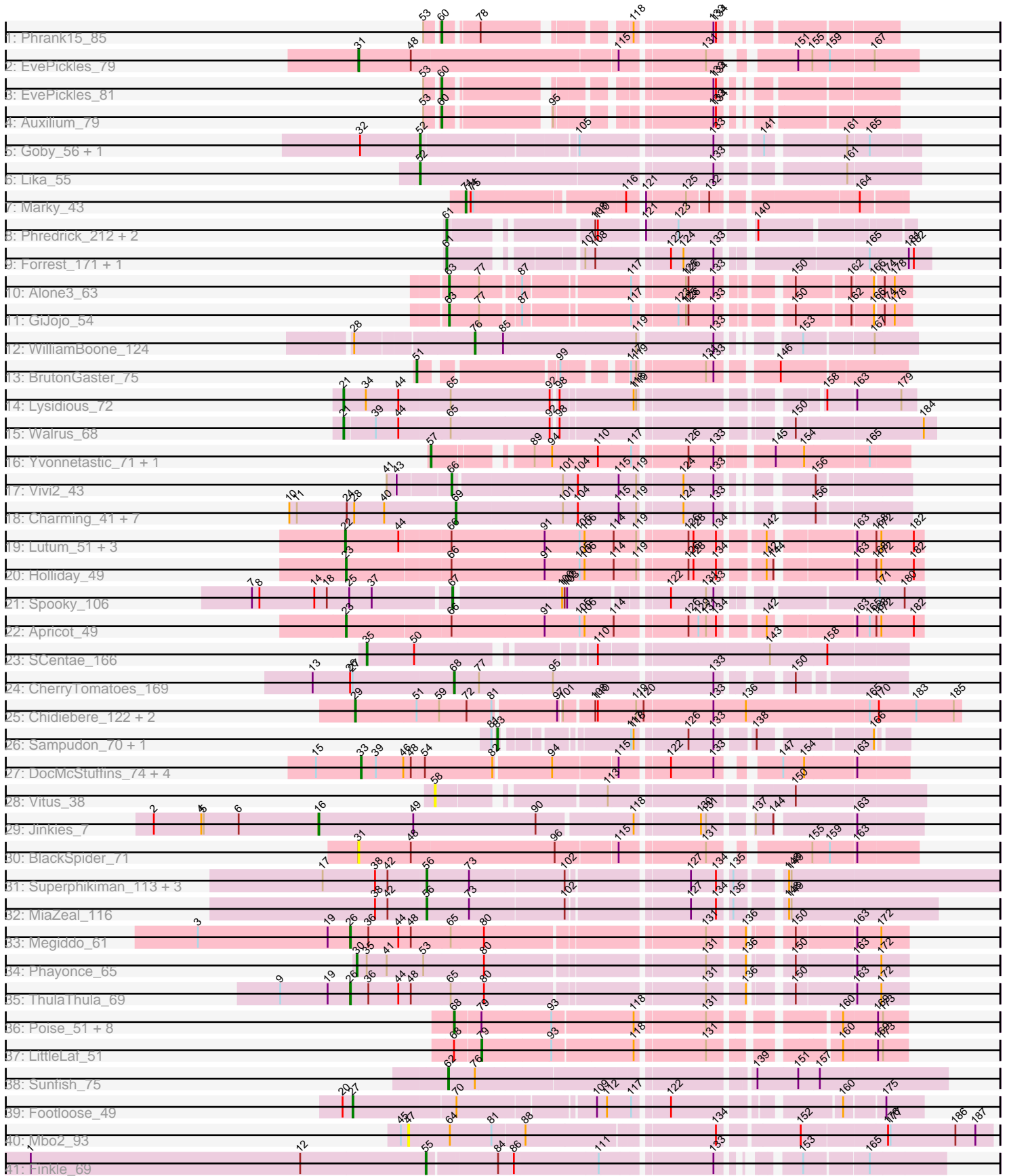


Pham 216118



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 216118 Report

This analysis was run 02/22/25 on database version 588.

Pham number 216118 has 74 members, 4 are drafts.

Phages represented in each track:

- Track 1 : Phrank15\_85
- Track 2 : EvePickles\_79
- Track 3 : EvePickles\_81
- Track 4 : Auxilium\_79
- Track 5 : Goby\_56, Toma\_56
- Track 6 : Lika\_55
- Track 7 : Marky\_43
- Track 8 : Phredrick\_212, Forrest\_210, Emma1919\_210
- Track 9 : Forrest\_171, Jada\_168
- Track 10 : Alone3\_63
- Track 11 : GiJojo\_54
- Track 12 : WilliamBoone\_124
- Track 13 : BrutonGaster\_75
- Track 14 : Lysidious\_72
- Track 15 : Walrus\_68
- Track 16 : Yvonnetastic\_71, JonJames\_73
- Track 17 : Vivi2\_43
- Track 18 : Charming\_41, Paries\_43, Tangent\_41, Love\_44, Rofo\_41, BobBob\_38, Nordenberg\_35, Brandonk123\_42
- Track 19 : Lutum\_51, Kenna\_50, Getalong\_54, BENtherdunthat\_51
- Track 20 : Holliday\_49
- Track 21 : Spooky\_106
- Track 22 : Apricot\_49
- Track 23 : SCentae\_166
- Track 24 : CherryTomatoes\_169
- Track 25 : Chidiebere\_122, Schomber\_120, Kabocha\_123
- Track 26 : Sampudon\_70, Jalebi\_69
- Track 27 : DocMcStuffins\_74, Misha28\_72, TootsiePop\_72, SkinnyPete\_53, Awesomesauce\_74
- Track 28 : Vitus\_38
- Track 29 : Jinkies\_7
- Track 30 : BlackSpider\_71
- Track 31 : Superphikiman\_113, Courthouse\_111, Squint\_114, Ariel\_116
- Track 32 : MiaZeal\_116
- Track 33 : Megiddo\_61
- Track 34 : Phayonce\_65
- Track 35 : ThulaThula\_69

- Track 36 : Poise\_51, Raela\_51, Beelzebub\_55, Clarkson\_52, Lilbit\_52, Pringar\_51, Huphlepuuff\_53, Blackbeetle\_51, VasuNzinga\_51
- Track 37 : LittleLaf\_51
- Track 38 : Sunfish\_75
- Track 39 : Footloose\_49
- Track 40 : Mbo2\_93
- Track 41 : Finkle\_69

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

The start number called the most often in the published annotations is 68, it was called in 9 of the 70 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Beelzebub\_55, Blackbeetle\_51, CherryTomatoes\_169, Clarkson\_52, Huphlepuuff\_53, Lilbit\_52, Poise\_51, Pringar\_51, Raela\_51, VasuNzinga\_51,

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

- LittleLaf\_51,

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

- Alone3\_63, Apricot\_49, Ariel\_116, Auxilium\_79, Awesomesauce\_74, BENtherdunthat\_51, BlackSpider\_71, BobBob\_38, Brandonk123\_42, BrutonGaster\_75, Charming\_41, Chidiebere\_122, Courthouse\_111, DocMcStuffins\_74, Emma1919\_210, EvePickles\_79, EvePickles\_81, Finkle\_69, Footloose\_49, Forrest\_171, Forrest\_210, Getalong\_54, GiJojo\_54, Goby\_56, Holliday\_49, Jada\_168, Jalebi\_69, Jinkies\_7, JonJames\_73, Kabocha\_123, Kenna\_50, Lika\_55, Love\_44, Lutum\_51, Lysidious\_72, Markey\_43, Mbo2\_93, Megiddo\_61, MiaZeal\_116, Misha28\_72, Nordenberg\_35, Paries\_43, Phayonce\_65, Phrank15\_85, Phredrick\_212, Rofo\_41, SCentae\_166, Sampudon\_70, Schomber\_120, SkinnyPete\_53, Spooky\_106, Squint\_114, Sunfish\_75, Superphikiman\_113, Tangent\_41, ThulaThula\_69, Toma\_56, TootsiePop\_72, Vitus\_38, Vivi2\_43, Walrus\_68, WilliamBoone\_124, Yvonnetastic\_71,

**Summary by start number:**

Start 16:

- Found in 1 of 74 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jinkies\_7 (FL),

Start 21:

- Found in 2 of 74 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Lysidious\_72 (CV), Walrus\_68 (CV),

Start 22:

- Found in 4 of 74 ( 5.4% ) of genes in pham

- Manual Annotations of this start: 4 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BENtherdunthat\_51 (DN1), Getalong\_54 (DN1), Kenna\_50 (DN1), Lutum\_51 (DN1),

#### Start 23:

- Found in 2 of 74 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Apricot\_49 (DN3), Holliday\_49 (DN1),

#### Start 26:

- Found in 3 of 74 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Megiddo\_61 (P1), ThulaThula\_69 (P5),

#### Start 27:

- Found in 2 of 74 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 50.0% of time when present
- Phage (with cluster) where this start called: Footloose\_49 (singleton),

#### Start 29:

- Found in 3 of 74 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 3 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chidiebere\_122 (DQ), Kabocha\_123 (DQ), Schomber\_120 (DQ),

#### Start 30:

- Found in 1 of 74 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Phayonce\_65 (P5),

#### Start 31:

- Found in 2 of 74 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BlackSpider\_71 (FN), EvePickles\_79 (AY),

#### Start 33:

- Found in 5 of 74 ( 6.8% ) of genes in pham
- Manual Annotations of this start: 5 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Awesomesauce\_74 (F1), DocMcStuffins\_74 (F1), Misha28\_72 (F1), SkinnyPete\_53 (N), TootsiePop\_72 (F1),

#### Start 35:

- Found in 2 of 74 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 70

- Called 50.0% of time when present
- Phage (with cluster) where this start called: SCentae\_166 (DO),

Start 47:

- Found in 1 of 74 ( 1.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Mbo2\_93 (singleton),

Start 51:

- Found in 4 of 74 ( 5.4% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 25.0% of time when present
- Phage (with cluster) where this start called: BrutonGaster\_75 (CQ2),

Start 52:

- Found in 3 of 74 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 3 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Goby\_56 (BD1), Lika\_55 (BD1), Toma\_56 (BD1),

Start 55:

- Found in 1 of 74 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Finkle\_69 (singleton),

Start 56:

- Found in 5 of 74 ( 6.8% ) of genes in pham
- Manual Annotations of this start: 5 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ariel\_116 (J), Courthouse\_111 (J), MiaZeal\_116 (J), Squint\_114 (J), Superphikiman\_113 (J),

Start 57:

- Found in 2 of 74 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JonJames\_73 (DD), Yvonnetastic\_71 (DD),

Start 58:

- Found in 1 of 74 ( 1.4% ) of genes in pham
- No Manual Annotations of this start.
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Vitus\_38 (FL),

Start 60:

- Found in 3 of 74 ( 4.1% ) of genes in pham
- Manual Annotations of this start: 3 of 70
- Called 100.0% of time when present

- Phage (with cluster) where this start called: Auxilium\_79 (AY), EvePickles\_81 (AY), Phrank15\_85 (AY),

Start 61:

- Found in 5 of 74 ( 6.8% ) of genes in pham
- Manual Annotations of this start: 5 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Emma1919\_210 (BK1), Forrest\_171 (BK1), Forrest\_210 (BK1), Jada\_168 (BK1), Phredrick\_212 (BK1),

Start 62:

- Found in 1 of 74 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sunfish\_75 (singleton),

Start 63:

- Found in 2 of 74 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alone3\_63 (BS), GiJojo\_54 (BS),

Start 66:

- Found in 7 of 74 ( 9.5% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 14.3% of time when present
- Phage (with cluster) where this start called: Vivi2\_43 (DE1),

Start 67:

- Found in 1 of 74 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Spooky\_106 (DN2),

Start 68:

- Found in 11 of 74 ( 14.9% ) of genes in pham
- Manual Annotations of this start: 9 of 70
- Called 90.9% of time when present
- Phage (with cluster) where this start called: Beelzebub\_55 (S), Blackbeetle\_51 (S), CherryTomatoes\_169 (DO), Clarkson\_52 (S), Huphlepuuff\_53 (S), Lilbit\_52 (S), Poise\_51 (S), Pringar\_51 (S), Raela\_51 (S), VasuNzinga\_51 (S),

Start 69:

- Found in 8 of 74 ( 10.8% ) of genes in pham
- Manual Annotations of this start: 8 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BobBob\_38 (DE1), Brandonk123\_42 (DE1), Charming\_41 (DE1), Love\_44 (DE1), Nordenberg\_35 (DE1), Paries\_43 (DE1), Rofo\_41 (DE1), Tangent\_41 (DE1),

Start 71:

- Found in 1 of 74 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 70

- Called 100.0% of time when present
- Phage (with cluster) where this start called: Marky\_43 (BH),

Start 76:

- Found in 2 of 74 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 50.0% of time when present
- Phage (with cluster) where this start called: WilliamBoone\_124 (CQ1),

Start 79:

- Found in 10 of 74 ( 13.5% ) of genes in pham
- Manual Annotations of this start: 1 of 70
- Called 10.0% of time when present
- Phage (with cluster) where this start called: LittleLaf\_51 (S),

Start 83:

- Found in 2 of 74 ( 2.7% ) of genes in pham
- Manual Annotations of this start: 2 of 70
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Jalebi\_69 (DV), Sampudon\_70 (DV),

### **Summary by clusters:**

There are 25 clusters represented in this pham: DO, singleton, DD, BH, BD1, BS, DV, FL, FN, DQ, DN1, DN3, DN2, CQ2, CQ1, P1, P5, J, N, S, BK1, AY, CV, F1, DE1,

Info for manual annotations of cluster AY:

- Start number 31 was manually annotated 1 time for cluster AY.
- Start number 60 was manually annotated 3 times for cluster AY.

Info for manual annotations of cluster BD1:

- Start number 52 was manually annotated 3 times for cluster BD1.

Info for manual annotations of cluster BH:

- Start number 71 was manually annotated 1 time for cluster BH.

Info for manual annotations of cluster BK1:

- Start number 61 was manually annotated 5 times for cluster BK1.

Info for manual annotations of cluster BS:

- Start number 63 was manually annotated 2 times for cluster BS.

Info for manual annotations of cluster CQ1:

- Start number 76 was manually annotated 1 time for cluster CQ1.

Info for manual annotations of cluster CQ2:

- Start number 51 was manually annotated 1 time for cluster CQ2.

Info for manual annotations of cluster CV:

- Start number 21 was manually annotated 2 times for cluster CV.

Info for manual annotations of cluster DD:

- Start number 57 was manually annotated 2 times for cluster DD.

Info for manual annotations of cluster DE1:

- Start number 66 was manually annotated 1 time for cluster DE1.
- Start number 69 was manually annotated 8 times for cluster DE1.

Info for manual annotations of cluster DN1:

- Start number 22 was manually annotated 4 times for cluster DN1.
- Start number 23 was manually annotated 1 time for cluster DN1.

Info for manual annotations of cluster DN2:

- Start number 67 was manually annotated 1 time for cluster DN2.

Info for manual annotations of cluster DN3:

- Start number 23 was manually annotated 1 time for cluster DN3.

Info for manual annotations of cluster DO:

- Start number 35 was manually annotated 1 time for cluster DO.
- Start number 68 was manually annotated 1 time for cluster DO.

Info for manual annotations of cluster DQ:

- Start number 29 was manually annotated 3 times for cluster DQ.

Info for manual annotations of cluster DV:

- Start number 83 was manually annotated 2 times for cluster DV.

Info for manual annotations of cluster F1:

- Start number 33 was manually annotated 4 times for cluster F1.

Info for manual annotations of cluster FL:

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

Info for manual annotations of cluster J:

- Start number 56 was manually annotated 5 times for cluster J.

Info for manual annotations of cluster N:

- Start number 33 was manually annotated 1 time for cluster N.

Info for manual annotations of cluster P1:

- Start number 26 was manually annotated 1 time for cluster P1.

Info for manual annotations of cluster P5:

- Start number 26 was manually annotated 1 time for cluster P5.
- Start number 30 was manually annotated 1 time for cluster P5.

Info for manual annotations of cluster S:

- Start number 68 was manually annotated 8 times for cluster S.
- Start number 79 was manually annotated 1 time for cluster S.

***Gene Information:***



Gene: Alone3\_63 Start: 21624, Stop: 22094, Start Num: 63

Candidate Starts for Alone3\_63:

(Start: 63 @21624 has 2 MA's), (77, 21660), (87, 21702), (117, 21816), (125, 21870), (126, 21873), (133, 21903), (150, 21969), (162, 22029), (166, 22053), (174, 22062), (178, 22074),

Gene: Apricot\_49 Start: 33085, Stop: 32453, Start Num: 23

Candidate Starts for Apricot\_49:

(Start: 23 @33085 has 2 MA's), (Start: 66 @32965 has 1 MA's), (91, 32854), (105, 32812), (106, 32806), (114, 32773), (126, 32695), (129, 32683), (131, 32674), (134, 32662), (142, 32617), (163, 32530), (165, 32515), (168, 32509), (172, 32503), (182, 32464),

Gene: Ariel\_116 Start: 62922, Stop: 63554, Start Num: 56

Candidate Starts for Ariel\_116:

(17, 62799), (38, 62862), (42, 62877), (Start: 56 @62922 has 5 MA's), (73, 62973), (102, 63084), (127, 63213), (134, 63243), (135, 63255), (148, 63303), (149, 63306),

Gene: Auxilium\_79 Start: 44205, Stop: 44636, Start Num: 60

Candidate Starts for Auxilium\_79:

(53, 44190), (Start: 60 @44205 has 3 MA's), (95, 44313), (133, 44466), (134, 44469),

Gene: Awesomesauce\_74 Start: 45209, Stop: 45796, Start Num: 33

Candidate Starts for Awesomesauce\_74:

(15, 45155), (Start: 33 @45209 has 5 MA's), (39, 45227), (46, 45260), (48, 45269), (54, 45284), (82, 45365), (94, 45431), (115, 45503), (122, 45554), (133, 45605), (147, 45656), (154, 45680), (163, 45737),

Gene: BENtherdunthat\_51 Start: 33462, Stop: 32830, Start Num: 22

Candidate Starts for BENtherdunthat\_51:

(Start: 22 @33462 has 4 MA's), (44, 33399), (Start: 66 @33342 has 1 MA's), (91, 33231), (105, 33189), (106, 33183), (114, 33150), (119, 33123), (126, 33072), (128, 33066), (134, 33039), (142, 32994), (163, 32907), (168, 32886), (172, 32880), (182, 32841),

Gene: Beelzebub\_55 Start: 29418, Stop: 29891, Start Num: 68

Candidate Starts for Beelzebub\_55:

(Start: 68 @29418 has 9 MA's), (Start: 79 @29448 has 1 MA's), (93, 29529), (118, 29619), (131, 29694), (160, 29817), (169, 29856), (173, 29862),

Gene: BlackSpider\_71 Start: 42752, Stop: 43360, Start Num: 31

Candidate Starts for BlackSpider\_71:

(Start: 31 @42752 has 1 MA's), (48, 42815), (96, 42986), (115, 43055), (131, 43148), (155, 43241), (159, 43259), (163, 43289),

Gene: Blackbeetle\_51 Start: 28464, Stop: 28937, Start Num: 68

Candidate Starts for Blackbeetle\_51:

(Start: 68 @28464 has 9 MA's), (Start: 79 @28494 has 1 MA's), (93, 28575), (118, 28665), (131, 28740), (160, 28863), (169, 28902), (173, 28908),

Gene: BobBob\_38 Start: 35578, Stop: 35108, Start Num: 69

Candidate Starts for BobBob\_38:

(10, 35776), (11, 35767), (24, 35707), (28, 35698), (40, 35662), (Start: 69 @35578 has 8 MA's), (101, 35452), (104, 35434), (115, 35389), (119, 35371), (124, 35326), (133, 35290), (156, 35212),

Gene: Brandonk123\_42 Start: 36713, Stop: 36243, Start Num: 69

Candidate Starts for Brandonk123\_42:

(10, 36911), (11, 36902), (24, 36842), (28, 36833), (40, 36797), (Start: 69 @36713 has 8 MA's), (101, 36587), (104, 36569), (115, 36524), (119, 36506), (124, 36461), (133, 36425), (156, 36347),

Gene: BrutonGaster\_75 Start: 52573, Stop: 53064, Start Num: 51

Candidate Starts for BrutonGaster\_75:

(Start: 51 @52573 has 1 MA's), (99, 52717), (117, 52774), (119, 52780), (131, 52852), (133, 52861), (146, 52921),

Gene: Charming\_41 Start: 36214, Stop: 35744, Start Num: 69

Candidate Starts for Charming\_41:

(10, 36412), (11, 36403), (24, 36343), (28, 36334), (40, 36298), (Start: 69 @36214 has 8 MA's), (101, 36088), (104, 36070), (115, 36025), (119, 36007), (124, 35962), (133, 35926), (156, 35848),

Gene: CherryTomatoes\_169 Start: 123046, Stop: 122573, Start Num: 68

Candidate Starts for CherryTomatoes\_169:

(13, 123214), (Start: 26 @123169 has 2 MA's), (Start: 27 @123166 has 1 MA's), (Start: 68 @123046 has 9 MA's), (77, 123016), (95, 122929), (133, 122755), (150, 122689),

Gene: Chidiebere\_122 Start: 85918, Stop: 86616, Start Num: 29

Candidate Starts for Chidiebere\_122:

(Start: 29 @85918 has 3 MA's), (Start: 51 @85990 has 1 MA's), (59, 86017), (72, 86050), (81, 86080), (97, 86152), (101, 86155), (108, 86188), (110, 86191), (119, 86236), (120, 86245), (133, 86326), (136, 86365), (165, 86509), (170, 86518), (183, 86563), (185, 86608),

Gene: Clarkson\_52 Start: 29146, Stop: 29619, Start Num: 68

Candidate Starts for Clarkson\_52:

(Start: 68 @29146 has 9 MA's), (Start: 79 @29176 has 1 MA's), (93, 29257), (118, 29347), (131, 29422), (160, 29545), (169, 29584), (173, 29590),

Gene: Courthouse\_111 Start: 62522, Stop: 63154, Start Num: 56

Candidate Starts for Courthouse\_111:

(17, 62399), (38, 62462), (42, 62477), (Start: 56 @62522 has 5 MA's), (73, 62573), (102, 62684), (127, 62813), (134, 62843), (135, 62855), (148, 62903), (149, 62906),

Gene: DocMcStuffins\_74 Start: 46126, Stop: 46713, Start Num: 33

Candidate Starts for DocMcStuffins\_74:

(15, 46072), (Start: 33 @46126 has 5 MA's), (39, 46144), (46, 46177), (48, 46186), (54, 46201), (82, 46282), (94, 46348), (115, 46420), (122, 46471), (133, 46522), (147, 46573), (154, 46597), (163, 46654),

Gene: Emma1919\_210 Start: 103175, Stop: 103651, Start Num: 61

Candidate Starts for Emma1919\_210:

(Start: 61 @103175 has 5 MA's), (108, 103319), (110, 103322), (121, 103370), (123, 103406), (140, 103484),

Gene: EvePickles\_79 Start: 46090, Stop: 46698, Start Num: 31

Candidate Starts for EvePickles\_79:

(Start: 31 @46090 has 1 MA's), (48, 46153), (115, 46393), (131, 46486), (151, 46564), (155, 46579), (159, 46597), (167, 46648),

Gene: EvePickles\_81 Start: 47374, Stop: 47805, Start Num: 60

Candidate Starts for EvePickles\_81:

(53, 47359), (Start: 60 @47374 has 3 MA's), (133, 47635), (134, 47638),

Gene: Finkle\_69 Start: 42637, Stop: 43176, Start Num: 55

Candidate Starts for Finkle\_69:

(1, 42163), (12, 42487), (Start: 55 @42637 has 1 MA's), (84, 42715), (86, 42733), (111, 42832), (133, 42955), (153, 43015), (165, 43087),

Gene: Footloose\_49 Start: 28880, Stop: 29479, Start Num: 27

Candidate Starts for Footloose\_49:

(20, 28868), (Start: 27 @28880 has 1 MA's), (70, 29000), (109, 29150), (112, 29162), (117, 29189), (122, 29225), (160, 29393), (175, 29435),

Gene: Forrest\_210 Start: 104141, Stop: 104617, Start Num: 61

Candidate Starts for Forrest\_210:

(Start: 61 @104141 has 5 MA's), (108, 104285), (110, 104288), (121, 104336), (123, 104372), (140, 104450),

Gene: Forrest\_171 Start: 88900, Stop: 89394, Start Num: 61

Candidate Starts for Forrest\_171:

(Start: 61 @88900 has 5 MA's), (107, 89029), (108, 89041), (122, 89119), (124, 89134), (133, 89170), (165, 89323), (181, 89368), (182, 89374),

Gene: Getalong\_54 Start: 36463, Stop: 35831, Start Num: 22

Candidate Starts for Getalong\_54:

(Start: 22 @36463 has 4 MA's), (44, 36400), (Start: 66 @36343 has 1 MA's), (91, 36232), (105, 36190), (106, 36184), (114, 36151), (119, 36124), (126, 36073), (128, 36067), (134, 36040), (142, 35995), (163, 35908), (168, 35887), (172, 35881), (182, 35842),

Gene: GiJojo\_54 Start: 20818, Stop: 21288, Start Num: 63

Candidate Starts for GiJojo\_54:

(Start: 63 @20818 has 2 MA's), (77, 20854), (87, 20896), (117, 21010), (123, 21055), (125, 21064), (126, 21067), (133, 21097), (150, 21163), (162, 21223), (166, 21247), (174, 21256), (178, 21268),

Gene: Goby\_56 Start: 42305, Stop: 41778, Start Num: 52

Candidate Starts for Goby\_56:

(32, 42374), (Start: 52 @42305 has 3 MA's), (105, 42131), (133, 41987), (141, 41942), (161, 41858), (165, 41834),

Gene: Holliday\_49 Start: 33694, Stop: 33062, Start Num: 23

Candidate Starts for Holliday\_49:

(Start: 23 @33694 has 2 MA's), (Start: 66 @33574 has 1 MA's), (91, 33463), (105, 33421), (106, 33415), (114, 33382), (119, 33355), (126, 33304), (128, 33298), (134, 33271), (142, 33226), (144, 33220), (163, 33139), (168, 33118), (172, 33112), (182, 33073),

Gene: Huphlebuff\_53 Start: 28951, Stop: 29424, Start Num: 68

Candidate Starts for Huphlebuff\_53:

(Start: 68 @28951 has 9 MA's), (Start: 79 @28981 has 1 MA's), (93, 29062), (118, 29152), (131, 29227), (160, 29350), (169, 29389), (173, 29395),

Gene: Jada\_168 Start: 87596, Stop: 88090, Start Num: 61

Candidate Starts for Jada\_168:

(Start: 61 @87596 has 5 MA's), (107, 87725), (108, 87737), (122, 87815), (124, 87830), (133, 87866), (165, 88019), (181, 88064), (182, 88070),

Gene: Jalebi\_69 Start: 49016, Stop: 49408, Start Num: 83

Candidate Starts for Jalebi\_69:

(81, 49013), (Start: 83 @49016 has 2 MA's), (117, 49139), (118, 49142), (126, 49196), (133, 49226), (138, 49262), (166, 49376),

Gene: Jinkies\_7 Start: 5796, Stop: 6461, Start Num: 16

Candidate Starts for Jinkies\_7:

(2, 5598), (4, 5655), (5, 5658), (6, 5700), (Start: 16 @5796 has 1 MA's), (49, 5910), (90, 6057), (118, 6165), (130, 6234), (131, 6240), (137, 6279), (144, 6300), (163, 6384),

Gene: JonJames\_73 Start: 49905, Stop: 50405, Start Num: 57

Candidate Starts for JonJames\_73:

(Start: 57 @49905 has 2 MA's), (89, 49998), (94, 50019), (110, 50073), (117, 50112), (126, 50169), (133, 50199), (145, 50253), (154, 50286), (165, 50361),

Gene: Kabocha\_123 Start: 86731, Stop: 87429, Start Num: 29

Candidate Starts for Kabocha\_123:

(Start: 29 @86731 has 3 MA's), (Start: 51 @86803 has 1 MA's), (59, 86830), (72, 86863), (81, 86893), (97, 86965), (101, 86968), (108, 87001), (110, 87004), (119, 87049), (120, 87058), (133, 87139), (136, 87178), (165, 87322), (170, 87331), (183, 87376), (185, 87421),

Gene: Kenna\_50 Start: 34206, Stop: 33574, Start Num: 22

Candidate Starts for Kenna\_50:

(Start: 22 @34206 has 4 MA's), (44, 34143), (Start: 66 @34086 has 1 MA's), (91, 33975), (105, 33933), (106, 33927), (114, 33894), (119, 33867), (126, 33816), (128, 33810), (134, 33783), (142, 33738), (163, 33651), (168, 33630), (172, 33624), (182, 33585),

Gene: Lika\_55 Start: 42316, Stop: 41774, Start Num: 52

Candidate Starts for Lika\_55:

(Start: 52 @42316 has 3 MA's), (133, 41986), (161, 41857),

Gene: Lilbit\_52 Start: 29147, Stop: 29620, Start Num: 68

Candidate Starts for Lilbit\_52:

(Start: 68 @29147 has 9 MA's), (Start: 79 @29177 has 1 MA's), (93, 29258), (118, 29348), (131, 29423), (160, 29546), (169, 29585), (173, 29591),

Gene: LittleLaf\_51 Start: 28906, Stop: 29349, Start Num: 79

Candidate Starts for LittleLaf\_51:

(Start: 68 @28876 has 9 MA's), (Start: 79 @28906 has 1 MA's), (93, 28987), (118, 29077), (131, 29152), (160, 29275), (169, 29314), (173, 29320),

Gene: Love\_44 Start: 37647, Stop: 37177, Start Num: 69

Candidate Starts for Love\_44:

(10, 37845), (11, 37836), (24, 37776), (28, 37767), (40, 37731), (Start: 69 @37647 has 8 MA's), (101, 37521), (104, 37503), (115, 37458), (119, 37440), (124, 37395), (133, 37359), (156, 37281),

Gene: Lutum\_51 Start: 34206, Stop: 33574, Start Num: 22

Candidate Starts for Lutum\_51:

(Start: 22 @34206 has 4 MA's), (44, 34143), (Start: 66 @34086 has 1 MA's), (91, 33975), (105, 33933), (106, 33927), (114, 33894), (119, 33867), (126, 33816), (128, 33810), (134, 33783), (142, 33738), (163, 33651), (168, 33630), (172, 33624), (182, 33585),

Gene: Lysidious\_72 Start: 45013, Stop: 45621, Start Num: 21

Candidate Starts for Lysidious\_72:

(Start: 21 @45013 has 2 MA's), (34, 45040), (44, 45079), (65, 45139), (92, 45256), (98, 45262), (118, 45343), (119, 45346), (158, 45520), (163, 45553), (179, 45604),

Gene: Marky\_43 Start: 31173, Stop: 31622, Start Num: 71

Candidate Starts for Marky\_43:

(Start: 71 @31173 has 1 MA's), (74, 31179), (75, 31182), (116, 31344), (121, 31359), (125, 31404), (132, 31428), (164, 31572),

Gene: Mbo2\_93 Start: 66190, Stop: 65546, Start Num: 47

Candidate Starts for Mbo2\_93:

(45, 66199), (47, 66190), (64, 66142), (81, 66094), (88, 66058), (134, 65854), (152, 65770), (176, 65671), (177, 65668), (186, 65590), (187, 65566),

Gene: Megiddo\_61 Start: 41199, Stop: 41795, Start Num: 26

Candidate Starts for Megiddo\_61:

(3, 41016), (19, 41172), (Start: 26 @41199 has 2 MA's), (36, 41220), (44, 41256), (48, 41271), (65, 41316), (80, 41355), (131, 41595), (136, 41634), (150, 41670), (163, 41736), (172, 41763),

Gene: MiaZeal\_116 Start: 63594, Stop: 64151, Start Num: 56

Candidate Starts for MiaZeal\_116:

(38, 63534), (42, 63549), (Start: 56 @63594 has 5 MA's), (73, 63645), (102, 63756), (127, 63885), (134, 63915), (135, 63927), (148, 63975), (149, 63978),

Gene: Misha28\_72 Start: 45214, Stop: 45801, Start Num: 33

Candidate Starts for Misha28\_72:

(15, 45160), (Start: 33 @45214 has 5 MA's), (39, 45232), (46, 45265), (48, 45274), (54, 45289), (82, 45370), (94, 45436), (115, 45508), (122, 45559), (133, 45610), (147, 45661), (154, 45685), (163, 45742),

Gene: Nordenberg\_35 Start: 35840, Stop: 35370, Start Num: 69

Candidate Starts for Nordenberg\_35:

(10, 36038), (11, 36029), (24, 35969), (28, 35960), (40, 35924), (Start: 69 @35840 has 8 MA's), (101, 35714), (104, 35696), (115, 35651), (119, 35633), (124, 35588), (133, 35552), (156, 35474),

Gene: Paries\_43 Start: 37309, Stop: 36839, Start Num: 69

Candidate Starts for Paries\_43:

(10, 37507), (11, 37498), (24, 37438), (28, 37429), (40, 37393), (Start: 69 @37309 has 8 MA's), (101, 37183), (104, 37165), (115, 37120), (119, 37102), (124, 37057), (133, 37021), (156, 36943),

Gene: Phayonce\_65 Start: 43286, Stop: 43876, Start Num: 30

Candidate Starts for Phayonce\_65:

(Start: 30 @43286 has 1 MA's), (Start: 35 @43298 has 1 MA's), (41, 43322), (53, 43364), (80, 43436), (131, 43676), (136, 43715), (150, 43751), (163, 43817), (172, 43844),

Gene: Phrank15\_85 Start: 46952, Stop: 47386, Start Num: 60

Candidate Starts for Phrank15\_85:

(53, 46937), (Start: 60 @46952 has 3 MA's), (78, 46988), (118, 47129), (133, 47213), (134, 47216),

Gene: Phredrick\_212 Start: 102971, Stop: 103447, Start Num: 61

Candidate Starts for Phredrick\_212:

(Start: 61 @102971 has 5 MA's), (108, 103115), (110, 103118), (121, 103166), (123, 103202), (140, 103280),

Gene: Poise\_51 Start: 28464, Stop: 28937, Start Num: 68

Candidate Starts for Poise\_51:

(Start: 68 @28464 has 9 MA's), (Start: 79 @28494 has 1 MA's), (93, 28575), (118, 28665), (131, 28740), (160, 28863), (169, 28902), (173, 28908),

Gene: Pringar\_51 Start: 28752, Stop: 29225, Start Num: 68

Candidate Starts for Pringar\_51:

(Start: 68 @28752 has 9 MA's), (Start: 79 @28782 has 1 MA's), (93, 28863), (118, 28953), (131, 29028), (160, 29151), (169, 29190), (173, 29196),

Gene: Raela\_51 Start: 29019, Stop: 29492, Start Num: 68

Candidate Starts for Raela\_51:

(Start: 68 @29019 has 9 MA's), (Start: 79 @29049 has 1 MA's), (93, 29130), (118, 29220), (131, 29295), (160, 29418), (169, 29457), (173, 29463),

Gene: Rofo\_41 Start: 36635, Stop: 36165, Start Num: 69

Candidate Starts for Rofo\_41:

(10, 36833), (11, 36824), (24, 36764), (28, 36755), (40, 36719), (Start: 69 @36635 has 8 MA's), (101, 36509), (104, 36491), (115, 36446), (119, 36428), (124, 36383), (133, 36347), (156, 36269),

Gene: SCentae\_166 Start: 121636, Stop: 122217, Start Num: 35

Candidate Starts for SCentae\_166:

(Start: 35 @121636 has 1 MA's), (50, 121693), (110, 121873), (143, 122059), (158, 122125),

Gene: Sampudon\_70 Start: 49016, Stop: 49408, Start Num: 83

Candidate Starts for Sampudon\_70:

(81, 49013), (Start: 83 @49016 has 2 MA's), (117, 49139), (118, 49142), (126, 49196), (133, 49226), (138, 49262), (166, 49376),

Gene: Schomber\_120 Start: 85119, Stop: 85817, Start Num: 29

Candidate Starts for Schomber\_120:

(Start: 29 @85119 has 3 MA's), (Start: 51 @85191 has 1 MA's), (59, 85218), (72, 85251), (81, 85281), (97, 85353), (101, 85356), (108, 85389), (110, 85392), (119, 85437), (120, 85446), (133, 85527), (136, 85566), (165, 85710), (170, 85719), (183, 85764), (185, 85809),

Gene: SkinnyPete\_53 Start: 35995, Stop: 36582, Start Num: 33

Candidate Starts for SkinnyPete\_53:

(15, 35941), (Start: 33 @35995 has 5 MA's), (39, 36013), (46, 36046), (48, 36055), (54, 36070), (82, 36151), (94, 36217), (115, 36289), (122, 36340), (133, 36391), (147, 36442), (154, 36466), (163, 36523),

Gene: Spooky\_106 Start: 55742, Stop: 56233, Start Num: 67

Candidate Starts for Spooky\_106:

(7, 55508), (8, 55517), (14, 55583), (18, 55598), (25, 55625), (37, 55652), (Start: 67 @55742 has 1 MA's), (100, 55859), (102, 55862), (103, 55865), (122, 55967), (131, 56009), (133, 56018), (171, 56180), (180, 56210),

Gene: Squint\_114 Start: 63713, Stop: 64345, Start Num: 56

Candidate Starts for Squint\_114:

(17, 63590), (38, 63653), (42, 63668), (Start: 56 @63713 has 5 MA's), (73, 63764), (102, 63875), (127, 64004), (134, 64034), (135, 64046), (148, 64094), (149, 64097),

Gene: Sunfish\_75 Start: 46858, Stop: 46316, Start Num: 62

Candidate Starts for Sunfish\_75:

(Start: 62 @46858 has 1 MA's), (Start: 76 @46828 has 1 MA's), (139, 46537), (151, 46489), (157, 46465),

Gene: Superphikiman\_113 Start: 62804, Stop: 63436, Start Num: 56

Candidate Starts for Superphikiman\_113:

(17, 62681), (38, 62744), (42, 62759), (Start: 56 @62804 has 5 MA's), (73, 62855), (102, 62966), (127, 63095), (134, 63125), (135, 63137), (148, 63185), (149, 63188),

Gene: Tangent\_41 Start: 36226, Stop: 35756, Start Num: 69

Candidate Starts for Tangent\_41:

(10, 36424), (11, 36415), (24, 36355), (28, 36346), (40, 36310), (Start: 69 @36226 has 8 MA's), (101, 36100), (104, 36082), (115, 36037), (119, 36019), (124, 35974), (133, 35938), (156, 35860),

Gene: ThulaThula\_69 Start: 44706, Stop: 45302, Start Num: 26

Candidate Starts for ThulaThula\_69:

(9, 44622), (19, 44679), (Start: 26 @44706 has 2 MA's), (36, 44727), (44, 44763), (48, 44778), (65, 44823), (80, 44862), (131, 45102), (136, 45141), (150, 45177), (163, 45243), (172, 45270),

Gene: Toma\_56 Start: 42308, Stop: 41778, Start Num: 52

Candidate Starts for Toma\_56:

(32, 42377), (Start: 52 @42308 has 3 MA's), (105, 42131), (133, 41987), (141, 41942), (161, 41858), (165, 41834),

Gene: TootsiePop\_72 Start: 45214, Stop: 45801, Start Num: 33

Candidate Starts for TootsiePop\_72:

(15, 45160), (Start: 33 @45214 has 5 MA's), (39, 45232), (46, 45265), (48, 45274), (54, 45289), (82, 45370), (94, 45436), (115, 45508), (122, 45559), (133, 45610), (147, 45661), (154, 45685), (163, 45742),

Gene: VasuNzinga\_51 Start: 28326, Stop: 28799, Start Num: 68

Candidate Starts for VasuNzinga\_51:

(Start: 68 @28326 has 9 MA's), (Start: 79 @28356 has 1 MA's), (93, 28437), (118, 28527), (131, 28602), (160, 28725), (169, 28764), (173, 28770),

Gene: Vitus\_38 Start: 31088, Stop: 31606, Start Num: 58

Candidate Starts for Vitus\_38:

(58, 31088), (113, 31262), (150, 31457),

Gene: Vivi2\_43 Start: 37381, Stop: 36914, Start Num: 66

Candidate Starts for Vivi2\_43:

(41, 37450), (43, 37441), (Start: 66 @37381 has 1 MA's), (101, 37258), (104, 37240), (115, 37195), (119, 37177), (124, 37132), (133, 37096), (156, 37018),

Gene: Walrus\_68 Start: 43422, Stop: 44057, Start Num: 21

Candidate Starts for Walrus\_68:

(Start: 21 @43422 has 2 MA's), (39, 43458), (44, 43485), (65, 43545), (92, 43662), (98, 43668), (150, 43899), (184, 44043),

Gene: WilliamBoone\_124 Start: 68689, Stop: 69156, Start Num: 76

Candidate Starts for WilliamBoone\_124:

(28, 68554), (Start: 76 @68689 has 1 MA's), (85, 68722), (119, 68878), (133, 68962), (153, 69028), (167, 69106),

Gene: Yvonnetastic\_71 Start: 47446, Stop: 47946, Start Num: 57

Candidate Starts for Yvonnetastic\_71:

(Start: 57 @47446 has 2 MA's), (89, 47539), (94, 47560), (110, 47614), (117, 47653), (126, 47710), (133, 47740), (145, 47794), (154, 47827), (165, 47902),