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