Michael W. Gramlich

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1.A Standard Biographical Data Sheet
Auburn University
Standard Biographical Data

Name: **Michael W. Gramlich**
Department: **PHYSICS** College: **COSAM**
Department Address: **380 DUNCAN DR., STE. 3114, AUBURN, AL, 36849**
Present Rank: **ASSOCIATE PROFESSOR**
Pay Basis: **9 MONTHS**
Graduate Faculty Status: **MEMBER** Date Awarded: 0**8/2018**

Education

Institution	Degree	Major	Date Awarded
University of Missouri – Columbia	Ph.D.	Physics	2011
University of Missouri – Columbia	M.S.	Physics	2007
University of Missouri – Columbia	B.S.	Physics	2005

Academic Experience

Institution	Position	Period of Appointment
Auburn University	Associate Professor	10/2025 – Present
Auburn University	Assistant Professor	08/2018 – 10/2025
Washington University in St. Louis - School of Medicine	Postdoctoral Res. Assoc.	01/2015 – 08/2018
University of Massachusetts – Amherst	Postdoctoral Res. Assoc.	01/2012 – 12/2014

4.B Research/Creative Work
4.B.a Article-Length Publications

*** Denotes that I am the corresponding author**
[#] Denotes Undergraduate/Graduate student lead project

(i) Articles in science archives or in final stages of preparation

26. (2026) [#] Presynapses Dynamically Modulate Spontaneous Release Frequency During the Early Time-Course of Plasticity Following Entropic Force Framework; P. Wilson, H. Stephens, R. Cotter, M. Menon, B. Plank, M. N. Reed, M. W. Gramlich***, (**Manuscript under Revision)

25. (2026) [#] Altered Mitochondria Morphology and Function Support P301L tau Mediated Increased Glutamate Release in Hippocampal Presynapses; R. Cotter, M. Hellums, D. Gray, D. Batista, J. Pfister, M.N. Reed, **M.W. Gramlich*** (Manuscript in Revision)

(ii) Articles in Refereed Journals

24. (2026) Prenatal cannabinoid exposure alters excitation-inhibition balance through glutamate and GABA receptor-mediated signaling; Priyanka D Pinky; Warren D. Smith; Miles T. Wiley; Jenna Bloemer; Vasiliki Syropoulou; Iva Durdanovic; Sharay E. Setti; Jeremiah C. Pfitzer; Savannah R. Perman; Kawsar U. Chowdhury; Kelli L. McDonald; Michael W. Gramlich; Subhrajit Bhattacharya; Vishnu Suppiramaniam; Miranda Reed; (Manuscript in press) Journal of Biological Chemistry

23. (2025)[#] Presynaptic recycling pool density regulates spontaneous synaptic vesicle exocytosis rate and is upregulated in the presence of β-amyloid; P. Wilson, M. Parkes, N. Kim, L. Cmelak, M.N Reed, **M.W. Gramlich*,** Cell Reports 44: 115410

22. (2024) [#]Troriluzole Rescues Glutamatergic Deficits, Amyloid and Tau Pathology, and Synaptic and Memory Impairments in 3xTg-AD Mice; J. Pfitzer, P.D. Pinky, S. Perman, E. Redmon, L. Cmelak, V. Suppiramaniam, V. Coric, I. A. Qureshi, **M.W. Gramlich*** & M.N. Reed*; Journal of Neurochemistry **00**: 1–19, *Co-corresponding authors

21. (2024) Myofascial Trigger Point (MTrP) Size and Elasticity Properties Can Be Used to Differentiate Characteristics of MTrPs in Lower Back Skeletal Muscle; P. Tsai, J. Edison, C. Wang, J. Sefton, K. Manning, **M.W. Gramlich***, Scientific Reports 14:11912

20. (2024) Characteristics of patients with myofascial pain syndrome of the low back; P. Tsai, J.L. Edison, C. Wang, **M.W. Gramlich**, K.Q. Manning, G. Deshpande, A. Bashir, J. Sefton; Scientific Reports 14:11912

19. (2023) [#] Recently recycled synaptic vesicles use multi-cytoskeletal transport and differential presynaptic capture probability to establish a retrograde net flux during ISVE in central neurons; M. Parkes, N.L. Landers, **M.W. Gramlich***, Front. in Cell and Devel. Bio. 11: 1286915

18. (2023) A kinesin-1 adaptor complex controls bimodal slow axonal transport of spectrin in Caenorhabditis elegans; O Glomb, et. al., Developmental Cell 58:1847 - 1863.e12

17. (2022) [#] rTg (TauP301L) 4510 mice exhibit increased VGLUT1 in hippocampal presynaptic glutamatergic vesicles and increased extracellular glutamate release; E Taipala, JC Pfitzer, M Hellums, MN Reed, **MW Gramlich*;** Frontiers in Synaptic Neuroscience 14: 925546

16. (2021) Myosin V regulates spatial localization of different forms of neurotransmitter release in central synapses; D. Maschi, **M.W. Gramlich,** V.A. Klyachko; Frontiers in Synaptic Neuroscience 13:650334

15. (2021) Distinguishing synaptic vesicle precursor navigation of microtubule ends with a single rate constant model; **M. W. Gramlich***, S. Balseiro-Gómez, S. M. Ali Tabei, M. Parkes and S. Yogev; Scientific Reports 11:3444,

14. (2019) Nanoscale Organization of Vesicle Release at Central Synapses; **MW Gramlich**, VA Klyachko; Trends in neurosciences 42:425-437

13. (2018) Myosin V functions as a vesicle tether at the plasma membrane to control neurotransmitter release in central synapses; D. Maschi[1], **M.W. Gramlich**[1], V. A. Klyachko; eLife 7:e39440; [1]Co-First Authors

12. (2017) Activity-Dependence of Synaptic Vesicle Dynamics; L. Forte[1], **M.W. Gramlich**[1], V.A. Klyachko; J. Neuroscience 37:10597-10610; [1]Co-First Authors

11. (2017) Actin/Myosin-V-and Activity-Dependent Inter-synaptic Vesicle Exchange in Central Neurons; **M.W. Gramlich**, V.A. Klyachko; Cell Reports 18:2096-2104

10. (2017) Single Molecule Investigation of Kinesin-1 Motility Using Engineered Microtubule Defects; **M.W. Gramlich**, L. Conway, W.H. Liang, J.A. Labastide, S.J. King, J. Xu, J.L. Ross; Scientific Reports 7:44290

9. (2017) Poisson-like height distribution of Ag nanoislands on Si(111)7x7; Y. Chen, **M.W. Gramlich**, S.T. Hayden, P.F. Miceli; Physical Rev. B 95**:**035419

8. (2016) In situ x-ray scattering study of Ag island growth on Si(111)7x7; Y. Chen, **M.W. Gramlich**, S.T. Hayden, P.F. Miceli; Physical Rev. B 94**:**045437

7. (2015) Critical Role of a Buried Interface in the Stranski-Krastanov Growth of Metallic Nanocrystals: Quantum Size Effects in Ag/Si(111)-(7×7); Yiyao Chen, **M.W. Gramlich**, S.T. Hayden, P.F. Miceli; Phys. Rev. Lett. 114:035501

6. (2014) Microtubule Orientation and Spacing within Bundles is Critical for Long-Range Kinesin-1 Motility; L. Conway, **M.W. Gramlich**, S.M.A. Tabei, J.L. Ross; Cytoskeleton 71: 595-610

5. (2014) Fluorescence imaging of nanoscale domains in polymer blends using stochastic optical reconstruction microscopy (STORM); **M.W. Gramlich**, J. Bae, R. Hayward, J.L. Ross; Optics Express 22:8438–8450

4. (2013) Modern Methods to Interrogate Microtubule Dynamics; M. Bailey, L. Conway, **M.W. Gramlich**, T.L. Hawkins, and J.L. Ross Integr. Biol. 5:1324-1333

3. (2011) Nonequilibrium behavior of the Pb wetting layer on Si(111)7×7; **M.W. Gramlich**, S. T. Hayden, Yiyao Chen, C. Kim, E. H. Conrad, M. C. Tringides, and P. F. Miceli; PHYSICAL REVIEW B 84:075433

2. (2010) Interface between Quantum Size Effect Pb-Nanocrystals and the Si(111)-7x7 Substate: An X-ray Diffraction Study; **M.W. Gramlich**, S.T. Hayden, C.A. Jeffery, C. Kim, R.Feng, E.H.Conrad, P.F. Miceli, Metallurgical & Materials Transactions A 45: 1150

1. (2006) Angle Dependence of Two-Wave Mixing in Photorefractive Multiple Quantum Wells **M. Gramlich**, S. Balasubramanian, P. Yu, Applied Physics Letters 89:222106

(ii) Invited Talks:

Date	Location	Title
2026	IAS Symposium on Synaptic Transmission and Neurological Diseases Hong Kong University of Science and Technology (HKUST)	Entropic Force Theory Predicts Spontaneous Synaptic Release in Normal and Alzheimer's Disease States
2024	University of Missouri - Columbia	Presynapses Utilize Constrained Entropic Force to Mediate Spontaneous Synaptic Communication
2023	Department of Anatomy, Physiology, and Pharmacology College of Veterinary Medicine, Auburn University	Molecular Mechanics of Memory in Normal Neurons and Disease States
2023	Department of Psychology, Auburn University	Molecular Mechanics of Memory in Normal Neurons and Disease States
2023	Edward Via College of Osteopathic Medicine Auburn University	Myofascial Trigger Point (MTrP) Size and Elasticity Properties Can Be Used to Differentiate Active and Latent MTrPs in Lower Back Skeletal Muscle
2021	Department of Physics, University of Northern Iowa	P301L Tau Mediates Increased VGlut1 per Synaptic Vesicle Leading to Increased Glutamate Release During Early Alzheimer's Disease Progression
2017	American Physical Society March Meeting, New Orleans, LA	Sharing is Caring: The role of Myosin-V in inter-synaptic vesicle transport
2014	American Physical Society March Meeting, Denver, CO	Motors are Stymied by Microtubule Defects

(iii) Selected Presentations:

Date	Location	Title
2024	American Physical Society March Meeting Minneapolis, MN	Astrocytes Mediate Hyperexcitability in Normal Neuronal Function During Tauopathy Disease Progression
2023	American Physical Society March Meeting Las Vegas, NV	P301L Tau Mediates Increased Glutamate Release in Hippocampal Neurons Via Increased VGLUT1 in Tauopathy Mouse Model
2016	Gordon Conference on Synaptic Transmission Waterville Valley, VT	Actin/Myosin-V- and Activity-Dependent Inter-Synaptic Vesicle Exchange in Central Neurons
2013	Single Molecule Biophysics Conference Aspen, CO	Microtubule Defects Inhibit Molecular Motor Motility
2013	Biophysical Society, Philadelphia, PA	Kinesin-1 Motility inhibited by Microtubule Defects
2010	Surface X-ray/Neutron Scattering Conference, Northwestern University, IL	Studies of wetting layer stability in the Pb/Si(111) using X-ray scattering
2010	APS March Meeting	Stability of the wetting layer in the Pb/Si(111)7x7 quantum-size-effect system
2007	39th Course on Crystallography Erice, Sicily	Novel Growth and Coarsening Behavior of Quantum Size Effect Nanocrystals: Pb on Si(111)7x7
2005	CLEO/QELS Optical Conference Baltimore, MD	Optimizing two-wave mixing efficiency in photorefractive quantum wells by selective angle tuning

(iv) Workshops attended:

Date	Location	Workshop
2012	Urbana-Champaign, IL	Center for the Physics of Living Systems (CPLC)
2007	Erice, Sicily	International School of Crystallography
2007	Argonne National Labs, IL	Argonne X-ray/Neutron Scattering School for Scattering Techniques

4.B.g Other research/creative contributions

(i) Organized Conference Sessions:

Date	Conference	Session Title
2025	APS	Physics of Neurodegenerative Disease, Diagnosis and Treatments
2024	APS	Physics of Neurodegenerative Disease, Diagnosis and Treatments
2023	APS	Physics of Disease, Diagnosis and Treatment
2017	APS	The Physics of Cellular Organization

2016	APS	The Physics of Cellular Organization
2015	APS	The Physics of Cellular Organization

(ii) Organized Workshops:

Date	Conference	Session Title
2013	UMass Undergraduate Data Analysis Workship	"Computational Techniques for Experimental Research" non-credit undergraduate course for biophysics research students
2012	NESM Workshop	New England Society for Microscopy (NESM) workshop on: "Lessons Learned by building a multicolor TIRF/STORM microscope"
2012	UMass- ICE workshop	University of Massachusetts-Amherst Institute for Cellular Engineering (ICE) workshop on: "Multi-Color Total Internal Reflection Fluorescence and Super-Resolution Imaging"

4.B.h Grants and Contracts

* Note: All grants are as sole PI unless otherwise listed

(i) Grants Received (external)

Title	Agency	Funding Period	Award
The roles of mitochondrial behavior and morphology in animal performance PI: Wendy Hood, Auburn University Role: CO-I Contribution: 10%	NSF	2023-2026	$950,000

(ii) Grants Received (internal)

Title	Agency	Funding Period	Award
Examining Inter-rater reliability of palpation and microvascular flow of myofascial trigger points- A continuation study PIs: P. Tsai, J. Edison Role: Co-PI Contribution: 30%	VCOM REAP	07/1/23-06/30/24	$28,258
A feasibility and pilot study of a multiple component mobile-aid pain reduction intervention to decrease myofascial pain syndrome PIs: P. Tsai, J. Edison Role: Co-I Contribution: 20%	VCOM REAP	07/1/22 – 06/30/23	$40,000
Exploration of objective diagnosis of myofascial pain syndrome of the low back and development of a home intervention program PIs: P. Tsai, J. Edison Role: Co-I Contribution: 20%	VCOM-REAP	07/01/21-06/30/22	$40,000
Role of Pre-synaptic vesicle mobility in Alzheimer's disease PIs: Dr. Gramlich, Dr. Miranda Reed Contribution: 80%	IGP (RSP)	08/1/20 – 08/1/22	$50,000

(iii) Grants Applied (Pending or Being Submitted):

Title	Agency	Funding Period	Award
Deducing the bioenergetic adaptations that enable the evolution of migration in birds PIs: Dr. Gramlich, Dr. Wendy Hood, Dr. Geoffrey Hill Contribution: 30%	NSF	2027-2030	$1,741,453
Deciphering the Biological Effects of Engineered Nanomaterials through the Lens of Mitochondria PI: Dr. Priscilla Lostch Role: Co-PI Contribution: 20%	NSF	2026 - 2029	$798,032

4.C.b Activities and Products:

- Spring into Science 2021
- Summer Science Institute 2024
- Summer Science Institute 2023
- Summer Science Institute 2019

4.D Service at Auburn University

4.D.a University level

None

4.D.b College of Science and Mathematics

- Advisor for OIED Mentorship Program for Underrepresented Students
- Course Peer Review Biology Department:
    - Biophysics 4970/7970
    - Nanomedicine 5550/6550

4.D.c Department of Physics

- Biophysics Faculty Search Committee (2022)
- Biophysics Faculty Search Committee (2020)
- Biophysics Faculty Search Committee (2019)
- Grad. Student Recruiting Committee (2019)
- Biophysics Strategic Planning Committee (2019-present)
- Physics Department Colloquium Coordinator (2019)

4.D.d Professional Service

- Member of American Physical Society
- Executive Committee Member American Physical Society Group on Medical Physics (APS-GMED)
    - Vice Chair (2024 – present)
    - Member at large (2021 – 2024)
- Review Editor for Frontiers in Molecular Neuroscience (IF 4.8)
- Reviewer for:
    - Journal of Biological Physics
    - Journal of Physics D: Applied Physics
    - Journal of Molecular Therapy