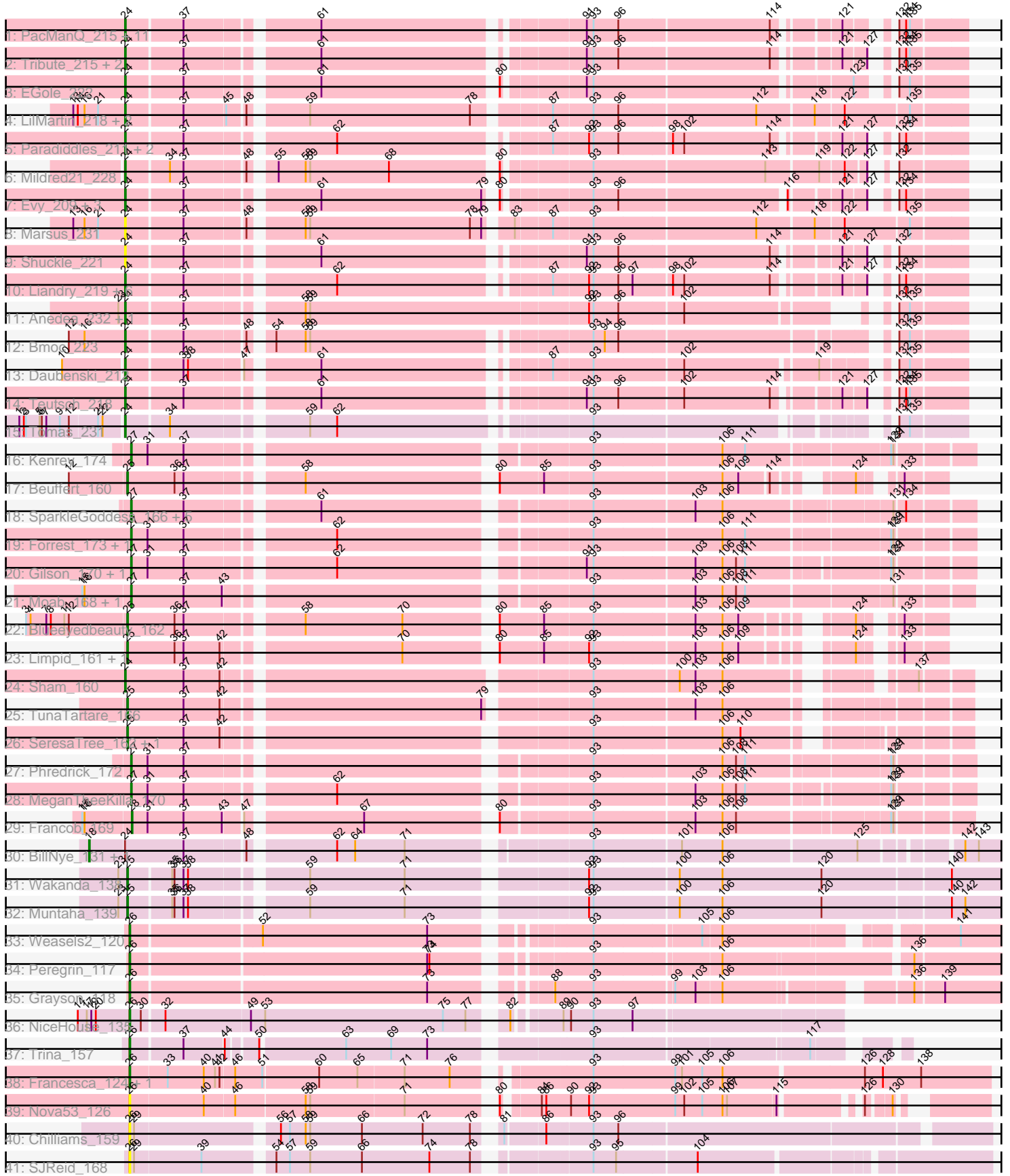


Pham 214222



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 214222 Report

This analysis was run 02/22/25 on database version 588.

Pham number 214222 has 80 members, 9 are drafts.

Phages represented in each track:

- Track 1 : PacManQ\_215, BlueOtter\_217, Larnav\_218, Lululemon\_215, HangryHippo\_217, Cross\_218, Scheme\_222, Peebs\_216, Samisti12\_223, Leo04\_219, Watermoore\_218, Cursive\_221
- Track 2 : Tribute\_215, Sushi23\_219, Pepperwood\_219
- Track 3 : EGole\_222
- Track 4 : LilMartin\_218, MulchMansion\_222, Angela\_221
- Track 5 : Paradiddles\_211, Braelyn\_215, WhereRU\_218
- Track 6 : Mildred21\_228
- Track 7 : Evy\_209, Targaryen\_218, Jay2Jay\_224, Warpy\_222
- Track 8 : Marsus\_231
- Track 9 : Shuckle\_221
- Track 10 : Liandry\_219, NootNoot\_216, Bartholomune\_219, Persimmon\_222, Squillium\_222, PinkiePie\_219, Navo\_213
- Track 11 : Anedea\_232, Riptide\_225
- Track 12 : Bmoc\_223
- Track 13 : Daubenski\_212
- Track 14 : Teutsch\_218
- Track 15 : Tomas\_231
- Track 16 : Kenrey\_174
- Track 17 : Beuffert\_160
- Track 18 : SparkleGoddess\_166, Karp\_161, Belfort\_167, Comrade\_164, Westy\_168, Stigma\_165
- Track 19 : Forrest\_173, Jada\_170
- Track 20 : Gilson\_170, Emma1919\_171
- Track 21 : Moab\_168, Patelgo\_169
- Track 22 : Blueeyedbeauty\_162
- Track 23 : Limpid\_161, Annadreamy\_154
- Track 24 : Sham\_160
- Track 25 : TunaTartare\_166
- Track 26 : SeresaTree\_162, Faust\_160
- Track 27 : Phredrick\_172
- Track 28 : MeganTheeKilla\_170
- Track 29 : Francob\_169
- Track 30 : BillNye\_131, Circinus\_132
- Track 31 : Wakanda\_138
- Track 32 : Muntaha\_139
- Track 33 : Weasels2\_120

- Track 34 : Peregrin\_117
- Track 35 : Grayson\_118
- Track 36 : NiceHouse\_135
- Track 37 : Trina\_157
- Track 38 : Francesca\_124, Dorin\_124
- Track 39 : Nova53\_126
- Track 40 : Chilliams\_159
- Track 41 : SJReid\_168

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

The start number called the most often in the published annotations is 24, it was called in 39 of the 71 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Anedea\_232, Angela\_221, Bartholomune\_219, BlueOtter\_217, Bmoc\_223, Braelyn\_215, Cross\_218, Cursive\_221, Daubenski\_212, EGole\_222, Evy\_209, HangryHippo\_217, Jay2Jay\_224, Larnav\_218, Leo04\_219, Liandry\_219, LilMartin\_218, Lululemon\_215, Marsus\_231, Mildred21\_228, MulchMansion\_222, Navo\_213, NootNoot\_216, PacManQ\_215, Paradiddles\_211, Peebs\_216, Pepperwood\_219, Persimmon\_222, PinkiePie\_219, Riptide\_225, Samisti12\_223, Scheme\_222, Sham\_160, Shuckle\_221, Squillium\_222, Sushi23\_219, Targaryen\_218, Teutsch\_218, Tomas\_231, Tribute\_215, Warpy\_222, Watermoore\_218, WhereRU\_218,

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

- BillNye\_131, Circinus\_132,

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

- Annadreamy\_154, Belfort\_167, Beuffert\_160, Blueeyedbeauty\_162, Chilliams\_159, Comrade\_164, Dorin\_124, Emma1919\_171, Faust\_160, Forrest\_173, Francesca\_124, Francob\_169, Gilson\_170, Grayson\_118, Jada\_170, Karp\_161, Kenrey\_174, Limpid\_161, MeganTheeKilla\_170, Moab\_168, Muntaha\_139, NiceHouse\_135, Nova53\_126, Patelgo\_169, Peregrin\_117, Phredrick\_172, SJReid\_168, SeresaTree\_162, SparkleGoddess\_166, Stigma\_165, Trina\_157, TunaTartare\_166, Wakanda\_138, Weasels2\_120, Westy\_168,

**Summary by start number:**

Start 18:

- Found in 2 of 80 ( 2.5% ) of genes in pham
- Manual Annotations of this start: 2 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: BillNye\_131 (BK2), Circinus\_132 (BK2),

Start 24:

- Found in 45 of 80 ( 56.2% ) of genes in pham
- Manual Annotations of this start: 39 of 71
- Called 95.6% of time when present

- Phage (with cluster) where this start called: Anedea\_232 (BE1), Angela\_221 (BE1), Bartholomune\_219 (BE1), BlueOtter\_217 (BE1), Bmoc\_223 (BE1), Braelyn\_215 (BE1), Cross\_218 (BE1), Cursive\_221 (BE1), Daubenski\_212 (BE1), EGole\_222 (BE1), Evy\_209 (BE1), HangryHippo\_217 (BE1), Jay2Jay\_224 (BE1), Larnav\_218 (BE1), Leo04\_219 (BE1), Liandry\_219 (BE1), LiiMartin\_218 (BE1), Lululemon\_215 (BE1), Marsus\_231 (BE1), Mildred21\_228 (BE1), MulchMansion\_222 (BE1), Navo\_213 (BE1), NootNoot\_216 (BE1), PacManQ\_215 (BE1), Paradiddles\_211 (BE1), Peebs\_216 (BE1), Pepperwood\_219 (BE1), Persimmon\_222 (BE1), PinkiePie\_219 (BE1), Riptide\_225 (BE1), Samisti12\_223 (BE1), Scheme\_222 (BE1), Sham\_160 (BK1), Shuckle\_221 (BE1), Squillium\_222 (BE1), Sushi23\_219 (BE1), Targaryen\_218 (BE1), Teutsch\_218 (BE1), Tomas\_231 (BE2), Tribute\_215 (BE1), Warpy\_222 (BE1), Watermoore\_218 (BE1), WhereRU\_218 (BE1),

#### Start 25:

- Found in 9 of 80 ( 11.2% ) of genes in pham
- Manual Annotations of this start: 8 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Annadreamy\_154 (BK1), Beuffert\_160 (BK1), Blueeyedbeauty\_162 (BK1), Faust\_160 (BK1), Limpid\_161 (BK1), Muntaha\_139 (BK2), SeresaTree\_162 (BK1), TunaTartare\_166 (BK1), Wakanda\_138 (BK2),

#### Start 26:

- Found in 10 of 80 ( 12.5% ) of genes in pham
- Manual Annotations of this start: 7 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Chilliams\_159 (FC), Dorin\_124 (CG), Francesca\_124 (CG), Grayson\_118 (CB), NiceHouse\_135 (CE), Nova53\_126 (CG), Peregrin\_117 (CB), SJReid\_168 (FC), Trina\_157 (CE), Weasels2\_120 (CB),

#### Start 27:

- Found in 15 of 80 ( 18.8% ) of genes in pham
- Manual Annotations of this start: 14 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Belfort\_167 (BK1), Comrade\_164 (BK1), Emma1919\_171 (BK1), Forrest\_173 (BK1), Gilson\_170 (BK1), Jada\_170 (BK1), Karp\_161 (BK1), Kenrey\_174 (BK1), MeganTheeKilla\_170 (BK1), Moab\_168 (BK1), Patelgo\_169 (BK1), Phredrick\_172 (BK1), SparkleGoddess\_166 (BK1), Stigma\_165 (BK1), Westy\_168 (BK1),

#### Start 28:

- Found in 1 of 80 ( 1.2% ) of genes in pham
- Manual Annotations of this start: 1 of 71
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Francob\_169 (BK1),

### Summary by clusters:

There are 8 clusters represented in this pham: CB, CG, CE, FC, BK1, BK2, BE2, BE1,

#### Info for manual annotations of cluster BE1:

- Start number 24 was manually annotated 37 times for cluster BE1.

Info for manual annotations of cluster BE2:

- Start number 24 was manually annotated 1 time for cluster BE2.

Info for manual annotations of cluster BK1:

- Start number 24 was manually annotated 1 time for cluster BK1.
- Start number 25 was manually annotated 6 times for cluster BK1.
- Start number 27 was manually annotated 14 times for cluster BK1.
- Start number 28 was manually annotated 1 time for cluster BK1.

Info for manual annotations of cluster BK2:

- Start number 18 was manually annotated 2 times for cluster BK2.
- Start number 25 was manually annotated 2 times for cluster BK2.

Info for manual annotations of cluster CB:

- Start number 26 was manually annotated 3 times for cluster CB.

Info for manual annotations of cluster CE:

- Start number 26 was manually annotated 2 times for cluster CE.

Info for manual annotations of cluster CG:

- Start number 26 was manually annotated 2 times for cluster CG.

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

Gene: Anedea\_232 Start: 111995, Stop: 112969, Start Num: 24

Candidate Starts for Anedea\_232:

(23, 111986), (Start: 24 @111995 has 39 MA's), (37, 112067), (58, 112202), (59, 112208), (92, 112568), (93, 112574), (96, 112607), (102, 112688), (132, 112886), (135, 112898),

Gene: Angela\_221 Start: 109751, Stop: 110782, Start Num: 24

Candidate Starts for Angela\_221:

(13, 109682), (14, 109688), (16, 109697), (21, 109715), (Start: 24 @109751 has 39 MA's), (37, 109823), (45, 109877), (48, 109898), (59, 109964), (78, 110177), (87, 110264), (93, 110312), (96, 110345), (112, 110522), (118, 110594), (122, 110630), (135, 110711),

Gene: Annadreamy\_154 Start: 85058, Stop: 85987, Start Num: 25

Candidate Starts for Annadreamy\_154:

(Start: 25 @85058 has 8 MA's), (36, 85121), (37, 85133), (42, 85181), (70, 85397), (80, 85502), (85, 85556), (92, 85610), (93, 85616), (103, 85745), (106, 85781), (109, 85802), (124, 85907), (133, 85940),

Gene: Bartholomune\_219 Start: 109980, Stop: 110945, Start Num: 24

Candidate Starts for Bartholomune\_219:

(Start: 24 @109980 has 39 MA's), (37, 110052), (62, 110229), (87, 110481), (92, 110523), (93, 110529), (96, 110562), (97, 110580), (98, 110628), (102, 110643), (114, 110757), (121, 110826), (127, 110853), (132, 110862), (134, 110871),

Gene: Belfort\_167 Start: 91008, Stop: 92018, Start Num: 27

Candidate Starts for Belfort\_167:

(Start: 27 @91008 has 14 MA's), (37, 91077), (61, 91233), (93, 91554), (103, 91683), (106, 91719), (131, 91926), (134, 91938),

Gene: Beuffert\_160 Start: 89147, Stop: 90076, Start Num: 25

Candidate Starts for Beuffert\_160:

(12, 89072), (Start: 25 @89147 has 8 MA's), (36, 89210), (37, 89222), (58, 89357), (80, 89591), (85, 89645), (93, 89705), (106, 89870), (109, 89891), (114, 89927), (124, 89996), (133, 90029),

Gene: BillNye\_131 Start: 80702, Stop: 81835, Start Num: 18

Candidate Starts for BillNye\_131:

(Start: 18 @80702 has 2 MA's), (Start: 24 @80747 has 39 MA's), (37, 80825), (48, 80900), (62, 81002), (64, 81026), (71, 81092), (93, 81305), (101, 81416), (106, 81470), (125, 81644), (142, 81755), (143, 81773),

Gene: BlueOtter\_217 Start: 110101, Stop: 111066, Start Num: 24

Candidate Starts for BlueOtter\_217:

(Start: 24 @110101 has 39 MA's), (37, 110173), (61, 110329), (91, 110641), (93, 110650), (96, 110683), (114, 110878), (121, 110947), (132, 110983), (134, 110992), (135, 110995),

Gene: Blueeyedbeauty\_162 Start: 88815, Stop: 89744, Start Num: 25

Candidate Starts for Blueeyedbeauty\_162:

(3, 88683), (4, 88689), (7, 88710), (8, 88716), (11, 88734), (12, 88740), (Start: 25 @88815 has 8 MA's), (36, 88878), (37, 88890), (58, 89025), (70, 89154), (80, 89259), (85, 89313), (93, 89373), (103, 89502), (106, 89538), (109, 89559), (124, 89664), (133, 89697),

Gene: Bmoc\_223 Start: 110200, Stop: 111180, Start Num: 24

Candidate Starts for Bmoc\_223:

(12, 110125), (16, 110146), (Start: 24 @110200 has 39 MA's), (37, 110272), (48, 110347), (54, 110368), (58, 110407), (59, 110413), (93, 110749), (94, 110764), (96, 110782), (132, 111097), (135, 111109),

Gene: Braelyn\_215 Start: 109627, Stop: 110592, Start Num: 24

Candidate Starts for Braelyn\_215:

(Start: 24 @109627 has 39 MA's), (37, 109699), (62, 109876), (87, 110128), (92, 110170), (93, 110176), (96, 110209), (98, 110275), (102, 110290), (114, 110404), (121, 110473), (127, 110500), (132, 110509), (134, 110518),

Gene: Chilliams\_159 Start: 100299, Stop: 101354, Start Num: 26

Candidate Starts for Chilliams\_159:

(Start: 26 @100299 has 7 MA's), (29, 100305), (56, 100479), (57, 100491), (58, 100512), (59, 100518), (66, 100587), (72, 100668), (78, 100731), (81, 100752), (86, 100800), (93, 100857), (96, 100890),

Gene: Circinus\_132 Start: 80670, Stop: 81803, Start Num: 18

Candidate Starts for Circinus\_132:

(Start: 18 @80670 has 2 MA's), (Start: 24 @80715 has 39 MA's), (37, 80793), (48, 80868), (62, 80970), (64, 80994), (71, 81060), (93, 81273), (101, 81384), (106, 81438), (125, 81612), (142, 81723), (143, 81741),

Gene: Comrade\_164 Start: 91210, Stop: 92220, Start Num: 27

Candidate Starts for Comrade\_164:

(Start: 27 @91210 has 14 MA's), (37, 91279), (61, 91435), (93, 91756), (103, 91885), (106, 91921), (131, 92128), (134, 92140),

Gene: Cross\_218 Start: 110746, Stop: 111711, Start Num: 24

Candidate Starts for Cross\_218:

(Start: 24 @110746 has 39 MA's), (37, 110818), (61, 110974), (91, 111286), (93, 111295), (96, 111328), (114, 111523), (121, 111592), (132, 111628), (134, 111637), (135, 111640),

Gene: Cursive\_221 Start: 110430, Stop: 111395, Start Num: 24

Candidate Starts for Cursive\_221:

(Start: 24 @110430 has 39 MA's), (37, 110502), (61, 110658), (91, 110970), (93, 110979), (96, 111012), (114, 111207), (121, 111276), (132, 111312), (134, 111321), (135, 111324),

Gene: Daubenski\_212 Start: 110817, Stop: 111794, Start Num: 24

Candidate Starts for Daubenski\_212:

(10, 110739), (Start: 24 @110817 has 39 MA's), (37, 110889), (38, 110895), (47, 110961), (61, 111045), (87, 111318), (93, 111366), (102, 111480), (119, 111645), (132, 111711), (135, 111723),

Gene: Dorin\_124 Start: 80878, Stop: 81957, Start Num: 26

Candidate Starts for Dorin\_124:

(Start: 26 @80878 has 7 MA's), (33, 80926), (40, 80974), (41, 80989), (42, 80995), (46, 81013), (51, 81049), (60, 81121), (65, 81172), (71, 81232), (76, 81292), (93, 81439), (99, 81547), (101, 81556), (105, 81583), (106, 81610), (126, 81790), (128, 81814), (138, 81865),

Gene: EGole\_222 Start: 112476, Stop: 113450, Start Num: 24

Candidate Starts for EGole\_222:

(Start: 24 @112476 has 39 MA's), (37, 112548), (61, 112704), (80, 112923), (91, 113016), (93, 113025), (123, 113340), (132, 113367), (135, 113379),

Gene: Emma1919\_171 Start: 89918, Stop: 90925, Start Num: 27

Candidate Starts for Emma1919\_171:

(Start: 27 @89918 has 14 MA's), (31, 89939), (37, 89987), (62, 90164), (91, 90455), (93, 90464), (103, 90593), (106, 90629), (108, 90647), (111, 90659), (129, 90830), (131, 90833),

Gene: Evy\_209 Start: 110921, Stop: 111886, Start Num: 24

Candidate Starts for Evy\_209:

(Start: 24 @110921 has 39 MA's), (37, 110993), (61, 111149), (79, 111362), (80, 111368), (93, 111470), (96, 111503), (116, 111710), (121, 111767), (127, 111794), (132, 111803), (134, 111812),

Gene: Faust\_160 Start: 90385, Stop: 91368, Start Num: 25

Candidate Starts for Faust\_160:

(Start: 25 @90385 has 8 MA's), (37, 90460), (42, 90508), (93, 90943), (106, 91108), (110, 91132),

Gene: Forrest\_173 Start: 91510, Stop: 92523, Start Num: 27

Candidate Starts for Forrest\_173:

(Start: 27 @91510 has 14 MA's), (31, 91531), (37, 91579), (62, 91756), (93, 92056), (106, 92221), (111, 92251), (129, 92428), (131, 92431),

Gene: Francesca\_124 Start: 81793, Stop: 82872, Start Num: 26

Candidate Starts for Francesca\_124:

(Start: 26 @81793 has 7 MA's), (33, 81841), (40, 81889), (41, 81904), (42, 81910), (46, 81928), (51, 81964), (60, 82036), (65, 82087), (71, 82147), (76, 82207), (93, 82354), (99, 82462), (101, 82471), (105, 82498), (106, 82525), (126, 82705), (128, 82729), (138, 82780),

Gene: Francob\_169 Start: 90421, Stop: 91428, Start Num: 28

Candidate Starts for Francob\_169:

(15, 90358), (16, 90361), (Start: 28 @90421 has 1 MA's), (31, 90442), (37, 90490), (43, 90541), (47, 90562), (67, 90703), (80, 90859), (93, 90967), (103, 91096), (106, 91132), (108, 91150), (129, 91336), (131, 91339),

Gene: Gilson\_170 Start: 89880, Stop: 90887, Start Num: 27

Candidate Starts for Gilson\_170:

(Start: 27 @89880 has 14 MA's), (31, 89901), (37, 89949), (62, 90126), (91, 90417), (93, 90426), (103, 90555), (106, 90591), (108, 90609), (111, 90621), (129, 90792), (131, 90795),

Gene: Grayson\_118 Start: 74391, Stop: 75455, Start Num: 26

Candidate Starts for Grayson\_118:

(Start: 26 @74391 has 7 MA's), (73, 74775), (88, 74898), (93, 74946), (99, 75045), (103, 75072), (106, 75105), (136, 75312), (139, 75348),

Gene: HangryHippo\_217 Start: 110101, Stop: 111066, Start Num: 24

Candidate Starts for HangryHippo\_217:

(Start: 24 @110101 has 39 MA's), (37, 110173), (61, 110329), (91, 110641), (93, 110650), (96, 110683), (114, 110878), (121, 110947), (132, 110983), (134, 110992), (135, 110995),

Gene: Jada\_170 Start: 90206, Stop: 91219, Start Num: 27

Candidate Starts for Jada\_170:

(Start: 27 @90206 has 14 MA's), (31, 90227), (37, 90275), (62, 90452), (93, 90752), (106, 90917), (111, 90947), (129, 91124), (131, 91127),

Gene: Jay2Jay\_224 Start: 111076, Stop: 112041, Start Num: 24

Candidate Starts for Jay2Jay\_224:

(Start: 24 @111076 has 39 MA's), (37, 111148), (61, 111304), (79, 111517), (80, 111523), (93, 111625), (96, 111658), (116, 111865), (121, 111922), (127, 111949), (132, 111958), (134, 111967),

Gene: Karp\_161 Start: 90434, Stop: 91444, Start Num: 27

Candidate Starts for Karp\_161:

(Start: 27 @90434 has 14 MA's), (37, 90503), (61, 90659), (93, 90980), (103, 91109), (106, 91145), (131, 91352), (134, 91364),

Gene: Kenrey\_174 Start: 91221, Stop: 92234, Start Num: 27

Candidate Starts for Kenrey\_174:

(Start: 27 @91221 has 14 MA's), (31, 91242), (37, 91290), (93, 91767), (106, 91932), (111, 91962), (129, 92139), (131, 92142),

Gene: Larnav\_218 Start: 110595, Stop: 111560, Start Num: 24

Candidate Starts for Larnav\_218:

(Start: 24 @110595 has 39 MA's), (37, 110667), (61, 110823), (91, 111135), (93, 111144), (96, 111177), (114, 111372), (121, 111441), (132, 111477), (134, 111486), (135, 111489),

Gene: Leo04\_219 Start: 111127, Stop: 112092, Start Num: 24

Candidate Starts for Leo04\_219:

(Start: 24 @111127 has 39 MA's), (37, 111199), (61, 111355), (91, 111667), (93, 111676), (96, 111709), (114, 111904), (121, 111973), (132, 112009), (134, 112018), (135, 112021),

Gene: Liandry\_219 Start: 110503, Stop: 111468, Start Num: 24

Candidate Starts for Liandry\_219:

(Start: 24 @110503 has 39 MA's), (37, 110575), (62, 110752), (87, 111004), (92, 111046), (93, 111052), (96, 111085), (97, 111103), (98, 111151), (102, 111166), (114, 111280), (121, 111349), (127,



111376), (132, 111385), (134, 111394),

Gene: LilMartin\_218 Start: 109115, Stop: 110146, Start Num: 24

Candidate Starts for LilMartin\_218:

(13, 109046), (14, 109052), (16, 109061), (21, 109079), (Start: 24 @109115 has 39 MA's), (37, 109187), (45, 109241), (48, 109262), (59, 109328), (78, 109541), (87, 109628), (93, 109676), (96, 109709), (112, 109886), (118, 109958), (122, 109994), (135, 110075),

Gene: Limpid\_161 Start: 90371, Stop: 91300, Start Num: 25

Candidate Starts for Limpid\_161:

(Start: 25 @90371 has 8 MA's), (36, 90434), (37, 90446), (42, 90494), (70, 90710), (80, 90815), (85, 90869), (92, 90923), (93, 90929), (103, 91058), (106, 91094), (109, 91115), (124, 91220), (133, 91253),

Gene: Lululemon\_215 Start: 109482, Stop: 110447, Start Num: 24

Candidate Starts for Lululemon\_215:

(Start: 24 @109482 has 39 MA's), (37, 109554), (61, 109710), (91, 110022), (93, 110031), (96, 110064), (114, 110259), (121, 110328), (132, 110364), (134, 110373), (135, 110376),

Gene: Marsus\_231 Start: 110780, Stop: 111811, Start Num: 24

Candidate Starts for Marsus\_231:

(13, 110711), (16, 110726), (21, 110744), (Start: 24 @110780 has 39 MA's), (37, 110852), (48, 110927), (58, 110987), (59, 110993), (78, 111206), (79, 111221), (83, 111248), (87, 111293), (93, 111341), (112, 111551), (118, 111623), (122, 111659), (135, 111740),

Gene: MeganTheeKilla\_170 Start: 89949, Stop: 90956, Start Num: 27

Candidate Starts for MeganTheeKilla\_170:

(Start: 27 @89949 has 14 MA's), (31, 89970), (37, 90018), (62, 90195), (93, 90495), (103, 90624), (106, 90660), (108, 90678), (111, 90690), (129, 90861), (131, 90864),

Gene: Mildred21\_228 Start: 108870, Stop: 109850, Start Num: 24

Candidate Starts for Mildred21\_228:

(Start: 24 @108870 has 39 MA's), (34, 108924), (37, 108942), (48, 109017), (55, 109041), (58, 109077), (59, 109083), (68, 109188), (80, 109317), (93, 109419), (113, 109641), (119, 109707), (122, 109737), (127, 109761), (132, 109767),

Gene: Moab\_168 Start: 92420, Stop: 93433, Start Num: 27

Candidate Starts for Moab\_168:

(15, 92360), (16, 92363), (Start: 27 @92420 has 14 MA's), (37, 92489), (43, 92540), (93, 92966), (103, 93095), (106, 93131), (108, 93149), (111, 93161), (131, 93344),

Gene: MulchMansion\_222 Start: 110749, Stop: 111780, Start Num: 24

Candidate Starts for MulchMansion\_222:

(13, 110680), (14, 110686), (16, 110695), (21, 110713), (Start: 24 @110749 has 39 MA's), (37, 110821), (45, 110875), (48, 110896), (59, 110962), (78, 111175), (87, 111262), (93, 111310), (96, 111343), (112, 111520), (118, 111592), (122, 111628), (135, 111709),

Gene: Muntaha\_139 Start: 79684, Stop: 80793, Start Num: 25

Candidate Starts for Muntaha\_139:

(23, 79672), (Start: 25 @79684 has 8 MA's), (35, 79738), (36, 79741), (37, 79753), (38, 79759), (59, 79894), (71, 80020), (92, 80230), (93, 80236), (100, 80344), (106, 80401), (120, 80533), (140, 80695), (142, 80713),

Gene: Navo\_213 Start: 108831, Stop: 109796, Start Num: 24

Candidate Starts for Navo\_213:

(Start: 24 @108831 has 39 MA's), (37, 108903), (62, 109080), (87, 109332), (92, 109374), (93, 109380), (96, 109413), (97, 109431), (98, 109479), (102, 109494), (114, 109608), (121, 109677), (127, 109704), (132, 109713), (134, 109722),

Gene: NiceHouse\_135 Start: 88021, Stop: 88899, Start Num: 26

Candidate Starts for NiceHouse\_135:

(14, 87952), (17, 87964), (19, 87970), (20, 87976), (Start: 26 @88021 has 7 MA's), (30, 88036), (32, 88063), (49, 88174), (53, 88192), (75, 88429), (77, 88459), (82, 88492), (89, 88543), (90, 88552), (93, 88582), (97, 88633),

Gene: NootNoot\_216 Start: 109348, Stop: 110313, Start Num: 24

Candidate Starts for NootNoot\_216:

(Start: 24 @109348 has 39 MA's), (37, 109420), (62, 109597), (87, 109849), (92, 109891), (93, 109897), (96, 109930), (97, 109948), (98, 109996), (102, 110011), (114, 110125), (121, 110194), (127, 110221), (132, 110230), (134, 110239),

Gene: Nova53\_126 Start: 82372, Stop: 83373, Start Num: 26

Candidate Starts for Nova53\_126:

(Start: 26 @82372 has 7 MA's), (40, 82468), (46, 82507), (58, 82597), (59, 82603), (71, 82726), (80, 82828), (84, 82867), (86, 82873), (90, 82906), (92, 82930), (93, 82936), (99, 83041), (102, 83053), (105, 83077), (106, 83104), (107, 83110), (115, 83173), (126, 83257), (130, 83284),

Gene: PacManQ\_215 Start: 109482, Stop: 110447, Start Num: 24

Candidate Starts for PacManQ\_215:

(Start: 24 @109482 has 39 MA's), (37, 109554), (61, 109710), (91, 110022), (93, 110031), (96, 110064), (114, 110259), (121, 110328), (132, 110364), (134, 110373), (135, 110376),

Gene: Paradiddles\_211 Start: 111723, Stop: 112688, Start Num: 24

Candidate Starts for Paradiddles\_211:

(Start: 24 @111723 has 39 MA's), (37, 111795), (62, 111972), (87, 112224), (92, 112266), (93, 112272), (96, 112305), (98, 112371), (102, 112386), (114, 112500), (121, 112569), (127, 112596), (132, 112605), (134, 112614),

Gene: Patelgo\_169 Start: 92898, Stop: 93911, Start Num: 27

Candidate Starts for Patelgo\_169:

(15, 92838), (16, 92841), (Start: 27 @92898 has 14 MA's), (37, 92967), (43, 93018), (93, 93444), (103, 93573), (106, 93609), (108, 93627), (111, 93639), (131, 93822),

Gene: Peebs\_216 Start: 110566, Stop: 111531, Start Num: 24

Candidate Starts for Peebs\_216:

(Start: 24 @110566 has 39 MA's), (37, 110638), (61, 110794), (91, 111106), (93, 111115), (96, 111148), (114, 111343), (121, 111412), (132, 111448), (134, 111457), (135, 111460),

Gene: Pepperwood\_219 Start: 110798, Stop: 111763, Start Num: 24

Candidate Starts for Pepperwood\_219:

(Start: 24 @110798 has 39 MA's), (37, 110870), (61, 111026), (91, 111338), (93, 111347), (96, 111380), (114, 111575), (121, 111644), (127, 111671), (132, 111680), (134, 111689), (135, 111692),

Gene: Peregrin\_117 Start: 74368, Stop: 75456, Start Num: 26

Candidate Starts for Peregrin\_117:

(Start: 26 @74368 has 7 MA's), (73, 74752), (74, 74755), (93, 74923), (106, 75082), (136, 75313),

Gene: Persimmon\_222 Start: 109849, Stop: 110814, Start Num: 24

Candidate Starts for Persimmon\_222:

(Start: 24 @109849 has 39 MA's), (37, 109921), (62, 110098), (87, 110350), (92, 110392), (93, 110398), (96, 110431), (97, 110449), (98, 110497), (102, 110512), (114, 110626), (121, 110695), (127, 110722), (132, 110731), (134, 110740),

Gene: Phredrick\_172 Start: 89845, Stop: 90858, Start Num: 27

Candidate Starts for Phredrick\_172:

(Start: 27 @89845 has 14 MA's), (31, 89866), (37, 89914), (93, 90391), (106, 90556), (108, 90574), (111, 90586), (129, 90763), (131, 90766),

Gene: PinkiePie\_219 Start: 110503, Stop: 111468, Start Num: 24

Candidate Starts for PinkiePie\_219:

(Start: 24 @110503 has 39 MA's), (37, 110575), (62, 110752), (87, 111004), (92, 111046), (93, 111052), (96, 111085), (97, 111103), (98, 111151), (102, 111166), (114, 111280), (121, 111349), (127, 111376), (132, 111385), (134, 111394),

Gene: Riptide\_225 Start: 109525, Stop: 110499, Start Num: 24

Candidate Starts for Riptide\_225:

(23, 109516), (Start: 24 @109525 has 39 MA's), (37, 109597), (58, 109732), (59, 109738), (92, 110098), (93, 110104), (96, 110137), (102, 110218), (132, 110416), (135, 110428),

Gene: SJReid\_168 Start: 100899, Stop: 101945, Start Num: 26

Candidate Starts for SJReid\_168:

(Start: 26 @100899 has 7 MA's), (29, 100905), (39, 100992), (54, 101073), (57, 101091), (59, 101118), (66, 101187), (74, 101277), (78, 101331), (93, 101457), (95, 101487), (104, 101589),

Gene: Samisti12\_223 Start: 112392, Stop: 113357, Start Num: 24

Candidate Starts for Samisti12\_223:

(Start: 24 @112392 has 39 MA's), (37, 112464), (61, 112620), (91, 112932), (93, 112941), (96, 112974), (114, 113169), (121, 113238), (132, 113274), (134, 113283), (135, 113286),

Gene: Scheme\_222 Start: 112037, Stop: 113002, Start Num: 24

Candidate Starts for Scheme\_222:

(Start: 24 @112037 has 39 MA's), (37, 112109), (61, 112265), (91, 112577), (93, 112586), (96, 112619), (114, 112814), (121, 112883), (132, 112919), (134, 112928), (135, 112931),

Gene: SeresaTree\_162 Start: 89767, Stop: 90750, Start Num: 25

Candidate Starts for SeresaTree\_162:

(Start: 25 @89767 has 8 MA's), (37, 89842), (42, 89890), (93, 90325), (106, 90490), (110, 90514),

Gene: Sham\_160 Start: 91368, Stop: 92348, Start Num: 24

Candidate Starts for Sham\_160:

(Start: 24 @91368 has 39 MA's), (37, 91446), (42, 91494), (93, 91935), (100, 92043), (103, 92064), (106, 92100), (137, 92289),

Gene: Shuckle\_221 Start: 110925, Stop: 111890, Start Num: 24

Candidate Starts for Shuckle\_221:

(Start: 24 @110925 has 39 MA's), (37, 110997), (61, 111153), (91, 111465), (93, 111474), (96, 111507), (114, 111702), (121, 111771), (127, 111798), (132, 111807),

Gene: SparkleGoddess\_166 Start: 91221, Stop: 92228, Start Num: 27

Candidate Starts for SparkleGoddess\_166:

(Start: 27 @91221 has 14 MA's), (37, 91290), (61, 91446), (93, 91767), (103, 91896), (106, 91932), (131, 92136), (134, 92148),

Gene: Squillium\_222 Start: 110505, Stop: 111470, Start Num: 24

Candidate Starts for Squillium\_222:

(Start: 24 @110505 has 39 MA's), (37, 110577), (62, 110754), (87, 111006), (92, 111048), (93, 111054), (96, 111087), (97, 111105), (98, 111153), (102, 111168), (114, 111282), (121, 111351), (127, 111378), (132, 111387), (134, 111396),

Gene: Stigma\_165 Start: 91655, Stop: 92665, Start Num: 27

Candidate Starts for Stigma\_165:

(Start: 27 @91655 has 14 MA's), (37, 91724), (61, 91880), (93, 92201), (103, 92330), (106, 92366), (131, 92573), (134, 92585),

Gene: Sushi23\_219 Start: 111432, Stop: 112397, Start Num: 24

Candidate Starts for Sushi23\_219:

(Start: 24 @111432 has 39 MA's), (37, 111504), (61, 111660), (91, 111972), (93, 111981), (96, 112014), (114, 112209), (121, 112278), (127, 112305), (132, 112314), (134, 112323), (135, 112326),

Gene: Targaryen\_218 Start: 111605, Stop: 112570, Start Num: 24

Candidate Starts for Targaryen\_218:

(Start: 24 @111605 has 39 MA's), (37, 111677), (61, 111833), (79, 112046), (80, 112052), (93, 112154), (96, 112187), (116, 112394), (121, 112451), (127, 112478), (132, 112487), (134, 112496),

Gene: Teutsch\_218 Start: 111221, Stop: 112186, Start Num: 24

Candidate Starts for Teutsch\_218:

(Start: 24 @111221 has 39 MA's), (37, 111293), (61, 111449), (91, 111761), (93, 111770), (96, 111803), (102, 111884), (114, 111998), (121, 112067), (127, 112094), (132, 112103), (134, 112112), (135, 112115),

Gene: Tomas\_231 Start: 112309, Stop: 113268, Start Num: 24

Candidate Starts for Tomas\_231:

(1, 112177), (2, 112183), (3, 112186), (5, 112204), (6, 112207), (7, 112213), (9, 112231), (12, 112243), (21, 112279), (22, 112285), (Start: 24 @112309 has 39 MA's), (34, 112363), (59, 112522), (62, 112558), (93, 112858), (132, 113185), (135, 113197),

Gene: Tribute\_215 Start: 111386, Stop: 112351, Start Num: 24

Candidate Starts for Tribute\_215:

(Start: 24 @111386 has 39 MA's), (37, 111458), (61, 111614), (91, 111926), (93, 111935), (96, 111968), (114, 112163), (121, 112232), (127, 112259), (132, 112268), (134, 112277), (135, 112280),

Gene: Trina\_157 Start: 95691, Stop: 96605, Start Num: 26

Candidate Starts for Trina\_157:

(Start: 26 @95691 has 7 MA's), (37, 95757), (44, 95808), (50, 95841), (63, 95949), (69, 96009), (73, 96057), (93, 96246), (117, 96513),

Gene: TunaTartare\_166 Start: 92604, Stop: 93599, Start Num: 25

Candidate Starts for TunaTartare\_166:

(Start: 25 @92604 has 8 MA's), (37, 92679), (42, 92727), (79, 93048), (93, 93168), (103, 93297), (106, 93333),

Gene: Wakanda\_138 Start: 79625, Stop: 80734, Start Num: 25

Candidate Starts for Wakanda\_138:

(23, 79613), (Start: 25 @79625 has 8 MA's), (35, 79679), (36, 79682), (37, 79694), (38, 79700), (59, 79835), (71, 79961), (92, 80171), (93, 80177), (100, 80285), (106, 80342), (120, 80474), (140, 80636),

Gene: Warpy\_222 Start: 110514, Stop: 111479, Start Num: 24

Candidate Starts for Warpy\_222:

(Start: 24 @110514 has 39 MA's), (37, 110586), (61, 110742), (79, 110955), (80, 110961), (93, 111063), (96, 111096), (116, 111303), (121, 111360), (127, 111387), (132, 111396), (134, 111405),

Gene: Watermoore\_218 Start: 111744, Stop: 112709, Start Num: 24

Candidate Starts for Watermoore\_218:

(Start: 24 @111744 has 39 MA's), (37, 111816), (61, 111972), (91, 112284), (93, 112293), (96, 112326), (114, 112521), (121, 112590), (132, 112626), (134, 112635), (135, 112638),

Gene: Weasels2\_120 Start: 75722, Stop: 76783, Start Num: 26

Candidate Starts for Weasels2\_120:

(Start: 26 @75722 has 7 MA's), (52, 75887), (73, 76106), (93, 76277), (105, 76412), (106, 76436), (141, 76697),

Gene: Westy\_168 Start: 91970, Stop: 92977, Start Num: 27

Candidate Starts for Westy\_168:

(Start: 27 @91970 has 14 MA's), (37, 92039), (61, 92195), (93, 92516), (103, 92645), (106, 92681), (131, 92885), (134, 92897),

Gene: WhereRU\_218 Start: 110028, Stop: 110993, Start Num: 24

Candidate Starts for WhereRU\_218:

(Start: 24 @110028 has 39 MA's), (37, 110100), (62, 110277), (87, 110529), (92, 110571), (93, 110577), (96, 110610), (98, 110676), (102, 110691), (114, 110805), (121, 110874), (127, 110901), (132, 110910), (134, 110919),