

NSF BIOGRAPHICAL SKETCH

Provide the following information for the Senior personnel.
Follow this format for each person. **DO NOT EXCEED 3 PAGES.**

IDENTIFYING INFORMATION:

NAME: Aylward, Frank

ORCID: 0000-0002-1279-4050

POSITION TITLE: Associate Professor

ORGANIZATION AND LOCATION: Virginia Tech, Blacksburg, VA, United States**Professional Preparation:**

ORGANIZATION AND LOCATION	DEGREE (if applicable)	DATE RECEIVED	FIELD OF STUDY
University of Hawaii at Manoa, Honolulu, HI, USA	Postdoctoral Fellow	2014 - 2017	Microbiology Biochemistry and Molecular Biophysics
Massachusetts Institute of Technology, Cambridge, MA, USA	Postdoctoral Fellow	2013 - 2014	
University of Wisconsin Madison, Madison, WI, US	PhD	08/2013	
University of Arizona, Tucson, AZ, US	B.Sci.	05/2008	

Appointments and Positions

2023 - present Associate Professor, Virginia Tech, Biological Sciences, Blacksburg, VA, United States

2017 - 2023 Assistant Professor, Virginia Tech, Biological Sciences, Blacksburg, VA, US

Products**Products Most Closely Related to the Proposed Project**

1. Moniruzzaman M, Weinheimer AR, Martinez-Gutierrez CA, Aylward FO. Widespread endogenization of giant viruses shapes genomes of green algae. Nature. 2020 Dec;588(7836):141-145. PubMed PMID: [33208937](#).
2. Ha AD, Moniruzzaman M, Aylward FO. High Transcriptional Activity and Diverse Functional Repertoires of Hundreds of Giant Viruses in a Coastal Marine System. mSystems. 2021 Aug 31;6(4):e0029321. PubMed Central PMCID: [PMC8407384](#).
3. Aylward FO, Moniruzzaman M, Ha AD, Koonin EV. A phylogenomic framework for charting the diversity and evolution of giant viruses. PLoS Biol. 2021 Oct;19(10):e3001430. PubMed Central PMCID: [PMC8575486](#).
4. Moniruzzaman M, Martinez-Gutierrez CA, Weinheimer AR, Aylward FO. Dynamic genome evolution and complex virocell metabolism of globally-distributed giant viruses. Nat Commun. 2020 Apr 6;11(1):1710. PubMed Central PMCID: [PMC7136201](#).

5. Weinheimer AR, Aylward FO. Infection strategy and biogeography distinguish cosmopolitan groups of marine jumbo bacteriophages. ISME J. 2022 Jun;16(6):1657-1667. PubMed Central PMCID: [PMC9123017](#).

Other Significant Products, Whether or Not Related to the Proposed Project

1. Aylward FO, Boeuf D, Mende DR, Wood-Charlson EM, Vislova A, Eppley JM, Romano AE, DeLong EF. Diel cycling and long-term persistence of viruses in the ocean's euphotic zone. Proc Natl Acad Sci U S A. 2017 Oct 24;114(43):11446-11451. PubMed Central PMCID: [PMC5663388](#).
2. Aylward FO, Eppley JM, Smith JM, Chavez FP, Scholin CA, DeLong EF. Microbial community transcriptional networks are conserved in three domains at ocean basin scales. Proc Natl Acad Sci U S A. 2015 Apr 28;112(17):5443-8. PubMed Central PMCID: [PMC4418921](#).
3. Weinheimer AR, Aylward FO. A distinct lineage of Caudovirales that encodes a deeply branching multi-subunit RNA polymerase. Nat Commun. 2020 Sep 9;11(1):4506. PubMed Central PMCID: [PMC7481178](#).
4. Wilson ST, Aylward FO, Ribalet F, Barone B, Casey JR, Connell PE, Eppley JM, Ferrón S, Fitzsimmons JN, Hayes CT, Romano AE, Turk-Kubo KA, Vislova A, Armbrust EV, Caron DA, Church MJ, Zehr JP, Karl DM, DeLong EF. Coordinated regulation of growth, activity and transcription in natural populations of the unicellular nitrogen-fixing cyanobacterium Crocosphaera. Nat Microbiol. 2017 Jul 31;2:17118. PubMed PMID: [28758990](#).
5. Aylward FO, Santoro AE. Heterotrophic Thaumarchaea with Small Genomes Are Widespread in the Dark Ocean. mSystems. 2020 Jun 16;5(3) PubMed Central PMCID: [PMC7300363](#).

Synergistic Activities

1. Undergraduate Mentorship. As an assistant professor I have directly mentored over a dozen undergraduate students in the Systems Biology and general Biology programs at Virginia Tech on research projects, some of which have led to peer-reviewed publications. As part of my mentorship I also perform outreach focused on recruiting and retaining underrepresented minority students, such as participating in the American Society for Limnology and Oceanography Multicultural Program and the VT PREP program, both of which are designed to help students prepare for graduate school after their undergraduate degree.
2. I am the chair of the ICTV study group for the Imitervirales. As part of this I led a major reclassification effort that was approved by the ICTV in 2023. The update describing this effort is in consideration in Archives of Virology.
3. Service to Peer-Reviewed Journals. I am on the editorial board of the journals Environmental Microbiology, the ISME Journal, and Frontiers in Microbiology. I frequently review manuscripts from all of these journals, and in some cases I serve as an ad-hoc editor.
4. The Giant Virus Database. I developed and maintain the Giant Virus Database, which is an open-access repository of reference giant virus genomes, taxonomic information, and other genomic resources.
5. Publicly-Available Bioinformatics Tutorials. I have developed over 30 introductory bioinformatics tutorials that are available on Protocols.IO. These tutorials have been accessed >20,000 times over the last three years by students around the globe.

Certification:

When the individual signs the certification on behalf of themselves, they are certifying that the information is current, accurate, and complete. This includes, but is not limited to, information related to domestic and foreign appointments and positions. Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§ 287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802.

Certified by Aylward, Frank in SciENcv on 2023-07-21 10:28:09