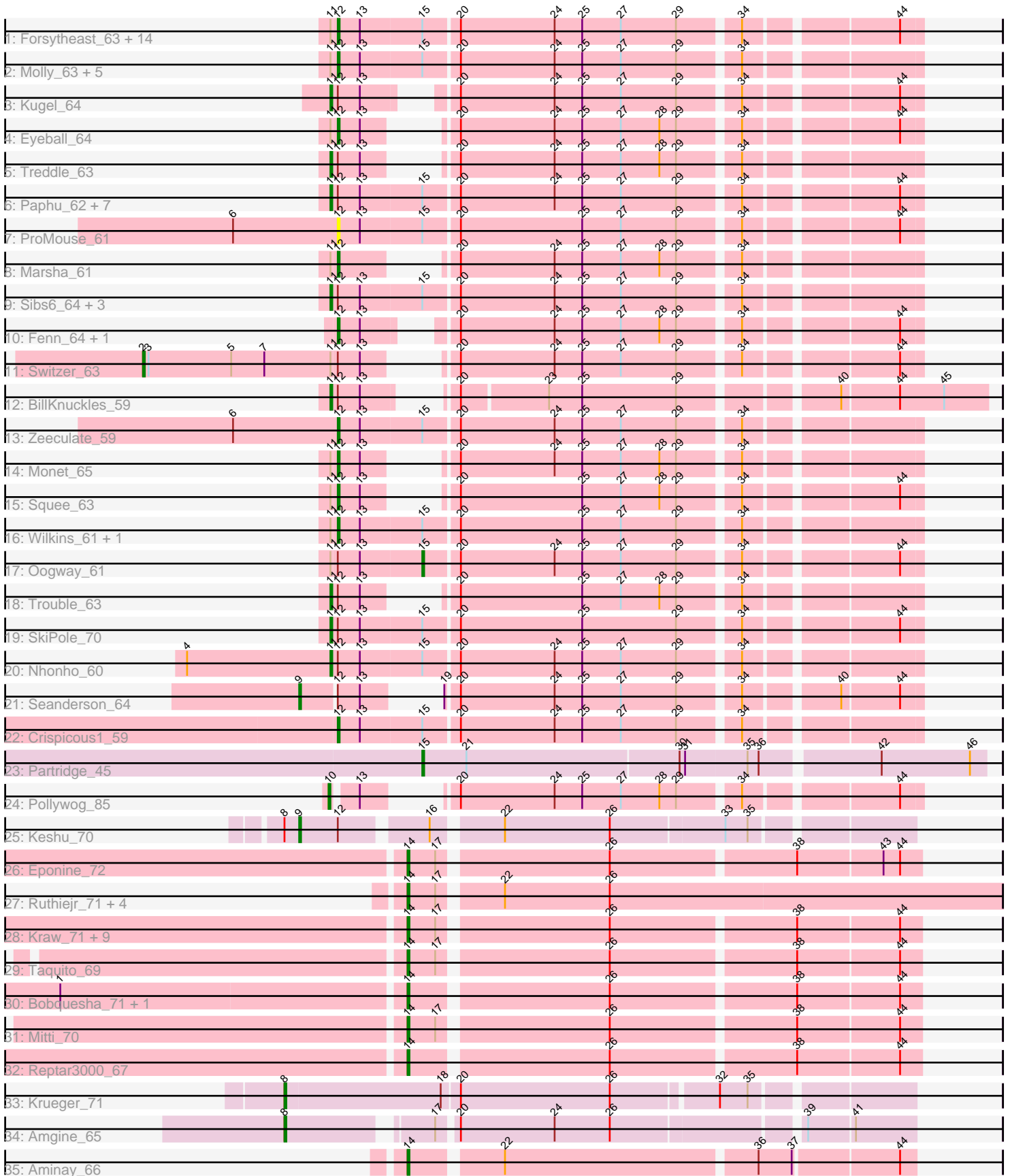


# Pham 224519



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 224519 Report

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

Pham number 224519 has 80 members, 5 are drafts.

Phages represented in each track:

- Track 1 : Forsytheast\_63, HermioneGrange\_64, Moose\_63, Bones\_61, Bruns\_63, Cueyllyss\_62, U2\_60, BigMau\_64, Parliament\_64, Bob3\_63, Adahisdi\_62, SwissCheese\_65, Kykar\_63, Arlo\_60, IgnatiusPatJac\_62
- Track 2 : Molly\_63, GMonster\_57, Killigrew\_61, Briton15\_66, McGuire\_63, Zephyr\_63
- Track 3 : Kugel\_64
- Track 4 : Eyeball\_64
- Track 5 : Treddle\_63
- Track 6 : Paphu\_62, BluSpix\_60, Rohr\_64, Petp2012\_65, Museum\_64, DreamCatcher\_65, Tasp14\_66, MPlant7149\_62
- Track 7 : ProMouse\_61
- Track 8 : Marsha\_61
- Track 9 : Sibs6\_64, Seabiscuit\_65, Watermelon\_62, HanShotFirst\_63
- Track 10 : Fenn\_64, Naira\_64
- Track 11 : Switzer\_63
- Track 12 : BillKnuckles\_59
- Track 13 : Zeeculate\_59
- Track 14 : Monet\_65
- Track 15 : Squee\_63
- Track 16 : Wilkins\_61, Topgun\_60
- Track 17 : Oogway\_61
- Track 18 : Trouble\_63
- Track 19 : SkiPole\_70
- Track 20 : Nhonho\_60
- Track 21 : Seanderson\_64
- Track 22 : Crispicous1\_59
- Track 23 : Partridge\_45
- Track 24 : Pollywog\_85
- Track 25 : Keshu\_70
- Track 26 : Eponine\_72
- Track 27 : Ruthiejr\_71, OmniCritical\_69, Y10\_67, Y2\_67, JF1\_70
- Track 28 : Kraw\_71, Cheetobro\_70, Chancellor\_70, Juliette\_72, Malthus\_71, Fionnbharth\_70, SamScheppers\_68, Lebo14\_71, Slarp\_70, Wintermute\_70
- Track 29 : Taquito\_69
- Track 30 : Bobquesha\_71, Patt\_66
- Track 31 : Mitti\_70
- Track 32 : Reptar3000\_67

- Track 33 : Krueger\_71
- Track 34 : Amgine\_65
- Track 35 : Aminay\_66

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

The start number called the most often in the published annotations is 12, it was called in 30 of the 75 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Adahisdi\_62, Arlo\_60, BigMau\_64, Bob3\_63, Bones\_61, Briton15\_66, Bruns\_63, Crispicous1\_59, Cueylyss\_62, Eyeball\_64, Fenn\_64, Forsytheast\_63, GMonster\_57, HermioneGrange\_64, IgnatiusPatJac\_62, Killigrew\_61, Kykar\_63, Marsha\_61, McGuire\_63, Molly\_63, Monet\_65, Moose\_63, Naira\_64, Parliament\_64, ProMouse\_61, Squee\_63, SwissCheese\_65, Topgun\_60, U2\_60, Wilkins\_61, Zeeculate\_59, Zephyr\_63,

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

- BillKnuckles\_59, BluSpix\_60, DreamCatcher\_65, HanShotFirst\_63, Keshu\_70, Kugel\_64, MPlant7149\_62, Museum\_64, Nhonho\_60, Oogway\_61, Paphu\_62, Petp2012\_65, Rohr\_64, Seabiscuit\_65, Seanderson\_64, Sibs6\_64, SkiPole\_70, Switzer\_63, Tasp14\_66, Treddle\_63, Trouble\_63, Watermelon\_62,

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

- Amgine\_65, Aminay\_66, Bobquesha\_71, Chancellor\_70, Cheetobro\_70, Eponine\_72, Fionnbharth\_70, JF1\_70, Juliette\_72, Kraw\_71, Krueger\_71, Lebo14\_71, Malthus\_71, Mitti\_70, OmniCritical\_69, Partridge\_45, Patt\_66, Pollywog\_85, Reptar3000\_67, Ruthiejr\_71, SamScheppers\_68, Slarp\_70, Taquito\_69, Wintermute\_70, Y10\_67, Y2\_67,

**Summary by start number:**

Start 2:

- Found in 1 of 80 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 75
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Switzer\_63 (A1),

Start 8:

- Found in 3 of 80 ( 3.8% ) of genes in pham
- Manual Annotations of this start: 2 of 75
- Called 66.7% of time when present
- Phage (with cluster) where this start called: Amgine\_65 (K6), Krueger\_71 (K6),

Start 9:

- Found in 2 of 80 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 2 of 75
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Keshu\_70 (K3), Seanderson\_64 (A1),

Start 10:

- Found in 1 of 80 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 75
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Pollywog\_85 (F1),

Start 11:

- Found in 47 of 80 ( 58.8% ) of genes in pham
- Manual Annotations of this start: 18 of 75
- Called 38.3% of time when present
- Phage (with cluster) where this start called: BillKnuckles\_59 (A1), BluSpix\_60 (A1), DreamCatcher\_65 (A1), HanShotFirst\_63 (A1), Kugel\_64 (A1), MPlant7149\_62 (A1), Museum\_64 (A1), Nhonho\_60 (A1), Paphu\_62 (A1), Petp2012\_65 (A1), Rohr\_64 (A1), Seabiscuit\_65 (A1), Sibs6\_64 (A1), SkiPole\_70 (A1), Tasp14\_66 (A1), Treddle\_63 (A1), Trouble\_63 (A1), Watermelon\_62 (A1),

Start 12:

- Found in 54 of 80 ( 67.5% ) of genes in pham
- Manual Annotations of this start: 30 of 75
- Called 59.3% of time when present
- Phage (with cluster) where this start called: Adahisdi\_62 (A1), Arlo\_60 (A1), BigMau\_64 (A1), Bob3\_63 (A1), Bones\_61 (A1), Briton15\_66 (A1), Bruns\_63 (A1), Crispicous1\_59 (A1), Cueyllyss\_62 (A1), Eyeball\_64 (A1), Fenn\_64 (A1), Forsytheast\_63 (A1), GMonster\_57 (A1), HermioneGrange\_64 (A1), IgnatiusPatJac\_62 (A1), Killigrew\_61 (A1), Kykar\_63 (A1), Marsha\_61 (A1), McGuire\_63 (A1), Molly\_63 (A1), Monet\_65 (A1), Moose\_63 (A1), Naira\_64 (A1), Parliament\_64 (A1), ProMouse\_61 (A1), Squee\_63 (A1), SwissCheese\_65 (A1), Topgun\_60 (A1), U2\_60 (A1), Wilkins\_61 (A1), Zeeculate\_59 (A1), Zephyr\_63 (A1),

Start 14:

- Found in 22 of 80 ( 27.5% ) of genes in pham
- Manual Annotations of this start: 19 of 75
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Aminay\_66 (K7), Bobquesha\_71 (K4), Chancellor\_70 (K4), Cheetobro\_70 (K4), Eponine\_72 (K4), Fionnbharth\_70 (K4), JF1\_70 (K4), Juliette\_72 (K4), Kraw\_71 (K4), Lebo14\_71 (K4), Malthus\_71 (K4), Mitti\_70 (K4), OmniCritical\_69 (K4), Patt\_66 (K4), Reptar3000\_67 (K4), Ruthiejr\_71 (K4), SamScheppers\_68 (K4), Slarp\_70 (K4), Taquito\_69 (K4), Wintermute\_70 (K4), Y10\_67 (K4), Y2\_67 (K4),

Start 15:

- Found in 42 of 80 ( 52.5% ) of genes in pham
- Manual Annotations of this start: 2 of 75
- Called 4.8% of time when present
- Phage (with cluster) where this start called: Oogway\_61 (A1), Partridge\_45 (CA),

**Summary by clusters:**

There are 7 clusters represented in this pham: F1, CA, A1, K7, K6, K4, K3,

Info for manual annotations of cluster A1:

- Start number 2 was manually annotated 1 time for cluster A1.
- Start number 9 was manually annotated 1 time for cluster A1.

- Start number 11 was manually annotated 18 times for cluster A1.
- Start number 12 was manually annotated 30 times for cluster A1.
- Start number 15 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster CA:

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

Info for manual annotations of cluster F1:

- Start number 10 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster K3:

- Start number 9 was manually annotated 1 time for cluster K3.

Info for manual annotations of cluster K4:

- Start number 14 was manually annotated 18 times for cluster K4.

Info for manual annotations of cluster K6:

- Start number 8 was manually annotated 2 times for cluster K6.

Info for manual annotations of cluster K7:

- Start number 14 was manually annotated 1 time for cluster K7.

### ***Gene Information:***

Gene: Adahisdi\_62 Start: 42536, Stop: 42240, Start Num: 12

Candidate Starts for Adahisdi\_62:

(Start: 11 @42539 has 18 MA's), (Start: 12 @42536 has 30 MA's), (13, 42524), (Start: 15 @42491 has 2 MA's), (20, 42473), (24, 42422), (25, 42407), (27, 42386), (29, 42356), (34, 42326), (44, 42251),

Gene: Amgine\_65 Start: 44496, Stop: 44807, Start Num: 8

Candidate Starts for Amgine\_65:

(Start: 8 @44496 has 2 MA's), (17, 44565), (20, 44574), (24, 44625), (26, 44655), (39, 44751), (41, 44775),

Gene: Aminay\_66 Start: 43144, Stop: 43401, Start Num: 14

Candidate Starts for Aminay\_66:

(Start: 14 @43144 has 19 MA's), (22, 43189), (36, 43321), (37, 43339), (44, 43393),

Gene: Arlo\_60 Start: 40881, Stop: 40585, Start Num: 12

Candidate Starts for Arlo\_60:

(Start: 11 @40884 has 18 MA's), (Start: 12 @40881 has 30 MA's), (13, 40869), (Start: 15 @40836 has 2 MA's), (20, 40818), (24, 40767), (25, 40752), (27, 40731), (29, 40701), (34, 40671), (44, 40596),

Gene: BigMau\_64 Start: 41801, Stop: 41505, Start Num: 12

Candidate Starts for BigMau\_64:

(Start: 11 @41804 has 18 MA's), (Start: 12 @41801 has 30 MA's), (13, 41789), (Start: 15 @41756 has 2 MA's), (20, 41738), (24, 41687), (25, 41672), (27, 41651), (29, 41621), (34, 41591), (44, 41516),

Gene: BillKnuckles\_59 Start: 42435, Stop: 42130, Start Num: 11

Candidate Starts for BillKnuckles\_59:

(Start: 11 @42435 has 18 MA's), (Start: 12 @42432 has 30 MA's), (13, 42420), (20, 42396), (23, 42351), (25, 42333), (29, 42282), (40, 42207), (44, 42177), (45, 42153),

Gene: BluSpix\_60 Start: 37016, Stop: 36717, Start Num: 11

Candidate Starts for BluSpix\_60:

(Start: 11 @37016 has 18 MA's), (Start: 12 @37013 has 30 MA's), (13, 37001), (Start: 15 @36968 has 2 MA's), (20, 36950), (24, 36899), (25, 36884), (27, 36863), (29, 36833), (34, 36803), (44, 36728),

Gene: Bob3\_63 Start: 41074, Stop: 40778, Start Num: 12

Candidate Starts for Bob3\_63:

(Start: 11 @41077 has 18 MA's), (Start: 12 @41074 has 30 MA's), (13, 41062), (Start: 15 @41029 has 2 MA's), (20, 41011), (24, 40960), (25, 40945), (27, 40924), (29, 40894), (34, 40864), (44, 40789),

Gene: Bobquesha\_71 Start: 42269, Stop: 42532, Start Num: 14

Candidate Starts for Bobquesha\_71:

(1, 42086), (Start: 14 @42269 has 19 MA's), (26, 42371), (38, 42467), (44, 42521),

Gene: Bones\_61 Start: 42258, Stop: 41962, Start Num: 12

Candidate Starts for Bones\_61:

(Start: 11 @42261 has 18 MA's), (Start: 12 @42258 has 30 MA's), (13, 42246), (Start: 15 @42213 has 2 MA's), (20, 42195), (24, 42144), (25, 42129), (27, 42108), (29, 42078), (34, 42048), (44, 41973),

Gene: Briton15\_66 Start: 42878, Stop: 42582, Start Num: 12

Candidate Starts for Briton15\_66:

(Start: 11 @42881 has 18 MA's), (Start: 12 @42878 has 30 MA's), (13, 42866), (Start: 15 @42833 has 2 MA's), (20, 42815), (24, 42764), (25, 42749), (27, 42728), (29, 42698), (34, 42668),

Gene: Bruns\_63 Start: 40455, Stop: 40159, Start Num: 12

Candidate Starts for Bruns\_63:

(Start: 11 @40458 has 18 MA's), (Start: 12 @40455 has 30 MA's), (13, 40443), (Start: 15 @40410 has 2 MA's), (20, 40392), (24, 40341), (25, 40326), (27, 40305), (29, 40275), (34, 40245), (44, 40170),

Gene: Chancellor\_70 Start: 43377, Stop: 43640, Start Num: 14

Candidate Starts for Chancellor\_70:

(Start: 14 @43377 has 19 MA's), (17, 43392), (26, 43479), (38, 43575), (44, 43629),

Gene: Cheetobro\_70 Start: 43374, Stop: 43637, Start Num: 14

Candidate Starts for Cheetobro\_70:

(Start: 14 @43374 has 19 MA's), (17, 43389), (26, 43476), (38, 43572), (44, 43626),

Gene: Crispicious1\_59 Start: 39995, Stop: 39699, Start Num: 12

Candidate Starts for Crispicious1\_59:

(Start: 12 @39995 has 30 MA's), (13, 39983), (Start: 15 @39950 has 2 MA's), (20, 39932), (24, 39881), (25, 39866), (27, 39845), (29, 39815), (34, 39785),

Gene: Cueylyss\_62 Start: 42458, Stop: 42162, Start Num: 12

Candidate Starts for Cueylyss\_62:

(Start: 11 @42461 has 18 MA's), (Start: 12 @42458 has 30 MA's), (13, 42446), (Start: 15 @42413 has 2 MA's), (20, 42395), (24, 42344), (25, 42329), (27, 42308), (29, 42278), (34, 42248), (44, 42173),

Gene: DreamCatcher\_65 Start: 41754, Stop: 41455, Start Num: 11

Candidate Starts for DreamCatcher\_65:

(Start: 11 @41754 has 18 MA's), (Start: 12 @41751 has 30 MA's), (13, 41739), (Start: 15 @41706 has 2 MA's), (20, 41688), (24, 41637), (25, 41622), (27, 41601), (29, 41571), (34, 41541), (44, 41466),

Gene: Eponine\_72 Start: 44220, Stop: 44483, Start Num: 14

Candidate Starts for Eponine\_72:

(Start: 14 @44220 has 19 MA's), (17, 44235), (26, 44322), (38, 44418), (43, 44463), (44, 44472),

Gene: Eyeball\_64 Start: 42166, Stop: 41900, Start Num: 12

Candidate Starts for Eyeball\_64:

(Start: 11 @42169 has 18 MA's), (Start: 12 @42166 has 30 MA's), (13, 42154), (20, 42133), (24, 42082), (25, 42067), (27, 42046), (28, 42025), (29, 42016), (34, 41986), (44, 41911),

Gene: Fenn\_64 Start: 42653, Stop: 42378, Start Num: 12

Candidate Starts for Fenn\_64:

(Start: 12 @42653 has 30 MA's), (13, 42641), (20, 42611), (24, 42560), (25, 42545), (27, 42524), (28, 42503), (29, 42494), (34, 42464), (44, 42389),

Gene: Fionnbharth\_70 Start: 43618, Stop: 43881, Start Num: 14

Candidate Starts for Fionnbharth\_70:

(Start: 14 @43618 has 19 MA's), (17, 43633), (26, 43720), (38, 43816), (44, 43870),

Gene: Forsytheast\_63 Start: 40623, Stop: 40327, Start Num: 12

Candidate Starts for Forsytheast\_63:

(Start: 11 @40626 has 18 MA's), (Start: 12 @40623 has 30 MA's), (13, 40611), (Start: 15 @40578 has 2 MA's), (20, 40560), (24, 40509), (25, 40494), (27, 40473), (29, 40443), (34, 40413), (44, 40338),

Gene: GMonster\_57 Start: 40681, Stop: 40385, Start Num: 12

Candidate Starts for GMonster\_57:

(Start: 11 @40684 has 18 MA's), (Start: 12 @40681 has 30 MA's), (13, 40669), (Start: 15 @40636 has 2 MA's), (20, 40618), (24, 40567), (25, 40552), (27, 40531), (29, 40501), (34, 40471),

Gene: HanShotFirst\_63 Start: 42830, Stop: 42531, Start Num: 11

Candidate Starts for HanShotFirst\_63:

(Start: 11 @42830 has 18 MA's), (Start: 12 @42827 has 30 MA's), (13, 42815), (Start: 15 @42782 has 2 MA's), (20, 42764), (24, 42713), (25, 42698), (27, 42677), (29, 42647), (34, 42617),

Gene: HermioneGrange\_64 Start: 42295, Stop: 41999, Start Num: 12

Candidate Starts for HermioneGrange\_64:

(Start: 11 @42298 has 18 MA's), (Start: 12 @42295 has 30 MA's), (13, 42283), (Start: 15 @42250 has 2 MA's), (20, 42232), (24, 42181), (25, 42166), (27, 42145), (29, 42115), (34, 42085), (44, 42010),

Gene: IgnatiusPatJac\_62 Start: 40958, Stop: 40662, Start Num: 12

Candidate Starts for IgnatiusPatJac\_62:

(Start: 11 @40961 has 18 MA's), (Start: 12 @40958 has 30 MA's), (13, 40946), (Start: 15 @40913 has 2 MA's), (20, 40895), (24, 40844), (25, 40829), (27, 40808), (29, 40778), (34, 40748), (44, 40673),

Gene: JF1\_70 Start: 43533, Stop: 43847, Start Num: 14

Candidate Starts for JF1\_70:

(Start: 14 @43533 has 19 MA's), (17, 43548), (22, 43578), (26, 43635),

Gene: Juliette\_72 Start: 43682, Stop: 43945, Start Num: 14

Candidate Starts for Juliette\_72:

(Start: 14 @43682 has 19 MA's), (17, 43697), (26, 43784), (38, 43880), (44, 43934),

Gene: Keshu\_70 Start: 44135, Stop: 44440, Start Num: 9

Candidate Starts for Keshu\_70:

(Start: 8 @44129 has 2 MA's), (Start: 9 @44135 has 2 MA's), (Start: 12 @44156 has 30 MA's), (16, 44198), (22, 44231), (26, 44288), (33, 44348), (35, 44360),

Gene: Killigrew\_61 Start: 41393, Stop: 41097, Start Num: 12

Candidate Starts for Killigrew\_61:

(Start: 11 @41396 has 18 MA's), (Start: 12 @41393 has 30 MA's), (13, 41381), (Start: 15 @41348 has 2 MA's), (20, 41330), (24, 41279), (25, 41264), (27, 41243), (29, 41213), (34, 41183),

Gene: Kraw\_71 Start: 43370, Stop: 43633, Start Num: 14

Candidate Starts for Kraw\_71:

(Start: 14 @43370 has 19 MA's), (17, 43385), (26, 43472), (38, 43568), (44, 43622),

Gene: Krueger\_71 Start: 43668, Stop: 43991, Start Num: 8

Candidate Starts for Krueger\_71:

(Start: 8 @43668 has 2 MA's), (18, 43752), (20, 43761), (26, 43842), (32, 43896), (35, 43911),

Gene: Kugel\_64 Start: 42232, Stop: 41954, Start Num: 11

Candidate Starts for Kugel\_64:

(Start: 11 @42232 has 18 MA's), (Start: 12 @42229 has 30 MA's), (13, 42217), (20, 42187), (24, 42136), (25, 42121), (27, 42100), (29, 42070), (34, 42040), (44, 41965),

Gene: Kykar\_63 Start: 41758, Stop: 41462, Start Num: 12

Candidate Starts for Kykar\_63:

(Start: 11 @41761 has 18 MA's), (Start: 12 @41758 has 30 MA's), (13, 41746), (Start: 15 @41713 has 2 MA's), (20, 41695), (24, 41644), (25, 41629), (27, 41608), (29, 41578), (34, 41548), (44, 41473),

Gene: Lebo14\_71 Start: 43703, Stop: 43966, Start Num: 14

Candidate Starts for Lebo14\_71:

(Start: 14 @43703 has 19 MA's), (17, 43718), (26, 43805), (38, 43901), (44, 43955),

Gene: MPlant7149\_62 Start: 40186, Stop: 39887, Start Num: 11

Candidate Starts for MPlant7149\_62:

(Start: 11 @40186 has 18 MA's), (Start: 12 @40183 has 30 MA's), (13, 40171), (Start: 15 @40138 has 2 MA's), (20, 40120), (24, 40069), (25, 40054), (27, 40033), (29, 40003), (34, 39973), (44, 39898),

Gene: Malthus\_71 Start: 43370, Stop: 43633, Start Num: 14

Candidate Starts for Malthus\_71:

(Start: 14 @43370 has 19 MA's), (17, 43385), (26, 43472), (38, 43568), (44, 43622),

Gene: Marsha\_61 Start: 42250, Stop: 41984, Start Num: 12

Candidate Starts for Marsha\_61:

(Start: 11 @42253 has 18 MA's), (Start: 12 @42250 has 30 MA's), (20, 42217), (24, 42166), (25, 42151), (27, 42130), (28, 42109), (29, 42100), (34, 42070),

Gene: McGuire\_63 Start: 40458, Stop: 40162, Start Num: 12

Candidate Starts for McGuire\_63:

(Start: 11 @40461 has 18 MA's), (Start: 12 @40458 has 30 MA's), (13, 40446), (Start: 15 @40413 has 2 MA's), (20, 40395), (24, 40344), (25, 40329), (27, 40308), (29, 40278), (34, 40248),

Gene: Mitti\_70 Start: 43525, Stop: 43788, Start Num: 14



Candidate Starts for Mitti\_70:

(Start: 14 @43525 has 19 MA's), (17, 43540), (26, 43627), (38, 43723), (44, 43777),

Gene: Molly\_63 Start: 41563, Stop: 41267, Start Num: 12

Candidate Starts for Molly\_63:

(Start: 11 @41566 has 18 MA's), (Start: 12 @41563 has 30 MA's), (13, 41551), (Start: 15 @41518 has 2 MA's), (20, 41500), (24, 41449), (25, 41434), (27, 41413), (29, 41383), (34, 41353),

Gene: Monet\_65 Start: 43052, Stop: 42786, Start Num: 12

Candidate Starts for Monet\_65:

(Start: 11 @43055 has 18 MA's), (Start: 12 @43052 has 30 MA's), (13, 43040), (20, 43019), (24, 42968), (25, 42953), (27, 42932), (28, 42911), (29, 42902), (34, 42872),

Gene: Moose\_63 Start: 40623, Stop: 40327, Start Num: 12

Candidate Starts for Moose\_63:

(Start: 11 @40626 has 18 MA's), (Start: 12 @40623 has 30 MA's), (13, 40611), (Start: 15 @40578 has 2 MA's), (20, 40560), (24, 40509), (25, 40494), (27, 40473), (29, 40443), (34, 40413), (44, 40338),

Gene: Museum\_64 Start: 42785, Stop: 42486, Start Num: 11

Candidate Starts for Museum\_64:

(Start: 11 @42785 has 18 MA's), (Start: 12 @42782 has 30 MA's), (13, 42770), (Start: 15 @42737 has 2 MA's), (20, 42719), (24, 42668), (25, 42653), (27, 42632), (29, 42602), (34, 42572), (44, 42497),

Gene: Naira\_64 Start: 42709, Stop: 42434, Start Num: 12

Candidate Starts for Naira\_64:

(Start: 12 @42709 has 30 MA's), (13, 42697), (20, 42667), (24, 42616), (25, 42601), (27, 42580), (28, 42559), (29, 42550), (34, 42520), (44, 42445),

Gene: Nhonho\_60 Start: 41685, Stop: 41386, Start Num: 11

Candidate Starts for Nhonho\_60:

(4, 41763), (Start: 11 @41685 has 18 MA's), (Start: 12 @41682 has 30 MA's), (13, 41670), (Start: 15 @41637 has 2 MA's), (20, 41619), (24, 41568), (25, 41553), (27, 41532), (29, 41502), (34, 41472),

Gene: OmniCritical\_69 Start: 43407, Stop: 43721, Start Num: 14

Candidate Starts for OmniCritical\_69:

(Start: 14 @43407 has 19 MA's), (17, 43422), (22, 43452), (26, 43509),

Gene: Oogway\_61 Start: 42078, Stop: 41827, Start Num: 15

Candidate Starts for Oogway\_61:

(Start: 11 @42126 has 18 MA's), (Start: 12 @42123 has 30 MA's), (13, 42111), (Start: 15 @42078 has 2 MA's), (20, 42060), (24, 42009), (25, 41994), (27, 41973), (29, 41943), (34, 41913), (44, 41838),

Gene: Paphu\_62 Start: 41937, Stop: 41638, Start Num: 11

Candidate Starts for Paphu\_62:

(Start: 11 @41937 has 18 MA's), (Start: 12 @41934 has 30 MA's), (13, 41922), (Start: 15 @41889 has 2 MA's), (20, 41871), (24, 41820), (25, 41805), (27, 41784), (29, 41754), (34, 41724), (44, 41649),

Gene: Parliament\_64 Start: 43726, Stop: 43430, Start Num: 12

Candidate Starts for Parliament\_64:

(Start: 11 @43729 has 18 MA's), (Start: 12 @43726 has 30 MA's), (13, 43714), (Start: 15 @43681 has 2 MA's), (20, 43663), (24, 43612), (25, 43597), (27, 43576), (29, 43546), (34, 43516), (44, 43441),

Gene: Partridge\_45 Start: 34587, Stop: 34291, Start Num: 15

Candidate Starts for Partridge\_45:

(Start: 15 @34587 has 2 MA's), (21, 34563), (30, 34449), (31, 34446), (35, 34413), (36, 34407), (42, 34347), (46, 34299),

Gene: Patt\_66 Start: 42008, Stop: 42271, Start Num: 14

Candidate Starts for Patt\_66:

(1, 41825), (Start: 14 @42008 has 19 MA's), (26, 42110), (38, 42206), (44, 42260),

Gene: Petp2012\_65 Start: 43269, Stop: 42970, Start Num: 11

Candidate Starts for Petp2012\_65:

(Start: 11 @43269 has 18 MA's), (Start: 12 @43266 has 30 MA's), (13, 43254), (Start: 15 @43221 has 2 MA's), (20, 43203), (24, 43152), (25, 43137), (27, 43116), (29, 43086), (34, 43056), (44, 42981),

Gene: Pollywog\_85 Start: 50811, Stop: 51077, Start Num: 10

Candidate Starts for Pollywog\_85:

(Start: 10 @50811 has 1 MA's), (13, 50823), (20, 50844), (24, 50895), (25, 50910), (27, 50931), (28, 50952), (29, 50961), (34, 50991), (44, 51066),

Gene: ProMouse\_61 Start: 41373, Stop: 41077, Start Num: 12

Candidate Starts for ProMouse\_61:

(6, 41430), (Start: 12 @41373 has 30 MA's), (13, 41361), (Start: 15 @41328 has 2 MA's), (20, 41310), (25, 41244), (27, 41223), (29, 41193), (34, 41163), (44, 41088),

Gene: Reptar3000\_67 Start: 41997, Stop: 42260, Start Num: 14

Candidate Starts for Reptar3000\_67:

(Start: 14 @41997 has 19 MA's), (26, 42099), (38, 42195), (44, 42249),

Gene: Rohr\_64 Start: 42615, Stop: 42316, Start Num: 11

Candidate Starts for Rohr\_64:

(Start: 11 @42615 has 18 MA's), (Start: 12 @42612 has 30 MA's), (13, 42600), (Start: 15 @42567 has 2 MA's), (20, 42549), (24, 42498), (25, 42483), (27, 42462), (29, 42432), (34, 42402), (44, 42327),

Gene: Ruthiejr\_71 Start: 43418, Stop: 43732, Start Num: 14

Candidate Starts for Ruthiejr\_71:

(Start: 14 @43418 has 19 MA's), (17, 43433), (22, 43463), (26, 43520),

Gene: SamScheppers\_68 Start: 43849, Stop: 44112, Start Num: 14

Candidate Starts for SamScheppers\_68:

(Start: 14 @43849 has 19 MA's), (17, 43864), (26, 43951), (38, 44047), (44, 44101),

Gene: Seabiscuit\_65 Start: 40723, Stop: 40424, Start Num: 11

Candidate Starts for Seabiscuit\_65:

(Start: 11 @40723 has 18 MA's), (Start: 12 @40720 has 30 MA's), (13, 40708), (Start: 15 @40675 has 2 MA's), (20, 40657), (24, 40606), (25, 40591), (27, 40570), (29, 40540), (34, 40510),

Gene: Seanderson\_64 Start: 43120, Stop: 42836, Start Num: 9

Candidate Starts for Seanderson\_64:

(Start: 9 @43120 has 2 MA's), (Start: 12 @43102 has 30 MA's), (13, 43090), (19, 43075), (20, 43069), (24, 43018), (25, 43003), (27, 42982), (29, 42952), (34, 42922), (40, 42877), (44, 42847),

Gene: Sibs6\_64 Start: 39832, Stop: 39533, Start Num: 11

Candidate Starts for Sibs6\_64:

(Start: 11 @39832 has 18 MA's), (Start: 12 @39829 has 30 MA's), (13, 39817), (Start: 15 @39784 has 2 MA's), (20, 39766), (24, 39715), (25, 39700), (27, 39679), (29, 39649), (34, 39619),

Gene: SkiPole\_70 Start: 42720, Stop: 42421, Start Num: 11

Candidate Starts for SkiPole\_70:

(Start: 11 @42720 has 18 MA's), (Start: 12 @42717 has 30 MA's), (13, 42705), (Start: 15 @42672 has 2 MA's), (20, 42654), (25, 42588), (29, 42537), (34, 42507), (44, 42432),

Gene: Slarp\_70 Start: 43377, Stop: 43640, Start Num: 14

Candidate Starts for Slarp\_70:

(Start: 14 @43377 has 19 MA's), (17, 43392), (26, 43479), (38, 43575), (44, 43629),

Gene: Squee\_63 Start: 41158, Stop: 40892, Start Num: 12

Candidate Starts for Squee\_63:

(Start: 11 @41161 has 18 MA's), (Start: 12 @41158 has 30 MA's), (13, 41146), (20, 41125), (25, 41059), (27, 41038), (28, 41017), (29, 41008), (34, 40978), (44, 40903),

Gene: SwissCheese\_65 Start: 41123, Stop: 40827, Start Num: 12

Candidate Starts for SwissCheese\_65:

(Start: 11 @41126 has 18 MA's), (Start: 12 @41123 has 30 MA's), (13, 41111), (Start: 15 @41078 has 2 MA's), (20, 41060), (24, 41009), (25, 40994), (27, 40973), (29, 40943), (34, 40913), (44, 40838),

Gene: Switzer\_63 Start: 42783, Stop: 42412, Start Num: 2

Candidate Starts for Switzer\_63:

(Start: 2 @42783 has 1 MA's), (3, 42780), (5, 42735), (7, 42717), (Start: 11 @42681 has 18 MA's), (Start: 12 @42678 has 30 MA's), (13, 42666), (20, 42645), (24, 42594), (25, 42579), (27, 42558), (29, 42528), (34, 42498), (44, 42423),

Gene: Taquito\_69 Start: 43582, Stop: 43845, Start Num: 14

Candidate Starts for Taquito\_69:

(Start: 14 @43582 has 19 MA's), (17, 43597), (26, 43684), (38, 43780), (44, 43834),

Gene: Tasp14\_66 Start: 43218, Stop: 42919, Start Num: 11

Candidate Starts for Tasp14\_66:

(Start: 11 @43218 has 18 MA's), (Start: 12 @43215 has 30 MA's), (13, 43203), (Start: 15 @43170 has 2 MA's), (20, 43152), (24, 43101), (25, 43086), (27, 43065), (29, 43035), (34, 43005), (44, 42930),

Gene: Topgun\_60 Start: 40325, Stop: 40029, Start Num: 12

Candidate Starts for Topgun\_60:

(Start: 11 @40328 has 18 MA's), (Start: 12 @40325 has 30 MA's), (13, 40313), (Start: 15 @40280 has 2 MA's), (20, 40262), (25, 40196), (27, 40175), (29, 40145), (34, 40115),

Gene: Treddle\_63 Start: 42567, Stop: 42298, Start Num: 11

Candidate Starts for Treddle\_63:

(Start: 11 @42567 has 18 MA's), (Start: 12 @42564 has 30 MA's), (13, 42552), (20, 42531), (24, 42480), (25, 42465), (27, 42444), (28, 42423), (29, 42414), (34, 42384),

Gene: Trouble\_63 Start: 41668, Stop: 41399, Start Num: 11

Candidate Starts for Trouble\_63:

(Start: 11 @41668 has 18 MA's), (Start: 12 @41665 has 30 MA's), (13, 41653), (20, 41632), (25, 41566), (27, 41545), (28, 41524), (29, 41515), (34, 41485),

Gene: U2\_60 Start: 41888, Stop: 41592, Start Num: 12

Candidate Starts for U2\_60:

(Start: 11 @41891 has 18 MA's), (Start: 12 @41888 has 30 MA's), (13, 41876), (Start: 15 @41843 has 2 MA's), (20, 41825), (24, 41774), (25, 41759), (27, 41738), (29, 41708), (34, 41678), (44, 41603),

Gene: Watermelon\_62 Start: 40661, Stop: 40362, Start Num: 11

Candidate Starts for Watermelon\_62:

(Start: 11 @40661 has 18 MA's), (Start: 12 @40658 has 30 MA's), (13, 40646), (Start: 15 @40613 has 2 MA's), (20, 40595), (24, 40544), (25, 40529), (27, 40508), (29, 40478), (34, 40448),

Gene: Wilkins\_61 Start: 40255, Stop: 39959, Start Num: 12

Candidate Starts for Wilkins\_61:

(Start: 11 @40258 has 18 MA's), (Start: 12 @40255 has 30 MA's), (13, 40243), (Start: 15 @40210 has 2 MA's), (20, 40192), (25, 40126), (27, 40105), (29, 40075), (34, 40045),

Gene: Wintermute\_70 Start: 43607, Stop: 43870, Start Num: 14

Candidate Starts for Wintermute\_70:

(Start: 14 @43607 has 19 MA's), (17, 43622), (26, 43709), (38, 43805), (44, 43859),

Gene: Y10\_67 Start: 43533, Stop: 43847, Start Num: 14

Candidate Starts for Y10\_67:

(Start: 14 @43533 has 19 MA's), (17, 43548), (22, 43578), (26, 43635),

Gene: Y2\_67 Start: 43533, Stop: 43847, Start Num: 14

Candidate Starts for Y2\_67:

(Start: 14 @43533 has 19 MA's), (17, 43548), (22, 43578), (26, 43635),

Gene: Zeeculate\_59 Start: 41408, Stop: 41112, Start Num: 12

Candidate Starts for Zeeculate\_59:

(6, 41465), (Start: 12 @41408 has 30 MA's), (13, 41396), (Start: 15 @41363 has 2 MA's), (20, 41345), (24, 41294), (25, 41279), (27, 41258), (29, 41228), (34, 41198),

Gene: Zephyr\_63 Start: 40825, Stop: 40529, Start Num: 12

Candidate Starts for Zephyr\_63:

(Start: 11 @40828 has 18 MA's), (Start: 12 @40825 has 30 MA's), (13, 40813), (Start: 15 @40780 has 2 MA's), (20, 40762), (24, 40711), (25, 40696), (27, 40675), (29, 40645), (34, 40615),