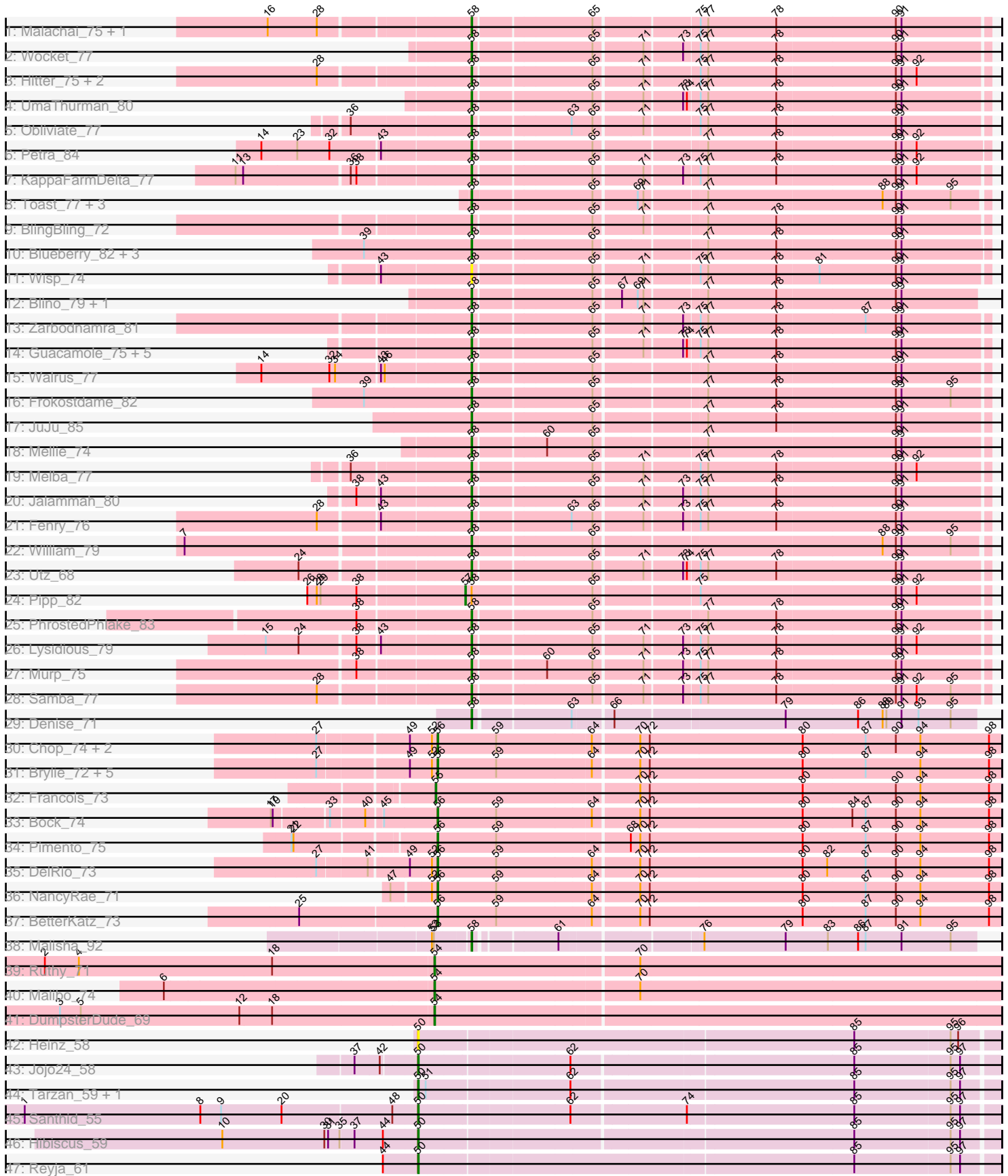


Pham 196513



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 196513 Report

This analysis was run 12/09/24 on database version 580.

Pham number 196513 has 70 members, 3 are drafts.

Phages represented in each track:

- Track 1 : Malachai\_75, Begonia\_75
- Track 2 : Wocket\_77
- Track 3 : Hitter\_75, Archis\_79, ZiggyZoo\_78
- Track 4 : UmaThurman\_80
- Track 5 : Obliviate\_77
- Track 6 : Petra\_84
- Track 7 : KappaFarmDelta\_77
- Track 8 : Toast\_77, PrincePatrick\_79, Fairfaxidum\_80, PCoral7\_76
- Track 9 : BlingBling\_72
- Track 10 : Blueberry\_82, Gambino\_85, Azula\_83, MissRona\_83
- Track 11 : Wisp\_74
- Track 12 : Blino\_79, CarolAnn\_78
- Track 13 : Zarbodnamra\_81
- Track 14 : Guacamole\_75, Barco\_74, JasperJr\_75, CaptainKirk2\_77, Delian\_80, MintFen\_77
- Track 15 : Walrus\_77
- Track 16 : Frokostdame\_82
- Track 17 : JuJu\_85
- Track 18 : Mellie\_74
- Track 19 : Melba\_77
- Track 20 : Jalammah\_80
- Track 21 : Fenry\_76
- Track 22 : William\_79
- Track 23 : Utz\_68
- Track 24 : Pipp\_82
- Track 25 : PhrostedPhlake\_83
- Track 26 : Lysidious\_79
- Track 27 : Murp\_75
- Track 28 : Samba\_77
- Track 29 : Denise\_71
- Track 30 : Chop\_74, Hamood\_74, GrandSlam\_74
- Track 31 : Brylie\_72, Parada\_72, WheatThin\_72, Mulch\_72, Ayotoya\_73, Nadeem\_72
- Track 32 : Francois\_73
- Track 33 : Bock\_74
- Track 34 : Pimento\_75
- Track 35 : DelRio\_73

- Track 36 : NancyRae\_71
- Track 37 : BetterKatz\_73
- Track 38 : Malisha\_92
- Track 39 : Ruthy\_71
- Track 40 : Malibo\_74
- Track 41 : DumpsterDude\_69
- Track 42 : Heinz\_58
- Track 43 : Jojo24\_58
- Track 44 : Tarzan\_59, DonkeyMan\_57
- Track 45 : Santhid\_55
- Track 46 : Hibiscus\_59
- Track 47 : Reyja\_61

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

The start number called the most often in the published annotations is 58, it was called in 43 of the 67 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Archis\_79, Azula\_83, Barco\_74, Begonia\_75, BlingBling\_72, Blino\_79, Blueberry\_82, CaptainKirk2\_77, CarolAnn\_78, Delian\_80, Denise\_71, Fairfaxidum\_80, Fenry\_76, Frokostdame\_82, Gambino\_85, Guacamole\_75, Hitter\_75, Jalammah\_80, JasperJr\_75, JuJu\_85, KappaFarmDelta\_77, Lysidious\_79, Malachai\_75, Malisha\_92, Melba\_77, Mellie\_74, MintFen\_77, MissRona\_83, Murp\_75, Obliviate\_77, PCoral7\_76, Petra\_84, PhrostedPhlake\_83, PrincePatrick\_79, Samba\_77, Toast\_77, UmaThurman\_80, Utz\_68, Walrus\_77, William\_79, Wisp\_74, Wocket\_77, Zarbodnamra\_81, ZiggyZoo\_78,

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

- Pipp\_82,

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

- Ayotoya\_73, BetterKatz\_73, Bock\_74, Brylie\_72, Chop\_74, DelRio\_73, DonkeyMan\_57, DumpsterDude\_69, Francois\_73, GrandSlam\_74, Hamood\_74, Heinz\_58, Hibiscus\_59, Jojo24\_58, Malibo\_74, Mulch\_72, Nadeem\_72, NancyRae\_71, Parada\_72, Pimento\_75, Reyja\_61, Ruthy\_71, Santhid\_55, Tarzan\_59, WheatThin\_72,

**Summary by start number:**

Start 50:

- Found in 7 of 70 ( 10.0% ) of genes in pham
- Manual Annotations of this start: 5 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DonkeyMan\_57 (DY), Heinz\_58 (DY), Hibiscus\_59 (DY), Jojo24\_58 (DY), Reyja\_61 (DY), Santhid\_55 (DY), Tarzan\_59 (DY),

Start 54:

- Found in 3 of 70 ( 4.3% ) of genes in pham

- Manual Annotations of this start: 3 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: DumpsterDude\_69 (DW), Malibo\_74 (DW), Ruthy\_71 (DW),

Start 55:

- Found in 1 of 70 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Francois\_73 (DI),

Start 56:

- Found in 14 of 70 ( 20.0% ) of genes in pham
- Manual Annotations of this start: 14 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ayotoya\_73 (DI), BetterKatz\_73 (DI), Bock\_74 (DI), Brylie\_72 (DI), Chop\_74 (DI), DelRio\_73 (DI), GrandSlam\_74 (DI), Hamood\_74 (DI), Mulch\_72 (DI), Nadeem\_72 (DI), NancyRae\_71 (DI), Parada\_72 (DI), Pimento\_75 (DI), WheatThin\_72 (DI),

Start 57:

- Found in 1 of 70 ( 1.4% ) of genes in pham
- Manual Annotations of this start: 1 of 67
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Pipp\_82 (CV),

Start 58:

- Found in 45 of 70 ( 64.3% ) of genes in pham
- Manual Annotations of this start: 43 of 67
- Called 97.8% of time when present
- Phage (with cluster) where this start called: Archis\_79 (CV), Azula\_83 (CV), Barco\_74 (CV), Begonia\_75 (CV), BlingBling\_72 (CV), Blino\_79 (CV), Blueberry\_82 (CV), CaptainKirk2\_77 (CV), CarolAnn\_78 (CV), Delian\_80 (CV), Denise\_71 (CZ5), Fairfaxidum\_80 (CV), Fenry\_76 (CV), Frokostdame\_82 (CV), Gambino\_85 (CV), Guacamole\_75 (CV), Hitter\_75 (CV), Jalammah\_80 (CV), JasperJr\_75 (CV), JuJu\_85 (CV), KappaFarmDelta\_77 (CV), Lysidious\_79 (CV), Malachai\_75 (CV), Malisha\_92 (DN), Melba\_77 (CV), Mellie\_74 (CV), MintFen\_77 (CV), MissRona\_83 (CV), Murp\_75 (CV), Obliviate\_77 (CV), PCoral7\_76 (CV), Petra\_84 (CV), PhrostedPhlake\_83 (CV), PrincePatrick\_79 (CV), Samba\_77 (CV), Toast\_77 (CV), UmaThurman\_80 (CV), Utz\_68 (CV), Walrus\_77 (CV), William\_79 (CV), Wisp\_74 (CV), Wocket\_77 (CV), Zarbodnamra\_81 (CV), ZiggyZoo\_78 (CV),

### Summary by clusters:

There are 6 clusters represented in this pham: DN, DI, CZ5, DY, DW, CV,

Info for manual annotations of cluster CV:

- Start number 57 was manually annotated 1 time for cluster CV.
- Start number 58 was manually annotated 41 times for cluster CV.

Info for manual annotations of cluster CZ5:

- Start number 58 was manually annotated 1 time for cluster CZ5.

Info for manual annotations of cluster DI:

- Start number 55 was manually annotated 1 time for cluster DI.
- Start number 56 was manually annotated 14 times for cluster DI.

Info for manual annotations of cluster DN:

- Start number 58 was manually annotated 1 time for cluster DN.

Info for manual annotations of cluster DW:

- Start number 54 was manually annotated 3 times for cluster DW.

Info for manual annotations of cluster DY:

- Start number 50 was manually annotated 5 times for cluster DY.

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

Gene: Archis\_79 Start: 46629, Stop: 47405, Start Num: 58

Candidate Starts for Archis\_79:

(28, 46410), (Start: 58 @46629 has 43 MA's), (65, 46806), (71, 46878), (75, 46956), (77, 46968), (78, 47076), (90, 47262), (91, 47271), (92, 47295),

Gene: Ayotoya\_73 Start: 49136, Stop: 50011, Start Num: 56

Candidate Starts for Ayotoya\_73:

(27, 48965), (49, 49097), (52, 49130), (Start: 56 @49136 has 14 MA's), (59, 49229), (64, 49376), (70, 49445), (72, 49460), (80, 49700), (87, 49799), (94, 49886), (98, 49994),

Gene: Azula\_83 Start: 51089, Stop: 51874, Start Num: 58

Candidate Starts for Azula\_83:

(39, 50924), (Start: 58 @51089 has 43 MA's), (65, 51272), (77, 51434), (78, 51542), (90, 51728), (91, 51737),

Gene: Barco\_74 Start: 46443, Stop: 47219, Start Num: 58

Candidate Starts for Barco\_74:

(Start: 58 @46443 has 43 MA's), (65, 46620), (71, 46692), (73, 46749), (74, 46755), (75, 46770), (77, 46782), (78, 46890), (90, 47076), (91, 47085),

Gene: Begonia\_75 Start: 49240, Stop: 50016, Start Num: 58

Candidate Starts for Begonia\_75:

(16, 48943), (28, 49021), (Start: 58 @49240 has 43 MA's), (65, 49417), (75, 49567), (77, 49579), (78, 49687), (90, 49873), (91, 49882),

Gene: BetterKatz\_73 Start: 48918, Stop: 49793, Start Num: 56

Candidate Starts for BetterKatz\_73:

(25, 48711), (Start: 56 @48918 has 14 MA's), (59, 49011), (64, 49158), (70, 49227), (72, 49242), (80, 49482), (87, 49581), (90, 49629), (94, 49668), (98, 49776),

Gene: BlingBling\_72 Start: 46215, Stop: 46991, Start Num: 58

Candidate Starts for BlingBling\_72:

(Start: 58 @46215 has 43 MA's), (65, 46392), (71, 46464), (77, 46554), (78, 46662), (90, 46848), (91, 46857),

Gene: Blino\_79 Start: 52044, Stop: 52805, Start Num: 58

Candidate Starts for Blino\_79:

(Start: 58 @52044 has 43 MA's), (65, 52221), (67, 52260), (69, 52284), (71, 52293), (77, 52383), (78, 52491), (90, 52677), (91, 52686),

Gene: Blueberry\_82 Start: 51089, Stop: 51874, Start Num: 58

Candidate Starts for Blueberry\_82:

(39, 50924), (Start: 58 @51089 has 43 MA's), (65, 51272), (77, 51434), (78, 51542), (90, 51728), (91, 51737),

Gene: Bock\_74 Start: 48502, Stop: 49377, Start Num: 56

Candidate Starts for Bock\_74:

(17, 48271), (19, 48274), (33, 48349), (40, 48400), (45, 48421), (Start: 56 @48502 has 14 MA's), (59, 48595), (64, 48742), (70, 48811), (72, 48826), (80, 49066), (84, 49144), (87, 49165), (90, 49213), (94, 49252), (98, 49360),

Gene: Brylie\_72 Start: 48152, Stop: 49027, Start Num: 56

Candidate Starts for Brylie\_72:

(27, 47981), (49, 48113), (52, 48146), (Start: 56 @48152 has 14 MA's), (59, 48245), (64, 48392), (70, 48461), (72, 48476), (80, 48716), (87, 48815), (94, 48902), (98, 49010),

Gene: CaptainKirk2\_77 Start: 46000, Stop: 46776, Start Num: 58

Candidate Starts for CaptainKirk2\_77:

(Start: 58 @46000 has 43 MA's), (65, 46177), (71, 46249), (73, 46306), (74, 46312), (75, 46327), (77, 46339), (78, 46447), (90, 46633), (91, 46642),

Gene: CarolAnn\_78 Start: 52043, Stop: 52804, Start Num: 58

Candidate Starts for CarolAnn\_78:

(Start: 58 @52043 has 43 MA's), (65, 52220), (67, 52259), (69, 52283), (71, 52292), (77, 52382), (78, 52490), (90, 52676), (91, 52685),

Gene: Chop\_74 Start: 49201, Stop: 50076, Start Num: 56

Candidate Starts for Chop\_74:

(27, 49030), (49, 49162), (52, 49195), (Start: 56 @49201 has 14 MA's), (59, 49294), (64, 49441), (70, 49510), (72, 49525), (80, 49765), (87, 49864), (90, 49912), (94, 49951), (98, 50059),

Gene: DelRio\_73 Start: 49243, Stop: 50118, Start Num: 56

Candidate Starts for DelRio\_73:

(27, 49072), (41, 49147), (49, 49204), (52, 49237), (Start: 56 @49243 has 14 MA's), (59, 49336), (64, 49483), (70, 49552), (72, 49567), (80, 49807), (82, 49846), (87, 49906), (90, 49954), (94, 49993), (98, 50101),

Gene: Delian\_80 Start: 45998, Stop: 46774, Start Num: 58

Candidate Starts for Delian\_80:

(Start: 58 @45998 has 43 MA's), (65, 46175), (71, 46247), (73, 46304), (74, 46310), (75, 46325), (77, 46337), (78, 46445), (90, 46631), (91, 46640),

Gene: Denise\_71 Start: 41520, Stop: 42272, Start Num: 58

Candidate Starts for Denise\_71:

(Start: 58 @41520 has 43 MA's), (63, 41658), (66, 41715), (79, 41973), (86, 42087), (88, 42126), (89, 42132), (91, 42156), (93, 42183), (95, 42234),

Gene: DonkeyMan\_57 Start: 38622, Stop: 39494, Start Num: 50

Candidate Starts for DonkeyMan\_57:

(Start: 50 @38622 has 5 MA's), (51, 38634), (62, 38847), (85, 39276), (95, 39426), (97, 39441),

Gene: DumpsterDude\_69 Start: 50376, Stop: 51257, Start Num: 54

Candidate Starts for DumpsterDude\_69:

(3, 49788), (5, 49821), (12, 50073), (18, 50124), (Start: 54 @50376 has 3 MA's),

Gene: Fairfaxidum\_80 Start: 48694, Stop: 49470, Start Num: 58

Candidate Starts for Fairfaxidum\_80:

(Start: 58 @48694 has 43 MA's), (65, 48874), (69, 48937), (71, 48946), (77, 49036), (88, 49309), (90, 49330), (91, 49339), (95, 49417),

Gene: Fenry\_76 Start: 48068, Stop: 48844, Start Num: 58

Candidate Starts for Fenry\_76:

(28, 47849), (43, 47936), (Start: 58 @48068 has 43 MA's), (63, 48212), (65, 48245), (71, 48317), (73, 48374), (75, 48395), (77, 48407), (78, 48515), (90, 48701), (91, 48710),

Gene: Francois\_73 Start: 48813, Stop: 49691, Start Num: 55

Candidate Starts for Francois\_73:

(Start: 55 @48813 has 1 MA's), (70, 49125), (72, 49140), (80, 49380), (90, 49527), (94, 49566), (98, 49674),

Gene: Frokostdame\_82 Start: 50554, Stop: 51336, Start Num: 58

Candidate Starts for Frokostdame\_82:

(39, 50389), (Start: 58 @50554 has 43 MA's), (65, 50737), (77, 50899), (78, 51007), (90, 51193), (91, 51202), (95, 51280),

Gene: Gambino\_85 Start: 51089, Stop: 51874, Start Num: 58

Candidate Starts for Gambino\_85:

(39, 50924), (Start: 58 @51089 has 43 MA's), (65, 51272), (77, 51434), (78, 51542), (90, 51728), (91, 51737),

Gene: GrandSlam\_74 Start: 49201, Stop: 50076, Start Num: 56

Candidate Starts for GrandSlam\_74:

(27, 49030), (49, 49162), (52, 49195), (Start: 56 @49201 has 14 MA's), (59, 49294), (64, 49441), (70, 49510), (72, 49525), (80, 49765), (87, 49864), (90, 49912), (94, 49951), (98, 50059),

Gene: Guacamole\_75 Start: 47418, Stop: 48194, Start Num: 58

Candidate Starts for Guacamole\_75:

(Start: 58 @47418 has 43 MA's), (65, 47595), (71, 47667), (73, 47724), (74, 47730), (75, 47745), (77, 47757), (78, 47865), (90, 48051), (91, 48060),

Gene: Hamood\_74 Start: 49201, Stop: 50076, Start Num: 56

Candidate Starts for Hamood\_74:

(27, 49030), (49, 49162), (52, 49195), (Start: 56 @49201 has 14 MA's), (59, 49294), (64, 49441), (70, 49510), (72, 49525), (80, 49765), (87, 49864), (90, 49912), (94, 49951), (98, 50059),

Gene: Heinz\_58 Start: 37588, Stop: 38469, Start Num: 50

Candidate Starts for Heinz\_58:

(Start: 50 @37588 has 5 MA's), (85, 38251), (95, 38401), (96, 38413),

Gene: Hibiscus\_59 Start: 37479, Stop: 38351, Start Num: 50

Candidate Starts for Hibiscus\_59:

(10, 37173), (30, 37335), (31, 37341), (35, 37359), (37, 37380), (44, 37425), (Start: 50 @37479 has 5 MA's), (85, 38133), (95, 38283), (97, 38298),

Gene: Hitter\_75 Start: 45674, Stop: 46450, Start Num: 58

Candidate Starts for Hitter\_75:

(28, 45455), (Start: 58 @45674 has 43 MA's), (65, 45851), (71, 45923), (75, 46001), (77, 46013), (78, 46121), (90, 46307), (91, 46316), (92, 46340),

Gene: Jalammah\_80 Start: 49580, Stop: 50356, Start Num: 58

Candidate Starts for Jalammah\_80:

(38, 49415), (43, 49448), (Start: 58 @49580 has 43 MA's), (65, 49757), (71, 49829), (73, 49886), (75, 49907), (77, 49919), (78, 50027), (90, 50213), (91, 50222),

Gene: JasperJr\_75 Start: 47418, Stop: 48194, Start Num: 58

Candidate Starts for JasperJr\_75:

(Start: 58 @47418 has 43 MA's), (65, 47595), (71, 47667), (73, 47724), (74, 47730), (75, 47745), (77, 47757), (78, 47865), (90, 48051), (91, 48060),

Gene: Jojo24\_58 Start: 37912, Stop: 38784, Start Num: 50

Candidate Starts for Jojo24\_58:

(37, 37819), (42, 37858), (Start: 50 @37912 has 5 MA's), (62, 38137), (85, 38566), (95, 38716), (97, 38731),

Gene: JuJu\_85 Start: 51321, Stop: 52103, Start Num: 58

Candidate Starts for JuJu\_85:

(Start: 58 @51321 has 43 MA's), (65, 51504), (77, 51666), (78, 51774), (90, 51960), (91, 51969),

Gene: KappaFarmDelta\_77 Start: 47260, Stop: 48036, Start Num: 58

Candidate Starts for KappaFarmDelta\_77:

(11, 46912), (13, 46924), (36, 47086), (38, 47095), (Start: 58 @47260 has 43 MA's), (65, 47437), (71, 47509), (73, 47566), (75, 47587), (77, 47599), (78, 47707), (90, 47893), (91, 47902), (92, 47926),

Gene: Lysidious\_79 Start: 48328, Stop: 49104, Start Num: 58

Candidate Starts for Lysidious\_79:

(15, 48028), (24, 48079), (38, 48163), (43, 48196), (Start: 58 @48328 has 43 MA's), (65, 48505), (71, 48577), (73, 48634), (75, 48655), (77, 48667), (78, 48775), (90, 48961), (91, 48970), (92, 48994),

Gene: Malachai\_75 Start: 49240, Stop: 50016, Start Num: 58

Candidate Starts for Malachai\_75:

(16, 48943), (28, 49021), (Start: 58 @49240 has 43 MA's), (65, 49417), (75, 49567), (77, 49579), (78, 49687), (90, 49873), (91, 49882),

Gene: Malibo\_74 Start: 48036, Stop: 48914, Start Num: 54

Candidate Starts for Malibo\_74:

(6, 47619), (Start: 54 @48036 has 3 MA's), (70, 48348),

Gene: Malisha\_92 Start: 53316, Stop: 54062, Start Num: 58

Candidate Starts for Malisha\_92:

(52, 53265), (53, 53268), (Start: 58 @53316 has 43 MA's), (61, 53430), (76, 53634), (79, 53763), (83, 53829), (86, 53877), (87, 53889), (91, 53946), (95, 54024),

Gene: Melba\_77 Start: 46375, Stop: 47151, Start Num: 58

Candidate Starts for Melba\_77:



(36, 46201), (Start: 58 @46375 has 43 MA's), (65, 46552), (71, 46624), (75, 46702), (77, 46714), (78, 46822), (90, 47008), (91, 47017), (92, 47041),

Gene: Mellie\_74 Start: 46392, Stop: 47168, Start Num: 58

Candidate Starts for Mellie\_74:

(Start: 58 @46392 has 43 MA's), (60, 46497), (65, 46569), (77, 46731), (90, 47025), (91, 47034),

Gene: MintFen\_77 Start: 46614, Stop: 47390, Start Num: 58

Candidate Starts for MintFen\_77:

(Start: 58 @46614 has 43 MA's), (65, 46791), (71, 46863), (73, 46920), (74, 46926), (75, 46941), (77, 46953), (78, 47061), (90, 47247), (91, 47256),

Gene: MissRona\_83 Start: 51090, Stop: 51875, Start Num: 58

Candidate Starts for MissRona\_83:

(39, 50925), (Start: 58 @51090 has 43 MA's), (65, 51273), (77, 51435), (78, 51543), (90, 51729), (91, 51738),

Gene: Mulch\_72 Start: 48191, Stop: 49066, Start Num: 56

Candidate Starts for Mulch\_72:

(27, 48020), (49, 48152), (52, 48185), (Start: 56 @48191 has 14 MA's), (59, 48284), (64, 48431), (70, 48500), (72, 48515), (80, 48755), (87, 48854), (94, 48941), (98, 49049),

Gene: Murp\_75 Start: 49491, Stop: 50267, Start Num: 58

Candidate Starts for Murp\_75:

(38, 49326), (Start: 58 @49491 has 43 MA's), (60, 49596), (65, 49668), (71, 49740), (73, 49797), (75, 49818), (77, 49830), (78, 49938), (90, 50124), (91, 50133),

Gene: Nadeem\_72 Start: 48179, Stop: 49054, Start Num: 56

Candidate Starts for Nadeem\_72:

(27, 48008), (49, 48140), (52, 48173), (Start: 56 @48179 has 14 MA's), (59, 48272), (64, 48419), (70, 48488), (72, 48503), (80, 48743), (87, 48842), (94, 48929), (98, 49037),

Gene: NancyRae\_71 Start: 48057, Stop: 48932, Start Num: 56

Candidate Starts for NancyRae\_71:

(47, 47997), (52, 48051), (Start: 56 @48057 has 14 MA's), (59, 48150), (64, 48297), (70, 48366), (72, 48381), (80, 48621), (87, 48720), (90, 48768), (94, 48807), (98, 48915),

Gene: Oblivate\_77 Start: 46932, Stop: 47708, Start Num: 58

Candidate Starts for Oblivate\_77:

(36, 46752), (Start: 58 @46932 has 43 MA's), (63, 47076), (65, 47109), (71, 47181), (75, 47259), (77, 47271), (78, 47379), (90, 47565), (91, 47574),

Gene: PCoral7\_76 Start: 47524, Stop: 48300, Start Num: 58

Candidate Starts for PCoral7\_76:

(Start: 58 @47524 has 43 MA's), (65, 47704), (69, 47767), (71, 47776), (77, 47866), (88, 48139), (90, 48160), (91, 48169), (95, 48247),

Gene: Parada\_72 Start: 48191, Stop: 49066, Start Num: 56

Candidate Starts for Parada\_72:

(27, 48020), (49, 48152), (52, 48185), (Start: 56 @48191 has 14 MA's), (59, 48284), (64, 48431), (70, 48500), (72, 48515), (80, 48755), (87, 48854), (94, 48941), (98, 49049),

Gene: Petra\_84 Start: 49488, Stop: 50267, Start Num: 58

Candidate Starts for Petra\_84:

(14, 49173), (23, 49230), (32, 49281), (43, 49356), (Start: 58 @49488 has 43 MA's), (65, 49665), (77, 49827), (78, 49935), (90, 50121), (91, 50130), (92, 50154),

Gene: PhrostedPhlake\_83 Start: 49071, Stop: 49847, Start Num: 58

Candidate Starts for PhrostedPhlake\_83:

(38, 48906), (Start: 58 @49071 has 43 MA's), (65, 49248), (77, 49410), (78, 49518), (90, 49704), (91, 49713),

Gene: Pimento\_75 Start: 48276, Stop: 49151, Start Num: 56

Candidate Starts for Pimento\_75:

(21, 48075), (22, 48078), (Start: 56 @48276 has 14 MA's), (59, 48369), (68, 48570), (70, 48585), (72, 48600), (80, 48840), (87, 48939), (90, 48987), (94, 49026), (98, 49134),

Gene: Pipp\_82 Start: 48884, Stop: 49675, Start Num: 57

Candidate Starts for Pipp\_82:

(26, 48650), (28, 48665), (29, 48671), (38, 48728), (Start: 57 @48884 has 1 MA's), (Start: 58 @48893 has 43 MA's), (65, 49076), (75, 49226), (90, 49532), (91, 49541), (92, 49565),

Gene: PrincePatrick\_79 Start: 47344, Stop: 48120, Start Num: 58

Candidate Starts for PrincePatrick\_79:

(Start: 58 @47344 has 43 MA's), (65, 47524), (69, 47587), (71, 47596), (77, 47686), (88, 47959), (90, 47980), (91, 47989), (95, 48067),

Gene: Reyja\_61 Start: 39095, Stop: 39976, Start Num: 50

Candidate Starts for Reyja\_61:

(44, 39041), (Start: 50 @39095 has 5 MA's), (85, 39758), (95, 39908), (97, 39923),

Gene: Ruthy\_71 Start: 49474, Stop: 50355, Start Num: 54

Candidate Starts for Ruthy\_71:

(2, 48862), (4, 48916), (18, 49222), (Start: 54 @49474 has 3 MA's), (70, 49786),

Gene: Samba\_77 Start: 49525, Stop: 50301, Start Num: 58

Candidate Starts for Samba\_77:

(28, 49306), (Start: 58 @49525 has 43 MA's), (65, 49702), (71, 49774), (73, 49831), (75, 49852), (77, 49864), (78, 49972), (90, 50158), (91, 50167), (92, 50191), (95, 50245),

Gene: Santhid\_55 Start: 36515, Stop: 37387, Start Num: 50

Candidate Starts for Santhid\_55:

(1, 35897), (8, 36176), (9, 36209), (20, 36305), (48, 36476), (Start: 50 @36515 has 5 MA's), (62, 36740), (74, 36911), (85, 37169), (95, 37319), (97, 37334),

Gene: Tarzan\_59 Start: 37877, Stop: 38749, Start Num: 50

Candidate Starts for Tarzan\_59:

(Start: 50 @37877 has 5 MA's), (51, 37889), (62, 38102), (85, 38531), (95, 38681), (97, 38696),

Gene: Toast\_77 Start: 47524, Stop: 48300, Start Num: 58

Candidate Starts for Toast\_77:

(Start: 58 @47524 has 43 MA's), (65, 47704), (69, 47767), (71, 47776), (77, 47866), (88, 48139), (90, 48160), (91, 48169), (95, 48247),

Gene: UmaThurman\_80 Start: 47661, Stop: 48437, Start Num: 58

Candidate Starts for UmaThurman\_80:

(Start: 58 @47661 has 43 MA's), (65, 47838), (71, 47910), (73, 47967), (74, 47973), (75, 47988), (77, 48000), (78, 48108), (90, 48294), (91, 48303),

Gene: Utz\_68 Start: 47303, Stop: 48079, Start Num: 58

Candidate Starts for Utz\_68:

(24, 47054), (Start: 58 @47303 has 43 MA's), (65, 47480), (71, 47552), (73, 47609), (74, 47615), (75, 47630), (77, 47642), (78, 47750), (90, 47936), (91, 47945),

Gene: Walrus\_77 Start: 48349, Stop: 49125, Start Num: 58

Candidate Starts for Walrus\_77:

(14, 48034), (32, 48142), (34, 48151), (43, 48217), (46, 48223), (Start: 58 @48349 has 43 MA's), (65, 48526), (77, 48688), (78, 48796), (90, 48982), (91, 48991),

Gene: WheatThin\_72 Start: 48179, Stop: 49054, Start Num: 56

Candidate Starts for WheatThin\_72:

(27, 48008), (49, 48140), (52, 48173), (Start: 56 @48179 has 14 MA's), (59, 48272), (64, 48419), (70, 48488), (72, 48503), (80, 48743), (87, 48842), (94, 48929), (98, 49037),

Gene: William\_79 Start: 48596, Stop: 49372, Start Num: 58

Candidate Starts for William\_79:

(7, 48164), (Start: 58 @48596 has 43 MA's), (65, 48776), (88, 49211), (90, 49232), (91, 49241), (95, 49319),

Gene: Wisp\_74 Start: 47248, Stop: 48024, Start Num: 58

Candidate Starts for Wisp\_74:

(43, 47116), (Start: 58 @47248 has 43 MA's), (65, 47425), (71, 47497), (75, 47575), (77, 47587), (78, 47695), (81, 47761), (90, 47881), (91, 47890),

Gene: Wocket\_77 Start: 47897, Stop: 48673, Start Num: 58

Candidate Starts for Wocket\_77:

(Start: 58 @47897 has 43 MA's), (65, 48074), (71, 48146), (73, 48203), (75, 48224), (77, 48236), (78, 48344), (90, 48530), (91, 48539),

Gene: Zarbodnamra\_81 Start: 47607, Stop: 48383, Start Num: 58

Candidate Starts for Zarbodnamra\_81:

(Start: 58 @47607 has 43 MA's), (65, 47784), (71, 47856), (73, 47913), (75, 47934), (77, 47946), (78, 48054), (87, 48192), (90, 48240), (91, 48249),

Gene: ZiggyZoo\_78 Start: 49093, Stop: 49869, Start Num: 58

Candidate Starts for ZiggyZoo\_78:

(28, 48874), (Start: 58 @49093 has 43 MA's), (65, 49270), (71, 49342), (75, 49420), (77, 49432), (78, 49540), (90, 49726), (91, 49735), (92, 49759),