

<b>Learning Objectives</b>	<p>Participants will be able to:</p> <ul style="list-style-type: none"> <li>• Characterize and investigate mycobacteriophage genomes. This includes the details of gene calling evaluation, functional assignments, and preparing a final product of a submission file that meets QC requirements.</li> <li>• Install and use the software for annotation/analyses of mycobacteriophages. The software includes DNA Master, Phamerator, and other web-based tools.</li> <li>• Identify the basic concepts that underpin the bioinformatics of phage biology that is relevant to their students.</li> <li>• Devise a systematic plan for implementation of phage genomics in their classroom.</li> </ul>
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<b>Pre-req</b>	<p>Participants will bring a computer with all software installed and tested. See computer requirements and software installation information at <a href="http://seaphages.org/faculty/information/#bioinformatics">http://seaphages.org/faculty/information/#bioinformatics</a>.</p>
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	<i>Time</i>	<i>Location</i>	<i>Topic</i>	<i>Annotation Guide &amp; Website References</i>
<b>Monday   December 5</b>	2:00-4:00p	<i>Conference Center</i>	<b>Registration</b> ( <i>Guests may get lunch in the Dining Room between 11:30a-1:30p by showing their registration badge to the cashier</i> )	
	4:00	<i>Main Auditorium</i>	<b>Welcome from Graham Hatfull</b>	
	4:15	<i>Main Auditorium</i>	<b>Workshop Overview &amp; Software Orientation</b>	<b>Software Downloads:</b> Software page, <a href="http://seaphages.org">seaphages.org</a> <b>Settings Preferences:</b> AG Section 1.5, p.10
	5:30	<i>Dining Room</i>	<i>Dinner</i>	
	6:45	<i>Main Auditorium</i>	<b>Getting Started: Introduction to Mycobacteriophage (including Auto-Annotation)</b>	<b>Auto-Annotation:</b> AG Section 3 & 4, pp.23-40 <b>Obtain GeneMark graphic outputs using host target:</b> phage page on PhagesDB
	7:30	<i>Main Auditorium</i>	<b>BLASTing the Genome</b>	<b>BlastP entire genome in DNA Master:</b> AG Section 4.5, p. 37
	8:00	<i>Pilot</i>	<b>Social</b>	

Tuesday   December 6	Time	Location	Topic	Annotation Guide & Website References
	7:15a	Dining Room	Breakfast	
	8:00	Main Auditorium	<b>Gene Calling Guidelines</b>	AG p. 64-65; AG Section 7 & 8, pp. 63-80
	9:00	Main Auditorium	<b>Add, Delete, and Modify a Gene</b>	AG Section 9.2, p. 81-82
	10:00	Great Hall	Break	
	10:15	Main Auditorium	<b>Calling the Genes</b>	AG Section 7 & 8, pp. 63- 80
	11:00	Main Auditorium	<b>Choosing Starts: Tools and Considerations</b>	AG Section 8.4.2, pp. 72-76
	12:30p	Dining Room	Lunch	
	1:15	D124&D125	<b>Group Exercise: Annotation and Analysis of Genome</b>	
	2:30	Main Auditorium	<b>Annotation Tools at your disposal: Beyond DNA Master</b>	Phamerator,;AG Section 10, pp. 49-59 Starterator: seaphages.org tRNA evaluation: seaphages.org
	3:00	Great Hall	Break	
	3:15	D124&125	<b>Group Exercise: Annotation and Analysis of Genome (continued)</b>	
	5:30	Dining Room	Dinner	
6:45	Pilot	<b>Inside the Black Box: Assembling and Finishing</b>		
7:45	Pilot	<b>Social</b>		

Wednesday   December 7	Time	Location	Topic	Annotation Guide & Website References
	7:15a	Dining Room	Breakfast	
	8:00	Main Auditorium	Assigning Functions	AG Section 10, pp. 105-115
	9:00	D124&125	Group Exercise: Annotation and Analysis of Genome (continued)	
	10:15	Great Hall	Break	
	10:30	D124&125	Group Exercise: Annotation and Analysis of Genome (continued)	
	12:30p	Dining Room	Lunch	
	1:15	D124&125	Group Exercise: Annotation and Analysis of Genome (continued)	
	3:00	Great Hall	File posted   Break	
	3:15	Main Auditorium D124&125	Merge I and Examining Merged Data Group Exercise: Resolving Discrepancies	AG Section 11, pp. 117- 124
	5:30	Dining Room	Dinner	
	6:45	Main Auditorium	HHMI Biointeractive	
6:55	Main Auditorium	Graham Hatfull TBA		
7:45	Pilot	Informal Discussions at the Pilot		

Thursday   December 8	Time	Location	Topic	Annotation Guide & Website References
	7:15a	Dining Room	File posted   Breakfast	
	8:00	Main Auditorium	<b>Merge II</b> <b>Resolving Discrepancies in the Merged Data: Several case studies</b>	<b>AG Section 11 (pp. 117- 124)</b>
	9:00	D124&125	<b>Group Exercise: Resolving Discrepancies</b>	
	10:15	Great Hall	Break	
	10:30	D124&125	<b>Group Exercise: Resolving Discrepancies</b>	
	11:45	Main Auditorium	<b>Resolving Discrepancies: Addressing your questions</b>	
	12:30p	Dining Room	Lunch	
	1:15	Main Auditorium	<b>Phamerator Analyses</b>	<b>Phamerator User's Guide</b> <b>AG Section 6 (pp. 49-59)</b>
	2:00	D124&125	<b>Group Exercise: Phamerator Exercise</b>	
	3:00	Great Hall	Break	
	3:15	Main Auditorium	<b>Elective: Post Annotation Analyses &amp; Experiments</b>	
5:30	Dining Room	Dinner		
6:45	The Pilot	<b>Informal discussions at the Pilot</b>		

	<b>Time</b>	<b>Location</b>	<b>Topic</b>	
<b>Friday   December 9</b>	7-8:00a	<i>Conference Center</i>	<b>Room Checkout</b> ( <i>Participants may store their luggage in the Conference Center</i> )	
	7:15	<i>Dining Room</i>	<i>Breakfast</i>	
	8:00	<i>Main Auditorium</i>	<b>Final file formatting requirements and submission for QC before May 15, 2016</b>	<b>Cover sheet: Faculty Info page of <a href="http://seaphages.org">seaphages.org</a></b>
	8:30	<i>Main Auditorium</i>	<b>Best Classroom Practices to Improve Genome Annotations</b>	
	8:35	<i>D124&amp;125</i>	<b>Group Discussions: Best Classroom Practices to Improve Genome Annotations</b>	
	9:15	<i>Main Auditorium</i>	<b>Reporting of Group Discussion Information</b>	
	10:00	<i>Great Hall</i>	<i>Break</i>	
	10:15	<i>Main Auditorium</i>	<b>Panel: Examples of Successful Bioinformatics Implementation</b>  Panelists: <i>TBD</i>	
	11:45	<i>Main Auditorium</i>	<b>Submit to GenBank, Closing Remarks and Announcements</b>	
	12:00p	<i>Main Auditorium</i>	<b>Adjournment</b>	
12:45p	<i>Conference Center</i>	<b>Departure</b>		