

Arun Anantharam  
Assistant Professor  
Department of Pharmacology  
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## **Education and Training**

9/1993-5/1998      B.A. Columbia University, Double major in Neurosciences and Comp. Literature  
6/1999-10/1999    Research Assistant, Johns Hopkins University School of Medicine  
11/1999-6/2001    Research Assistant, Mt. Sinai School of Medicine  
9/2001-5/2007     Ph.D. Cornell University, Dept. of Physiology and Biophysics

## **Academic Positions**

9/2007-5/2011     Postdoctoral Fellow, University of Michigan, Dept. of Pharmacology  
8/2011-6/2016     Assistant Professor, Wayne State University, Dept. of Biological Sciences  
6/2016-present     Assistant Professor, University of Michigan, Dept. of Pharmacology

## **Grants awarded (external)**

NIH R01 (NIGMS; Biophysics of Neural Systems section); Impact score 15; Percentile score 5.0  
Total Award: \$1,438,439; Dates: 9/1/2015-8/30/2020

American Heart Association, National Scientist Development Grant  
Total Award: \$308,000; Dates: 1/1/2013 – 12/31/2016

National Science Foundation, MCB Division, Cellular Dynamics and Function cluster  
Total Award: \$ 778,736 (awarded July 2016 and declined)

## **Grants awarded (internal at WSU)**

WSU Research Grant (awarded April 2015)  
Total Award: \$10,000

WSU Research Enhancement Grant (awarded September 2015)  
Total Award: \$75,000

Richard Barber Interdisciplinary Summer Research Grant in Biophysics  
Total Award: \$25,500 (awarded April 2013, 2014, 2015)

## Honors and Awards

6/2008-5/2009	NIH Postdoctoral NRSA fellowship (NIDA)
6/2009-5/2011	NIH Postdoctoral NRSA fellowship (NIGMS)
1/2013	National Scientist Development Award (American Heart Association)
6/2015	National Academies Education Fellow in the Life Sciences
2/2016	Wayne State University, CLAS Teaching Award

## Memberships in Professional Societies

2001-present	Member, Biophysical Society
2009-present	Member, Society for Neuroscience
2012-present	Member, American Heart Association
2013-present	Member, American Society for Cell Biology

## Peer-Review Service

National Science Foundation (MCB Division; Cellular Dynamics and Function Cluster), Review Panel Member (2016); Ad-hoc Reviewer (2011-present)

Journal reviewer for: *Cellular and Molecular Life Sciences*, *Journal of General Physiology*, *Biophysical Journal*, *Integrative Biology*, *Molecular Biology of the Cell*, *Frontiers in Neuroscience*, *Scientific Reports (Editorial Board)*

## Teaching

2012 (Winter) – Graduate seminar in Biology  
2012-2015 (Fall) – Comparative Physiology 4120  
2013-2016 (Winter) – Neurobiology 1 6690

## Committee and Organizational Service

### a) Institutional

2012, 2015 co-Chair, Retreat Organizing Committee, Biological Sciences Department  
2012 Judge for Wayne State University Graduate Exhibition.  
2012 Research 1010 Workshop Panelist Wayne State University  
2013 Speaker for high school AP Biology Day, Wayne State University  
2014 Biological Sciences faculty search committee, Systems Biology position.  
2013-2015 Graduate Admissions Committee, Biological Sciences Department  
2014-2015 Website redevelopment committee, Biological Sciences Department  
2011-present College of Liberal Arts and Sciences Machine Shop Steering Committee  
2012-present Wayne State Tennis team faculty liaison  
2014-present Research Infrastructure Committee, Biological Sciences Department  
2014-present Developed curriculum for and instituted a discovery-based lab for a “Comparative Physiology” course at Wayne State. From 2014-2015, this was the only discovery-based Biology lab course offered at the university.

- 2015-present Graduate Student Recruitment Committee, Biological Sciences Department
- 2015-present Chair, WSU Student Recruitment Committee, Biological Sciences Department
- 2015-present Brain@Wayne, Wayne State University Neuroscience Organization  
co-Chair of Communications Committee and Students Committee
- 2015-present co-Chair of exploratory committee to establish an undergraduate Neuroscience major at  
Wayne State University
- 2016-present “Physics for the Life Sciences” course sequence faculty member

#### b) Regional

- 2012-2013 Developed a portable “optics-bench” lab using the principles of active  
learning for high school students at the Detroit Edison Public School Academy. The goals  
were to broaden their interest and participation in STEM activities.
- 2014-present Developed an optics unit for the NASA-funded Science, Engineering,  
Math, and Aerospace Academy (SEMAA) for 9<sup>th</sup>-12<sup>th</sup> grade students in Detroit.

### **Consulting Positions**

- 2012-2013 Advisory Board Member, National Academy Foundation, Detroit-Edison Public School  
Academy, Detroit, MI.

### **Seminars and Invited Presentations**

- 6/2012 Gordon Research Conference on “Protein processing, trafficking, and secretion”. New  
London, NH.
- 2/2014 Exocytosis/Endocytosis Symposium speaker. Biophysical Society Meeting. San  
Francisco, CA.
- 4/2014 Department of Biomedical Sciences, Grand Valley State University, Allendale, MI. Host  
– Dr. Daniel Bergman.
- 4/2014 Department of Neuroscience, University of Wisconsin. Host – Dr. Edwin R. Chapman.
- 10/2014 Department of Physiology and Biophysics, Case-Western Reserve University. Host – Dr.  
Rajesh Ramachandran.
- 4/2015 Department of Neuroscience, University of Toledo. Host – Dr. David Giovannucci.
- 4/2015 Department of Pharmacology and Physiology, University of Rochester. Host – Dr. Paul  
Kammermeier.
- 4/2015 Department of Molecular, Cellular, and Biomedical Sciences, University of New  
Hampshire. Host – Dr. Kelley Thomas
- 5/2015 Department of Chemistry, University of Colorado, Denver. Host – Dr. Jefferson Knight
- 9/2015 Center for the Physics of Living Cells, University of Illinois, Urbana-Champaign. Host –  
Dr. Paul Selvin.
- 9/2015 Department of Biophysics, University of Michigan. Host – Dr. Sarah Veatch.
- 11/2015 Department of Biological Sciences, University of Cincinnati. Host – Dr. Joshua Benoit.
- 12/2015 Department of Pharmacology, Indiana University School of Medicine. Host – Dr. Bryan  
Yamamoto.

- 1/2016 Department of Molecular Physiology and Biological Physics, University of Virginia.  
Host – Dr. Lukas Tamm.
- 2/2016 Department of Pharmacology and Therapeutics, University of Florida. Host – Dr. Jeff  
Martens.

## **Bibliography**

### *Peer-reviewed Journals and Publications*

1. **Anantharam A**, Lewis A, Panaghie G, Gordon E, McCrossan ZA, Lerner DJ, and Abbott GW. RNA interference reveals that endogenous *Xenopus* MinK-related peptides govern mammalian K<sup>+</sup> channel function in oocyte expression studies. *Journal of Biological Chemistry* 2003;278:11739-11745.
2. Roepke TK, **Anantharam A**, Kirchhoff P, Busque SM, Young JB, Geibel JP, Lerner DJ, and Abbott GW. The KCNE2 potassium channel ancillary subunit is essential for gastric acid secretion. *Journal of Biological Chemistry* 2006;281:23740-23747.
3. **Anantharam A**, Tian Y, and Palmer LG. Open probability of the epithelial sodium channel is regulated by intracellular sodium. *Journal of Physiology-London* 2006;574:333-347.
4. **Anantharam A**, Palmer LG. Determination of epithelial Na<sup>+</sup> channel subunit stoichiometry from single-channel conductances. *Journal of General Physiology*. 2007;130(1):55-70.
5. **Anantharam A**, Onoa B, Edwards RH, Holz RW, Axelrod D. Localized topological changes of the plasma membrane upon exocytosis visualized by polarized TIRFM. *Journal of Cell Biology*. 2010;188(3):415-28.
6. **Anantharam A**, Axelrod D, Holz RW. Polarized TIRFM reveals changes in plasma membrane topology before and during granule fusion. *Cellular and Molecular Neurobiology*. 2010;30(8):1343-9.
7. **Anantharam A**, Bittner MA, Aikman RL, Stuenkel EL, Schmid SL, Axelrod D, et al. A new role for the dynamin GTPase in the regulation of fusion pore expansion. *Molecular Biology of the Cell*. 2011;22(11):1907-18.
8. Jenkins PM, McIntyre JC, Zhang L, **Anantharam A**, Vesely ED, Arendt KL, et al. Subunit-dependent axonal trafficking of distinct alpha heteromeric potassium channel complexes. *The Journal of Neuroscience*. 2011;31(37):13224-35.  
[I performed TIRF imaging to assay potassium channel trafficking in neurons]
9. **Anantharam A**, Axelrod D, Holz RW. Real-time imaging of plasma membrane deformations reveals pre-fusion membrane curvature changes and a role for dynamin in fusion pore expansion. *Journal of Neurochemistry* 2012; 122(4): 661-671.
10. Lama RD, Charlson K, **Anantharam A**, Hashemi P. Ultra-fast detection and quantification of brain signaling molecules with carbon fiber microelectrodes. *Analytical Chemistry* 2012; 84(19): 8096-101.

11. Passmore DR, Rao TC, Peleman AR, **Anantharam A**. Imaging plasma membrane deformations with pTIRFM. *Journal of Visualized Experiments: JoVE* 2014(86).
12. Weiss AN, **Anantharam A**, Bittner MA, Axelrod D, Holz RW. Lumenal Protein within Secretory Granules Affects Fusion Pore Expansion. *Biophysical Journal*. 2014;107(1):26-33.
13. Rao TC, Passmore DR, Peleman AR, Das M, Chapman ER, **Anantharam A**. Distinct fusion properties of synaptotagmin-1 and synaptotagmin-7 bearing dense core granules. *Molecular Biology of the Cell*. 2014;25(16):2416-27.
14. Holz RW, **Anantharam A**. Food deprivation induces presynaptic plasticity in the autonomic nervous system. *PNAS* 2016; 113 (21): 5766-5767.

*Book Chapters*

15. **Anantharam A**, Diversé-Pierluissi MA. Biochemical approaches to study interaction of calcium channels with RGS12 in primary neuronal cultures. *Methods in Enzymology* 2002;345:60-70.
16. **Anantharam A**, Diversé-Pierluissi MA. Studies of endogenous G-protein-mediated pathways in neurons by whole-cell electrophysiology. *Methods in Enzymology* 2002;345:51-9.
17. **Anantharam A**, Abbott GW. Does hERG coassemble with a beta subunit? Evidence for roles of MinK and MiRP1. *Novartis Foundation Symposium* 2005;266:100-117.
18. Passmore DR, Rao T, **Anantharam A**. Real time investigation of plasma membrane deformation and fusion pore expansion using polarized TIRFM. *Methods in Molecular Biology* 2014;1174: 263-73.