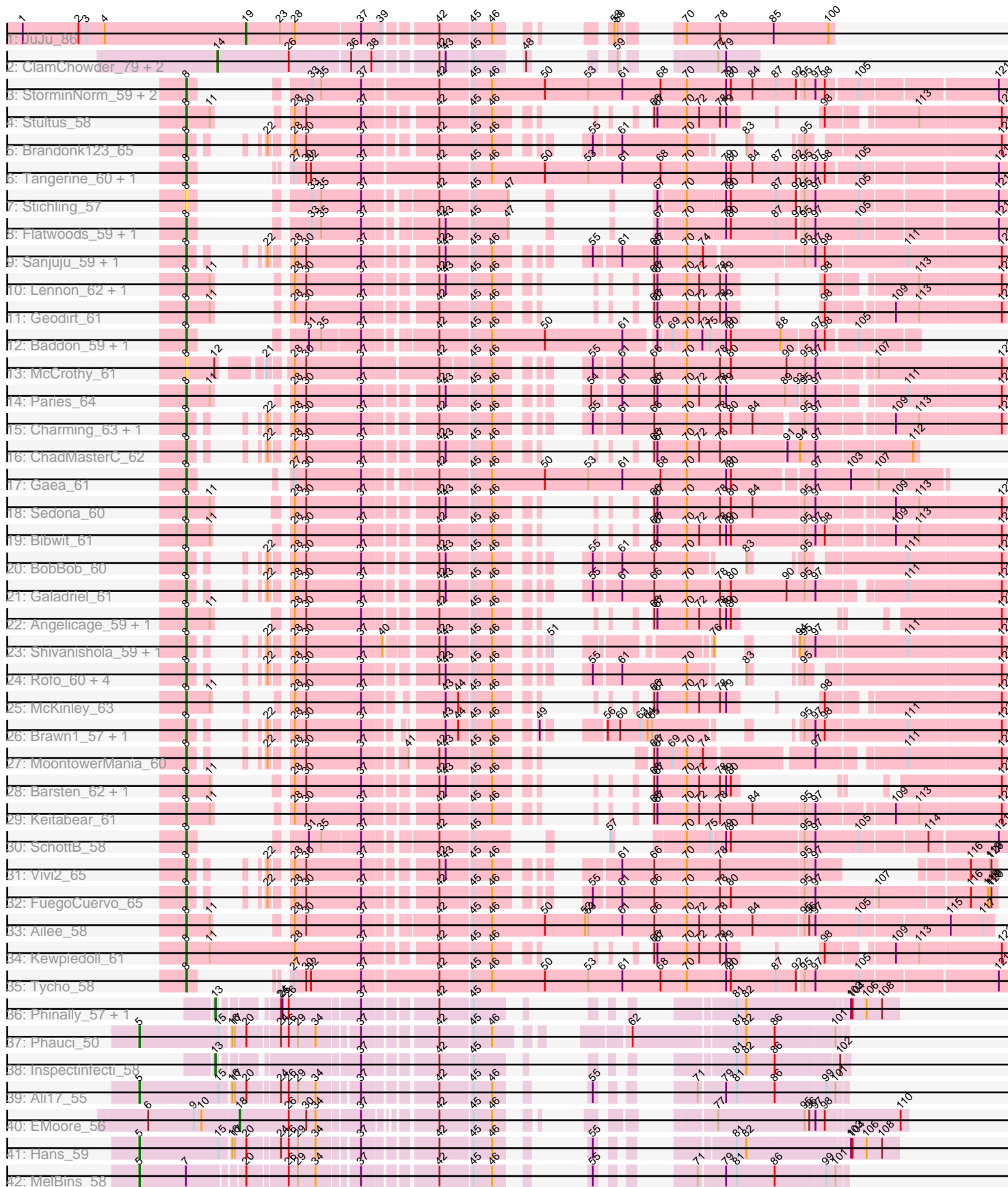


Pham 296588



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 296588 Report

This analysis was run 04/25/26 on database version 644.

Pham number 296588 has 61 members, 3 are drafts.

Phages represented in each track:

- Track 1 : JuJu\_86
- Track 2 : ClamChowder\_79, Fugax\_80, Barb\_79
- Track 3 : StorminNorm\_59, Saronaya\_61, Gustavo\_61
- Track 4 : Stultus\_58
- Track 5 : Brandonk123\_65
- Track 6 : Tangerine\_60, Baumdotcom\_57
- Track 7 : Stichling\_57
- Track 8 : Flatwoods\_59, Kroos\_59
- Track 9 : Sanjuju\_59, Fitzgerald\_58
- Track 10 : Lennon\_62, Sitar\_62
- Track 11 : Geodirt\_61
- Track 12 : Baddon\_59, JKSyngboy\_59
- Track 13 : McCrothy\_61
- Track 14 : Paries\_64
- Track 15 : Charming\_63, Nordenberg\_58
- Track 16 : ChadMasterC\_62
- Track 17 : Gaea\_61
- Track 18 : Sedona\_60
- Track 19 : Bibwit\_61
- Track 20 : BobBob\_60
- Track 21 : Galadriel\_61
- Track 22 : Angelicage\_59, Affeca\_59
- Track 23 : Shivanishola\_59, Love\_64
- Track 24 : Rofo\_60, Tangent\_62, Kamashten\_60, Fosterous\_63, Thing3\_60
- Track 25 : McKinley\_63
- Track 26 : Brawn1\_57, Jabberwocky\_59
- Track 27 : MoontowerMania\_60
- Track 28 : Barsten\_62, RiverRaider\_61
- Track 29 : Keitabear\_61
- Track 30 : SchottB\_58
- Track 31 : Vivi2\_65
- Track 32 : FuegoCuervo\_65
- Track 33 : Ailee\_58
- Track 34 : Kewpiedoll\_61
- Track 35 : Tycho\_58
- Track 36 : Phinally\_57, Leonard\_57
- Track 37 : Phauci\_50

- Track 38 : Inspectinfecti\_58
- Track 39 : Ali17\_55
- Track 40 : EMOore\_56
- Track 41 : Hans\_59
- Track 42 : MelBins\_58

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

The start number called the most often in the published annotations is 8, it was called in 46 of the 58 non-draft genes in the pham.

Genes that call this "Most Annotated" start:

- Affeca\_59, Ailee\_58, Angelicage\_59, Baddon\_59, Barsten\_62, Baumdotcom\_57, Bibwit\_61, BobBob\_60, Brandonk123\_65, Brawn1\_57, ChadMasterC\_62, Charming\_63, Fitzgerald\_58, Flatwoods\_59, Fosterous\_63, FuegoCuervo\_65, Gaea\_61, Galadriel\_61, Geodirt\_61, Gustavo\_61, JKSyngboy\_59, Jabberwocky\_59, Kamashten\_60, Keitabear\_61, Kewpiedoll\_61, Kroos\_59, Lennon\_62, Love\_64, McCrothy\_61, McKinley\_63, MoontowerMania\_60, Nordenberg\_58, Paries\_64, RiverRaider\_61, Rofo\_60, Sanjuju\_59, Saronaya\_61, SchottB\_58, Sedona\_60, Shivanishola\_59, Sitar\_62, Stichling\_57, StorminNorm\_59, Stultus\_58, Tangent\_62, Tangerine\_60, Thing3\_60, Tycho\_58, Vivi2\_65,

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

- 

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

- Ali17\_55, Barb\_79, ClamChowder\_79, EMOore\_56, Fugax\_80, Hans\_59, Inspectinfecti\_58, JuJu\_86, Leonard\_57, MelBins\_58, Phauci\_50, Phinally\_57,

**Summary by start number:**

Start 5:

- Found in 4 of 61 ( 6.6% ) of genes in pham
- Manual Annotations of this start: 4 of 58
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Ali17\_55 (DE2), Hans\_59 (DE2), MelBins\_58 (DE2), Phauci\_50 (DE2),

Start 8:

- Found in 49 of 61 ( 80.3% ) of genes in pham
- Manual Annotations of this start: 46 of 58
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Affeca\_59 (DE1), Ailee\_58 (DE1), Angelicage\_59 (DE1), Baddon\_59 (DE1), Barsten\_62 (DE1), Baumdotcom\_57 (DE1), Bibwit\_61 (DE1), BobBob\_60 (DE1), Brandonk123\_65 (DE1), Brawn1\_57 (DE1), ChadMasterC\_62 (DE1), Charming\_63 (DE1), Fitzgerald\_58 (DE1), Flatwoods\_59 (DE1), Fosterous\_63 (DE1), FuegoCuervo\_65 (DE1), Gaea\_61 (DE1), Galadriel\_61 (DE1), Geodirt\_61 (DE1), Gustavo\_61 (DE1), JKSyngboy\_59 (DE1), Jabberwocky\_59 (DE1), Kamashten\_60 (DE1), Keitabear\_61 (DE1), Kewpiedoll\_61 (DE1), Kroos\_59 (DE1), Lennon\_62 (DE1), Love\_64 (DE1), McCrothy\_61 (DE1), McKinley\_63 (DE1),

MoontowerMania\_60 (DE1), Nordenberg\_58 (DE1), Paries\_64 (DE1), RiverRaider\_61 (DE1), Rofo\_60 (DE1), Sanjuju\_59 (DE1), Saronaya\_61 (DE1), SchottB\_58 (DE1), Sedona\_60 (DE1), Shivanishola\_59 (DE1), Sitar\_62 (DE1), Stichling\_57 (DE1), StorminNorm\_59 (DE1), Stultus\_58 (DE1), Tangent\_62 (DE1), Tangerine\_60 (DE1), Thing3\_60 (DE1), Tycho\_58 (DE1), Vivi2\_65 (DE1),

Start 13:

- Found in 3 of 61 ( 4.9% ) of genes in pham
- Manual Annotations of this start: 3 of 58
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Inspectinfecti\_58 (DE2), Leonard\_57 (DE2), Phinally\_57 (DE2),

Start 14:

- Found in 3 of 61 ( 4.9% ) of genes in pham
- Manual Annotations of this start: 3 of 58
- Called 100.0% of time when present
- Phage (with cluster) where this start called: Barb\_79 (DC1), ClamChowder\_79 (DC1), Fugax\_80 (DC1),

Start 18:

- Found in 1 of 61 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 58
- Called 100.0% of time when present
- Phage (with cluster) where this start called: EMoore\_56 (DE2),

Start 19:

- Found in 1 of 61 ( 1.6% ) of genes in pham
- Manual Annotations of this start: 1 of 58
- Called 100.0% of time when present
- Phage (with cluster) where this start called: JuJu\_86 (CV),

### **Summary by clusters:**

There are 4 clusters represented in this pham: DE1, DE2, CV, DC1,

Info for manual annotations of cluster CV:

- Start number 19 was manually annotated 1 time for cluster CV.

Info for manual annotations of cluster DC1:

- Start number 14 was manually annotated 3 times for cluster DC1.

Info for manual annotations of cluster DE1:

- Start number 8 was manually annotated 46 times for cluster DE1.

Info for manual annotations of cluster DE2:

- Start number 5 was manually annotated 4 times for cluster DE2.
- Start number 13 was manually annotated 3 times for cluster DE2.
- Start number 18 was manually annotated 1 time for cluster DE2.

### **Gene Information:**

Gene: Affeca\_59 Start: 48685, Stop: 49548, Start Num: 8

Candidate Starts for Affeca\_59:

(Start: 8 @48685 has 46 MA's), (11, 48730), (28, 48763), (30, 48784), (37, 48886), (42, 49000), (45, 49057), (46, 49093), (66, 49174), (67, 49180), (70, 49231), (72, 49255), (78, 49294), (79, 49306), (80, 49315), (122, 49540),

Gene: Ailee\_58 Start: 48107, Stop: 49438, Start Num: 8

Candidate Starts for Ailee\_58:

(Start: 8 @48107 has 46 MA's), (11, 48152), (28, 48179), (30, 48200), (37, 48302), (42, 48416), (45, 48473), (46, 48509), (50, 48611), (52, 48689), (53, 48695), (61, 48761), (66, 48818), (70, 48875), (72, 48899), (78, 48938), (84, 49001), (95, 49094), (96, 49103), (97, 49115), (105, 49193), (115, 49358), (117, 49418),

Gene: Ali17\_55 Start: 45697, Stop: 46656, Start Num: 5

Candidate Starts for Ali17\_55:

(Start: 5 @45697 has 4 MA's), (15, 45841), (16, 45856), (17, 45859), (20, 45880), (24, 45934), (26, 45946), (29, 45964), (34, 45997), (37, 46060), (42, 46174), (45, 46234), (46, 46270), (55, 46318), (71, 46396), (79, 46441), (81, 46462), (86, 46531), (99, 46624), (101, 46642),

Gene: Angelicage\_59 Start: 48758, Stop: 49621, Start Num: 8

Candidate Starts for Angelicage\_59:

(Start: 8 @48758 has 46 MA's), (11, 48803), (28, 48836), (30, 48857), (37, 48959), (42, 49073), (45, 49130), (46, 49166), (66, 49247), (67, 49253), (70, 49304), (72, 49328), (78, 49367), (79, 49379), (80, 49388), (122, 49613),

Gene: Baddon\_59 Start: 48114, Stop: 49244, Start Num: 8

Candidate Starts for Baddon\_59:

(Start: 8 @48114 has 46 MA's), (31, 48180), (35, 48204), (37, 48273), (42, 48387), (45, 48444), (46, 48480), (50, 48582), (61, 48732), (67, 48783), (69, 48804), (70, 48828), (73, 48858), (75, 48873), (79, 48900), (80, 48909), (88, 49005), (97, 49065), (98, 49083), (105, 49137),

Gene: Barb\_79 Start: 51582, Stop: 52301, Start Num: 14

Candidate Starts for Barb\_79:

(Start: 14 @51582 has 3 MA's), (26, 51714), (36, 51822), (38, 51861), (42, 51960), (43, 51972), (45, 52017), (48, 52083), (59, 52125), (77, 52224), (79, 52239),

Gene: Barsten\_62 Start: 48900, Stop: 49757, Start Num: 8

Candidate Starts for Barsten\_62:

(Start: 8 @48900 has 46 MA's), (11, 48945), (28, 48972), (30, 48993), (37, 49095), (42, 49209), (43, 49221), (45, 49266), (46, 49302), (66, 49383), (67, 49389), (70, 49440), (72, 49464), (78, 49503), (79, 49515), (80, 49524), (122, 49749),

Gene: Baumdotcom\_57 Start: 46701, Stop: 48035, Start Num: 8

Candidate Starts for Baumdotcom\_57:

(Start: 8 @46701 has 46 MA's), (27, 46734), (30, 46755), (32, 46764), (37, 46857), (42, 46995), (45, 47052), (46, 47088), (50, 47190), (53, 47274), (61, 47340), (68, 47409), (70, 47454), (79, 47529), (80, 47538), (84, 47580), (87, 47625), (92, 47664), (95, 47673), (97, 47694), (98, 47712), (105, 47766), (121, 48012),

Gene: Bibwit\_61 Start: 48153, Stop: 49274, Start Num: 8

Candidate Starts for Bibwit\_61:

(Start: 8 @48153 has 46 MA's), (11, 48198), (28, 48225), (30, 48246), (37, 48348), (42, 48462), (45, 48519), (46, 48555), (66, 48636), (67, 48642), (70, 48693), (72, 48717), (78, 48756), (79, 48768), (80,

48777), (95, 48915), (97, 48936), (98, 48954), (109, 49068), (113, 49113), (122, 49266),

Gene: BobBob\_60 Start: 47974, Stop: 49047, Start Num: 8

Candidate Starts for BobBob\_60:

(Start: 8 @47974 has 46 MA's), (22, 48019), (28, 48046), (30, 48067), (37, 48169), (42, 48280), (43, 48292), (45, 48337), (46, 48373), (55, 48466), (61, 48514), (66, 48571), (70, 48628), (83, 48673), (95, 48700), (111, 48865), (122, 49039),

Gene: Brandonk123\_65 Start: 48648, Stop: 49724, Start Num: 8

Candidate Starts for Brandonk123\_65:

(Start: 8 @48648 has 46 MA's), (22, 48693), (28, 48720), (30, 48741), (37, 48843), (42, 48954), (45, 49017), (46, 49053), (55, 49143), (61, 49191), (70, 49305), (83, 49350), (95, 49377), (122, 49716),

Gene: Brawn1\_57 Start: 47927, Stop: 49018, Start Num: 8

Candidate Starts for Brawn1\_57:

(Start: 8 @47927 has 46 MA's), (22, 47972), (28, 47999), (30, 48020), (37, 48122), (43, 48233), (44, 48254), (45, 48278), (46, 48314), (49, 48371), (56, 48428), (60, 48452), (63, 48491), (64, 48503), (65, 48512), (95, 48647), (97, 48668), (98, 48686), (111, 48836), (122, 49010),

Gene: ChadMasterC\_62 Start: 50308, Stop: 51270, Start Num: 8

Candidate Starts for ChadMasterC\_62:

(Start: 8 @50308 has 46 MA's), (22, 50353), (28, 50380), (30, 50401), (37, 50503), (42, 50617), (43, 50629), (45, 50674), (46, 50710), (66, 50791), (67, 50797), (70, 50848), (72, 50872), (78, 50911), (91, 51037), (94, 51061), (97, 51091), (112, 51259),

Gene: Charming\_63 Start: 47762, Stop: 48985, Start Num: 8

Candidate Starts for Charming\_63:

(Start: 8 @47762 has 46 MA's), (22, 47807), (28, 47834), (30, 47855), (37, 47957), (42, 48068), (45, 48125), (46, 48161), (55, 48254), (61, 48302), (66, 48359), (70, 48416), (78, 48479), (80, 48500), (84, 48542), (95, 48626), (97, 48647), (109, 48779), (113, 48824), (122, 48977),

Gene: ClamChowder\_79 Start: 51582, Stop: 52301, Start Num: 14

Candidate Starts for ClamChowder\_79:

(Start: 14 @51582 has 3 MA's), (26, 51714), (36, 51822), (38, 51861), (42, 51960), (43, 51972), (45, 52017), (48, 52083), (59, 52125), (77, 52224), (79, 52239),

Gene: EMoore\_56 Start: 47210, Stop: 48160, Start Num: 18

Candidate Starts for EMoore\_56:

(6, 47051), (9, 47129), (10, 47144), (Start: 18 @47210 has 1 MA's), (26, 47300), (30, 47333), (34, 47351), (37, 47420), (42, 47522), (45, 47579), (46, 47615), (77, 47804), (95, 47969), (96, 47978), (97, 47990), (98, 48008), (110, 48146),

Gene: Fitzgerald\_58 Start: 48818, Stop: 50050, Start Num: 8

Candidate Starts for Fitzgerald\_58:

(Start: 8 @48818 has 46 MA's), (22, 48863), (28, 48890), (30, 48911), (37, 49013), (42, 49127), (43, 49139), (45, 49184), (46, 49220), (55, 49310), (61, 49358), (66, 49415), (67, 49421), (70, 49472), (74, 49502), (95, 49679), (97, 49700), (98, 49718), (111, 49868), (122, 50042),

Gene: Flatwoods\_59 Start: 46541, Stop: 47608, Start Num: 8

Candidate Starts for Flatwoods\_59:

(Start: 8 @46541 has 46 MA's), (33, 46613), (35, 46631), (37, 46706), (42, 46820), (43, 46832), (45, 46877), (47, 46943), (67, 46973), (70, 47018), (79, 47090), (80, 47099), (87, 47186), (92, 47225), (95, 47234), (97, 47255), (105, 47339), (121, 47585),

Gene: Fosterous\_63 Start: 48909, Stop: 49979, Start Num: 8

Candidate Starts for Fosterous\_63:

(Start: 8 @48909 has 46 MA's), (22, 48954), (28, 48981), (30, 49002), (37, 49104), (42, 49215), (43, 49227), (45, 49272), (46, 49308), (55, 49398), (61, 49446), (70, 49560), (83, 49605), (95, 49632), (122, 49971),

Gene: FuegoCuervo\_65 Start: 48426, Stop: 49637, Start Num: 8

Candidate Starts for FuegoCuervo\_65:

(Start: 8 @48426 has 46 MA's), (22, 48471), (28, 48498), (30, 48519), (37, 48621), (42, 48732), (45, 48789), (46, 48825), (55, 48915), (61, 48963), (66, 49020), (70, 49077), (78, 49140), (80, 49161), (95, 49299), (97, 49320), (107, 49431), (116, 49587), (118, 49620), (119, 49623), (120, 49626),

Gene: Fugax\_80 Start: 51574, Stop: 52293, Start Num: 14

Candidate Starts for Fugax\_80:

(Start: 14 @51574 has 3 MA's), (26, 51706), (36, 51814), (38, 51853), (42, 51952), (43, 51964), (45, 52009), (48, 52075), (59, 52117), (77, 52216), (79, 52231),

Gene: Gaea\_61 Start: 47107, Stop: 48300, Start Num: 8

Candidate Starts for Gaea\_61:

(Start: 8 @47107 has 46 MA's), (27, 47140), (30, 47161), (37, 47263), (42, 47377), (45, 47434), (46, 47470), (50, 47572), (53, 47656), (61, 47722), (68, 47794), (70, 47839), (79, 47914), (80, 47923), (97, 48070), (103, 48133), (107, 48181),

Gene: Galadriel\_61 Start: 49042, Stop: 50259, Start Num: 8

Candidate Starts for Galadriel\_61:

(Start: 8 @49042 has 46 MA's), (22, 49087), (28, 49114), (30, 49135), (37, 49237), (42, 49348), (43, 49360), (45, 49405), (46, 49441), (55, 49531), (61, 49579), (66, 49636), (70, 49693), (78, 49756), (80, 49777), (90, 49882), (95, 49915), (97, 49936), (111, 50077), (122, 50251),

Gene: Geodirt\_61 Start: 49352, Stop: 50326, Start Num: 8

Candidate Starts for Geodirt\_61:

(Start: 8 @49352 has 46 MA's), (11, 49397), (28, 49424), (30, 49445), (37, 49547), (42, 49661), (45, 49718), (46, 49754), (66, 49835), (67, 49841), (70, 49892), (72, 49916), (78, 49955), (79, 49967), (98, 50006), (109, 50120), (113, 50165), (122, 50318),

Gene: Gustavo\_61 Start: 47618, Stop: 48964, Start Num: 8

Candidate Starts for Gustavo\_61:

(Start: 8 @47618 has 46 MA's), (33, 47690), (35, 47708), (37, 47783), (42, 47921), (45, 47978), (46, 48014), (50, 48116), (53, 48200), (61, 48266), (68, 48338), (70, 48383), (79, 48458), (80, 48467), (84, 48509), (87, 48554), (92, 48593), (95, 48602), (97, 48623), (98, 48641), (105, 48695), (121, 48941),

Gene: Hans\_59 Start: 46328, Stop: 47386, Start Num: 5

Candidate Starts for Hans\_59:

(Start: 5 @46328 has 4 MA's), (15, 46472), (16, 46487), (17, 46490), (20, 46511), (24, 46565), (26, 46577), (29, 46595), (34, 46628), (37, 46691), (42, 46805), (45, 46865), (46, 46901), (55, 46949), (81, 47087), (82, 47105), (103, 47294), (104, 47297), (106, 47324), (108, 47354),

Gene: Inspectinfecti\_58 Start: 46732, Stop: 47517, Start Num: 13

Candidate Starts for Inspectinfecti\_58:

(Start: 13 @46732 has 3 MA's), (37, 46945), (42, 47056), (45, 47113), (81, 47323), (82, 47341), (86, 47392), (102, 47503),

Gene: JKSyngboy\_59 Start: 48219, Stop: 49349, Start Num: 8

Candidate Starts for JKSyngboy\_59:

(Start: 8 @48219 has 46 MA's), (31, 48285), (35, 48309), (37, 48378), (42, 48492), (45, 48549), (46, 48585), (50, 48687), (61, 48837), (67, 48888), (69, 48909), (70, 48933), (73, 48963), (75, 48978), (79, 49005), (80, 49014), (88, 49110), (97, 49170), (98, 49188), (105, 49242),

Gene: Jabberwocky\_59 Start: 49193, Stop: 50284, Start Num: 8

Candidate Starts for Jabberwocky\_59:

(Start: 8 @49193 has 46 MA's), (22, 49238), (28, 49265), (30, 49286), (37, 49388), (43, 49499), (44, 49520), (45, 49544), (46, 49580), (49, 49637), (56, 49694), (60, 49718), (63, 49757), (64, 49769), (65, 49778), (95, 49913), (97, 49934), (98, 49952), (111, 50102), (122, 50276),

Gene: JuJu\_86 Start: 52100, Stop: 52939, Start Num: 19

Candidate Starts for JuJu\_86:

(1, 51668), (2, 51776), (3, 51791), (4, 51827), (Start: 19 @52100 has 1 MA's), (23, 52166), (28, 52193), (37, 52313), (39, 52349), (42, 52433), (45, 52490), (46, 52526), (58, 52607), (59, 52613), (70, 52664), (78, 52727), (85, 52826), (100, 52928),

Gene: Kamashten\_60 Start: 48087, Stop: 49157, Start Num: 8

Candidate Starts for Kamashten\_60:

(Start: 8 @48087 has 46 MA's), (22, 48132), (28, 48159), (30, 48180), (37, 48282), (42, 48393), (43, 48405), (45, 48450), (46, 48486), (55, 48576), (61, 48624), (70, 48738), (83, 48783), (95, 48810), (122, 49149),

Gene: Keitabear\_61 Start: 49762, Stop: 50880, Start Num: 8

Candidate Starts for Keitabear\_61:

(Start: 8 @49762 has 46 MA's), (11, 49807), (28, 49834), (30, 49855), (37, 49957), (42, 50071), (45, 50128), (46, 50164), (66, 50245), (67, 50251), (70, 50302), (72, 50326), (78, 50365), (84, 50428), (95, 50521), (97, 50542), (109, 50674), (113, 50719), (122, 50872),

Gene: Kewpiedoll\_61 Start: 49141, Stop: 50238, Start Num: 8

Candidate Starts for Kewpiedoll\_61:

(Start: 8 @49141 has 46 MA's), (11, 49186), (28, 49351), (37, 49474), (42, 49585), (45, 49642), (46, 49678), (66, 49759), (67, 49765), (70, 49816), (72, 49840), (78, 49879), (79, 49891), (98, 49930), (109, 50032), (113, 50077), (122, 50230),

Gene: Kroos\_59 Start: 47638, Stop: 48705, Start Num: 8

Candidate Starts for Kroos\_59:

(Start: 8 @47638 has 46 MA's), (33, 47710), (35, 47728), (37, 47803), (42, 47917), (43, 47929), (45, 47974), (47, 48040), (67, 48070), (70, 48115), (79, 48187), (80, 48196), (87, 48283), (92, 48322), (95, 48331), (97, 48352), (105, 48436), (121, 48682),

Gene: Lennon\_62 Start: 50070, Stop: 51029, Start Num: 8

Candidate Starts for Lennon\_62:

(Start: 8 @50070 has 46 MA's), (11, 50115), (28, 50142), (30, 50163), (37, 50265), (42, 50379), (43, 50391), (45, 50436), (46, 50472), (66, 50553), (67, 50559), (70, 50610), (72, 50634), (78, 50673), (79, 50685), (98, 50724), (113, 50868), (122, 51021),

Gene: Leonard\_57 Start: 46698, Stop: 47588, Start Num: 13

Candidate Starts for Leonard\_57:

(Start: 13 @46698 has 3 MA's), (24, 46776), (25, 46779), (26, 46788), (37, 46911), (42, 47022), (45, 47079), (81, 47289), (82, 47307), (103, 47496), (104, 47499), (106, 47526), (108, 47556),

Gene: Love\_64 Start: 49089, Stop: 50165, Start Num: 8

Candidate Starts for Love\_64:

(Start: 8 @49089 has 46 MA's), (22, 49134), (28, 49161), (30, 49182), (37, 49284), (40, 49320), (42, 49404), (43, 49416), (45, 49461), (46, 49497), (51, 49563), (76, 49764), (94, 49788), (95, 49797), (97, 49818), (111, 49983), (122, 50157),

Gene: McCrothy\_61 Start: 49612, Stop: 50943, Start Num: 8

Candidate Starts for McCrothy\_61:

(Start: 8 @49612 has 46 MA's), (12, 49666), (21, 49729), (28, 49765), (30, 49786), (37, 49888), (42, 50026), (45, 50077), (46, 50113), (55, 50203), (61, 50251), (66, 50308), (70, 50365), (78, 50428), (80, 50449), (90, 50554), (95, 50587), (97, 50608), (107, 50707), (122, 50935),

Gene: McKinley\_63 Start: 48890, Stop: 49840, Start Num: 8

Candidate Starts for McKinley\_63:

(Start: 8 @48890 has 46 MA's), (11, 48935), (28, 48968), (30, 48989), (37, 49091), (43, 49202), (44, 49223), (45, 49247), (46, 49283), (66, 49364), (67, 49370), (70, 49421), (72, 49445), (78, 49484), (79, 49496), (98, 49535), (122, 49832),

Gene: MelBins\_58 Start: 46810, Stop: 47757, Start Num: 5

Candidate Starts for MelBins\_58:

(Start: 5 @46810 has 4 MA's), (7, 46894), (20, 46984), (26, 47050), (29, 47068), (34, 47101), (37, 47164), (42, 47278), (45, 47335), (46, 47371), (55, 47419), (71, 47497), (79, 47542), (81, 47563), (86, 47632), (99, 47725), (101, 47743),

Gene: MoontowerMania\_60 Start: 49188, Stop: 50267, Start Num: 8

Candidate Starts for MoontowerMania\_60:

(Start: 8 @49188 has 46 MA's), (22, 49233), (28, 49260), (30, 49281), (37, 49383), (41, 49449), (42, 49494), (43, 49506), (45, 49551), (46, 49587), (66, 49668), (67, 49674), (69, 49701), (70, 49725), (74, 49755), (97, 49944), (111, 50085), (122, 50259),

Gene: Nordenberg\_58 Start: 47326, Stop: 48549, Start Num: 8

Candidate Starts for Nordenberg\_58:

(Start: 8 @47326 has 46 MA's), (22, 47371), (28, 47398), (30, 47419), (37, 47521), (42, 47632), (45, 47689), (46, 47725), (55, 47818), (61, 47866), (66, 47923), (70, 47980), (78, 48043), (80, 48064), (84, 48106), (95, 48190), (97, 48211), (109, 48343), (113, 48388), (122, 48541),

Gene: Paries\_64 Start: 49225, Stop: 50445, Start Num: 8

Candidate Starts for Paries\_64:

(Start: 8 @49225 has 46 MA's), (11, 49270), (28, 49297), (30, 49318), (37, 49420), (42, 49534), (43, 49546), (45, 49591), (46, 49627), (54, 49717), (61, 49765), (66, 49822), (67, 49828), (70, 49879), (72, 49903), (78, 49942), (79, 49954), (89, 50068), (93, 50092), (95, 50101), (97, 50122), (111, 50263), (122, 50437),

Gene: Phauci\_50 Start: 43331, Stop: 44437, Start Num: 5

Candidate Starts for Phauci\_50:

(Start: 5 @43331 has 4 MA's), (15, 43475), (16, 43490), (17, 43493), (20, 43514), (24, 43568), (26, 43580), (29, 43598), (34, 43631), (37, 43694), (42, 43808), (45, 43868), (46, 43904), (62, 44060), (81, 44243), (82, 44261), (86, 44312), (101, 44423),

Gene: Phinally\_57 Start: 46695, Stop: 47585, Start Num: 13

Candidate Starts for Phinally\_57:

(Start: 13 @46695 has 3 MA's), (24, 46773), (25, 46776), (26, 46785), (37, 46908), (42, 47019), (45, 47076), (81, 47286), (82, 47304), (103, 47493), (104, 47496), (106, 47523), (108, 47553),

Gene: RiverRaider\_61 Start: 46742, Stop: 47599, Start Num: 8

Candidate Starts for RiverRaider\_61:

(Start: 8 @46742 has 46 MA's), (11, 46787), (28, 46814), (30, 46835), (37, 46937), (42, 47051), (43, 47063), (45, 47108), (46, 47144), (66, 47225), (67, 47231), (70, 47282), (72, 47306), (78, 47345), (79, 47357), (80, 47366), (122, 47591),

Gene: Rofo\_60 Start: 48491, Stop: 49561, Start Num: 8

Candidate Starts for Rofo\_60:

(Start: 8 @48491 has 46 MA's), (22, 48536), (28, 48563), (30, 48584), (37, 48686), (42, 48797), (43, 48809), (45, 48854), (46, 48890), (55, 48980), (61, 49028), (70, 49142), (83, 49187), (95, 49214), (122, 49553),

Gene: Sanjuju\_59 Start: 48950, Stop: 50182, Start Num: 8

Candidate Starts for Sanjuju\_59:

(Start: 8 @48950 has 46 MA's), (22, 48995), (28, 49022), (30, 49043), (37, 49145), (42, 49259), (43, 49271), (45, 49316), (46, 49352), (55, 49442), (61, 49490), (66, 49547), (67, 49553), (70, 49604), (74, 49634), (95, 49811), (97, 49832), (98, 49850), (111, 50000), (122, 50174),

Gene: Saronaya\_61 Start: 47618, Stop: 48964, Start Num: 8

Candidate Starts for Saronaya\_61:

(Start: 8 @47618 has 46 MA's), (33, 47690), (35, 47708), (37, 47783), (42, 47921), (45, 47978), (46, 48014), (50, 48116), (53, 48200), (61, 48266), (68, 48338), (70, 48383), (79, 48458), (80, 48467), (84, 48509), (87, 48554), (92, 48593), (95, 48602), (97, 48623), (98, 48641), (105, 48695), (121, 48941),

Gene: SchottB\_58 Start: 47810, Stop: 48874, Start Num: 8

Candidate Starts for SchottB\_58:

(Start: 8 @47810 has 46 MA's), (31, 47876), (35, 47900), (37, 47969), (42, 48083), (45, 48140), (57, 48224), (70, 48284), (75, 48329), (79, 48356), (80, 48365), (95, 48500), (97, 48521), (105, 48605), (114, 48728), (121, 48851),

Gene: Sedona\_60 Start: 49583, Stop: 50710, Start Num: 8

Candidate Starts for Sedona\_60:

(Start: 8 @49583 has 46 MA's), (11, 49628), (28, 49661), (30, 49682), (37, 49784), (42, 49898), (43, 49910), (45, 49955), (46, 49991), (66, 50072), (67, 50078), (70, 50129), (78, 50192), (80, 50213), (84, 50255), (95, 50351), (97, 50372), (109, 50504), (113, 50549), (122, 50702),

Gene: Shivanishola\_59 Start: 46800, Stop: 47876, Start Num: 8

Candidate Starts for Shivanishola\_59:

(Start: 8 @46800 has 46 MA's), (22, 46845), (28, 46872), (30, 46893), (37, 46995), (40, 47031), (42, 47115), (43, 47127), (45, 47172), (46, 47208), (51, 47274), (76, 47475), (94, 47499), (95, 47508), (97, 47529), (111, 47694), (122, 47868),

Gene: Sitar\_62 Start: 49779, Stop: 50738, Start Num: 8

Candidate Starts for Sitar\_62:

(Start: 8 @49779 has 46 MA's), (11, 49824), (28, 49851), (30, 49872), (37, 49974), (42, 50088), (43, 50100), (45, 50145), (46, 50181), (66, 50262), (67, 50268), (70, 50319), (72, 50343), (78, 50382), (79, 50394), (98, 50433), (113, 50577), (122, 50730),

Gene: Stichling\_57 Start: 46948, Stop: 48015, Start Num: 8

Candidate Starts for Stichling\_57:

(Start: 8 @46948 has 46 MA's), (33, 47020), (35, 47038), (37, 47113), (42, 47227), (45, 47284), (47, 47350), (67, 47380), (70, 47425), (79, 47497), (80, 47506), (87, 47593), (92, 47632), (95, 47641), (97,

47662), (105, 47746), (121, 47992),

Gene: StorminNorm\_59 Start: 47260, Stop: 48606, Start Num: 8

Candidate Starts for StorminNorm\_59:

(Start: 8 @47260 has 46 MA's), (33, 47332), (35, 47350), (37, 47425), (42, 47563), (45, 47620), (46, 47656), (50, 47758), (53, 47842), (61, 47908), (68, 47980), (70, 48025), (79, 48100), (80, 48109), (84, 48151), (87, 48196), (92, 48235), (95, 48244), (97, 48265), (98, 48283), (105, 48337), (121, 48583),

Gene: Stultus\_58 Start: 48041, Stop: 49000, Start Num: 8

Candidate Starts for Stultus\_58:

(Start: 8 @48041 has 46 MA's), (11, 48086), (28, 48113), (30, 48134), (37, 48236), (42, 48350), (45, 48407), (46, 48443), (66, 48524), (67, 48530), (70, 48581), (72, 48605), (78, 48644), (79, 48656), (98, 48695), (113, 48839), (122, 48992),

Gene: Tangent\_62 Start: 48196, Stop: 49266, Start Num: 8

Candidate Starts for Tangent\_62:

(Start: 8 @48196 has 46 MA's), (22, 48241), (28, 48268), (30, 48289), (37, 48391), (42, 48502), (43, 48514), (45, 48559), (46, 48595), (55, 48685), (61, 48733), (70, 48847), (83, 48892), (95, 48919), (122, 49258),

Gene: Tangerine\_60 Start: 47020, Stop: 48357, Start Num: 8

Candidate Starts for Tangerine\_60:

(Start: 8 @47020 has 46 MA's), (27, 47053), (30, 47074), (32, 47083), (37, 47176), (42, 47314), (45, 47371), (46, 47407), (50, 47509), (53, 47593), (61, 47659), (68, 47731), (70, 47776), (79, 47851), (80, 47860), (84, 47902), (87, 47947), (92, 47986), (95, 47995), (97, 48016), (98, 48034), (105, 48088), (121, 48334),

Gene: Thing3\_60 Start: 48087, Stop: 49157, Start Num: 8

Candidate Starts for Thing3\_60:

(Start: 8 @48087 has 46 MA's), (22, 48132), (28, 48159), (30, 48180), (37, 48282), (42, 48393), (43, 48405), (45, 48450), (46, 48486), (55, 48576), (61, 48624), (70, 48738), (83, 48783), (95, 48810), (122, 49149),

Gene: Tycho\_58 Start: 46784, Stop: 48127, Start Num: 8

Candidate Starts for Tycho\_58:

(Start: 8 @46784 has 46 MA's), (27, 46817), (30, 46838), (32, 46847), (37, 46940), (42, 47078), (45, 47135), (46, 47171), (50, 47273), (53, 47357), (61, 47423), (68, 47492), (70, 47537), (79, 47609), (80, 47618), (87, 47705), (92, 47744), (95, 47753), (97, 47774), (105, 47858), (121, 48104),

Gene: Vivi2\_65 Start: 49251, Stop: 50327, Start Num: 8

Candidate Starts for Vivi2\_65:

(Start: 8 @49251 has 46 MA's), (22, 49296), (28, 49323), (30, 49344), (37, 49446), (42, 49557), (43, 49569), (45, 49614), (46, 49650), (61, 49788), (66, 49845), (70, 49902), (78, 49965), (95, 50124), (97, 50145), (116, 50277), (119, 50313), (120, 50316),