Christine A. Hrycyna, Ph.D.

I. GENERAL INFORMATION

EDUCATION

- **B.A., *cum laude*, Chemistry** 1988
  Middlebury College, Middlebury, VT
- **Ph.D, Biochemistry** 1993
  Department of Chemistry and Biochemistry
  University of California, Los Angeles, Los Angeles, CA

PRESENT POSITIONS

- **Department Head** July 1, 2017 – present
  Department of Chemistry
  College of Science
  Purdue University, West Lafayette
- **150th Anniversary Professor** 2018 – present
  Department of Chemistry
  College of Science
  Purdue University, West Lafayette

PREVIOUS POSITIONS

- **Professor** 2014 – 2018
  Department of Chemistry
  College of Science
  Purdue University, West Lafayette
- **Associate Department Head-Teaching & Undergraduate Education** 7/1/16 – 6/30/17
  Department of Chemistry
  College of Science
  Purdue University, West Lafayette
- **Head, Biochemistry Division** 2013 – 2017
  Department of Chemistry
  College of Science
  Purdue University, West Lafayette
- **Head, PULSe Interdisciplinary Life Sciences Graduate Program** 2012 – 2017
  Office of Interdisciplinary Graduate Programs
  Purdue University, West Lafayette
- **Associate Professor** 2006 – 2014
  Department of Chemistry
  College of Science
  Purdue University, West Lafayette
- **Assistant Professor** 2000 – 2006
  Department of Chemistry
  College of Science
  Purdue University, West Lafayette

- **Research Fellow**
  Laboratory of Cell Biology, National Cancer Institute 1998 – 2000
  National Institutes of Health, Bethesda, MD
  Laboratory of Michael M. Gottesman, M.D.
- **Postdoctoral Fellow** 1993 – 1998
  Laboratory of Cell Biology, National Cancer Institute
  National Institutes of Health, Bethesda, MD
  Laboratory of Michael M. Gottesman, M.D.
- **Graduate Research Assistant** 1989 – 1993
  University of California, Los Angeles
  Department of Chemistry and Biochemistry
  Laboratory of Steven G. Clarke, Ph.D.
- **Undergraduate Research Assistant** 1987 – 1988
  Middlebury College
  Department of Chemistry and Biochemistry
  Laboratory of Jane Margaret O'Brien, Ph.D.
- **Laboratory Research Coordinator** 1987 – 1988
  Middlebury College
  Department of Chemistry and Biochemistry
  Laboratory of Dr. Jane Margaret O'Brien, Ph.D.

AWARDS AND HONORS

- College of Science Leadership Award, Purdue University 2023
- 150th Anniversary Professorship 2018
- Big 10 Academic Alliance Department Executive Officers (DEO) Seminar 2017
- University Faculty Scholar, Purdue University 2017 – 2022
- The Arthur E. Kelley Undergraduate Teaching Award – Department of Chemistry 2016
- Committee on Institutional Cooperation (CIC) Academic Leadership Program 2015 – 2016
  - Fellow
- Favorite Faculty Award, Purdue University 2015, 2016
- College of Science Team Award, Purdue University 2015
- College of Science Leadership Award, Purdue University 2014
- Purdue University "*Seed for Success*" Research Award 2007 & 2013
- Induction into "*The Purdue University Book of Great Teachers*" 2013
- Purdue University "*Seed for Success*" Research Award 2013
- Alpha Lambda Delta and Phi Eta Sigma National Honor Societies – Honorary Member 2011
  National honor societies for first year undergraduate students
- Gates Foundation Grand Challenges Explorations Award 2010
- The Arthur E. Kelley Undergraduate Teaching Award – Department of Chemistry 2009
- Purdue University Teaching Academy – Fellow 2008
- Outstanding Undergraduate Teaching Award in Memory of Charles B. Murphy – Purdue University (Highest Undergraduate Teaching Award given at Purdue) 2007
- Purdue University *"Teaching for Tomorrow Award"* 2005 – 2006
- The Walther Cancer Institute Assistant Professorship 2000 – 2004
- Purdue University School of Science Faculty Award for Outstanding Contributions to Research and Undergraduate Teaching by an Assistant Professor 2003
- Purdue University School of Science *"Top Ten Teachers of the Year"* 2003

- Purdue University – The 2003 Outstanding Teacher of Undergraduates in the School of Science Award 2003
- The Arthur E. Kelley Undergraduate Teaching Award – Department of Chemistry 2003
- AACR-Rhône-Poulenc Rorer Young Investigator Award 1998
- The Jane Coffin Childs Memorial Fund for Medical Research
  - Postdoctoral Fellowship 1994 – 1997
- Research Products and Chemical Corporation Research Award, UCLA 1990
- Clorox Foundation Prize for research and graduate coursework, UCLA 1989

CURRENT MEMBERSHIPS IN PROFESSIONAL SOCIETIES

- American Society of Biochemistry & Molecular Biology (ASBMB), member 2015 – present
- American Chemical Society (ACS), member 2008 – present
- Alpha Chi Sigma, member 2009 – present

II. RESEARCH SUMMARY AND PUBLICATIONS

RESEARCH SUMMARY: The overall goal of my research program is to understand the mechanisms and roles of important eukaryotic integral membrane proteins that are fundamental to human health and disease. My multidisciplinary work successfully integrates the tools of biochemistry, molecular biology, cell biology and biophysical chemistry to define how these membrane proteins recognize their substrates and how they operate at the molecular level. We also develop ways to use our mechanistic knowledge to create pharmacological agents to modulate the activities of these important proteins. Specifically, I focus on three major areas: 1) the membrane-associated enzymes involved in the posttranslational processing of –CaaX proteins, including the yeast and human isoprenylcysteine carboxyl methyltransferases (Icmts) and the endoproteases human ZMPSTE24 and yeast Ste24p, 2) the human ATP binding cassette (ABC) transporters ABCG2 and P-glycoprotein, and (3) drug discovery for inhibitors of human Icmt and for human ABC transporters at the blood-brain barrier.

PUBLICATIONS (* = Corresponding author)

1. Quelle, F. W., Smith, R. V., **Hrycyna, C. A.**, Kaliban,T. D., Crooks, J. A., and O'Brien, J. M.: [^{3}H]Dexamethasone binding to plasma membrane enriched fractions from liver of non-adrenalectomized rats, *Endocrinology* 123:1642 – 1651, **1988**.
2. **Hrycyna, C. A.** and Clarke S.: Farnesyl-cysteine C-terminal methyltransferase activity is dependent upon the *STE14* gene product in *Saccharomyces cerevisiae*, *Mol. Cell. Biol*. 10:5071 – 5076, **1990**.
3. **Hrycyna, C. A.**, Sapperstein, S. K., Clarke, S., and Michaelis, S.: The *Saccharomyces cerevisiae STE14* gene encodes a methyltransferase that mediates C-terminal methylation of **a**-factor and RAS proteins, *EMBO J*. 10:1699 – 1709, **1991**.
4. **Hrycyna, C. A.** and Clarke, S.: Maturation of isoprenylated proteins in *Saccharomyces cerevisiae*: Multiple activities catalyze the cleavage of the three carboxyl-terminal amino acids from farnesylated substrates *in vitro*, *J. Biol. Chem.* 267:10457 – 10464, **1992**.
5. **Hrycyna, C. A.** and Clarke, S.: Purification and characterization of a novel metalloendopeptidase from *Saccharomyces cerevisiae*, *Biochemistry* 32:11293 – 11301, **1993**.
6. **Hrycyna, C. A.** and Clarke, S.: Modification of eukaryotic signaling proteins by C-terminal methylation reactions, *Pharmacol. Ther*. 59:281 – 300, **1993**.
7. **Hrycyna, C. A.**, Yang, M., and Clarke, S.: Protein carboxyl methylation in *Saccharomyces cerevisiae*: Evidence for STE14-dependent and STE14-independent pathways, *Biochemistry* 33:9806 – 9812, **1994**.
8. Sugimoto, Y., **Hrycyna, C. A.**, Aksentijevich, I., Pastan, I., and Gottesman, M. M.: Co-expression of a multidrug resistance gene (*MDR*1) and Herpes Simplex Virus thymidine kinase gene as part of a bicistronic mRNA in a retrovirus vector allows selective killing of *MDR*1-transduced cells, *Clin. Cancer Res.* 1:447 – 457, **1995**.
9. Evans, G. L., Ni, B., **Hrycyna, C. A.**, Chen, D., Ambudkar, S. V., Pastan, I., Germann, U. A., and Gottesman, M. M.: Heterologous expression systems for P-glycoprotein: *E. coli*, yeast and baculovirus, *J. Bioenerg. Biomembr*. 27:43 – 52, **1995**.
10. **Hrycyna, C. A.**, Wait, S., Backlund, P. S. Jr., and Michaelis, S.: Use of the yeast STE14 methyltransferase, expressed as a TrpE-STE14 fusion protein in *Escherichia coli*, for *in vitro* carboxylmethylation of isoprenylated polypeptides, *Methods in Enzymol*ogy 250:251 – 266, **1995**.

11. Gottesman, M. M., **Hrycyna, C. A.**, Schoenlein, P. V., Germann, U. A., and Pastan, I.: Genetic analysis of the multidrug transporter P-glycoprotein, *Annu. Rev. Genet*. 29:607 – 649, **1995**.

12. Hwang, M., Ahn, C.-H., Pine, P. S., Yin, J.-J., **Hrycyna, C. A.**, Licht, T., and Aszalos, A.: Effect of combination of suboptimal concentrations of P-glycoprotein blockers on the proliferation of *MDR*1 expressing cells, *Int. J. Cancer* 65:389 – 397, **1996**.

13. **Hrycyna, C. A.**, Zhang, S., Ramachandra, M., Ni, B., Pastan, I., and Gottesman, M. M.: Functional and molecular characterization of the human multidrug transporter. *in* Multidrug Resistance in Cancer Cells: Cellular, biochemical, molecular, and biological aspects, eds. S. Gupta and T. Tsuruo, 29 – 38, **1996**.

14. Ramachandra, M., Ambudkar, S. V., Gottesman, M. M., Pastan, I., and **Hrycyna, C. A.**: Functional characterization of a glycine 185 to valine 185 substitution in human P-glycoprotein using a vaccinia based transient expression system, *Molecular Biology of the Cell* 7:1485 – 1498, **1996**.

15. Ramachandra, M., Ambudkar, S. V., Chen, D., **Hrycyna, C. A.**, Dey, S., Gottesman, M. M., and Pastan, I.: Human P-glycoprotein exhibits reduced affinity for substrates during a catalytic transition state, *Biochemistry* 37:5010 – 5019, **1998**.

16. **Hrycyna, C. A.**, Ambudkar, S. V., Ramachandra, M., Ko, Y. H., Pedersen, P. L., Pastan, I., and Gottesman, M. M.: Mechanism of action of human P-glycoprotein ATPase activity. Photochemical cleavage during a catalytic transition state using orthovanadate reveals cross-talk between the two ATP sites, *J. Biol. Chem.* 273:16631 – 16634, **1998**.

17. **Hrycyna, C. A.**, Airan, L. E., Germann, U. A., Pastan, I., and Gottesman, M. M.: Structural flexibility of the linker region of human P-glycoprotein permits ATP hydrolysis and drug transport, *Biochemistry* 37:13660 – 13673, **1998**.

18. **Hrycyna, C. A.**, Ramachandra, M., Pastan, I., and Gottesman, M. M.: Rapid and Transient Functional Expression of Human P-glycoprotein from Plasmids using a Vaccinia Virus-Bacteriophage T7 RNA Polymerase System, *Methods in Enzymology* 292:456 – 473, **1998**.

19. Russ, G., Ramachandra, M., **Hrycyna, C. A.**, Gottesman, M. M., Pastan, I, Bennink, J. R., and Yewdell, J. W.: P-glycoprotein plays an insignificant role in the presentation of antigenic peptides to $CD8^+$ T cells., *Cancer Research* 58:4688 – 4693, **1998**.

20. Hafkemeyer, P., Dey, S., Ambudkar, S. V., **Hrycyna, C.A.**, Pastan, I, and Gottesman, M.M. Contribution to substrate specificity and transport of non-conserved residues in transmembrane domain 12 of human P-glycoprotein, *Biochemistry* 37:16400 -16409, **1998**.

21. **Hrycyna, C.A.** and Gottesman, M.M.: Multidrug ABC transporters from bacteria to man: An emerging hypothesis for the universality of molecular mechanism and function, *Drug Resistance Updates* 1:81 – 83, **1998**.

22. **Hrycyna, C. A.,** Ramachandra, M., Germann, U. A, Wu, P., Pastan, I., and Gottesman, M. M.: Both ATP sites of human P-glycoprotein are essential but not symmetric, *Biochemistry* 38:13887 – 13899, **1999**.

23. Gottesman, M. M., **Hrycyna, C. A.**, Ramachandra, M., Dey, S., Pastan, I., and Ambudkar, S. V.: Biochemical, Cellular and Pharmacological Aspects of the Multidrug Transporter, *Annual Review of Pharmacology and Toxicology* 39:361 – 398, **1999**.

24. Gribar, J. J., Ramachandra, M., **Hrycyna, C. A.**, Dey, S., and Ambudkar, S. V.: Functional characterization of glycosylation deficient human P-glycoprotein using a vaccinia virus expression system, *J. Membrane Biology* 173:203 – 214, **2000**.

25. Gottesman, M. M., Licht, T., Zhou, Y, Lee, C. G. L., Shoshani, T., Hafkemeyer, P., **Hrycyna, C. A.,** and Pastan, I.: Selectable Markers for Gene Therapy. In Lasic, D. and Templeton, N. S. (Eds.): *Gene Therapy: Therapeutic Mechanisms and Strategies. Ch. 16*. New York, Marcel Dekker, Inc., **2000**, pp. 333 – 352. (2nd Edition 2004; 391 – 412).
26. Lamensdorf, I., **Hrycyna, C. A.**, Li Ping, H., Nechushtan, A., Tjurmina, O., Harvey-White, J., and Kopin, I. J.: Acidic dopamine metabolites are actively extruded from PC12 cells by a novel sulfonylurea-sensitive transporter, *Arch Pharmacol.* 361:654 – 664, **2000**.
27. **Hrycyna, C. A.*:** Molecular Genetic Analysis and Biochemical Characterization of Mammalian P-glycoproteins, *Semin. Cell Dev. Biol.* 12:247 – 256, **2001**.
28. Honjo, Y., **Hrycyna, C. A.,** Yan, Q-W., Medina-Perez, W. Y., Robey, R. W., van de Laar, A., Litman, T., Dean, M. and Bates, S. E**:** Acquired Mutations in the MXR/BCRP/ABCP Gene Alter Substrate Specificity in MXR/BCRP/ABCP-overexpressing Cells, *Cancer Research* 61:6635 – 6639, **2001**.
29. Ejendal, K. F. and **Hrycyna, C. A.*:** Multidrug Resistance and Cancer: The Role of the Human ABC Transporter ABCG2, *Current Protein and Peptide Science* 3:503 – 511, **2002**.
30. Corrigan, D. P., Kuszczak, D., Rusinol, A. E., Thewke, D. P., Hrycyna, C.A., Michaelis, S. and Sinensky, M. S.: Prelamin A Endoproteolytic Processing *In Vitro* by Recombinant Zmpste24, *Biochemical Journal* 387:129 – 138, **2005**.
31. Ejendal, F. K. and Hrycyna, C. A.*: Differential Sensitivities of the Human ABC Transporters ABCG2 and P-glycoprotein to Cyclosporin A, *Mol. Pharmacol.*, 67:902 – 911, **2005**.
32. Anderson, J. A., Frase, H., Michaelis, S., and **Hrycyna, C. A.*:** Purification, functional reconstitution, and characterization of the *Saccharomyces cerevisiae* isoprenylcysteine carboxylmethyltransferase Ste14p, *J. Biol. Chem.* 280:7336 – 7345, **2005**. "Paper of the Week" – defined as being ranked in the top 1% of all papers (~6600) published in 2005.
33. Diop, N. K. and **Hrycyna, C. A.*:** N-linked Glycosylation of the Human ABC Transporter ABCG2 on Asparagine 596 is Not Essential for Expression, Transport Activity or Trafficking to the Plasma Membrane, *Biochemistry* 44:5420 – 5429, **2005**.
34. Wang, C., Leffler, L., Thompson, D. T. and **Hrycyna, C. A.*:** A General Fluorescence-based Coupled Assay for *S*-Adenosylmethionine-dependent Methyltransferases, *Biochem. Biophys. Res. Comm.* 331:351 – 356, **2005**.
35. Hodges, H. B., Zhou, M., Anderson, J. L., Thompson, D. T. and **Hrycyna, C. A.*:** Inhibition of Membrane-Associated Methyltransferases by a Cholesterol-Based Metal Chelator, *Bioconjug. Chem.* 16:490 – 493, **2005**.
36. Tarasova, N. I., Rishi S., Tarasov, S. G., Kosakowska-Cholody, T., **Hrycyna, C. A.**, Gottesman, M. M. and Michejda, C. J. Transmembrane inhibitors of P-glycoprotein, an ABC transporter, *J. Med. Chem*. 48:3768 – 3775, **2005**.
37. Bhatia, A., Schäfer, H. J., and **Hrycyna, C. A.*:** Oligomerization of the Human ABC Transporter, ABCG2: Evaluation of the Native Protein and Chimeric Dimers, *Biochemistry* 44:10893 – 10904, **2005**.
38. Anderson, J. A., Henriksen, B., Gibbs, R. and **Hrycyna, C. A.*:** The Isoprenoid Substrate Specificity of Isoprenylcysteine Carboxylmethyltransferase: Development of Novel Inhibitors, *J. Biol. Chem.,* 280:29454 – 29461, **2005**.
39. Geisler, M., Blakeslee, J. J., Bouchard, R., Lee, O. R., Vincenzetti, V., Bandyopadhyay, A., Peer, W.A., Bailly, A., Richards, E. L., Ejendal, K. F. K., Smith, A. P., Baroux, C., Grossniklaus, U., Müller, A., **Hrycyna, C. A.**, Dudler, R., Murphy, A. S. and Martinoia, E.: Active export of auxin by MDR-type ATP-binding cassette transporters of *Arabidopsis thaliana*,

The Plant Journal, 44:179 – 194, **2005**.

40. Henriksen, B., Anderson, J. L., **Hrycyna, C. A.***, and Gibbs, R. A.*: Synthesis of Desthio Prenylcysteine Analogs: Sulfur is Important for Biological Activity, *Bioorg. Med. Chem. Lett.,* 15:5080 – 5083, **2005**.

41. Ejendal, F. K., Diop, N. K., Schweiger, L. C., and **Hrycyna, C. A.*:** The Nature of Amino Acid 482 of Human ABCG2 is Important for Substrate Transport and ATPase Activity but not for Substrate Binding, *Protein Sci.,* 15:1597 – 1607, **2006**.

42. Donelson, J. L., Hodges, H. B., MacDougall, D. D., **Hrycyna, C. A.***, and Gibbs, R. A.*: Synthesis and Biological Evaluation of Amide-Modified Farnesyl Cysteine Analogs as Isoprenylcysteine Methyltransferase Inhibitors, *Bioorg. Med. Chem. Lett.*, 16:4420 – 4423, **2006**.

43. Pires, M., **Hrycyna, C. A.*,** and Chmielewski, J. A.*: Bivalent Inhibitors of the Human Multidrug Transporter P-glycoprotein, *Biochemistry,* 45:11695 – 11702. , **2006**.

44. Anderson, J. A. and **Hrycyna, C. A.*:** Structure and Function of Isoprenylcysteine Carboxylmethyltransferase (Icmt), a Key Enzyme in CaaX Processing, *The Enzymes, Vol. 24, Protein Methyltransferases.* Steven G. Clarke and Fuyuhiko Tamanoi, eds., 245 – 272, **2006**.

45. Febo-Ayala, W., Morera-Felix, **Hrycyna, C. A.*,** and Thompson, D. T.*: Functional Reconstitution of the Integral Membrane Enzyme, Isoprenylcysteine Carboxyl Methyltransferase, in Synthetic Bolalipid Vesicles, *Biochemistry*, 45:14683 – 14694, **2006**.

46. Gelb, M. H.*, S. Michaelis, **Hrycyna, C. A.**, Waldman, H. Brunsveld, L., Tamanoi, F. and Van Voorhis, W. Therapeutic intervention based on protein prenylation and associated modifications. *Nature Chemical Biology*, 2:518 – 528, **2006**.

47. Coffinier, C.*, Hudon, S.E., Farber, E., Chang, S. Y., **Hrycyna, C. A.***, Young, S. G.*, and Fong, L. G.*: **From the Cover** – HIV Protease Inhibitors Block the Zinc Metalloproteinase ZMPSTE24 and Lead to an Accumulation of Prelamin A in Cells, *Proc. Natl. Acad. Sci*., 33: 13432–13437, **2007**.

    Accompanying Commentary: Clarke, S. G.: HIV Protease Inhibitors and Nuclear Lamin Processing: Getting the Right Bells and Whistles, *Proc. Natl. Acad. Sci*. 35: 13875 – 78, **2007**.

48. Takenaka, K., Morgan, J. A., Krishnamurthy, P., Lan, L., Adachi, M., Stewart, C. F., Sun, D., Leggas, M., Ejendal, K. F. K., **Hrycyna, C. A.,** and Schuetz, J. D.*: Substrate Overlap Between Mrp4 and Abcg2/Bcrp Affects Purine Analog Drug Cytotoxicity and Tissue Distribution, *Cancer Res.*, 67:6965-6972, **2007**.

49. Coffinier, C., Hudon, S.E., Lee, R., Farber, E.A., Nobumori, C., Miner, J.H., Andres, D.A., Spielmann, H.P., **Hrycyna, C.A.**, Fong, L.G., and Young, S.G.*: A Potent HIV Protease Inhibitor, Darunavir, Does not Inhibit ZMPSTE24 or Lead to an Accumulation of Farnesyl-Prelamin A in Cells, *J. Biol. Chem.*, 15: 9797-804, **2008**.

50. Hudon, S.E., Coffinier, C., Michaelis, S., Fong, L.G., Young, S.G. and **Hrycyna, C.A.***: HIV-Protease Inhibitors Block the Enzymatic Activity of Purified Ste24p, *Biochem. Biophys. Res. Comm.*, 374:365-368, **2008**.

51. Pires, M.M., Emmert, D., **Hrycyna, C.A.*** and Chmielewski, J.*: Inhibition of P-Glycoprotein-Mediated Taxol Resistance by Reversibly-Linked Quinine Homodimers, *Mol. Pharm*. 75:92-100, **2009**.

52. Donelson, J. L., Hodges, H. B., Henriksen, B. S, **Hrycyna, C. A.*,** and Gibbs, R. A.*: Solid-phase synthesis of prenylcysteine analogs, *J. Org. Chem.*, 74:2975-2981, **2009**.

53. Namanja, H., Emmert, D., Pires, M.M., **Hrycyna, C.A.***, and Chmielewski, J.*: Inhibition of Human P-glycoprotein Transport and Substrate Binding Using a Galantamine Dimer, *Biochem. Biophys. Res. Comm.*, 388:672-676, **2009**.
54. Griggs, A.M., Hahne, K. and **Hrycyna, C.A**.*: Functional Oligomerization of the Isoprenylcysteine Carboxyl Methyltransferase from *Saccharomyces cerevisiae*, Ste14p, *J. Biol. Chem.*, 285:13380-13387, **2010**.
55. Jacobs A, Emmert D, Wieschrath S, **Hrycyna C.A.**, Wiese M.* Recombinant Synthesis of Human ABCG2 Expressed in the Yeast *Saccharomyces cerevisiae*: An Experimental Methodological Study, *Protein J.,* 30:201-11*,* **2011**.
56. Majmudar, J., Hahne, K., **Hrycyna, C.A.*** and Gibbs, R.A.*: Probing the Isoprenylcysteine Carboxyl Methyltransferase (Icmt) Binding Pocket: Sulfonamide modified farnesyl cysteine (SMFC) Analogs as Icmt Inhibitors, *Bioorg. Med. Chem. Lett.*, 21:2616-20, **2011**.
57. Pires, M.M., Emmert, D., Chmielewski, J.A. and **Hrycyna, C.A.***: ABCB1 and ABCG2: Deciphering the Role of Human Efflux Proteins in Cellular and Tissue Permeability" Chapter 4, pp. 85 – 126. In Linton, K. and Holland, B. *ABC Transporters In Human Physiology And Disease: Genetics and Biochemistry of ATP Binding Cassette transporters*, World Scientific Press, **2011**.
58. Bergman, J., Hahne, K., **Hrycyna, C.A.*** and Gibbs, R.A.*: Lipid and Sulfur Substitutions of Prenylcysteine as Icmt Inhibitors, *Bioorg. Med. Chem. Lett.*, 21:5616-9, **2011**.
59. Court, H., Hahne, K., Morrison – Logue, A., Philips, M. and **Hrycyna, C.A**. Isoprenylcysteine Carboxyl Methyltransferase – "*The Enzymes: Protein prenylation and post-prenylation modifications".* Tamanoi, F., **Hrycyna, C.A.** and Bergo, M., eds. **2011**.
60. Bergman, J., Hahne, K., Majumder, J., Gibbs, R.A. and **Hrycyna, C.A**.: CaaX Post-Prenylation Processing Enzymes as Targets for Drug Discovery – "*The Enzymes: Protein prenylation and post-prenylation modifications".* Tamanoi, F., **Hrycyna, C.A.** and Bergo, M., eds., **2011**.
61. Namanja, H., Emmert, D., Campos, C., Miller, D., Davis, D., **Hrycyna, C.A.*** and Chmielewski, J.*: Toward Eradicating HIV Reservoirs in the Brain: Inhibiting P-glycoprotein at the Blood-Brain Barrier with Prodrug Abacavir Dimers, *J. Am. Chem. Soc.*, 15:2976-80, **2012**.
62. Bergman, J., Hahne, K., Song, J., **Hrycyna, C.A.*** and Gibbs, R.A.*:*S*-Farnesyl-Thiopropionic Acid (FTP) Triazoles as Novel, Potent Inhibitors of Isoprenylcysteine Carboxyl Methyltransferase (Icmt), *ACS Med Chem Letters*, 3:15–19, **2012**.
63. Chang, S.Y., Hudon, S.E., Yang S., Jung, H.J., Farber, E., Subramanian, T., Andres, D.A., Spielmann H.P., **Hrycyna, C.A.,** Young, S.G. and Fong, L.G.*: Inhibitors of protein geranylgeranyltransferase-I lead to prelamin A accumulation in cells by inhibiting ZMPSTE24. *J Lipid Res.,* 53:1176-82, **2012**.
64. Kuriakose, J., **Hrycyna, C.A.*,** and Chmielewski, J.* "Click chemistry-derived bivalent quinine inhibitors of P-glycoprotein-mediated cellular efflux", *BMCL.*, 22:4410-4412, **2012**.
65. Hahne, K., Vervacke, J., Shrestha, L., Donelson, J. L., Gibbs, R.A., Distefano, M.D., and **Hrycyna, C.A.***: "Evaluation of Substrate and Inhibitor Binding to Yeast and Human Isoprenylcysteine Carboxyl Methyltransferases (Icmts) using Biotinylated Benzophenone-containing Photoaffinity Probes, *Biochem. Biophys. Res. Commun.*. 423:98-103, **2012**.
66. Barrowman, J., Wiley, P.A., Hudon-Miller, S.E., **Hrycyna, C.A.** and Michaelis, S.*: Human ZMPSTE24 Disease Mutations: Residual Proteolytic Activity Correlates with Disease Severity, *Human Molecular Genetics* 18:4084-93, **2012**.
67. **Hrycyna, C.A.** and Chmielewski, J.: "Tools for Eradicating HIV Reservoirs: Dimeric Prodrug Inhibitors of P-glycoprotein" *Therapeutic Delivery*, 3:689-92, **2012**.

68. Majmudar, J.D., Morrison-Logue, A., Song, J., **Hrycyna, C.A.*** and Gibbs, R.A.*: Identification of a Novel Nanomolar Inhibitor of hIcmt via a Carboxylate Isosteric Replacement Approach, *Med. Chem. Comm.* 3, 1125-1137, **2012**.
69. Majmudar, J.D., Hodges-Loaiza, H.B., Hahne K., Donelson J.L., Song, J, Shrestha, L, Harrison, ML, **Hrycyna CA*,** Gibbs R.A.*: Amide-modified prenylcysteine based Icmt inhibitors: Structure-activity relationships, kinetic analysis and cellular characterization. *Bioorg. Med. Chem.,* 20:283-295, **2012**.
70. Michaelis, S & **Hrycyna, C.A.**: A Protease for the Ages, *Science*, 339: 1529 – 1530, **2013**.
71. Thompson, K.V., Chmielewski, J., Gaines, M.S., **Hrycyna, C.A.** and LaCourse, W.R.: Competency-Based Reforms of the Undergraduate Biology Curriculum: Integrating the Physical and Biological Sciences, *CBE – Life Sciences Education*, 12:162 – 169, **2013**.
72. Namanja, H., Emmert, D., **Hrycyna, C.A.*,** Chmielewski, J.*:Abacavir Homodimers as Modulators of P-glycoprotein Transport in Cell Culture, *Med. Chem. Comm.,* 4; 1344 - 1349, **2013**.
73. Vervacke, J.S., Funk, A.L, Wang, Y-C., Strom, M., **Hrycyna, C.A.*** and Distefano, M.D.*: A Diazirine-Containing Photoactivatable Isoprenoid: Synthesis and Application in Studies with Isoprenylcysteine Carboxyl Methyltransferase, *J. Org. Chem.*, 79:1971-8, **2014**.
74. **Hrycyna, C.A.*,** Summers, R, Lehane, A., Pires, M.M., Namanja, H., Bohn, K., Kuriakose, J., Ferdig, M. Henrich, P., Fidock, D., Kirk, K., Chmielewski, J.* and Martin, R.*: Quinine Dimers are Potent Inhibitors of the Plasmodium falciparum Chloroquine Resistance Transporter and are Active Against Quinoline-Resistant *P. falciparum*, *ACS Chem. Biol.*, 9:722-730, **2014**.
75. Emmert, D. Campos, C.R., Ward, D., Lu, P., Namanja, H.A., Bohn, K., Miller, D.S., Sharom, F.J., Chmielewski, J.* and **Hrycyna, C.A.***: Reversible Homodimers of the Atypical Antipsychotic Quetiapine Inhibit P-glycoprotein-mediated Efflux with Increased Binding Affinity *in vitro* and *in vivo* at the Blood Brain Barrier*, ACS Chem. Neurosci.,* 16:305-317, **2014**.
76. Butler, K., Bohn, K., **Hrycyna, C.A.*,** Jin, J.* Non-Substrate Based, Small Molecule Inhibitors of the Human Isoprenylcysteine Carboxyl Methyltransferase, *MedChemComm,* **7**, 1016-1021, **2016**.
77. Di Micco, A., Frera, G., Lugrin, J., Jamillioux, Y., Hsu, E-T., Tardivel, A., de Gassart, A., Zaffalon, L., Bujisic, B., Siegert, S., Quadroni, M., Broz, P., Henry, T., **Hrycyna, C.A.** and Martinon, F.*: The AIM2 Inflammasome is a Guardian of Nuclear Envelope Integrity, *Proc. Natl. Acad. Sci.*, 113:E4671-80, **2016**.
78. Bohn, K., Lange, A., Chmielewski, J.* and **Hrycyna, C.A.***: Dual Modulation of Human P-glycoprotein and ABCG2 with Prodrug Dimers of the Atypical Antipsychotic Agent Paliperidone in a Model of the Blood-Brain Barrier *Molec. Pharmaceutics,* 14(4):1107-1119, **2017**.
79. Namanja-Magliano H.A., Bohn K., Agrawal N., Willoughby M.E., **Hrycyna C.A.*,** Chmielewski J.*: Dual inhibitors of the human blood-brain barrier drug efflux transporters P-glycoprotein and ABCG2 based on the antiviral azidothymidine. *Bioorg Med Chem*. 17: 31353-31356, **2017**.
80. Diaz-Rodriguez, V., Hsu, E-T; Ganusova, E., Werst, E., Becker, J., **Hrycyna, C.A.,** Distefano, M.: **a**-Factor Analogues Containing Alkyne- and Azide Functionalized Isoprenoids are Efficiently Enzymatically Processed and Retain Wild Type Bioactivity. *Bioconjugate Chem.*, 29:316-323, **2018**.
81. Spear, E.D, Hse, E-H., Nie, L., Carpenter, E.P., **Hrycyna, C.A.**, and Michaelis, S. ZMPSTE24 Missense Mutations that Cause Progeroid Diseases Decrease Prelamin A Cleavage Activity, Protein Stability, or Both, *Disease Models & Mechanisms,* 11(7), dmm033670, **2018.**

82. Schnoebelen, C., Towns, M., Chmielewski, J.* and **Hrycyna, C.A.***: Design and Evaluation of a One- Semester General Chemistry Course for Undergraduate Life Science Majors, *J. Chem. Ed.*, 95:734–740, **2018**.
83. Hsu, E-H, Vervacke, J., Distefano, M.D. and **Hrycyna, C.A.***: A Quantitative FRET Assay for the Upstream Cleavage Activity of the Integral Membrane Proteases Human ZMPSTE24 and Yeast Ste24, *Methods Molecular Biology*, Vol. 2009: Protein Lipidation, 978-1-4939-9531-8, 449915_1_En, (21), **2019.**
84. Wang, C., Zhang, B., Ratliff, A.C., Arrington, J., Chen, J., Xiong, Y., Yue, F., Nie., Y., Hu, K., Jin, W., Tao, W.A., **Hrycyna, C.A.**, Sun, X., Kuang, S.: Methyltransferase like 21e inhibits 26S proteasome activity to facilitate hypertrophy of type IIb myofibers, *FASEB J.,* 33:9672-9684, **2019**.
85. Wang, C., Arrington, J., Ratliff, A.C., Chen, J., Horton, H.E., Nie, Y., Yue, F., **Hrycyna, C.A.**, Tao, W.A, Kuang, S.: Methyltransferase-like 21c methylates and stabilizes the heat shock protein HSPA8 in type I myofibers in mice. *J. Biol. Chem.*, 294:1371-13728, **2019**.
86. Agrawal, N., Rowe, J.,Lan, J., Yu, Q., **Hrycyna, C.A.*** and Jean Chmielewski, J.*: Tools for eradicating HIV reservoirs in the brain: the development of Trojan horse prodrugs for the inhibition of P-glycoprotein with anti-HIV activity, *J. Med. Chem.*, 63:2131-2138, **2020**.
87. Goebel, J, Chmielewski, J, **Hrycyna, C.A**.*:The roles of the human ATP-binding cassette transporters P-glycoprotein and ABCG2 in multidrug resistance in cancer and at endogenous sites: future opportunities for structure-based drug design of inhibitors, *Cancer Drug Resist.* 4: 784-804, **2021**.
88. Morstein J., Bader T., Cardillo A.L., Schackmann J., Ashok S., Hougland J.L., **Hrycyna C.A.**, Trauner D.H., Distefano M.D.. Photoswitchable Isoprenoid Lipids Enable Optical Control of Peptide Lipidation, *ACS Chemical Biol.*, online ahead of print, **2022**.

EDITED BOOKS

1. **The Enzymes: VOLUME XXIX: *PROTEIN PRENYLATION PART A* (2011)**
   Editors: Fuyuhiko Tamanoi, **Christine A. Hrycyna** and Martin O. Bergo

2. **The Enzymes: VOLUME XXIX: *PROTEIN PRENYLATION PART B* (2011)**
   Editors: Christine A. Hrycyna, Martin O. Bergo and Fuyuhiko Tamanoi

III. PATENTS

Issued:

1. Thompson, D. T., **Hrycyna, C. A.**, Lee, G. U., Basaran, O. A., Park, K., and Szleifer, I. ASYMMETRIC MEMBRANES FOR BIOANALYTICAL INSTRUMENTATION, Patent No. 7,374,944. Issued on 5/20/08

Filed:

2. Gibbs, R.A., Henriksen, B., Anderson, J. A. and **Hrycyna, C. A.** COMPOUNDS AND METHODS FOR USE IN TREATING NEOPLASIA AND CANCER BASED UPON INHIBITORS OF ISOPRENYLCYSTEINE METHYLTRANSFERASE:
   U.S. Patent filed March 26, 2003 (Patent Disclosure P-63045); International Patent Number: PCT/US2004/009506.

3. Gibbs, R.A., Hodges, H.B., Donelson, J.D. and **Hrycyna, C.A.** COMPOUNDS AND METHODS FOR USE IN TREATING NEOPLASIA AND CANCER BASED UPON INHIBITORS OF ISOPRENYLCYSTEINE METHYLTRANSFERASE
   P27-065 – Conversion of provisional patent to PCT patent October 2008

IV. FUNDING

1. Current Funding

- **NSF CHE-DRP-CLP 1905156 (Hrycyna, PI) 7/15/19 – 6/30/23**
  - Chemistry: Disciplinary Research Programs (CHE-DRP); Chemistry of Life Processes (CLP)
  - Collaborative Research: Mechanism of Ste24, a Novel Integral Membrane Zinc Metalloprotease that Promotes Catalysis Within an Intramembrane Chamber
  - $357,000 total

2. Previous Funding

- **NIH – 1R01GM106082-01 (Hrycyna, C.A. – PI) 7/1/13 – 3/31/19**
  - *"Structure, Function and Conformational Dynamics of the Ste14p Methyltransferase"*
  - $1,025,000 total over 5 years (85% - Hrycyna)
  - Mark Distefano (15%) (Univ. Minnesota) – Co-I

- **NIH – 1R21NS084913-01 4/1/13 – 3/31/16**
  - **Hrycyna, C.A. (PI)** and Chmielewski, J. (PI) (Multiple PI Proposal)
  - *"Tools for Eradicating HIV Reservoirs in the Brain: A Trojan Horse Approach"*
  - $275,000 direct costs (50% - Hrycyna)

- **2015 Purdue Research Foundation Grant** – Department of Chemistry **6/1/15 – 5/31/16**
  - Full-time support of Allison Lange (Graduate Student)

- **2014 Purdue Research Foundation Grant** – Department of Chemistry **6/1/14 – 5/31/15**
  - Full-time support of Kelsey Bohn (Graduate Student)

- **Howard Hughes Medical Institute # 52007125. 3/1/11 – 8/31/15**
  - **Office of Grants and Special Programs**
  - **Undergraduate Science Education**
  - Co-leader with Jean Chmielewski; Co-PI's: Loudon, M., Towns, M. and Sanders, D.,
  - *"Development of an Undergraduate Chemistry Curriculum and Associated Learning Resources for the Life Sciences" (Purdue NEXUS)*
  - $400,000 direct costs over 4 years (20% – Hrycyna)

- **NIH R13 – Grants for Conferences and Scientific Meetings – 1R13CA162820-01 2015**
  - **Hrycyna, C.A., PI**
  - "*FASEB SRC on Protein Lipidation, Signaling and Membrane Domains"*

- **2013 Purdue Research Foundation Grant** – Department of Chemistry **6/1/13 – 5/31/14**
  - Full-time support of Patricia Wiley (Graduate Student)

- **2013 Purdue Teaching Academy Educational Grant 7/1/13 – 6/30/14**
  - $1500 for undergraduate biochemistry lab course development

- **2012 Purdue Research Foundation Grant** – Department of Chemistry **6/1/12 – 5/31/13**
  - Full-time support of Amanda Logue (Graduate Student)

- **2011 Purdue Research Foundation Grant** – Department of Chemistry **5/15/11 – 5/14/12**
  - Full-time support of Brett Schilling (Graduate Student)

- **Gates Foundation Grand Challenges Grant 5/1/10 – 10/31/11**
  - **Hrycyna, C.A. (PI)** and Chmielewski, J. (Co-I)
  - *"Blocking the P falciparum Transporter PfCRT: Eliminating Drug Resistance in Malaria"*
  - $100,000 direct costs (50% Hrycyna – 50% Chmielewski)

- **NIH – 1 R01 CA112427 3/1/06 – 2/28/11**

- Thompson, D.H. (PI), Co-PI's: **Hrycyna, C.A.**, Szleifer, I., and Saavedra, S.
- *"Development of an Icmt Supported Membrane Sensor"*
- ~$1,378,702 total direct costs (32% Hrycyna; 35% Thompson)
- 5% AY, 1 month summer salary

• **NIH R13 – Grants for Conferences and Scientific Meetings – 1R13CA162820-01 2011**
- **Hrycyna, C.A., PI**
- "*FASEB SRC on Protein Lipidation, Signaling and Membrane Domains"*
- $4000

• **Purdue Learning Outcomes Assessment Grants 2011 5/1/11 – 4/30/12**
- Loudon, M. (PI), **Hrycyna, C.A. (Co-I)** and Towns, M. (Co-I)
- Assessment of CHM10901 – General Chemistry with a Biological Focus

• **NSF 103078 5/1/08 - 8/30/11**
- *"Student Understanding of Biomolecules: An Investigation of Student's Visual Competence"*
- Towns, Marcy (PI), **Hrycyna, C.A. (Co-I)**

• **NIH – R01 CA112483 2/1/07 – 8/31/11**
- Gibbs, R.A. (PI), Co-PIs: **Hrycyna, C.A.** and Harrison, M.L.
- *"Inhibition of Prenylated Protein Processing"*
- $163,804 total direct costs first year
- 36% for Hrycyna Lab
- 5% AY, 1 month summer salary

• **Purdue Research Foundation Grant** – Department of Chemistry **8/15/09 – 8/14/10**
- Full-time support of Dana Emmert (Graduate Student)

• **NIH – 1R21EY018481-01 9/01/07 – 8/31/10**
- **Hrycyna, C.A (PI)**, Chmielewski, J.A. (Co-PI)
- *"Modulating P-glycoprotein to Enhance Neurodegenerative Drug Penetration of Brain"*
- RFA-EY-07-001 Therapeutics Delivery for Neurodegenerative Diseases
- $275,000 direct costs over two years (50% Hrycyna – 50% Chmielewski)

• **Tibotec Pharmaceuticals 2008 – 2009**
- $22,000
  - Contract work to assay HIV protease inhibitor leads as inhibitors of ZMPSTE24

• **Purdue Research Foundation Grant** – Department of Chemistry **6/1/08 – 5/31/09**
- Full-time support of Amy Griggs (Graduate Student)

• **Purdue Research Foundation Grant** – Department of Chemistry **6/1/06 – 5/31/08**
- Full-time support of Heather Hodges (Graduate Student)

• **2008 Purdue Research Foundation International Travel Grant 2008**

• **R01 NIH – 1 R01 CA092403 4/8/03 – 4/7/07**
- Co-PI with PI Mark Green, Ph.D (Nuclear Pharmacy, Purdue University)
- "*PET Radiotracers to Evaluate Tumor Multidrug Resistance*"
- $800,000 total direct costs (20% for Hrycyna lab)

• **2006 Purdue Research Foundation International Travel Grant 2006**

• **2005 National Pancreas Foundation 7/1/05 – 6/30/06**
- Hrycyna, C.A., PI – $25,000 (100% for Hrycyna lab)
- *"Ras Carboxylmethyltransferase as a Target for Pancreatic Cancer Drug Discovery"*

• **Indiana 21st Century Research and Technology Fund 2/15/03 – 2/14/06**
- Center for Membrane Protein Biotechnology (CMPB)
- Lee, G.U. (PI), Co-PIs: Hrycyna, C.A., Thompson, D., Szleifer, I., Basaran, O., & Franses, E.

- "*Biofunctional Asymmetric Membranes for Bioanalytical Instrumentation (BAMBI)"*
- Total direct costs $1,320,000 (17% for Hrycyna lab totaling $224,000)

• **2004 National Pancreas Foundation** **6/1/04 – 5/31/05**
- Hrycyna, C.A. (PI)
- *"Ras Carboxylmethyltransferase as a Target for Pancreatic Cancer Drug Discovery"*
- $25,000 direct costs (100% Hrycyna)

• **Walther Cancer Institute, Indianapolis, IN** **2/7/00 – 6/30/04**
- Hrycyna, C.A. (PI)
- *"Molecular Targets for Cancer Therapeutics"*
- $300,000 direct costs (100% Hrycyna)

• **Purdue Research Foundation Grant** **6/1/03 – 5/31/05**
- Full-time support of Karin Ejendal (Graduate Student)

• **Cancer Pilot Project Grants Program, Purdue Cancer Center** **1/1/02 – 12/31/02**
- Hrycyna, C.A., PI and Gibbs, R.A., Co-PI
- *"Isoprenylcysteine Methyltransferase as a New Target for Cancer Chemotherapy"*
- $30,000 total direct costs (60% for Hrycyna lab)

• **Purdue Biochemistry and Molecular Biology Program NIH Training Grant**
- Trainer – Aarti Bhatia, Ph.D. student **2001 – 2004**

• **American Cancer Society IRG Award** **7/1/2000 – 6/30/02**
- Hrycyna, C.A. (PI)
- *"Molecular Characterization of a Novel Mitoxantrone Resistance-Associated ABC Transporter, MXR1: An Analysis of the ATP and Drug Binding Domains of Human MXR1 Expressed in the Yeast Saccharomyces cerevisiae"*
- $20,000 direct costs (100% for Hrycyna lab)

• **2001 Purdue University PRF International Travel Grant**
- Used for travel to 3rd FEBS Advanced Lecture Course *"ABC-Binding Proteins: From Multidrug Resistance to Genetic Disease"*
- Gosau, Austria, March 3-10, 2001

• **Cancer Target Assay Development Grant, Purdue Cancer Center** **1/1/01 – 6/30/02**
- Christine Hrycyna, PI, Co-PI's David Thompson and Mark Green
- *"Medium and High-throughput Screening of Novel Anti-Cancer Drugs as Substrates and Inhibitors of Human P-glycoprotein"*
- $25,000 direct costs (50% for Hrycyna lab)

• **Cancer Pilot Project Grants Program, Purdue Cancer Center** **1/1/01 – 6/30/02**
- Hrycyna, C.A., PI and Stauffacher, C., Co-PI
- *"Biochemical and Structural Analysis of the STE14 C-terminal Isoprenylcysteine Methyltransferase from Saccharomyces cerevisiae"*
- $35,000 direct costs (75% for Hrycyna lab)

V. HRYCYNA LABORATORY PERSONNEL

1. Ph.D. and M.S. students graduated: 29 (24 Ph.D & 5 M.S.)

1. Jessica Anderson (Chemistry) (Fall 2000; joined Spring 2021) Ph.D. 10/12/05
2. Ndeye Khady Diop Bove (Chemistry) (Fall 2000, joined Spring 2021) Ph.D. 4/17/06
3. Karin Ejendal (BMB) (Fall 2000; joined Summer 2001) (Ph.D. 5/4/06)
4. Shakira Morera-Felix (Chemistry) (Fall 2003; joined Spring 2004) M.S. 5/5/06
5. Aarti Bhatia (BMB) (Fall 2001; joined Spring 2002) Ph.D. 4/5/07

6. Darryl Boyd (Chemistry) (Fall 2004, joined Spring 2005) M.S. 7/16/08
7. Kevin Cram (PULSe) (Fall 2005, joined Summer 2006) M.S. 6/30/08
8. Heather Hodges – Loaiza (Chemistry) (Fall 2003; joined Spring 2004) Ph.D. 12/2/08
9. Sarah Hudon (Chemistry) (Fall 2003; joined Spring 2004) Ph.D. 1/23/09
10. Amy Griggs (BMB) (Fall 2003, joined Spring 2004) Ph.D. 4/8/09
11. Dana Emmert (PULSe) (Fall 2004; joined Spring 2007) Ph.D. May 2011
12. Ulhas Kadam (PULSe) (Fall 2008; joined Summer 2009) M.S. Fall 2011
13. Jenna Ivers (PULSe) (Fall 2009; joined Summer 2010) M.S. Fall 2011
14. Brett Schilling (Chemistry) (Fall 2006; joined Spring 2007) Ph.D., June 2012
15. Shengfeng Xu (PULSe) (Fall 2007; joined Summer 2008) Ph.D., June 2012
16. Kalub Hahne (Chemistry) (Fall 2007; joined Spring 2008) Ph.D., December 2012
17. Amanda Logue (PULSe) (Fall 2007, joined Summer 2008); Ph.D. May 2013
18. Kelsey Bohn (Chemistry) (Fall 2009, joined Spring 2010); Ph.D. Aug 2015
19. Patricia Wiley (Chemistry) (Fall 2009, joined Spring 2010); Ph.D. Aug 2015
20. Karen Olsen (Chemistry) (Fall 2010, joined Spring 2011); Ph.D. May 2016
21. Amy Funk (PULSe) (Fall 2011, joined Summer 2012); Ph.D. May 2017
22. Allison Lange (PULSe) (Fall 2011; joined Summer 2012) Ph.D. May 2017
23. Carly Schnoebelen (Chemistry) (joined Spring 2016) Ph.D., May 2018
24. Erh-Ting Hsu (PULSe) (Fall 2013; joined Summer 2014) Ph.D., Dec. 2018
25. Anna Ratliff (Chemistry) (Fall 2014, joined Spring 2015), Ph.D., August 2019
26. Jason Goebel (Chemistry) (Fall 2014, joined Spring 2015), Ph.D., Dec. 2020
27. Chelsea Theisen (PULSe) (joined Summer 2016), Ph.D., Dec. 2021
28. Ariana Cardillo (Chemistry) (Fall 2016, joined Spring 2017), Ph.D., May 2022
29. Elias Beretta (Chemistry) (Fall 2016, joined Spring 2017), Ph.D., Dec. 2022

2. Current Ph.D. Graduate Students:

- Shanica Brown (Fall 2018; joined Spring 2019)
- Akansha Maheshwari (PULSe) (joined Summer 2019)
- Danielle Toner (Fall 2020; joined Spring 2021)
- Eric Glasser (Fall 2020; joined Spring 2021)
- Erick Baez Bolivar (Fall 2021; joined Spring 2022)
- Andrew Caskey (Fall 2021; joined Fall 2021)
- Chidinma (Pamela) Ononiwu (joined Spring 2023)

3. Undergraduate Laboratory Research Students: (* indicates current student)

- Annie Gowan (Chemistry)*
- Alex Piroozi (Biology) - IU Medical School
- Nisreen Islaih (Chemistry Honors/Beering Scholar) - IU Medical School
- Sahej Bains (Biology) – M.D./Ph.D. Program – Mayo Clinic, Rochester, MN
- Rebecca Sterner (Biology)
- Erich Weidenbener (Biology)
- Alexandra Bednarz (Pharmacy School)
- Rui Guo (Pharmacy School)
- Elizabeth Dobben (Chemistry)
- Colin Hansen (Pharmacy School)
- Amanda McIntire (Chemistry)
- John Herrington (Chemistry) – Chemistry Ph.D. Program – University of Notre Dame
- Wilmarie Fuentes (SROP – Puerto Rico)
- Tingjiao Li (Pre-Pharmacy) – Purdue Pharm.D. Program
- Cameron Wade (Chemistry) – Purdue PULSe Ph.D. Program
- Rachel Weingartner (Pre-Pharmacy) – Purdue Pharm.D. Program
- Andrew Drahos (Chemistry) – Indiana University Medical School
- Kristina Thorsell (Chemistry) – MPH Graduate School

- Audrey Wessel (Biology)
- Dorothy Cupka (Chemistry) – UT Southwestern Graduate School Biosciences
- Amanda Lines (Chemistry/Chemical Engineering)
- Joshua Mieher (Chemistry) – University of Alabama BMB Ph.D. Program
- Hari Vasu (Honors Biology) – IU Medical School
- Emily Starrick (Honors Biology) – Medical School
- Daniel Piraner (Chemistry)
- Katelyn Zak (Interdisciplinary Engineering)
- Paul Wrighton (Chemistry) University of Wisconsin – Ph.D. Program
- Kathryn Paunicka (Chemistry)
- Claire Tornow (NSF REU Student – Summer 2006)
- Matthew Ball (Chemistry)
- Julie Lesniak (Chemistry) – Margerum Award 2006 & IUPUI Graduate School
- Daniel MacDougall (NSF REU Student – Kalamazoo College) Summer 2005
- Margaret Pain (NSF REU Student – Carleton College) Summer 2004
- Ohm Chandrruangphen (Chemistry)
- Colleen Jones (Chemistry) University of Chicago – Ph.D. Program
- James Smock (Animal Science)
- Matthew McConnell (Amherst College – Summer 2003)
- Carrie MacDonald (Middlebury College – Summer 2002)
- Amanda Anthony (Chemistry)
- Alyson Fryer (Biology)
- Christopher Green (Chemistry)
- Sara Ruegsegger (Chemistry)
- Nicole Genovese (Chemistry)
- Michael Gray (Health Sciences)
- Martin Teresk (Chemistry)
- Christopher Brown (Chemistry)
- Aaron Hoskins (Chemistry) MIT – Ph.D. Chemistry; Asst. Prof. U. Wisconsin – Biochemistry

4. Postdoctoral Fellows

- Jill Paterson – American Cancer Society Fellow (July 2007 – March 2008)
- Miranda Deverall (February 2006 – January 2007)

5. Technical Staff

- Elisabeth Garland-Kuntz (7/1/17– present)
- Vicki Croy (5/15/03– 5/31/05)
- Linda Schweiger (5/01 – 4/03)

VI. SEMINARS AND INVITED LECTURES

- **Invited Speaker and Session Chair**
  2022 FASEB Summer Research Conference
  "The Protein Lipidation Conference: Enzymology, Signaling and Therapeutics"
  James Hougland, Paul Jenkins, Mei Wang
  Saxton's River, VT, July 31 – August 5, 2022
- **Pacifichem 2021**
  Mechanisms of the CaaX Processing Enzyme ZMPSTE24/Ste24
  Invited Speaker
  December 2021
- **Invited Speaker and Session Chair**
  2019 FASEB Summer Research Conference

"The Protein Lipidation Conference: Enzymology, Signaling and Therapeutics"
Mark Distefano, Ed Tate, Will Fuller
Olean, NY, July 7 – 12, 2019

- **2017 Protein Society National Meeting**
  The 1-2-1 Transformative Chemistry Curriculum for Life Science Majors at Purdue University
  Invited Speaker
  July 25, 2017
  Montreal, CA
- **Invited Speaker and Session Chair**
  2017 FASEB Summer Research Conference
  "Protein Lipidation, Signaling and Membrane Domains"
  Rami Hannoush, Luke Chamberlain, Pat Casey, Anant Menon
  Saxton's River, VT, July 16 – 21, 2017
- **Ochanomizu University**
  Modulating ABC Transporters at the Blood-Brain Barrier
  March 29, 2017
  Tokyo, Japan
- **The 7th Symposium on Biomolecular Science**
  Osaka Prefecture University
  Modulating ABC Transporters at the Blood-Brain Barrier
  March 28, 2017
  Osaka, Japan
- **2016 Symposium:**
  Celebrating 30 Years of Research on Multidrug Resistance and ABC Transporters
  National Cancer Institute – NIH
  Invited Speaker
  "Enhancing Brain Penetration of Drugs Used to Treat Central Nervous System Disorders"
  September 21 – 22, 2016
- **2015 Pacifichem Conference**
  "Elucidation of the lipidated substrate binding site in isoprenylcysteine carboxyl methyltransferase (Icmt) using biotinylated photoaffinity probes"
  December 15 – 20, 2015
- **2015 FASEB Summer Research Conference**
  "Protein Lipidation, Signaling and Membrane Domains"
  Co-organizer & Speaker
  July 19 – 24, 2015
- **2014 FASEB Summer Research Conference**
  "Lipids and Lipid Regulated Kinases in Cancer"; Steamboat Springs, Colorado
  "Inhibitors of Ras Carboxyl Methyltransferase as Potential Treatments for Pancreatic Cancer"
  July 27 – August 1, 2014
- **247th ACS National Meeting & Exposition – 2014**
  "Elucidation of the lipidated substrate binding site in isoprenylcysteine carboxyl methyltransferase (Icmt) using biotinylated photoaffinity probes"
  Dallas, TX, March 16, 2014
- **2013 FASEB Summer Research Conference**
  "Protein Lipidation, Signaling and Membrane Domains"; Vermont Academy
  "Inhibitors of Ras Carboxyl Methyltransferase as Potential Treatments for Pancreatic Cancer"
  July 14 – 19, 2013

- **Texas A&M University,** Department of Chemistry
  "Ras Protein Carboxyl Methyltransferase: Structure, Function & Inhibitor Development"; April 18, 2013
- **245th ACS National Meeting & Exposition – 2013**
  "Elucidation of the isoprenylated substrate binding site in Ras carboxyl methyltransferase using biotinylated benzophenone-containing photoaffinity probes"
  New Orleans, LA, April 9, 2013
- **245th ACS National Meeting & Exposition – 2013**
  "Inhibitors of Ras carboxyl methyltransferase as potential treatments for pancreatic cancer"
  New Orleans, LA, April 10, 2013
- **University of North Carolina, Chapel Hill,** School of Pharmacy and the Dept. of Chemistry
  Chemical Biology and Medicinal Chemistry Seminar Series
  "Ras Protein Carboxyl Methyltransferase: Structure, Function and Inhibitor Development"
  November 7, 2012
- **2012 Biennial Conference on Chemical Education,** The Pennsylvania State University, University Park, PA, Experiences with Nontraditional Freshman-Sophomore Chemistry Sequences**,***"Curricular model for chemistry education for life science students"*
  July 29 – August 2, 2012
- **IUPUI, School of Science, Department of Biology**
  "Enhancing Brain Penetration of Drugs Used to Treat Central Nervous System Disorders"
  February 10, 2012
- **University of Tokyo**: **39th Mini-Symposium on Molecular Pharmacokinetics"ABC Transporters as Molecular Targets and Controlling Factors of Pharmacokinetic Profiles"**
  Plenary Speaker: *"Enhancing Brain Penetration of Drugs Used to Treat Central Nervous System Disorders through Modulation of ABC Transporters"***;** Tokyo, Japan; September 27, 2011
- **Daiichi Sankyo Pharmaceuticals**
  "Enhancing Brain Penetration of Drugs Used to Treat Central Nervous System Disorders through Modulation of ABC Transporters"; Tokyo, Japan; September 28, 2011
- **Taisho Pharmaceutical Co.**
  "Bivalent Inhibitors of P-glycoprotein to Enhance the Brain Penetration of Central Nervous System Therapeutics"; Tokyo, Japan; September 28, 2011
- **University of Kentucky College of Medicine,** Graduate Center for Toxicology
  "Enhancing Brain Penetration of Drugs Used to Treat Central Nervous System Disorders" Mar. 28, 2011
- **Purdue University Center for Cancer Research**
  "Targeting the Ras Processing Pathway for Pancreatic Cancer Drug Discovery"; February 10, 2011
- **Indiana Academy of Science,** Chemistry Section
  "Bivalent Inhibitors of P-glycoprotein to Enhance Bioavailability and Penetration of the Blood Brain Barrier"; October 23, 2009
- **Blizard Institute of Cell and Molecular Science**
  The Bart's College of Medicine and Dentistry
  Queen Mary University of London
  "Bivalent Inhibitors of P-glycoprotein to Enhance Bioavailability & Penetration of the Blood Brain Barrier"; London, England; September 30, 2009
- **Imperial College London**
  Faculty of Medicine/National Heart and Lung Institute
  "CaaX Protein Carboxylmethyltransferases: Molecular Mechanisms and Inhibitor Development"
  London, England; September 28, 2009
- **Deutsche Forschungsgemeinschaft (German Research Foundation)**

International Symposium: *"Structure and Molecular Interactions as a Basis for Drug Action"*
"Bivalent Inhibitors of P-glycoprotein"
University of Bonn, Bonn, Germany; September 21 – 23, 2009

- **University of New Mexico School of Medicine**, Dept. of Biochemistry and Molecular Biology
"*Bivalent Inhibitors of P-glycoprotein";* September 11, 2009
- **IUPUI**, Department of Chemistry
"Molecular Targets for Cancer Chemotherapy"; September 10, 2008
- **2008 Gordon Research Conference**
"Membrane Transport Proteins"; Il Ciocco; Lucca (Barga), Italy
Modulating P-glycoprotein to Enhance Neurodegenerative & Cancer Drug Penetration of Brain
July 20 – 25, 2008
- **Truman State University**, Department of Chemistry, ACS Student Affiliate Invited Speaker
"Molecular Targets for Cancer Chemotherapy"; March 30, 2007
- **Vanderbilt University,** Institute of Chemical Biology, Department of Biochemistry
Research Seminar: *"Isoprenylcysteine Carboxylmethyltransferases: Molecular Characterization and the Development of Inhibitors";* Seminar 2: *"Careers for the New Millenium: Research and Teaching at a Research University";* November 14, 2007
- **The Cloning of the Human *MDR1* Gene 20th Anniversary Celebration** – National Institutes of Health
"Biochemical ABC's of Multidrug Resistance Transporters"; September 20, 2006
- **2006 FASEB Summer Research Conference**
"Protein Lipidation, Signaling and Membrane Domains"
"Molecular Mechanisms of Protein CaaX Carboxylmethyltransferase"; July 22 – 27, 2006
- **2006 FASEB Summer Research Conference**
"Biological Methylation"
Isoprenylcysteine Carboxyl Methyltransferases: Molecular Mechanisms & Inhibitor Development
June 24 – 29, 2006
- **Kalamazoo College**, Department of Chemistry
"Molecular Targets for Cancer Therapeutics"; November 14, 2005
- **St. Jude Children's Research Hospital**, Department of Pharmaceutical Sciences
"*Molecular Investigation of the Human ABC Transporter, ABCG2*"; October 20, 2005
- **Purdue University**, Department of Chemistry
Isoprenylcysteine Carboxyl Methyltransferases: Molecular Mechanisms & Inhibitor Development
October 14, 2005
- **Purdue University**, Dept. of Biochemistry, *Molecular Targets for Cancer Therapeutics";* Sept. 7, 2005
- **UCLA David Geffen School of Medicine**, Department of Human Genetics
"*Ras Isoprenylcysteine Carboxyl Methyltransferases: Purification, Characterization and Development of Novel Inhibitors";* June 3, 2005
- **Case Western Reserve University**, Department of Chemistry
"*Molecular Mechanisms of Ras Isoprenylcysteine Carboxyl Methyltransferase*"; May 6, 2005
- **University of Virginia**, Department of Biochemistry
"*Molecular Mechanisms of Ras Isoprenylcysteine Carboxyl Methyltransferase*"; May 2, 2005
- **Medical College of Wisconsin**, Department of Biochemistry
"*Molecular Mechanisms of Ras Isoprenylcysteine Carboxyl Methyltransferase*"; April 27, 2005
- **Iowa State University**, Dept. of Biochemistry, Biophysics & Molecular Biology
"*Ras Isoprenylcysteine Carboxylmethyltransferases: Purification, Characterization and Development of Novel Inhibitors"*; April 21, 2005
- **University of Iowa**, Dept. of Biochemistry, Biophysics & Molecular Biology

"*Molecular Characterization of the Human ABC Transporter, ABCG2"*; April 20, 2005

- **National Cancer Institute/NIH**, Laboratory of Cell Biology
  "*Molecular Characterization of the Human ABC Transporter, ABCG2"*; April 12, 2005
- **Organic Division Seminar,** Department of Chemistry, Purdue University
  "*Ras Isoprenylcysteine Carboxylmethyltransferases: Purification, Characterization and Development of Novel Inhibitors";* April 7, 2005
- **XXIV Midwest Enzyme Chemistry Conference (MECC)**
  The University of Chicago, Chicago, IL
  "Purification, Characterization and Inhibition of the Integral Membrane Enzyme Ste14p"
  October 9, 2004
- **East Coast ABC Genes and Diseases Workshop**
  National Cancer Institute – Frederick; Frederick, MD
  "Differential Sensitivities of the Human ABC Transporters ABCG2 and P-glycoprotein to Cyclosporin A"; October 21, 2004
- **Middlebury College**, Department of Chemistry and Biochemistry, Merck Seminar Series
  "*Molecular Targets for Cancer Therapeutics"*
  September 26, 2003
- **Indiana University School of Medicine**
  Northwest Center for Medical Education, Gary, IN
  "*Molecular Mechanisms of Ras Isoprenylcysteine Carboxyl Methyltransferase*"; April 4, 2003
- **Indiana University School of Medicine**, Department of Biochemistry and Molecular Biology
  "*Molecular Targets for Cancer Therapeutics*"; March 31, 2003
- **2003 Keystone Symposium: Membrane Proteins: Structure and Mechanism**
  "*Molecular Mechanisms of Ras Isoprenylcysteine Carboxyl Methyltransferase",* Feb. 4 – 10, 2003
- **Purdue University Workshop: Biology of the Future: Sensor Needs**
  "High-throughput Assay Technology for Membrane Proteins"; April 20, 2002.
- **Presentation to the Discovery Park – Bioscience/Engineering Center (BEC) Executive Council:** "High-throughput Assay Technology for Membrane Proteins**"** – Potential cost share for Purdue's "Center for Membrane Protein Biotechnology" in partnership with the Indiana 21st Century Research and Technology Fund, September 23, 2002
- **Active Pass Pharmaceuticals**, Vancouver, BC, Canada, Seminar/Consulting: *"Molecular Targets for Cancer and Heart Disease Therapeutics";* June 26-28, 2002

- **Ball State University,** Department of Chemistry
  "Molecular Targets for Cancer Therapeutics," March 21, 2002.
- **University of Hawaii Pacific Biomedical Research Center,** Laboratory of Matrix Pathobiology, Honolulu, HI, *"Molecular Targets for Cancer Therapeutics,"* January 22, 2002.
- **Eastern Michigan University,** Department of Chemistry
  "The ABCs of Drug Resistance in Cancer," November 2000.
- **University of Michigan, Dearborn**, Department of Natural Sciences, Dearborn, MI, Seminar:
  "The ABCs of Drug Resistance in Cancer," October 2000.
- **Purdue Cancer Center Annual Retreat**, Invited Speaker: *"The ABCs of Drug Resistance in Cancer,"* September 2000.
- **University of San Diego**, Department of Chemistry; *"Drug Resistance in Cancer,"* March 2000.
- **NCI-Frederick Cancer Research Development Center**, Laboratory of Macromolecular Structure, Frederick, MD, Seminar: *"How does the Human Multidrug Transporter Pump Drugs",* Jan. 2000.

- **2nd FEBS Advanced Lecture Course/Meeting: ATP-Binding Cassette (ABC) Transporters, Gosau, Austria**, *"Both ATP Sites of Human P-glycoprotein are Essential but Not Equivalent,"* February 1999.
- **NIH Research Festival 1998**, Bethesda, MD, Mini-Symposium talk: *"Structural Flexibility of the Linker Region of Human P-glycoprotein Permits ATP Hydrolysis and Drug Transport,"* October 1998.
- **American Association for Cancer Research (AACR) Annual Meeting**, New Orleans, LA, Mini-symposium talk: *"Domain-Domain Interactions of Human P-glycoprotein: Role of the Linker Region in ATP Hydrolysis and Drug Transport,"* March 1998.
- **Royal Danish School of Pharmacy,** Department of Medicinal Chemistry, Copenhagen, Denmark, Seminar: *"Functional Characterization of Mutant Human P-glycoproteins Using a Vaccinia Virus Transient Expression System,"* March 1997.
- **1st FEBS Advanced Lecture Course/Meeting: ATP-Binding Cassette (ABC) Transporters, Gosau, Austria,** Short talk: *"Functional Characterization of the Nucleotide Binding Domains of Human P-glycoprotein Using a Vaccinia Virus Transient Expression System,"* February 1997.

VII. SCIENTIFIC MEETINGS ORGANIZED

- **Co-Organizer and Co-Chair**
  2015 FASEB Summer Research Conference
  "Protein Lipidation, Signaling and Membrane Domains"
  Michael Shipston, Masaki Fukata, Carol Williams, Co-Chairs
  Saxton's River, VT, July 19 – 24, 2015
- **Co-Organizer and Co-Chair**
  2011 FASEB Summer Research Conference
  "Protein Lipidation, Signaling and Membrane Domains"
  Martin O. Bergo, European Co-Chair
  Saxton's River, VT, July 24 – 29, 2011
- **Co-Chair**, Chemistry Section, Indiana Academy of Science Annual Meeting, March 4 – 5, 2011.
- **Scientific Symposium Organizer and Leader**, Division of Medicinal Chemistry, "*ABC Transporters and Multidrug Resistance*", National ACS Meeting, New Orleans, LA, April 6 – 10, 2008.

- **Organizing Committee, 2002 Walther Cancer Institute Annual Scientific Retreat**
  Co-organizer responsible for organization and implementation of retreat events
  Held at Purdue University – 150+ participants, August 8-10, 2002.
- **Scientific Symposium Organizer and Leader**, "Mechanisms of Drug Resistance", 33rd Central/33rd Great Lakes Regional Meeting of the American Chemical Society, Grand Rapids, Michigan, June 11-13, 2001.

VIII. SESSION CHAIR AT SCIENTIFIC MEETINGS

- **3nd FEBS Special Meeting**
  "ABC-Binding Proteins: From Multidrug Resistance to Genetic Disease"
  Innsbruck, Austria, February 27 – March 5, 2010
  Session Chair, Poster Presenter & Scientific Advisory Board Member
  "Inhibition of Human P-glycoprotein by Dimers of the Substrate Quetiapine, an Anti-Psychotic Agent"

- **2nd FEBS Special Meeting "ABC-Binding Proteins: From Multidrug Resistance to Genetic Disease" Innsbruck, Austria, March 1 – 8, 2008**
  Session Chair & Poster Presenter; *Posters: "Structural Characterization of ABCG2 via a Cysteine-less Variant" and "Bivalent Inhibitors of P-glycoprotein"*
- **3rd Annual North American ABC Genetic Workshop; Frederick, MD, September 21 – 22, 2006**
  Session Chair

IX. TEACHING DUTIES AND INNOVATIONS

A. STATEMENT OF TEACHING PHILOSOPHIES, INNOVATIONS, PEDAGOGIES AND ACTIVITIES

Summary:

During my tenure at Purdue, the majority of my teaching activities and accomplishments have been in the area of undergraduate education. My significant achievements in this area include: (1) instructing ~1500 students in a one-semester introductory biochemistry course for non-chemistry majors, mainly from the College of Health Sciences, (2) leading an initiative to develop and implement a new 1-2-1 chemistry freshman/sophomore curriculum for life science and pre-health professional students at Purdue, (3) developing and teaching a new one-semester accelerated general chemistry course with a biological focus for the new curriculum, (4) Co-PI in the HHMI-funded National Experiment in Undergraduate Science Education (NEXUS) initiative, (5) serving as research mentor for ~40 undergraduate students at Purdue, including those from the NSF REU, SROP and MARC-AIM summer research programs and (6) serving as the College of Science representative in establishing and implementing the new University Core Curriculum. On evaluations from multiple semesters, numerous students stated that I was one of, if not the, best professors that they have had at Purdue. Many others have commented positively on my enthusiasm, knowledge of the subject matter and genuine concern about them and their education. In recognition of my teaching achievements and student evaluations, I have won the highest teaching awards given at Purdue by the Department of Chemistry (Arthur E. Kelley Undergraduate Teaching Award – 2003 & 2009), the College of Science (Outstanding Teacher of Undergraduates in the College of Science Award – chosen by students – 2003) and the University (Outstanding Undergraduate Teaching Award in Memory of Charles B. Murphy – 2007). As a result of my accomplishments, I was inducted as a Fellow into the Purdue University Teaching Academy in 2008 and am due to be inducted into the Purdue University Great Book of Teachers during the 2013 – 2014 academic year. In each of the past two years, I have been selected by undergraduate students as a "Favorite Faculty Member" in a newly developed faculty recognition program at Purdue. In 2018, I was named a 150th Anniversary Professor.

In terms of graduate education, I have also taught graduate courses in transport biochemistry and the posttranslational modifications of proteins. I also served as the Chair of Graduate Admissions & Recruitment for the Department of Chemistry. My most significant accomplishments, however, involve my activities in the interdisciplinary life sciences graduate program (PULSe) since its inception in 2003. I was the founding member of the Membrane Biology Training Group and served as its head from 2003 – 2012. In 2012, I was elected Head of the PULSe Graduate Program and continue to serve in that position.

X. SERVICE

A. DEPARTMENT OF CHEMISTRY

- **Department Head** July 2017 – present
- **Associate Head (Teaching & Undergraduate Education)** July 2016 – June 2017
- **Departmental Strategic Planning Committee (Chair)** 2015 - 2017
- **Head, Biochemistry Division, Department of Chemistry** 2013 - 2017
- **Departmental Executive Committee** 2013 - present
- **Faculty Hiring & Recruitment Committee – Chair (Biochemistry Hire)** 2013 – 2014
- **Department of Chemistry Equity Advisor** 2012 - 2016
- **Graduate Admissions & Recruiting Committee – Chair** 2012 – 2014
- **University Senate – Department of Chemistry Representative** 2011 – 2017
  - Elected to **Educational Policy Committee (EPC)** 2011 – 2017
  - Elected to **University Senate Advisory Committee** – College of Science Representative 2012 – 2013
- **General Chemistry Committee** 2010 – 2016

- **ACS Student Affiliate – Faculty Mentor** 2007 – 2010
- **Undergraduate Committee** 2005 – 2011
  - Committee Chair 2007 – 2009
- **Cell Culture Facility (CCCB)** 2003 – present
  - Facility Co-Director (J. Chmielewski)
  - Faculty Oversight Committee Member
- **College of Science Faculty Council** 2005 – 2009
  - Department of Chemistry Representative
- **College of Science Undergraduate Education Policy & Curriculum Committee (UEPCC)**
  - Department of Chemistry Representative 2006 – 2008
  - Faculty Council Representative 2007 – 2008
- **Faculty Hiring & Recruitment Committee – Chair (Biochemistry Hire)** 2006 – 2007
- **Department of Chemistry Executive Committee** 2002 – 2006
- **Chemistry Graduate Admissions/Recruitment Committee** 2001 – 2005
- **Other Faculty Graduate Students Thesis Committees**
- **Other Faculty Graduate Students Thesis Committees**

B. COLLEGE OF SCIENCE

- **College of Science Dean Search Advisory Committee** 2016 – 2017
- **College of Science *Strategic Planning Guidance Group* (SPGG)**
  - Department of Chemistry Representative 2015 – 2017
- **Faculty Search Committee – Department of Biological Sciences:**
  - 1 junior position and 1 senior positions 2015 – 2017
- **University Senate – Department of Chemistry Representative** 2011 – 2017
  - Elected to **Educational Policy Committee (EPC)** 2011 – 2017
  - Elected to **University Senate Advisory Committee** – College of Science Representative 2012 – 2014
- **University Core Curriculum Committee – College of Science Rep.** 2011 –2012
- **Faculty Fellow – Learning Community Freshmen Science Honors Students** 2009 – 2010
  - McCutcheon Residence Hall
- **Undergraduate Education Policy and Curriculum Committee (UEPCC)** 2006 – 2009
  - Department of Chemistry Representative 2006 – 2007; 2008 - 2009
  - Faculty Council Representative 2007 – 2008
- **College of Science Faculty Council** 2005 – 2009
  - Department of Chemistry Representative

C. UNIVERSITY

- **Administrative Review Committee for the Dean of the College of Science** ……2022
- **AAU STEM Department Chair Workshop** 2018
- **Big 10 Academic Alliance Department Executive Officers (DEO) Seminar** 2017
- **Purdue University CIC (Big10 Alliance) Academic Leadership Program Fellow** 2015 – 2016
- **Purdue University Life Sciences Education (PULSe) Interdisciplinary Graduate Program**
  - Chair of the Graduate Program 2012 – 2017

- **University Curriculum Council (UCC)** 2012 – 2013
  - Founding Chair 2012
  - Senate Educational Policy Committee (EPC) Representative 2012 – 2013
- **University Core Curriculum Committee** 2011 – 2012
- **University Senate – Department of Chemistry Representative** 2011 – 2017
  - Elected to **Educational Policy Committee (EPC)** 2011 – 2017
  - Elected to **University Senate Advisory Committee** – College of Science Representative 2012 – 2017
- **Faculty Mentoring Network, Purdue University Teaching Academy** 2006 – present
  - Faculty Mentor
- **Faculty Fellows Program**
  - Faculty Fellow, Harrison Residence Hall 2006 – 2007
  - Faculty Fellow, McCutcheon Residence Hall 2009 – 2010

D. INTERDISCIPLINARY ACTIVITIES AT PURDUE UNIVERSITY

- **Purdue University Life Sciences Education (PULSe) Interdisciplinary Graduate Program**
  - Head of the Graduate Program 2012 – 2017
  - Organizer and Chair of "Membrane Biology" Training Group 2003 – 2012
  - Executive Committee Member (Membrane Biology Representative)
  - Participatory member of "Structural Biology", "Integrated Molecular Signaling and Cancer Biology" and "Chemical Biology" Training Groups
- **Purdue University Center for Drug Discovery – Member** 2013 – present
- **Biochemistry & Molecular Biology (BMB) Program**
  - Member 2000 – 2004
  - Graduate Student Recruitment Committee
- **Purdue Bindley Bioscience Center – Member** 2005 – present
  - Member
- **Purdue Center for Membrane Protein Biotechnology (CPMB)** 2003 – present
  - Co-PI; Funded by the Indiana 21st Century Research and Technology Fund
- **Purdue Cancer Center Cluster Hire Committee** 2001 – 2002
- **Purdue University Cancer Center – Member** 2000 – present

E. PROFESSIONAL

- **Editorial Board – *The Journal of Biological Chemistry (JBC)* – ASBMB** 2015 – present
- **External Review Advisory Committee** February 2022
  - Department of Chemistry
  - University of Arizona
- **External Review Advisory Committee** October 2022
  - Department of Chemistry
  - University of Illinois, Chicago
- **Nominating Committee – American Chemical Society Division of Biological Chemistry** 2015 – 2017
- **Digital Faculty Consultant – McGraw-Hill Higher Education Company** Fall 2012 – Fall 2017

- **Textbook Reviewer**
  - Pratt's *Essentials of Biochemistry*
  - McKee & McKee's *Biochemistry: The Molecular Basis of Life*
  - Burdge and Overby, "Atoms First"
- **NIH Study Section Reviewer – Special Emphasis Panel 2014**
  - *Ad Hoc* member
  - Biological Chemistry and Macromolecular Biophysics
- **American Cancer Society – Peer Review Committee on Cancer Drug Development (CDD)**
  - *Ad Hoc* proposal reviewer 2009 – 2010
  - Standing Member – Peer Review Committee 2011 – 2015
- **Cottrell College Science Award – Research Corporation** 2009
  - Proposal Reviewer
- **University of Wisconsin-Milwaukee's Research Growth Initiative** 2008
  - Proposal Reviewer
- **NIH Study Section Reviewer –** NIH F04B Fellowship Study Section 2007
  - Biological Chemistry & Macromolecular Biophysics (BCMB)
  - ZRG1 F04B-T (20) L – Biophysical and Biochemical Science
- **NIH Study Section Reviewer – Membrane Biology and Protein Processing (MBPP)**
  - *Ad Hoc* member 2006
- **International Scientific Advisory Board (SAB) Member** 2004 – present
  - Federation of European Biochemical Societies (FEBS) Meetings on ABC Proteins
- **Expert Witness/Expert Reviewer** **……..**2005 – present
  - Inception LLC and Fitzgerald Associates for *Embedded Concepts*
- **Editorial Board Member**
  - *Future Medicinal Chemistry* 2008 – present
  - *Protein Peptide Science* 2004 – present
- **Consultant**, Active Pass Pharmaceuticals, Vancouver, Canada; 2002
- **Consultant**, 3M Pharmaceuticals, St. Paul, MN 2001

F. OUTREACH AND MENTORING

- **Chemistry Day at Purdue for High School Students** October 29, 2011
- **American Chemical Society Student Affiliate Faculty Advisor – Purdue Chapter** 2007 – 10
- **NIH Graduate Research Festival**
  - Former Trainee Panel: "*How I Benefited from my NIH Training Experience*"
  - Invited panelist
  - NIH, Bethesda, MD, October 12 – 13, 2006; Sept. 11 – 12, 2008; Nov, 12 – 13, 2009
- **Purdue University School of Science High School Girls Recruitment Day**
  - Performed demonstrations and talked to area high school girls about science
  - April 5, 2003
- **National Institutes of Health, Bethesda, MD: Invited speaker** to the postdoctoral community (2500 post-docs) at the NIH as part of a seminar series entitled *"Careers for the 21st Century – Research and Teaching at a Research University"*, May 10, 2001
- **Iota Sigma Pi**, Purdue University Department of Chemistry Chapter
  - Invited Speaker – Career Discussion Group
  - October 26, 2000

- **Panelist, NCI Center for Cancer Research Fellows and Young Investigators Association**
  - 2nd Annual Retreat; National Institutes of Health
  - Baltimore, MD, February 25 – 26, 2002
- **Iota Sigma Pi**, Purdue University Department of Chemistry Chapter,
  - Panelist – Preliminary Examination Help Session
  - September 18, 2002; August 3, 2005; July 22, 2010

G. DIVERSITY EFFORTS

- **Ford Foundation Fellowship Program on the Biological & Biomedical Sciences Panel**
  - Ford Foundation seeks to increase the diversity of the nation's college and university faculties by increasing their ethnic and racial diversity
  - Grant Reviewer (Pre- and Post-doctoral applications) 2011, 2022, 2023
- **Selection Committee – Diversity Transformation Awards (Purdue)** 2015
- **Summer Research Opportunities Program (SROP)** 2011, 2016
  - Faculty Research Mentor
  - Program designed for underrepresented undergraduate students to increase the number who pursue graduate study and research careers.
- **Faculty Research Sponsor**
  - NSF REU program - *Research Experience for Undergraduates in Chemical Biology*
- **HORIZONS Faculty Mentoring Program** 2005 – present
  - Faculty mentor; Designed for first-generation, low-income and disabled students
- **Midwest Crossroads AGEP Faculty Mentor** 2005 – present
  - I agreed to graduate at least one underrepresented minority in ten years with a Ph.D. in a S.T.E.M. (Science, Technology, Engineering and Math) discipline.
    Amanda Morrison Logue – Ph.D. Student – PULSe 2007 – Ph.D., May 2013
- **Purdue University Minority Access to Research Careers and Access Internally for Minorities** (MARC/AIM) Summer Research Program 2001 & 2002
  - Evening Speaker June 11, 2002
  - Research Mentor for Undergraduate Student and Evening Speaker June 19, 2001