

GLIAL CONTRIBUTIONS TO TRAUMATIC BRAIN INJURY

China N. Byrns

A DISSERTATION

in

Neuroscience

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2021

Supervisor of Dissertation



---

Nancy M. Bonini, PhD  
Florence R.C. Murray Professor of Biology

Graduate Group Chairperson



---

Joshua I. Gold, PhD  
Professor of Neuroscience

Dissertation Committee

Matthew S. Kayser, MD, PhD  
Assistant Professor of Psychiatry,  
Physician-of-Record

Edward B. Lee, MD, PhD  
Assistant Professor of Pathology and  
Laboratory Medicine

David F. Meaney, PhD  
Solomon R. Pollack  
Professor of Bioengineering

Roberto Bonasio, PhD  
Associate Professor of Cell and  
Developmental Biology

Guo-Li Ming, MD, PhD  
Perelman Professor of  
Neuroscience

Frederick Christian Bennett, MD  
Assistant Professor of  
Psychiatry