

# Aditi Das, Ph.D.

## Associate Professor (with Tenure)

University of Illinois at Urbana-Champaign, Urbana IL 61801

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### CURRENT POSITION

**UNIVERSITY OF ILLINOIS-URBANA CHAMPAIGN** 2012- Present  
Associate Professor (Tenured), Department of Comparative Biosciences  
Pharmacology and Toxicology Division, College of Veterinary Medicine

#### *Department Affiliate Appointments*

- Department of Biochemistry (2012- present)
- Department of Bioengineering (2012-present)

#### *Center Affiliate Appointments*

- Beckman Institute for Advanced Science and Technology (2012- present)
  - Center for Biophysics and Quantitative Biology (2015- present)
  - Division of Nutritional Sciences (2015- present)
  - Neuroscience Program (2015- present)
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### RESEARCH AREA

Dietary consumption of  $\omega$ -3 and  $\omega$ -6 fatty acids has been linked to several health benefits in humans. This is partly mediated by the conversion of  $\omega$ -3 and  $\omega$ -6 fatty acids into eicosanoids via the cytochrome P450 epoxygenase pathway.

Biochemical mechanism of CYP epoxygenases: Our goal is to elucidate the biochemistry of the allosteric modulation of cytochrome P450 epoxygenases by  $\omega$ -3 and  $\omega$ -6 fatty acids and selected drugs. We focus our studies on CYP2J2 epoxygenase that is highly expressed in the human cardiomyocytes and brain.

Cannabinoid and Endocannabinoid metabolism by cytochrome P450s: Endocannabinoids are *cannabis*-like molecules that are derived from  $\omega$ -3 and  $\omega$ -6 fatty acids. The goal of our laboratory is to examine the metabolism of endocannabinoids and phytocannabinoids by CYP epoxygenases to produce endocannabinoid-epoxides that exhibit anti-neuroinflammatory properties.

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### EDUCATION

#### **UNIVERSITY OF ILLINOIS-URBANA CHAMPAIGN**

2006- 2011, *Advisor: Prof. Stephen G. Sligar*

Postdoctoral Research Fellow, Northwestern University - Nanoscale Science & Engineering Center,  
Department of Biochemistry and Beckman Institute for Science & Technology

#### **PRINCETON UNIVERSITY** 2001-2006, *Advisor: Prof. Michael H. Hecht*

Ph.D. (Chemistry) – 2005; M.A. (Chemistry) - 2003

#### **I. I. T. (INDIAN INSTITUTE OF TECHNOLOGY), KANPUR** 1996-1998, *Advisor: Prof. Sabyasachi Sarkar*

M.Sc. (Chemistry)

#### **ST. STEPHEN'S COLLEGE, DELHI UNIVERSITY, INDIA**, 1993-1996

B.Sc. (Honors) (Chemistry)

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## AWARDS AND HONORS

- **2019 Mary Swartz Rose Young Investigator Award from American Society for Nutrition (ASN)**
- **2019** Editorial board of *Frontiers in Pharmacology*
- **2018.** National Multiple Sclerosis Society, High-risk Pilot Award
- **2018. Gordon Hammes Scholar's Award (runner up), Invited viewpoint in Biochemistry**
- **2018.** Faculty of 1000 recommendation for Doxorubicin Paper in Biochemistry
- **2018.** Member (AdHoc), NIH Study Section, Macromolecular Structure and Function A Study Section
- **2018.** Editorial Board Member, Journal of Clinical Pharmacology & Toxicology
- **2017. Colin Wraight best paper award from the Department of Biochemistry**
- **2016.** Editorial Board Member, ChemSelect, ChemPubSoc Europe, Wiley VCH
- **2014-2016.** Lightning Talk, LIPID MAPS meeting, San Diego, CA
- **2015. American Heart Association (AHA), National Scientist Development Grant**
- **2014.** NIEHS funded travel award, International Winter Eicosanoid Conference
- **2013.** Moog Lecturer at Hauptmann Woodward Center (Prestigious lecture series)
- **2013.** American Chemical Society (ACS) Travel Award
- **2013.** Pew Scholar's Award Nominee (One person from the UIUC campus)
- **2010.** ACS Biological Division Travel Award.
- **2007. Outstanding Researcher Award, NSF-Nanoscale Science and Engineering Center** (Awarded annually to the top researcher at the center).
- **2006-11.** NSF-Nanoscale Science and Eng. Center (NSEC) Postdoctoral Fellowship.
- **2005. FMC CORPORATION Graduate Fellowships in Chemistry, Princeton.** (Awarded to the top graduate student in Biochemistry at Princeton University)
- **2004.** Dean's List for Honorary Fellowship, Princeton (Top graduating student at Princeton U).
- **2001.** Science and Engineering First Year Fellowship, the Graduate School, Princeton University.
- **1998.** CSIR-JRF Fellowship, India. Awarded annually to the top students in chemistry country-wide.
- **1993-96.** Merit List Scholarship, Delhi University, India. (Top 10 of 900 undergrads in chemistry.)

## AWARDS AND HONORS TO MENTORED STUDENTS

### *Graduate Students*

- **2019** Frank W. Kari Memorial Award from DNS to Mr. Justin Kim
- **2018** Best biochemistry paper award from the Department of Biochemistry Mr. William Arnold
- **2018** Best speaker award at Vetmed research day to Ms. Lauren Carnevale
- **2018** Best lightning speaker award at MCB to Mr. Austin Weigle
- **2017** DNS research excellence award to Mr. Justin Kim
- **2017** Best paper award from the Department of Biochemistry to Mr. William Arnold
- **2016** Best poster award in the Midwest Enzyme Conference to Mr. William Arnold and Ms. Hannah Huff (5/260 poster presenters)
- **2016** Govindjee Award for Excellence in Biological Research to Mr. William Arnold
- **2016** Morris Animal Foundation Veterinary Scholar Fellowship to Ms. Nicole Sidebotham
- **2016** Craig Hazel Fellowship to Mr. Amogh Kambalyal, MD student
- **2015** Joseph O. Alberts Award to Daniel McDougale (Top student, College of Veterinary medicine)
- **2014** American Heart Pre-doctoral Fellowship to Daniel McDougale

## RESEARCH ACTIVITIES

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### GRANTS FUNDED

**(Grants received as independent faculty member from National Institute of Health (NIH)-NIGMS and NIDA, American Heart Association (AHA), National multiple sclerosis society, Manus Biosynthesis and Morris Animal Foundation)**

**Total Number of Grants Obtained = 16**

**Number of Different Agencies = 6**

### Current

#### **Grants received as PI**

- **Das, Aditi** (PI). “Biochemical Mechanism of Eicosanoid Synthesizing Enzymes” National Institute of Health, **NIH** R01 GM115584-01A1, 04/01/2017-03/30/2022
- **Das, Aditi** (PI). Josephine Watson, Diversity Supplement, “Biochemical Mechanism of Eicosanoid Synthesizing Enzymes” **NIH** R01GM115584-02S1, 04/01/2018-03/30/2020
- **Das, Aditi** (PI), NIGMS Instrument Supplement to buy HPLC-MS, “Biochemical Mechanism of Eicosanoid Synthesizing Enzymes” **NIH** R01GM115584-A08, 08/01/2018
- **Das, Aditi** (PI). “Biochemical Mechanism of CYP2J2 epoxygenase” National Scientist Development Award, **American Heart Association (AHA)**. 15SDG25760064, 07/2015-07/2019
- **Das, Aditi** (PI). “Discovery of omega-3 endocannabinoid epoxides and elucidation of their neuroinflammatory properties” National Institute of Health, **NIH** R03 RDA042365A, 07/01/2017-06/03/2019
- **Das, Aditi** (PI), Andrew Steelman (MPI). “Anti-inflammatory endocannabinoids as potential MS therapeutics” **National Multiple Sclerosis Society (NMSS)**, Grant #: PP-1805-30908, 10/01/18-09/20/20
- **Das Aditi** (MPI), Andrew Steelman (MPI). “Infection, myelin plasticity and behavior” ILLU-538-932, U.S. Department of Agriculture (**USDA**) -Future Interdisciplinary Research Explorations (FIRE), 10/01/2018-09/30/2020
- **Das, Aditi** (PI), Andrew Steelman (Co-I). “Anti-inflammatory Endocannabinoids as Potential MS Therapeutics,” **Division of Nutritional Science’s** Vision 20/20 program, 10/15/18-10/14/2020

#### **Grants received as Co-PI**

- **Das Aditi** (Co-PI), Josh Gulley (Co-PI) and Liang Nu-Chu (PI), “Consequences of simultaneous alcohol and cannabis use in adolescence”, **NIH** R03 DA043701-01A1, 10/01/2018/-09/30/2019
- **Das, Aditi** (Co-PI), Josh Gulley (PI) and Liang Nu-Chu (Co-PI), **NIH** 1R21DA045175 - 01A1, 10/15/18-10/14/2020
- **Das. Aditi (Preceptor)**. Rodney Johnson (PI), USDA, National Needs Graduate and Postgraduate Fellowship Grants Program Funding Opportunity (NNF)

### Completed

- **Das, Aditi** (PI), “Taxol Biosynthesis” **Manus Biosynthesis**, this is a research collaboration with Manus Biosynthesis, to synthesize taxol precursors in bacteria, 02/2014-Present Ongoing Gift Funds

- **Das, Aditi** (PI). “Mechanisms of Membrane Bound Metalloenzymes in Eicosanoid Biosynthesis.” Campus Research Board Programs, 08/2012-12/2013, \$19,000.  
**Fellowships for Students**
- **Das, Aditi** (PI). Sidebotham, Nicole, “Biochemical Mechanism of Metastasis in Osteosarcoma”. Morris Animal Foundation, 05/2016-07/2016, \$5,000.
- **Das, Aditi** (PI), Krapf, John (Co-PI), “Elucidating the Mechanism of CYP2J2 Epoxygenase” American Heart Association Fellowship, 05/2015-07/2015 \$4,000
- **Das, Aditi** (PI), McDougale Daniel (Co-PI), “Biochemical mechanism of CYP2J2 epoxygenase and interrogation of EET receptors.” American Heart Association Fellowship, 07/2014-07/2016, \$52,000.
- **Das, Aditi** (PI), Zelasko, Susan (Co-PI), “Elucidating the Mechanism of Unusual Stereo-selectivity in CYP2J2 Epoxygenase” American Heart Association Fellowship, 05/2012-07/2013 \$ 4,000
- **Das, Aditi** (PI), Rouck, John (Co-PI), “Biochemical Mechanism of CYP2J2 Epoxygenase highly expressed in the heart”, American Heart Association Fellowship, 05/2013-07/2014 \$ 4,000

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## RESEARCH EXPERIENCE

### UNIVERSITY OF ILLINOIS-URBANA CHAMPAIGN

Associate Professor, 2019- Present

Assistant Professor, 2012- 2018

- Biochemical mechanism of cytochrome P450 epoxygenases involved in dietary fatty acid metabolism.
- Endocannabinoid metabolism by cytochrome P450s.
- Evaluation of anti-inflammatory lipid metabolites in neuroinflammation
- Structure-function studies of membrane proteins in Nanodiscs.

#### Active Collaborations

- Total synthesis of omega-3 endocannabinoid epoxides (Prof. David Sarlah)
- Use of simulation approaches to study Cannabinoid Receptors (Prof. Diwakar Shukla)
- Molecular Dynamics Study of Drug and Lipid Binding to CYP epoxygenases (Prof. Emad Tajkhorshid)
- Pro-resolving  $\omega$ -3 FA mediators facilitate resolution of neuroinflammation (*Collaborator: Prof. Rodney Johnson & Prof. Andrew Steelman*).
- Lipidomics changes during relapse and remission in Multiple sclerosis (*Prof. Andrew Steelman*)
- Protein and lipid biomarkers in osteosarcoma (*Collaborator: Prof. Timothy Fan*).
- Using massively parallel reporter assay (MPRA) to study the role of IL-6 enhancer in inflammation (*Collaborator: Prof. Saurabh Sinha*)
- Redesigning diterpinoid cytochrome P450s for natural product biosynthesis (*Collaborator: Dr. Ajikumar Parayil, Manus Biosynthesis*).
- Synthesis of biocompatible nanoparticles for ultrasensitive detection of biological processes (*Collaborator: Prof. Andrew Smith, Prof. Logan Liu*).
- Solution TEM and Cryo-EM studies of Membrane Proteins in Nanodiscs (*Collaborator: Prof. Qian Chen*)

### UNIVERSITY OF ILLINOIS-URBANA CHAMPAIGN

Post-Doctoral Research Fellow, 2006-2011, Advisor: Prof. Stephen G. Sligar

- Mechanism of redox potential regulation and electron transfer kinetics in membrane bound cytochrome P450s and nitric oxide synthase (NOS). (*Collaborator for NOS: Prof. Thomas Poulos*)
- Ultrasensitive detection of signal transduction in membrane proteins using Localized Surface Plasmon Resonance (LSPR). (*Collaborators: Prof. Richard Van Duyne, Prof. George Schatz*)
- Isolation of A $\beta$  oligomers (involved in Alzheimer’s disease) binding receptors from synaptosomes into Nanodiscs. (*Collaborator: Prof. William Klein*)
- Development of label free assay for cholera toxin binding to receptors in Nanodisc using nanomechanical detection methodology. (*Collaborator: Prof. Vinayak Dravid*)

## PRINCETON UNIVERSITY

Research Associate, Chemistry, 2001 – 2005, Advisor: Prof. Michael H. Hecht

- Electrochemical studies of *de novo* designed alpha helical heme proteins.
- Nanografting *de novo* proteins onto gold surface (*Prof. Giacinto Scoles*)
- Peroxidase activity of *de novo* designed heme proteins on gold surface
- Evaluation of small molecule binding to designed proteins using solution-state NMR

## NAVAL RESEARCH LABORATORY

Summer Intern, 2002, 2004, Supervisor: Dr. Scott. A. Trammell

- Design of TNT biosensors using *de novo* designed proteins as scaffolds.

## I. I. T. (DELHI)

Research Fellow, Center for Biomedical Engineering, 1998-2001 Advisor: Prof. Alok. R. Ray

- Synthesis of polymers for use in bone tissue engineering.

## I. I. T. (KANPUR)

Research Scholar, Chemistry Department, 1996-1998, Advisor: Prof. Sabyasachi. Sarkar

- Synthesis of molybdenum based functional mimics of aerobic acetylene hydratase enzymes.

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## PUBLICATIONS

**Total number of papers published: ~44**

**Total number of papers published from independent position with graduate students: 26**

**h-index (google scholar): 23**

**Total Citations: 1569**

### **Papers Published During Independent Faculty Position**

**\* denotes corresponding author and papers published with graduate students**

#### **Manuscripts Published From Independent Position**

44. Arnold, W., Carnevale, L., Watson, J. and Das, A\*, "Serotonin derivative of omega-6 fatty acid makes potent TRPV1 channel agonists with potential Anti-Pain properties" *Nature Communications*, 2019  
*Paper has been invited for revisions*

43. Huff, H., Maroutsos, D., and Das, A\*, "Macromolecular Crowding and Lipid Composition Controls CYP2J2 activity", *Protein Science*, 2019, *Accepted*

43. Watson, J, Kim, J. and Das, A\* "Omega-3 Endocannabinoids: What do they do?", *Prostaglandins and Other Lipid Mediators (POLM)*, 2019, *Accepted with minor revisions*

42. Roy, J., Fan, T., Payam, Sinha S., and **Das, A\***, "Global Analysis of Osteosarcoma Lipidomes Reveal Altered Lipid Profiles in Metastatic vs. Non-Metastatic Cells" *J. Lipid Res.* 2019 *Accepted*

41. Nelson, N., Law, Weingarten, W., Carnevale, L., **Das, A.** Liang, Nu-Chu, "Subcutaneous or oral delta9-tetrahydrocannabinol administration in combination with moderate alcohol consumption differently alter ingestive behaviors in adolescent rats", *Psychopharmacology*, *Accepted*

40. Carnevale, L., Arango, A., Tajkhorshid, E., and **Das, A\***, "Endocannabinoid Virodhamine Inhibits Cardiovascular CYP2J2 epoxygenase", *ACS-Biochemistry*, 2018, *Accepted*

39. Arnold, W., and **Das, A\***. "Human Cardiovascular CYP2J2 is modulated by Doxorubicin" *Biochemistry*, 2018, *Viewpoint, Invited paper. 57(16):2294-2296*

38. Roy, J., Watson, J., Hong, I., Fan, T., and Das, A\*, "Endocannabinoid epoxides regio-isomers have anti-tumorigenic properties" *J. Med. Chem.*, 2018 Accepted. (**Altmetric score: 237**)

**In News: Highlighted in several news sites.** <https://acs.altmetric.com/details/43321817/news>

37. Arnold, W., Weigle, A. and Das, A\*, "Cannabinoids inhibit cardiac CYP2J2 mediated endocannabinoid metabolism" *Journal of Inorganic Biochemistry*, 2018, 88-99. doi: 10.1016/j.jinorgbio.2018.03.016.

36. Arnold, W., Baylon, J., Tajkhorshid, E.\* and Das, A\*. "Arachidonic Acid Metabolism by Human Cardiovascular CYP2J2 is Modulated by Doxorubicin" *Biochemistry*. 2017 Dec 26;56(51):6700-6712

- Faculty of 1000 recommended
- Gordon Hammes Scholar Award Runner Up

35. McDougle, D., Abdeen, A., Adili, R., Caputo, M., Krapf, J., Johnson, R., Kilian, K., Holinstat, M., Das, A.\* "Anti-inflammatory omega-3 endocannabinoid epoxides", *Proceedings of the National Academy of Sciences (Direct Submission)* 2017 doi:10.1073/pnas.1610325114

#### **In News**

Highlighted in several news sites. <https://pnas.altmetric.com/details/21631043/news>

Forbes, Nutra ingredients, MNT, Bioscience Technology, News Medical, R&D, Health Medicine Network, Medical Express, Science Daily, EurekaAlert

(**Altmetric score: 167**)

This Altmetric score means that the article is in the 98 percentile of a sample of 142345 of the 144236 tracked articles of a similar age in all journals and is in the 94 percentile (ranked 39) of the 673 tracked articles of a similar age in PNAS

34. Rouck, J.\*, Krapf, J.\* Roy, J. and Das, A.\*, "Recent Advances in Nanodisc Technology for studying Membrane Proteins (2012-2017)". *FEBS Letter*, 2017doi: 10.1002/1873-3468.12706

33. Roy, J. Pondenis, H., Fan T.\*, Das, A\*, "Comparative Proteomic Analysis of Metastatic and Non-metastatic Osteosarcoma of Human and Canine Origin" *PLOS One*, 2017, <https://doi.org/10.1371/journal.pone.0183930>

32. Arnold, W., Baylon, JL, Tajkhorshid, E.\* and Das, A.\*, "Asymmetric Binding and Metabolism of Polyunsaturated Fatty Acids (PUFAs) by CYP2J2 Epoxygenase" *Biochemistry*, 2016, 6969

31. Roy, J. Adili, Raymond, Holistat, M., and Das, A\*,"Development of Poly Unsaturated Fatty Acid Derivatives of Aspirin for Inhibition of Platelet Function" *Journal of Pharmacology and Experimental Therapeutics*, 2016, 134

30. Rouck\*, J.Bradley\*, Kambalyal, A.,Parayil, A.\* and Das, A\*., "Expression and Purification of cytochrome P450 taxadiene 5alpha-hydroxylase in E.Coli" *Protein Expression and Purification*, 2016, 60

29. Biggs, B., Rouck, J., Kambalyal, A., Arnold, W., Lim, C-G., de Mey, M., O'Neil-Johnson, M., Starks, C., Das, A.\* and Parayil, A., "Orthogonal assays clarify the oxidative biochemistry of Taxol P450 CYP725A4" *ACS Chemical Biology*, 2016, 1445

28. Lim, SJ, McDougle, D., Das, A\* and Smith, A.\*, " Lipoprotein Nanoplatelets: Fluorescent, Zwitterionic Probes for Molecular and Cellular Imaging" *Journal of American Chemical Society (JACS)*, 2016, 64

27. Plucinski, L., Gartia, M., Arnold, W., Ameen, A., Chang, T., Hsiao, A., Liu, G.\* , Das, A.\*, "Substrate Binding to CYP2J2- Nanodiscs Detected by Nanoplasmonic Lygurgus Cup Arrays" *Biosensors and Bioelectronics*, 2016, 337.

26. Roy, J. Pondenis, H., Fan T.\*, **Das, A\***, "Direct Capture of Functional Proteins from Mammalian Plasma Membranes into Nanodiscs" *Biochemistry*. **2015, 6299**
25. McDougle, D\*, Baylon, J.\* Meling D., Kambalyal, A., Tajkorshid, E\*, and **Das, A\*** "A single residue mutation converts a membrane protein into a soluble protein without loss of function" *Biochimica Biophysica Acta. Biomembranes*. **2015, 2460**
24. Meling, D., Zelasko, S, Kambalyal, A., Roy, J. and **Das A\***. "A critical residue that controls the isomerization of prostaglandin in thromboxane synthase" *Biophysical Chemistry*, **2015, 34-40**.
23. Wilcox, K., **Das, A.**, Velasco, P., Sligar S.G. and Klein, W. "Soluble membrane protein libraries for cell-free studies of ligand binding to biological membrane proteins – application to toxic A $\beta$  oligomers (ADDLs)" *PLOS ONE*. **2015, 10(4): e0125263**
22. Zelasko, S., Arnold, W., **Das, A\*** "Metabolism of Endocannabinoids by Cytochrome P450 monooxygenases, *Prostaglandins and Other Lipid Mediators*. **2015, 112**.  
(News): Most downloaded article in the journal for last 90 days.
21. McDougle, D., Kambalayal, A., Meling, D. and **Das, A\***. "Endocannabinoids - Anandamide and 2-Arachidonoylglycerol are Substrates for Human Cytochrome P450 2J2 Epoxygenase. *Journal of Pharmacology and Experimental Therapeutics*, **2014, 351, 616**.
20. Meling, D., and **Das, A.\***," CYP2J2 epoxygenase membrane anchor plays an important role in facilitating electron transfer from CPR" *Journal of Inorganic Biochemistry*, **2015, 47**.
19. Orlando, B., McDougle, D., Lucido, M., Eng, E., Stokes, D., **Das, A\***, and Malkowski, M\*. "Cyclooxygenase-2 Catalysis and Inhibition in Lipid Bilayer Nanodiscs" *Archives of Biochemistry and Biophysics* **2014, 33**.
18. **Das, A\***, Srivarma, S., Mularczyk, C. Meling, D. and. "Substrate binding thermodynamics and kinetics to thromboxane synthase in model lipid bilayers", *ChemBioChem* **2014, 15, 892**.
17. McDougle, D., Palaria, A., Magnetta E., and **Das, A\***. "Role of N-terminus of CYP2J2 epoxygenase in association with model lipid bilayers", *Protein Science*, **2013, 964**.
16. Zelasko, S, Palaria, A. and **Das, A\***. Optimizations to Achieve High-Level Expression of Cytochrome P450 Proteins Using Escherichia Coli Expression Systems, *Protein Expression and Purification*, **2013, 77**.

**Papers published during postdoctoral and Ph.D. research**

15. Marty, M., **Das, A.**, Sligar, S.G. "Ultra-thin layer MALDI mass spectrometry of membrane proteins in nanodiscs", *Analytical Bioanalytical Chemistry*, **2012, 402, 721-729**.
14. **Das, A.**, Wei, Y., Pelczer, I. and Hecht, M.H. "Binding of Small Molecules to Cavity Forming Mutants of a De Novo Designed Protein", *Protein Science*, **2011, 20, 702-711**.  
(**Editor Highlight**): <http://onlinelibrary.wiley.com/doi/10.1002/pro.624/full#sec1-2>
13. Turk, S., **Das, A.**, Sligar, S. G. and Dravid, V. "Nanomechanical Detection of Cholera Toxin Using Microcantilevers Functionalized with Ganglioside-Nanodiscs" *Nanotechnology*, **2010, 21, 435502**.  
(In News): Nanomechanical sensor can detect cholera. *Nanowerk Spotlight*  
<http://www.nanowerk.com/spotlight/spotid=18381.php>

12. **Das, A.** and Sligar, S.G. "Modulation of the Cytochrome P450 Reductase Redox Potential by the Phospholipid Bilayer" *Biochemistry*, **2009**, *48*(51), 12104-12.
11. **Das, A.**, Zhao, J. Van Duyne, R. and Sligar, S.G. "Screening of Type I and II Drug Binding to Human Cytochrome P450-3A4 in Nanodiscs by Localized Surface Plasmon Resonance Spectroscopy", *Anal. Chem.*, **2009**, *81* (10), 3754–3759.
10. Li, H., **Das, A.**, Sibhatu, H., Jamal, J., Sligar, S. and Poulos, T.L. "Exploring the Electron Transfer Properties of Neuronal Nitric Oxide Synthase by Reversal of the FMN Redox Potential" *J. Biol. Chem.* **2008**, *283* (50), 34762-34772.
9. Zhao, J., **Das, A.** Sligar, S.G. and Van Duyne, R. "Resonance Localized Surface Plasmon Spectroscopy: Sensing Substrate & Inhibitor Binding to Cytochrome P450" *J. Phys. Chem. C* **2008**, *112* (34), 13084-13088.
8. Gruia, F., Ionascu, D., Kubo, M. Ye, X., Dawson, J., Osborne, R.L., Sligar, S. G., Denisov, I., **Das, A.** Poulos, T. L., Turner, J. and Champion, P.M. "Low Frequency Dynamics of *Caldariomyces fumago* Chloroperoxidase Probed by Femtosecond Coherence Spectroscopy" *Biochemistry* **2008**, *47*(18), 5156-5167.
7. **Das, A.**, Grinkova, Y. and Sligar, S.G. "Redox Potential Control by Drug Binding to Cytochrome P450 3A4." *J. Am. Chem. Soc.* **2007**, *129* (45), 13778-13779
6. **Das, A.** and Hecht, M. H. "Peroxidase Activity of *De Novo* Heme Proteins Immobilized on Electrodes." *J. Inorg. Biochem.* **2007**, *101* (11-12), 1820-1826
5. Kimmich, N., **Das, A.**, Sevrioukova, I, Meharena, Y., Sligar, S.G. and Poulos, T. L. "Electron Transfer between P450cin and its FMN-Containing Redox Partner" *J. Biol. Chem.*, **2007**, *282* (37), 27006-27011
4. Zhao\*, J., **Das, A.\***, Zhang, X, Schatz, G., Sligar, S., Van Duyne, R. "Resonance Surface Plasmon Spectroscopy: Low Molecular Weight Substrate Binding to Cytochrome P450" *J. Am. Chem. Soc.* **2006**, *128* (34), 11004-11005. (\* Co-first authors)  
(In News): (1) Enhanced LSPR detects binding of small molecules. *Anal. Chem.*, **2006**, *78*(21), 7356. (2) Kirrill's Café paper of the month. August 2006 [http://www.icgeb.org/~p450srv/cafe\\_archive\\_2006.html](http://www.icgeb.org/~p450srv/cafe_archive_2006.html)
3. **Das, A.**, Trammell, S. A. and Hecht, M. H. "Electrochemical and Binding Studies of an immobilized *De Novo* Heme Protein" *Biophys. Chem.* **2006**, *123* (2-3), 102-112.
2. Hu, Y., **Das, A.**, Hecht, M. H. and Scoles, G. "Nanografting *De Novo* Proteins onto gold surface" *Langmuir* **2005**, *21*(20), 9103-9109.
1. Hecht, M.H., **Das, A.**, Go, A., Bradley, L. and Wei, Y. (2004) "De Novo Proteins from Designed Combinatorial Libraries." *Protein Science* **2004**, *13*(7), 1711–1723.

### **Other Thesis Publications**

1. **Das, A.** "Electrochemical and Functional Studies of *De Novo* Alpha Helical Protein from a Designed Combinatorial Library." Ph.D. Thesis Princeton University November **2005**
2. **Das, A.** Model Chemistry of Aerobic Acetylene Hydratase Enzymes. M.Sc. Thesis: I.I.T (Kanpur) **1998**



## **Manuscripts in Preparation**

46. Arnold, W. Jain, S., and **Das, A\***. "EET receptors: Are we there yet?" *In preparation*
47. Arnold, W., Carnevale, L., **Das, A\***, "NADA and NA5HT metabolism by CYP epoxygenase makes potent TRPV1 channel agonists" *In preparation*
48. Watson, J., Carnevale, L., Roy, J, and **Das, A\***. "Anti-inflammatory Endocannabinoid Epoxides Causes Macrophage Polarization", *In preparation*

## **INVITED TALKS AND PRESENTATIONS (SELECTED)**

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### ***Invited Talks as a Faculty at UIUC***

- 2019 CANBIC conference, Toronto, Canada
- 2019, FACTOR conference, Miami, Florida
- 2019, Department of Chemistry, University of South Carolina
- 2018, Gill Center for Molecular Neuroscience, Indiana University Bloomington
- 2018, Comparative Biomedical Sciences, Louisiana State University
- 2018, International Winter Eicosanoid Meeting, Baltimore
- 2018, Department of Chemistry & Biochemistry, University of Arizona
- 2018, Department of Chemistry, University of Illinois Urbana Champaign
- 2017, Department of Biochemistry, University of Illinois Urbana Champaign
- 2017, Division of Endocrinology, Diabetes and Metabolism, University of Illinois Chicago
- 2017, Eicosanoid Research Foundation, Puerto Vallarta, Mexico
- 2017, 20<sup>th</sup> International Conference on Cytochrome P450, Dusseldorf, Germany
- 2017, Department of Plant Biology and the Department of Physiology in the School of Medicine, Southern Illinois University
- 2017, Department of Biology, Yeshiva University
- 2016, Microsomal Drug Oxidation, UC Davis
- 2016, Lightning Talk, "Elucidating the metabolism of omega-3 and omega-6 endocannabinoids by cardiac CYP2J2 epoxygenase in Nanodiscs" Lipid Maps Meeting, San Diego
- 2016, "Discovery of Omega-3 endocannabinoid epoxides: Lipid Metabolites Emanating from Cross-talk between Endocannabinoid and CYP pathway", in session - Therapeutic potential of omega 3 fatty acid-derived CYP epoxygenase metabolites organized. 16th International Winter Eicosanoid Conference. March 13-16, 2016 in Baltimore, Maryland
- 2015 Lightning Talk, "Elucidating the metabolism of omega-3 and omega-6 endocannabinoids by cardiac CYP2J2 epoxygenase in Nanodiscs" Lipid Maps Meeting, Lightning Talk, San Diego
- 2014 Engineering Cytochrome P450s for Natural product biosynthesis" Manus Biosynthesis, Division of Protein Engineering, Boston
- 2014 Lightning Talk, "Elucidating the mechanism of endocannabinoid metabolism by CYP2J2 epoxygenase in Nanodiscs." Lipid Maps Meeting, Lightning Talk, San Diego
- 2013 (Prestigious Seminar Series), "Elucidating the function of membrane proteins using phospholipid bilayer Nanodiscs" Woodward Hauptmann Center and SUNY Buffalo.
- 2013 "Functional Studies of Membrane Proteins in Nanodiscs" Eastern Illinois University
- 2013 "Elucidating the Function of Membrane Proteins using Nanodiscs" Cell Biology and Metabolism Program, NIH (NICHD) Structural and Chemical Biology of Membrane Proteins
- 2013 "Functional studies of N-terminally modified CYP2J2 epoxygenase involved in cardiotoxicity", American Chemical Society, Division of Chemical Toxicology
- 2012 "Nanophotonic Detection of Drug Binding to Cytochrome P450 using Localized Surface Plasmon Resonance Spectroscopy", NSF Biophotonics Summer School at Beckman Institute.
- 2011 University of Illinois - Urbana Champaign, Department of Biochemistry, IL.

- 2011 “Elucidating the Role of Membrane Proteins in Lipid Bilayer Nanodiscs” Indian Institute of Technology, Mumbai, India.
- 2011 “Role of Cytochrome P450s in Drug Metabolism”, Tata Institute of Fundamental Research (TIFR) Mumbai, India.
- 2011 “Membrane Protein Structure and Function”, Indian Institute of Technology, Delhi, Department of Chemistry, India.

#### ***Invited Talks Delivered as a Postdoc/Graduate Student (Selected)***

- 2011 University of North Carolina, Chapel Hill, Department of Biophysics and Biochemistry, NC.
- 2011 University of Utah, Department of Biochemistry, Salt Lake City, UT.
- 2011 University of Georgia, Department of Chemistry, Athens, GA.
- 2011 University of Texas (Arlington), Department of Chemistry, Dallas, TX.
- 2011 University of Central Florida, Department of Chemistry, FL.
- 2011 University of Akron, Department of Chemistry, Akron, OH.
- 2011 University of Nevada, Department of Chemistry, NV.
- 2011 West Virginia University, Department of Biochemistry, WV.
- 2011 University of Tennessee, Department of Biochemistry and Molecular Biology, TN.
- 2009 “Understanding redox regulation in membrane associated cytochrome P450s and the FMN domain of Nitric Oxide Synthase” ACS National Meeting, Aug 11-16, Chemical Toxicology Division, DC.
- 2005 “Combinatorial designed de novo protein: Immobilization on gold and applications as biosensors”, Les Dutton Group, Department of Biochemistry and Biophysics Perelman School of Medicine, University of Pennsylvania.
- 2005 “Combinatorial designed de novo protein: Immobilization on gold and applications as biosensors”, Peter Lansbury Group, Center for Neurologic Diseases, Brigham and Women’s Hospital, Department of Neurology, Harvard Medical School.
- 2004 “Electrochemical and Functional Studies of De Novo Alpha Helical Protein from a Designed Combinatorial Library”, Abstracts of Papers, 228th ACS National Meeting, Inorganic Division, PA
- 2003 “Biomedical Application of De Novo Designed Proteins” Chemical and Biological Engineering. Rensselaer Polytechnic Institute (RPI), NY.

#### **POSTERS PRESENTED AS A FACULTY AT UIUC**

- 2018: Das, A, Watson, J., McDougale, D., Arnold, W., Weigle, A., “Endocannabinoid and Cannabinoid Metabolism by CYP Epoxygenases”, ASBMB Lipids and Membranes, April 20-23<sup>rd</sup>, San Diego, CA
- 2016: Arnold, W., Baylon, J., Tajkorshid, E. and **Das, A.**, Kinetic Analysis and Inhibition of CYP2J2 Arachidonic Acid Metabolism by  $\omega$ -3 Polyunsaturated Fatty Acids in Nanodiscs, Microsomal Drug Oxidation, Oct 2-6, Davis, CA
- 2016: McDougale, D., and **Das, A.** Biochemistry of the metabolism of omega-3 and omega-6 endocannabinoids by heart CYP2J2 epoxygenase in Nanodiscs, Gordon Research Conference –Lipids, July 26-31, 2015, Waterville, NH. Winter Eicosanoid Meeting
- 2016: Arnold, W., Baylon, J., Tajkorshid, E. and **Das, A.**, Kinetic Analysis and Inhibition of CYP2J2 Arachidonic Acid Metabolism by  $\omega$ -3 Polyunsaturated Fatty Acids in Nanodiscs, Gordon Research Conference –Lipids, July 26-31, 2015, Waterville, NH Winter Eicosanoid Meeting
- 2015: McDougale, D., and **Das, A.** Biochemistry of the metabolism of omega-3 and omega-6 endocannabinoids by heart CYP2J2 epoxygenase in Nanodiscs, Gordon Research Conference –Lipids, July 26-31, 2015, Waterville, NH
- 2015: Arnold, W., Baylon, J., Tajkorshid, E. and **Das, A.**, Kinetic Analysis and Inhibition of CYP2J2 Arachidonic Acid Metabolism by  $\omega$ -3 Polyunsaturated Fatty Acids in Nanodiscs, Gordon Research Conference –Lipids, July 26-31, 2015, Waterville, NH

- **LIPID MAPS LIGHTENING TALK AND POSTER**

- 2015: **Das A.** McDougale D, Kambalyal A, Meling D, Elucidating the mechanism of Endocannabinoids metabolism by CYP2J2 epoxygenase in Nanodiscs. Lipid MAPS Annual Meeting, May 13-14, 2015, La Jolla, CA.

- **NIEHS TRAVEL AWARD**

- 2014: **Das A.** McDougale D, Kambalyal A, Meling D, Endocannabinoids Anandamide and 2-Arachidonoylglycerol Are Substrates for Human CYP2J2 Epoxygenase. 15th International Winter Eicosanoid Conference March 9-12, 2014 Baltimore, Maryland.
- 2014: Plucinski, Hsiao, A., Gartia, M. Arnold, W., Ameen, A., **Das, A.**, and Liu, G.. Colorimetric Detection of Substrate Binding to Cytochrome P450 with Plasmonic Nano Lycurgus Cup Array. Biomedical Engineering Society (BMES) Annual Meeting, October 22-25, 2014 in San Antonio, Texas.

- **LIPID MAPS LIGHTENING TALK AND POSTER**

- 2014: **Das A.** McDougale D, Kambalyal A, Meling D, Elucidating the mechanism of Endocannabinoids metabolism by CYP2J2 epoxygenase in Nanodiscs. Lipid MAPS Annual Meeting, May 13-14, 2014, La Jolla, CA.
- 2014: Arnold, W. McDougale, D., Meling, D. and **Das, A.** Allosteric modulation of CYP2J2 lipid metabolism by other small molecules and proteins. Midwest Enzyme Chemistry Conference (MECC) September 27 2014 in Evanston, Illinois.
- 2013: Dumeng-Santiago, Y., Meling, D., and **Das, A.** Effect of macromolecular crowding on cytochrome P450 2J2 stability and activity. Abstracts of Papers of the American Chemical Society, New Orleans, 245.
- 2013: **Das, A.**, Sri Varma, S., Mularczyk, C., and Meling, D. Elucidating the function of thromboxane synthase in model lipid bilayers. Abstracts of Papers of the American Chemical Society, 246, Indianapolis, IN.
- 2013: **Das, A.**, McDougale, DR., Palaria, A., Magnetta, E. and Meling, D., Functional studies of N-terminally modified CYP2J2 epoxygenase in model lipid bilayers. Abstracts of Papers of the American Chemical Society, 246, Indianapolis, IN.
- 2013: **Das, A.**, Sri Varma, S., McDougale, DR., Palaria, A., Magnetta, E. and Meling, D., Functional characterization of Eicosanoid Synthesizing Enzymes- CYP2J2 epoxygenase and Thromboxane synthase (CYP5A1) in Model Lipid Bilayers. A-28, P92, 18th International Conference on Cytochrome P450s, June 18-22, Seattle WA.
- 2013: Orlando, B., McDougale, D., Lucido, M., Eng, E., Stokes, D., **Das, A.**, and Malkowski, M. Lipid Bilayer Nanodiscs as a tool in the study of membrane-associated cyclooxygenase-2. 13th International Conference on Bioactive Lipids in Cancer, Inflammation and Related Diseases, Puerto Rico November 4-6, 2013

- **BEST POSTER AWARD**

- 2013: **Das, A.**, Sri Varma, S., McDougale, DR., Meling, D., Sri Varma, S., Palaria, A., and Zelasko, S., Elucidating the Mechanism of Eicosanoid Synthesizing Enzymes. No. 149. 13th International Conference on Bioactive Lipids in Cancer, Inflammation and Related Diseases, Puerto Rico.

## **PATENTS**

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- Das, A. and Watson, J., "EPA endocannabinoid derivatives as Anti-inflammatory and Anti-pain drugs", US Patent Application 62/560,726
- Das, A. and Ray, J., "DHA endocannabinoid derivatives as Anti-inflammatory and Anti-pain drugs", US Patent Application 62/560,719
- Smith, A., Lim, S.J., Das, A., "Lipoprotein Nanoplatelets: Fluorescent, Zwitterionic Probes for Molecular and Cellular Imaging" US Patent Application 15/244,026
- Das, A. and Ray, J., "Aspirin derivatives of Omega-3 fatty acids", Invention Disclosure.

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## **COLLABORATIONS**

### **COLLABORATIONS WITH ACADEMIA**

- Prof. Emad Tajkhorshid, Department of Biochemistry, UIUC
- Prof. Timothy Fan, Veterinary Clinical Medicine, UIUC
- Prof. Qian Chen, Department of Material Science and Engineering, UIUC
- Prof. Rodney Johnson, Department of Animal Sciences, UIUC
- Prof. Andrew Steelman, Department of Animal Sciences, UIUC
- Prof. Nu-Chu Liang, Department of Psychology, UIUC
- Prof. Josh Gulley, Department of Psychology, UIUC
- Prof. Yanina Pepino, Department of Food Science and Human Nutrition, UIUC
- Prof. Michael Holinstat, Medical School Pharmacology, University of Michigan
- Prof. David Sarlah, Department of Chemistry, UIUC

### **COLLABORATIONS WITH INDUSTRY**

- Dr. Mark Tepper, Corbus Pharmaceuticals
- Dr. Ajikumar Parayil, Manus Biosynthesis, Boston.

### **PREVIOUS COLLABORATIONS (Completed):**

- Prof. James Kincaid, Marquette University
- Prof. Michael Malkowski, Hauptmann-Woodward Institute
- Prof. Richard Van Duyne, Northwestern University
- Prof. Vinayak Dravid, Northwestern University
- Prof. William Klein, Northwestern University
- Prof. Giacinto Scoles, SISSA- Trieste-Italy
- Prof. Logan Liu, Department of Electrical Engineering, UIUC
- Prof. Andrew Smith, Department of Bioengineering, UIUC
- Prof. Kristopher Kilian, Material Science and Engineering, UIUC

## MENTORING AND TEACHING ACTIVITIES

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**Total Number of Graduate Students Advised as Primary Advisor: 11 (11 Ph.D. and 1 M.S.)**

**Total Number of Graduate Student who completed Ph.D.: 4**

**Total Number of Other Graduate Students: 3 (2 D.V.M. and 1 M.D.)**

**Total Number of Students Mentored as Thesis Committee Member: 23**

**Total Number of Undergraduate students advised: 15**

**Total Number of Postdoctoral/Visiting Scholars advised: 1**

### ***Doctoral Students (Ph.D.) (Currently 8)***

- **Dr. William Arnold** (2013– 2018) Department of Biochemistry
  - *Project title:* CYP2J2 mediated metabolism of lipids and cardiotoxic drugs.
  - Colin Wraight Best biochemistry paper award from the Department of Biochemistry
  - Best poster award in the Midwest Enzyme Conference (5/260 poster presenters)
  - Govindjee Award for Excellence in Biological Research to Mr. William Arnold
  - Faculty of 1000 highlighted research paper
  - **Placement:** Post-doctoral research associate at University of California – San Francisco in the Lab of David Julius and Yifan Cheng
- **Ms. Josephine Watson** (2015-Present) Department of Biochemistry
  - *Project Title:* Omega-3 and Omega-6 Endocannabinoid Derivatives and Elucidation of their Novel Biological Functions
- **Ms. Hanna Huff** (2016-Present) Department of Chemistry
  - *Project Title:* Understanding the role of transcription factor on inflammation pathways that are triggered by anti-inflammatory lipid metabolites
  - Best poster award in the Midwest Enzyme Conference (5/260 poster presenters)
- **Ms. Lauren Carnevale** (2016– Present) Department of Biochemistry
  - *Project title:* Mechanism of DHA endocannabinoid epoxide anti-inflammatory action
  - Best speaker award at Vetmed research day to Ms. Lauren Carnevale
- **Mr. Justin Kim** (2017– Present) Division of Nutritional Sciences.
  - *Project title:* Endocannabinoid epoxide anti-inflammatory action in EAE model of MS.
  - Received DNS research excellence award
- **Mr. Austin Weigle** (Nov 2017 – Present) Department of Chemistry (Chemical-Biology)
  - *Project title:* Cytochrome P450 mediated metabolism of cannabinoids Mechanism of endocannabinoid epoxide anti-inflammatory action
  - Best lightening speaker award at MCB to Mr. Austin Weigle
- **Ms. Asma'a Albakri** (Jan 2018 – Present) Division of Nutritional Sciences
  - *Project title:* Cytochrome P450 mediated metabolism of endocannabinoids leads to PPARgamma activation
- **Mr. Taek Jung Oh** (Dec 2018 – Present) Department of Biochemistry
  - *Project title:* Lipid Mediators in Cancer Cell Immunology

### ***Ph.D. Alumni***

- **Dr. Jahnabi Roy** (2014 – 2017) Department of Chemistry
  - *Project Title:* Identification of protein and lipid metabolite biomarkers in Metastatic Osteosarcoma

- Block Grant from Department of Chemistry
- Travel Award from the Department of Chemistry
- **Placement:** Scientist, Army Institute of Surgical Research (Regenerative Medicine)
- **Dr. Daniel Ryan McDougle** (2012 –2016) Department of Comparative Biosciences,
  - *Ph.D. Thesis Title:* Omega-3 and Omega-6 Endocannabinoid Derivatives and Elucidation of their Novel Biological Functions
  - Received American Heart Association (AHA) Pre-doctoral Fellowship
  - Joseph O’Alberts Award (Top graduate student in the College)
  - **Placement:** UIUC medical school M4
- **Dr. Daryl Meling** (2012 – 2016) Department of Biochemistry.
  - *Ph.D. Thesis Title:* Protein-protein Interactions and Mechanistic Insights for CYP2J2 and CYP5A1
  - **Placement:** Post-Doctoral Research Associate, Flaws Laboratory, University of Illinois at Urbana Champaign

### **Master Student (M.S)**

**Ms. Snehita SriVarma** (2012-2014) Department of Bioengineering, College of Engineering, University of Illinois – Urbana Champaign

- *M.S. Thesis Title:* Elucidating the role of membranes in modulating the thermodynamics and kinetics of substrate binding to Thromboxane Synthase
- **Placement:** Data Analyst at Captech Services

### **Other graduate students and postdoctoral fellow/visiting researcher advised (3)**

- Nicole Sidebotham D.V.M
- Amogh Kambalyal M. D.
- Sona Jain, Ph.D.

### **Student thesis & prelim committees (Total number of students 14):**

- 1) Hanchao Zhao, Ph.D. (2012-2015): Department of Biochemistry, College of LAS, University of Illinois, Urbana 61801.
- 2) Michael Gregory, Ph.D. (2013-2016): Department of Biochemistry, College of LAS, University of Illinois, Urbana 61801.
- 3) Xinyun Cao, Ph.D. (2013-Present): Department of Biochemistry, College of LAS, University of Illinois, Urbana 61801.
- 4) Brittany Weida, Ph.D. (2013- Present): Department of Bioengineering, College of Engineering, University of Illinois, Urbana Champaign, Urbana 61801.
- 5) Nektaria Petronikolou, Ph.D. (2014-2015): Department of Biochemistry, College of LAS, University of Illinois, Urbana 61801.
- 6) Hassan Majeed (2014-2015): Department of Bioengineering, College of Engineering, University of Illinois, Urbana Champaign, Urbana 61801.
- 7) Zainab Rahil (2015-Present): Evaluating the effects of substrate stiffness on integrin bond tension and cell fate, Department of Bioengineering, University of Illinois – Urbana Champaign
- 8) Phuong Le (2015-Present): A drug screening platform for breast cancer metastasis, Department of Bioengineering, University of Illinois – Urbana Champaign
- 9) Lai, Kuan-Yu (2016-Present): L-antibiotics, Department of Biochemistry, University of Illinois-Urbana Champaign
- 10) Janish Desai (2016-2017): Structure, Function and Inhibition of Staphylococcus aureus Heptaprenyl Diphosphate Synthase, Center for Biophysics, University of Illinois –Urbana Champaign
- 11) Megan Caputo (2016-Present): Chair of the thesis committee: Omega-3 fatty acids effect on inflammation in the neonatal piglets, Department of Animal Science, Division of Nutritional Sciences.
- 12) Sushant Bangru (2017-Present): Department of Biochemistry

- 13) Xuankun Zeng (2017-Present): Department of Biochemistry.
- 14) Tianjiong Yao (2017-Present): DNA zymes for Amino Acylation. Department of Biochemistry
- 15) Vo Vinh Huang (2018-Present): Membrane protein interactions that regulate vascular permeability in response to mechanical perturbations (Advisor: Deborah Leckband)
- 16) Kevin Gill (2018-Present): Determining the Effects of Loss of Dimerization of CXCR4 and CCR5, and Incorporating Mutant HIV-1 Envelope Glycoprotein into VLPs (Advisor: Erik Procko)
- 17) Xuejiao Song (2018-Present): Characterize the enzymatic and regulatory function of two biotin protein ligases in *Clostridium acetobutylicum* (Advisor: John Cronnan)
- 18) Kisurb Choe (2018-Present):
- 19) Xuejin Zhang (2018- Present): Phosphoethanolamine methyltransferases inhibitors with broad spectrum anthelmintic effect against livestock nematodes.
- 20) Raybarman, Adrika (2019-Present)
- 21) Brendan Sullivan (2019-Present)
- 22) Dustin Buntrock (2019-Present)
- 23) Xiaoman Xie (2019-Present) Department of Computer Science

### **Undergraduate Student Thesis Supervision (\* denotes student who co-authored papers)**

#### ***Current Undergraduate Students***

- Benjamin Ray 2018- Present, Molecular and Cellular Biology
- Diane Wei 2018-Present, Molecular and Cellular Biology
- Swapnil Shah 2017-Present, Molecular and Cellular Biology
- Demetrios Maroustos Aug 2016- Present, Molecular and Cellular Biology  
Research Topic: Endocannabinoid Metabolism
- Insup Hong Jan 2017- Present, Molecular and Cellular Biology  
Research Topic: Endocannabinoid and Cancer

#### ***Undergraduate Students as Major Advisor (Alumni)***

##### ***(All students are from Molecular and Cellular Biology)***

- \*John Krapf Aug 2014- 2017, **Awarded:** American Heart Association Undergraduate Fellowship, Highest Distinction, **Placement:** Medical School
- \*John Rouck Aug 2013- 2016, **Awarded:** American Heart Association Undergraduate Fellowship and Highest Distinction, **Placement:** Medical School, St. Louis University
- Navroop Gill Aug 2015-2016, Molecular and Cellular Biology
- Mathew Posen Oct 2015- 2016, Molecular and Cellular Biology
- \*Eric Magnetta 2011- 2012: Minority Student. **Placement:** M.D. Ph.D student at Loyola University
- \*Christopher Mularczyk 2012-2013, **Awarded:** Highest Distinction, **Placement:** Medical school at University of Illinois
- Susan Zelasko 2012-2015, **Awarded:** Fulbright Scholarship, American Heart Association Undergraduate Fellowship, Best Poster Award – MECC conference, Highest Distinction for undergraduate thesis  
**Placement:** Fulbright Scholar, Medical School (MD-Ph.D.) University of Wisconsin-Madison
- Amogh Kambalyal 2013- 2016, **Awarded:** Highest Distinction Award, William and Lycan Biochemistry Fellow, Hazel Craig Fellowship, **Placement:** Medical school at University of Illinois
- Kimberly Sam Jan 2015-Aug 2015, Molecular and Cellular Biology

#### **I-STEM (High School) & SROP (Summer Research Opportunities Program) for minority students**

- Shiyu Qiu (Women from University High School): Currently undergraduate at MIT
- Mary Fieser (Women from University High School)
- Pablo Marrero, University of Puerto Rico: SROP. **Placement:** Pharmacy School - University of South Florida College of Pharmacy
- Yarelis Dumengo, University of Puerto Rico. **Placement:** Medical School-University of Puerto Rico

## TEACHING & SERVICE ACTIVITIES

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### TEACHING:

- VM 602: Biochemistry (2016-Present)
- VM 603: Gastrointestinal Physiology (2012-2016)
- Basic Toxicology (2012-Present)

### Special Training for Teaching

- Faculty Summer Institute @intersection of teaching, learning and technology
- Learned to use teaching tool – Periscope, Blackboard, Creative interactive videos
- Teacher Scholar Certification (in progress)
- Attended Spring 2018 Junior Faculty Seminar Series
  - *Session 1: Active Teaching & Active Learning: Strategies for Deep Learning and Retention*
  - *Session 2: The Teaching Philosophy Statement for Promotion & Tenure*
  - *Campus Annual Faculty Retreat: “Educating Students as Difference-Makers”*
  - *Session 3: A Learner-Centered Course Design for Enhanced Learning*
  - *Session 4: Critical Factors for Motivating Students to Learn*
  - *Session 5: Maximizing the Benefits of Informal and Formal Peer Learning*
  - *Session 6: The Kind of Practice & Feedback Does Matter in Students’ Remembering*

### Service to Disciplinary and Professional Societies or Associations

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#### *Memberships in Professional Societies*

- 2018-Present, Member, ASPET
- 2016-Present, Member, ASBMB
- 2012- Present, Member, American Heart Association
- 2011-Present, Illinois Biophysics Society
- 2011- Present, Member, Eicosanoid Research Foundation
- 2008-2009, Member, American Society for Biochemistry and Molecular Biology
- 2005-2009, Member, Biophysical Society
- 2003- Present, Member, American Chemical Society
- 2002- 2009, Member, Protein Society

#### *Reviewer for the following journal articles and grants*

##### 2019

Journal of Medicinal Chemistry  
Nature Communications  
ACS-Chemical Biology (2 separate papers)  
Nutrients

##### 2018

Cannabis and Cannabinoid Research  
Journal of Medicinal Chemistry  
Nutrients  
Nature Communications  
Journal of the American Chemical Society (JACS)  
Cannabis and Cannabinoid Research (2 separate papers)  
Proteomics  
Drug Metabolism and Disposition  
The International Journal of Molecular Sciences



Analytical Chemistry  
 Proceedings of the National Academy of Sciences (PNAS)  
 Journal of Inorganic Chemistry (JIB) (3 separate papers)  
 Science Reports  
 Pharmaceuticals  
**2017** Proteomics  
 Soft Matter  
 Drug Design, Development and Therapy  
 Current Pharmaceutical Design  
 Journal of Diabetes & Metabolic Syndrome  
 FASEB Journal  
 Analytical Chemistry  
 Scientific Reports (2 separate papers)  
 European Journal of Pharmaceutical Sciences  
 Cardiovascular Research  
 ChemistrySelect (2 separate papers)  
 Prostaglandins and other Lipid Mediators (PLOM)  
**2016** Biochemistry (3 separate papers)  
 Biomacromolecules  
 Analytical Chemistry  
 Physiology and Behavior  
 Prostaglandins and other lipid mediators (PLOM)  
 Nature Protocols  
 ChemistrySelect (4 separate papers)  
 BBA-Biomembranes  
 ChemBioChem  
**2015** Journal of Food Science and Nutrition  
 ChemBioChem  
 Journal of Nutritional Biochemistry  
 Drug Metabolism Reviews  
 Turkish Journal of Biochemistry  
 Current Drug Metabolism  
 Molecular and Cellular Toxicology  
 Free Radical Biology and Medicine  
 BBA-Biomembranes  
 Analytical Chemistry  
**2014** ChemBioChem  
 Angewandte Chemie  
 Molecular Pharmaceutics  
**2012** J. Phys. Chem.  
**2008** Analytical Chemistry  
 Drug Metabolism Reviews

***Other services to the professional society and to the peer review process***

- **2020, Organizer, Winter Eicosanoid Meeting, Baltimore.**
- 2018, Member, Study Section, NIH MSFA (Ad Hoc)
- 2018, Abstract Judge, Biomedical Engineering Society (BMES) (30 abstracts reviewed)
- 2018, Poster Judge, Winter Eicosanoid Conference (WEC)
- 2017, Reviewer for Promotion Package of RA Professor
- 2016, Poster Judge, Winter Eicosanoid Conference (WEC).
- 2015, Poster Judge Annual Midwest Enzyme Conference (MECC).

- 2015-Present, Member of the Editorial Board, ChemSelect, ChemPubSoc Europe, Wiley VCH
- 2014, Poster Judge Annual Midwest Enzyme Conference (MECC).
- 2013, Reviewer for NSF career grants from the division of MCB.
- 2013, Poster Judge for Annual Midwest Enzyme Conference (MECC).
- 2011, Presentation Judge, Undergraduate Research Symposium, ACS-Women Chemist Committee, Eastern Central Illinois Chapter
- 2010, Grant Reviewer for Medical Research Council (MRC), United Kingdom

### **Service to Department, College and University**

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#### **Department of Comparative Biosciences, University of Illinois College of Veterinary Medicine**

- 2018 Faculty Search Committee for Neurobiology position -2
- 2017 Faculty Search Committee for Neurobiology position-1
- 2016 Faculty Search Committee for Comparative Pharmacologist position
- 2016 Faculty Search Committee for Pharmacogenomics position
- 2011- 2015 Department Safety Committee
- 2014 Search Committee for academic hourly research technician position
- 2013 Block grant renewal for the department (appointed by the Head of the department)

#### **College of Veterinary Medicine**

- 2019 Plate reader purchase committee
- 2019 University Research Safety Committee
- 2018 Judge, College of Veterinary Medicine Research Day
- 2018 Interview Committee for grants and contracts associate for CVM grants

#### **2017-Present Awards and Scholarship Committee**

#### **2017-Present Research Advisory Committee**

- 2016 Faculty Search Committee for Department of Pathobiology (Parasitologist)
- 2016 Faculty Search Committee for Department of Pathobiology (Host-Pathogen Interactions)

#### **2016-2017 Basic Sciences Realignment Committee (appointed by the Dean)**

- 2016-Present Shared Instrument Facilities Committee
- 2015-2017 Judge, College of Veterinary Medicine Research Day
- 2012 Organized NSF Grant Overview Workshop for College of the Veterinary Medicine
- 2012-2016 Equal Employment & Affirmative Action Officer Committee
- 2012-2016 Occupational Health & Safety Committee

#### **University of Illinois**

#### **2019 Institutional Biosafety Committee (IBC) 2018- Current**

- 2019 Graduate Admission Committee, Center for Biophysics and Quantitative Biology
- 2017 Alumni Testimonial, Research Academy Steering Committee, College of ACES
- 2017 MCB Journal Club, "Cannabinoids and Endocannabinoids"
- 2017 BioCafe talk at Champaign Public Library "Therapeutic promises and challenges of Cannabis and the Endocannabinoid system."

#### **2016- Present Executive Committee, Division of Nutritional Sciences**

- 2016 Grant Reviewer for the Campus Research Board

#### **2013-2015 Senate Member, Representative of the department and college**

- 2014 Medical Scholar Program (MSP) Interview Panel
- 2012- Present Graduate Admissions Committee, Department of Biochemistry, UIUC.
- 2012 Discussion group leader for the SROP programs for minority students.
- 2011 Organizer, Beckman Postdoctoral Association Workshop, "Demystifying the tenure process".
- 2011 Co-organizer, Beckman Postdoctoral Association Workshop "Applying for Faculty Positions: Perspectives from Recent Hires".