CURRICULUM VITAE
ELIZABETH A. PROCTOR

The Pennsylvania State University
500 University Drive
Mail Code: R130
Hershey, PA 17033

Office: HCAR 3037
Email: eproctor@psu.edu
Telephone: (717) 531-5922
sites.psu.edu/proctorlab

EDUCATION

Massachusetts Institute of Technology — *Cambridge, MA*
Postdoctorate, Biological Engineering — June 2018
Supervisor: Dr. Douglas A. Lauffenburger

University of North Carolina at Chapel Hill — *Chapel Hill, NC*
Ph.D., Bioinformatics and Computational Biology — December 2013
Specialization in Molecular and Cellular Biophysics
Supervisor: Dr. Nikolay V. Dokholyan

Purdue University — *West Lafayette, IN*
B.S. with Honors, Physics — May 2008
B.A. with Honors, Russian Language and Literature — May 2008

Novgorod State University — *V. Novgorod, Russia*
Study Abroad — June 2006

PROFESSIONAL EXPERIENCE

2018-present — Assistant Professor
Departments of Neurosurgery, Pharmacology, Biomedical Engineering, and Engineering Science & Mechanics
Center for Neural Engineering
Penn State Neuroscience Institute
The Pennsylvania State University

2022-present — Associate Director, Cross-Disciplinary Neural Engineering training program (T32NS115667)

TEACHING EXPERIENCE

----- Penn State University -----

Cross Disciplinary Neural Engineering Training Program (NINDS T32) — *Fall 2022/Spring 2023 - current*
Associate Director

Biological Basis of Human Health & Disease (BMS 506A, BMS 506B) — *Fall 2022/Spring 2023 - current*
Course Co-Director

Art of Scientific Communication (BMS 504, BMS 505) — *Fall 2020/Spring 2021 - current*
Course Co-Director

Functional and Integrative Neurosciences (BBH 470) — *Spring 2022 - current*
Topic Instructor: *Brain aging and neurodegeneration*

Cellular and Molecular Neuroscience (NEURO 520) — *Fall 2020 - current*
Topic Instructor: *Alzheimer's Disease*

Genetic Approaches to Biomedical Problems — *Fall 2019, 2020, 2023*
Topic Instructor: Single-Cell RNAseq

Bioinformatics Data Mining (CTS 596) *Spring 2023*
Course Director

Neuroscience Colloquium (NEURO 590) *Fall 2020*
Session Discussion Leader

Biomedical Engineering: First-Year Colloquium (BME 100S) *Fall 2020*
Presenter: *Altered signaling in brain disorders*

----- MIT -----

Teaching & Learning Laboratory *Spring 2015*
Kaufman Teaching Certificate Program

FORMAL MENTORING

Pennsylvania State University

Rebecca Fleeman	PhD Student	Biomedical Sciences	2019-2023	PhD 01/2023
Madison Kuhn	PhD Student	Bioengineering	2018-present	
Dennis Chan	PhD Student	Bioengineering	2018-present	
Rachel Kang	PhD Student	Biomedical Sciences	2023-present	
Ashley Thommana	UG Student	Pre-Medical Medical Program		2022-present
Morgan McNamara	UG thesis	Engineering Science & Mechanics		2019
Tyler Vokes	UG technician	Biology		2019
Alessia Iannuzzi	HS intern	Carlisle High School		2023-present
Sophia Dokholyan	HS intern	Hershey High School		2019-2020
Cong Cong	PhD Rotation	Biomedical Sciences		2023
Paige Bond	PhD Rotation	Biomedical Sciences		2023
Grace Smith	PhD Rotation	Biomedical Engineering		2022
Brendan Ball	Visiting PhD	Biomedical Engineering		2022
Katelyn Ayers	PhD Rotation	Biomedical Sciences		2019
Brandon LaFever	PhD Rotation	Neuroscience		2019
Bailey Keller	PhD Rotation	Neuroscience		2019
Rhea Sullivan	PhD Rotation	MD-PhD MSTP		2019-2020
Kevin Fundora	PhD Rotation	MD-PhD MSTP		2019
Esther Choi	PhD Rotation	MD-PhD MSTP		2019

HONORS AND ACTIVITIES

2023	Cellular and Molecular Bioengineering Young Innovator, Biomedical Engineering Society
2022	Samuel Hinkle Junior Faculty Research Award, Penn State College of Medicine
2021	Women in STEM Game Changer Award, Whitaker Center
2020	Student-chosen Keynote Speaker at Graduate Oath Ceremony, Penn State College of Medicine
2017	BMES Career Development Award, Biomedical Engineering Society
2017	Environmental Toxicology Training Fellowship, MIT Department of Biological Engineering
2014	Dean's Distinguished Dissertation Award in Biological & Biomedical Sciences, University of North Carolina at Chapel Hill

2010 - 2013	Ruth L. Kirschstein National Research Service Award Predoctoral Fellowship, National Institute of Health
2012	F1000Prime Associate Faculty Member Travel Grant, Faculty of 1000
2012	NSF-MCC Travel Award, National Science Foundation and the Materials Computation Center, University of Illinois Urbana-Champaign
2009 - 2010	Predoctoral Training Fellowship, Curriculum in Bioinformatics and Computational Biology, University of North Carolina at Chapel Hill
2008	Director's Award for top candidates, Biological and Biomedical Sciences Program, University of North Carolina at Chapel Hill
2008	Student Speaker Honor for 2008 Purdue University Graduation, Section II
2003 - 2005	Purdue Varsity Track and Field Team (pole vault)
2004	NCAA Big Ten Conference Track and Field All-Academic Team
2003 - 2004	Ascarelli Research Fellowship, Physics Department, Purdue University
2003 - 2007	National Merit Scholar, Purdue University

PROFESSIONAL MEMBERSHIPS AND SERVICE

- **Handling Editor of *Proteins: Structure, Function, and Bioinformatics*, 2021-present**
- Editorial Board of Neurodegeneration Section, *Frontiers in Neuroscience, Frontiers in Neurology,* and *Frontiers in Psychiatry*, 2021-present
- Editorial Board of Molecular and Cellular Oncology Section, *Frontiers in Oncology* and *Frontiers in Cell and Developmental Biology*, 2021-present
- Faculty Member, Faculty Opinions (formerly Faculty of 1000), 2021-present
- Member, Biomedical Engineering Society, 2017-present
- Member, Society for Neuroscience, 2022-present
- Biomedical Engineering Society Annual Meeting session chair (2020, 2022)
- Biomedical Engineering Society Annual Meeting abstract reviewer (2019-2023)
- Member, American Heart Association, 2018-2020
- Associate Faculty Member, Faculty Opinions (formerly Faculty of 1000), 2012-2021
- Grant Proposal Referee:
    - NIH Special Emphasis Panel ZRG1 AN-Z 55: Research on Current Topics in Alzheimer's Disease and Its Related Dementias (June 2023)
    - NIH Aging Systems and Geriatrics study section (February 2023)
    - NIH U19 Renewal Panel ZAG1 ZIJ-3 (J2): Aging Dog Project (November 2022)
    - NIH Special Emphasis Panel ZRG1 AN-Q 55: Research on Current Topics in Alzheimer's Disease and Its Related Dementias (October 2022)
    - NIH Special Emphasis Panel ZRG1 BDCN-S 55: Research on Current Topics in Alzheimer's Disease and Its Related Dementias (July 2022)
    - NIH Special Emphasis Panel ZAG1 ZIJ-8 A1: Infectious Etiology of Alzheimer's Disease (June 2021)
    - NIH Biophysics and Biochemistry of Membranes study section (September 2020)
    - NSF SBIR/STTR review panel (September 2020)
    - Foundation for Armenian Science and Technology (FAST) (December 2018)
    - European Science Federation – Science Connect (December 2018)
    - Missouri Spinal Cord Injury/Disease Research Program (SCIDRP) (February 2016)
- Expert Commentator for *ALZforum* and *ResearchALS*
- Journal Referee (publons.com/**a/1263151/**): (1) *Scientific Reports;* (2) *PLOS Computational Biology;* (3) *Proteins: Structure, Function, and Bioinformatics;* (4) *Analytical Chemistry;* (5) *Bioinformatics;* (6) *Neuroscience;* (7) *Journal of Neurochemistry;* (8) *Journal of Pharmacology and Experimental Therapeutics;* (9) *Pharmacology;* (10) *Nucleic Acids Research;* (11) *FASEB;*

(12) *Biomedicine & Pharmacotherapy;* (13) *Journal of Physical Chemistry;* (14) *Neuropsychopharmacology;* (15) *Proceedings of the National Academy of Sciences USA*

UNIVERSITY SERVICE

Standing Committees

- **Medical Scientist (MD-PhD) Training Program Steering Committee, 2019-present**
- **Cross-Disciplinary Neural Engineering Training Program Committee, 2021-present**
- College of Medicine Conflict of Interest Committee, 2020-present
- College of Medicine Diversity Council, 2020-present

Time-Delimited Committees

- NeuroRetreat Organizing Committee (2020-2021)
- College of Medicine Faculty Compensation Plan Task Force (2023)

Hiring Committees

- Cellular and Molecular Physiology Chair Search Committee (2023)
- ESM/BME Data Sciences Faculty Search Committee (2021-2022, 2022-2023)
- Department of Pharmacology Organic Synthesis Faculty Search Committee (2021-2022)
- Department of Pharmacology Synthetic Biology Faculty Search Committee (2021-2022)
- Huck Neural Engineering Faculty Search Committee (2021-2022)
- Engineering Science & Mechanics/Center for Neural Engineering Neuroethics Faculty Search Committee, 2019-2020
- Biomedical Engineering Faculty Search Committee, 2018-2019, 2019-2020
- Center for Translational and Systems Research Faculty Search Committee, 2018-2019

Graduate Program Committees

- Bioengineering/Biomedical Engineering Graduate Admissions Committee, 2018-present
- Biomedical Sciences Graduate Program Admissions Committee, 2018-2020
- Medical Scientist Training Program, 2019-present
- Qualifying Exam Panels: Biomedical Sciences (2019, 2020, 2023), Bioengineering/Biomedical Engineering (2020, 2023), Engineering Science & Mechanics (2020, 2023)
- Graduate Program Interviewer: MD Program, Medical Scientist Training Program (MD-PhD), Biomedical Sciences, Neuroscience, Biomedical Engineering, Bioinformatics & Genomics

Internal Grant Review and/or Panels

- COM Artificial Intelligence Initiative (2023)
- Finkelstein Memorial Research Award (2023)
- Four Diamonds (2019-2020)
- CTSI (2018)

Doctoral Thesis Committees

- Insung Song, Biomedical Sciences (Advisor: J. Connor, PhD 2020)
- Chirag Patel, Anatomy (Advisor: P. McLaughlin, PhD 2021)
- Emily Freiben, Biomedical Sciences (Advisors: N. Dokholyan and R. Mailman, PhD 2021)
- Zachary Nolan, Biomedical Sciences (MD-PhD) (Advisor: A. Nelson; exited program 2022)
- Barbara Manfredi, Biomedical Sciences (Advisor: R. Hohl, PhD 2022)
- Vladimir Khristov, Biomedical Sciences (MD-PhD) (Advisor: J. Connor, PhD 2022)
- Elias Rizk, Neuroscience (Advisor: J. Connor, PhD 2023)

- Stephanie Baringer, Biomedical Sciences (Advisor: J. Connor)
- Quinn Wade, Neuroscience (Advisor: J. Connor)
- Joshua Reynolds, Bioengineering (Advisors: J. Pritchard and N. Dokholyan)
- Esther Choi, Biomedical Sciences (MD-PhD) (Advisor: N. Dokholyan)
- Savannah Marshall, Biomedical Sciences (Advisor: J. Connor)
- Congzhou Mike Sha, Engineering Science & Mechanics (MD-PhD) (Advisor: N. Dokholyan)
- Michael Ream, Biomedical Engineering (Advisor: X. Lian)
- Makenzie Nolt, Neuroscience (Advisor: J. Connor)
- EXTERNAL: Brendan Ball, Purdue University Biomedical Engineering (Advisor: D. Brubaker)
- Rhea Sullivan, Biomedical Sciences (MD-PhD) (Advisor: S. Hicks)
- Ritika Raj Menghani, Mechanical Engineering (Advisor: R. Kraft)
- Farnaz Naeemikia, Biomedical Engineering (Advisor: C. Dong and J. Pritchard)
- Rebecka Serpa, Neuroscience (Advisor: J. Connor)
- Emily Tufano, Biomedical Sciences (Advisor: J. Connor)
- Sarah Latario, Biomedical Sciences (Advisor: S. Stahley)
- Keeley Naylor, Engineering Science & Mechanics (Advisor: B. Gluckman)

Master's Thesis Committees

- Darya Nesterova, Biomedical Sciences (Advisor: J. Connor, MS 2020)

OUTREACH

Whitaker Center Questioneers February 2023
Represented "Ada Twist, Scientist" in an outreach event aimed toward grade school children, to answer their questions about becoming a scientist and empower girls interested in STEM careers.

ACTIVE FUNDING (as PI or Co-I)

R01AG072513 (Contact PI: **Proctor**; MPI: Gluckman, Drew) 07/15/2022 – 03/31/2027
NIH **$3,832,478**
Impaired Vasoreactivity, Sleep Degradation, and Impaired Clearance in the APOE4 Brain
Goal: The goal of this research project is to determine the trajectories of altered sleep stages and quality, impaired vasodilation, and dysregulated production and clearance of immune and metabolic products in APOE4, and test the relationship between these pathologies by introducing exercise from young age to ameliorate vascular dysfunction.

R21AG068532 (Contact PI: **Proctor**; MPI: Zhang) 05/01/2021 – 04/30/2024
NIH **$438,028**
Coupling and spread of molecular and functional pathology of Alzheimer's disease
Goal: The goal of this research project is to test whether molecular and cellular dysfunction can be transmitted from cell to cell along their pathways of functional connectivity in the brain, and whether perturbation of molecular and cellular state can correct brain functional changes that happen in disease.

H.G. Barsumian Memorial Grant (PI: Proctor) 09/01/2022 – 08/31/2023
Barsumian Trust **$25,000**
Engineered mini-brains to identify novel therapeutic targets for Alzheimer's disease
Goal: The goal of this research project is to use mini-brain organoids grown from patient cells to map dysregulated communications between cells that drive Alzheimer's disease pathology, and identify and correct the identified molecular pathways to restore health.

R01AA029403-supp (PI: Crowley, Co-I: Proctor) 04/05/2023 – 02/29/2024

NIH **$304,741**

Prelimbic somatostatin peptide signaling in binge ethanol consumption

Goal: The goal of this research project supplement is to uncover the neurobiological underpinnings of the interaction between binge drinking and cognitive decline, and support efforts to develop treatments for reducing alcohol use disorder-induced agitations of healthy aging.

Comparative Health Sciences Microgrant (PI: Proctor) 05/08/2023 – 11/06/2023
Penn State College of Medicine **$4,000**

Dysfunctional cellular cross-talk in Alzheimer's disease iPSC-derived human brain organoids

Goal: The goal of this research project is to use single-cell mRNA sequencing of brain organoids to construct signaling networks among neurons, astrocytes, and microglia and identify alterations in these networks in Alzheimer's disease.

T32NS115667 (PI: Gluckman, Co-I: Proctor) 08/01/2021 – 07/31/2026
NIH **$832,049**

Cross-Disciplinary Neural Engineering (CDNE) Training Program

Goal: The goal of this predoctoral training program is to train the future research leaders able to bridge across the disciplinary boundaries of engineering, sciences, and mathematics to neurosciences and the treatment of human brain health.

R01CA260901 (PI: Liu, Co-I: Proctor) 09/01/2021 – 08/31/2026
NIH **$2,908,574**

Early clinical trials for Angelica herbal supplements for prostate cancer interception

Goal: The goal of this research project is to provide the first of its kind knowledge of safety and preliminary efficacy of an AGN herbal supplement against prostate cancer at therapeutic dosages, with mechanisms of action distinct from the currently approved drugs and more favorable safety profiles.

Capacity Building Grant (PI: Paul, Co-I: Proctor) 05/01/2023 – 10/31/2024
Geroscience and Dementia Prevention Consortium **$100,000**

A scalable patient to petri dish (P2P) initiative for investigating Alzheimer's Disease

Goal: The goal of this research project is to demonstrate and establish the operational feasibility of an in-house "patient to petri dish" (P2P) platform to leverage Penn State Health patient samples and perform a limited mechanistic investigation into AD biology.

INCOMING FUNDING

CURE Formula Funds (Contact PI: Proctor; MPI: Zhang) 09/01/2023 – 12/31/2026
PA Department of Health **$381,986**

Molecular and Circuit-Level Mechanisms of Cognitive Decline in Alzheimer's Disease

Goal: The goal of this research project is to directly engineer cognitive health by defining and controlling the molecular mechanisms of detrimental neural circuit changes in the brains of diseased mice. This innovative strategy will shift the focus of AD from poorly-correlated proxies to direct measurement and effects on cognition, providing novel targets for effective Alzheimer's disease therapies.

PAST FUNDING

F31AG071131 (PI: Fleeman, PI Mentor: Proctor) 08/15/2022 – 03/31/2023
NIH **$100,472**

APOE4 Increases Astrocytic Tau Internalization to Promote Alzheimer's-Related Neuronal Pathology

Goal: The goal of this research project is to identify whether increased cholesterol levels inherent to APOE ε4 astrocytes affects their uptake and propagation of pathological tau, increasing release of proinflammatory cytokines that negatively impact neuronal health and resilience.

PUBLICATIONS

Proctor Lab members
† Corresponding author

1. E. Zukowski, M. Sannella, J. Donato Rockhold, G. Pugh, J. Yu, M. K. Kuhn, N. Hah, L. Ouyang, T. W. Wang, M. Drummond, **E. A. Proctor**, H. Hasturk, B. S. Nikolajczyk, L. P. Bharath. "STAT3 Modulates CD4+ T Mitochondrial Dynamics and Function in Aging," *in revision at Aging Cell* (2023).
2. M.K. Kuhn, R. M. Fleeman, L. M. Beidler, A. M. Snyder, D. C. Chan, **E. A. Proctor**†. "Alzheimer's disease-specific cytokine secretion suppresses neuronal mitochondrial metabolism," *in revision at Cellular and Molecular Bioengineering* (2023), bioRxiv doi:10.1101/2023.04.07.536014
3. R. M. Fleeman, M. K. Kuhn, D. C. Chan, **E. A. Proctor**†. "Apolipoprotein E4 modulates astrocyte neuronal support functions in the presence of amyloid-β," ***Journal of Neurochemistry*** 165:536-549 (2023).
4. R. M. Fleeman, A. M. Snyder, M. K. Kuhn, D. C. Chan, G. C. Smith, N. A. Crowley, A. C. Arnold, **E. A. Proctor**†. Predictive link between systemic metabolism and immune signaling in the brain of APOE4 mice," ***Neurobiology of Aging*** 123:154-169 (2023).
5. D. Y. Zhang, J. Wang, R. M. Fleeman**,** M. K. Kuhn, M. T. Swulius, **E. A. Proctor**, N. V. Dokholyan. "GM1 mediates the formation and maintenance of cytotoxic Aβ," ***ACS Chemical Neuroscience*** 13:1979-1991 (2022).
6. R. M. Fleeman & **E. A. Proctor**†. "Astrocytic propagation of tau in the context of Alzheimer's Disease," ***Frontiers in Cellular Neuroscience*** 15:645233 (2021).
7. A. W. Simonson, A. S. Mongia, M. R. Aronson, J. N. Alumasa, D. C. Chan, A. Lawanprasert, M. D. Howe, A. Bolotsky, T. K. Mal, C. George, A. Ebrahimi, A. D. Baughn, **E. A. Proctor**, K. C. Keiler, S. H. Medina. "Pathogen-specific antimicrobials engineered *de novo* through membrane porin biomimicry," ***Nature Biomedical Engineering*** 5:467-480 (2021).
8. K. L. Turner, K. W. Gheres, **E. A. Proctor,** P. J. Drew. "Neurovascular coupling and bilateral connectivity during NREM and REM sleep," ***eLife*** 9:e62071 (2020).
9. C. S. Drapaca, S. Ozdemir, **E. A. Proctor**. "A Non-local Model of the Propagation of Action Potentials in Myelinated Neurons," ***Emerging Science Journal*** 4:148-164 (2020).
10. R. M. Fleeman, G. Deiter, K. Lambert, **E. A. Proctor,** R. Phaëton. "Novel microRNA multivariate biomarkers of response to immunotherapy against HPV E6 oncogene," *bioRxiv* doi:10.1101/2020.06.26.174441 (2020)
11. **E. A. Proctor**, S. M. Dineen, S. C. Van Nostrand, M. K. Kuhn, C. D. Barrett, D. K. Brubaker, M. B. Yaffe, D. A. Lauffenburger, L. R. Leon. "Coagulopathy signature precedes and predicts severity of end-organ heat stroke pathology in a mouse model," ***Journal of Thrombosis and Haemostasis*** 18:1900-1910 (2020).
12. L. P. Bharath, M. Agrawal, G. McCambridge, D. A. Nicholas-Alvarado, H. Hasturk, J. Liu, K. Jiang, Z. Guo, J. Deeney, J. Snyder-Cappione, G. Hawk, R. M. Fleeman, R. M. F. Pihl, K. Thompson, A. C. Belkina, L. Cui, **E. A. Proctor**, P. A. Kern, B. S. Nikolajczyk. "Metformin enhances autophagy and normalizes mitochondrial function to alleviate aging-associated inflammation," ***Cell Metabolism*** 32:44-55 (2020).
13. D. S. Nesterova, V. Midya, B. E. Zacharia, **E. A. Proctor**, S. Lee, L. Stetson, J. Lathia, J. Rubin, K. Waite, M. Berens, J. Barnholtz-Sloan, J. R. Connor. "HFE gene expression impacts sex-based survival in glioblastoma," ***Neuro-Oncology Advances*** 2:vddaa001 (2020).
14. **E. A. Proctor**†, D. D. Mowrey, N. V. Dokholyan†. "β-Methylamino-L-alanine substitution of serine 107 in SOD1 suggests a direct role in ALS etiology," ***PLOS Computational Biology*** 15:e1007225 (2019).
15. D. A. Nicholas*, **E. A. Proctor***, M. Agrawal, A. C. Belkina, S. C. Van Nostrand, L. Panneerseelan-Barath, A. R. Jones IV, F. Raval, B. C. Ip, M. Zhu, J. Cacecido, C. Habib, N. Sainz-Rueda, B.

Corkey, C. Apovian, P. Kern, D. A. Lauffenburger, B. S. Nikolajczyk. "Fatty Acid Metabolites Combine with Reduced β Oxidation to Activate Th17 Inflammation in Human Type 2 Diabetes," ***Cell Metabolism*** 30:447-461.e5 (2019).
("*" denotes equal authorship, alphabetical order)

16. D. K. Brubaker, **E. A. Proctor**, K. M. Haigis, D. A. Lauffenburger. "Computational translation of genomic responses from experimental model systems to humans," ***PLOS Computational Biology*** 15:e1006286 (2019).
17. A. C. Belkina, A. Starchenko, K. Drake, **E. A. Proctor**, D. A. Lauffenburger, J. Browning, A. Olsen, Y. Robles, L. Huang, N. Lin, J. E. Snyder-Cappione. "Multivariate Computational Analysis of Gamma Delta T cell Inhibitory Receptor Signatures Reveals the Divergence of Healthy and ART-Suppressed HIV+ Aging," ***Frontiers in Immunology*** 9:2783 (2018).
18. C. Wang, A. A. Aleksandrov, Z. Yang, F. Forouhar, **E. A. Proctor**, P. Kota, J. An, A. Kaplan, N. Khazanov, G. Boël, B. R. Stockwell, H. Senderowitz, N. V. Dokholyan, J. R. Riordan, C. G. Brouillette, J. F. Hunt. "Ligand binding to a remote site thermodynamically corrects the F508del mutation in the human cystic fibrosis transmembrane conductance regulator," ***Journal of Biological Chemistry*** 293:17685-17704 (2018).
19. M. Fleury, A. Belkina, **E. A. Proctor**, C. Zammitti, R. Simms, D. A. Lauffenburger, J. Snyder-Cappione, R. Lafyatis, H. Dooms. "Increased Expression and Modulated Regulatory Activity of Co-Inhibitory Receptors PD-1, TIGIT, TIM-3 in Lymphocytes of Systemic Sclerosis Patients," ***Arthritis & Rheumatology*** 70:566-577 (2018).
20. D. Nicholas*, **E. A. Proctor***, F. M. Raval*, B. C. Ip, C. Habib, E. Ritou, T. N. Grammatopoulos, D. Steenkamp, H. Dooms, C. M. Apovian, D. A. Lauffenburger, B. Nikolajczyk. "Advances in the Quantification of Mitochondrial Function in Primary Human Immune Cells through Extracellular Flux Analysis," ***PLOS ONE*** 12(2):e0170975 (2017).
("*" denotes equal authorship, alphabetical order)
21. L. Liebenberg*, L. Masson*, K. Arnold*, L. McKinnon*, Werner L., **E. A. Proctor**, D. Archary, L. Werner, L. Mansoor, D. A. Lauffenburger, Q. Abdool Karim, S. Abdool Karim, J. Passmore. "Genital-systemic chemokine gradients and the risk of HIV acquisition in women," ***Journal of Acquired Immune Deficiency Syndromes*** 74:318-325 (2017).
("*" denotes equal authorship)
22. J. M. Fay*, C. Zhu*, **E. A. Proctor**, Y. Tao, W. Cui, H. Ke, N. V. Dokholyan. "A phosphomimetic mutation stabilizes SOD1 and rescues cell viability in the context of an ALS-associated mutation," ***Structure,*** 24:1898-1906 (2016).
("*" denotes equal authorship)
23. H. Hadi-Alijanvand, **E. A. Proctor**, F. Ding, N. V. Dokholyan, A. A. Moosavi-Movahedi. "A hidden aggregation-prone structure in the heart of hypoxia inducible factor prolyl hydroxylase," ***Proteins: Structure, Function, and Bioinformatics,*** 84:611-623 (2016).
24. **E. A. Proctor** and N. V. Dokholyan. "Applications of Discrete Molecular Dynamics in Biology and Medicine," ***Current Opinion in Structural Biology,*** 37:9-13 (2016).
25. **E. A. Proctor**, L. Fee, Y. Tao, R. L. Redler, J. M. Fay, Y. Zhang, L. Lv, I. P. Mercer, M. Deshmukh, Y. L. Lyubchenko, N. V. Dokholyan. "Non-native SOD1 trimer is toxic to motor neurons in a model of amyotrophic lateral sclerosis," ***Proceedings of the National Academy of Sciences USA,*** 113:614-619 (2016). [Featured in F1000]
26. L. B. Wood, A. R. Winslow, **E. A. Proctor**, D. McGuone, D. A. Mordes, M. P. Frosch, B. T. Hyman, D. A. Lauffenburger, K. M. Haigis. "Identification of neurotoxic cytokines by profiling Alzheimer's disease tissues and neuron culture viability screening," ***Scientific Reports,*** 5:16622 (2015).
27. **E. A. Proctor**, P. Kota, A. A. Aleksandrov, L. He, J. R. Riordan, N. V. Dokholyan. "Rational Allosteric Network Manipulation Rescues Disease-Relevant Mutant Cystic Fibrosis Transmembrane Conductance Regulator," ***Chemical Science,*** 6:1237-1246 (2015).

28. S. Nedd, R. L. Redler, **E. A. Proctor**, N. V. Dokholyan, A. A. Alexandrova. "Cu,Zn-Superoxide Dismutase without Zn is Folded but Catalytically Inactive," ***Journal of Molecular Biology,*** 426:4112-4124 (2014).
29. S. S. Hasan, **E. A. Proctor**, E. Yamashita, N. V. Dokholyan, W. A. Cramer. "Traffic within the Cytochrome b_6f Complex: Gating of the Quinone Portal," ***Biophysical Journal,*** 107:1620-1628 (2014).
30. R. L. Redler, D. Shirvanyants, O. Dagliyan*, D. N. Kim*, P. Kota*, **E. A. Proctor***, S. Ramachandran*, A. Tandon*, F. Ding, N. V. Dokholyan. "Computational approaches to understanding protein aggregation in neurodegeneration," ***Journal of Molecular Cell Biology,*** 6:104-115 (2014).
    ("*" denotes equal authorship, listed alphabetically)
31. N. Barison, L. Cendron, V. Loconte, **E. A. Proctor**, N. V. Dokholyan, G. Zanotti. "Protein HP1028 from the human pathogen Helicobacter pylori belongs to the lipocalin family," ***Acta Crystallographica Section D,*** 69: 1387-1394, (2013).
32. **E. A. Proctor**, P. Kota, S. J. Demarest, J. A. Caravella, N. V. Dokholyan. "Highly covarying residues have a functional role in antibody constant domains," ***Proteins: Structure, Function, and Bioinformatics***, 81: 884-895 (2013).
33. **E. A. Proctor**, P. Kota, S. J. Demarest, J. A. Caravella, N. V. Dokholyan. "Metric to distinguish closely related domain families using sequence information," ***Journal of Molecular Biology***, 425: 475-478 (2013).
34. H. Hadi-Alijanvand, **E. A. Proctor**, B. Goliaei, N. V. Dokholyan, A. A. Moosavi-Mohavedi. "Thermal unfolding pathway of PHD2 catalytic domain in three different PHD2 species: Computational approaches," ***PLOS ONE***, 7:e47061 (2012).
35. **E. A. Proctor**, S. Yin, A. Tropsha, and N. V. Dokholyan. "Discrete molecular dynamics simulations distinguish the native and native-like binding poses from decoys in difficult drug targets," ***Biophysical Journal*** 102: 144-151 (2012).
36. O. Dagliyan, **E. A. Proctor**, K. M. D'Auria, F. Ding, and N. V. Dokholyan. "Structural and dynamic determinants of protein-peptide recognition," ***Structure*** 19: 1837-1845 (2011). [Cover article]
37. R. L. Redler, K. C. Wilcox, **E. A. Proctor**, L. Fee, M. Caplow, and N. V. Dokholyan. "Glutathionylation at Cys 111 triggers dissociation of wild type and FALS mutant SOD1 dimers," ***Biochemistry*** 50: 7057-7066, (2011). [Featured in F1000]
38. **E. A. Proctor**, F. Ding, and N. V. Dokholyan. "Structural and thermodynamic effects of post-translational modifications in mutant and wild-type Cu, Zn superoxide dismutase," ***Journal of Molecular Biology***, 408: 555-567, (2011). [Featured in F1000]
39. H. Hadi-Alijanvand, M. Rouhani, **E. A. Proctor**, N. V. Dokholyan, and A. A. Moosavi-Mohavedi. "A folding pathway-dependent score to recognize membrane proteins," ***PLOS ONE***, 6:e16778 (2011).
40. **E. A. Proctor**, F. Ding, and N. V. Dokholyan. "Discrete Molecular Dynamics," ***Wiley Interdisciplinary Reviews: Computational Molecular Science***, 1: 80-92 (2011).
41. S. Yin, **E. A. Proctor**, A. A. Lugovskoy, and N. V. Dokholyan. "Fast screening of protein surfaces using geometric invariant fingerprints," ***Proceedings of the National Academy of Sciences USA***, 106: 16622-16626, (2009). [Featured in F1000]
42. K. J. Seu, A. P. Pandey, F. Haque, **E. A. Proctor**, A. E. Ribbe, and J. S. Hovis. "Effect of surface treatment on diffusion and domain formation in supported lipid bilayers," ***Biophysical Journal***, 92: 2445-2450, (2007).

TALKS

***denotes invited talk**

1. *Seminar, Department of Biomedical Engineering, University of Virgina (Spring 2024)

2. *Seminar, Department of Pharmacology, Penn State College of Medicine (November 2023)
3. *CMBE Young Innovator, Biomedical Engineering Society Annual Meeting (October 2023)
4. *Penn State Neuroscience Institute NeuroRetreat, Pennsylvania State University (May 2023)
5. *Machine Learning Workshop, Penn State College of Medicine (April 2023)
6. *Seminar, Department of Biomedical Engineering, Purdue University (November 2022)
7. Platform talk, Biomedical Engineering Society Annual Meeting, San Antonio, Texas (October 2022)
8. *Seminar, Center for Neural Engineering, Pennsylvania State University (September 2022)
9. *Seminar, Department of Biomedical Engineering, Pennsylvania State University (September 2022)
10. *Center for Neural Engineering Retreat, Pennsylvania State University (August 2022)
11. *CECAM Workshop on Challenges in Alzheimer's, Parkinson and Amyotrophic Lateral Sclerosis diseases, Paris, France (June 2022)
12. *Seminar, Department of Pharmacology, Penn State College of Medicine (virtual) (April 2022)
13. *Seminar, Translational Brain Research Center, Penn State College of Medicine (virtual) (April 2022)
14. *Seminar, College of Life Sciences, Tianjin University, Tianjin, China (virtual) (October 2021)
15. *Seminar, Department of Nutrition Sciences, Pennsylvania State University (virtual) (October 2021)
16. *Seminar, Department of Pharmacology, Penn State College of Medicine (virtual) (November 2020)
17. On-demand platform talk, Biomedical Engineering Society Annual Meeting, Virtual due to COVID-19 (October 2020)
18. *Noll Seminar, Department of Kinesiology, Pennsylvania State University (virtual) (October 2020)
19. *Seminar, Department of Molecular & Cellular Physiology, Penn State College of Medicine (virtual) (August 2020)
20. *Smart Materials Programmed to Operate in Living Systems, University of North Carolina at Charlotte (virtual) (May 2020)
21. *Seminar, Department of Chemistry, University of North Carolina at Charlotte (December 2019)
22. Platform talk, Biomedical Engineering Society Annual Meeting, Philadelphia, Pennsylvania (October 2019)
23. *Bioinformatics and Genomics Retreat, Pennsylvania State University (September 2019)
24. Seminar, Center for Neural Engineering, Pennsylvania State University (September 2019)
25. *International Conference on Environmental Ergonomics, Amsterdam, The Netherlands (July 2019)
26. *From Theory to Practice in Neuroscience 3rd Annual Workshop, Yerevan State Medical University, Yerevan, Armenia (November 2018)
27. *Engineering the Evolution Global Innovation Forum, Yerevan, Armenia (October 2018)
28. Platform talk, Biomedical Engineering Society Annual Meeting, Atlanta, Georgia (October 2018)
29. *Seminar, Center for Neural Engineering, Pennsylvania State University (October 2018)
30. *Neuroscience Seminar Series, Penn State College of Medicine (September 2018)
31. *Seminar, Department of Pharmacology, Pennsylvania State University (September 2018)
32. *Seminar, Department of Neurosurgery, Pennsylvania State University (August 2018)
33. *Seminar, Department of Biomedical Engineering, Pennsylvania State University (August 2018)
34. *Structural and Computational Biology and Biophysics Seminar Series, Department of Biology, Purdue University (March 2018)
35. *Seminar, Department of Biological Sciences, Molecular and Computational Biology Section, University of Southern California (February 2018)
36. *Seminar, Department of Biomedical Engineering, Duke University (February 2018)
37. *Seminar, Department of Bioengineering, University of Maryland College Park (January 2018)
38. *Seminar, Department of Biomedical Engineering, University of Texas Austin (January 2018)
39. *Seminar, Department of Bioengineering, University of Illinois Urbana-Champaign (November 2017)
40. Platform talk, Biomedical Engineering Society Annual Meeting, Phoenix, Arizona (October 2017)
41. *Bioinformatics and Computational Biology Alumni Seminar, University of North Carolina at Chapel Hill (September 2017)

42. *Summer School on Advances in Complex Systems, Como, Italy (July 2017)
43. *Seminar, Department of Computational and Systems Biology, University of Pittsburgh (May 2017)
44. *Seminar, Department of Biomedical Engineering, Cornell University (April 2017)
45. *Seminar, Department of Bioengineering, University of Illinois Urbana-Champaign (February 2017)
46. *Seminar, Department of Biomedical Engineering, The Pennsylvania State University (February 2017)
47. *Seminar, Department of Bioengineering, Rice University (February 2017)
48. *Seminar, Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute (February 2017)
49. *Seminar, Department of Biomedical Engineering, Binghamton University (January 2017)
50. *Seminar, Department of Chemistry and Biochemistry, University of Denver (January 2017)
51. *Seminar, School of Molecular Sciences, Arizona State University (December 2016)
52. *Alumni Seminar Series, Dokholyan laboratory, University of North Carolina at Chapel Hill (November 2015)
53. *Bioinformatics and Computational Biology Seminar, University of North Carolina at Chapel Hill (September 2013)
54. *Biological and Biomedical Sciences Program Graduate Student Recruitment, University of North Carolina at Chapel Hill (February 2013)
55. Department of Biochemistry and Biophysics Retreat, University of North Carolina at Chapel Hill (October 2012)
56. CECAM Workshop on Exploring Protein Interactions through Theory and Experiments, Lausanne, Switzerland (September 2012)
57. 2nd Workshop on the Physics of Protein Folding and Aggregation, Bressanone, Italy (February 2012)
58. *Biological and Biomedical Sciences Program Graduate Student Recruitment, University of North Carolina at Chapel Hill (January 2012)
59. Science in Progress Seminar, University of North Carolina at Chapel Hill, Department of Biochemistry and Biophysics (January 2012)
60. *Biological and Biomedical Sciences Program Graduate Student Recruitment, University of North Carolina at Chapel Hill (March 2011)

POSTER PRESENTATIONS (as presenter)

1. L. M. Beidler, M. K. Kuhn, **E. A. Proctor.** "Pathological tau alters astrocyte immunometabolism." Keystone Symposium: Advances in Neurodegenerative Disease Research and Therapy, June 16-20, 2019; Keystone, Colorado.
2. **E. A. Proctor**, D. D. Mowrey, N. V. Dokholyan. "Incorporation of the neurotoxin β-methylamino-L-alanine in SOD1 promotes protein misfolding and suggests a role in ALS etiology." Keystone Symposium: Advances in Neurodegenerative Disease Research and Therapy, June 17-21, 2018; Keystone, Colorado.
3. **E. A. Proctor**, S. M. Dineen, G. N. Audet, W. B. Adams, L. R. Leon, D. A. Lauffenburger. "Systems Quantification of Blood Cell Populations in Heat Stroke." ICB-TAB Research Review, August 29, 2017; Santa Barbara, California.
4. **E. A. Proctor**, P. Kota, A. A. Aleksandrov, L. He, J. R. Riordan, N. V. Dokholyan. "Rescue of mutant Cystic Fibrosis Transmembrane Regulator by allosteric network rewiring." IRB Barcelona BioMed Conference on Frontiers in Dynamics Simulations of Biological Molecules, November 4-6, 2013; Barcelona, Spain.
5. **E. A. Proctor**, J. Das, A. A. Aleksandrov, L. Cui, K. L. Nesbitt, J. R. Riordan, N. V. Dokholyan. "Ring of Fire: Charged residues that control channel conductance, open probability, and pore dynamics of Cystic Fibrosis Transmembrane Regulator." 27th Annual North American Cystic Fibrosis Conference, October 17-19, 2013; Salt Lake City, Utah.

6. **E. A. Proctor**, F. Ding, N. V. Dokholyan. “Structural and thermodynamic effects of post-translational modifications in mutant and wild-type Cu, Zn superoxide dismutase.” Colorado Protein Stability Conference, July 19-21, 2011; Breckenridge, Colorado.
7. **E. A. Proctor**, S. Yin, and N. V. Dokholyan. “Ultra-fast screen for protein similarity using geometric fingerprints.” From Computational Biophysics to Systems Biology, June 6-8, 2010; Traverse City, Michigan.