86, Lollipop1437\_11, Magpie\_81, Mithril\_84, Mudslide\_85, Nanao\_83, Nigel\_81, PenguinLover67\_82, Poster\_82, Prince\_84, QueenPie\_78,

Quesadilla\_83, RawrgerThat\_84, Renkei\_83, Saguaro\_78, Stinger\_83, Vincenzo\_85, VioletZ\_87, Waleliano\_84, Xincheng\_78, Zemanar\_84, Zenteno07\_96,

### Summary by start number:

#### Start 30:

- Found in 15 of 100 ( 15.0% ) of genes in pham
- Manual Annotations of this start: 4 of 69
- Called 26.7% of time when present
- Phage (with cluster) where this start called: BobbyK\_85 (B4), JAMaL\_84 (B4), Nigel\_81 (B4), Stinger\_83 (B4),

#### Start 31:

- Found in 2 of 100 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AlanGrant\_86 (B4), Vincenzo\_85 (B4),

#### Start 34:

- Found in 3 of 100 ( 3.0% ) of genes in pham
- Manual Annotations of this start: 3 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Indlovu\_82 (B11), Lollipop1437\_11 (CR3), Saguaro\_78 (B7),

#### Start 37:

- Found in 2 of 100 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: CRB2\_82 (B9), PenguinLover67\_82 (B9),

#### Start 38:

- Found in 2 of 100 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 1 of 69
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Quesadilla\_83 (B9),

#### Start 39:

- Found in 52 of 100 ( 52.0% ) of genes in pham
- Manual Annotations of this start: 18 of 69
- Called 63.5% of time when present
- Phage (with cluster) where this start called: Ahwei\_83 (B4), Antihero\_83 (B4), Apex\_86 (B4), Austelle\_85 (B4), BrownCNA\_86 (B4), ChrisnMich\_86 (B4), Cooper\_86 (B4), Epah\_83 (B4), Fanaw\_80 (B4), Fortunato\_83 (B4), Frederick\_86 (B4), Hally898\_81 (B4), Hangman\_85 (B4), Hydro\_85 (B4), JaguarMi\_79 (B4), JoyceMaria\_84 (B4), Lambano\_81 (B4), LittleDigger\_83 (B4), Lolalove\_86 (B4), Magpie\_81 (B4), Mithril\_84 (B4), Mudslide\_85 (B4), Nanao\_83 (B4), Nehemiah\_82 (B5), Poster\_82 (B4), Prince\_84 (B4), QueenPie\_78 (B4), RawrgerThat\_84 (B4), Renkei\_83 (B4), VioletZ\_87 (B4), Waleliano\_84 (B4), Xincheng\_78 (B4), Zemanar\_84 (B4),

#### Start 40:

- Found in 14 of 100 ( 14.0% ) of genes in pham
- Manual Annotations of this start: 2 of 69
- Called 50.0% of time when present
- Phage (with cluster) where this start called: DigitDog\_85 (B5), KarasumaRum\_81 (B5), LilMcDreamy\_81 (B12), Nangang\_84 (B5), Serendipitous\_83 (B5), Shenyu\_84 (B5), StinkyVeggy\_81 (B5),

#### Start 41:

- Found in 15 of 100 ( 15.0% ) of genes in pham
- Manual Annotations of this start: 5 of 69
- Called 33.3% of time when present
- Phage (with cluster) where this start called: Bae\_82 (B5), EastView9101\_82 (B5), Mysterious\_82 (B5), Reprobate\_82 (B5), Rich\_81 (B5),

#### Start 44:

- Found in 49 of 100 ( 49.0% ) of genes in pham
- Manual Annotations of this start: 18 of 69
- Called 55.1% of time when present
- Phage (with cluster) where this start called: 39HC\_087 (B6), 40BC\_087 (B6), Acadian\_83 (B5), Commandaria\_8 (CR2), Donny\_83 (B5), Emianna\_9 (CR2), Foxboro\_9 (CR2), Funsized\_84 (B9), Fury\_11 (CR5), HomeFry\_10 (CR5), Hosp\_082 (B6), Imvubu\_87 (B10), Jifall16\_8 (CR2), Jolie1\_084 (B6), KidneyBean\_9 (CR2), Knocker\_83 (B9), Kurt\_9 (CR2), NatB6\_9 (CR2), Phelemich\_80 (B5), Phomeo\_8 (CR2), Pleakley\_11 (CR5), Reccee\_84 (B5), Rita130\_82 (B5), Scuba\_11 (CR5), SirJeffery\_81 (B5), Suigeneris\_84 (B5), Tracker\_9 (CR2),

#### Start 45:

- Found in 13 of 100 ( 13.0% ) of genes in pham
- Manual Annotations of this start: 11 of 69
- Called 92.3% of time when present
- Phage (with cluster) where this start called: BiPauneto\_7 (CR4), BirdsNest\_96 (B13), Hashim76\_93 (B13), HubbaBubba\_7 (CR4), IDyn\_8 (CR4), Marietta\_7 (CR4), NadineRae\_7 (CR4), Pemberton\_7 (CR4), Sukkupi\_7 (CR4), WhoseManz\_7 (CR4), Yndexa\_7 (CR4), Zenteno07\_96 (B13),

#### Start 46:

- Found in 2 of 100 ( 2.0% ) of genes in pham
- Manual Annotations of this start: 2 of 69
- Called 100.0% of time when present
- Phage (with cluster) where this start called: AnClar\_71 (DR), BiggityBass\_72 (DR),

#### Start 48:

- Found in 41 of 100 ( 41.0% ) of genes in pham
- Manual Annotations of this start: 1 of 69
- Called 4.9% of time when present
- Phage (with cluster) where this start called: GinPorsche\_85 (B4), LittleMinkey\_99 (B13),

### Summary by clusters:

There are 14 clusters represented in this pham: CR2, CR3, CR4, CR5, B4, B5, B6, B7, B12, B13, B10, B11, DR, B9,

Info for manual annotations of cluster B10:

- Start number 44 was manually annotated 1 time for cluster B10.

Info for manual annotations of cluster B11:

- Start number 34 was manually annotated 1 time for cluster B11.

Info for manual annotations of cluster B12:

- Start number 40 was manually annotated 1 time for cluster B12.

Info for manual annotations of cluster B13:

- Start number 45 was manually annotated 3 times for cluster B13.

Info for manual annotations of cluster B4:

- Start number 30 was manually annotated 4 times for cluster B4.
- Start number 31 was manually annotated 2 times for cluster B4.
- Start number 39 was manually annotated 18 times for cluster B4.
- Start number 48 was manually annotated 1 time for cluster B4.

Info for manual annotations of cluster B5:

- Start number 40 was manually annotated 1 time for cluster B5.
- Start number 41 was manually annotated 5 times for cluster B5.
- Start number 44 was manually annotated 4 times for cluster B5.

Info for manual annotations of cluster B7:

- Start number 34 was manually annotated 1 time for cluster B7.

Info for manual annotations of cluster B9:

- Start number 37 was manually annotated 2 times for cluster B9.
- Start number 38 was manually annotated 1 time for cluster B9.
- Start number 44 was manually annotated 2 times for cluster B9.

Info for manual annotations of cluster CR2:

- Start number 44 was manually annotated 9 times for cluster CR2.

Info for manual annotations of cluster CR3:

- Start number 34 was manually annotated 1 time for cluster CR3.

Info for manual annotations of cluster CR4:

- Start number 45 was manually annotated 8 times for cluster CR4.

Info for manual annotations of cluster CR5:

- Start number 44 was manually annotated 2 times for cluster CR5.

Info for manual annotations of cluster DR:

- Start number 46 was manually annotated 2 times for cluster DR.

**Gene Information:**

Gene: 39HC\_087 Start: 65341, Stop: 65051, Start Num: 44

Candidate Starts for 39HC\_087:

(23, 65503), (26, 65443), (Start: 44 @65341 has 18 MA's), (60, 65233), (65, 65179),

Gene: 40BC\_087 Start: 65341, Stop: 65051, Start Num: 44

Candidate Starts for 40BC\_087:

(23, 65503), (26, 65443), (Start: 44 @65341 has 18 MA's), (60, 65233), (65, 65179),

Gene: Acadian\_83 Start: 63798, Stop: 63526, Start Num: 44

Candidate Starts for Acadian\_83:

(29, 63873), (32, 63846), (Start: 44 @63798 has 18 MA's), (62, 63657),

Gene: Ahwei\_83 Start: 64624, Stop: 64340, Start Num: 39

Candidate Starts for Ahwei\_83:

(Start: 30 @64666 has 4 MA's), (Start: 39 @64624 has 18 MA's), (Start: 48 @64588 has 1 MA's), (55, 64531), (56, 64522), (58, 64513), (59, 64501), (62, 64474), (64, 64459),

Gene: AlanGrant\_86 Start: 66429, Stop: 66130, Start Num: 31

Candidate Starts for AlanGrant\_86:

(4, 66777), (8, 66699), (Start: 31 @66429 has 2 MA's), (Start: 39 @66393 has 18 MA's), (Start: 41 @66387 has 5 MA's), (62, 66264), (66, 66243), (69, 66234), (71, 66204),

Gene: AnClar\_71 Start: 57138, Stop: 56902, Start Num: 46

Candidate Starts for AnClar\_71:

(33, 57174), (Start: 46 @57138 has 2 MA's), (51, 57102), (52, 57084),

Gene: Antihero\_83 Start: 64547, Stop: 64263, Start Num: 39

Candidate Starts for Antihero\_83:

(Start: 30 @64589 has 4 MA's), (Start: 39 @64547 has 18 MA's), (Start: 48 @64511 has 1 MA's), (55, 64454), (56, 64445), (58, 64436), (59, 64424), (62, 64397), (64, 64382),

Gene: Apex\_86 Start: 65693, Stop: 65415, Start Num: 39

Candidate Starts for Apex\_86:

(Start: 39 @65693 has 18 MA's), (Start: 48 @65663 has 1 MA's), (55, 65606), (56, 65597), (59, 65576), (62, 65549),

Gene: Austelle\_85 Start: 66243, Stop: 65959, Start Num: 39

Candidate Starts for Austelle\_85:

(Start: 30 @66285 has 4 MA's), (Start: 39 @66243 has 18 MA's), (Start: 48 @66207 has 1 MA's), (55, 66150), (56, 66141), (57, 66138), (58, 66132), (59, 66120), (63, 66087), (64, 66078),

Gene: Bae\_82 Start: 64440, Stop: 64162, Start Num: 41

Candidate Starts for Bae\_82:

(28, 64512), (Start: 39 @64446 has 18 MA's), (Start: 40 @64443 has 2 MA's), (Start: 41 @64440 has 5 MA's), (Start: 44 @64434 has 18 MA's),

Gene: BiPauneto\_7 Start: 3671, Stop: 3916, Start Num: 45

Candidate Starts for BiPauneto\_7:

(5, 3311), (Start: 44 @3668 has 18 MA's), (Start: 45 @3671 has 11 MA's), (53, 3737), (59, 3773), (61, 3779), (62, 3809), (69, 3839), (73, 3899), (74, 3905),

Gene: BiggityBass\_72 Start: 56910, Stop: 56674, Start Num: 46

Candidate Starts for BiggityBass\_72:

(33, 56946), (Start: 46 @56910 has 2 MA's), (51, 56874), (52, 56856),

Gene: BirdsNest\_96 Start: 67441, Stop: 67193, Start Num: 45

Candidate Starts for BirdsNest\_96:

(Start: 45 @67441 has 11 MA's), (Start: 48 @67423 has 1 MA's), (59, 67339), (65, 67285),

Gene: BobbyK\_85 Start: 65257, Stop: 64931, Start Num: 30

Candidate Starts for BobbyK\_85:

(Start: 30 @65257 has 4 MA's), (Start: 39 @65215 has 18 MA's), (Start: 48 @65179 has 1 MA's), (55, 65122), (56, 65113), (58, 65104), (59, 65092), (62, 65065), (64, 65050),

Gene: BrownCNA\_86 Start: 65641, Stop: 65363, Start Num: 39

Candidate Starts for BrownCNA\_86:

(Start: 39 @65641 has 18 MA's), (Start: 48 @65611 has 1 MA's), (52, 65566), (55, 65554), (56, 65545), (59, 65524), (62, 65497),

Gene: CRB2\_82 Start: 65913, Stop: 65626, Start Num: 37

Candidate Starts for CRB2\_82:

(Start: 37 @65913 has 2 MA's), (Start: 48 @65877 has 1 MA's), (62, 65757), (71, 65697),

Gene: ChrisnMich\_86 Start: 64491, Stop: 64228, Start Num: 39

Candidate Starts for ChrisnMich\_86:

(Start: 39 @64491 has 18 MA's), (56, 64410), (58, 64401), (62, 64362), (64, 64347), (68, 64335),

Gene: Commandaria\_8 Start: 4772, Stop: 5020, Start Num: 44

Candidate Starts for Commandaria\_8:

(7, 4496), (12, 4535), (21, 4649), (Start: 44 @4772 has 18 MA's), (62, 4913), (74, 5009),

Gene: Cooper\_86 Start: 64991, Stop: 64728, Start Num: 39

Candidate Starts for Cooper\_86:

(18, 65192), (Start: 39 @64991 has 18 MA's), (56, 64910), (58, 64901), (62, 64862), (64, 64847), (68, 64835),

Gene: DigitDog\_85 Start: 64306, Stop: 64025, Start Num: 40

Candidate Starts for DigitDog\_85:

(Start: 39 @64309 has 18 MA's), (Start: 40 @64306 has 2 MA's), (Start: 41 @64303 has 5 MA's), (Start: 44 @64297 has 18 MA's),

Gene: Donny\_83 Start: 63632, Stop: 63360, Start Num: 44

Candidate Starts for Donny\_83:

(32, 63680), (Start: 44 @63632 has 18 MA's),

Gene: EastView9101\_82 Start: 63548, Stop: 63270, Start Num: 41

Candidate Starts for EastView9101\_82:

(Start: 39 @63554 has 18 MA's), (Start: 40 @63551 has 2 MA's), (Start: 41 @63548 has 5 MA's), (Start: 44 @63542 has 18 MA's), (62, 63401),

Gene: Emianna\_9 Start: 5711, Stop: 5956, Start Num: 44

Candidate Starts for Emianna\_9:

(21, 5591), (22, 5594), (Start: 44 @5711 has 18 MA's), (50, 5753), (66, 5867), (70, 5882), (74, 5942),

Gene: Epah\_83 Start: 64547, Stop: 64263, Start Num: 39

Candidate Starts for Epah\_83:

(Start: 30 @64589 has 4 MA's), (Start: 39 @64547 has 18 MA's), (Start: 48 @64511 has 1 MA's), (55, 64454), (56, 64445), (58, 64436), (59, 64424), (62, 64397), (64, 64382),

Gene: Fanaw\_80 Start: 65228, Stop: 64950, Start Num: 39

Candidate Starts for Fanaw\_80:

(Start: 39 @65228 has 18 MA's), (52, 65153), (55, 65141), (56, 65132), (59, 65111), (62, 65084),

Gene: Fortunato\_83 Start: 65020, Stop: 64742, Start Num: 39

Candidate Starts for Fortunato\_83:

(Start: 39 @65020 has 18 MA's), (Start: 48 @64990 has 1 MA's), (52, 64945), (55, 64933), (56, 64924), (59, 64903), (62, 64876),

Gene: Foxboro\_9 Start: 5722, Stop: 5967, Start Num: 44

Candidate Starts for Foxboro\_9:

(21, 5602), (22, 5605), (Start: 44 @5722 has 18 MA's), (50, 5764), (66, 5878), (70, 5893), (74, 5953),

Gene: Frederick\_86 Start: 65507, Stop: 65229, Start Num: 39

Candidate Starts for Frederick\_86:

(Start: 39 @65507 has 18 MA's), (Start: 48 @65477 has 1 MA's), (52, 65432), (55, 65420), (56, 65411), (59, 65390), (62, 65363),

Gene: Funsized\_84 Start: 66820, Stop: 66524, Start Num: 44

Candidate Starts for Funsized\_84:

(15, 67057), (16, 67048), (17, 67045), (25, 66949), (Start: 44 @66820 has 18 MA's), (59, 66712), (60, 66709), (62, 66676),

Gene: Fury\_11 Start: 5184, Stop: 5441, Start Num: 44

Candidate Starts for Fury\_11:

(20, 5022), (24, 5070), (27, 5091), (Start: 44 @5184 has 18 MA's), (47, 5193), (67, 5355), (74, 5427),

Gene: GinPorsche\_85 Start: 64508, Stop: 64260, Start Num: 48

Candidate Starts for GinPorsche\_85:

(Start: 30 @64586 has 4 MA's), (Start: 39 @64544 has 18 MA's), (Start: 48 @64508 has 1 MA's), (55, 64451), (56, 64442), (58, 64433), (59, 64421), (62, 64394), (64, 64379),

Gene: Hally898\_81 Start: 64384, Stop: 64100, Start Num: 39

Candidate Starts for Hally898\_81:

(Start: 30 @64426 has 4 MA's), (Start: 39 @64384 has 18 MA's), (Start: 48 @64348 has 1 MA's), (55, 64291), (56, 64282), (58, 64273), (59, 64261), (62, 64234), (64, 64219),

Gene: Hangman\_85 Start: 65719, Stop: 65441, Start Num: 39

Candidate Starts for Hangman\_85:

(Start: 39 @65719 has 18 MA's), (Start: 48 @65689 has 1 MA's), (52, 65644), (55, 65632), (56, 65623), (59, 65602), (62, 65575),

Gene: Hashim76\_93 Start: 66930, Stop: 66682, Start Num: 45

Candidate Starts for Hashim76\_93:

(Start: 45 @66930 has 11 MA's), (Start: 48 @66912 has 1 MA's), (65, 66774),

Gene: HomeFry\_10 Start: 4695, Stop: 4946, Start Num: 44

Candidate Starts for HomeFry\_10:

(Start: 44 @4695 has 18 MA's), (74, 4932),

Gene: Hosp\_082 Start: 62629, Stop: 62333, Start Num: 44

Candidate Starts for Hosp\_082:

(23, 62791), (26, 62731), (Start: 44 @62629 has 18 MA's), (56, 62545), (65, 62467),

Gene: HubbaBubba\_7 Start: 3528, Stop: 3773, Start Num: 45

Candidate Starts for HubbaBubba\_7:

(Start: 44 @3525 has 18 MA's), (Start: 45 @3528 has 11 MA's), (53, 3594), (59, 3630), (61, 3636), (62, 3666), (69, 3696), (70, 3702), (74, 3762),

Gene: Hydro\_85 Start: 65594, Stop: 65316, Start Num: 39

Candidate Starts for Hydro\_85:

(Start: 39 @65594 has 18 MA's), (Start: 48 @65564 has 1 MA's), (52, 65519), (55, 65507), (56, 65498), (59, 65477), (62, 65450),

Gene: IDyn\_8 Start: 4449, Stop: 4694, Start Num: 45

Candidate Starts for IDyn\_8:

(Start: 44 @4446 has 18 MA's), (Start: 45 @4449 has 11 MA's), (53, 4515), (59, 4551), (61, 4557), (62, 4587), (69, 4617), (70, 4623), (74, 4683),

Gene: Imvubu\_87 Start: 64765, Stop: 64490, Start Num: 44

Candidate Starts for Imvubu\_87:

(1, 65203), (6, 65092), (10, 65053), (11, 65047), (13, 65023), (14, 64999), (19, 64945), (35, 64783), (Start: 44 @64765 has 18 MA's),

Gene: Indlovu\_82 Start: 65227, Stop: 64946, Start Num: 34

Candidate Starts for Indlovu\_82:

(Start: 34 @65227 has 3 MA's), (60, 65110),

Gene: JAMaL\_84 Start: 65126, Stop: 64800, Start Num: 30

Candidate Starts for JAMaL\_84:

(Start: 30 @65126 has 4 MA's), (Start: 39 @65084 has 18 MA's), (Start: 48 @65048 has 1 MA's), (55, 64991), (56, 64982), (58, 64973), (59, 64961), (62, 64934), (64, 64919),

Gene: JaguarMi\_79 Start: 65587, Stop: 65303, Start Num: 39

Candidate Starts for JaguarMi\_79:

(Start: 39 @65587 has 18 MA's), (Start: 48 @65551 has 1 MA's), (56, 65485), (58, 65476), (59, 65464), (63, 65431), (69, 65407),

Gene: Jifall16\_8 Start: 5183, Stop: 5428, Start Num: 44

Candidate Starts for Jifall16\_8:

(21, 5063), (22, 5066), (Start: 44 @5183 has 18 MA's), (50, 5225), (66, 5339), (70, 5354), (74, 5414),

Gene: Jolie1\_084 Start: 64656, Stop: 64360, Start Num: 44

Candidate Starts for Jolie1\_084:

(23, 64818), (26, 64758), (Start: 44 @64656 has 18 MA's), (56, 64572), (60, 64548), (65, 64494),

Gene: JoyceMaria\_84 Start: 65545, Stop: 65267, Start Num: 39

Candidate Starts for JoyceMaria\_84:

(Start: 39 @65545 has 18 MA's), (Start: 48 @65515 has 1 MA's), (52, 65470), (55, 65458), (56, 65449), (59, 65428), (62, 65401),

Gene: KarasumaRum\_81 Start: 63704, Stop: 63423, Start Num: 40

Candidate Starts for KarasumaRum\_81:

(Start: 39 @63707 has 18 MA's), (Start: 40 @63704 has 2 MA's), (Start: 41 @63701 has 5 MA's), (43, 63698), (Start: 44 @63695 has 18 MA's),

Gene: KidneyBean\_9 Start: 5528, Stop: 5773, Start Num: 44  
Candidate Starts for KidneyBean\_9:  
(21, 5408), (22, 5411), (Start: 44 @5528 has 18 MA's), (50, 5570), (66, 5684), (70, 5699), (74, 5759),

Gene: Knocker\_83 Start: 65702, Stop: 65406, Start Num: 44  
Candidate Starts for Knocker\_83:  
(15, 65939), (16, 65930), (Start: 44 @65702 has 18 MA's), (52, 65636), (54, 65627), (59, 65594), (62, 65558),

Gene: Kurt\_9 Start: 5711, Stop: 5956, Start Num: 44  
Candidate Starts for Kurt\_9:  
(21, 5591), (22, 5594), (Start: 44 @5711 has 18 MA's), (50, 5753), (66, 5867), (70, 5882), (74, 5942),

Gene: Lambano\_81 Start: 64384, Stop: 64100, Start Num: 39  
Candidate Starts for Lambano\_81:  
(Start: 30 @64426 has 4 MA's), (Start: 39 @64384 has 18 MA's), (Start: 48 @64348 has 1 MA's), (55, 64291), (56, 64282), (58, 64273), (59, 64261), (62, 64234), (64, 64219),

Gene: LilMcDreamy\_81 Start: 63946, Stop: 63668, Start Num: 40  
Candidate Starts for LilMcDreamy\_81:  
(Start: 40 @63946 has 2 MA's), (Start: 44 @63940 has 18 MA's),

Gene: LittleDigger\_83 Start: 64484, Stop: 64200, Start Num: 39  
Candidate Starts for LittleDigger\_83:  
(Start: 30 @64526 has 4 MA's), (Start: 39 @64484 has 18 MA's), (Start: 48 @64448 has 1 MA's), (55, 64391), (56, 64382), (58, 64373), (59, 64361), (62, 64334), (64, 64319),

Gene: LittleMinkey\_99 Start: 67387, Stop: 67157, Start Num: 48  
Candidate Starts for LittleMinkey\_99:  
(Start: 45 @67405 has 11 MA's), (Start: 48 @67387 has 1 MA's), (65, 67249),

Gene: Lolalove\_86 Start: 65538, Stop: 65260, Start Num: 39  
Candidate Starts for Lolalove\_86:  
(Start: 39 @65538 has 18 MA's), (Start: 48 @65508 has 1 MA's), (52, 65463), (55, 65451), (56, 65442), (59, 65421), (62, 65394),

Gene: Lollipop1437\_11 Start: 6477, Stop: 6752, Start Num: 34  
Candidate Starts for Lollipop1437\_11:  
(9, 6279), (Start: 34 @6477 has 3 MA's), (36, 6480), (42, 6498), (59, 6612), (72, 6714), (74, 6741),

Gene: Magpie\_81 Start: 65221, Stop: 64943, Start Num: 39  
Candidate Starts for Magpie\_81:  
(Start: 39 @65221 has 18 MA's), (52, 65146), (55, 65134), (56, 65125), (59, 65104), (62, 65077),

Gene: Marietta\_7 Start: 3861, Stop: 4106, Start Num: 45  
Candidate Starts for Marietta\_7:  
(Start: 44 @3858 has 18 MA's), (Start: 45 @3861 has 11 MA's), (53, 3927), (59, 3963), (61, 3969), (62, 3999), (69, 4029), (70, 4035), (74, 4095),

Gene: Mithril\_84 Start: 65378, Stop: 65100, Start Num: 39  
Candidate Starts for Mithril\_84:

(Start: 39 @65378 has 18 MA's), (Start: 48 @65348 has 1 MA's), (52, 65303), (55, 65291), (56, 65282), (59, 65261), (62, 65234),

Gene: Mudslide\_85 Start: 65768, Stop: 65490, Start Num: 39

Candidate Starts for Mudslide\_85:

(Start: 39 @65768 has 18 MA's), (Start: 48 @65738 has 1 MA's), (52, 65693), (55, 65681), (56, 65672), (59, 65651), (62, 65624),

Gene: Mysterious\_82 Start: 63888, Stop: 63610, Start Num: 41

Candidate Starts for Mysterious\_82:

(Start: 39 @63894 has 18 MA's), (Start: 40 @63891 has 2 MA's), (Start: 41 @63888 has 5 MA's), (Start: 44 @63882 has 18 MA's), (59, 63777), (62, 63741), (74, 63645),

Gene: NadineRae\_7 Start: 3565, Stop: 3810, Start Num: 45

Candidate Starts for NadineRae\_7:

(Start: 44 @3562 has 18 MA's), (Start: 45 @3565 has 11 MA's), (53, 3631), (59, 3667), (61, 3673), (62, 3703), (69, 3733), (70, 3739), (74, 3799),

Gene: Nanao\_83 Start: 64397, Stop: 64113, Start Num: 39

Candidate Starts for Nanao\_83:

(Start: 30 @64439 has 4 MA's), (Start: 39 @64397 has 18 MA's), (Start: 48 @64361 has 1 MA's), (55, 64304), (56, 64295), (58, 64286), (59, 64274), (62, 64247), (64, 64232),

Gene: Nangang\_84 Start: 64289, Stop: 64008, Start Num: 40

Candidate Starts for Nangang\_84:

(Start: 39 @64292 has 18 MA's), (Start: 40 @64289 has 2 MA's), (Start: 41 @64286 has 5 MA's), (Start: 44 @64280 has 18 MA's),

Gene: NatB6\_9 Start: 5790, Stop: 6035, Start Num: 44

Candidate Starts for NatB6\_9:

(21, 5670), (22, 5673), (Start: 44 @5790 has 18 MA's), (50, 5832), (66, 5946), (70, 5961), (74, 6021),

Gene: Nehemiah\_82 Start: 63774, Stop: 63490, Start Num: 39

Candidate Starts for Nehemiah\_82:

(Start: 39 @63774 has 18 MA's), (Start: 40 @63771 has 2 MA's), (Start: 41 @63768 has 5 MA's), (Start: 44 @63762 has 18 MA's), (59, 63657), (62, 63621), (74, 63525),

Gene: Nigel\_81 Start: 63962, Stop: 63636, Start Num: 30

Candidate Starts for Nigel\_81:

(3, 64301), (Start: 30 @63962 has 4 MA's), (Start: 39 @63920 has 18 MA's), (Start: 48 @63884 has 1 MA's), (49, 63860), (56, 63818), (58, 63809), (62, 63770), (64, 63755), (69, 63740),

Gene: Pemberton\_7 Start: 3521, Stop: 3766, Start Num: 45

Candidate Starts for Pemberton\_7:

(5, 3296), (Start: 44 @3518 has 18 MA's), (Start: 45 @3521 has 11 MA's), (53, 3587), (59, 3623), (61, 3629), (62, 3659), (69, 3689), (73, 3749), (74, 3755),

Gene: PenguinLover67\_82 Start: 63644, Stop: 63351, Start Num: 37

Candidate Starts for PenguinLover67\_82:

(Start: 37 @63644 has 2 MA's), (Start: 48 @63602 has 1 MA's), (59, 63518), (71, 63422),

Gene: Phelemich\_80 Start: 63840, Stop: 63568, Start Num: 44

Candidate Starts for Phelemich\_80:

(2, 64257), (28, 63918), (Start: 39 @63852 has 18 MA's), (Start: 40 @63849 has 2 MA's), (Start: 41 @63846 has 5 MA's), (Start: 44 @63840 has 18 MA's), (55, 63765), (59, 63735), (62, 63699), (74, 63603),

Gene: Phomeo\_8 Start: 5364, Stop: 5609, Start Num: 44

Candidate Starts for Phomeo\_8:

(21, 5244), (22, 5247), (Start: 44 @5364 has 18 MA's), (50, 5406), (66, 5520), (70, 5535), (74, 5595),

Gene: Pleakley\_11 Start: 5184, Stop: 5441, Start Num: 44

Candidate Starts for Pleakley\_11:

(20, 5022), (24, 5070), (27, 5091), (Start: 44 @5184 has 18 MA's), (47, 5193), (67, 5355), (74, 5427),

Gene: Poster\_82 Start: 64398, Stop: 64114, Start Num: 39

Candidate Starts for Poster\_82:

(Start: 30 @64440 has 4 MA's), (Start: 39 @64398 has 18 MA's), (Start: 48 @64362 has 1 MA's), (55, 64305), (56, 64296), (58, 64287), (59, 64275), (62, 64248), (64, 64233),

Gene: Prince\_84 Start: 65635, Stop: 65357, Start Num: 39

Candidate Starts for Prince\_84:

(Start: 39 @65635 has 18 MA's), (Start: 48 @65605 has 1 MA's), (55, 65548), (56, 65539), (59, 65518), (62, 65491),

Gene: QueenPie\_78 Start: 64138, Stop: 63863, Start Num: 39

Candidate Starts for QueenPie\_78:

(Start: 39 @64138 has 18 MA's), (Start: 48 @64111 has 1 MA's), (55, 64054), (56, 64045), (58, 64036), (62, 63997), (64, 63982),

Gene: Quesadilla\_83 Start: 64272, Stop: 63979, Start Num: 38

Candidate Starts for Quesadilla\_83:

(Start: 38 @64272 has 1 MA's), (Start: 48 @64230 has 1 MA's),

Gene: RawrgerThat\_84 Start: 65226, Stop: 64948, Start Num: 39

Candidate Starts for RawrgerThat\_84:

(Start: 39 @65226 has 18 MA's), (Start: 48 @65196 has 1 MA's), (52, 65151), (55, 65139), (56, 65130), (59, 65109), (62, 65082),

Gene: Reccee\_84 Start: 64102, Stop: 63830, Start Num: 44

Candidate Starts for Reccee\_84:

(32, 64150), (Start: 44 @64102 has 18 MA's),

Gene: Renkei\_83 Start: 64478, Stop: 64194, Start Num: 39

Candidate Starts for Renkei\_83:

(Start: 30 @64520 has 4 MA's), (Start: 39 @64478 has 18 MA's), (Start: 48 @64442 has 1 MA's), (55, 64385), (56, 64376), (58, 64367), (59, 64355), (62, 64328), (64, 64313),

Gene: Reprobate\_82 Start: 63851, Stop: 63573, Start Num: 41

Candidate Starts for Reprobate\_82:

(2, 64262), (28, 63923), (Start: 39 @63857 has 18 MA's), (Start: 40 @63854 has 2 MA's), (Start: 41 @63851 has 5 MA's), (Start: 44 @63845 has 18 MA's), (55, 63770), (59, 63740), (62, 63704), (74, 63608),

Gene: Rich\_81 Start: 64507, Stop: 64226, Start Num: 41

Candidate Starts for Rich\_81:

(28, 64579), (Start: 39 @64513 has 18 MA's), (Start: 40 @64510 has 2 MA's), (Start: 41 @64507 has 5 MA's), (42, 64504), (Start: 44 @64498 has 18 MA's),

Gene: Rita130\_82 Start: 63772, Stop: 63500, Start Num: 44  
Candidate Starts for Rita130\_82:  
(29, 63847), (32, 63820), (Start: 44 @63772 has 18 MA's), (62, 63631),

Gene: Saguaro\_78 Start: 62799, Stop: 62497, Start Num: 34  
Candidate Starts for Saguaro\_78:  
(Start: 34 @62799 has 3 MA's), (Start: 38 @62790 has 1 MA's), (Start: 48 @62754 has 1 MA's), (62, 62628),

Gene: Scuba\_11 Start: 5282, Stop: 5539, Start Num: 44  
Candidate Starts for Scuba\_11:  
(20, 5120), (24, 5168), (Start: 44 @5282 has 18 MA's), (47, 5291), (62, 5429), (67, 5453), (74, 5525),

Gene: Serendipitous\_83 Start: 63637, Stop: 63356, Start Num: 40  
Candidate Starts for Serendipitous\_83:  
(Start: 39 @63640 has 18 MA's), (Start: 40 @63637 has 2 MA's), (Start: 41 @63634 has 5 MA's),  
(Start: 44 @63628 has 18 MA's),

Gene: Shenyu\_84 Start: 64305, Stop: 64024, Start Num: 40  
Candidate Starts for Shenyu\_84:  
(Start: 39 @64308 has 18 MA's), (Start: 40 @64305 has 2 MA's), (Start: 41 @64302 has 5 MA's),  
(Start: 44 @64296 has 18 MA's),

Gene: SirJeffery\_81 Start: 63582, Stop: 63310, Start Num: 44  
Candidate Starts for SirJeffery\_81:  
(32, 63630), (Start: 44 @63582 has 18 MA's), (62, 63441),

Gene: Stinger\_83 Start: 64081, Stop: 63758, Start Num: 30  
Candidate Starts for Stinger\_83:  
(Start: 30 @64081 has 4 MA's), (Start: 39 @64039 has 18 MA's), (Start: 48 @64006 has 1 MA's), (49, 63982), (56, 63940), (58, 63931), (62, 63892), (69, 63862),

Gene: StinkyVeggy\_81 Start: 63704, Stop: 63423, Start Num: 40  
Candidate Starts for StinkyVeggy\_81:  
(Start: 39 @63707 has 18 MA's), (Start: 40 @63704 has 2 MA's), (Start: 41 @63701 has 5 MA's), (43, 63698), (Start: 44 @63695 has 18 MA's),

Gene: Suigeneris\_84 Start: 64020, Stop: 63748, Start Num: 44  
Candidate Starts for Suigeneris\_84:  
(29, 64095), (32, 64068), (Start: 44 @64020 has 18 MA's),

Gene: Sukkupi\_7 Start: 3562, Stop: 3807, Start Num: 45  
Candidate Starts for Sukkupi\_7:  
(5, 3202), (Start: 44 @3559 has 18 MA's), (Start: 45 @3562 has 11 MA's), (53, 3628), (59, 3664), (61, 3670), (62, 3700), (69, 3730), (73, 3790), (74, 3796),

Gene: Tracker\_9 Start: 5503, Stop: 5748, Start Num: 44  
Candidate Starts for Tracker\_9:  
(21, 5383), (22, 5386), (Start: 44 @5503 has 18 MA's), (50, 5545), (66, 5659), (70, 5674), (74, 5734),

Gene: Vincenzo\_85 Start: 66459, Stop: 66160, Start Num: 31

Candidate Starts for Vincenzo\_85:

(4, 66807), (8, 66729), (Start: 31 @66459 has 2 MA's), (Start: 39 @66423 has 18 MA's), (Start: 41 @66417 has 5 MA's), (62, 66294), (66, 66273), (69, 66264), (71, 66234),

Gene: VioletZ\_87 Start: 65725, Stop: 65447, Start Num: 39

Candidate Starts for VioletZ\_87:

(Start: 39 @65725 has 18 MA's), (Start: 48 @65695 has 1 MA's), (52, 65650), (55, 65638), (56, 65629), (59, 65608), (62, 65581),

Gene: Waleliano\_84 Start: 65393, Stop: 65115, Start Num: 39

Candidate Starts for Waleliano\_84:

(Start: 39 @65393 has 18 MA's), (Start: 48 @65363 has 1 MA's), (52, 65318), (55, 65306), (56, 65297), (59, 65276), (62, 65249),

Gene: WhoseManz\_7 Start: 3472, Stop: 3717, Start Num: 45

Candidate Starts for WhoseManz\_7:

(5, 3247), (Start: 44 @3469 has 18 MA's), (Start: 45 @3472 has 11 MA's), (53, 3538), (59, 3574), (61, 3580), (62, 3610), (69, 3640), (70, 3646), (74, 3706),

Gene: Xincheng\_78 Start: 65538, Stop: 65254, Start Num: 39

Candidate Starts for Xincheng\_78:

(Start: 39 @65538 has 18 MA's), (Start: 48 @65502 has 1 MA's), (56, 65436), (58, 65427), (59, 65415), (63, 65382), (69, 65358),

Gene: Yndexa\_7 Start: 3562, Stop: 3807, Start Num: 45

Candidate Starts for Yndexa\_7:

(5, 3202), (Start: 44 @3559 has 18 MA's), (Start: 45 @3562 has 11 MA's), (53, 3628), (59, 3664), (61, 3670), (62, 3700), (69, 3730), (73, 3790), (74, 3796),

Gene: Zemanar\_84 Start: 65406, Stop: 65128, Start Num: 39

Candidate Starts for Zemanar\_84:

(Start: 39 @65406 has 18 MA's), (Start: 48 @65376 has 1 MA's), (52, 65331), (55, 65319), (56, 65310), (59, 65289), (62, 65262),

Gene: Zenteno07\_96 Start: 67053, Stop: 66802, Start Num: 45

Candidate Starts for Zenteno07\_96:

(Start: 45 @67053 has 11 MA's), (Start: 48 @67035 has 1 MA's), (65, 66894),