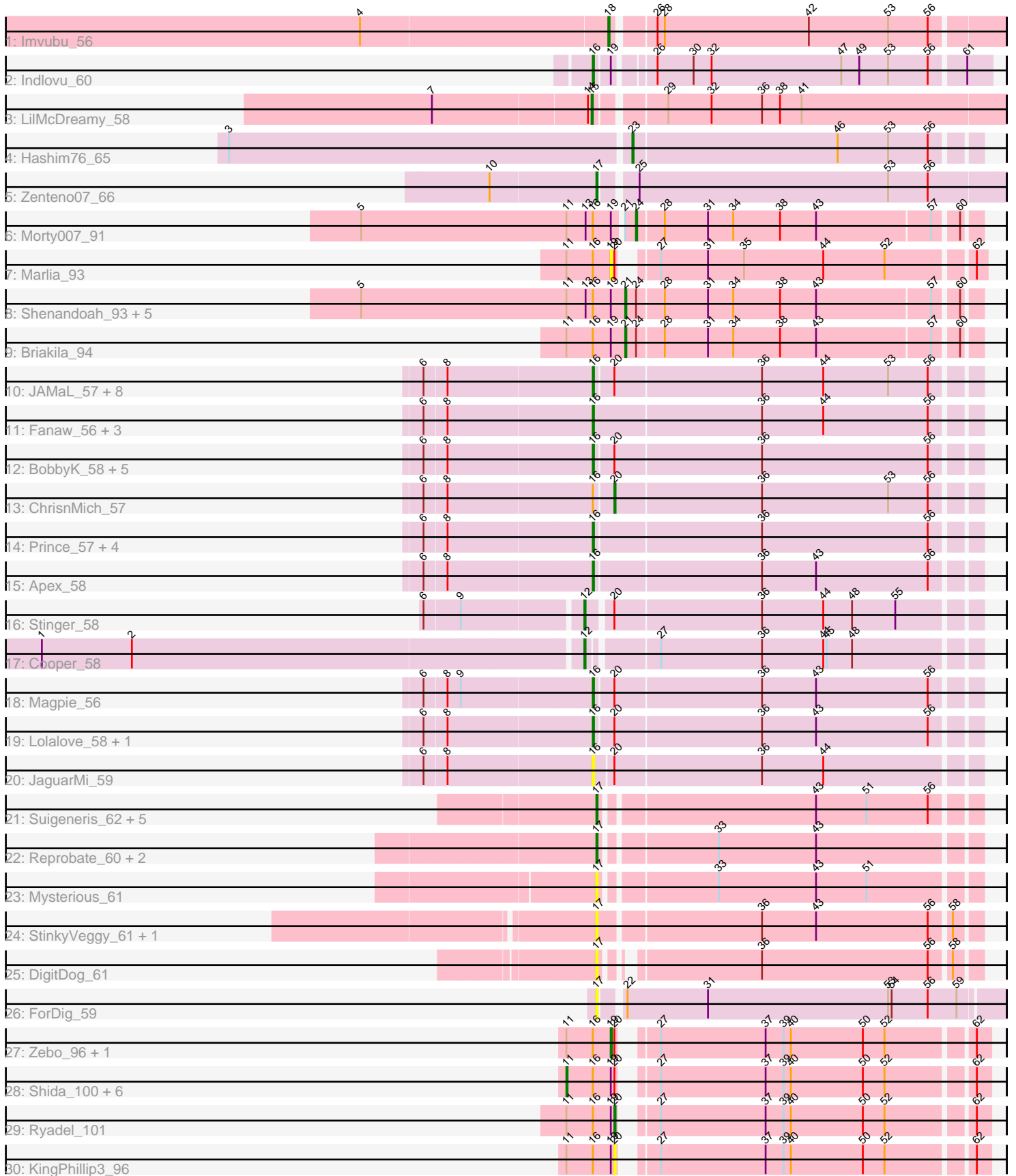


Pham 224550



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 224550 Report

This analysis was run 03/28/25 on database version 593.

Pham number 224550 has 71 members, 24 are drafts.

Phages represented in each track:

- Track 1 : Imvubu\_56
- Track 2 : Indlovu\_60
- Track 3 : LilMcDreamy\_58
- Track 4 : Hashim76\_65
- Track 5 : Zenteno07\_66
- Track 6 : Morty007\_91
- Track 7 : Marlia\_93
- Track 8 : Shenandoah\_93, Deenasa\_94, RagingRooster\_93, Chalmers\_93, Neos5\_92, SynergyX\_94
- Track 9 : Briakila\_94
- Track 10 : JAMaL\_57, Epah\_56, Hally898\_56, GinPorsche\_56, Antihero\_56, Poster\_56, Ahwei\_56, Nanao\_56, Lambano\_56
- Track 11 : Fanaw\_56, Fortunato\_58, QueenPie\_55, RawrgerThat\_58
- Track 12 : BobbyK\_58, Waleliano\_57, Frederick\_58, BrownCNA\_59, Zemanar\_58, Hangman\_57
- Track 13 : ChrisnMich\_57
- Track 14 : Prince\_57, Heath\_56, Austelle\_58, Hydro\_57, Mudslide\_57
- Track 15 : Apex\_58
- Track 16 : Stinger\_58
- Track 17 : Cooper\_58
- Track 18 : Magpie\_56
- Track 19 : Lolalove\_58, VioletZ\_59
- Track 20 : JaguarMi\_59
- Track 21 : Suigeneris\_62, SirJeffery\_60, Rita130\_60, EastView9101\_60, Acadian\_61, Donny\_62
- Track 22 : Reprobate\_60, Nehemiah\_60, Phelemich\_59
- Track 23 : Mysterious\_61
- Track 24 : StinkyVeggy\_61, KarasumaRum\_61
- Track 25 : DigitDog\_61
- Track 26 : ForDig\_59
- Track 27 : Zebo\_96, Bora\_97
- Track 28 : Shida\_100, Catdawg\_99, Krili\_100, TelAviv\_95, SchoolBus\_97, Idergollasper\_100, Familton\_99
- Track 29 : Ryadel\_101
- Track 30 : KingPhillip3\_96

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

The start number called the most often in the published annotations is 16, it was called in 19 of the 47 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Ahwei\_56, Antihero\_56, Apex\_58, Austelle\_58, BobbyK\_58, BrownCNA\_59, Epah\_56, Fanaw\_56, Fortunato\_58, Frederick\_58, GinPorsche\_56, Hally898\_56, Hangman\_57, Heath\_56, Hydro\_57, Indlovu\_60, JAMaL\_57, JaguarMi\_59, Lambano\_56, Lolalove\_58, Magpie\_56, Mudslide\_57, Nanao\_56, Poster\_56, Prince\_57, QueenPie\_55, RawrgerThat\_58, VioletZ\_59, Waleliano\_57, Zemanar\_58,

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

- Bora\_97, Briakila\_94, Catdawg\_99, Chalmers\_93, ChrisnMich\_57, Deenasa\_94, Familton\_99, Idergollasper\_100, KingPhillip3\_96, Krili\_100, Marlia\_93, Morty007\_91, Neos5\_92, RagingRooster\_93, Ryadel\_101, SchoolBus\_97, Shenandoah\_93, Shida\_100, SynergyX\_94, TelAviv\_95, Zebo\_96,

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

- Acadian\_61, Cooper\_58, DigitDog\_61, Donny\_62, EastView9101\_60, ForDig\_59, Hashim76\_65, Imvubu\_56, KarasumaRum\_61, LilMcDreamy\_58, Mysterious\_61, Nehemiah\_60, Phelemich\_59, Reprobate\_60, Rita130\_60, SirJeffery\_60, Stinger\_58, StinkyVeggy\_61, Suigeneris\_62, Zenteno07\_66,

### **Summary by start number:**

Start 11:

- Found in 20 of 71 ( 28.2% ) of genes in pham
- Manual Annotations of this start: 7 of 47
- Called 35.0% of time when present
- Phage (with cluster) where this start called: Catdawg\_99 (O), Familton\_99 (O), Idergollasper\_100 (O), Krili\_100 (O), SchoolBus\_97 (O), Shida\_100 (O), TelAviv\_95 (O),

Start 12:

- Found in 2 of 71 ( 2.8% ) of genes in pham
- Manual Annotations of this start: 2 of 47
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Cooper\_58 (B4), Stinger\_58 (B4),

Start 15:

- Found in 1 of 71 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 47
- Called 100.0% of time when present
- Phage (with cluster) where this start called: LilMcDreamy\_58 (B12),

Start 16:

- Found in 51 of 71 ( 71.8% ) of genes in pham
- Manual Annotations of this start: 19 of 47
- Called 58.8% of time when present
- Phage (with cluster) where this start called: Ahwei\_56 (B4), Antihero\_56 (B4), Apex\_58 (B4), Austelle\_58 (B4), BobbyK\_58 (B4), BrownCNA\_59 (B4), Epah\_56

(B4), Fanaw\_56 (B4), Fortunato\_58 (B4), Frederick\_58 (B4), GinPorsche\_56 (B4), Hally898\_56 (B4), Hangman\_57 (B4), Heath\_56 (B4), Hydro\_57 (B4), Indlovu\_60 (B11), JAMaL\_57 (B4), JaguarMi\_59 (B4), Lambano\_56 (B4), Lolalove\_58 (B4), Magpie\_56 (B4), Mudslide\_57 (B4), Nanao\_56 (B4), Poster\_56 (B4), Prince\_57 (B4), QueenPie\_55 (B4), RawrgerThat\_58 (B4), VioletZ\_59 (B4), Waleliano\_57 (B4), Zemanar\_58 (B4),

Start 17:

- Found in 15 of 71 ( 21.1% ) of genes in pham
- Manual Annotations of this start: 7 of 47
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Acadian\_61 (B5), DigitDog\_61 (B5), Donny\_62 (B5), EastView9101\_60 (B5), ForDig\_59 (B6), KarasumaRum\_61 (B5), Mysterious\_61 (B5), Nehemiah\_60 (B5), Phelemich\_59 (B5), Reprobate\_60 (B5), Rita130\_60 (B5), SirJeffery\_60 (B5), StinkyVeggy\_61 (B5), Suigeneris\_62 (B5), Zenteno07\_66 (B13),

Start 18:

- Found in 1 of 71 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 47
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Imvubu\_56 (B10),

Start 19:

- Found in 21 of 71 ( 29.6% ) of genes in pham
- Manual Annotations of this start: 1 of 47
- Called 14.3% of time when present
- Phage (with cluster) where this start called: Bora\_97 (O), Marlia\_93 (B3), Zebo\_96 (O),

Start 20:

- Found in 33 of 71 ( 46.5% ) of genes in pham
- Manual Annotations of this start: 2 of 47
- Called 9.1% of time when present
- Phage (with cluster) where this start called: ChrisnMich\_57 (B4), KingPhillip3\_96 (O), Ryadel\_101 (O),

Start 21:

- Found in 8 of 71 ( 11.3% ) of genes in pham
- Manual Annotations of this start: 5 of 47
- Called 87.5% of time when present
- Phage (with cluster) where this start called: Briakila\_94 (B3), Chalmers\_93 (B3), Deenasa\_94 (B3), Neos5\_92 (B3), RagingRooster\_93 (B3), Shenandoah\_93 (B3), SynergyX\_94 (B3),

Start 23:

- Found in 1 of 71 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 47
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Hashim76\_65 (B13),

Start 24:

- Found in 8 of 71 ( 11.3% ) of genes in pham

- Manual Annotations of this start: 1 of 47
- Called 12.5% of time when present
- Phage (with cluster) where this start called: Morty007\_91 (B3),

### **Summary by clusters:**

There are 9 clusters represented in this pham: B11, O, B4, B5, B6, B12, B13, B10, B3,

Info for manual annotations of cluster B10:

- Start number 18 was manually annotated 1 time for cluster B10.

Info for manual annotations of cluster B11:

- Start number 16 was manually annotated 1 time for cluster B11.

Info for manual annotations of cluster B12:

- Start number 15 was manually annotated 1 time for cluster B12.

Info for manual annotations of cluster B13:

- Start number 17 was manually annotated 1 time for cluster B13.
- Start number 23 was manually annotated 1 time for cluster B13.

Info for manual annotations of cluster B3:

- Start number 21 was manually annotated 5 times for cluster B3.
- Start number 24 was manually annotated 1 time for cluster B3.

Info for manual annotations of cluster B4:

- Start number 12 was manually annotated 2 times for cluster B4.
- Start number 16 was manually annotated 18 times for cluster B4.
- Start number 20 was manually annotated 1 time for cluster B4.

Info for manual annotations of cluster B5:

- Start number 17 was manually annotated 6 times for cluster B5.

Info for manual annotations of cluster O:

- Start number 11 was manually annotated 7 times for cluster O.
- Start number 19 was manually annotated 1 time for cluster O.
- Start number 20 was manually annotated 1 time for cluster O.

### **Gene Information:**

Gene: Acadian\_61 Start: 55866, Stop: 55570, Start Num: 17

Candidate Starts for Acadian\_61:

(Start: 17 @55866 has 7 MA's), (43, 55698), (51, 55656), (56, 55605),

Gene: Ahwei\_56 Start: 55057, Stop: 54749, Start Num: 16

Candidate Starts for Ahwei\_56:

(6, 55189), (8, 55171), (Start: 16 @55057 has 19 MA's), (Start: 20 @55042 has 2 MA's), (36, 54922), (44, 54871), (53, 54817), (56, 54784),

Gene: Antihero\_56 Start: 55055, Stop: 54747, Start Num: 16

Candidate Starts for Antihero\_56:

(6, 55187), (8, 55169), (Start: 16 @55055 has 19 MA's), (Start: 20 @55040 has 2 MA's), (36, 54920), (44, 54869), (53, 54815), (56, 54782),

Gene: Apex\_58 Start: 56278, Stop: 55970, Start Num: 16

Candidate Starts for Apex\_58:

(6, 56410), (8, 56392), (Start: 16 @56278 has 19 MA's), (36, 56143), (43, 56098), (56, 56005),

Gene: Austelle\_58 Start: 56734, Stop: 56426, Start Num: 16

Candidate Starts for Austelle\_58:

(6, 56866), (8, 56848), (Start: 16 @56734 has 19 MA's), (36, 56599), (56, 56461),

Gene: BobbyK\_58 Start: 56044, Stop: 55736, Start Num: 16

Candidate Starts for BobbyK\_58:

(6, 56176), (8, 56158), (Start: 16 @56044 has 19 MA's), (Start: 20 @56029 has 2 MA's), (36, 55909), (56, 55771),

Gene: Bora\_97 Start: 61792, Stop: 61508, Start Num: 19

Candidate Starts for Bora\_97:

(Start: 11 @61828 has 7 MA's), (Start: 16 @61807 has 19 MA's), (Start: 19 @61792 has 1 MA's), (Start: 20 @61789 has 2 MA's), (27, 61771), (37, 61684), (39, 61669), (40, 61663), (50, 61603), (52, 61585), (62, 61519),

Gene: Briakila\_94 Start: 65038, Stop: 64757, Start Num: 21

Candidate Starts for Briakila\_94:

(Start: 11 @65080 has 7 MA's), (Start: 16 @65059 has 19 MA's), (Start: 19 @65044 has 1 MA's), (Start: 21 @65038 has 5 MA's), (Start: 24 @65029 has 1 MA's), (28, 65008), (31, 64972), (34, 64951), (38, 64912), (43, 64882), (57, 64789), (60, 64771),

Gene: BrownCNA\_59 Start: 56401, Stop: 56093, Start Num: 16

Candidate Starts for BrownCNA\_59:

(6, 56533), (8, 56515), (Start: 16 @56401 has 19 MA's), (Start: 20 @56386 has 2 MA's), (36, 56266), (56, 56128),

Gene: Catdawg\_99 Start: 62098, Stop: 61778, Start Num: 11

Candidate Starts for Catdawg\_99:

(Start: 11 @62098 has 7 MA's), (Start: 16 @62077 has 19 MA's), (Start: 19 @62062 has 1 MA's), (Start: 20 @62059 has 2 MA's), (27, 62041), (37, 61954), (39, 61939), (40, 61933), (50, 61873), (52, 61855), (62, 61789),

Gene: Chalmers\_93 Start: 65285, Stop: 65004, Start Num: 21

Candidate Starts for Chalmers\_93:

(5, 65498), (Start: 11 @65327 has 7 MA's), (13, 65312), (Start: 16 @65306 has 19 MA's), (Start: 19 @65291 has 1 MA's), (Start: 21 @65285 has 5 MA's), (Start: 24 @65276 has 1 MA's), (28, 65255), (31, 65219), (34, 65198), (38, 65159), (43, 65129), (57, 65036), (60, 65018),

Gene: ChrisnMich\_57 Start: 55054, Stop: 54761, Start Num: 20

Candidate Starts for ChrisnMich\_57:

(6, 55201), (8, 55183), (Start: 16 @55069 has 19 MA's), (Start: 20 @55054 has 2 MA's), (36, 54934), (53, 54829), (56, 54796),

Gene: Cooper\_58 Start: 55230, Stop: 54922, Start Num: 12

Candidate Starts for Cooper\_58:

(1, 55668), (2, 55593), (Start: 12 @55230 has 2 MA's), (27, 55179), (36, 55095), (44, 55044), (45, 55041), (48, 55020),

Gene: Deenasa\_94 Start: 65761, Stop: 65480, Start Num: 21

Candidate Starts for Deenasa\_94:

(5, 65974), (Start: 11 @65803 has 7 MA's), (13, 65788), (Start: 16 @65782 has 19 MA's), (Start: 19 @65767 has 1 MA's), (Start: 21 @65761 has 5 MA's), (Start: 24 @65752 has 1 MA's), (28, 65731), (31, 65695), (34, 65674), (38, 65635), (43, 65605), (57, 65512), (60, 65494),

Gene: DigitDog\_61 Start: 55800, Stop: 55516, Start Num: 17

Candidate Starts for DigitDog\_61:

(Start: 17 @55800 has 7 MA's), (36, 55689), (56, 55551), (58, 55536),

Gene: Donny\_62 Start: 55912, Stop: 55616, Start Num: 17

Candidate Starts for Donny\_62:

(Start: 17 @55912 has 7 MA's), (43, 55744), (51, 55702), (56, 55651),

Gene: EastView9101\_60 Start: 55721, Stop: 55425, Start Num: 17

Candidate Starts for EastView9101\_60:

(Start: 17 @55721 has 7 MA's), (43, 55553), (51, 55511), (56, 55460),

Gene: Epah\_56 Start: 55055, Stop: 54747, Start Num: 16

Candidate Starts for Epah\_56:

(6, 55187), (8, 55169), (Start: 16 @55055 has 19 MA's), (Start: 20 @55040 has 2 MA's), (36, 54920), (44, 54869), (53, 54815), (56, 54782),

Gene: Familton\_99 Start: 61510, Stop: 61190, Start Num: 11

Candidate Starts for Familton\_99:

(Start: 11 @61510 has 7 MA's), (Start: 16 @61489 has 19 MA's), (Start: 19 @61474 has 1 MA's), (Start: 20 @61471 has 2 MA's), (27, 61453), (37, 61366), (39, 61351), (40, 61345), (50, 61285), (52, 61267), (62, 61201),

Gene: Fanaw\_56 Start: 55956, Stop: 55645, Start Num: 16

Candidate Starts for Fanaw\_56:

(6, 56088), (8, 56070), (Start: 16 @55956 has 19 MA's), (36, 55818), (44, 55767), (56, 55680),

Gene: ForDig\_59 Start: 54668, Stop: 54345, Start Num: 17

Candidate Starts for ForDig\_59:

(Start: 17 @54668 has 7 MA's), (22, 54653), (31, 54587), (53, 54437), (54, 54434), (56, 54404), (59, 54380),

Gene: Fortunato\_58 Start: 56096, Stop: 55785, Start Num: 16

Candidate Starts for Fortunato\_58:

(6, 56228), (8, 56210), (Start: 16 @56096 has 19 MA's), (36, 55958), (44, 55907), (56, 55820),

Gene: Frederick\_58 Start: 55987, Stop: 55679, Start Num: 16

Candidate Starts for Frederick\_58:

(6, 56119), (8, 56101), (Start: 16 @55987 has 19 MA's), (Start: 20 @55972 has 2 MA's), (36, 55852), (56, 55714),

Gene: GinPorsche\_56 Start: 55055, Stop: 54747, Start Num: 16

Candidate Starts for GinPorsche\_56:

(6, 55187), (8, 55169), (Start: 16 @55055 has 19 MA's), (Start: 20 @55040 has 2 MA's), (36, 54920), (44, 54869), (53, 54815), (56, 54782),

Gene: Hally898\_56 Start: 55070, Stop: 54762, Start Num: 16

Candidate Starts for Hally898\_56:

(6, 55202), (8, 55184), (Start: 16 @55070 has 19 MA's), (Start: 20 @55055 has 2 MA's), (36, 54935), (44, 54884), (53, 54830), (56, 54797),

Gene: Hangman\_57 Start: 56144, Stop: 55836, Start Num: 16

Candidate Starts for Hangman\_57:

(6, 56276), (8, 56258), (Start: 16 @56144 has 19 MA's), (Start: 20 @56129 has 2 MA's), (36, 56009), (56, 55871),

Gene: Hashim76\_65 Start: 56241, Stop: 55963, Start Num: 23

Candidate Starts for Hashim76\_65:

(3, 56568), (Start: 23 @56241 has 1 MA's), (46, 56073), (53, 56031), (56, 55998),

Gene: Heath\_56 Start: 55770, Stop: 55462, Start Num: 16

Candidate Starts for Heath\_56:

(6, 55902), (8, 55884), (Start: 16 @55770 has 19 MA's), (36, 55635), (56, 55497),

Gene: Hydro\_57 Start: 56121, Stop: 55813, Start Num: 16

Candidate Starts for Hydro\_57:

(6, 56253), (8, 56235), (Start: 16 @56121 has 19 MA's), (36, 55986), (56, 55848),

Gene: Idergollasper\_100 Start: 62058, Stop: 61738, Start Num: 11

Candidate Starts for Idergollasper\_100:

(Start: 11 @62058 has 7 MA's), (Start: 16 @62037 has 19 MA's), (Start: 19 @62022 has 1 MA's), (Start: 20 @62019 has 2 MA's), (27, 62001), (37, 61914), (39, 61899), (40, 61893), (50, 61833), (52, 61815), (62, 61749),

Gene: Imvubu\_56 Start: 53913, Stop: 53602, Start Num: 18

Candidate Starts for Imvubu\_56:

(4, 54114), (Start: 18 @53913 has 1 MA's), (26, 53883), (28, 53877), (42, 53757), (53, 53691), (56, 53658),

Gene: Indlovu\_60 Start: 56251, Stop: 55940, Start Num: 16

Candidate Starts for Indlovu\_60:

(Start: 16 @56251 has 19 MA's), (Start: 19 @56239 has 1 MA's), (26, 56212), (30, 56182), (32, 56167), (47, 56059), (49, 56044), (53, 56020), (56, 55987), (61, 55960),

Gene: JAMaL\_57 Start: 56162, Stop: 55854, Start Num: 16

Candidate Starts for JAMaL\_57:

(6, 56294), (8, 56276), (Start: 16 @56162 has 19 MA's), (Start: 20 @56147 has 2 MA's), (36, 56027), (44, 55976), (53, 55922), (56, 55889),

Gene: JaguarMi\_59 Start: 57188, Stop: 56880, Start Num: 16

Candidate Starts for JaguarMi\_59:

(6, 57320), (8, 57302), (Start: 16 @57188 has 19 MA's), (Start: 20 @57173 has 2 MA's), (36, 57053), (44, 57002),

Gene: KarasumaRum\_61 Start: 55996, Stop: 55694, Start Num: 17

Candidate Starts for KarasumaRum\_61:



(Start: 17 @55996 has 7 MA's), (36, 55867), (43, 55822), (56, 55729), (58, 55714),

Gene: KingPhillip3\_96 Start: 61719, Stop: 61438, Start Num: 20

Candidate Starts for KingPhillip3\_96:

(Start: 11 @61758 has 7 MA's), (Start: 16 @61737 has 19 MA's), (Start: 19 @61722 has 1 MA's), (Start: 20 @61719 has 2 MA's), (27, 61701), (37, 61614), (39, 61599), (40, 61593), (50, 61533), (52, 61515), (62, 61449),

Gene: Krili\_100 Start: 61607, Stop: 61287, Start Num: 11

Candidate Starts for Krili\_100:

(Start: 11 @61607 has 7 MA's), (Start: 16 @61586 has 19 MA's), (Start: 19 @61571 has 1 MA's), (Start: 20 @61568 has 2 MA's), (27, 61550), (37, 61463), (39, 61448), (40, 61442), (50, 61382), (52, 61364), (62, 61298),

Gene: Lambano\_56 Start: 55070, Stop: 54762, Start Num: 16

Candidate Starts for Lambano\_56:

(6, 55202), (8, 55184), (Start: 16 @55070 has 19 MA's), (Start: 20 @55055 has 2 MA's), (36, 54935), (44, 54884), (53, 54830), (56, 54797),

Gene: LilMcDreamy\_58 Start: 55359, Stop: 55033, Start Num: 15

Candidate Starts for LilMcDreamy\_58:

(7, 55488), (14, 55362), (Start: 15 @55359 has 1 MA's), (29, 55311), (32, 55275), (36, 55233), (38, 55218), (41, 55200),

Gene: Lolalove\_58 Start: 56101, Stop: 55793, Start Num: 16

Candidate Starts for Lolalove\_58:

(6, 56233), (8, 56215), (Start: 16 @56101 has 19 MA's), (Start: 20 @56086 has 2 MA's), (36, 55966), (43, 55921), (56, 55828),

Gene: Magpie\_56 Start: 56026, Stop: 55718, Start Num: 16

Candidate Starts for Magpie\_56:

(6, 56158), (8, 56140), (9, 56131), (Start: 16 @56026 has 19 MA's), (Start: 20 @56011 has 2 MA's), (36, 55891), (43, 55846), (56, 55753),

Gene: Marlia\_93 Start: 64604, Stop: 64323, Start Num: 19

Candidate Starts for Marlia\_93:

(Start: 11 @64640 has 7 MA's), (Start: 16 @64619 has 19 MA's), (Start: 19 @64604 has 1 MA's), (Start: 20 @64601 has 2 MA's), (27, 64583), (31, 64544), (35, 64514), (44, 64448), (52, 64397), (62, 64331),

Gene: Morty007\_91 Start: 65294, Stop: 65022, Start Num: 24

Candidate Starts for Morty007\_91:

(5, 65516), (Start: 11 @65345 has 7 MA's), (13, 65330), (Start: 16 @65324 has 19 MA's), (Start: 19 @65309 has 1 MA's), (Start: 21 @65303 has 5 MA's), (Start: 24 @65294 has 1 MA's), (28, 65273), (31, 65237), (34, 65216), (38, 65177), (43, 65147), (57, 65054), (60, 65036),

Gene: Mudslide\_57 Start: 56366, Stop: 56058, Start Num: 16

Candidate Starts for Mudslide\_57:

(6, 56498), (8, 56480), (Start: 16 @56366 has 19 MA's), (36, 56231), (56, 56093),

Gene: Mysterious\_61 Start: 55986, Stop: 55690, Start Num: 17

Candidate Starts for Mysterious\_61:

(Start: 17 @55986 has 7 MA's), (33, 55899), (43, 55818), (51, 55776),

Gene: Nanao\_56 Start: 55060, Stop: 54752, Start Num: 16

Candidate Starts for Nanao\_56:

(6, 55192), (8, 55174), (Start: 16 @55060 has 19 MA's), (Start: 20 @55045 has 2 MA's), (36, 54925), (44, 54874), (53, 54820), (56, 54787),

Gene: Nehemiah\_60 Start: 55986, Stop: 55690, Start Num: 17

Candidate Starts for Nehemiah\_60:

(Start: 17 @55986 has 7 MA's), (33, 55899), (43, 55818),

Gene: Neos5\_92 Start: 64759, Stop: 64478, Start Num: 21

Candidate Starts for Neos5\_92:

(5, 64972), (Start: 11 @64801 has 7 MA's), (13, 64786), (Start: 16 @64780 has 19 MA's), (Start: 19 @64765 has 1 MA's), (Start: 21 @64759 has 5 MA's), (Start: 24 @64750 has 1 MA's), (28, 64729), (31, 64693), (34, 64672), (38, 64633), (43, 64603), (57, 64510), (60, 64492),

Gene: Phelemich\_59 Start: 55981, Stop: 55685, Start Num: 17

Candidate Starts for Phelemich\_59:

(Start: 17 @55981 has 7 MA's), (33, 55894), (43, 55813),

Gene: Poster\_56 Start: 55061, Stop: 54753, Start Num: 16

Candidate Starts for Poster\_56:

(6, 55193), (8, 55175), (Start: 16 @55061 has 19 MA's), (Start: 20 @55046 has 2 MA's), (36, 54926), (44, 54875), (53, 54821), (56, 54788),

Gene: Prince\_57 Start: 56279, Stop: 55971, Start Num: 16

Candidate Starts for Prince\_57:

(6, 56411), (8, 56393), (Start: 16 @56279 has 19 MA's), (36, 56144), (56, 56006),

Gene: QueenPie\_55 Start: 55794, Stop: 55486, Start Num: 16

Candidate Starts for QueenPie\_55:

(6, 55926), (8, 55908), (Start: 16 @55794 has 19 MA's), (36, 55659), (44, 55608), (56, 55521),

Gene: RagingRooster\_93 Start: 64543, Stop: 64262, Start Num: 21

Candidate Starts for RagingRooster\_93:

(5, 64756), (Start: 11 @64585 has 7 MA's), (13, 64570), (Start: 16 @64564 has 19 MA's), (Start: 19 @64549 has 1 MA's), (Start: 21 @64543 has 5 MA's), (Start: 24 @64534 has 1 MA's), (28, 64513), (31, 64477), (34, 64456), (38, 64417), (43, 64387), (57, 64294), (60, 64276),

Gene: RawrgerThat\_58 Start: 56119, Stop: 55811, Start Num: 16

Candidate Starts for RawrgerThat\_58:

(6, 56251), (8, 56233), (Start: 16 @56119 has 19 MA's), (36, 55984), (44, 55933), (56, 55846),

Gene: Reprobate\_60 Start: 55986, Stop: 55690, Start Num: 17

Candidate Starts for Reprobate\_60:

(Start: 17 @55986 has 7 MA's), (33, 55899), (43, 55818),

Gene: Rita130\_60 Start: 55808, Stop: 55512, Start Num: 17

Candidate Starts for Rita130\_60:

(Start: 17 @55808 has 7 MA's), (43, 55640), (51, 55598), (56, 55547),

Gene: Ryadel\_101 Start: 62070, Stop: 61789, Start Num: 20

Candidate Starts for Ryadel\_101:

(Start: 11 @62109 has 7 MA's), (Start: 16 @62088 has 19 MA's), (Start: 19 @62073 has 1 MA's), (Start: 20 @62070 has 2 MA's), (27, 62052), (37, 61965), (39, 61950), (40, 61944), (50, 61884), (52, 61866), (62, 61800),

Gene: SchoolBus\_97 Start: 61227, Stop: 60907, Start Num: 11

Candidate Starts for SchoolBus\_97:

(Start: 11 @61227 has 7 MA's), (Start: 16 @61206 has 19 MA's), (Start: 19 @61191 has 1 MA's), (Start: 20 @61188 has 2 MA's), (27, 61170), (37, 61083), (39, 61068), (40, 61062), (50, 61002), (52, 60984), (62, 60918),

Gene: Shenandoah\_93 Start: 64463, Stop: 64182, Start Num: 21

Candidate Starts for Shenandoah\_93:

(5, 64676), (Start: 11 @64505 has 7 MA's), (13, 64490), (Start: 16 @64484 has 19 MA's), (Start: 19 @64469 has 1 MA's), (Start: 21 @64463 has 5 MA's), (Start: 24 @64454 has 1 MA's), (28, 64433), (31, 64397), (34, 64376), (38, 64337), (43, 64307), (57, 64214), (60, 64196),

Gene: Shida\_100 Start: 61728, Stop: 61408, Start Num: 11

Candidate Starts for Shida\_100:

(Start: 11 @61728 has 7 MA's), (Start: 16 @61707 has 19 MA's), (Start: 19 @61692 has 1 MA's), (Start: 20 @61689 has 2 MA's), (27, 61671), (37, 61584), (39, 61569), (40, 61563), (50, 61503), (52, 61485), (62, 61419),

Gene: SirJeffery\_60 Start: 55943, Stop: 55647, Start Num: 17

Candidate Starts for SirJeffery\_60:

(Start: 17 @55943 has 7 MA's), (43, 55775), (51, 55733), (56, 55682),

Gene: Stinger\_58 Start: 54992, Stop: 54681, Start Num: 12

Candidate Starts for Stinger\_58:

(6, 55112), (9, 55085), (Start: 12 @54992 has 2 MA's), (Start: 20 @54974 has 2 MA's), (36, 54854), (44, 54803), (48, 54779), (55, 54743),

Gene: StinkyVeggy\_61 Start: 55996, Stop: 55694, Start Num: 17

Candidate Starts for StinkyVeggy\_61:

(Start: 17 @55996 has 7 MA's), (36, 55867), (43, 55822), (56, 55729), (58, 55714),

Gene: Suigeneris\_62 Start: 56064, Stop: 55768, Start Num: 17

Candidate Starts for Suigeneris\_62:

(Start: 17 @56064 has 7 MA's), (43, 55896), (51, 55854), (56, 55803),

Gene: SynergyX\_94 Start: 64853, Stop: 64572, Start Num: 21

Candidate Starts for SynergyX\_94:

(5, 65066), (Start: 11 @64895 has 7 MA's), (13, 64880), (Start: 16 @64874 has 19 MA's), (Start: 19 @64859 has 1 MA's), (Start: 21 @64853 has 5 MA's), (Start: 24 @64844 has 1 MA's), (28, 64823), (31, 64787), (34, 64766), (38, 64727), (43, 64697), (57, 64604), (60, 64586),

Gene: TelAviv\_95 Start: 61453, Stop: 61133, Start Num: 11

Candidate Starts for TelAviv\_95:

(Start: 11 @61453 has 7 MA's), (Start: 16 @61432 has 19 MA's), (Start: 19 @61417 has 1 MA's), (Start: 20 @61414 has 2 MA's), (27, 61396), (37, 61309), (39, 61294), (40, 61288), (50, 61228), (52, 61210), (62, 61144),

Gene: VioletZ\_59 Start: 56192, Stop: 55884, Start Num: 16

Candidate Starts for VioletZ\_59:

(6, 56324), (8, 56306), (Start: 16 @56192 has 19 MA's), (Start: 20 @56177 has 2 MA's), (36, 56057), (43, 56012), (56, 55919),

Gene: Waleliano\_57 Start: 56133, Stop: 55825, Start Num: 16

Candidate Starts for Waleliano\_57:

(6, 56265), (8, 56247), (Start: 16 @56133 has 19 MA's), (Start: 20 @56118 has 2 MA's), (36, 55998), (56, 55860),

Gene: Zebo\_96 Start: 61191, Stop: 60907, Start Num: 19

Candidate Starts for Zebo\_96:

(Start: 11 @61227 has 7 MA's), (Start: 16 @61206 has 19 MA's), (Start: 19 @61191 has 1 MA's), (Start: 20 @61188 has 2 MA's), (27, 61170), (37, 61083), (39, 61068), (40, 61062), (50, 61002), (52, 60984), (62, 60918),

Gene: Zemanar\_58 Start: 55965, Stop: 55657, Start Num: 16

Candidate Starts for Zemanar\_58:

(6, 56097), (8, 56079), (Start: 16 @55965 has 19 MA's), (Start: 20 @55950 has 2 MA's), (36, 55830), (56, 55692),

Gene: Zenteno07\_66 Start: 55753, Stop: 55427, Start Num: 17

Candidate Starts for Zenteno07\_66:

(10, 55840), (Start: 17 @55753 has 7 MA's), (25, 55729), (53, 55522), (56, 55489),