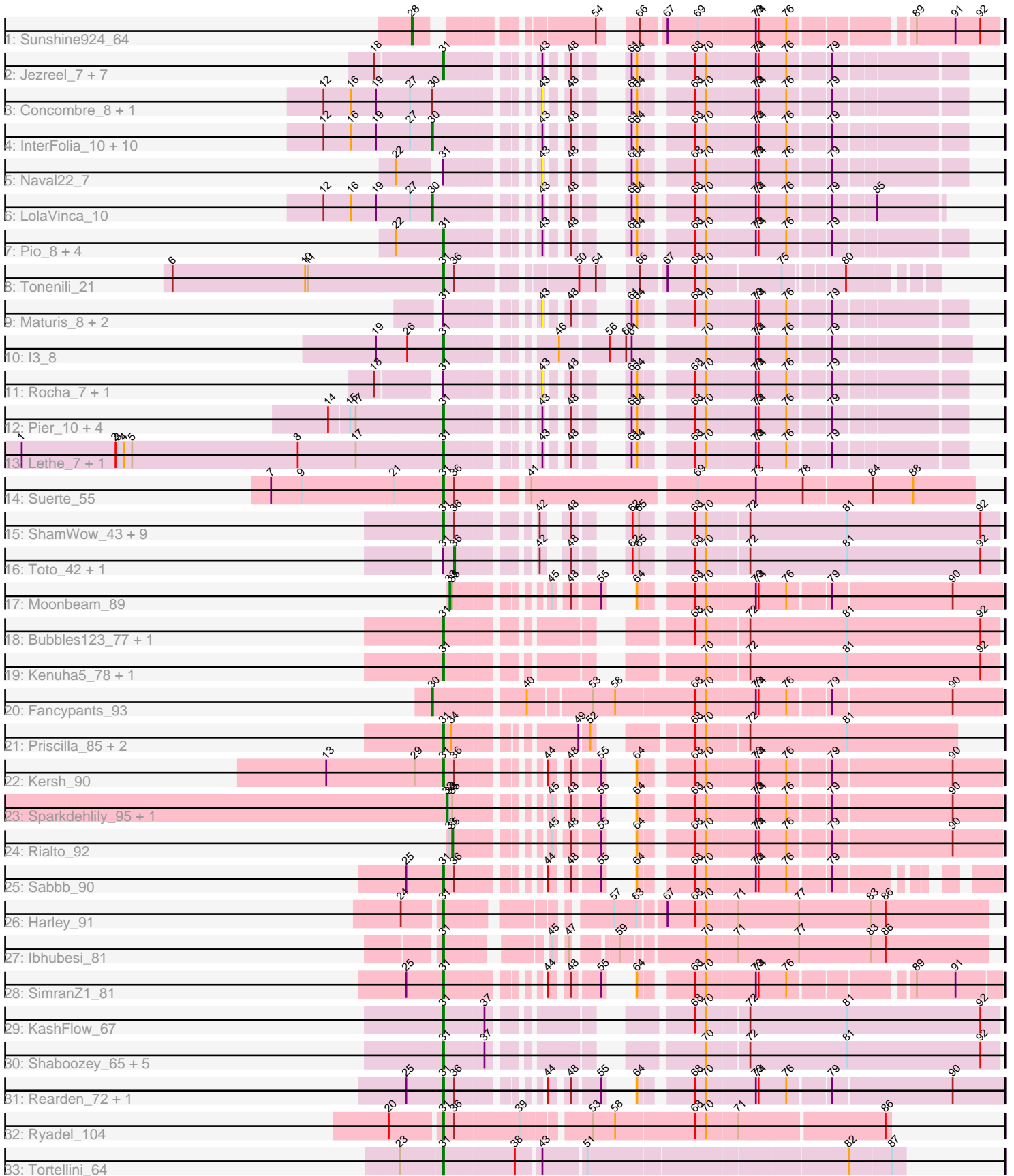


Pham 304932



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 304932 Report

This analysis was run 06/08/26 on database version 649.

Pham number 304932 has 84 members, 16 are drafts.

Phages represented in each track:

- Track 1 : Sunshine924\_64
- Track 2 : Jezreel\_7, Mikro\_7, Bxz1\_7, Tyke\_9, Drazdys\_9, Kamryn\_7, DTDevon\_9, NoodleTree\_7
- Track 3 : Concombre\_8, Demodog\_7
- Track 4 : InterFolia\_10, JayJay\_9, PharkleMinkus\_10, LordLeafolot\_10, Pupusa\_10, FrayBell\_10, Specks\_10, Tainan\_10, LinStu\_9, JigglyPuff\_8, Sebata\_9
- Track 5 : Naval22\_7
- Track 6 : LolaVinca\_10
- Track 7 : Pio\_8, Sauce\_7, Spud\_8, MoMoMixon\_7, Nidhogg\_7
- Track 8 : Tonenili\_21
- Track 9 : Maturis\_8, Montpel\_7, Lunareta\_7
- Track 10 : l3\_8
- Track 11 : Rocha\_7, LookingGlass\_7
- Track 12 : Pier\_10, StephanieG\_9, Astraea\_9, Dandelion\_10, NuevoMundo\_9
- Track 13 : Lethe\_7, Bigswole\_6
- Track 14 : Suerte\_55
- Track 15 : ShamWow\_43, Inca\_40, StellaBean\_41, BilboSwaggins\_42, ABCat\_41, CrystalP\_43, Phaja\_41, Myrale\_43, IHOP\_41, Tuco\_44
- Track 16 : Toto\_42, Marshmallow\_42
- Track 17 : Moonbeam\_89
- Track 18 : Bubbles123\_77, Shauna1\_82
- Track 19 : Kenuha5\_78, Nekros\_71
- Track 20 : Fancypants\_93
- Track 21 : Priscilla\_85, NormanBulbieJr\_83, Koella\_77
- Track 22 : Kersh\_90
- Track 23 : Sparkdehlily\_95, TDanisky\_96
- Track 24 : Rialto\_92
- Track 25 : Sabbb\_90
- Track 26 : Harley\_91
- Track 27 : lbhubesi\_81
- Track 28 : SimranZ1\_81
- Track 29 : KashFlow\_67
- Track 30 : Shaboozey\_65, Hannaconda\_69, BronnyJames\_66, Aubs\_83, Donkeykong\_89, SuperGrey\_83
- Track 31 : Rearden\_72, Pollywog\_88
- Track 32 : Ryadel\_104
- Track 33 : Tortellini\_64

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

The start number called the most often in the published annotations is 31, it was called in 52 of the 68 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- ABCat\_41, Astraea\_9, Aubs\_83, Bigswole\_6, BilboSwaggins\_42, BronnyJames\_66, Bubbles123\_77, Bxz1\_7, CrystalP\_43, DTDevon\_9, Dandelion\_10, Donkeykong\_89, Drazdys\_9, Hannaconda\_69, Harley\_91, I3\_8, IHOP\_41, Ibhubesi\_81, Inca\_40, Jezreel\_7, Kamryn\_7, KashFlow\_67, Kenuha5\_78, Kersh\_90, Koella\_77, Lethe\_7, Mikro\_7, MoMoMixon\_7, Myrale\_43, Nekros\_71, Nidhogg\_7, NoodleTree\_7, NormanBulbieJr\_83, NuevoMundo\_9, Phaja\_41, Pier\_10, Pio\_8, Pollywog\_88, Priscilla\_85, Rearden\_72, Ryadel\_104, Sabbb\_90, Sauce\_7, Shaboozey\_65, ShamWow\_43, Shauna1\_82, SimranZ1\_81, Spud\_8, StellaBean\_41, StephanieG\_9, Suerte\_55, SuperGrey\_83, Tonenili\_21, Tortellini\_64, Tuco\_44, Tyke\_9,

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

- LookingGlass\_7, Lunareta\_7, Marshmallow\_42, Maturis\_8, Montpel\_7, Naval22\_7, Rocha\_7, Toto\_42,

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

- Concombre\_8, Demodog\_7, Fancypants\_93, FrayBell\_10, InterFolia\_10, JayJay\_9, JigglyPuff\_8, LinStu\_9, LolaVinca\_10, LordLeafolot\_10, Moonbeam\_89, PharkleMinkus\_10, Pupusa\_10, Rialto\_92, Sebata\_9, Sparkdehlily\_95, Specks\_10, Sunshine924\_64, TDanisky\_96, Tainan\_10,

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

Start 28:

- Found in 1 of 84 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 68
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sunshine924\_64 (A1),

Start 30:

- Found in 15 of 84 ( 17.9% ) of genes in pham
- Manual Annotations of this start: 9 of 68
- Called 86.7% of time when present
- Phage (with cluster) where this start called: Fancypants\_93 (F1), FrayBell\_10 (C1), InterFolia\_10 (C1), JayJay\_9 (C1), JigglyPuff\_8 (C1), LinStu\_9 (C1), LolaVinca\_10 (C1), LordLeafolot\_10 (C1), PharkleMinkus\_10 (C1), Pupusa\_10 (C1), Sebata\_9 (C1), Specks\_10 (C1), Tainan\_10 (C1),

Start 31:

- Found in 64 of 84 ( 76.2% ) of genes in pham
- Manual Annotations of this start: 52 of 68
- Called 87.5% of time when present
- Phage (with cluster) where this start called: ABCat\_41 (E), Astraea\_9 (C1), Aubs\_83 (F1), Bigswole\_6 (C1), BilboSwaggins\_42 (E), BronnyJames\_66 (J), Bubbles123\_77

(F1), Bxz1\_7 (C1), CrystalP\_43 (E), DTDevon\_9 (C1), Dandelion\_10 (C1), Donkeykong\_89 (F1), Drazdys\_9 (C1), Hannaconda\_69 (J), Harley\_91 (F1), I3\_8 (C1), IHOP\_41 (E), Ibhubesi\_81 (F1), Inca\_40 (E), Jezreel\_7 (C1), Kamryn\_7 (C1), KashFlow\_67 (J), Kenuha5\_78 (F1), Kersh\_90 (F1), Koella\_77 (F1), Lethe\_7 (C1), Mikro\_7 (C1), MoMoMixon\_7 (C1), Myrale\_43 (E), Nekros\_71 (J), Nidhogg\_7 (C1), NoodleTree\_7 (C1), NormanBulbieJr\_83 (F1), NuevoMundo\_9 (C1), Phaja\_41 (E), Pier\_10 (C1), Pio\_8 (C1), Pollywog\_88 (F1), Priscilla\_85 (F1), Rearden\_72 (J), Ryadel\_104 (O), Sabbb\_90 (F1), Sauce\_7 (C1), Shaboozey\_65 (J), ShamWow\_43 (E), Shauna1\_82 (F1), SimranZ1\_81 (F1), Spud\_8 (C1), StellaBean\_41 (E), StephanieG\_9 (C1), Suerte\_55 (CZ4), SuperGrey\_83 (F1), Tonenili\_21 (C1), Tortellini\_64 (P2), Tuco\_44 (E), Tyke\_9 (C1),

Start 32:

- Found in 2 of 84 ( 2.4% ) of genes in pham
- Manual Annotations of this start: 2 of 68
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sparkdehlily\_95 (F1), TDanisky\_96 (F1),

Start 33:

- Found in 4 of 84 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 1 of 68
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Moonbeam\_89 (F1),

Start 35:

- Found in 4 of 84 ( 4.8% ) of genes in pham
- Manual Annotations of this start: 1 of 68
- Called 25.0% of time when present
- Phage (with cluster) where this start called: Rialto\_92 (F1),

Start 36:

- Found in 19 of 84 ( 22.6% ) of genes in pham
- Manual Annotations of this start: 2 of 68
- Called 10.5% of time when present
- Phage (with cluster) where this start called: Marshmallow\_42 (E), Toto\_42 (E),

Start 43:

- Found in 41 of 84 ( 48.8% ) of genes in pham
- No Manual Annotations of this start.
- Called 19.5% of time when present
- Phage (with cluster) where this start called: Concombre\_8 (C1), Demodog\_7 (C1), LookingGlass\_7 (C1), Lunareta\_7 (C1), Maturis\_8 (C1), Montpel\_7 (C1), Naval22\_7 (C1), Rocha\_7 (C1),

### Summary by clusters:

There are 8 clusters represented in this pham: P2, F1, E, J, CZ4, A1, O, C1,

Info for manual annotations of cluster A1:

- Start number 28 was manually annotated 1 time for cluster A1.

Info for manual annotations of cluster C1:

- Start number 30 was manually annotated 8 times for cluster C1.

- Start number 31 was manually annotated 22 times for cluster C1.

Info for manual annotations of cluster CZ4:

- Start number 31 was manually annotated 1 time for cluster CZ4.

Info for manual annotations of cluster E:

- Start number 31 was manually annotated 10 times for cluster E.
- Start number 36 was manually annotated 2 times for cluster E.

Info for manual annotations of cluster F1:

- Start number 30 was manually annotated 1 time for cluster F1.
- Start number 31 was manually annotated 15 times for cluster F1.
- Start number 32 was manually annotated 2 times for cluster F1.
- Start number 33 was manually annotated 1 time for cluster F1.
- Start number 35 was manually annotated 1 time for cluster F1.

Info for manual annotations of cluster J:

- Start number 31 was manually annotated 2 times for cluster J.

Info for manual annotations of cluster O:

- Start number 31 was manually annotated 1 time for cluster O.

Info for manual annotations of cluster P2:

- Start number 31 was manually annotated 1 time for cluster P2.

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

Gene: ABCat\_41 Start: 35824, Stop: 35336, Start Num: 31

Candidate Starts for ABCat\_41:

(Start: 31 @35824 has 52 MA's), (Start: 36 @35812 has 2 MA's), (42, 35749), (48, 35734), (62, 35707), (65, 35701), (68, 35656), (70, 35644), (72, 35602), (81, 35500), (92, 35356),

Gene: Astraea\_9 Start: 2499, Stop: 2930, Start Num: 31

Candidate Starts for Astraea\_9:

(14, 2394), (15, 2415), (17, 2421), (Start: 31 @2499 has 52 MA's), (43, 2574), (48, 2589), (61, 2616), (64, 2622), (68, 2667), (70, 2679), (73, 2730), (74, 2733), (76, 2763), (79, 2805),

Gene: Aubs\_83 Start: 50008, Stop: 50520, Start Num: 31

Candidate Starts for Aubs\_83:

(Start: 31 @50008 has 52 MA's), (37, 50050), (70, 50212), (72, 50254), (81, 50356), (92, 50500),

Gene: Bigswole\_6 Start: 2050, Stop: 2481, Start Num: 31

Candidate Starts for Bigswole\_6:

(1, 1606), (2, 1708), (3, 1711), (4, 1717), (5, 1726), (8, 1906), (17, 1969), (Start: 31 @2050 has 52 MA's), (43, 2125), (48, 2140), (61, 2167), (64, 2173), (68, 2218), (70, 2230), (73, 2281), (74, 2284), (76, 2314), (79, 2356),

Gene: BilboSwaggins\_42 Start: 35832, Stop: 35344, Start Num: 31

Candidate Starts for BilboSwaggins\_42:

(Start: 31 @35832 has 52 MA's), (Start: 36 @35820 has 2 MA's), (42, 35757), (48, 35742), (62, 35715), (65, 35709), (68, 35664), (70, 35652), (72, 35610), (81, 35508), (92, 35364),

Gene: BronnyJames\_66 Start: 44654, Stop: 44142, Start Num: 31  
Candidate Starts for BronnyJames\_66:  
(Start: 31 @44654 has 52 MA's), (37, 44612), (70, 44450), (72, 44408), (81, 44306), (92, 44162),

Gene: Bubbles123\_77 Start: 48885, Stop: 49397, Start Num: 31  
Candidate Starts for Bubbles123\_77:  
(Start: 31 @48885 has 52 MA's), (68, 49077), (70, 49089), (72, 49131), (81, 49233), (92, 49377),

Gene: Bxz1\_7 Start: 2148, Stop: 2579, Start Num: 31  
Candidate Starts for Bxz1\_7:  
(18, 2091), (Start: 31 @2148 has 52 MA's), (43, 2223), (48, 2238), (61, 2265), (64, 2271), (68, 2316),  
(70, 2328), (73, 2379), (74, 2382), (76, 2412), (79, 2454),

Gene: Concombres\_8 Start: 2242, Stop: 2598, Start Num: 43  
Candidate Starts for Concombres\_8:  
(12, 2038), (16, 2068), (19, 2095), (27, 2131), (Start: 30 @2155 has 9 MA's), (43, 2242), (48, 2257),  
(61, 2284), (64, 2290), (68, 2335), (70, 2347), (73, 2398), (74, 2401), (76, 2431), (79, 2473),

Gene: CrystalP\_43 Start: 35832, Stop: 35344, Start Num: 31  
Candidate Starts for CrystalP\_43:  
(Start: 31 @35832 has 52 MA's), (Start: 36 @35820 has 2 MA's), (42, 35757), (48, 35742), (62, 35715),  
(65, 35709), (68, 35664), (70, 35652), (72, 35610), (81, 35508), (92, 35364),

Gene: DTDevon\_9 Start: 2817, Stop: 3251, Start Num: 31  
Candidate Starts for DTDevon\_9:  
(18, 2760), (Start: 31 @2817 has 52 MA's), (43, 2892), (48, 2907), (61, 2934), (64, 2940), (68, 2985),  
(70, 2997), (73, 3048), (74, 3051), (76, 3081), (79, 3123),

Gene: Dandelion\_10 Start: 3168, Stop: 3599, Start Num: 31  
Candidate Starts for Dandelion\_10:  
(14, 3063), (15, 3084), (17, 3090), (Start: 31 @3168 has 52 MA's), (43, 3243), (48, 3258), (61, 3285),  
(64, 3291), (68, 3336), (70, 3348), (73, 3399), (74, 3402), (76, 3432), (79, 3474),

Gene: Demodog\_7 Start: 2242, Stop: 2598, Start Num: 43  
Candidate Starts for Demodog\_7:  
(12, 2038), (16, 2068), (19, 2095), (27, 2131), (Start: 30 @2155 has 9 MA's), (43, 2242), (48, 2257),  
(61, 2284), (64, 2290), (68, 2335), (70, 2347), (73, 2398), (74, 2401), (76, 2431), (79, 2473),

Gene: Donkeykong\_89 Start: 51613, Stop: 52125, Start Num: 31  
Candidate Starts for Donkeykong\_89:  
(Start: 31 @51613 has 52 MA's), (37, 51655), (70, 51817), (72, 51859), (81, 51961), (92, 52105),

Gene: Drazdys\_9 Start: 2817, Stop: 3251, Start Num: 31  
Candidate Starts for Drazdys\_9:  
(18, 2760), (Start: 31 @2817 has 52 MA's), (43, 2892), (48, 2907), (61, 2934), (64, 2940), (68, 2985),  
(70, 2997), (73, 3048), (74, 3051), (76, 3081), (79, 3123),

Gene: Fancypants\_93 Start: 52418, Stop: 52996, Start Num: 30  
Candidate Starts for Fancypants\_93:  
(Start: 30 @52418 has 9 MA's), (40, 52508), (53, 52571), (58, 52595), (68, 52679), (70, 52691), (73,  
52742), (74, 52745), (76, 52775), (79, 52817), (90, 52943),

Gene: FrayBell\_10 Start: 2978, Stop: 3421, Start Num: 30

Candidate Starts for FrayBell\_10:

(12, 2861), (16, 2891), (19, 2918), (27, 2954), (Start: 30 @2978 has 9 MA's), (43, 3065), (48, 3080), (61, 3107), (64, 3113), (68, 3158), (70, 3170), (73, 3221), (74, 3224), (76, 3254), (79, 3296),

Gene: Hannaconda\_69 Start: 45759, Stop: 45247, Start Num: 31

Candidate Starts for Hannaconda\_69:

(Start: 31 @45759 has 52 MA's), (37, 45717), (70, 45555), (72, 45513), (81, 45411), (92, 45267),

Gene: Harley\_91 Start: 51213, Stop: 51740, Start Num: 31

Candidate Starts for Harley\_91:

(24, 51174), (Start: 31 @51213 has 52 MA's), (57, 51351), (63, 51375), (67, 51399), (68, 51429), (70, 51441), (71, 51474), (77, 51537), (83, 51615), (86, 51630),

Gene: I3\_8 Start: 2847, Stop: 3332, Start Num: 31

Candidate Starts for I3\_8:

(19, 2790), (26, 2823), (Start: 31 @2847 has 52 MA's), (46, 2940), (56, 2988), (60, 3006), (61, 3012), (70, 3078), (73, 3129), (74, 3132), (76, 3162), (79, 3204),

Gene: IHOP\_41 Start: 35396, Stop: 34908, Start Num: 31

Candidate Starts for IHOP\_41:

(Start: 31 @35396 has 52 MA's), (Start: 36 @35384 has 2 MA's), (42, 35321), (48, 35306), (62, 35279), (65, 35273), (68, 35228), (70, 35216), (72, 35174), (81, 35072), (92, 34928),

Gene: Ibhubesi\_81 Start: 47329, Stop: 47838, Start Num: 31

Candidate Starts for Ibhubesi\_81:

(Start: 31 @47329 has 52 MA's), (45, 47413), (47, 47422), (59, 47458), (70, 47539), (71, 47572), (77, 47635), (83, 47713), (86, 47728),

Gene: Inca\_40 Start: 33921, Stop: 33433, Start Num: 31

Candidate Starts for Inca\_40:

(Start: 31 @33921 has 52 MA's), (Start: 36 @33909 has 2 MA's), (42, 33846), (48, 33831), (62, 33804), (65, 33798), (68, 33753), (70, 33741), (72, 33699), (81, 33597), (92, 33453),

Gene: InterFolia\_10 Start: 2977, Stop: 3420, Start Num: 30

Candidate Starts for InterFolia\_10:

(12, 2860), (16, 2890), (19, 2917), (27, 2953), (Start: 30 @2977 has 9 MA's), (43, 3064), (48, 3079), (61, 3106), (64, 3112), (68, 3157), (70, 3169), (73, 3220), (74, 3223), (76, 3253), (79, 3295),

Gene: JayJay\_9 Start: 2506, Stop: 2949, Start Num: 30

Candidate Starts for JayJay\_9:

(12, 2389), (16, 2419), (19, 2446), (27, 2482), (Start: 30 @2506 has 9 MA's), (43, 2593), (48, 2608), (61, 2635), (64, 2641), (68, 2686), (70, 2698), (73, 2749), (74, 2752), (76, 2782), (79, 2824),

Gene: Jezreel\_7 Start: 2148, Stop: 2579, Start Num: 31

Candidate Starts for Jezreel\_7:

(18, 2091), (Start: 31 @2148 has 52 MA's), (43, 2223), (48, 2238), (61, 2265), (64, 2271), (68, 2316), (70, 2328), (73, 2379), (74, 2382), (76, 2412), (79, 2454),

Gene: JigglyPuff\_8 Start: 2522, Stop: 2965, Start Num: 30

Candidate Starts for JigglyPuff\_8:

(12, 2405), (16, 2435), (19, 2462), (27, 2498), (Start: 30 @2522 has 9 MA's), (43, 2609), (48, 2624), (61, 2651), (64, 2657), (68, 2702), (70, 2714), (73, 2765), (74, 2768), (76, 2798), (79, 2840),

Gene: Kamryn\_7 Start: 2148, Stop: 2579, Start Num: 31

Candidate Starts for Kamryn\_7:

(18, 2091), (Start: 31 @2148 has 52 MA's), (43, 2223), (48, 2238), (61, 2265), (64, 2271), (68, 2316), (70, 2328), (73, 2379), (74, 2382), (76, 2412), (79, 2454),

Gene: KashFlow\_67 Start: 45630, Stop: 45118, Start Num: 31

Candidate Starts for KashFlow\_67:

(Start: 31 @45630 has 52 MA's), (37, 45588), (68, 45438), (70, 45426), (72, 45384), (81, 45282), (92, 45138),

Gene: Kenuha5\_78 Start: 49646, Stop: 50158, Start Num: 31

Candidate Starts for Kenuha5\_78:

(Start: 31 @49646 has 52 MA's), (70, 49850), (72, 49892), (81, 49994), (92, 50138),

Gene: Kersh\_90 Start: 52725, Stop: 53210, Start Num: 31

Candidate Starts for Kersh\_90:

(13, 52599), (29, 52695), (Start: 31 @52725 has 52 MA's), (Start: 36 @52737 has 2 MA's), (44, 52800), (48, 52815), (55, 52842), (64, 52848), (68, 52893), (70, 52905), (73, 52956), (74, 52959), (76, 52989), (79, 53031), (90, 53157),

Gene: Koella\_77 Start: 46451, Stop: 46915, Start Num: 31

Candidate Starts for Koella\_77:

(Start: 31 @46451 has 52 MA's), (34, 46460), (49, 46562), (52, 46571), (68, 46643), (70, 46655), (72, 46697), (81, 46799),

Gene: Lethe\_7 Start: 2050, Stop: 2481, Start Num: 31

Candidate Starts for Lethe\_7:

(1, 1606), (2, 1708), (3, 1711), (4, 1717), (5, 1726), (8, 1906), (17, 1969), (Start: 31 @2050 has 52 MA's), (43, 2125), (48, 2140), (61, 2167), (64, 2173), (68, 2218), (70, 2230), (73, 2281), (74, 2284), (76, 2314), (79, 2356),

Gene: LinStu\_9 Start: 3505, Stop: 3948, Start Num: 30

Candidate Starts for LinStu\_9:

(12, 3388), (16, 3418), (19, 3445), (27, 3481), (Start: 30 @3505 has 9 MA's), (43, 3592), (48, 3607), (61, 3634), (64, 3640), (68, 3685), (70, 3697), (73, 3748), (74, 3751), (76, 3781), (79, 3823),

Gene: LolaVinca\_10 Start: 2977, Stop: 3399, Start Num: 30

Candidate Starts for LolaVinca\_10:

(12, 2860), (16, 2890), (19, 2917), (27, 2953), (Start: 30 @2977 has 9 MA's), (43, 3064), (48, 3079), (61, 3106), (64, 3112), (68, 3157), (70, 3169), (73, 3220), (74, 3223), (76, 3253), (79, 3295), (85, 3334),

Gene: LookingGlass\_7 Start: 2223, Stop: 2579, Start Num: 43

Candidate Starts for LookingGlass\_7:

(18, 2091), (Start: 31 @2148 has 52 MA's), (43, 2223), (48, 2238), (61, 2265), (64, 2271), (68, 2316), (70, 2328), (73, 2379), (74, 2382), (76, 2412), (79, 2454),

Gene: LordLeafolot\_10 Start: 2977, Stop: 3420, Start Num: 30

Candidate Starts for LordLeafolot\_10:

(12, 2860), (16, 2890), (19, 2917), (27, 2953), (Start: 30 @2977 has 9 MA's), (43, 3064), (48, 3079), (61, 3106), (64, 3112), (68, 3157), (70, 3169), (73, 3220), (74, 3223), (76, 3253), (79, 3295),

Gene: Lunareta\_7 Start: 2252, Stop: 2608, Start Num: 43

Candidate Starts for Lunareta\_7:

(Start: 31 @2177 has 52 MA's), (43, 2252), (48, 2267), (61, 2294), (64, 2300), (68, 2345), (70, 2357), (73, 2408), (74, 2411), (76, 2441), (79, 2483),

Gene: Marshmallow\_42 Start: 35818, Stop: 35342, Start Num: 36

Candidate Starts for Marshmallow\_42:

(Start: 31 @35830 has 52 MA's), (Start: 36 @35818 has 2 MA's), (42, 35755), (48, 35740), (62, 35713), (65, 35707), (68, 35662), (70, 35650), (72, 35608), (81, 35506), (92, 35362),

Gene: Maturis\_8 Start: 2252, Stop: 2608, Start Num: 43

Candidate Starts for Maturis\_8:

(Start: 31 @2177 has 52 MA's), (43, 2252), (48, 2267), (61, 2294), (64, 2300), (68, 2345), (70, 2357), (73, 2408), (74, 2411), (76, 2441), (79, 2483),

Gene: Mikro\_7 Start: 3147, Stop: 3578, Start Num: 31

Candidate Starts for Mikro\_7:

(18, 3090), (Start: 31 @3147 has 52 MA's), (43, 3222), (48, 3237), (61, 3264), (64, 3270), (68, 3315), (70, 3327), (73, 3378), (74, 3381), (76, 3411), (79, 3453),

Gene: MoMoMixon\_7 Start: 2383, Stop: 2814, Start Num: 31

Candidate Starts for MoMoMixon\_7:

(22, 2347), (Start: 31 @2383 has 52 MA's), (43, 2458), (48, 2473), (61, 2500), (64, 2506), (68, 2551), (70, 2563), (73, 2614), (74, 2617), (76, 2647), (79, 2689),

Gene: Montpel\_7 Start: 2252, Stop: 2608, Start Num: 43

Candidate Starts for Montpel\_7:

(Start: 31 @2177 has 52 MA's), (43, 2252), (48, 2267), (61, 2294), (64, 2300), (68, 2345), (70, 2357), (73, 2408), (74, 2411), (76, 2441), (79, 2483),

Gene: Moonbeam\_89 Start: 51150, Stop: 51629, Start Num: 33

Candidate Starts for Moonbeam\_89:

(Start: 33 @51150 has 1 MA's), (Start: 35 @51153 has 1 MA's), (45, 51222), (48, 51234), (55, 51261), (64, 51267), (68, 51312), (70, 51324), (73, 51375), (74, 51378), (76, 51408), (79, 51450), (90, 51576),

Gene: Myrale\_43 Start: 35695, Stop: 35207, Start Num: 31

Candidate Starts for Myrale\_43:

(Start: 31 @35695 has 52 MA's), (Start: 36 @35683 has 2 MA's), (42, 35620), (48, 35605), (62, 35578), (65, 35572), (68, 35527), (70, 35515), (72, 35473), (81, 35371), (92, 35227),

Gene: Naval22\_7 Start: 2458, Stop: 2814, Start Num: 43

Candidate Starts for Naval22\_7:

(22, 2347), (Start: 31 @2383 has 52 MA's), (43, 2458), (48, 2473), (61, 2500), (64, 2506), (68, 2551), (70, 2563), (73, 2614), (74, 2617), (76, 2647), (79, 2689),

Gene: Nekros\_71 Start: 48970, Stop: 48458, Start Num: 31

Candidate Starts for Nekros\_71:

(Start: 31 @48970 has 52 MA's), (70, 48766), (72, 48724), (81, 48622), (92, 48478),

Gene: Nidhogg\_7 Start: 2383, Stop: 2814, Start Num: 31

Candidate Starts for Nidhogg\_7:

(22, 2347), (Start: 31 @2383 has 52 MA's), (43, 2458), (48, 2473), (61, 2500), (64, 2506), (68, 2551), (70, 2563), (73, 2614), (74, 2617), (76, 2647), (79, 2689),

Gene: NoodleTree\_7 Start: 2148, Stop: 2579, Start Num: 31

Candidate Starts for NoodleTree\_7:

(18, 2091), (Start: 31 @2148 has 52 MA's), (43, 2223), (48, 2238), (61, 2265), (64, 2271), (68, 2316), (70, 2328), (73, 2379), (74, 2382), (76, 2412), (79, 2454),

Gene: NormanBulbieJr\_83 Start: 50465, Stop: 50929, Start Num: 31

Candidate Starts for NormanBulbieJr\_83:

(Start: 31 @50465 has 52 MA's), (34, 50474), (49, 50576), (52, 50585), (68, 50657), (70, 50669), (72, 50711), (81, 50813),

Gene: NuevoMundo\_9 Start: 2841, Stop: 3272, Start Num: 31

Candidate Starts for NuevoMundo\_9:

(14, 2736), (15, 2757), (17, 2763), (Start: 31 @2841 has 52 MA's), (43, 2916), (48, 2931), (61, 2958), (64, 2964), (68, 3009), (70, 3021), (73, 3072), (74, 3075), (76, 3105), (79, 3147),

Gene: Phaja\_41 Start: 35395, Stop: 34907, Start Num: 31

Candidate Starts for Phaja\_41:

(Start: 31 @35395 has 52 MA's), (Start: 36 @35383 has 2 MA's), (42, 35320), (48, 35305), (62, 35278), (65, 35272), (68, 35227), (70, 35215), (72, 35173), (81, 35071), (92, 34927),

Gene: PharkleMinkus\_10 Start: 2978, Stop: 3421, Start Num: 30

Candidate Starts for PharkleMinkus\_10:

(12, 2861), (16, 2891), (19, 2918), (27, 2954), (Start: 30 @2978 has 9 MA's), (43, 3065), (48, 3080), (61, 3107), (64, 3113), (68, 3158), (70, 3170), (73, 3221), (74, 3224), (76, 3254), (79, 3296),

Gene: Pier\_10 Start: 2844, Stop: 3275, Start Num: 31

Candidate Starts for Pier\_10:

(14, 2739), (15, 2760), (17, 2766), (Start: 31 @2844 has 52 MA's), (43, 2919), (48, 2934), (61, 2961), (64, 2967), (68, 3012), (70, 3024), (73, 3075), (74, 3078), (76, 3108), (79, 3150),

Gene: Pio\_8 Start: 2537, Stop: 2968, Start Num: 31

Candidate Starts for Pio\_8:

(22, 2501), (Start: 31 @2537 has 52 MA's), (43, 2612), (48, 2627), (61, 2654), (64, 2660), (68, 2705), (70, 2717), (73, 2768), (74, 2771), (76, 2801), (79, 2843),

Gene: Pollywog\_88 Start: 51599, Stop: 52084, Start Num: 31

Candidate Starts for Pollywog\_88:

(25, 51560), (Start: 31 @51599 has 52 MA's), (Start: 36 @51611 has 2 MA's), (44, 51674), (48, 51689), (55, 51716), (64, 51722), (68, 51767), (70, 51779), (73, 51830), (74, 51833), (76, 51863), (79, 51905), (90, 52031),

Gene: Priscilla\_85 Start: 50563, Stop: 51027, Start Num: 31

Candidate Starts for Priscilla\_85:

(Start: 31 @50563 has 52 MA's), (34, 50572), (49, 50674), (52, 50683), (68, 50755), (70, 50767), (72, 50809), (81, 50911),

Gene: Pupusa\_10 Start: 2977, Stop: 3420, Start Num: 30

Candidate Starts for Pupusa\_10:

(12, 2860), (16, 2890), (19, 2917), (27, 2953), (Start: 30 @2977 has 9 MA's), (43, 3064), (48, 3079), (61, 3106), (64, 3112), (68, 3157), (70, 3169), (73, 3220), (74, 3223), (76, 3253), (79, 3295),

Gene: Rearden\_72 Start: 47623, Stop: 47135, Start Num: 31

Candidate Starts for Rearden\_72:

(25, 47662), (Start: 31 @47623 has 52 MA's), (Start: 36 @47611 has 2 MA's), (44, 47548), (48, 47533), (55, 47506), (64, 47500), (68, 47455), (70, 47443), (73, 47392), (74, 47389), (76, 47359), (79, 47317), (90, 47191),

Gene: Rialto\_92 Start: 51249, Stop: 51725, Start Num: 35

Candidate Starts for Rialto\_92:

(Start: 33 @51246 has 1 MA's), (Start: 35 @51249 has 1 MA's), (45, 51318), (48, 51330), (55, 51357), (64, 51363), (68, 51408), (70, 51420), (73, 51471), (74, 51474), (76, 51504), (79, 51546), (90, 51672),

Gene: Rocha\_7 Start: 2220, Stop: 2576, Start Num: 43

Candidate Starts for Rocha\_7:

(18, 2088), (Start: 31 @2145 has 52 MA's), (43, 2220), (48, 2235), (61, 2262), (64, 2268), (68, 2313), (70, 2325), (73, 2376), (74, 2379), (76, 2409), (79, 2451),

Gene: Ryadel\_104 Start: 63381, Stop: 62932, Start Num: 31

Candidate Starts for Ryadel\_104:

(20, 63432), (Start: 31 @63381 has 52 MA's), (Start: 36 @63369 has 2 MA's), (39, 63303), (53, 63240), (58, 63216), (68, 63132), (70, 63120), (71, 63087), (86, 62937),

Gene: Sabbb\_90 Start: 48794, Stop: 49228, Start Num: 31

Candidate Starts for Sabbb\_90:

(25, 48755), (Start: 31 @48794 has 52 MA's), (Start: 36 @48806 has 2 MA's), (44, 48869), (48, 48884), (55, 48911), (64, 48917), (68, 48962), (70, 48974), (73, 49025), (74, 49028), (76, 49058), (79, 49100),

Gene: Sauce\_7 Start: 2387, Stop: 2818, Start Num: 31

Candidate Starts for Sauce\_7:

(22, 2351), (Start: 31 @2387 has 52 MA's), (43, 2462), (48, 2477), (61, 2504), (64, 2510), (68, 2555), (70, 2567), (73, 2618), (74, 2621), (76, 2651), (79, 2693),

Gene: Sebata\_9 Start: 3505, Stop: 3948, Start Num: 30

Candidate Starts for Sebata\_9:

(12, 3388), (16, 3418), (19, 3445), (27, 3481), (Start: 30 @3505 has 9 MA's), (43, 3592), (48, 3607), (61, 3634), (64, 3640), (68, 3685), (70, 3697), (73, 3748), (74, 3751), (76, 3781), (79, 3823),

Gene: Shaboozey\_65 Start: 44675, Stop: 44163, Start Num: 31

Candidate Starts for Shaboozey\_65:

(Start: 31 @44675 has 52 MA's), (37, 44633), (70, 44471), (72, 44429), (81, 44327), (92, 44183),

Gene: ShamWow\_43 Start: 35832, Stop: 35344, Start Num: 31

Candidate Starts for ShamWow\_43:

(Start: 31 @35832 has 52 MA's), (Start: 36 @35820 has 2 MA's), (42, 35757), (48, 35742), (62, 35715), (65, 35709), (68, 35664), (70, 35652), (72, 35610), (81, 35508), (92, 35364),

Gene: Shauna1\_82 Start: 49932, Stop: 50444, Start Num: 31

Candidate Starts for Shauna1\_82:

(Start: 31 @49932 has 52 MA's), (68, 50124), (70, 50136), (72, 50178), (81, 50280), (92, 50424),

Gene: SimranZ1\_81 Start: 48125, Stop: 48592, Start Num: 31

Candidate Starts for SimranZ1\_81:

(25, 48086), (Start: 31 @48125 has 52 MA's), (44, 48200), (48, 48215), (55, 48242), (64, 48248), (68, 48293), (70, 48305), (73, 48356), (74, 48359), (76, 48389), (89, 48503), (91, 48545),

Gene: Sparkdehlily\_95 Start: 49514, Stop: 49996, Start Num: 32

Candidate Starts for Sparkdehlily\_95:

(Start: 32 @49514 has 2 MA's), (Start: 33 @49517 has 1 MA's), (Start: 35 @49520 has 1 MA's), (45, 49589), (48, 49601), (55, 49628), (64, 49634), (68, 49679), (70, 49691), (73, 49742), (74, 49745), (76, 49775), (79, 49817), (90, 49943),

Gene: Specks\_10 Start: 2977, Stop: 3420, Start Num: 30

Candidate Starts for Specks\_10:

(12, 2860), (16, 2890), (19, 2917), (27, 2953), (Start: 30 @2977 has 9 MA's), (43, 3064), (48, 3079), (61, 3106), (64, 3112), (68, 3157), (70, 3169), (73, 3220), (74, 3223), (76, 3253), (79, 3295),

Gene: Spud\_8 Start: 2537, Stop: 2968, Start Num: 31

Candidate Starts for Spud\_8:

(22, 2501), (Start: 31 @2537 has 52 MA's), (43, 2612), (48, 2627), (61, 2654), (64, 2660), (68, 2705), (70, 2717), (73, 2768), (74, 2771), (76, 2801), (79, 2843),

Gene: StellaBean\_41 Start: 35156, Stop: 34668, Start Num: 31

Candidate Starts for StellaBean\_41:

(Start: 31 @35156 has 52 MA's), (Start: 36 @35144 has 2 MA's), (42, 35081), (48, 35066), (62, 35039), (65, 35033), (68, 34988), (70, 34976), (72, 34934), (81, 34832), (92, 34688),

Gene: StephanieG\_9 Start: 2844, Stop: 3275, Start Num: 31

Candidate Starts for StephanieG\_9:

(14, 2739), (15, 2760), (17, 2766), (Start: 31 @2844 has 52 MA's), (43, 2919), (48, 2934), (61, 2961), (64, 2967), (68, 3012), (70, 3024), (73, 3075), (74, 3078), (76, 3108), (79, 3150),

Gene: Suerte\_55 Start: 39354, Stop: 39890, Start Num: 31

Candidate Starts for Suerte\_55:

(7, 39168), (9, 39201), (21, 39300), (Start: 31 @39354 has 52 MA's), (Start: 36 @39366 has 2 MA's), (41, 39429), (69, 39597), (73, 39660), (78, 39711), (84, 39783), (88, 39825),

Gene: Sunshine924\_64 Start: 40630, Stop: 40100, Start Num: 28

Candidate Starts for Sunshine924\_64:

(Start: 28 @40630 has 1 MA's), (54, 40477), (66, 40453), (67, 40429), (69, 40396), (73, 40336), (74, 40333), (76, 40303), (89, 40189), (91, 40147), (92, 40120),

Gene: SuperGrey\_83 Start: 51298, Stop: 51810, Start Num: 31

Candidate Starts for SuperGrey\_83:

(Start: 31 @51298 has 52 MA's), (37, 51340), (70, 51502), (72, 51544), (81, 51646), (92, 51790),

Gene: TDanisky\_96 Start: 49514, Stop: 49996, Start Num: 32

Candidate Starts for TDanisky\_96:

(Start: 32 @49514 has 2 MA's), (Start: 33 @49517 has 1 MA's), (Start: 35 @49520 has 1 MA's), (45, 49589), (48, 49601), (55, 49628), (64, 49634), (68, 49679), (70, 49691), (73, 49742), (74, 49745), (76, 49775), (79, 49817), (90, 49943),

Gene: Tainan\_10 Start: 2977, Stop: 3420, Start Num: 30

Candidate Starts for Tainan\_10:

(12, 2860), (16, 2890), (19, 2917), (27, 2953), (Start: 30 @2977 has 9 MA's), (43, 3064), (48, 3079), (61, 3106), (64, 3112), (68, 3157), (70, 3169), (73, 3220), (74, 3223), (76, 3253), (79, 3295),

Gene: Tonenili\_21 Start: 6415, Stop: 6846, Start Num: 31

Candidate Starts for Tonenili\_21:

(6, 6136), (10, 6280), (11, 6283), (Start: 31 @6415 has 52 MA's), (Start: 36 @6427 has 2 MA's), (50, 6535), (54, 6553), (66, 6577), (67, 6601), (68, 6631), (70, 6643), (75, 6715), (80, 6769),

Gene: Tortellini\_64 Start: 43747, Stop: 44214, Start Num: 31

Candidate Starts for Tortellini\_64:

(23, 43702), (Start: 31 @43747 has 52 MA's), (38, 43822), (43, 43846), (51, 43888), (82, 44155), (87, 44200),

Gene: Toto\_42 Start: 35820, Stop: 35344, Start Num: 36

Candidate Starts for Toto\_42:

(Start: 31 @35832 has 52 MA's), (Start: 36 @35820 has 2 MA's), (42, 35757), (48, 35742), (62, 35715), (65, 35709), (68, 35664), (70, 35652), (72, 35610), (81, 35508), (92, 35364),

Gene: Tuco\_44 Start: 36340, Stop: 35852, Start Num: 31

Candidate Starts for Tuco\_44:

(Start: 31 @36340 has 52 MA's), (Start: 36 @36328 has 2 MA's), (42, 36265), (48, 36250), (62, 36223), (65, 36217), (68, 36172), (70, 36160), (72, 36118), (81, 36016), (92, 35872),

Gene: Tyke\_9 Start: 2817, Stop: 3251, Start Num: 31

Candidate Starts for Tyke\_9:

(18, 2760), (Start: 31 @2817 has 52 MA's), (43, 2892), (48, 2907), (61, 2934), (64, 2940), (68, 2985), (70, 2997), (73, 3048), (74, 3051), (76, 3081), (79, 3123),