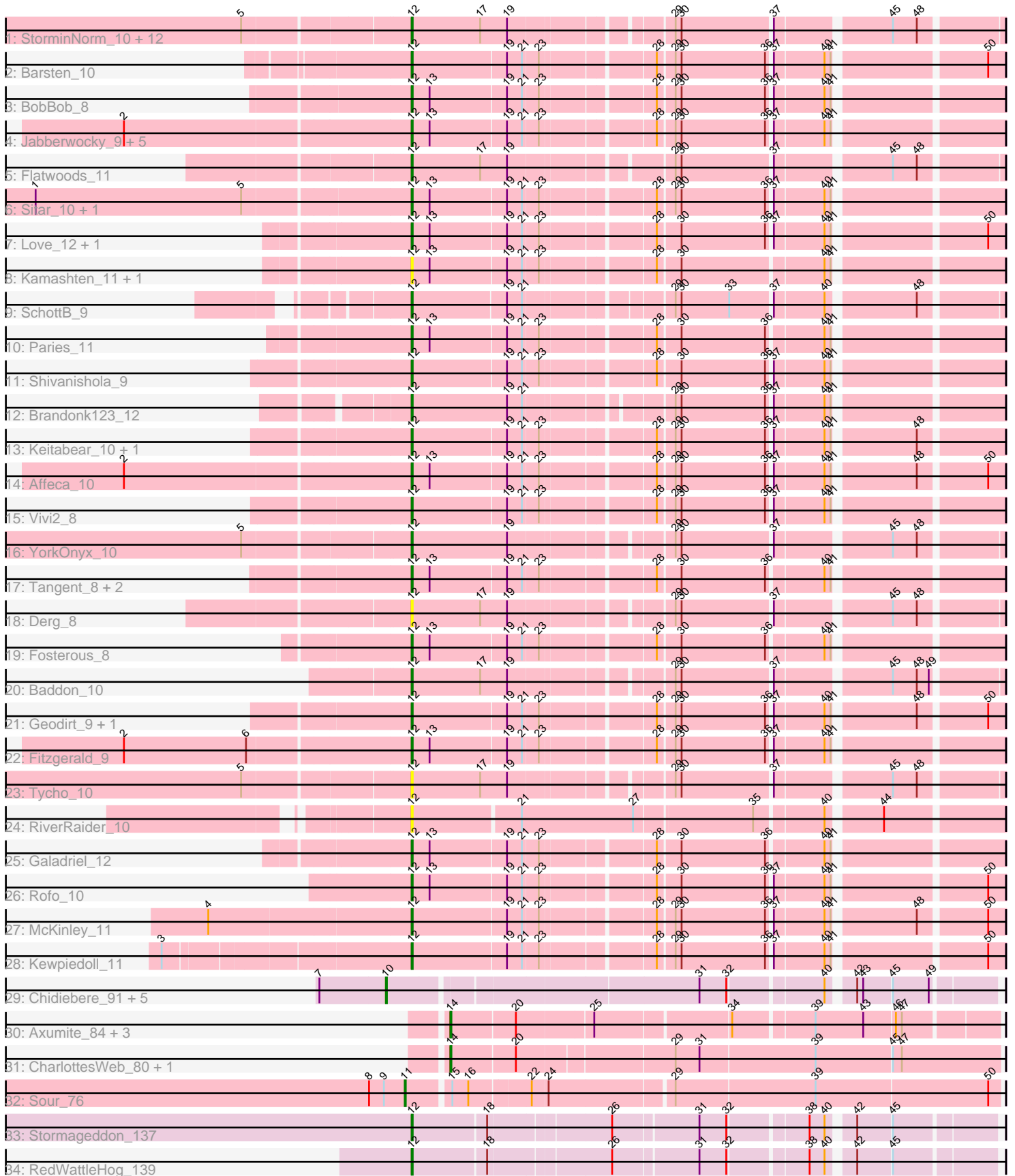


# Pham 154709



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 154709 Report

This analysis was run 04/12/24 on database version 558.

Pham number 154709 has 67 members, 15 are drafts.

Phages represented in each track:

- Track 1 : StorminNorm\_10, Tangerine\_10, Kroos\_10, Ribeye\_11, LilHam\_8, JKSyngboy\_9, Bizzy\_11, Baumdotcom\_10, Saronaya\_10, Kwobi\_10, Gaea\_10, Ashertheman\_10, Gustavo\_10
- Track 2 : Barsten\_10
- Track 3 : BobBob\_8
- Track 4 : Jabberwocky\_9, Ailee\_10, Sanjuju\_9, Angelicage\_10, Sedona\_11, Bibwit\_10
- Track 5 : Flatwoods\_11
- Track 6 : Sitar\_10, Lennon\_10
- Track 7 : Love\_12, MoontowerMania\_9
- Track 8 : Kamashten\_11, Thing3\_11
- Track 9 : SchottB\_9
- Track 10 : Paries\_11
- Track 11 : Shivanishola\_9
- Track 12 : Brandonk123\_12
- Track 13 : Keitabear\_10, Stultus\_9
- Track 14 : Affeca\_10
- Track 15 : Vivi2\_8
- Track 16 : YorkOnyx\_10
- Track 17 : Tangent\_8, Charming\_8, Nordenberg\_5
- Track 18 : Derg\_8
- Track 19 : Fosterous\_8
- Track 20 : Baddon\_10
- Track 21 : Geodirt\_9, ChadMasterC\_9
- Track 22 : Fitzgerald\_9
- Track 23 : Tycho\_10
- Track 24 : RiverRaider\_10
- Track 25 : Galadriel\_12
- Track 26 : Rofo\_10
- Track 27 : McKinley\_11
- Track 28 : Kewpiedoll\_11
- Track 29 : Chidiebere\_91, Pakusa\_87, Schomber\_89, Alok\_86, Hanem\_90, Kabocha\_92
- Track 30 : Axumite\_84, Fresco\_84, Shatter\_84, Ligma\_84
- Track 31 : CharlottesWeb\_80, Mariokart\_80
- Track 32 : Sour\_76
- Track 33 : Stormageddon\_137

- Track 34 : RedWattleHog\_139

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

The start number called the most often in the published annotations is 12, it was called in 44 of the 52 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Affeca\_10, Ailee\_10, Angelicage\_10, Ashertheman\_10, Baddon\_10, Barsten\_10, Baumdotcom\_10, Bibwit\_10, Bizzy\_11, BobBob\_8, Brandonk123\_12, ChadMasterC\_9, Charming\_8, Derg\_8, Fitzgerald\_9, Flatwoods\_11, Fosterous\_8, Gaea\_10, Galadriel\_12, Geodirt\_9, Gustavo\_10, JKSyngboy\_9, Jabberwocky\_9, Kamashten\_11, Keitabear\_10, Kewpiedoll\_11, Kroos\_10, Kwobi\_10, Lennon\_10, LilHam\_8, Love\_12, McKinley\_11, MoontowerMania\_9, Nordenberg\_5, Paries\_11, RedWattleHog\_139, Ribeye\_11, RiverRaider\_10, Rofo\_10, Sanjuju\_9, Saronaya\_10, SchottB\_9, Sedona\_11, Shivanishola\_9, Sitar\_10, Stormageddon\_137, StorminNorm\_10, Stultus\_9, Tangent\_8, Tangerine\_10, Thing3\_11, Tycho\_10, Vivi2\_8, YorkOnyx\_10,

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

- 

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

- Alok\_86, Axumite\_84, CharlottesWeb\_80, Chidiebere\_91, Fresco\_84, Hanem\_90, Kabocha\_92, Ligma\_84, Mariokart\_80, Pakusa\_87, Schomber\_89, Shatter\_84, Sour\_76,

**Summary by start number:**

Start 10:

- Found in 6 of 67 ( 9.0% ) of genes in pham
- Manual Annotations of this start: 4 of 52
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Alok\_86 (DQ), Chidiebere\_91 (DQ), Hanem\_90 (DQ), Kabocha\_92 (DQ), Pakusa\_87 (DQ), Schomber\_89 (DQ),

Start 11:

- Found in 1 of 67 ( 1.5% ) of genes in pham
- Manual Annotations of this start: 1 of 52
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Sour\_76 (DR),

Start 12:

- Found in 54 of 67 ( 80.6% ) of genes in pham
- Manual Annotations of this start: 44 of 52
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Affeca\_10 (DE1), Ailee\_10 (DE1), Angelicage\_10 (DE1), Ashertheman\_10 (DE1), Baddon\_10 (DE1), Barsten\_10 (DE1), Baumdotcom\_10 (DE1), Bibwit\_10 (DE1), Bizzy\_11 (DE1), BobBob\_8 (DE1), Brandonk123\_12 (DE1), ChadMasterC\_9 (DE1), Charming\_8 (DE1), Derg\_8 (DE1),

Fitzgerald\_9 (DE1), Flatwoods\_11 (DE1), Fosterous\_8 (DE1), Gaea\_10 (DE1), Galadriel\_12 (DE1), Geodirt\_9 (DE1), Gustavo\_10 (DE1), JKSyngboy\_9 (DE1), Jabberwocky\_9 (DE1), Kamashten\_11 (DE1), Keitabear\_10 (DE1), Kewpiedoll\_11 (DE1), Kroos\_10 (DE1), Kwobi\_10 (DE1), Lennon\_10 (DE1), LilHam\_8 (DE1), Love\_12 (DE1), McKinley\_11 (DE1), MoontowerMania\_9 (DE1), Nordenberg\_5 (DE1), Paries\_11 (DE1), RedWattleHog\_139 (DX), Ribeye\_11 (DE1), RiverRaider\_10 (DE1), Rofo\_10 (DE1), Sanjuju\_9 (DE1), Saronaya\_10 (DE1), SchottB\_9 (DE1), Sedona\_11 (DE1), Shivanishola\_9 (DE1), Sitar\_10 (DE1), Stormageddon\_137 (DX), StorminNorm\_10 (DE1), Stultus\_9 (DE1), Tangent\_8 (DE1), Tangerine\_10 (DE1), Thing3\_11 (DE1), Tycho\_10 (DE1), Vivi2\_8 (DE1), YorkOnyx\_10 (DE1),

Start 14:

- Found in 6 of 67 ( 9.0% ) of genes in pham
- Manual Annotations of this start: 3 of 52
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Axumite\_84 (DR), CharlottesWeb\_80 (DR), Fresco\_84 (DR), Ligma\_84 (DR), Mariokart\_80 (DR), Shatter\_84 (DR),

### **Summary by clusters:**

There are 4 clusters represented in this pham: DE1, DR, DX, DQ,

Info for manual annotations of cluster DE1:

- Start number 12 was manually annotated 42 times for cluster DE1.

Info for manual annotations of cluster DQ:

- Start number 10 was manually annotated 4 times for cluster DQ.

Info for manual annotations of cluster DR:

- Start number 11 was manually annotated 1 time for cluster DR.
- Start number 14 was manually annotated 3 times for cluster DR.

Info for manual annotations of cluster DX:

- Start number 12 was manually annotated 2 times for cluster DX.

### **Gene Information:**

Gene: Affeca\_10 Start: 5721, Stop: 6263, Start Num: 12

Candidate Starts for Affeca\_10:

(2, 5442), (Start: 12 @5721 has 44 MA's), (13, 5739), (19, 5814), (21, 5829), (23, 5844), (28, 5946), (29, 5961), (30, 5967), (36, 6051), (37, 6054), (40, 6102), (41, 6108), (48, 6183), (50, 6246),

Gene: Ailee\_10 Start: 6574, Stop: 7116, Start Num: 12

Candidate Starts for Ailee\_10:

(2, 6295), (Start: 12 @6574 has 44 MA's), (13, 6592), (19, 6667), (21, 6682), (23, 6697), (28, 6799), (29, 6814), (30, 6820), (36, 6904), (37, 6907), (40, 6955), (41, 6961),

Gene: Alok\_86 Start: 67872, Stop: 68426, Start Num: 10

Candidate Starts for Alok\_86:

(7, 67806), (Start: 10 @67872 has 4 MA's), (31, 68163), (32, 68190), (40, 68277), (42, 68298), (43, 68304), (45, 68331), (49, 68367),

Gene: Angelicage\_10 Start: 6141, Stop: 6683, Start Num: 12

Candidate Starts for Angelicage\_10:

(2, 5862), (Start: 12 @6141 has 44 MA's), (13, 6159), (19, 6234), (21, 6249), (23, 6264), (28, 6366), (29, 6381), (30, 6387), (36, 6471), (37, 6474), (40, 6522), (41, 6528),

Gene: Ashertheman\_10 Start: 5336, Stop: 5872, Start Num: 12

Candidate Starts for Ashertheman\_10:

(5, 5180), (Start: 12 @5336 has 44 MA's), (17, 5405), (19, 5432), (29, 5573), (30, 5579), (37, 5666), (45, 5771), (48, 5795),

Gene: Axumite\_84 Start: 60888, Stop: 60379, Start Num: 14

Candidate Starts for Axumite\_84:

(Start: 14 @60888 has 3 MA's), (20, 60825), (25, 60753), (34, 60627), (39, 60552), (43, 60504), (46, 60474), (47, 60468),

Gene: Baddon\_10 Start: 6045, Stop: 6581, Start Num: 12

Candidate Starts for Baddon\_10:

(Start: 12 @6045 has 44 MA's), (17, 6114), (19, 6141), (29, 6282), (30, 6288), (37, 6375), (45, 6480), (48, 6504), (49, 6516),

Gene: Barsten\_10 Start: 5370, Stop: 5912, Start Num: 12

Candidate Starts for Barsten\_10:

(Start: 12 @5370 has 44 MA's), (19, 5463), (21, 5478), (23, 5493), (28, 5595), (29, 5610), (30, 5616), (36, 5700), (37, 5703), (40, 5751), (41, 5757), (50, 5895),

Gene: Baumdotcom\_10 Start: 5359, Stop: 5895, Start Num: 12

Candidate Starts for Baumdotcom\_10:

(5, 5203), (Start: 12 @5359 has 44 MA's), (17, 5428), (19, 5455), (29, 5596), (30, 5602), (37, 5689), (45, 5794), (48, 5818),

Gene: Bibwit\_10 Start: 6407, Stop: 6949, Start Num: 12

Candidate Starts for Bibwit\_10:

(2, 6128), (Start: 12 @6407 has 44 MA's), (13, 6425), (19, 6500), (21, 6515), (23, 6530), (28, 6632), (29, 6647), (30, 6653), (36, 6737), (37, 6740), (40, 6788), (41, 6794),

Gene: Bizzy\_11 Start: 5533, Stop: 6069, Start Num: 12

Candidate Starts for Bizzy\_11:

(5, 5377), (Start: 12 @5533 has 44 MA's), (17, 5602), (19, 5629), (29, 5770), (30, 5776), (37, 5863), (45, 5968), (48, 5992),

Gene: BobBob\_8 Start: 5063, Stop: 5605, Start Num: 12

Candidate Starts for BobBob\_8:

(Start: 12 @5063 has 44 MA's), (13, 5081), (19, 5156), (21, 5171), (23, 5186), (28, 5288), (29, 5303), (30, 5309), (36, 5393), (37, 5396), (40, 5444), (41, 5450),

Gene: Brandonk123\_12 Start: 6057, Stop: 6596, Start Num: 12

Candidate Starts for Brandonk123\_12:

(Start: 12 @6057 has 44 MA's), (19, 6153), (21, 6168), (29, 6294), (30, 6300), (36, 6384), (37, 6387), (40, 6435), (41, 6441),

Gene: ChadMasterC\_9 Start: 5642, Stop: 6184, Start Num: 12

Candidate Starts for ChadMasterC\_9:

(Start: 12 @5642 has 44 MA's), (19, 5735), (21, 5750), (23, 5765), (28, 5867), (29, 5882), (30, 5888), (36, 5972), (37, 5975), (40, 6023), (41, 6029), (48, 6104), (50, 6167),

Gene: CharlottesWeb\_80 Start: 59691, Stop: 59161, Start Num: 14

Candidate Starts for CharlottesWeb\_80:

(Start: 14 @59691 has 3 MA's), (20, 59628), (29, 59481), (31, 59457), (39, 59343), (45, 59268), (47, 59259),

Gene: Charming\_8 Start: 5065, Stop: 5607, Start Num: 12

Candidate Starts for Charming\_8:

(Start: 12 @5065 has 44 MA's), (13, 5083), (19, 5158), (21, 5173), (23, 5188), (28, 5290), (30, 5311), (36, 5395), (40, 5446), (41, 5452),

Gene: Chidiebere\_91 Start: 68405, Stop: 68959, Start Num: 10

Candidate Starts for Chidiebere\_91:

(7, 68339), (Start: 10 @68405 has 4 MA's), (31, 68696), (32, 68723), (40, 68810), (42, 68831), (43, 68837), (45, 68864), (49, 68900),

Gene: Derg\_8 Start: 4663, Stop: 5199, Start Num: 12

Candidate Starts for Derg\_8:

(Start: 12 @4663 has 44 MA's), (17, 4732), (19, 4759), (29, 4900), (30, 4906), (37, 4993), (45, 5098), (48, 5122),

Gene: Fitzgerald\_9 Start: 5991, Stop: 6533, Start Num: 12

Candidate Starts for Fitzgerald\_9:

(2, 5712), (6, 5835), (Start: 12 @5991 has 44 MA's), (13, 6009), (19, 6084), (21, 6099), (23, 6114), (28, 6216), (29, 6231), (30, 6237), (36, 6321), (37, 6324), (40, 6372), (41, 6378),

Gene: Flatwoods\_11 Start: 5532, Stop: 6071, Start Num: 12

Candidate Starts for Flatwoods\_11:

(Start: 12 @5532 has 44 MA's), (17, 5601), (19, 5628), (29, 5772), (30, 5778), (37, 5865), (45, 5970), (48, 5994),

Gene: Fosterous\_8 Start: 5063, Stop: 5605, Start Num: 12

Candidate Starts for Fosterous\_8:

(Start: 12 @5063 has 44 MA's), (13, 5081), (19, 5156), (21, 5171), (23, 5186), (28, 5288), (30, 5309), (36, 5393), (40, 5444), (41, 5450),

Gene: Fresco\_84 Start: 60894, Stop: 60385, Start Num: 14

Candidate Starts for Fresco\_84:

(Start: 14 @60894 has 3 MA's), (20, 60831), (25, 60759), (34, 60633), (39, 60558), (43, 60510), (46, 60480), (47, 60474),

Gene: Gaea\_10 Start: 5339, Stop: 5875, Start Num: 12

Candidate Starts for Gaea\_10:

(5, 5183), (Start: 12 @5339 has 44 MA's), (17, 5408), (19, 5435), (29, 5576), (30, 5582), (37, 5669), (45, 5774), (48, 5798),

Gene: Galadriel\_12 Start: 5831, Stop: 6373, Start Num: 12

Candidate Starts for Galadriel\_12:

(Start: 12 @5831 has 44 MA's), (13, 5849), (19, 5924), (21, 5939), (23, 5954), (28, 6056), (30, 6077), (36, 6161), (40, 6212), (41, 6218),

Gene: Geodirt\_9 Start: 5682, Stop: 6224, Start Num: 12

Candidate Starts for Geodirt\_9:

(Start: 12 @5682 has 44 MA's), (19, 5775), (21, 5790), (23, 5805), (28, 5907), (29, 5922), (30, 5928), (36, 6012), (37, 6015), (40, 6063), (41, 6069), (48, 6144), (50, 6207),

Gene: Gustavo\_10 Start: 5336, Stop: 5872, Start Num: 12

Candidate Starts for Gustavo\_10:

(5, 5180), (Start: 12 @5336 has 44 MA's), (17, 5405), (19, 5432), (29, 5573), (30, 5579), (37, 5666), (45, 5771), (48, 5795),

Gene: Hanem\_90 Start: 67872, Stop: 68426, Start Num: 10

Candidate Starts for Hanem\_90:

(7, 67806), (Start: 10 @67872 has 4 MA's), (31, 68163), (32, 68190), (40, 68277), (42, 68298), (43, 68304), (45, 68331), (49, 68367),

Gene: JKSyngboy\_9 Start: 5847, Stop: 6383, Start Num: 12

Candidate Starts for JKSyngboy\_9:

(5, 5691), (Start: 12 @5847 has 44 MA's), (17, 5916), (19, 5943), (29, 6084), (30, 6090), (37, 6177), (45, 6282), (48, 6306),

Gene: Jabberwocky\_9 Start: 5993, Stop: 6535, Start Num: 12

Candidate Starts for Jabberwocky\_9:

(2, 5714), (Start: 12 @5993 has 44 MA's), (13, 6011), (19, 6086), (21, 6101), (23, 6116), (28, 6218), (29, 6233), (30, 6239), (36, 6323), (37, 6326), (40, 6374), (41, 6380),

Gene: Kabocha\_92 Start: 69218, Stop: 69772, Start Num: 10

Candidate Starts for Kabocha\_92:

(7, 69152), (Start: 10 @69218 has 4 MA's), (31, 69509), (32, 69536), (40, 69623), (42, 69644), (43, 69650), (45, 69677), (49, 69713),

Gene: Kamashten\_11 Start: 6152, Stop: 6694, Start Num: 12

Candidate Starts for Kamashten\_11:

(Start: 12 @6152 has 44 MA's), (13, 6170), (19, 6245), (21, 6260), (23, 6275), (28, 6377), (30, 6398), (40, 6533), (41, 6539),

Gene: Keitabear\_10 Start: 7048, Stop: 7590, Start Num: 12

Candidate Starts for Keitabear\_10:

(Start: 12 @7048 has 44 MA's), (19, 7141), (21, 7156), (23, 7171), (28, 7273), (29, 7288), (30, 7294), (36, 7378), (37, 7381), (40, 7429), (41, 7435), (48, 7510),

Gene: Kewpiedoll\_11 Start: 5563, Stop: 6105, Start Num: 12

Candidate Starts for Kewpiedoll\_11:

(3, 5332), (Start: 12 @5563 has 44 MA's), (19, 5656), (21, 5671), (23, 5686), (28, 5788), (29, 5803), (30, 5809), (36, 5893), (37, 5896), (40, 5944), (41, 5950), (50, 6088),

Gene: Kroos\_10 Start: 5500, Stop: 6036, Start Num: 12

Candidate Starts for Kroos\_10:

(5, 5344), (Start: 12 @5500 has 44 MA's), (17, 5569), (19, 5596), (29, 5737), (30, 5743), (37, 5830), (45, 5935), (48, 5959),

Gene: Kwobi\_10 Start: 5339, Stop: 5875, Start Num: 12

Candidate Starts for Kwobi\_10:

(5, 5183), (Start: 12 @5339 has 44 MA's), (17, 5408), (19, 5435), (29, 5576), (30, 5582), (37, 5669), (45, 5774), (48, 5798),

Gene: Lennon\_10 Start: 6257, Stop: 6799, Start Num: 12

Candidate Starts for Lennon\_10:

(1, 5891), (5, 6098), (Start: 12 @6257 has 44 MA's), (13, 6275), (19, 6350), (21, 6365), (23, 6380), (28, 6482), (29, 6497), (30, 6503), (36, 6587), (37, 6590), (40, 6638), (41, 6644),

Gene: Ligma\_84 Start: 60888, Stop: 60379, Start Num: 14

Candidate Starts for Ligma\_84:

(Start: 14 @60888 has 3 MA's), (20, 60825), (25, 60753), (34, 60627), (39, 60552), (43, 60504), (46, 60474), (47, 60468),

Gene: LilHam\_8 Start: 4655, Stop: 5191, Start Num: 12

Candidate Starts for LilHam\_8:

(5, 4499), (Start: 12 @4655 has 44 MA's), (17, 4724), (19, 4751), (29, 4892), (30, 4898), (37, 4985), (45, 5090), (48, 5114),

Gene: Love\_12 Start: 6151, Stop: 6693, Start Num: 12

Candidate Starts for Love\_12:

(Start: 12 @6151 has 44 MA's), (13, 6169), (19, 6244), (21, 6259), (23, 6274), (28, 6376), (30, 6397), (36, 6481), (37, 6484), (40, 6532), (41, 6538), (50, 6676),

Gene: Mariokart\_80 Start: 59929, Stop: 59399, Start Num: 14

Candidate Starts for Mariokart\_80:

(Start: 14 @59929 has 3 MA's), (20, 59866), (29, 59719), (31, 59695), (39, 59581), (45, 59506), (47, 59497),

Gene: McKinley\_11 Start: 6510, Stop: 7052, Start Num: 12

Candidate Starts for McKinley\_11:

(4, 6312), (Start: 12 @6510 has 44 MA's), (19, 6603), (21, 6618), (23, 6633), (28, 6735), (29, 6750), (30, 6756), (36, 6840), (37, 6843), (40, 6891), (41, 6897), (48, 6972), (50, 7035),

Gene: MoontowerMania\_9 Start: 5550, Stop: 6092, Start Num: 12

Candidate Starts for MoontowerMania\_9:

(Start: 12 @5550 has 44 MA's), (13, 5568), (19, 5643), (21, 5658), (23, 5673), (28, 5775), (30, 5796), (36, 5880), (37, 5883), (40, 5931), (41, 5937), (50, 6075),

Gene: Nordenberg\_5 Start: 3685, Stop: 4227, Start Num: 12

Candidate Starts for Nordenberg\_5:

(Start: 12 @3685 has 44 MA's), (13, 3703), (19, 3778), (21, 3793), (23, 3808), (28, 3910), (30, 3931), (36, 4015), (40, 4066), (41, 4072),

Gene: Pakusa\_87 Start: 67598, Stop: 68152, Start Num: 10

Candidate Starts for Pakusa\_87:

(7, 67532), (Start: 10 @67598 has 4 MA's), (31, 67889), (32, 67916), (40, 68003), (42, 68024), (43, 68030), (45, 68057), (49, 68093),

Gene: Paries\_11 Start: 5833, Stop: 6375, Start Num: 12

Candidate Starts for Paries\_11:

(Start: 12 @5833 has 44 MA's), (13, 5851), (19, 5926), (21, 5941), (23, 5956), (28, 6058), (30, 6079), (36, 6163), (40, 6214), (41, 6220),



Gene: RedWattleHog\_139 Start: 98356, Stop: 98886, Start Num: 12

Candidate Starts for RedWattleHog\_139:

(Start: 12 @98356 has 44 MA's), (18, 98428), (26, 98542), (31, 98623), (32, 98650), (38, 98722), (40, 98737), (42, 98758), (45, 98791),

Gene: Ribeye\_11 Start: 5534, Stop: 6070, Start Num: 12

Candidate Starts for Ribeye\_11:

(5, 5378), (Start: 12 @5534 has 44 MA's), (17, 5603), (19, 5630), (29, 5771), (30, 5777), (37, 5864), (45, 5969), (48, 5993),

Gene: RiverRaider\_10 Start: 4913, Stop: 5464, Start Num: 12

Candidate Starts for RiverRaider\_10:

(Start: 12 @4913 has 44 MA's), (21, 5018), (27, 5129), (35, 5240), (40, 5303), (44, 5351),

Gene: Rofo\_10 Start: 6082, Stop: 6624, Start Num: 12

Candidate Starts for Rofo\_10:

(Start: 12 @6082 has 44 MA's), (13, 6100), (19, 6175), (21, 6190), (23, 6205), (28, 6307), (30, 6328), (36, 6412), (37, 6415), (40, 6463), (41, 6469), (50, 6607),

Gene: Sanjuju\_9 Start: 6031, Stop: 6573, Start Num: 12

Candidate Starts for Sanjuju\_9:

(2, 5752), (Start: 12 @6031 has 44 MA's), (13, 6049), (19, 6124), (21, 6139), (23, 6154), (28, 6256), (29, 6271), (30, 6277), (36, 6361), (37, 6364), (40, 6412), (41, 6418),

Gene: Saronaya\_10 Start: 5336, Stop: 5872, Start Num: 12

Candidate Starts for Saronaya\_10:

(5, 5180), (Start: 12 @5336 has 44 MA's), (17, 5405), (19, 5432), (29, 5573), (30, 5579), (37, 5666), (45, 5771), (48, 5795),

Gene: Schomber\_89 Start: 67606, Stop: 68160, Start Num: 10

Candidate Starts for Schomber\_89:

(7, 67540), (Start: 10 @67606 has 4 MA's), (31, 67897), (32, 67924), (40, 68011), (42, 68032), (43, 68038), (45, 68065), (49, 68101),

Gene: SchottB\_9 Start: 5513, Stop: 6049, Start Num: 12

Candidate Starts for SchottB\_9:

(Start: 12 @5513 has 44 MA's), (19, 5606), (21, 5621), (29, 5750), (30, 5756), (33, 5804), (37, 5843), (40, 5891), (48, 5972),

Gene: Sedona\_11 Start: 7049, Stop: 7591, Start Num: 12

Candidate Starts for Sedona\_11:

(2, 6770), (Start: 12 @7049 has 44 MA's), (13, 7067), (19, 7142), (21, 7157), (23, 7172), (28, 7274), (29, 7289), (30, 7295), (36, 7379), (37, 7382), (40, 7430), (41, 7436),

Gene: Shatter\_84 Start: 60888, Stop: 60379, Start Num: 14

Candidate Starts for Shatter\_84:

(Start: 14 @60888 has 3 MA's), (20, 60825), (25, 60753), (34, 60627), (39, 60552), (43, 60504), (46, 60474), (47, 60468),

Gene: Shivanishola\_9 Start: 6091, Stop: 6633, Start Num: 12

Candidate Starts for Shivanishola\_9:

(Start: 12 @6091 has 44 MA's), (19, 6184), (21, 6199), (23, 6214), (28, 6316), (30, 6337), (36, 6421), (37, 6424), (40, 6472), (41, 6478),

Gene: Sitar\_10 Start: 6257, Stop: 6799, Start Num: 12

Candidate Starts for Sitar\_10:

(1, 5891), (5, 6098), (Start: 12 @6257 has 44 MA's), (13, 6275), (19, 6350), (21, 6365), (23, 6380), (28, 6482), (29, 6497), (30, 6503), (36, 6587), (37, 6590), (40, 6638), (41, 6644),

Gene: Sour\_76 Start: 60678, Stop: 60115, Start Num: 11

Candidate Starts for Sour\_76:

(8, 60714), (9, 60699), (Start: 11 @60678 has 1 MA's), (15, 60639), (16, 60624), (22, 60567), (24, 60552), (29, 60435), (39, 60297), (50, 60126),

Gene: Stormageddon\_137 Start: 98077, Stop: 98607, Start Num: 12

Candidate Starts for Stormageddon\_137:

(Start: 12 @98077 has 44 MA's), (18, 98149), (26, 98263), (31, 98344), (32, 98371), (38, 98443), (40, 98458), (42, 98479), (45, 98512),

Gene: StorminNorm\_10 Start: 5339, Stop: 5875, Start Num: 12

Candidate Starts for StorminNorm\_10:

(5, 5183), (Start: 12 @5339 has 44 MA's), (17, 5408), (19, 5435), (29, 5576), (30, 5582), (37, 5669), (45, 5774), (48, 5798),

Gene: Stultus\_9 Start: 6081, Stop: 6623, Start Num: 12

Candidate Starts for Stultus\_9:

(Start: 12 @6081 has 44 MA's), (19, 6174), (21, 6189), (23, 6204), (28, 6306), (29, 6321), (30, 6327), (36, 6411), (37, 6414), (40, 6462), (41, 6468), (48, 6543),

Gene: Tangent\_8 Start: 5065, Stop: 5607, Start Num: 12

Candidate Starts for Tangent\_8:

(Start: 12 @5065 has 44 MA's), (13, 5083), (19, 5158), (21, 5173), (23, 5188), (28, 5290), (30, 5311), (36, 5395), (40, 5446), (41, 5452),

Gene: Tangerine\_10 Start: 5348, Stop: 5884, Start Num: 12

Candidate Starts for Tangerine\_10:

(5, 5192), (Start: 12 @5348 has 44 MA's), (17, 5417), (19, 5444), (29, 5585), (30, 5591), (37, 5678), (45, 5783), (48, 5807),

Gene: Thing3\_11 Start: 6152, Stop: 6694, Start Num: 12

Candidate Starts for Thing3\_11:

(Start: 12 @6152 has 44 MA's), (13, 6170), (19, 6245), (21, 6260), (23, 6275), (28, 6377), (30, 6398), (40, 6533), (41, 6539),

Gene: Tycho\_10 Start: 5348, Stop: 5884, Start Num: 12

Candidate Starts for Tycho\_10:

(5, 5192), (Start: 12 @5348 has 44 MA's), (17, 5417), (19, 5444), (29, 5585), (30, 5591), (37, 5678), (45, 5783), (48, 5807),

Gene: Vivi2\_8 Start: 5070, Stop: 5612, Start Num: 12

Candidate Starts for Vivi2\_8:

(Start: 12 @5070 has 44 MA's), (19, 5163), (21, 5178), (23, 5193), (28, 5295), (29, 5310), (30, 5316), (36, 5400), (37, 5403), (40, 5451), (41, 5457),

Gene: YorkOnyx\_10 Start: 5297, Stop: 5833, Start Num: 12

Candidate Starts for YorkOnyx\_10:

(5, 5141), (Start: 12 @5297 has 44 MA's), (19, 5393), (29, 5534), (30, 5540), (37, 5627), (45, 5732),  
(48, 5756),