Behavioral and Neural Sciences – PhD Learning Goals

Research Skills
Graduates must have the conceptual and technical skills to conduct neuroscience research. Graduates are expected to:
• Identify a significant research problem or question for investigation
• Formulate valid hypotheses
• Design feasible experiments to test those hypotheses
• Possess the technical skills to perform experiments competently and reproducibly
• Analyze and Interpret data rigorously using appropriate statistical methods if necessary.

Scientific Knowledge
Graduates must possess both general and specific knowledge of neuroscience and related fields. Graduates are expected to:
• Demonstrate a broad general knowledge (at a level equivalent to that of an average working neuroscientist) of the concepts, current hypotheses and key experiments in all areas of neuroscience, including: cellular & molecular neuroscience, developmental neuroscience, neurochemistry, neurophysiology, neuroanatomy, neuropharmacology, neuroimmunology and behavioral and cognitive neuroscience.
• Demonstrate detailed knowledge of one or more areas of neuroscience (at a level equivalent to that of an expert in that area).

Learning and Improvement
Graduates must be able to appraise scientific data, and to evaluate their individual activities in order to grow professionally. Graduates are expected to:
• Critically appraise scientific papers in the neurosciences
• Make conclusions on the balance of evidence from multiple sources
• Use information technology to conduct literature searches and manage information to support their life-long intellectual enrichment
• Identify emerging areas of research on the basis of their literature reviews
• Self-assess their progress as a research scientist

Communication
Graduates must demonstrate effective oral and written communication skills. Graduates are expected to:
• Write, edit and submit scientific manuscripts for publication
• Present well organized research seminars that contain effective graphics
• Work effectively as a member of a research team
• Provide and receive constructive criticism in a professional manner
• Participate in teaching undergraduate and graduate students
• Communicate neuroscience effectively to a non-scientific audience

Ethics and Professionalism
Graduates must demonstrate a commitment to professional responsibilities, adherence to ethical principles and a respect for individuals. Graduates are expected to:
• Demonstrate knowledge of, and commitment to, the principles of responsible conduct in research (RCR)
• Evaluate a situation involving unethical or unprofessional conduct.
• Demonstrate effective conflict management skills
• Possess management tools required to supervise a scientific laboratory

Understand the System
Graduates must demonstrate an understanding of the external structures that govern biomedical research and the career pathways available to graduates. Graduates are expected to:
• Demonstrate knowledge of external agencies funding biomedical research
• Understand the grant review process of the National Institutes of Health
• Evaluate career opportunities and pathways, from an informed perspective