Actinobacteriophage Genome Annotation Submission Cover Sheet

This Cover Sheet will accompany each genome’s annotation file(s) submission and succinctly describe the work that your students and you have done. This document ensures that the work done was as complete and thorough as it could be. Most important to the QC reviewer, denote where the trouble spots were in your annotation and how they were resolved.

Phage Name. **Zodiariah**

Your Name. **James Melton**

Your Institution. **Spelman College**

Your email. **jmelton@spelman.edu**

Additional emails. (for correspondence). **jmeltonbio125@gmail.com**

Describe any issues or specific genes that you would like to highlight for the QC reviewer. This includes any genes that you had questions about or received help with or that warrant further inspection in the QC review process. Include those genes that you deliberated on and/or want to strongly advocate for. If you contacted SMART, workshop facilitator, or a buddy school for help, please document.

Closest annotated phage with Ruthy (53.4% Gene Content Similarity)

* SEA\_ZODIARIAH\_33-37: orphams that are directly upstream of a tyrosine integrase. SEA\_ZODIARIAH\_37 also gets a hit to a tyrosine integrase, while the others are hypothetical. SEA\_ZODIARIAH\_38 appears to be intact. I am not sure if 33-37 is fragmented. I tried to find a larger ORF to combine them but did not find one.
* SEA\_ZODIARIAH\_26&27 are directly downstream of two lysin A genes and are potentially holins. The official function list was followed: “The literature suggests that some phages have more than one holin, for now when we seem multiple possibilities for a holin gene, let's call them membrane proteins.”
* SEA\_ZODIARIAH\_63 is a reverse gene in a group of forward genes that gets a hit with pham 86633. There is an orpham in a similar position that is a forward gene (61 in PECAAN). The forward orpham was removed.
* SEA\_ZODIARIAH\_73: receives a significant HHPRED hit to terminase large subunit, ATPase domain. Gene was left as hypothetical, given the location and other calls for NCBI BLAST hits.

Genes added in gaps (Only added in the DNA Master Minimal file):

* SEA\_ZODIARIAH\_32 (29276-30136; reverse): BLASTs as DNA methyltransferase

Deleted phams in the DNA MASTER minimal file (Genes not deleted in PECAAN):

* Gene40: Start site for SEA\_ZODIARIAH\_40 (gene39 in PECAAN) was extended. Gene40 was also a forward gene in a group of reverse genes
* Gene61: see comment about SEA\_ZODIARIAH\_63 above.

Please record yes/no for each of the questions below. If further explanation is needed, please add this item to the above box.

In the submitted DNA Master file (Yes/No):

**Yes**  1. Does the genome sequence in your submitted DNA Master file match the nucleotide fasta file posted on phagesDB (same number of bases, no N bases, etc.)?

**Yes**. 2. Are all the genes ‘Valid” when you click the [Validation button](https://seaphagesbioinformatics.helpdocsonline.com/article-84)?

**Yes** 3. Are the genes (and matching LocusTag numbers) [sequential](https://seaphagesbioinformatics.helpdocsonline.com/article-77), starting with #1, counting by 1s?

**Yes**. 4. Are the Locus Tags the “[SEA\_PHAGE NAME](https://seaphagesbioinformatics.helpdocsonline.com/article-77)” format?

**Yes**. 5. Has the [documentation been recreated](https://seaphagesbioinformatics.helpdocsonline.com/article-86) from the Feature Table to match the latest file version?

**N/A** 6. Have tRNAs followed the [tRNA protocol](https://seaphagesbioinformatics.helpdocsonline.com/undefined), **COPYING** tRNA-AMINOACID type (DNA equivalent of the anti-codon) from Aragorn output - ﻿tRNA-Gln(ctg) - AND the ends been adjusted to match the Aragorn output?

**Yes** 7. Has the [frameshift in the tail assembly chaperone](https://seaphagesbioinformatics.helpdocsonline.com/article-54) been annotated correctly (if applicable)?

**Yes** 8. Have you cleared your Draft\_Blast data and have you [re-Blasted](https://seaphagesbioinformatics.helpdocsonline.com/article-57) the submitted DNA Master file?

**Yes** 9. Has every gene been [described and supported in your Supporting Data file](https://seaphagesbioinformatics.helpdocsonline.com/article-44)?

**Yes** 10. Did you investigate ‘[gaps](https://seaphagesbioinformatics.helpdocsonline.com/article-31)’?

**Yes** 11. Did you [delete the genes](https://seaphagesbioinformatics.helpdocsonline.com/article-65) that you meant to delete?

Now, [make a profile of the file](https://seaphagesbioinformatics.helpdocsonline.com/article-64) you plan to send. (And you can save this file for [Review to Improve!)](https://seaphagesbioinformatics.helpdocsonline.com/untitled-18)

**No** 1. Have any duplicate genes been deleted?

**Yes** 2. Has the Notes field been cleared (using the automated buttons)?

**Yes** 3. Do the gene numbers and locus tags match?

**Yes** 4. Are the correct Feature\_Types correctly selected (most will be ORFs, but check that tRNAs and tmRNAs are correctly labeled)?

**Yes** 5. Do the function names in the Product field either match the official function list or say “Hypothetical Protein”?

**Yes** 6. Has the Function field been cleared (using the automated buttons)?

How are you documenting your gene calls in class? Choose any/all that apply:

**X** PECAAN output

      DNA Master shorthand (previously used format)

**X**  Spreadsheet

      Powerpoint

      Word document (must be easily searchable)

      Other: Describe.

What is the file type (sort) submitted for QC to document your gene calls? Choose only one.:

**X** PECAAN output

      DNA Master shorthand (previously used format)

      Spreadsheet

      Powerpoint

      Word document (must be easily searchable)

      Other: Describe.