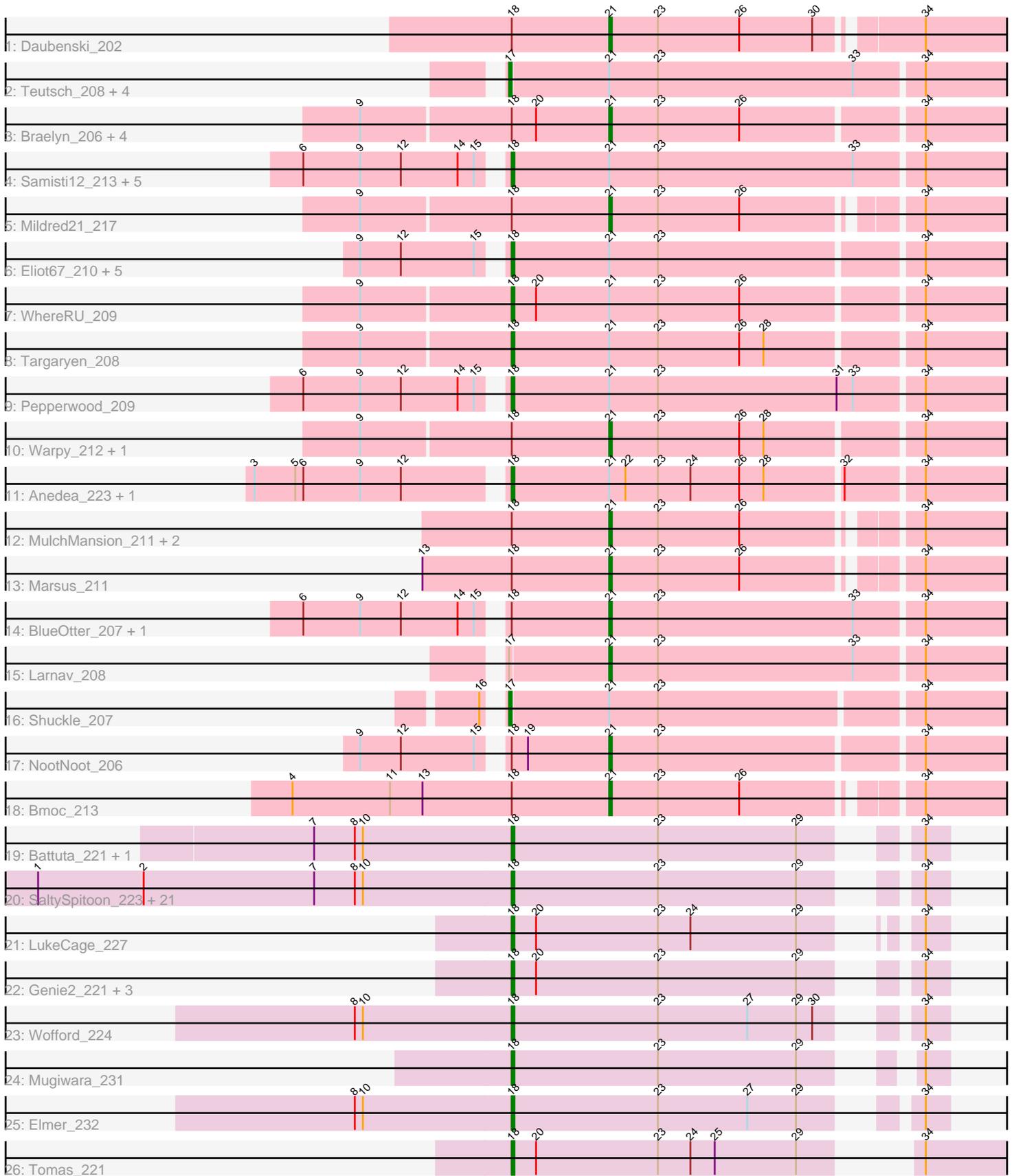


# Pham 282187



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 282187 Report

This analysis was run 02/23/26 on database version 636.

Pham number 282187 has 74 members, 4 are drafts.

Phages represented in each track:

- Track 1 : Daubenski\_202
- Track 2 : Deutsch\_208, Coogler\_206, Leo04\_210, EGole\_212, Peebs\_206
- Track 3 : Braelyn\_206, Navo\_204, Davielle\_209, Bartholomune\_210, Persimmon\_212
- Track 4 : Samisti12\_213, Cross\_208, Watermoore\_208, PacManQ\_206, Lululemon\_206, Cursive\_211
- Track 5 : Mildred21\_217
- Track 6 : Eliot67\_210, PinkiePie\_209, Liandry\_209, Paradiddles\_201, FreddyDRoo\_212, Squillium\_212
- Track 7 : WhereRU\_209
- Track 8 : Targaryen\_208
- Track 9 : Pepperwood\_209
- Track 10 : Warpy\_212, Jay2Jay\_214
- Track 11 : Anedea\_223, Riptide\_211
- Track 12 : MulchMansion\_211, LilMartin\_207, Angela\_210
- Track 13 : Marsus\_211
- Track 14 : BlueOtter\_207, HangryHippo\_207
- Track 15 : Larnav\_208
- Track 16 : Shuckle\_207
- Track 17 : NootNoot\_206
- Track 18 : Bmoc\_213
- Track 19 : Battuta\_221, Bordeaux\_221
- Track 20 : SaltySpitoon\_223, TomSawyer\_227, Brizzy\_222, JimJam\_230, Starbow\_220, Jollison\_220, Gibbi\_231, Rikishi\_224, Spelly\_228, Quaran19\_223, Birchlyn\_222, IchabodCrane\_217, Karimac\_223, Amabiko\_227, AcciDwight\_231, Spilled\_230, Wipeout\_214, PumpkinSpice\_226, CeilingFan\_227, KentuckyRacer\_229, MindFlayer\_216, Enygma\_231
- Track 21 : LukeCage\_227
- Track 22 : Genie2\_221, StarPlatinum\_231, AngryGiraffe\_221, BoomerJR\_221
- Track 23 : Wofford\_224
- Track 24 : Mugiwara\_231
- Track 25 : Elmer\_232
- Track 26 : Tomas\_221

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

The start number called the most often in the published annotations is 18, it was called in 46 of the 70 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- AcciDwight\_231, Amabiko\_227, Anedea\_223, AngryGiraffe\_221, Battuta\_221, Birchlyn\_222, BoomerJR\_221, Bordeaux\_221, Brizzy\_222, CeilingFan\_227, Cross\_208, Cursive\_211, Eliot67\_210, Elmer\_232, Enygma\_231, FreddyDRoo\_212, Genie2\_221, Gibbi\_231, IchabodCrane\_217, JimJam\_230, Jollison\_220, Karimac\_223, KentuckyRacer\_229, Liandry\_209, LukeCage\_227, Lululemon\_206, MindFlayer\_216, Mugiwara\_231, PacManQ\_206, Paradiddles\_201, Pepperwood\_209, PinkiePie\_209, PumpkinSpice\_226, Quarant19\_223, Rikishi\_224, Riptide\_211, SaltySpitoon\_223, Samisti12\_213, Spelly\_228, Spilled\_230, Squillium\_212, StarPlatinum\_231, Starbow\_220, Targaryen\_208, TomSawyer\_227, Tomas\_221, Watermoore\_208, WhereRU\_209, Wipeout\_214, Wofford\_224,

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

- Angela\_210, Bartholomune\_210, BlueOtter\_207, Bmoc\_213, Braelyn\_206, Daubenski\_202, Davielle\_209, HangryHippo\_207, Jay2Jay\_214, LilMartin\_207, Marsus\_211, Mildred21\_217, MulchMansion\_211, Navo\_204, NootNoot\_206, Persimmon\_212, Warpy\_212,

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

- Coogler\_206, EGole\_212, Larnav\_208, Leo04\_210, Peebs\_206, Shuckle\_207, Teutsch\_208,

### Summary by start number:

Start 17:

- Found in 7 of 74 ( 9.5% ) of genes in pham
- Manual Annotations of this start: 6 of 70
- Called 85.7% of time when present
- Phage (with cluster) where this start called: Coogler\_206 (BE1), EGole\_212 (BE1), Leo04\_210 (BE1), Peebs\_206 (BE1), Shuckle\_207 (BE1), Teutsch\_208 (BE1),

Start 18:

- Found in 67 of 74 ( 90.5% ) of genes in pham
- Manual Annotations of this start: 46 of 70
- Called 74.6% of time when present
- Phage (with cluster) where this start called: AcciDwight\_231 (BE2), Amabiko\_227 (BE2), Anedea\_223 (BE1), AngryGiraffe\_221 (BE2), Battuta\_221 (BE2), Birchlyn\_222 (BE2), BoomerJR\_221 (BE2), Bordeaux\_221 (BE2), Brizzy\_222 (BE2), CeilingFan\_227 (BE2), Cross\_208 (BE1), Cursive\_211 (BE1), Eliot67\_210 (BE1), Elmer\_232 (BE2), Enygma\_231 (BE2), FreddyDRoo\_212 (BE1), Genie2\_221 (BE2), Gibbi\_231 (BE2), IchabodCrane\_217 (BE2), JimJam\_230 (BE2), Jollison\_220 (BE2), Karimac\_223 (BE2), KentuckyRacer\_229 (BE2), Liandry\_209 (BE1), LukeCage\_227 (BE2), Lululemon\_206 (BE1), MindFlayer\_216 (BE2), Mugiwara\_231 (BE2), PacManQ\_206 (BE1), Paradiddles\_201 (BE1), Pepperwood\_209 (BE1), PinkiePie\_209 (BE1), PumpkinSpice\_226 (BE2), Quarant19\_223 (BE2), Rikishi\_224 (BE2), Riptide\_211 (BE1), SaltySpitoon\_223 (BE2), Samisti12\_213 (BE1), Spelly\_228 (BE2), Spilled\_230 (BE2), Squillium\_212 (BE1), StarPlatinum\_231 (BE2), Starbow\_220 (BE2), Targaryen\_208 (BE1), TomSawyer\_227 (BE2), Tomas\_221 (BE2), Watermoore\_208 (BE1), WhereRU\_209 (BE1), Wipeout\_214 (BE2),

Wofford\_224 (BE2),

Start 21:

- Found in 41 of 74 ( 55.4% ) of genes in pham
- Manual Annotations of this start: 18 of 70
- Called 43.9% of time when present
- Phage (with cluster) where this start called: Angela\_210 (BE1), Bartholomune\_210 (BE1), BlueOtter\_207 (BE1), Bmoc\_213 (BE1), Braelyn\_206 (BE1), Daubenski\_202 (BE1), Davielle\_209 (BE1), HangryHippo\_207 (BE1), Jay2Jay\_214 (BE1), Larnav\_208 (BE1), LilMartin\_207 (BE1), Marsus\_211 (BE1), Mildred21\_217 (BE1), MulchMansion\_211 (BE1), Navo\_204 (BE1), NootNoot\_206 (BE1), Persimmon\_212 (BE1), Warpy\_212 (BE1),

### **Summary by clusters:**

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

Info for manual annotations of cluster BE1:

- Start number 17 was manually annotated 6 times for cluster BE1.
- Start number 18 was manually annotated 15 times for cluster BE1.
- Start number 21 was manually annotated 18 times for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 18 was manually annotated 31 times for cluster BE2.

### **Gene Information:**

Gene: AcciDwight\_231 Start: 107312, Stop: 107452, Start Num: 18

Candidate Starts for AcciDwight\_231:

(1, 107147), (2, 107186), (7, 107249), (8, 107264), (10, 107267), (Start: 18 @107312 has 46 MA's), (23, 107366), (29, 107417), (34, 107444),

Gene: Amabiko\_227 Start: 107130, Stop: 107270, Start Num: 18

Candidate Starts for Amabiko\_227:

(1, 106965), (2, 107004), (7, 107067), (8, 107082), (10, 107085), (Start: 18 @107130 has 46 MA's), (23, 107184), (29, 107235), (34, 107262),

Gene: Anedea\_223 Start: 108049, Stop: 108228, Start Num: 18

Candidate Starts for Anedea\_223:

(3, 107962), (5, 107977), (6, 107980), (9, 108001), (12, 108016), (Start: 18 @108049 has 46 MA's), (Start: 21 @108085 has 18 MA's), (22, 108091), (23, 108103), (24, 108115), (26, 108133), (28, 108142), (32, 108169), (34, 108196),

Gene: Angela\_210 Start: 105164, Stop: 105301, Start Num: 21

Candidate Starts for Angela\_210:

(Start: 18 @105128 has 46 MA's), (Start: 21 @105164 has 18 MA's), (23, 105182), (26, 105212), (34, 105269),

Gene: AngryGiraffe\_221 Start: 107015, Stop: 107155, Start Num: 18

Candidate Starts for AngryGiraffe\_221:

(Start: 18 @107015 has 46 MA's), (20, 107024), (23, 107069), (29, 107120), (34, 107147),

Gene: Bartholomune\_210 Start: 105719, Stop: 105883, Start Num: 21

Candidate Starts for Bartholomune\_210:

(9, 105629), (Start: 18 @105683 has 46 MA's), (20, 105692), (Start: 21 @105719 has 18 MA's), (23, 105737), (26, 105767), (34, 105830),

Gene: Battuta\_221 Start: 106445, Stop: 106585, Start Num: 18

Candidate Starts for Battuta\_221:

(7, 106382), (8, 106397), (10, 106400), (Start: 18 @106445 has 46 MA's), (23, 106499), (29, 106550), (34, 106577),

Gene: Birchlyn\_222 Start: 104378, Stop: 104518, Start Num: 18

Candidate Starts for Birchlyn\_222:

(1, 104213), (2, 104252), (7, 104315), (8, 104330), (10, 104333), (Start: 18 @104378 has 46 MA's), (23, 104432), (29, 104483), (34, 104510),

Gene: BlueOtter\_207 Start: 105856, Stop: 106023, Start Num: 21

Candidate Starts for BlueOtter\_207:

(6, 105751), (9, 105772), (12, 105787), (14, 105808), (15, 105814), (Start: 18 @105820 has 46 MA's), (Start: 21 @105856 has 18 MA's), (23, 105874), (33, 105946), (34, 105970),

Gene: Bmoc\_213 Start: 105977, Stop: 106114, Start Num: 21

Candidate Starts for Bmoc\_213:

(4, 105860), (11, 105896), (13, 105908), (Start: 18 @105941 has 46 MA's), (Start: 21 @105977 has 18 MA's), (23, 105995), (26, 106025), (34, 106082),

Gene: BoomerJR\_221 Start: 107448, Stop: 107588, Start Num: 18

Candidate Starts for BoomerJR\_221:

(Start: 18 @107448 has 46 MA's), (20, 107457), (23, 107502), (29, 107553), (34, 107580),

Gene: Bordeaux\_221 Start: 107028, Stop: 107168, Start Num: 18

Candidate Starts for Bordeaux\_221:

(7, 106965), (8, 106980), (10, 106983), (Start: 18 @107028 has 46 MA's), (23, 107082), (29, 107133), (34, 107160),

Gene: Braelyn\_206 Start: 105366, Stop: 105530, Start Num: 21

Candidate Starts for Braelyn\_206:

(9, 105276), (Start: 18 @105330 has 46 MA's), (20, 105339), (Start: 21 @105366 has 18 MA's), (23, 105384), (26, 105414), (34, 105477),

Gene: Brizzy\_222 Start: 107556, Stop: 107696, Start Num: 18

Candidate Starts for Brizzy\_222:

(1, 107391), (2, 107430), (7, 107493), (8, 107508), (10, 107511), (Start: 18 @107556 has 46 MA's), (23, 107610), (29, 107661), (34, 107688),

Gene: CeilingFan\_227 Start: 107823, Stop: 107963, Start Num: 18

Candidate Starts for CeilingFan\_227:

(1, 107658), (2, 107697), (7, 107760), (8, 107775), (10, 107778), (Start: 18 @107823 has 46 MA's), (23, 107877), (29, 107928), (34, 107955),

Gene: Coogler\_206 Start: 106212, Stop: 106415, Start Num: 17

Candidate Starts for Coogler\_206:

(Start: 17 @106212 has 6 MA's), (Start: 21 @106248 has 18 MA's), (23, 106266), (33, 106338), (34, 106362),

Gene: Cross\_208 Start: 106465, Stop: 106668, Start Num: 18

Candidate Starts for Cross\_208:

(6, 106396), (9, 106417), (12, 106432), (14, 106453), (15, 106459), (Start: 18 @106465 has 46 MA's), (Start: 21 @106501 has 18 MA's), (23, 106519), (33, 106591), (34, 106615),

Gene: Cursive\_211 Start: 106149, Stop: 106352, Start Num: 18

Candidate Starts for Cursive\_211:

(6, 106080), (9, 106101), (12, 106116), (14, 106137), (15, 106143), (Start: 18 @106149 has 46 MA's), (Start: 21 @106185 has 18 MA's), (23, 106203), (33, 106275), (34, 106299),

Gene: Daubenski\_202 Start: 106555, Stop: 106716, Start Num: 21

Candidate Starts for Daubenski\_202:

(Start: 18 @106519 has 46 MA's), (Start: 21 @106555 has 18 MA's), (23, 106573), (26, 106603), (30, 106630), (34, 106663),

Gene: Davielle\_209 Start: 105764, Stop: 105928, Start Num: 21

Candidate Starts for Davielle\_209:

(9, 105674), (Start: 18 @105728 has 46 MA's), (20, 105737), (Start: 21 @105764 has 18 MA's), (23, 105782), (26, 105812), (34, 105875),

Gene: EGole\_212 Start: 108162, Stop: 108365, Start Num: 17

Candidate Starts for EGole\_212:

(Start: 17 @108162 has 6 MA's), (Start: 21 @108198 has 18 MA's), (23, 108216), (33, 108288), (34, 108312),

Gene: Eliot67\_210 Start: 105219, Stop: 105419, Start Num: 18

Candidate Starts for Eliot67\_210:

(9, 105171), (12, 105186), (15, 105213), (Start: 18 @105219 has 46 MA's), (Start: 21 @105255 has 18 MA's), (23, 105273), (34, 105366),

Gene: Elmer\_232 Start: 110772, Stop: 110912, Start Num: 18

Candidate Starts for Elmer\_232:

(8, 110724), (10, 110727), (Start: 18 @110772 has 46 MA's), (23, 110826), (27, 110859), (29, 110877), (34, 110904),

Gene: Enygma\_231 Start: 110232, Stop: 110372, Start Num: 18

Candidate Starts for Enygma\_231:

(1, 110067), (2, 110106), (7, 110169), (8, 110184), (10, 110187), (Start: 18 @110232 has 46 MA's), (23, 110286), (29, 110337), (34, 110364),

Gene: FreddyDRoo\_212 Start: 105219, Stop: 105419, Start Num: 18

Candidate Starts for FreddyDRoo\_212:

(9, 105171), (12, 105186), (15, 105213), (Start: 18 @105219 has 46 MA's), (Start: 21 @105255 has 18 MA's), (23, 105273), (34, 105366),

Gene: Genie2\_221 Start: 107573, Stop: 107713, Start Num: 18

Candidate Starts for Genie2\_221:

(Start: 18 @107573 has 46 MA's), (20, 107582), (23, 107627), (29, 107678), (34, 107705),

Gene: Gibbi\_231 Start: 107316, Stop: 107456, Start Num: 18

Candidate Starts for Gibbi\_231:

(1, 107151), (2, 107190), (7, 107253), (8, 107268), (10, 107271), (Start: 18 @107316 has 46 MA's), (23, 107370), (29, 107421), (34, 107448),

Gene: HangryHippo\_207 Start: 105856, Stop: 106023, Start Num: 21

Candidate Starts for HangryHippo\_207:

(6, 105751), (9, 105772), (12, 105787), (14, 105808), (15, 105814), (Start: 18 @105820 has 46 MA's), (Start: 21 @105856 has 18 MA's), (23, 105874), (33, 105946), (34, 105970),

Gene: IchabodCrane\_217 Start: 106831, Stop: 106971, Start Num: 18

Candidate Starts for IchabodCrane\_217:

(1, 106666), (2, 106705), (7, 106768), (8, 106783), (10, 106786), (Start: 18 @106831 has 46 MA's), (23, 106885), (29, 106936), (34, 106963),

Gene: Jay2Jay\_214 Start: 106812, Stop: 106976, Start Num: 21

Candidate Starts for Jay2Jay\_214:

(9, 106722), (Start: 18 @106776 has 46 MA's), (Start: 21 @106812 has 18 MA's), (23, 106830), (26, 106860), (28, 106869), (34, 106923),

Gene: JimJam\_230 Start: 108752, Stop: 108892, Start Num: 18

Candidate Starts for JimJam\_230:

(1, 108587), (2, 108626), (7, 108689), (8, 108704), (10, 108707), (Start: 18 @108752 has 46 MA's), (23, 108806), (29, 108857), (34, 108884),

Gene: Jollison\_220 Start: 106962, Stop: 107102, Start Num: 18

Candidate Starts for Jollison\_220:

(1, 106797), (2, 106836), (7, 106899), (8, 106914), (10, 106917), (Start: 18 @106962 has 46 MA's), (23, 107016), (29, 107067), (34, 107094),

Gene: Karimac\_223 Start: 107147, Stop: 107287, Start Num: 18

Candidate Starts for Karimac\_223:

(1, 106982), (2, 107021), (7, 107084), (8, 107099), (10, 107102), (Start: 18 @107147 has 46 MA's), (23, 107201), (29, 107252), (34, 107279),

Gene: KentuckyRacer\_229 Start: 108667, Stop: 108807, Start Num: 18

Candidate Starts for KentuckyRacer\_229:

(1, 108502), (2, 108541), (7, 108604), (8, 108619), (10, 108622), (Start: 18 @108667 has 46 MA's), (23, 108721), (29, 108772), (34, 108799),

Gene: Larnav\_208 Start: 106317, Stop: 106484, Start Num: 21

Candidate Starts for Larnav\_208:

(Start: 17 @106281 has 6 MA's), (Start: 21 @106317 has 18 MA's), (23, 106335), (33, 106407), (34, 106431),

Gene: Leo04\_210 Start: 106846, Stop: 107049, Start Num: 17

Candidate Starts for Leo04\_210:

(Start: 17 @106846 has 6 MA's), (Start: 21 @106882 has 18 MA's), (23, 106900), (33, 106972), (34, 106996),

Gene: Liandry\_209 Start: 105926, Stop: 106126, Start Num: 18

Candidate Starts for Liandry\_209:

(9, 105878), (12, 105893), (15, 105920), (Start: 18 @105926 has 46 MA's), (Start: 21 @105962 has 18 MA's), (23, 105980), (34, 106073),

Gene: LilMartin\_207 Start: 104528, Stop: 104665, Start Num: 21

Candidate Starts for LilMartin\_207:

(Start: 18 @104492 has 46 MA's), (Start: 21 @104528 has 18 MA's), (23, 104546), (26, 104576), (34, 104633),

Gene: LukeCage\_227 Start: 109429, Stop: 109566, Start Num: 18

Candidate Starts for LukeCage\_227:

(Start: 18 @109429 has 46 MA's), (20, 109438), (23, 109483), (24, 109495), (29, 109534), (34, 109558),

Gene: Lululemon\_206 Start: 105201, Stop: 105404, Start Num: 18

Candidate Starts for Lululemon\_206:

(6, 105132), (9, 105153), (12, 105168), (14, 105189), (15, 105195), (Start: 18 @105201 has 46 MA's), (Start: 21 @105237 has 18 MA's), (23, 105255), (33, 105327), (34, 105351),

Gene: Marsus\_211 Start: 106272, Stop: 106409, Start Num: 21

Candidate Starts for Marsus\_211:

(13, 106203), (Start: 18 @106236 has 46 MA's), (Start: 21 @106272 has 18 MA's), (23, 106290), (26, 106320), (34, 106377),

Gene: Mildred21\_217 Start: 104294, Stop: 104452, Start Num: 21

Candidate Starts for Mildred21\_217:

(9, 104204), (Start: 18 @104258 has 46 MA's), (Start: 21 @104294 has 18 MA's), (23, 104312), (26, 104342), (34, 104399),

Gene: MindFlayer\_216 Start: 106347, Stop: 106487, Start Num: 18

Candidate Starts for MindFlayer\_216:

(1, 106182), (2, 106221), (7, 106284), (8, 106299), (10, 106302), (Start: 18 @106347 has 46 MA's), (23, 106401), (29, 106452), (34, 106479),

Gene: Mugiwara\_231 Start: 109929, Stop: 110066, Start Num: 18

Candidate Starts for Mugiwara\_231:

(Start: 18 @109929 has 46 MA's), (23, 109983), (29, 110034), (34, 110058),

Gene: MulchMansion\_211 Start: 106162, Stop: 106299, Start Num: 21

Candidate Starts for MulchMansion\_211:

(Start: 18 @106126 has 46 MA's), (Start: 21 @106162 has 18 MA's), (23, 106180), (26, 106210), (34, 106267),

Gene: Navo\_204 Start: 104570, Stop: 104734, Start Num: 21

Candidate Starts for Navo\_204:

(9, 104480), (Start: 18 @104534 has 46 MA's), (20, 104543), (Start: 21 @104570 has 18 MA's), (23, 104588), (26, 104618), (34, 104681),

Gene: NootNoot\_206 Start: 104774, Stop: 104938, Start Num: 21

Candidate Starts for NootNoot\_206:

(9, 104690), (12, 104705), (15, 104732), (Start: 18 @104738 has 46 MA's), (19, 104744), (Start: 21 @104774 has 18 MA's), (23, 104792), (34, 104885),

Gene: PacManQ\_206 Start: 105201, Stop: 105404, Start Num: 18

Candidate Starts for PacManQ\_206:

(6, 105132), (9, 105153), (12, 105168), (14, 105189), (15, 105195), (Start: 18 @105201 has 46 MA's), (Start: 21 @105237 has 18 MA's), (23, 105255), (33, 105327), (34, 105351),

Gene: Paradiddles\_201 Start: 107113, Stop: 107313, Start Num: 18

Candidate Starts for Paradiddles\_201:

(9, 107065), (12, 107080), (15, 107107), (Start: 18 @107113 has 46 MA's), (Start: 21 @107149 has 18 MA's), (23, 107167), (34, 107260),

Gene: Peebs\_206 Start: 106252, Stop: 106455, Start Num: 17

Candidate Starts for Peebs\_206:

(Start: 17 @106252 has 6 MA's), (Start: 21 @106288 has 18 MA's), (23, 106306), (33, 106378), (34, 106402),

Gene: Pepperwood\_209 Start: 106487, Stop: 106690, Start Num: 18

Candidate Starts for Pepperwood\_209:

(6, 106418), (9, 106439), (12, 106454), (14, 106475), (15, 106481), (Start: 18 @106487 has 46 MA's), (Start: 21 @106523 has 18 MA's), (23, 106541), (31, 106607), (33, 106613), (34, 106637),

Gene: Persimmon\_212 Start: 105588, Stop: 105752, Start Num: 21

Candidate Starts for Persimmon\_212:

(9, 105498), (Start: 18 @105552 has 46 MA's), (20, 105561), (Start: 21 @105588 has 18 MA's), (23, 105606), (26, 105636), (34, 105699),

Gene: PinkiePie\_209 Start: 105926, Stop: 106126, Start Num: 18

Candidate Starts for PinkiePie\_209:

(9, 105878), (12, 105893), (15, 105920), (Start: 18 @105926 has 46 MA's), (Start: 21 @105962 has 18 MA's), (23, 105980), (34, 106073),

Gene: PumpkinSpice\_226 Start: 107568, Stop: 107708, Start Num: 18

Candidate Starts for PumpkinSpice\_226:

(1, 107403), (2, 107442), (7, 107505), (8, 107520), (10, 107523), (Start: 18 @107568 has 46 MA's), (23, 107622), (29, 107673), (34, 107700),

Gene: Quaran19\_223 Start: 107009, Stop: 107149, Start Num: 18

Candidate Starts for Quaran19\_223:

(1, 106844), (2, 106883), (7, 106946), (8, 106961), (10, 106964), (Start: 18 @107009 has 46 MA's), (23, 107063), (29, 107114), (34, 107141),

Gene: Rikishi\_224 Start: 107290, Stop: 107430, Start Num: 18

Candidate Starts for Rikishi\_224:

(1, 107125), (2, 107164), (7, 107227), (8, 107242), (10, 107245), (Start: 18 @107290 has 46 MA's), (23, 107344), (29, 107395), (34, 107422),

Gene: Riptide\_211 Start: 105579, Stop: 105758, Start Num: 18

Candidate Starts for Riptide\_211:

(3, 105492), (5, 105507), (6, 105510), (9, 105531), (12, 105546), (Start: 18 @105579 has 46 MA's), (Start: 21 @105615 has 18 MA's), (22, 105621), (23, 105633), (24, 105645), (26, 105663), (28, 105672), (32, 105699), (34, 105726),

Gene: SaltySpittoon\_223 Start: 106551, Stop: 106691, Start Num: 18

Candidate Starts for SaltySpittoon\_223:

(1, 106386), (2, 106425), (7, 106488), (8, 106503), (10, 106506), (Start: 18 @106551 has 46 MA's), (23, 106605), (29, 106656), (34, 106683),

Gene: Samisti12\_213 Start: 108111, Stop: 108314, Start Num: 18  
Candidate Starts for Samisti12\_213:  
(6, 108042), (9, 108063), (12, 108078), (14, 108099), (15, 108105), (Start: 18 @108111 has 46 MA's),  
(Start: 21 @108147 has 18 MA's), (23, 108165), (33, 108237), (34, 108261),

Gene: Shuckle\_207 Start: 106484, Stop: 106684, Start Num: 17  
Candidate Starts for Shuckle\_207:  
(16, 106481), (Start: 17 @106484 has 6 MA's), (Start: 21 @106520 has 18 MA's), (23, 106538), (34,  
106631),

Gene: Spelly\_228 Start: 106480, Stop: 106620, Start Num: 18  
Candidate Starts for Spelly\_228:  
(1, 106315), (2, 106354), (7, 106417), (8, 106432), (10, 106435), (Start: 18 @106480 has 46 MA's),  
(23, 106534), (29, 106585), (34, 106612),

Gene: Spilled\_230 Start: 107684, Stop: 107824, Start Num: 18  
Candidate Starts for Spilled\_230:  
(1, 107519), (2, 107558), (7, 107621), (8, 107636), (10, 107639), (Start: 18 @107684 has 46 MA's),  
(23, 107738), (29, 107789), (34, 107816),

Gene: Squillium\_212 Start: 105928, Stop: 106128, Start Num: 18  
Candidate Starts for Squillium\_212:  
(9, 105880), (12, 105895), (15, 105922), (Start: 18 @105928 has 46 MA's), (Start: 21 @105964 has 18  
MA's), (23, 105982), (34, 106075),

Gene: StarPlatinum\_231 Start: 109660, Stop: 109797, Start Num: 18  
Candidate Starts for StarPlatinum\_231:  
(Start: 18 @109660 has 46 MA's), (20, 109669), (23, 109714), (29, 109765), (34, 109789),

Gene: Starbow\_220 Start: 106524, Stop: 106664, Start Num: 18  
Candidate Starts for Starbow\_220:  
(1, 106359), (2, 106398), (7, 106461), (8, 106476), (10, 106479), (Start: 18 @106524 has 46 MA's),  
(23, 106578), (29, 106629), (34, 106656),

Gene: Targaryen\_208 Start: 107305, Stop: 107505, Start Num: 18  
Candidate Starts for Targaryen\_208:  
(9, 107251), (Start: 18 @107305 has 46 MA's), (Start: 21 @107341 has 18 MA's), (23, 107359), (26,  
107389), (28, 107398), (34, 107452),

Gene: Teutsch\_208 Start: 106940, Stop: 107143, Start Num: 17  
Candidate Starts for Teutsch\_208:  
(Start: 17 @106940 has 6 MA's), (Start: 21 @106976 has 18 MA's), (23, 106994), (33, 107066), (34,  
107090),

Gene: TomSawyer\_227 Start: 108995, Stop: 109135, Start Num: 18  
Candidate Starts for TomSawyer\_227:  
(1, 108830), (2, 108869), (7, 108932), (8, 108947), (10, 108950), (Start: 18 @108995 has 46 MA's),  
(23, 109049), (29, 109100), (34, 109127),

Gene: Tomas\_221 Start: 107946, Stop: 108128, Start Num: 18  
Candidate Starts for Tomas\_221:

(Start: 18 @107946 has 46 MA's), (20, 107955), (23, 108000), (24, 108012), (25, 108021), (29, 108051), (34, 108069),

Gene: Warpy\_212 Start: 106250, Stop: 106414, Start Num: 21

Candidate Starts for Warpy\_212:

(9, 106160), (Start: 18 @106214 has 46 MA's), (Start: 21 @106250 has 18 MA's), (23, 106268), (26, 106298), (28, 106307), (34, 106361),

Gene: Watermoore\_208 Start: 107463, Stop: 107666, Start Num: 18

Candidate Starts for Watermoore\_208:

(6, 107394), (9, 107415), (12, 107430), (14, 107451), (15, 107457), (Start: 18 @107463 has 46 MA's), (Start: 21 @107499 has 18 MA's), (23, 107517), (33, 107589), (34, 107613),

Gene: WhereRU\_209 Start: 105731, Stop: 105931, Start Num: 18

Candidate Starts for WhereRU\_209:

(9, 105677), (Start: 18 @105731 has 46 MA's), (20, 105740), (Start: 21 @105767 has 18 MA's), (23, 105785), (26, 105815), (34, 105878),

Gene: Wipeout\_214 Start: 107947, Stop: 108087, Start Num: 18

Candidate Starts for Wipeout\_214:

(1, 107782), (2, 107821), (7, 107884), (8, 107899), (10, 107902), (Start: 18 @107947 has 46 MA's), (23, 108001), (29, 108052), (34, 108079),

Gene: Wofford\_224 Start: 110638, Stop: 110778, Start Num: 18

Candidate Starts for Wofford\_224:

(8, 110590), (10, 110593), (Start: 18 @110638 has 46 MA's), (23, 110692), (27, 110725), (29, 110743), (30, 110749), (34, 110770),