

**Tufts Biology**  
**Core Competencies for Tufts Biology Majors**  
**(modified from *Vision & Change AAAS, 2011*)**

**1. Understand how to pursue scientific inquiry to answer biological questions**

- 1.1 Formulate hypotheses, design experiments +/- observational studies, gather data, analyze and evaluate results, formulate next questions
- 1.2 Perform standard laboratory techniques accurately and safely
- 1.3 Locate and understand relevant primary literature, interpret graphical and tabular data, evaluate evidence-based conclusions

**2. Use qualitative and quantitative analysis to test hypotheses and interpret biological data**

- 2.1 Generate and analyze data, draw conclusions based on appropriate statistical analysis
- 2.2 Access & analyze large databases
- 2.3 Use imaging techniques appropriately

**3. Use mathematical modeling and simulation tools to describe biological systems**

- 3.1 Apply computational modeling to dynamic biological systems
- 3.2 Use bioinformatics tools
- 3.3. Incorporate stochasticity into biological models

**4. Collaborate within and across disciplines**

- 4.1 Apply concepts from chemistry, physics, and other related disciplines to biological phenomena.
- 4.2 Work effectively in teams

**5. Communicate effectively**

- 5.1 Compose, revise, and analyze different types of scientific writing
- 5.2 Organize data and present it clearly and engagingly with tables, charts, and images.
- 5.3 Prepare and deliver oral presentations
- 5.4 Communicate with diverse audiences

**6. Understand the relationship between science and society**

- 6.1 Evaluate the ethical implications of biological research
- 6.2 Understand the social context of biological inquiry
- 6.3 Evaluate how biological tools can be applied to solve societal problems