

Table 2 Supplement. Learning Objectives and Competencies of Skill-Based Training Modules

MODULE	SKILL-BASED MODULE CORE COMPETENCIES
<b>Demystifying the PhD Experience: Strategies for Academic &amp; Personal Success in Graduate School</b>	<ul style="list-style-type: none"> <li>• Develop the traits/habits of successful PhD students</li> <li>• Develop ability to work, communicate &amp; collaborate with others</li> <li>• Learn to identify, set and meet goals</li> <li>• Learning to cultivate mentoring relationships</li> </ul>
<b>Beyond the Hypothesis: Experimental Design &amp; Critical Analysis</b>	<ul style="list-style-type: none"> <li>• Develop skills in mechanistic hypothesis setting and experimental design</li> <li>• Using the literature and deductive reasoning to generate hypotheses</li> <li>• Learn to use <i>in vitro</i> and <i>in vivo</i> complimentary model systems</li> <li>• Learn to validate findings and recognize flaws, to re-assess and modify approaches</li> </ul>
<b>Designing and Delivering Scientific Presentations</b>	<ul style="list-style-type: none"> <li>• Gain insight and practice effective oral communication of scientific results</li> <li>• Learn to frame and structure a poster &amp; oral presentation to communicate to others</li> <li>• Learn how to use visual materials to highlight concepts and findings</li> <li>• Giving and receiving formative feedback on presentations</li> </ul>
<b>Defending Your Research Proposal &amp; Critiquing Those of Others</b>	<ul style="list-style-type: none"> <li>• Learn how to develop a strong thesis topic</li> <li>• Learn how to defend your research project and evaluate your progress</li> <li>• How to handle mistakes and results that do not support your hypothesis</li> <li>• Learning to give and receive advice and criticism</li> </ul>
<b>Resources, Tools and Basic Techniques in Molecular Biology</b>	<ul style="list-style-type: none"> <li>• Gain insight into the resources, tools &amp; techniques of molecular biology</li> <li>• Learn to use on-line resources for literature and data searches</li> <li>• Learn about genomic/proteomic approaches to modern biology</li> <li>• Visit on-campus Core facilities to familiarize yourself with the resources</li> </ul>
<b>Professionalism: Maximizing your Impact in Professional Settings [Navigating a Successful Graduate Career: Professionalism &amp; Etiquette]</b>	<ul style="list-style-type: none"> <li>• Learn how to recognize and acquire behaviors that promote career success</li> <li>• Learn strategies for maximizing impact in scientific meetings and other professional settings</li> <li>• Learn how to successfully present yourself in interviews and in your CV</li> <li>• Learn how to improve interpersonal communication and interactions with colleagues</li> </ul>
<b>Scientific Presentation of Biological Data</b>	<ul style="list-style-type: none"> <li>• Learn to construct effective figures and graphs for scientific presentations</li> <li>• Learn to organize scientific data effectively</li> <li>• Learn to apply understanding of human vision &amp; cognition to maximize content and interpretation</li> <li>• Learn to adjust graphics for presentation in print and electronic/computer media</li> </ul>
<b>Scientific Writing: Key Principles</b>	<ul style="list-style-type: none"> <li>• Learn to effectively communicate your research in writing</li> <li>• Develop skill and strategies for writing journal articles</li> <li>• Learn to respond to reviewer comments and engage in critical peer review</li> <li>• Learn how to write with clarity and tailor articles to specific audiences</li> </ul>
<b>Introduction to Statistical Analysis of Data</b>	<ul style="list-style-type: none"> <li>• Gain familiarity with common statistical concepts</li> <li>• Develop a foundation of statistical reasoning in medical and biological research</li> <li>• Become familiarized with statistical software</li> </ul>

<b>Reading Scientific Publications</b>	<ul style="list-style-type: none"><li>• Learn to read and interpret original scientific literature</li><li>• Learn to distill the main message and critically analyze results</li><li>• Learn to engage in scientific discussions among colleagues</li><li>• Learn to compare and contrast publication formats</li></ul>
<b>Essential Laboratory Calculations</b>	<ul style="list-style-type: none"><li>• Review mathematical concepts/calculations used and applied in the lab setting</li><li>• Learn pointers on accuracy, following protocols and making measurements</li><li>• Review problem solving related to bench work</li><li>• How to decipher protocols in peer-reviewed publications</li></ul>