

# Pham 287980



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 287980 Report

This analysis was run 03/28/26 on database version 641.

Pham number 287980 has 49 members, 4 are drafts.

Phages represented in each track:

- Track 1 : LilSaint\_254
- Track 2 : Eliot67\_250, PinkiePie\_249, FreddyDRoo\_252, Squillium\_251, Liandry\_248
- Track 3 : Daubenski\_242, Cadmus\_248
- Track 4 : Riptide\_255
- Track 5 : Braelyn\_245, Bartholomune\_249, WhereRU\_249, Navo\_242, Davielle\_249
- Track 6 : NootNoot\_245
- Track 7 : Shuckle\_248
- Track 8 : Paradiddles\_240
- Track 9 : Persimmon\_251
- Track 10 : Anedea\_265
- Track 11 : Genie2\_255, Yaboi\_261, AngryGiraffe\_256
- Track 12 : Battuta\_257, SaltySpitoon\_259, Birchlyn\_259, Jollison\_256, Bordeaux\_257, KentuckyRacer\_266, Quarant19\_260, AcciDwight\_268, Spilled\_267, Wipeout\_251, PumpkinSpice\_262, Spelly\_264
- Track 13 : TomSawyer\_264
- Track 14 : Amabiko\_264, CeilingFan\_265, MindFlayer\_252, Gibbi\_269, JimJam\_267, Starbow\_256
- Track 15 : Brizzy\_258
- Track 16 : Sollertia\_256
- Track 17 : IchabodCrane\_253
- Track 18 : StarPlatinum\_269
- Track 19 : Stanimal\_255, BoomerJR\_255
- Track 20 : LukeCage\_263
- Track 21 : Enygma\_267

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

The start number called the most often in the published annotations is 13, it was called in 16 of the 45 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AcciDwight\_268, Anedea\_265, AngryGiraffe\_256, Battuta\_257, Birchlyn\_259, Bordeaux\_257, Brizzy\_258, Genie2\_255, Jollison\_256, KentuckyRacer\_266,

PumpkinSpice\_262, Quaran19\_260, SaltySpittoon\_259, Spelly\_264, Spilled\_267, Wipeout\_251, Yaboi\_261,

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

- Amabiko\_264, Bartholomune\_249, BoomerJR\_255, Braelyn\_245, Cadmus\_248, CeilingFan\_265, Daubenski\_242, Davielle\_249, Eliot67\_250, Enygma\_267, FreddyDRoo\_252, Gibbi\_269, IchabodCrane\_253, JimJam\_267, Liandry\_248, LilSaint\_254, LukeCage\_263, MindFlayer\_252, Navo\_242, NootNoot\_245, Paradiddles\_240, Persimmon\_251, PinkiePie\_249, Riptide\_255, Shuckle\_248, Sollertia\_256, Squillium\_251, Stanimal\_255, StarPlatinum\_269, Starbow\_256, TomSawyer\_264, WhereRU\_249,

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

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### Summary by start number:

Start 6:

- Found in 49 of 49 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 12 of 45
- Called 24.5% of time when present
- Phage (with cluster) where this start called: Bartholomune\_249 (BE1), Braelyn\_245 (BE1), Davielle\_249 (BE1), LilSaint\_254 (BE1), LukeCage\_263 (BE2), Navo\_242 (BE1), NootNoot\_245 (BE1), Paradiddles\_240 (BE1), Riptide\_255 (BE1), Shuckle\_248 (BE1), Sollertia\_256 (BE2), WhereRU\_249 (BE1),

Start 10:

- Found in 49 of 49 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 9 of 45
- Called 22.4% of time when present
- Phage (with cluster) where this start called: Cadmus\_248 (BE1), Daubenski\_242 (BE1), Eliot67\_250 (BE1), Enygma\_267 (BE2), FreddyDRoo\_252 (BE1), Liandry\_248 (BE1), Persimmon\_251 (BE1), PinkiePie\_249 (BE1), Squillium\_251 (BE1), StarPlatinum\_269 (BE2), TomSawyer\_264 (BE2),

Start 11:

- Found in 47 of 49 ( 95.9% ) of genes in pham
- Manual Annotations of this start: 8 of 45
- Called 19.1% of time when present
- Phage (with cluster) where this start called: Amabiko\_264 (BE2), BoomerJR\_255 (BE2), CeilingFan\_265 (BE2), Gibbi\_269 (BE2), IchabodCrane\_253 (BE2), JimJam\_267 (BE2), MindFlayer\_252 (BE2), Stanimal\_255 (BE2), Starbow\_256 (BE2),

Start 13:

- Found in 49 of 49 ( 100.0% ) of genes in pham
- Manual Annotations of this start: 16 of 45
- Called 34.7% of time when present
- Phage (with cluster) where this start called: Accidwight\_268 (BE2), Anedea\_265 (BE1), AngryGiraffe\_256 (BE2), Battuta\_257 (BE2), Birchlyn\_259 (BE2), Bordeaux\_257 (BE2), Brizzy\_258 (BE2), Genie2\_255 (BE2), Jollison\_256 (BE2), KentuckyRacer\_266 (BE2), PumpkinSpice\_262 (BE2), Quaran19\_260 (BE2), SaltySpittoon\_259 (BE2), Spelly\_264 (BE2), Spilled\_267 (BE2), Wipeout\_251 (BE2),

Yaboi\_261 (BE2),

### **Summary by clusters:**

There are 2 clusters represented in this pham: BE2, BE1,

Info for manual annotations of cluster BE1:

- Start number 6 was manually annotated 10 times for cluster BE1.
- Start number 10 was manually annotated 6 times for cluster BE1.
- Start number 13 was manually annotated 1 time for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 6 was manually annotated 2 times for cluster BE2.
- Start number 10 was manually annotated 3 times for cluster BE2.
- Start number 11 was manually annotated 8 times for cluster BE2.
- Start number 13 was manually annotated 15 times for cluster BE2.

### **Gene Information:**

Gene: AcciDwight\_268 Start: 118974, Stop: 119087, Start Num: 13

Candidate Starts for AcciDwight\_268:

(3, 118899), (5, 118929), (Start: 6 @118938 has 12 MA's), (9, 118950), (Start: 10 @118956 has 9 MA's), (Start: 11 @118968 has 8 MA's), (Start: 13 @118974 has 16 MA's), (20, 119073),

Gene: Amabiko\_264 Start: 118326, Stop: 118445, Start Num: 11

Candidate Starts for Amabiko\_264:

(3, 118257), (5, 118287), (Start: 6 @118296 has 12 MA's), (9, 118308), (Start: 10 @118314 has 9 MA's), (Start: 11 @118326 has 8 MA's), (Start: 13 @118332 has 16 MA's), (20, 118431),

Gene: Anedea\_265 Start: 122550, Stop: 122744, Start Num: 13

Candidate Starts for Anedea\_265:

(3, 122475), (4, 122490), (Start: 6 @122514 has 12 MA's), (7, 122520), (8, 122523), (9, 122526), (Start: 10 @122532 has 9 MA's), (Start: 11 @122544 has 8 MA's), (Start: 13 @122550 has 16 MA's), (14, 122565), (15, 122622), (22, 122703),

Gene: AngryGiraffe\_256 Start: 117819, Stop: 117935, Start Num: 13

Candidate Starts for AngryGiraffe\_256:

(1, 117666), (5, 117774), (Start: 6 @117783 has 12 MA's), (7, 117789), (Start: 10 @117801 has 9 MA's), (Start: 11 @117813 has 8 MA's), (Start: 13 @117819 has 16 MA's), (14, 117834),

Gene: Bartholomune\_249 Start: 120501, Stop: 120677, Start Num: 6

Candidate Starts for Bartholomune\_249:

(3, 120462), (4, 120477), (Start: 6 @120501 has 12 MA's), (8, 120510), (9, 120513), (Start: 10 @120519 has 9 MA's), (Start: 11 @120531 has 8 MA's), (Start: 13 @120537 has 16 MA's), (17, 120633),

Gene: Battuta\_257 Start: 117647, Stop: 117760, Start Num: 13

Candidate Starts for Battuta\_257:

(3, 117572), (5, 117602), (Start: 6 @117611 has 12 MA's), (9, 117623), (Start: 10 @117629 has 9 MA's), (Start: 11 @117641 has 8 MA's), (Start: 13 @117647 has 16 MA's), (20, 117746),

Gene: Birchlyn\_259 Start: 115580, Stop: 115693, Start Num: 13

Candidate Starts for Birchlyn\_259:

(3, 115505), (5, 115535), (Start: 6 @115544 has 12 MA's), (9, 115556), (Start: 10 @115562 has 9 MA's), (Start: 11 @115574 has 8 MA's), (Start: 13 @115580 has 16 MA's), (20, 115679),

Gene: BoomerJR\_255 Start: 118246, Stop: 118368, Start Num: 11

Candidate Starts for BoomerJR\_255:

(1, 118099), (5, 118207), (Start: 6 @118216 has 12 MA's), (7, 118222), (Start: 10 @118234 has 9 MA's), (Start: 11 @118246 has 8 MA's), (Start: 13 @118252 has 16 MA's), (14, 118267),

Gene: Bordeaux\_257 Start: 118230, Stop: 118343, Start Num: 13

Candidate Starts for Bordeaux\_257:

(3, 118155), (5, 118185), (Start: 6 @118194 has 12 MA's), (9, 118206), (Start: 10 @118212 has 9 MA's), (Start: 11 @118224 has 8 MA's), (Start: 13 @118230 has 16 MA's), (20, 118329),

Gene: Braelyn\_245 Start: 119835, Stop: 120011, Start Num: 6

Candidate Starts for Braelyn\_245:

(3, 119796), (4, 119811), (Start: 6 @119835 has 12 MA's), (8, 119844), (9, 119847), (Start: 10 @119853 has 9 MA's), (Start: 11 @119865 has 8 MA's), (Start: 13 @119871 has 16 MA's), (17, 119967),

Gene: Brizzy\_258 Start: 118758, Stop: 118871, Start Num: 13

Candidate Starts for Brizzy\_258:

(3, 118683), (5, 118713), (Start: 6 @118722 has 12 MA's), (9, 118734), (Start: 10 @118740 has 9 MA's), (Start: 11 @118752 has 8 MA's), (Start: 13 @118758 has 16 MA's), (20, 118857), (21, 118860),

Gene: Cadmus\_248 Start: 121931, Stop: 122080, Start Num: 10

Candidate Starts for Cadmus\_248:

(3, 121874), (5, 121904), (Start: 6 @121913 has 12 MA's), (7, 121919), (9, 121925), (Start: 10 @121931 has 9 MA's), (Start: 11 @121943 has 8 MA's), (12, 121946), (Start: 13 @121949 has 16 MA's), (16, 122042),

Gene: CeilingFan\_265 Start: 119479, Stop: 119598, Start Num: 11

Candidate Starts for CeilingFan\_265:

(3, 119410), (5, 119440), (Start: 6 @119449 has 12 MA's), (9, 119461), (Start: 10 @119467 has 9 MA's), (Start: 11 @119479 has 8 MA's), (Start: 13 @119485 has 16 MA's), (20, 119584),

Gene: Daubenski\_242 Start: 121832, Stop: 121981, Start Num: 10

Candidate Starts for Daubenski\_242:

(3, 121775), (5, 121805), (Start: 6 @121814 has 12 MA's), (7, 121820), (9, 121826), (Start: 10 @121832 has 9 MA's), (Start: 11 @121844 has 8 MA's), (12, 121847), (Start: 13 @121850 has 16 MA's), (16, 121943),

Gene: Davielle\_249 Start: 120585, Stop: 120761, Start Num: 6

Candidate Starts for Davielle\_249:

(3, 120546), (4, 120561), (Start: 6 @120585 has 12 MA's), (8, 120594), (9, 120597), (Start: 10 @120603 has 9 MA's), (Start: 11 @120615 has 8 MA's), (Start: 13 @120621 has 16 MA's), (17, 120717),

Gene: Eliot67\_250 Start: 120233, Stop: 120391, Start Num: 10

Candidate Starts for Eliot67\_250:

(5, 120206), (Start: 6 @120215 has 12 MA's), (7, 120221), (9, 120227), (Start: 10 @120233 has 9 MA's), (Start: 11 @120245 has 8 MA's), (Start: 13 @120251 has 16 MA's), (16, 120344),

Gene: Enygma\_267 Start: 121264, Stop: 121395, Start Num: 10

Candidate Starts for Enygma\_267:

(3, 121207), (5, 121237), (Start: 6 @121246 has 12 MA's), (9, 121258), (Start: 10 @121264 has 9 MA's), (Start: 11 @121276 has 8 MA's), (Start: 13 @121282 has 16 MA's), (20, 121381), (21, 121384),

Gene: FreddyDRoo\_252 Start: 120233, Stop: 120391, Start Num: 10

Candidate Starts for FreddyDRoo\_252:

(5, 120206), (Start: 6 @120215 has 12 MA's), (7, 120221), (9, 120227), (Start: 10 @120233 has 9 MA's), (Start: 11 @120245 has 8 MA's), (Start: 13 @120251 has 16 MA's), (16, 120344),

Gene: Genie2\_255 Start: 118377, Stop: 118493, Start Num: 13

Candidate Starts for Genie2\_255:

(1, 118224), (5, 118332), (Start: 6 @118341 has 12 MA's), (7, 118347), (Start: 10 @118359 has 9 MA's), (Start: 11 @118371 has 8 MA's), (Start: 13 @118377 has 16 MA's), (14, 118392),

Gene: Gibbi\_269 Start: 118972, Stop: 119091, Start Num: 11

Candidate Starts for Gibbi\_269:

(3, 118903), (5, 118933), (Start: 6 @118942 has 12 MA's), (9, 118954), (Start: 10 @118960 has 9 MA's), (Start: 11 @118972 has 8 MA's), (Start: 13 @118978 has 16 MA's), (20, 119077),

Gene: IchabodCrane\_253 Start: 118027, Stop: 118146, Start Num: 11

Candidate Starts for IchabodCrane\_253:

(3, 117958), (5, 117988), (Start: 6 @117997 has 12 MA's), (9, 118009), (Start: 10 @118015 has 9 MA's), (Start: 11 @118027 has 8 MA's), (Start: 13 @118033 has 16 MA's), (20, 118132), (21, 118135),

Gene: JimJam\_267 Start: 120408, Stop: 120527, Start Num: 11

Candidate Starts for JimJam\_267:

(3, 120339), (5, 120369), (Start: 6 @120378 has 12 MA's), (9, 120390), (Start: 10 @120396 has 9 MA's), (Start: 11 @120408 has 8 MA's), (Start: 13 @120414 has 16 MA's), (20, 120513),

Gene: Jollison\_256 Start: 118164, Stop: 118277, Start Num: 13

Candidate Starts for Jollison\_256:

(3, 118089), (5, 118119), (Start: 6 @118128 has 12 MA's), (9, 118140), (Start: 10 @118146 has 9 MA's), (Start: 11 @118158 has 8 MA's), (Start: 13 @118164 has 16 MA's), (20, 118263),

Gene: KentuckyRacer\_266 Start: 120329, Stop: 120442, Start Num: 13

Candidate Starts for KentuckyRacer\_266:

(3, 120254), (5, 120284), (Start: 6 @120293 has 12 MA's), (9, 120305), (Start: 10 @120311 has 9 MA's), (Start: 11 @120323 has 8 MA's), (Start: 13 @120329 has 16 MA's), (20, 120428),

Gene: Liandry\_248 Start: 120940, Stop: 121098, Start Num: 10

Candidate Starts for Liandry\_248:

(5, 120913), (Start: 6 @120922 has 12 MA's), (7, 120928), (9, 120934), (Start: 10 @120940 has 9 MA's), (Start: 11 @120952 has 8 MA's), (Start: 13 @120958 has 16 MA's), (16, 121051),

Gene: LilSaint\_254 Start: 121316, Stop: 121534, Start Num: 6

Candidate Starts for LilSaint\_254:

(3, 121277), (4, 121292), (Start: 6 @121316 has 12 MA's), (7, 121322), (8, 121325), (9, 121328), (Start: 10 @121334 has 9 MA's), (Start: 11 @121346 has 8 MA's), (Start: 13 @121352 has 16 MA's), (14, 121367), (15, 121424), (19, 121475), (22, 121505),

Gene: LukeCage\_263 Start: 120379, Stop: 120528, Start Num: 6

Candidate Starts for LukeCage\_263:

(2, 120322), (3, 120340), (Start: 6 @120379 has 12 MA's), (7, 120385), (Start: 10 @120397 has 9 MA's), (Start: 13 @120415 has 16 MA's), (14, 120430),

Gene: MindFlayer\_252 Start: 117543, Stop: 117662, Start Num: 11

Candidate Starts for MindFlayer\_252:

(3, 117474), (5, 117504), (Start: 6 @117513 has 12 MA's), (9, 117525), (Start: 10 @117531 has 9 MA's), (Start: 11 @117543 has 8 MA's), (Start: 13 @117549 has 16 MA's), (20, 117648),

Gene: Navo\_242 Start: 119039, Stop: 119215, Start Num: 6

Candidate Starts for Navo\_242:

(3, 119000), (4, 119015), (Start: 6 @119039 has 12 MA's), (8, 119048), (9, 119051), (Start: 10 @119057 has 9 MA's), (Start: 11 @119069 has 8 MA's), (Start: 13 @119075 has 16 MA's), (17, 119171),

Gene: NootNoot\_245 Start: 119734, Stop: 119910, Start Num: 6

Candidate Starts for NootNoot\_245:

(3, 119695), (5, 119725), (Start: 6 @119734 has 12 MA's), (7, 119740), (9, 119746), (Start: 10 @119752 has 9 MA's), (Start: 11 @119764 has 8 MA's), (Start: 13 @119770 has 16 MA's), (17, 119866),

Gene: Paradiddles\_240 Start: 122109, Stop: 122285, Start Num: 6

Candidate Starts for Paradiddles\_240:

(5, 122100), (Start: 6 @122109 has 12 MA's), (7, 122115), (9, 122121), (Start: 10 @122127 has 9 MA's), (Start: 11 @122139 has 8 MA's), (Start: 13 @122145 has 16 MA's), (16, 122238),

Gene: Persimmon\_251 Start: 120254, Stop: 120412, Start Num: 10

Candidate Starts for Persimmon\_251:

(5, 120227), (Start: 6 @120236 has 12 MA's), (7, 120242), (9, 120248), (Start: 10 @120254 has 9 MA's), (Start: 11 @120266 has 8 MA's), (Start: 13 @120272 has 16 MA's),

Gene: PinkiePie\_249 Start: 120940, Stop: 121098, Start Num: 10

Candidate Starts for PinkiePie\_249:

(5, 120913), (Start: 6 @120922 has 12 MA's), (7, 120928), (9, 120934), (Start: 10 @120940 has 9 MA's), (Start: 11 @120952 has 8 MA's), (Start: 13 @120958 has 16 MA's), (16, 121051),

Gene: PumpkinSpice\_262 Start: 118770, Stop: 118883, Start Num: 13

Candidate Starts for PumpkinSpice\_262:

(3, 118695), (5, 118725), (Start: 6 @118734 has 12 MA's), (9, 118746), (Start: 10 @118752 has 9 MA's), (Start: 11 @118764 has 8 MA's), (Start: 13 @118770 has 16 MA's), (20, 118869),

Gene: Quaran19\_260 Start: 118671, Stop: 118784, Start Num: 13

Candidate Starts for Quaran19\_260:

(3, 118596), (5, 118626), (Start: 6 @118635 has 12 MA's), (9, 118647), (Start: 10 @118653 has 9 MA's), (Start: 11 @118665 has 8 MA's), (Start: 13 @118671 has 16 MA's), (20, 118770),

Gene: Riptide\_255 Start: 120918, Stop: 121136, Start Num: 6

Candidate Starts for Riptide\_255:

(3, 120879), (4, 120894), (Start: 6 @120918 has 12 MA's), (7, 120924), (8, 120927), (9, 120930), (Start: 10 @120936 has 9 MA's), (Start: 11 @120948 has 8 MA's), (Start: 13 @120954 has 16 MA's), (14, 120969), (15, 121026), (17, 121065), (22, 121107), (23, 121125),

Gene: SaltySpittoon\_259 Start: 117753, Stop: 117866, Start Num: 13

Candidate Starts for SaltySpitooon\_259:

(3, 117678), (5, 117708), (Start: 6 @117717 has 12 MA's), (9, 117729), (Start: 10 @117735 has 9 MA's), (Start: 11 @117747 has 8 MA's), (Start: 13 @117753 has 16 MA's), (20, 117852),

Gene: Shuckle\_248 Start: 122102, Stop: 122263, Start Num: 6

Candidate Starts for Shuckle\_248:

(3, 122063), (4, 122078), (Start: 6 @122102 has 12 MA's), (8, 122111), (9, 122114), (Start: 10 @122120 has 9 MA's), (Start: 11 @122132 has 8 MA's), (Start: 13 @122138 has 16 MA's), (18, 122240),

Gene: Sollertia\_256 Start: 118330, Stop: 118482, Start Num: 6

Candidate Starts for Sollertia\_256:

(1, 118213), (5, 118321), (Start: 6 @118330 has 12 MA's), (7, 118336), (Start: 10 @118348 has 9 MA's), (Start: 11 @118360 has 8 MA's), (Start: 13 @118366 has 16 MA's), (14, 118381),

Gene: Spelly\_264 Start: 117682, Stop: 117795, Start Num: 13

Candidate Starts for Spelly\_264:

(3, 117607), (5, 117637), (Start: 6 @117646 has 12 MA's), (9, 117658), (Start: 10 @117664 has 9 MA's), (Start: 11 @117676 has 8 MA's), (Start: 13 @117682 has 16 MA's), (20, 117781),

Gene: Spilled\_267 Start: 119346, Stop: 119459, Start Num: 13

Candidate Starts for Spilled\_267:

(3, 119271), (5, 119301), (Start: 6 @119310 has 12 MA's), (9, 119322), (Start: 10 @119328 has 9 MA's), (Start: 11 @119340 has 8 MA's), (Start: 13 @119346 has 16 MA's), (20, 119445),

Gene: Squillium\_251 Start: 120942, Stop: 121115, Start Num: 10

Candidate Starts for Squillium\_251:

(5, 120915), (Start: 6 @120924 has 12 MA's), (7, 120930), (9, 120936), (Start: 10 @120942 has 9 MA's), (Start: 11 @120954 has 8 MA's), (Start: 13 @120960 has 16 MA's), (16, 121053),

Gene: Stanimal\_255 Start: 118732, Stop: 118854, Start Num: 11

Candidate Starts for Stanimal\_255:

(1, 118585), (5, 118693), (Start: 6 @118702 has 12 MA's), (7, 118708), (Start: 10 @118720 has 9 MA's), (Start: 11 @118732 has 8 MA's), (Start: 13 @118738 has 16 MA's), (14, 118753),

Gene: StarPlatinum\_269 Start: 121173, Stop: 121304, Start Num: 10

Candidate Starts for StarPlatinum\_269:

(2, 121098), (3, 121116), (Start: 6 @121155 has 12 MA's), (7, 121161), (Start: 10 @121173 has 9 MA's), (Start: 13 @121191 has 16 MA's), (14, 121206),

Gene: Starbow\_256 Start: 117720, Stop: 117839, Start Num: 11

Candidate Starts for Starbow\_256:

(3, 117651), (5, 117681), (Start: 6 @117690 has 12 MA's), (9, 117702), (Start: 10 @117708 has 9 MA's), (Start: 11 @117720 has 8 MA's), (Start: 13 @117726 has 16 MA's), (20, 117825),

Gene: TomSawyer\_264 Start: 120639, Stop: 120770, Start Num: 10

Candidate Starts for TomSawyer\_264:

(3, 120582), (5, 120612), (Start: 6 @120621 has 12 MA's), (9, 120633), (Start: 10 @120639 has 9 MA's), (Start: 11 @120651 has 8 MA's), (Start: 13 @120657 has 16 MA's), (20, 120756),

Gene: WhereRU\_249 Start: 120570, Stop: 120746, Start Num: 6

Candidate Starts for WhereRU\_249:

(3, 120531), (4, 120546), (Start: 6 @120570 has 12 MA's), (8, 120579), (9, 120582), (Start: 10 @120588 has 9 MA's), (Start: 11 @120600 has 8 MA's), (Start: 13 @120606 has 16 MA's), (17, 120702),

Gene: Wipeout\_251 Start: 119609, Stop: 119722, Start Num: 13

Candidate Starts for Wipeout\_251:

(3, 119534), (5, 119564), (Start: 6 @119573 has 12 MA's), (9, 119585), (Start: 10 @119591 has 9 MA's), (Start: 11 @119603 has 8 MA's), (Start: 13 @119609 has 16 MA's), (20, 119708),

Gene: Yaboi\_261 Start: 118301, Stop: 118417, Start Num: 13

Candidate Starts for Yaboi\_261:

(1, 118148), (5, 118256), (Start: 6 @118265 has 12 MA's), (7, 118271), (Start: 10 @118283 has 9 MA's), (Start: 11 @118295 has 8 MA's), (Start: 13 @118301 has 16 MA's), (14, 118316),