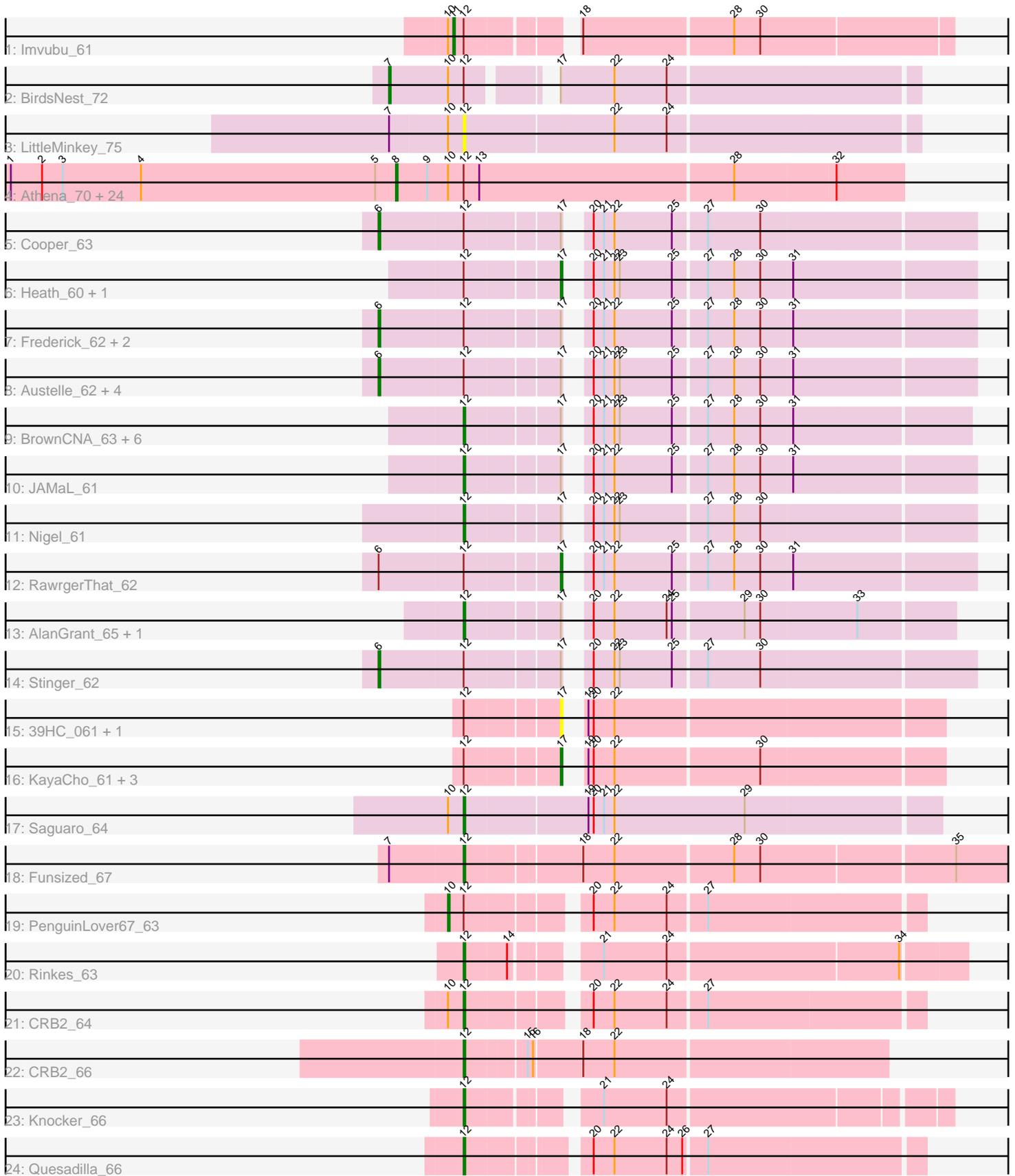


Pham 283790



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 283790 Report

This analysis was run 02/23/26 on database version 636.

Pham number 283790 has 66 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Imvubu\_61
- Track 2 : BirdsNest\_72
- Track 3 : LittleMinkey\_75
- Track 4 : Athena\_70, Nozo\_68, Heathcliff\_68, SynergyX\_68, GlenHope\_69, Yinz\_68, ChaChing\_68, Audrey\_68, Gadget\_69, Corofin\_68, Chalmers\_67, OrangeOswald\_68, RomaT\_68, Deenasa\_68, Abinghost\_68, Philly\_67, Devonte\_67, Glubnar\_69, Casbah\_68, TinyTerror\_69, Jackstina\_64, Rita1961\_69, RagingRooster\_67, Phlyer\_68, Halfpint\_67
- Track 5 : Cooper\_63
- Track 6 : Heath\_60, Zemanar\_62
- Track 7 : Frederick\_62, BobbyK\_62, ChrisnMich\_61
- Track 8 : Austelle\_62, Mudslide\_61, Hydro\_61, Prince\_61, Apex\_62
- Track 9 : BrownCNA\_63, VioletZ\_63, Lolalove\_62, Fortunato\_62, Waleliano\_61, Mithril\_61, Hangman\_61
- Track 10 : JAMaL\_61
- Track 11 : Nigel\_61
- Track 12 : RawrgerThat\_62
- Track 13 : AlanGrant\_65, Vincenzo\_64
- Track 14 : Stinger\_62
- Track 15 : 39HC\_061, 40BC\_061
- Track 16 : KayaCho\_61, ForDig\_62, Hosp\_059, Jolie1\_061
- Track 17 : Saguario\_64
- Track 18 : Funsized\_67
- Track 19 : PenguinLover67\_63
- Track 20 : Rinkes\_63
- Track 21 : CRB2\_64
- Track 22 : CRB2\_66
- Track 23 : Knocker\_66
- Track 24 : Quesadilla\_66

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

The start number called the most often in the published annotations is 8, it was called in 25 of the 61 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Abinghost\_68, Athena\_70, Audrey\_68, Casbah\_68, ChaChing\_68, Chalmers\_67, Corofin\_68, Deenasa\_68, Devonte\_67, Gadget\_69, GlenHope\_69, Glubnar\_69, Halfpint\_67, Heathcliff\_68, Jackstina\_64, Nozo\_68, OrangeOswald\_68, Philly\_67, Phlyer\_68, RagingRooster\_67, Rita1961\_69, RomaT\_68, SynergyX\_68, TinyTerror\_69, Yinz\_68,

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

- 

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

- 39HC\_061, 40BC\_061, AlanGrant\_65, Apex\_62, Austelle\_62, BirdsNest\_72, BobbyK\_62, BrownCNA\_63, CRB2\_64, CRB2\_66, ChrisnMich\_61, Cooper\_63, ForDig\_62, Fortunato\_62, Frederick\_62, Funsized\_67, Hangman\_61, Heath\_60, Hosp\_059, Hydro\_61, Imvubu\_61, JAMaL\_61, Jolie1\_061, KayaCho\_61, Knocker\_66, LittleMinkey\_75, Lolalove\_62, Mithril\_61, Mudslide\_61, Nigel\_61, PenguinLover67\_63, Prince\_61, Quesadilla\_66, RawrgerThat\_62, Rinkes\_63, Saguaro\_64, Stinger\_62, Vincenzo\_64, VioletZ\_63, Waleliano\_61, Zemanar\_62,

### Summary by start number:

Start 6:

- Found in 11 of 66 ( 16.7% ) of genes in pham
- Manual Annotations of this start: 10 of 61
- Called 90.9% of time when present
- Phage (with cluster) where this start called: Apex\_62 (B4), Austelle\_62 (B4), BobbyK\_62 (B4), ChrisnMich\_61 (B4), Cooper\_63 (B4), Frederick\_62 (B4), Hydro\_61 (B4), Mudslide\_61 (B4), Prince\_61 (B4), Stinger\_62 (B4),

Start 7:

- Found in 3 of 66 ( 4.5% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 33.3% of time when present
- Phage (with cluster) where this start called: BirdsNest\_72 (B13),

Start 8:

- Found in 25 of 66 ( 37.9% ) of genes in pham
- Manual Annotations of this start: 25 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Abinghost\_68 (B3), Athena\_70 (B3), Audrey\_68 (B3), Casbah\_68 (B3), ChaChing\_68 (B3), Chalmers\_67 (B3), Corofin\_68 (B3), Deenasa\_68 (B3), Devonte\_67 (B3), Gadget\_69 (B3), GlenHope\_69 (B3), Glubnar\_69 (B3), Halfpint\_67 (B3), Heathcliff\_68 (B3), Jackstina\_64 (B3), Nozo\_68 (B3), OrangeOswald\_68 (B3), Philly\_67 (B3), Phlyer\_68 (B3), RagingRooster\_67 (B3), Rita1961\_69 (B3), RomaT\_68 (B3), SynergyX\_68 (B3), TinyTerror\_69 (B3), Yinz\_68 (B3),

Start 10:

- Found in 31 of 66 ( 47.0% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 3.2% of time when present
- Phage (with cluster) where this start called: PenguinLover67\_63 (B9),

Start 11:

- Found in 1 of 66 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 61
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Imvubu\_61 (B10),

Start 12:

- Found in 66 of 66 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 18 of 61
- Called 28.8% of time when present
- Phage (with cluster) where this start called: AlanGrant\_65 (B4), BrownCNA\_63 (B4), CRB2\_64 (B9), CRB2\_66 (B9), Fortunato\_62 (B4), Funsized\_67 (B9), Hangman\_61 (B4), JAMaL\_61 (B4), Knocker\_66 (B9), LittleMinkey\_75 (B13), Lolalove\_62 (B4), Mithril\_61 (B4), Nigel\_61 (B4), Quesadilla\_66 (B9), Rinkes\_63 (B9), Saguaro\_64 (B7), Vincenzo\_64 (B4), VioletZ\_63 (B4), Waleliano\_61 (B4),

Start 17:

- Found in 31 of 66 ( 47.0% ) of genes in pham
- Manual Annotations of this start: 5 of 61
- Called 29.0% of time when present
- Phage (with cluster) where this start called: 39HC\_061 (B6), 40BC\_061 (B6), ForDig\_62 (B6), Heath\_60 (B4), Hosp\_059 (B6), Jolie1\_061 (B6), KayaCho\_61 (B6), RawrgerThat\_62 (B4), Zemanar\_62 (B4),

**Summary by clusters:**

There are 7 clusters represented in this pham: B4, B6, B7, B13, B10, B3, B9,

Info for manual annotations of cluster B10:

- Start number 11 was manually annotated 1 time for cluster B10.

Info for manual annotations of cluster B13:

- Start number 7 was manually annotated 1 time for cluster B13.

Info for manual annotations of cluster B3:

- Start number 8 was manually annotated 25 times for cluster B3.

Info for manual annotations of cluster B4:

- Start number 6 was manually annotated 10 times for cluster B4.
- Start number 12 was manually annotated 11 times for cluster B4.
- Start number 17 was manually annotated 3 times for cluster B4.

Info for manual annotations of cluster B6:

- Start number 17 was manually annotated 2 times for cluster B6.

Info for manual annotations of cluster B7:

- Start number 12 was manually annotated 1 time for cluster B7.

Info for manual annotations of cluster B9:

- Start number 10 was manually annotated 1 time for cluster B9.
- Start number 12 was manually annotated 6 times for cluster B9.

**Gene Information:**

Gene: 39HC\_061 Start: 56330, Stop: 56530, Start Num: 17

Candidate Starts for 39HC\_061:

(Start: 12 @56279 has 18 MA's), (Start: 17 @56330 has 5 MA's), (19, 56333), (20, 56336), (22, 56348),

Gene: 40BC\_061 Start: 56330, Stop: 56530, Start Num: 17

Candidate Starts for 40BC\_061:

(Start: 12 @56279 has 18 MA's), (Start: 17 @56330 has 5 MA's), (19, 56333), (20, 56336), (22, 56348),

Gene: Abinghost\_68 Start: 57207, Stop: 57494, Start Num: 8

Candidate Starts for Abinghost\_68:

(1, 56985), (2, 57003), (3, 57015), (4, 57060), (5, 57195), (Start: 8 @57207 has 25 MA's), (9, 57225), (Start: 10 @57237 has 1 MA's), (Start: 12 @57246 has 18 MA's), (13, 57255), (28, 57399), (32, 57456),

Gene: AlanGrant\_65 Start: 59138, Stop: 59395, Start Num: 12

Candidate Starts for AlanGrant\_65:

(Start: 12 @59138 has 18 MA's), (Start: 17 @59189 has 5 MA's), (20, 59195), (22, 59207), (24, 59237), (25, 59240), (29, 59279), (30, 59288), (33, 59342),

Gene: Apex\_62 Start: 58091, Stop: 58408, Start Num: 6

Candidate Starts for Apex\_62:

(Start: 6 @58091 has 10 MA's), (Start: 12 @58139 has 18 MA's), (Start: 17 @58190 has 5 MA's), (20, 58196), (21, 58202), (22, 58208), (23, 58211), (25, 58241), (27, 58259), (28, 58274), (30, 58289), (31, 58307),

Gene: Athena\_70 Start: 57982, Stop: 58269, Start Num: 8

Candidate Starts for Athena\_70:

(1, 57760), (2, 57778), (3, 57790), (4, 57835), (5, 57970), (Start: 8 @57982 has 25 MA's), (9, 58000), (Start: 10 @58012 has 1 MA's), (Start: 12 @58021 has 18 MA's), (13, 58030), (28, 58174), (32, 58231),

Gene: Audrey\_68 Start: 57246, Stop: 57533, Start Num: 8

Candidate Starts for Audrey\_68:

(1, 57024), (2, 57042), (3, 57054), (4, 57099), (5, 57234), (Start: 8 @57246 has 25 MA's), (9, 57264), (Start: 10 @57276 has 1 MA's), (Start: 12 @57285 has 18 MA's), (13, 57294), (28, 57438), (32, 57495),

Gene: Austelle\_62 Start: 58545, Stop: 58862, Start Num: 6

Candidate Starts for Austelle\_62:

(Start: 6 @58545 has 10 MA's), (Start: 12 @58593 has 18 MA's), (Start: 17 @58644 has 5 MA's), (20, 58650), (21, 58656), (22, 58662), (23, 58665), (25, 58695), (27, 58713), (28, 58728), (30, 58743), (31, 58761),

Gene: BirdsNest\_72 Start: 58539, Stop: 58814, Start Num: 7

Candidate Starts for BirdsNest\_72:

(Start: 7 @58539 has 1 MA's), (Start: 10 @58572 has 1 MA's), (Start: 12 @58581 has 18 MA's), (Start: 17 @58617 has 5 MA's), (22, 58647), (24, 58677),

Gene: BobbyK\_62 Start: 57853, Stop: 58170, Start Num: 6

Candidate Starts for BobbyK\_62:

(Start: 6 @57853 has 10 MA's), (Start: 12 @57901 has 18 MA's), (Start: 17 @57952 has 5 MA's), (20, 57958), (21, 57964), (22, 57970), (25, 58003), (27, 58021), (28, 58036), (30, 58051), (31, 58069),

Gene: BrownCNA\_63 Start: 58302, Stop: 58568, Start Num: 12

Candidate Starts for BrownCNA\_63:

(Start: 12 @58302 has 18 MA's), (Start: 17 @58353 has 5 MA's), (20, 58359), (21, 58365), (22, 58371), (23, 58374), (25, 58404), (27, 58422), (28, 58437), (30, 58452), (31, 58470),

Gene: CRB2\_64 Start: 58911, Stop: 59153, Start Num: 12

Candidate Starts for CRB2\_64:

(Start: 10 @58902 has 1 MA's), (Start: 12 @58911 has 18 MA's), (20, 58971), (22, 58983), (24, 59013), (27, 59034),

Gene: CRB2\_66 Start: 60189, Stop: 60422, Start Num: 12

Candidate Starts for CRB2\_66:

(Start: 12 @60189 has 18 MA's), (15, 60222), (16, 60225), (18, 60252), (22, 60270),

Gene: Casbah\_68 Start: 57566, Stop: 57853, Start Num: 8

Candidate Starts for Casbah\_68:

(1, 57344), (2, 57362), (3, 57374), (4, 57419), (5, 57554), (Start: 8 @57566 has 25 MA's), (9, 57584), (Start: 10 @57596 has 1 MA's), (Start: 12 @57605 has 18 MA's), (13, 57614), (28, 57758), (32, 57815),

Gene: ChaChing\_68 Start: 57264, Stop: 57551, Start Num: 8

Candidate Starts for ChaChing\_68:

(1, 57042), (2, 57060), (3, 57072), (4, 57117), (5, 57252), (Start: 8 @57264 has 25 MA's), (9, 57282), (Start: 10 @57294 has 1 MA's), (Start: 12 @57303 has 18 MA's), (13, 57312), (28, 57456), (32, 57513),

Gene: Chalmers\_67 Start: 57697, Stop: 57984, Start Num: 8

Candidate Starts for Chalmers\_67:

(1, 57475), (2, 57493), (3, 57505), (4, 57550), (5, 57685), (Start: 8 @57697 has 25 MA's), (9, 57715), (Start: 10 @57727 has 1 MA's), (Start: 12 @57736 has 18 MA's), (13, 57745), (28, 57889), (32, 57946),

Gene: ChrisnMich\_61 Start: 56895, Stop: 57212, Start Num: 6

Candidate Starts for ChrisnMich\_61:

(Start: 6 @56895 has 10 MA's), (Start: 12 @56943 has 18 MA's), (Start: 17 @56994 has 5 MA's), (20, 57000), (21, 57006), (22, 57012), (25, 57045), (27, 57063), (28, 57078), (30, 57093), (31, 57111),

Gene: Cooper\_63 Start: 57347, Stop: 57664, Start Num: 6

Candidate Starts for Cooper\_63:

(Start: 6 @57347 has 10 MA's), (Start: 12 @57395 has 18 MA's), (Start: 17 @57446 has 5 MA's), (20, 57452), (21, 57458), (22, 57464), (25, 57497), (27, 57515), (30, 57545),

Gene: Corofin\_68 Start: 57277, Stop: 57564, Start Num: 8

Candidate Starts for Corofin\_68:

(1, 57055), (2, 57073), (3, 57085), (4, 57130), (5, 57265), (Start: 8 @57277 has 25 MA's), (9, 57295), (Start: 10 @57307 has 1 MA's), (Start: 12 @57316 has 18 MA's), (13, 57325), (28, 57469), (32, 57526),

Gene: Deenasa\_68 Start: 58113, Stop: 58400, Start Num: 8

Candidate Starts for Deenasa\_68:

(1, 57891), (2, 57909), (3, 57921), (4, 57966), (5, 58101), (Start: 8 @58113 has 25 MA's), (9, 58131), (Start: 10 @58143 has 1 MA's), (Start: 12 @58152 has 18 MA's), (13, 58161), (28, 58305), (32, 58362),

Gene: Devonte\_67 Start: 56889, Stop: 57176, Start Num: 8

Candidate Starts for Devonte\_67:

(1, 56667), (2, 56685), (3, 56697), (4, 56742), (5, 56877), (Start: 8 @56889 has 25 MA's), (9, 56907), (Start: 10 @56919 has 1 MA's), (Start: 12 @56928 has 18 MA's), (13, 56937), (28, 57081), (32, 57138),

Gene: ForDig\_62 Start: 56642, Stop: 56842, Start Num: 17

Candidate Starts for ForDig\_62:

(Start: 12 @56591 has 18 MA's), (Start: 17 @56642 has 5 MA's), (19, 56645), (20, 56648), (22, 56660), (30, 56741),

Gene: Fortunato\_62 Start: 58000, Stop: 58269, Start Num: 12

Candidate Starts for Fortunato\_62:

(Start: 12 @58000 has 18 MA's), (Start: 17 @58051 has 5 MA's), (20, 58057), (21, 58063), (22, 58069), (23, 58072), (25, 58102), (27, 58120), (28, 58135), (30, 58150), (31, 58168),

Gene: Frederick\_62 Start: 57795, Stop: 58112, Start Num: 6

Candidate Starts for Frederick\_62:

(Start: 6 @57795 has 10 MA's), (Start: 12 @57843 has 18 MA's), (Start: 17 @57894 has 5 MA's), (20, 57900), (21, 57906), (22, 57912), (25, 57945), (27, 57963), (28, 57978), (30, 57993), (31, 58011),

Gene: Funsized\_67 Start: 60141, Stop: 60473, Start Num: 12

Candidate Starts for Funsized\_67:

(Start: 7 @60099 has 1 MA's), (Start: 12 @60141 has 18 MA's), (18, 60204), (22, 60222), (28, 60288), (30, 60303), (35, 60411),

Gene: Gadget\_69 Start: 57577, Stop: 57864, Start Num: 8

Candidate Starts for Gadget\_69:

(1, 57355), (2, 57373), (3, 57385), (4, 57430), (5, 57565), (Start: 8 @57577 has 25 MA's), (9, 57595), (Start: 10 @57607 has 1 MA's), (Start: 12 @57616 has 18 MA's), (13, 57625), (28, 57769), (32, 57826),

Gene: GlenHope\_69 Start: 57237, Stop: 57524, Start Num: 8

Candidate Starts for GlenHope\_69:

(1, 57015), (2, 57033), (3, 57045), (4, 57090), (5, 57225), (Start: 8 @57237 has 25 MA's), (9, 57255), (Start: 10 @57267 has 1 MA's), (Start: 12 @57276 has 18 MA's), (13, 57285), (28, 57429), (32, 57486),

Gene: Glubnar\_69 Start: 57143, Stop: 57430, Start Num: 8

Candidate Starts for Glubnar\_69:

(1, 56921), (2, 56939), (3, 56951), (4, 56996), (5, 57131), (Start: 8 @57143 has 25 MA's), (9, 57161), (Start: 10 @57173 has 1 MA's), (Start: 12 @57182 has 18 MA's), (13, 57191), (28, 57335), (32, 57392),

Gene: Halfpint\_67 Start: 56988, Stop: 57275, Start Num: 8

Candidate Starts for Halfpint\_67:

(1, 56766), (2, 56784), (3, 56796), (4, 56841), (5, 56976), (Start: 8 @56988 has 25 MA's), (9, 57006), (Start: 10 @57018 has 1 MA's), (Start: 12 @57027 has 18 MA's), (13, 57036), (28, 57180), (32,

57237),

Gene: Hangman\_61 Start: 58042, Stop: 58311, Start Num: 12

Candidate Starts for Hangman\_61:

(Start: 12 @58042 has 18 MA's), (Start: 17 @58093 has 5 MA's), (20, 58099), (21, 58105), (22, 58111), (23, 58114), (25, 58144), (27, 58162), (28, 58177), (30, 58192), (31, 58210),

Gene: Heath\_60 Start: 57720, Stop: 57938, Start Num: 17

Candidate Starts for Heath\_60:

(Start: 12 @57669 has 18 MA's), (Start: 17 @57720 has 5 MA's), (20, 57726), (21, 57732), (22, 57738), (23, 57741), (25, 57771), (27, 57789), (28, 57804), (30, 57819), (31, 57837),

Gene: Heathcliff\_68 Start: 57204, Stop: 57491, Start Num: 8

Candidate Starts for Heathcliff\_68:

(1, 56982), (2, 57000), (3, 57012), (4, 57057), (5, 57192), (Start: 8 @57204 has 25 MA's), (9, 57222), (Start: 10 @57234 has 1 MA's), (Start: 12 @57243 has 18 MA's), (13, 57252), (28, 57396), (32, 57453),

Gene: Hosp\_059 Start: 54555, Stop: 54755, Start Num: 17

Candidate Starts for Hosp\_059:

(Start: 12 @54504 has 18 MA's), (Start: 17 @54555 has 5 MA's), (19, 54558), (20, 54561), (22, 54573), (30, 54654),

Gene: Hydro\_61 Start: 57932, Stop: 58249, Start Num: 6

Candidate Starts for Hydro\_61:

(Start: 6 @57932 has 10 MA's), (Start: 12 @57980 has 18 MA's), (Start: 17 @58031 has 5 MA's), (20, 58037), (21, 58043), (22, 58049), (23, 58052), (25, 58082), (27, 58100), (28, 58115), (30, 58130), (31, 58148),

Gene: Imvubu\_61 Start: 56360, Stop: 56623, Start Num: 11

Candidate Starts for Imvubu\_61:

(Start: 10 @56357 has 1 MA's), (Start: 11 @56360 has 1 MA's), (Start: 12 @56366 has 18 MA's), (18, 56417), (28, 56501), (30, 56516),

Gene: JAMaL\_61 Start: 58031, Stop: 58300, Start Num: 12

Candidate Starts for JAMaL\_61:

(Start: 12 @58031 has 18 MA's), (Start: 17 @58082 has 5 MA's), (20, 58088), (21, 58094), (22, 58100), (25, 58133), (27, 58151), (28, 58166), (30, 58181), (31, 58199),

Gene: Jackstina\_64 Start: 57129, Stop: 57416, Start Num: 8

Candidate Starts for Jackstina\_64:

(1, 56907), (2, 56925), (3, 56937), (4, 56982), (5, 57117), (Start: 8 @57129 has 25 MA's), (9, 57147), (Start: 10 @57159 has 1 MA's), (Start: 12 @57168 has 18 MA's), (13, 57177), (28, 57321), (32, 57378),

Gene: Jolie1\_061 Start: 56473, Stop: 56673, Start Num: 17

Candidate Starts for Jolie1\_061:

(Start: 12 @56422 has 18 MA's), (Start: 17 @56473 has 5 MA's), (19, 56476), (20, 56479), (22, 56491), (30, 56572),

Gene: KayaCho\_61 Start: 56583, Stop: 56783, Start Num: 17

Candidate Starts for KayaCho\_61:

(Start: 12 @56532 has 18 MA's), (Start: 17 @56583 has 5 MA's), (19, 56586), (20, 56589), (22, 56601), (30, 56682),

Gene: Knocker\_66 Start: 59276, Stop: 59527, Start Num: 12

Candidate Starts for Knocker\_66:

(Start: 12 @59276 has 18 MA's), (21, 59339), (24, 59375),

Gene: LittleMinkey\_75 Start: 58467, Stop: 58718, Start Num: 12

Candidate Starts for LittleMinkey\_75:

(Start: 7 @58425 has 1 MA's), (Start: 10 @58458 has 1 MA's), (Start: 12 @58467 has 18 MA's), (22, 58551), (24, 58581),

Gene: Lolalove\_62 Start: 58003, Stop: 58272, Start Num: 12

Candidate Starts for Lolalove\_62:

(Start: 12 @58003 has 18 MA's), (Start: 17 @58054 has 5 MA's), (20, 58060), (21, 58066), (22, 58072), (23, 58075), (25, 58105), (27, 58123), (28, 58138), (30, 58153), (31, 58171),

Gene: Mithril\_61 Start: 58157, Stop: 58423, Start Num: 12

Candidate Starts for Mithril\_61:

(Start: 12 @58157 has 18 MA's), (Start: 17 @58208 has 5 MA's), (20, 58214), (21, 58220), (22, 58226), (23, 58229), (25, 58259), (27, 58277), (28, 58292), (30, 58307), (31, 58325),

Gene: Mudslide\_61 Start: 58184, Stop: 58498, Start Num: 6

Candidate Starts for Mudslide\_61:

(Start: 6 @58184 has 10 MA's), (Start: 12 @58232 has 18 MA's), (Start: 17 @58283 has 5 MA's), (20, 58289), (21, 58295), (22, 58301), (23, 58304), (25, 58334), (27, 58352), (28, 58367), (30, 58382), (31, 58400),

Gene: Nigel\_61 Start: 57023, Stop: 57292, Start Num: 12

Candidate Starts for Nigel\_61:

(Start: 12 @57023 has 18 MA's), (Start: 17 @57074 has 5 MA's), (20, 57080), (21, 57086), (22, 57092), (23, 57095), (27, 57143), (28, 57158), (30, 57173),

Gene: Nozo\_68 Start: 58013, Stop: 58300, Start Num: 8

Candidate Starts for Nozo\_68:

(1, 57791), (2, 57809), (3, 57821), (4, 57866), (5, 58001), (Start: 8 @58013 has 25 MA's), (9, 58031), (Start: 10 @58043 has 1 MA's), (Start: 12 @58052 has 18 MA's), (13, 58061), (28, 58205), (32, 58262),

Gene: OrangeOswald\_68 Start: 57254, Stop: 57541, Start Num: 8

Candidate Starts for OrangeOswald\_68:

(1, 57032), (2, 57050), (3, 57062), (4, 57107), (5, 57242), (Start: 8 @57254 has 25 MA's), (9, 57272), (Start: 10 @57284 has 1 MA's), (Start: 12 @57293 has 18 MA's), (13, 57302), (28, 57446), (32, 57503),

Gene: PenguinLover67\_63 Start: 57825, Stop: 58076, Start Num: 10

Candidate Starts for PenguinLover67\_63:

(Start: 10 @57825 has 1 MA's), (Start: 12 @57834 has 18 MA's), (20, 57894), (22, 57906), (24, 57936), (27, 57957),

Gene: Philly\_67 Start: 57066, Stop: 57353, Start Num: 8

Candidate Starts for Philly\_67:

(1, 56844), (2, 56862), (3, 56874), (4, 56919), (5, 57054), (Start: 8 @57066 has 25 MA's), (9, 57084), (Start: 10 @57096 has 1 MA's), (Start: 12 @57105 has 18 MA's), (13, 57114), (28, 57258), (32, 57315),

Gene: Phlyer\_68 Start: 57962, Stop: 58249, Start Num: 8

Candidate Starts for Phlyer\_68:

(1, 57740), (2, 57758), (3, 57770), (4, 57815), (5, 57950), (Start: 8 @57962 has 25 MA's), (9, 57980), (Start: 10 @57992 has 1 MA's), (Start: 12 @58001 has 18 MA's), (13, 58010), (28, 58154), (32, 58211),

Gene: Prince\_61 Start: 58088, Stop: 58405, Start Num: 6

Candidate Starts for Prince\_61:

(Start: 6 @58088 has 10 MA's), (Start: 12 @58136 has 18 MA's), (Start: 17 @58187 has 5 MA's), (20, 58193), (21, 58199), (22, 58205), (23, 58208), (25, 58238), (27, 58256), (28, 58271), (30, 58286), (31, 58304),

Gene: Quesadilla\_66 Start: 58228, Stop: 58470, Start Num: 12

Candidate Starts for Quesadilla\_66:

(Start: 12 @58228 has 18 MA's), (20, 58288), (22, 58300), (24, 58330), (26, 58339), (27, 58351),

Gene: RagingRooster\_67 Start: 56894, Stop: 57181, Start Num: 8

Candidate Starts for RagingRooster\_67:

(1, 56672), (2, 56690), (3, 56702), (4, 56747), (5, 56882), (Start: 8 @56894 has 25 MA's), (9, 56912), (Start: 10 @56924 has 1 MA's), (Start: 12 @56933 has 18 MA's), (13, 56942), (28, 57086), (32, 57143),

Gene: RawrgerThat\_62 Start: 58029, Stop: 58247, Start Num: 17

Candidate Starts for RawrgerThat\_62:

(Start: 6 @57930 has 10 MA's), (Start: 12 @57978 has 18 MA's), (Start: 17 @58029 has 5 MA's), (20, 58035), (21, 58041), (22, 58047), (25, 58080), (27, 58098), (28, 58113), (30, 58128), (31, 58146),

Gene: Rinkes\_63 Start: 57811, Stop: 58074, Start Num: 12

Candidate Starts for Rinkes\_63:

(Start: 12 @57811 has 18 MA's), (14, 57835), (21, 57874), (24, 57910), (34, 58039),

Gene: Rita1961\_69 Start: 57612, Stop: 57899, Start Num: 8

Candidate Starts for Rita1961\_69:

(1, 57390), (2, 57408), (3, 57420), (4, 57465), (5, 57600), (Start: 8 @57612 has 25 MA's), (9, 57630), (Start: 10 @57642 has 1 MA's), (Start: 12 @57651 has 18 MA's), (13, 57660), (28, 57804), (32, 57861),

Gene: RomaT\_68 Start: 57813, Stop: 58100, Start Num: 8

Candidate Starts for RomaT\_68:

(1, 57591), (2, 57609), (3, 57621), (4, 57666), (5, 57801), (Start: 8 @57813 has 25 MA's), (9, 57831), (Start: 10 @57843 has 1 MA's), (Start: 12 @57852 has 18 MA's), (13, 57861), (28, 58005), (32, 58062),

Gene: Saguaro\_64 Start: 57561, Stop: 57827, Start Num: 12

Candidate Starts for Saguaro\_64:

(Start: 10 @57552 has 1 MA's), (Start: 12 @57561 has 18 MA's), (19, 57630), (20, 57633), (21, 57639), (22, 57645), (29, 57720),

Gene: Stinger\_62 Start: 56901, Stop: 57218, Start Num: 6

Candidate Starts for Stinger\_62:

(Start: 6 @56901 has 10 MA's), (Start: 12 @56949 has 18 MA's), (Start: 17 @57000 has 5 MA's), (20, 57006), (22, 57018), (23, 57021), (25, 57051), (27, 57069), (30, 57099),

Gene: SynergyX\_68 Start: 57251, Stop: 57538, Start Num: 8

Candidate Starts for SynergyX\_68:

(1, 57029), (2, 57047), (3, 57059), (4, 57104), (5, 57239), (Start: 8 @57251 has 25 MA's), (9, 57269), (Start: 10 @57281 has 1 MA's), (Start: 12 @57290 has 18 MA's), (13, 57299), (28, 57443), (32, 57500),

Gene: TinyTerror\_69 Start: 57673, Stop: 57960, Start Num: 8

Candidate Starts for TinyTerror\_69:

(1, 57451), (2, 57469), (3, 57481), (4, 57526), (5, 57661), (Start: 8 @57673 has 25 MA's), (9, 57691), (Start: 10 @57703 has 1 MA's), (Start: 12 @57712 has 18 MA's), (13, 57721), (28, 57865), (32, 57922),

Gene: Vincenzo\_64 Start: 59168, Stop: 59425, Start Num: 12

Candidate Starts for Vincenzo\_64:

(Start: 12 @59168 has 18 MA's), (Start: 17 @59219 has 5 MA's), (20, 59225), (22, 59237), (24, 59267), (25, 59270), (29, 59309), (30, 59318), (33, 59372),

Gene: VioletZ\_63 Start: 58094, Stop: 58360, Start Num: 12

Candidate Starts for VioletZ\_63:

(Start: 12 @58094 has 18 MA's), (Start: 17 @58145 has 5 MA's), (20, 58151), (21, 58157), (22, 58163), (23, 58166), (25, 58196), (27, 58214), (28, 58229), (30, 58244), (31, 58262),

Gene: Waleliano\_61 Start: 58034, Stop: 58300, Start Num: 12

Candidate Starts for Waleliano\_61:

(Start: 12 @58034 has 18 MA's), (Start: 17 @58085 has 5 MA's), (20, 58091), (21, 58097), (22, 58103), (23, 58106), (25, 58136), (27, 58154), (28, 58169), (30, 58184), (31, 58202),

Gene: Yinz\_68 Start: 57121, Stop: 57408, Start Num: 8

Candidate Starts for Yinz\_68:

(1, 56899), (2, 56917), (3, 56929), (4, 56974), (5, 57109), (Start: 8 @57121 has 25 MA's), (9, 57139), (Start: 10 @57151 has 1 MA's), (Start: 12 @57160 has 18 MA's), (13, 57169), (28, 57313), (32, 57370),

Gene: Zemanar\_62 Start: 57920, Stop: 58138, Start Num: 17

Candidate Starts for Zemanar\_62:

(Start: 12 @57869 has 18 MA's), (Start: 17 @57920 has 5 MA's), (20, 57926), (21, 57932), (22, 57938), (23, 57941), (25, 57971), (27, 57989), (28, 58004), (30, 58019), (31, 58037),