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EMPLOYMENT

May 2022 - present	*Distinguished University Professor,* **University of Maryland**, Baltimore MD
Feb 2020 - present	*Chair, Department of Pharmaceutical Sciences, School of Pharmacy,* **University of Maryland**, Baltimore MD
2011 - present	*Associate Dean for research and Advanced Graduate Education,* School of Pharmacy, **University of Maryland**, Baltimore, MD
2008 - present	*Professor of Pharmaceutical Sciences,* School of Pharmacy, **University of Maryland**, Baltimore, MD
2007- 2015	*Director, Center for Nanomedicine and Cellular Delivery, School of Pharmacy,* **University of Maryland**, Baltimore, MD.
2006 - 2008	*Vice Chair for Research,* Department of Pharmaceutical Sciences, **University of Maryland**, Baltimore, MD.
2004-2011	*Director, Core Laboratory for Mass Spectrometry and Proteomics,* Department of Pharmaceutical Sciences, **University of Maryland**, Baltimore, MD.
2003-2008	*Associate Professor of Pharmaceutical Sciences,* **University of Maryland**, Baltimore, MD.
2002	*Associate Professor of Biophysics & Pharmaceutics,* **The Ohio State University**, Columbus, OH
2001-2003	*Director, Division of Bioinformatics and Computational Biology,* Biophysics Graduate Program, **The Ohio State University**
2000-2003	*Director, Core Laboratory for Bioinformatics and Computational Biology,* **Dorothy M. Davis Heart & Lung Research Institute**, OSU, Columbus, Ohio.
1999 – 2002	*Joint Assistant Professor of Biophysics,* **The Ohio State University**, Columbus OH
1996 – 2002	*Assistant Professor of Pharmaceutics and Pharmaceutical Chemistry,* **The Ohio State University**, Columbus, Ohio.
05 – 10/1991	*Visiting Scientist*, Department of Pharmaceutics, College of Pharmacy, **University of Michigan**, Ann Arbor, Michigan (Supervisor: Dr Gordon L. Amidon)
05 – 10/1990	*Visiting Scientist*, Department of Drug Delivery, **SmithKline Beecham**, King of Prussia, PA. (Supervisor: Dr. Philip L. Smith)

EDUCATION

1994 – 1996	**Postdoctoral Fellow**, Department of Biopharmaceutics and Pharmaceutical Chemistry. **University of California at San Francisco**, California. Advisors: Francis C Szoka, Jr. and Svein Øie
1993	**Ph.D., Biopharmaceutics, University of Utrecht**, Utrecht, The Netherlands Thesis: Prodrug targeting to the intestinal peptide carrier: an approach for increasing oral bioavailability. Advisor: Daan J.A. Crommelin
1989	**M.S. Pharmacy, Utrecht University**, Utrecht, The Netherlands
1984	**Propaedeuse, University of Leiden,** Leiden, The Netherlands

PUBLICATIONS

	All	Since 2017
Citations	12519	4001
h-index	55	28
i10-index	114	64

H-index (as of 4/2022) Scopus: 47; Google Scholar: 55

1. Murphy WA, Beaudoin JJ, Laitinen T, Sjostedt N, Malinen MM, Ho H, et al. Identification of Key Amino Acids that Impact Organic Solute Transporter Alpha/Beta (OSTalpha/beta). Mol Pharmacol. 2021. DOI: 10.1124/molpharm.121.000345

2. Ayewoh EN, Czuba LC, Nguyen TT, Swaan PW. S-acylation status of bile acid transporter hASBT regulates its function, metabolic stability, membrane expression, and phosphorylation state. Biochim Biophys Acta Biomembr. 2021;1863(2):183510.

3. Shiffka SJ, Jones JW, Li L, Farese AM, MacVittie TJ, Wang H, Swaan PW, Kane MA. Quantification of common and planar bile acids in tissues and cultured cells. J Lipid Res. (2020) 61:1524-1535

4. Swaan PW. Farewell Message from the Editor-in-Chief. Pharm Res. 2020 Jul 8;37(7):135.

5. Lebovitz L, Swaan PW, Eddington ND. Trends in Research and Graduate Affairs in Colleges and Schools of Pharmacy, Part 1 – Programs Am J Pharm Educ. 2020 84:7643

6. Lebovitz L, Swaan PW, Eddington ND. Trends in Research and Graduate Affairs in Colleges and Schools of Pharmacy, Part 2 – Students Am J Pharm Educ. 2020 84:7642.

7. Lebovitz L, Swaan PW, Eddington ND. Trends in Research and Graduate Affairs in Colleges and Schools of Pharmacy, Part 3 – Underrepresented Minorities. Am J Pharm Educ. 2020 84:7641.

8. Li L, Welch MA, Li Z, Mackowiak B, Heyward S, Swaan PW, Wang H. Mechanistic Insights of Phenobarbital-Mediated Activation of Human but Not Mouse Pregnane X Receptor. Mol Pharmacol. 2019;96(3):345-54.

9. Chothe PP, Czuba LC, Ayewoh EN, Swaan PW. Tyrosine Phosphorylation Regulates Plasma Membrane Expression and Stability of the Human Bile Acid Transporter ASBT (SLC10A2). Mol Pharm. 2019;16(8):3569-76.

10. Saha Ray A, Ghann WE, Tsoi PS, Szychowski B, Dockery LT, Pak YJ, Li W, Kane MA, Swaan P, Daniel MC. Set of Highly Stable Amine- and Carboxylate-Terminated Dendronized Au

Nanoparticles with Dense Coating and Nontoxic Mixed-Dendronized Form. Langmuir. 2019;35:3391-403.

11. Schlessinger A, Welch MA, van Vlijmen H, Korzekwa K, Swaan PW, Matsson P. Molecular Modeling of Drug-Transporter Interactions-An International Transporter Consortium Perspective. Clin Pharmacol Ther. 2018;104(5):818-35.

12. Czuba LC, Hillgren KM, Swaan PW. Post-translational modifications of transporters. Pharmacol Ther. 2018;192:88-99.

13. Chothe, PP, Czuba, LC, Moore, RH, Swaan, PW. Human bile acid transporter ASBT (SLC10A2) forms functional non-covalent homodimers and higher order oligomers. Biochim Biophys Act 1860: 645-653 (2017).

14. Shiffka, SJ, Kane, MA, Swaan, PW. Planar bile acids in health and disease. BBA Biomembranes 1859: 2269-2276 (2017).

15. Mackowiak, B, Li, LH, Welch, MA, Li, DC, Jones, JW, Heyward, S, Kane, MA , Swaan, PW, Wang, HB. Molecular Basis of Metabolism-Mediated Conversion of PK11195 from an Antagonist to an Agonist of the Constitutive Androstane Receptor. Mol Pharmacol 92: 75-87 (2017)

16. Ali I, Welch MA, Lu Y, Swaan PW, Brouwer KL. Identification of novel MRP3 inhibitors based on computational models and validation using an in vitro membrane vesicle assay. Eur J Pharm Sci. 103:52-59 (2017)

17. H. Duan, T. Hu, R.S. Foti, Y. Pan, P.W. Swaan, and J. Wang. Potent and Selective Inhibition of Plasma Membrane Monoamine Transporter by HIV Protease Inhibitors. Drug Metab Dispos. 43:1773-1780 (2015).

18. P.W. Swaan. Obituary: Paul M. Bummer (1955 - 2015). Pharm Res. 32:2813 (2015).

19. B.R. Avaritt and P.W. Swaan. Internalization and Subcellular Trafficking of Poly-l-lysine Dendrimers Are Impacted by the Site of Fluorophore Conjugation. Mol Pharm. 12:1961-1969 (2015).

20. M.A. Welch, K. Kock, T.J. Urban, K.L. Brouwer, and P.W. Swaan. Toward predicting drug-induced liver injury: parallel computational approaches to identify multidrug resistance protein 4 and bile salt export pump inhibitors. Drug Metab Dispos. 43:725-734 (2015).

21. C. Lynch, Y. Pan, L. Li, S. Heyward, T. Moeller, P.W. Swaan, and H. Wang. Activation of the constitutive androstane receptor inhibits gluconeogenesis without affecting lipogenesis or fatty acid synthesis in human hepatocytes. Toxicol Appl Pharmacol. 279:33-42 (2014).

22. Schuetz JD, Swaan PW, Tweedie DJ. The role of transporters in toxicity and disease. Drug metabolism and disposition: the biological fate of chemicals. 2014;42(4):541-5.

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24. Chothe PP, Swaan PW. Resveratrol promotes degradation of the human bile acid transporter ASBT (SLC10A2). The Biochemical journal. 2014;459(2):301-12.

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32. Claro da Silva T, Polli JE and Swaan PW (2013) The solute carrier family 10 (SLC10): beyond bile acid transport. Molecular aspects of medicine 34(2-3): 252-269.

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42. Structural requirements of the ASBT by 3D-QSAR analysis using aminopyridine conjugates of chenodeoxycholic acid. X. Zheng, Y. Pan, C. Acharya, P.W. Swaan, and J.E. Polli. Bioconjug Chem. **21**:2038-2048 (2010).

43. Publication ethics--a guide for submitting manuscripts to Pharmaceutical Research. P.W. Swaan. Pharm Res. 27:1757-1758 (2010).

44. Cellular Entry of G3.5 PAMAM Dendrimers by Clathrin- and Dynamin-Dependent Endocytosis is Required for Tight Junctional Opening in Intestinal Epithelia. D.S. Goldberg, H. Ghandehari and P.W. Swaan. *Pharm Res*. **27**:1547-57 (2010).

45. Targeting drug transporters - combining in silico and in vitro approaches to predict in vivo. Bahadduri PM, Polli JE, Swaan PW, Ekins S. *Methods Mol Biol.* **637**:65-103 (2010).

46. Riboflavin-Targeted Polymer Conjugates for Delivery of Mitomycin C to Breast Tumors. LM. Bareford, B.R. Avaritt, H. Ghandehari, A. Nan, and P.W. Swaan. *J Control Rel.* Accepted for publication (2010)

47. Increased expression of MDR1 and BCRP in placenta of women with preterm labor and associated inflammation. CW Mason, IA Buhimschi, C. Buhimschi, Y. Dong, C.P Weiner, and P.W. Swaan. J Pharmacol Exp Ther. Under Review.

48. Human Effector / Initiator Gene Sets That Regulate Myometrial Contractility During Term and Preterm Labor. CP. WEINER, CW MASON, Y. Dong, IA Buhimschi, P.W. Swaan and C. Buhimschi. *Am. J Obstet Gynecol.* **202**: 474 (2010).

49. Membrane transporters in drug development. K.M. Giacomini, S.M. Huang, D.J. Tweedie, L.Z. Benet, K.L. Brouwer, X. Chu, A. Dahlin, R. Evers, V. Fischer, K.M. Hillgren, K.A. Hoffmaster, T. Ishikawa, D. Keppler, R.B. Kim, C.A. Lee, M. Niemi, J.W. Polli, Y. Sugiyama, P.W. Swaan, J.A. Ware, S.H. Wright, S.W. Yee, M.J. Zamek-Gliszczynski, and L. Zhang. *Nat Rev Drug Discov*. **9**:215-236 (2010).

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55. Transepithelial Transport of PEGylated Anionic Poly (Amidoamine) Dendrimers: Implications for Oral Drug Delivery. Sweet, DM, Kolhatkar, RB, Swaan, PW, and Ghandehari, H. *J Control Rel.* In press (2009).

56. Intracellular processing of riboflavin in human breast cancer cells. Bareford LM, Phelps MA, Foraker AB, Swaan PW. *Mol Pharm.* **5:** 839-48 (2008).

57. Potential Oral Delivery of 7-Ethyl-10-Hydroxy-Camptothecin (SN-38) using Poly(amidoamine) Dendrimers. Kolhatkar, RB, Swaan, PW, and Ghandehari, H. *Pharm. Res.* **25:**1723-1729 (2008).

58. Conserved aspartic acid residues lining extracellular loop I of sodium-coupled bile acid transporter ASBT interact with Na^+ And 7□-OH moieties on the ligand cholestane skeleton. Hussainzada, N, Claro da Silva, T, Zhang, EY, and Swaan, PW. *J Biol Chem* **283:** 20653–20663, J (2008).

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61. Design, Synthesis, Cytoselective Toxicity, Structure-Activity Relationships, and Pharmacophore of Thiazolidinone Derivatives Targeting Drug-Resistant Lung Cancer Cells. H. Zhou, S. Wu, S. Zhai, A. Liu, Y. Sun, R. Li, Y. Zhang, S. Ekins, P. W. Swaan, B. Fang, B. Zhang, and B. Yan. *J Med Chem* **51:** 1242-1251 (2008).

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63. Design of high-affinity peptide conjugates with optimized fluorescence quantum yield as markers for small peptide transporter PEPT1 (SLC15A1). Bahadduri, PM, Ray, A, Khandelwal, A, and Swaan, PW. *Bioorg. Med. Chem. Lett.* **18:** 2555–2557 (2008).

64. Cytosolic Half of Transmembrane Domain IV of the Human Bile Acid Transporter hASBT (SLC10A2) Forms Part of the Substrate Translocation Pathway. Khantwal A and Swaan, PW. *Biochemistry* **47**: 3606–3614 (2008).

65. Multi-Level Analysis Of Organic Anion Transporters 1, 3, And 6 Reveals Major Differences In Structural Determinants Of Antiviral Discrimination. DM. Truong, G Kaler, A Khandelwal, PW. Swaan, and SK. Nigam. *J. Biol Chem.* **13**:8654-8663 (2008).

66. Electrostatic and Potential Cation-π Forces Guide Interaction of Extracellular Loop III in Human Apical Sodium-dependent Bile Acid Transporter (hASBT) with Na^+ and Bile Acids. Banerjee, A., Hussainzada, N., Khandelwal, A., and Swaan, P.W. *Biochemical J.* **410**: 391-400 (2008).

67. Conformational Flexibility of Helix VI is Essential for Substrate Permeation of the Human Apical Sodium-dependent Bile Acid Transporter (ASBT), Hussainzada, N., Khandelwal, A., and Swaan, P. W. *Mol Pharmacol* **73**: 305-313 (2008)

68. Evaluation of the effect of ethanol's toxic metabolite acetaldehyde on the gastrointestinal oligopeptide transporter, PEPT1: in vitro and in vivo studies. S. J. Fisher, I. J. Lee, P. W. Swaan, and N. D. Eddington. *Alcohol Clin Exp Res* **32:** 162-70 (2008).

69. Surface Acetylation of Polyamidoamine (PAMAM) Dendrimers Decreases Cytotoxicity while Maintaining Membrane Permeability, Kolhatkar, R. B., Kitchens, K. M., Swaan, P. W., and Ghandehari, H. *Bioconjug Chem.* **18:** 2054-2060 (2007).

70. Future Directions For Drug Transporter Modeling. S. Ekins, G.F. Ecker, P. Chiba and P.W. Swaan. *Xenobiotica* **37**: 1152-1170 (2007).

71. Endocytic Mechanisms for Targeted Drug Delivery. L.M. Bareford and P.W. Swaan. *Adv Drug Del. Rev*. **59:**748-758 (2007)

72. Endocytosis and Interaction of Poly (Amidoamine) Dendrimers with Caco-2 Cells. K. M. Kitchens, A.B. Foraker, R.B. Kolhatkar, P.W. Swaan, and H. Ghandehari. *Pharm Res* **24:** 2138-2145 (2007).

73. Dynamin 2 Regulates Riboflavin Endocytosis in Human Placental Trophoblasts. AB Foraker, A Ray, T Claro da Silva, LM Bareford, KM Hillgren, TD Schmittgen, and P.W. Swaan. *Mol Pharmacol.* **72:** 553-562 (2007)

74. Human Pregnane X Receptor Antagonists And Agonists Define Molecular Requirements For Different Binding Sites. S Ekins, C Chang, S Mani, MD Krasowski, EJ Reschly, M Iyer, V Kholodovych, N Ai, WJ Welsh, M Sinz, PW Swaan, R Patel, and K Bachmann. *Mol Pharmacol* **72**: 592-603 (2007)

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76. Structural variation governs substrate specificity for organic anion transporters (oat) homologs: potential remote sensing by oat family members. G. Kaler, D. M. Truong, A. Khandelwal, M. Nagle, S. A. Eraly, P. W. Swaan, and S. K. Nigam. *J Biol Chem* **282**: 23841-23853 (2007).

77. Analogs of methyllycaconitine as novel noncompetitive inhibitors of nicotinic receptors: pharmacological characterization, computational modeling, and pharmacophore development. D. B. McKay, C. Chang, T. F. Gonzalez-Cestari, S. B. McKay, R. A. El-Hajj, D. L. Bryant, M. X. Zhu, P. W. Swaan, K. M. Arason, A. B. Pulipaka, C. M. Orac, S. C. Bergmeier. *Mol Pharmacol* **71** (2007) 1288-97.

78. Bias in Estimation of Transporter Kinetic Parameters from Over-expression Systems: Interplay of Transporter Expression Level and Substrate Affinity. Balakrishnan, A, Hussainzada, N, Gonzalez, P., Bermejo, M, Swaan, PW, and Polli, JE. *J Pharmacol Exp Ther* **320**: 133-144 (2007).

79. Transport of poly(amidoamine) dendrimers across Caco-2 cell monolayers: Influence of size, charge and fluorescent labeling. K. M. Kitchens, R. B. Kolhatkar, P. W. Swaan, N. D. Eddington, and H. Ghandehari. *Pharm Res* **23**: 2818-26 (2006).

80. Rapid identification of P-glycoprotein substrates and inhibitors. C. Chang, P. M. Bahadduri, J. E. Polli, P. W. Swaan, and S. Ekins. *Drug Metab Dispos* **34**: 1976-84 (2006).

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84. Electrophysiological Characterization and Modeling of the Structure Activity Relationship of the Human Concentrative Nucleoside Transporter 3 (hCNT3). H. Hu, C.J. Endres, C. Chang, N.S. Umapathy, E.-W. Lee, Y.-J. Fei, S. Itagaki, P.W. Swaan, V. Ganapathy, and J.D. Unadkat. *Mol. Pharmacol.* **69:**1542-1553 (2006).

85. Cytoskeletal Scaffolds Regulate Riboflavin Endocytosis and Recycling in Placental Trophoblasts. V.M. D'Souza, L.M. Bareford; A. Ray, and P.W. Swaan. *J. Nutr. Biochem.* **17**:821-829 (2006).

86. Identification of interactive gene networks: a novel approach in gene array profiling of myometrial events during guinea pig pregnancy. C. W. Mason, P. W. Swaan, and C. P. Weiner. *Am J Obstet Gynecol* **194**: 1513-23 (2006).

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89. Recognition, Co-Internalization and Recycling of an Avian Riboflavin Carrier Protein in Human Placental Trophoblasts. C. W. Mason, V. M. D'Souza, L. M. Bareford, M. A. Phelps, A. Ray, and P. W. Swaan. *J Pharmacol Exp Ther* **317**:465-472 (2006).

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93. Reengineering the Pharmaceutical Industry by Crash-Testing Molecules. Swaan, PW and Ekins, S. *Drug Discov*. *Today* **10**: 1191-200 (2005).

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88. Transepithelial Transport Mechanism Of Riboflavin Across Caco-2 Cell Monolayers. Huang, S.-N. and Swaan, P.W. *PharmSci* **1**: S-453 (1998).

89. Effect Of Camptothecin Analogs On Dna Topoisomerase I Activity In (Sub)Confluent Caco-2 Cells. Ulukan, H., Muller, M.T., and Swaan, P.W. *PharmSci* **1**: S-229 (1998).

90. *Transport Mechanism Of Riboflavin In A Human Intestinal Cell Line, Caco-2 Cells. Huang, S.-N., Swaan, P.W., 30th Pharmaceutics Graduate Student Research Meeting, June 18-20, 1998, Lawrence KS.

91. Effect Of Camptothecin Analogs On Dna Topoisomerase I Activity In (Sub)Confluent Caco-2 Cells. Ulukan, H., Muller, M.T., and Swaan, P.W. *Pharm Res* **15**: S- (1998).

92. *Mechanistic Investigation of CPT-11 induced intestinal toxicity. Ulukan, H and Swaan, P.W., 30th Pharmaceutics Graduate Student Research Meeting, June 18-20, 1998, Lawrence KS.

93. Oral peptide delivery using the intestinal bile acid transporter. Swaan, P. W., Szoka, F. C., Jr., and Øie, S.. *Proceed. Int'l. Symp. Control. Rel. Bioact. Mater.* **24**: 7-8 (1997).

94. Structural requirements for the intestinal bile acid transporter. Swaan, P. W., Szoka, F. C., Jr., and Øie, S. *Pharm. Res.* **13**: S-236 (1996).

95. Utilizing the intestinal bile acid transporter for enhanced peptide transport. Swaan, PW, Hillgren, KM, Szoka, FC, Jr and Øie, S. *Pharm Res* **12**: S-300 (1995).

96. Structure-affinity comparison of three ACE-inhibitors enalapril, enalaprilat and lisinopril. Swaan, PW, Stehouwer, MC and Tukker, JJ. *Pharm Res* **11**: S-220 (1994)

97. Carrier-mediated transport of foscarnet across rat intestinal membrane in vitro. Swaan, PW and Tukker, JJ. *Pharm Res* **11**: S-220 (1994)

98. Prodrug approach using the intestinal peptide carrier. Swaan, PW, Stehouwer, MC, Blok, RIC and Tukker, JJ. *Pharm Res* **10**: S-295 (1993).

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100. **Essential molecular requirements for carrier-mediated peptide transport. Swaan, PW and Tukker, JJ. *Pharm Weekbl Sci Ed* **14F**: 62 (1992).

101. **Binding site mapping of the intestinal peptide carrier. Swaan, PW and Tukker, JJ. *Pharm Weekbl Sci Ed* **14M**: 4 (1992).

BOOK CHAPTERS

1. Rheology. *In:* Martin's Physical Pharmacy and Pharmaceutical Sciences, 7th Edition (Sinko, P.J., Ed.), 2021 (accepted for publication).

2. Interfacial Phenomena. *In:* Martin's Physical Pharmacy and Pharmaceutical Sciences, 7th Edition (Sinko, P.J., Ed.), 2021 (accepted for publication).

3. Bile Acid Transporters, Ayewoh, EN and Swaan, PW. *In:* Drug Transporters: Molecular Characterization and Role in Drug Disposition, 3rd Edition (Wang, B, You, G and Morris, ME, *Eds.*). Wiley, 2022.
4.
5. Membrane Transport Proteins and Drug Transport. Welch, M.A. and Swaan, P.W. In: Burger's Medicinal Chemistry, Drug Discovery, and Development, 7th Edition, Vol 1, Methods in Drug Discovery and Discovering Lead Molecules, Chapter 8 (Abraham, DJ, Ed.) 2021.
6.
7. Vitamin B2 – Riboflavin. Swaan, PW. In: Vitamins in the Prevention of Human Diseases (Hermann and Obeid, Eds), Walter de Gruyter, 2011

8. Computational Modeling of Drug Disposition. Chang, C, and Swaan, PW. *In: Computer Applications in Pharmaceutical Research and Development* (Ekins, S. Ed.). John Wiley & Sons, Inc., 2006, pp. 495-512.

9. Carrier Mediated Mechanisms For Cellular Drug Transport, Banerjee, A., Johnston, J.S., and Swaan, P.W. In *Cellular Drug Delivery: Principle and Practice*, Lu, D.R. and Øie, S. (Eds), Humana Press, 2003, pp. 107-128.

10. Membrane Transport Proteins and Drug Transport. Swaan, P.W. *In:* Burger's Medicinal Chemistry and Drug Discovery, 6th Edition, Vol 2, *Drug Discovery and Drug Development*, Chapter 8 (Abraham, DJ, Ed.) 2003, pp.

11. A prodrug of foscarnet. I. Lipophilizing phosphonoformate hexahydrate. Tukker, JJ and Swaan, PW. In: In vitro and ex vivo test systems to rationalize drug design and delivery. Crommelin, DJA, Couvreur, P and Duchene, D (Eds.), Ed. De Santé, Paris, 1994, pp. 321-325.

12. A prodrug of foscarnet. II. A peptide mimicking prodrug. Tukker, JJ and Swaan, PW. In: In vitro and ex vivo test systems to rationalize drug design and delivery, Crommelin, DJA, Couvreur, P and Duchene, D (Eds.), Ed. De Santé, Paris, 1994, pp. 326-330.

GRANTS AND CONTRACTS

Active Grants (total cost for grant period listed)

3R01 DK61425 (Swaan) 6/2017-6/2022 2 calendar
Structure-Function of the Apical Bile Acid Transporter $1,751,630
The major goal of this study is to elucidate the structure-function and structure-affinity relationship of the apical sodium-dependent bile acid transporter.
(pending renewal)

Z036601 (Polli) 9/15/11-9/14/22 Co-I 0.6 calendar
University of MD, College Park (FDA U01) $455,274
University of Maryland **Center of Excellence in Regulatory Science and Innovation**
UMB leads Project Biomarkers and Project Health Outcomes, and will contribute to Project Technologies. Project Biomarkers focuses on membrane transporters in drug development, hepatotoxicity biomarkers, and personalized medicine. Project Technologies focuses on performance of optical imaging and therapeutic systems, biocompatibility of stents and vascular grafts, and novel engineered cartilage constructs. Project Health Outcomes focuses on evaluation of risk evaluation and mitigation strategies, as well as infrastructure support and methods development to support decision science within pharmaceutical safety and effectiveness studies.

1UL1TR003098 (Ford/Davis) 2019-2024 Co-I 0.1 calendar
Johns Hopkins/UMB Institute for Clinical and Translational Research
National Center for Advancing Translational Sciences (NCATS) Clinical Translational Science Award (CTSA)
Dr Swaan co-chairs study sections to review applications submitted to the KL2 Mentored Career Development Scholars Program, the TL1 Pre- and Post-Doctoral Clinical Research Training Programs, and the Accelerated Translational Incubator Pilot (ATIP) Grant Programs

5R01AI147314 (Ernst/Goodlett) 2020-2025 Co-I 0.4 calendar
MS Diagnostic Bacterial Identification Library $2,317,500
The aim of this proposal is to develop a novel diagnostic platform in which microbial membrane glycolipids analyzed by mass spectrometry represent chemical "fingerprints" that can be used to differentiate Gram- negative and –positive and fungal isolates

Completed Grants (>$10M)

1. $8,000 from Ohio State University Seed Grants, Oral Peptide Delivery, principal investigator, 1997-1998. *(Starter Grant)*

2. $5,000 from the American Cancer Society, Institutional Research Grant, Targeted Drug Delivery to Pancreatic Carcinoma via the Oligopeptide Transporter (PepT1), principal investigator, 1998-1999, ACS#865906 *(Starter Grant)*

3. $25,000 from the Pharmaceutical Research and Manufacturers of America Foundation, Molecular Specificity of the Intestinal Bile Acid Carrier, principal investigator, 1998-2000. *(Starter Grant)*

4. $18,000 from the American Cancer Society – Ohio Division, Targeted Drug Delivery to Pancreatic Carcinoma via the Oligopeptide Transporter (PepT1), principal investigator, 1999-2000. *(Starter Grant)*

5. $30,953 from the Comprehensive Cancer Center-James Cancer Hospital and Solove Research Fund, for "Targeted Drug Delivery to Pancreatic Carcinoma via the Oligopeptide Transporter (PepT1)," principal investigator, 1999-2000 *(Starter Grant)*

6. $149,574 from NIH/NIDA for "Naltrexone Prodrugs for Transdermal Delivery," R03 DA11759-01, co-investigator (Stinchcomb, AL, PI), 1998-2000.

7. $10,000 from the American Federation of Pharmaceutical Education (AFPE) for "Targeted Drug Delivery to Pancreatic Tumors using the Oligopeptide Transporter," New Investigator Program for Pharmacy Faculty, 12/1999-12/2000 *(Starter Grant)*

8. $10,000 from the American Association of Pharmaceutical Scientists (AAPS) for "New Investigator Grant in Pharmaceutics and Pharmaceutical Technologies" sponsored by Pfizer. 2000-2001.

9. $227,795 from Pharmacia&Upjohn-Ohio State Research Collaboration, Mechanistic Investigations of Irinotecan (CPT-11) Induced Diarrhea, principal investigator, 8/1998-12/2001

10. $89,073 from iMEDD, Inc. (Columbus, OH) for "Oral-MEDDS", 9/2000-7/2002.

11. $1,752,000 from the National Institutes of Health, Research Contracts and Acquisition Branch (National Cancer Institute for "Preclinical Pharmacological Studies of Antitumor and anti-HIV

Agents," RFP #NO1-CM-97019-58, Chan, K.K. (PI), Hayton, W.L. (Co-PI), Balcerzak, S.P. (Co-I), Swaan, P.W. (Co-I), Vandre, D. (Co-I), 1999-2004.

12. $662,821 from the National Institutes of Health (NIDDK) for "Epithelial transport and function of riboflavin," Swaan, P.W. (PI), Lee, RJ (Co-I), 1R01 DK56631, 6/2001-5/2004.

13. $29,500 from Eli Lilly & Co. for "Computational Modeling of hPepT1", Swaan, P.W. (PI), Ekins, S, Hillgren, K, and Dantzig AH (Eli Lilly) 1/2002-12/2002

14. $88,500 from Concurrent Pharmaceuticals, Inc. for "Pharmacophore Development of PepT1", Swaan, PW (PI) 11/2002-10/2003.

15. $147,500 from Eli Lilly & Co. for "Cellular trafficking of riboflavin", Swaan, P.W. (PI) and Hillgren, K (Eli Lilly) 1/2003-12/2005
16. $74,500 from NIH R03 NS050791 for "High Throughput Assay for the intestinal peptide transporter" to Swaan (PI, 5%), 09/01/04 – 08/31/06

17. $135,000 from the Susan G. Komen Breast Cancer Foundation grant #PDF0402815 for "Riboflavin trafficking in Breast Cancer" to Swaan, PW (PI, no effort). 05/01/04 - 04/30/07. This was a postdoctoral research grant to support Dr. Vanessa M. D'Souza in his lab for 3 years.

18. $213,273 from State of Maryland Nano-biotechnology Initiative for "Transepithelial Transport of Poly Amido Amine Dendrimers" English (Co-I, UMCP), MacKerell (Co-I), and Swaan, PW (PI, 5% effort). 7/1/2007-6/30/2008.

19. $1,364,375 from NIH/NIDDK 1R01 DK61425 for "Structure-Function of the Apical Bile Acid Transporter" to Swaan, P.W. (PI, 20%). 12/2003-11/2008

20. $100,000 from Eli Lilly & Co. for 'Computational Modeling of BCRP' to Swaan, PW (PI, 5%) 2/1/2008-1/31/2010

21. $239,000 from Department of Energy for 'Nanobiotechnology Initiative at University of Maryland, to Swaan, PW (PI, 0% effort). This Federal Earmark was used to strengthen the infrastructure (equipment, startup, seed funding) of the Center for Nanomedicine and Cellular Delivery at UMB.

22. $926,935 from NIH/NIBIB 1R01 EB00162 for "Bioadhesive Microsystems for Oral Drug Delivery" to Swaan, PW (PI, 10% effort) and Desai, TA (Co-I, UCSF), 04/2004-03/2009

23. $891,716 from University of Utah (Subcontract to NIH/NIBIB R01 EB007470, Ghandehari, PI) for "Dendritic Biomaterials for Oral Delivery of Chemotherapeutics" to Swaan, P.W. (PI, 5% effort). 8/22/2007-4/30/2011

24. $618,083 from University of Utah (Subcontract to NIH/NIDCR R01DE019050-01, Ghandehari, H; PI) for "Biological fate and biocompatibility of dendritic and silica-base nanoconstructs" to Swaan, PW (Co-I, 5% effort), Nan (Co-I, 5% effort) and Eddington ND (Co-I, 2.5% effort). 9/28/2007-8/31/2011

25. $502,220 from the University of Kansas Medical Center (Subcontract to Center for Disease Control U01 DP000187 to Weiner, CP, PI) for "Race/Ethnicity/Immunity/Progesterone and Preterm Birth" to Swaan, PW (PI, 10% effort), 06/01/05 – 05/31/10.

26. $48,936 from the University of Arizona (subcontract for R01DK05825 to Wright, Stephen H, PI) for "Molecular Organization of the Renal and Hepatic Organic Cation Transporters" to Swaan, PW (PI, 0.225 calendar). 8/1/09-7/31/17

27. $254,860 from the University of North Carolina (Subcontract for NIH 5R01 GM041935 to Brouwer, KLR) for "Altered Hepatic Disposition of Anionic Drugs-Mechanisms" to Swaan, PW (PI, 0.6 calendar). 9/1/14-8/31/18.

28. $1,580,575 from NIH/NIDDK 2R01 DK61425-06 for "Structure-Function of the Apical Bile Acid Transporter" to Swaan, P.W. (PI, 20%). 9/20/2008-6/30/2015

INVITED LECTURES

1. **March 7, 2022** Principles of Drug Development and Regulation, STEM Week, Prince George's County Community College, Largo, Maryland (online)

2. **February 22, 2022** The future of pharmacy and pharmaceutical sciences. 20th International Pharmaceutical Technology Symposium. Ankara, Turkey (online)

3. **October 4, 2021** Targeting Membrane Transporters for Oral Drug Delivery. International Union for Pure and Applied Biophysics (IUPAB). Foz do Iguaçu, Brazil (online)

4. **March 3, 2021** Diversity in Faculty and Graduate Student Recruitment and Retention. "Leading Efforts in Diversity and Inclusion", #INclusion, AACP INterim Meeting (online)

5. **February 8, 2020** Research and Development at the University of Maryland. AACP Interim Meeting, San Juan, Puerto Rico

6. **October 15, 2018** Bile Acids have the gall to function as hormones: Evolution, Structure and Function of Bile Acids and their Transporters; Purdue University, West Lafayette, IN

7. **September 18, 2018** Uptake and Trafficking of Nanopharmaceuticals, 19th International Pharmaceutical Technology Symposium, Antalya, TURKEY

8. **Nov 10, 2017** Publishing and Publication Ethics. How to publish in High Impact Journals while maintaining scientific integrity. AAPS Annual Meeting and Exposition. San Diego CA.

9. **June 12, 2017** Bile acids have the gall to function as hormones: structural biology and function of bile acid transport and physiology. 30 Years of Drug Delivery Research Sympoisum. Kuopio, FINLAND.

10. **June 11, 2017** Modeling and simulation of drug transport: challenges and successes. Controlled Release Society Nordic Chapter Symposium, Kuopio FINLAND,

11. **Nov 15, 2016** Publication Ethics; AAPS Annual Meeting and Exposition, Denver CO.

12. **September 20, 2016** Development of Biodegradable Dendrimers for Drug Delivery. 18th International Pharmaceutical Technology Symposium, Antalya, Turkey.

13. **July 23, 2016** Prediction Of Drug-Transporter Interactions Through Computation. 2nd Drug Transporter Forum of Lanzhou, First Hospital of Lanzhou University, Lanzhou, CHINA

14.

15. **October 27, 2015** Steps to Getting Published, American Association for Pharmaceutical Scientists Annual Meeting, Student and Postdoc Outreach and Development Session, Orlando, FL

16. **December 15, 2014** Publication Ethics. Shanghai JiaoTong University School of Pharmacy, Shanghai, China.

17. **November 4, 2014** Publication Ethics, in the workshop "Steps to Getting Published in a Research Journal", Student Postdoc Outreach & Development. AAPS Annual Meeting, San Diego, CA

18. **September 24, 2014** Evolution *of Bile Acids and their Transporters:* Are Bacterial Crystal Structures Representative for their Vertrebrate Orthologs? University of Michigan, Ann Arbor MI

19. **July 15, 2014** A Brief History of Bile Acids. Past, Present, Future. Gordon Conference on Drug Metabolism. Holderness, NH

20. **April 15, 2014** Tight junctional modulation and pathways to drug delivery. Symposium on Barrier mechanisms team up: Interplay between transporters, enzymes and tight junctions at FIP/PSWC meeting, Melbourne, Australia

21. **April 13, 2014** Transporters: what do the regulators need to know? Workshop on Drug Transporters at FIP/PSWC meeting, Melbourne, Australia

22. **December 10, 2013** Good COP, Bad COP: Intracellular trafficking and its implications for drug targeting, Australasian Pharmaceutical Science Association/New Zealand Controlled Release Society Meeting, Dunedin, Otago, NEW ZEALAND (KEYNOTE SPEAKER)

23. **September 25, 2013** A decade of drug transporter research: a multidisciplinary approach to optimizing drug targeting and delivery. China Pharmaceutical University, Nanjing, CHINA

24. **September 26, 2013** A decade of drug transporter research: a multidisciplinary approach to optimizing drug targeting and delivery. Fudan University, Shanghai, CHINA

25. **June 7, 2013** Role of transporters in drug absorption and disposition. Pharmaceutics Graduate Student Research Meeting 2013 (KeyNote Speaker), University of Iowa, Iowa City, IO

26. **January 31, 2013** A Decade of Bile Acid Research: Trials & Tribulations, Lessons Learned, University of Missouri at Kansas City, Kansas City, MO

27. **November 29, 2012** Role of bile acid transporters in drug absorption and disposition. Short Course: Transporters as Mediators of Drug Disposition in Health and Disease, GPEN Meeting, November Melbourne, Australia

28. **November 27, 2012** ORAL DRUG DELIVERY: Hype, Hope or Hell? KEYNOTE LECTURE. Drug Delivery Australia, November 26-27, 2012, Melbourne, Australia

29. **October 15, 2012** Whither Transporters iN Drug Development. CLINICAL PHARMACOLOGY AND TRANSLATIONAL RESEARCH (CPTR) SECTION OPEN FORUM. AAPS National Meeting, Chicago, IL

30. **October 10, 2012** Cellular Fate of Liposomes prepared by microfluidic flow focusing. Liposome Research Days 2012, Westlake Museum Hangzhou, Hangzhou, China

31. **October 8, 2012** Oral Drug Delivery by Targeting to Transport Proteins: From Concept to Reality. Beijing University, School of Pharmacy, Beijing, China

32. **October 8, 2012** Workshop: Publication Ethics and Publishing in High Impact Journals. Beijing University, School of Pharmacy, Beijing, China

33. **September 19, 2012** Predictive ADME Modeling: Fact of Fiction? Applied Pharmaceutical Analysis Conference, Boston Society, September 17-19, Baltimore MD

34. **September 27, 2012** How to Deliver an Effective Research Talk. Research Career Development Program for Postdocs, University of Maryland, Baltimore

35. **February 27, 2012** Structural Biology of Transport Proteins using Biophysics and Computational Chemistry, Genentech, Inc. South San Francisco, CA

36. **February 3, 2009** Nanomaterials, nanotechnology and nanomedicine: looking ahead. Department of Ophthalmology and Visual Sciences, University of Maryland School of Medicine, Baltimore, MD.

37. **October 14, 2008** Structural Basis for the Intestinal Bile Acid Transporter Function. Symposium on "Structural Basis of Uptake Transporter Function" at the 15th North American ISSX Meeting, Oct 12-16, San Diego, CA

38. **October 3, 2008** Imaging and Modeling Techniques: Essential Quantitative Tools for the Drug Transport Scientist, *FDA Critical Path Transporter Workshop,* Bethesda MD

39. **July 10, 2008** Structure-function relationships of bile acid transporters. Gordon Research Conference on Drug Metabolism, Holderness School, NH

40. **June 11, 2008** Evaluation of small molecules in animal models. Computer-Aided Drug Design Forum, University of Maryland, Baltimore, MD.

41. **May 19, 2008** Review of the Pharmacology/Toxicology Section of the IND. In "Drug Development Processes and Regulatory Approaches III." A Program for Japan's leading pharmaceutical company executives and the Pharmaceutical and Medical Device Agency, University of Maryland, Baltimore MD

42. **May 13, 2008** Structural Biology of Membrane Proteins: Integrating Biochemical, Biophysical and In Silico Approaches. Eli Lilly & Co. Indianapolis, IN

43. **April 24, 2008** *A Great SCAM:* Probing Structure and Function of Membrane Transport Proteins. College of Notre Dame of Maryland, Baltimore MD

44. **January 17, 2008** Predictive ADME: Combining *In Silico* and *In Vitro* Approaches towards Discovery of Drug Transporter Substrates. Uppsala University, Uppsala, SWEDEN

45. **November 13, 2007** Structure and Function of the Apical Sodium-Dependent Bile Acid Transporter. Department of Medicine, University of California at San Diego, La Jolla, CA.

46. **November 8, 2007** Application of In Silico ADME-Tox to Designing Substrates and Inhibitors for Transporter Proteins. Laboratory of Pharmacology and Chemistry, National Institutes of Environmental Health and Safety, Research Triangle Park, NC.

47. **November 1, 2007** Prediction of Drug Transport and Metabolism using In Silico Technologies: Applications to BCS, BDDCS and beyond. University of Helsinki, Helsinki, Finland

48. **October 30, 2007** Receptor-mediated endocytosis in intracellular drug delivery. *FinPharmaNet Graduate Course in Intracellular Kinetics in Drug Delivery.* University of Kuopio, Kuopio, Finland

49. **October 29, 2007** Membrane Transporters: Biology, Structure, Function and Kinetics. *FinPharmaNet Graduate Course in Intracellular Kinetics in Drug Delivery.* University of Kuopio, Kuopio, Finland.

50. **May 23, 2007** Computational Methods for BCS. AAPS Workshop on "Bioequivalence, Biopharmaceutics Classification System and Beyond. May 21-23, 2007. Bethesda, MD.

51. **March 23, 2007** Microelectromechanical Systems for Oral Drug Delivery. "Nanomedicine Research Day". Baltimore, MD

52. **November 1, 2006** Subcellular Trafficking and Modeling of Drug Transport: Application of Vitamin B2 as a Model System. Sunrise Session on "Subcellular Transport and Delivery: The Cell as a Pharmacokinetic System" 20th AAPS Annual Meeting, San Antonio TX

53. **October 25, 2006** Predicting the Intestinal Disposition of Xenobiotics via their Interaction with Transporter Systems. Symposium 6, Intestinal Disposition of Xenobiotics. 14th International Society for the Study of Xenobiotics (ISSX) North American Meeting, Rio Grande, Puerto Rico.

54. **August 28, 2006** Application of Nanoparticles in Pharmaceutical Drug Delivery. Symposium on "Nanotechnology: New Technologies in Drug Delivery and Drug Development. 66th International Congress of FIP (Federation International de Pharmacie). August 25-31. Salvador Bahia, Brazil

55. **February 23, 2006** Molecules as Crash-Test Dummies: Unleashing In Silico ADME-Tox on Transporters and Enzymes. Greater Maryland Drug Metabolism Discussion Group of AAPS. Advancis Pharmaceutical Corp. Germantown MD.

56. **November 8, 2005** Use of Novel Experimental Techniques in Transporter Research. Sunrise Session on "Use of Novel Experimental Techniques in Transporter Research." AAPS Annual Meeting, Nashville, TN

57. **June 8, 2005** Subcellular Membrane Trafficking and Drug Transport. Symposium on "Cellular Drug Delivery: Strategy and Progress" AAPS National Biotechnology Conference. San Francisco, CA.

58. **April 8, 2005** Pharmacophore and 3D-QSAR-based discovery of transporter inhibitors and substrates. Department of Chemistry, Ohio University, Athens, OH.

59. **November 8, 2004** Pharmacophore models of solute transporters. Symposium on "Computational Modeling in Drug Discovery and Development." AAPS Annual Meeting, Baltimore, MD

60. **June 14, 2004** Drug Transport. Residential School on Medicinal Chemistry, Drew University, Madison, NJ

61. **May 20, 2004** Workshop on "Novel Developments in Oral Drug Delivery", Pharmaceutical Education Associates, Princeton, NJ.

62. **13 February 2004** Structure-function of the apical bile acid transporter: application of site-directed mutagenesis and *in silico* techniques. University of Arizona, Tucson, AZ.

63. **4 November 2003** Virtual ADME-Tox: Application to Designing Substrates for Transporters, Drug Discovery Working Group, University of Maryland, Baltimore, MD.

64. **28 October 2003** Virtual ADME/TOX: Application to transporter subfamily expression, AAPS Annual Meeting and Exposition, Salt Lake City, UT.

65. **29 September 2003** Clinical applications of Transporters to Transition from Bench to Bedside, Workshop on "New Technologies to Transition Preclinical Data into the Clinic" of the "Phase I Clinical Trials" Conference, Center for Business Intelligence (CBI), Alexandria, VA.

66. **June 17, 2003** Molecular Mechanisms Of Riboflavin Transport: Opportunities For Drug Targeting, Eli Lilly &Co., Dept. Drug Disposition, Indianapolis, IN

67. **1 April 2002** Molecular and Structural Biology of the Apical Sodium-Dependent Bile Acid Transporter, ASBT. Department of Pharmacology, George Washington University Medical Center, Washington, DC.

68. **11 March 2002** Intestinal Transporters: biology, regulation and role in drug and nutrient bioavailability. Unilever Health Institute, Vlaardingen, The Netherlands.

69. **15 Februari 2002** Modeling Active Transport Systems and Rational Design of Substrates. Concurrent Pharmaceuticals, Inc. Cambridge, MA

70. **30 January 2002** Molecular and Computational Biology of Bile Acid Transport: An Integrated Approach. University of Michigan, Ann Arbor, MI.

71. **14 January 2002** Molecular and Computational Biology of Bile Acid Transport. University of Maryland, Baltimore, MD

72. **12 November 2001** Designing Substrates for Transporters-Fact or Fiction? IBC 4th Annual Conference on Cutting Edge Technologies for Lead Optimization, November 12-14, 2001, San Diego, CA

73. **18 June 2001** Molecular determinants of recognition for the intestinal peptide and bile acid carriers; EUFEPS Conference on "Drug absorption and drug delivery: benefiting from the new biology and informatics"; Copenhagen, Denmark.

74. **12 January 2001** Membrane Transporters: Ideal Targets for Drug Delivery? Pfizer Central Research, Pharmaceutical Research and Development, Groton, CT.

75. **24 October 2000** Identifying Substrates for Membrane Transport: Direct and Indirect Methods. ISSX short course, "Biological and Physicochemical Aspects of Intestinal Permeability" International Society for Xenobiotics Meeting, 24-29 October 2000, Indianapolis, IN.

76. **5 October 2000** DNA Topoisomerase I expression and activity during the epithelial cell cycle: Implications for drug therapy. Procter & Gamble Pharmaceuticals, Mason, OH.

77. **5 October 2000** The intestinal peptide carrier (PepT1) as a target for drug delivery. Procter & Gamble Pharmaceuticals, Mason, OH.

78. **15 September 2000** Solute Transporters in Drug ADME: Strategies to Recognize and Design Substrates, Drug Metabolism Division, Eli Lilly & Co. Indianapolis, IN.

79. **11August 2000** Targeting Strategies to Solute Transporters:Combining Structural Biology, Genomics and Drug Design, Department of Pharmaceutics, University of Washington, Seattle, WA.

80. 9**-14 July 2000** Modeling of Membrane Transporters: Towards Predicting Substrate Affinity in Silico, Gordon Conference on Drug Metabolism, Holderness School, Plymouth, NH.

81. **22 May 2000** Strategies for Increasing the Bioavailability of Drugs with Poor Membrane Permeability, AAPS Midwest Regional Meeting, Rosemont Conference Center, Chicago, IL.

82. **16 March 2000** The Apical Bile Acid Transporter: Modeling Approaches for Integral Membrane Proteins, Dept of Biochemistry & Molecular Biology, Finch University of Health Sciences/The Chicago Medical School, Chicago, IL.

83. **22 February 2000** Structural biology of the apical bile acid transporter, Department of Metabolism, Chemistry, and Molecular Modeling, Aventis Pharma Deutschland, Frankfurt am Main, Germany.

84. **22 February 2000** Targeting Strategies to Transport Proteins, Department of Metabolism, Chemistry, and Molecular Modeling, Aventis Pharma Deutschland, Frankfurt am Main, Germany.

85. **10 January 2000** A Model for the Ileal Bile Acid Transporter, Department of Gastroenterology, Internal Medicine, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC

86. **13 December 1999** Identifying substrates for membrane transporters: direct and indirect screening methods, Innovative Techniques for ADME: Accelerating Drug Discovery, Institute for International Research, December 13-14, US Grant Hotel, San Diego, CA.

87. **10 September, 1999** Membrane Transporters and Drug Targets: Strategies for Drug Delivery. Faculty of Pharmacy, University of Toronto, Toronto, ON.

88. **28 July 1999** Direct and Indirect Approaches to Modeling Membrane Proteins, Gordon Conference on QSAR, Tilton School, Tilton, NH, July 25-30, 1999.

89. **22 October 1998** The Intestinal Bile Acid Transporter: Structure-Transport Relationship and Use in Drug Delivery. College of Medicine and Public Health, Department of Physiology, The Ohio State University, Columbus OH.

90. **17 July 1998** Strategies for Enhancing Oral Bioavailability: Design of Substrates for Carrier-Mediated Transport Pathways. Biogen Inc., Boston, MA.

91. **19 February 1998** Fact and fiction in intestinal macromolecular drug delivery Department of Pharmaceutics, Utrecht Institute of Pharmaceutical Sciences, Utrecht, The Netherlands

92. **22 October 1997** Prodrug Strategies for Enhancing Oral Bioavailability: Rational Design of Substrates for Carrier-Mediated Transport Pathways. Division of Medicinal Chemistry, The Ohio State University, Columbus, OH.

93. **10 September 1997** The Role of Carrier-Mediated Absorption Mechanisms in Peroral Drug Delivery Drug Discovery & Development Divisions, Procter & Gamble Pharmaceuticals, Cincinnati, OH

94. **17 June 1997** Oral Peptide Delivery Using the Intestinal Bile Acid Transporter. 24th International Symposium on Conntrolled Release of Bioactive Materials. Stockholm, Sweden, June 15-19, 1997.

95. **14 April 1997** Drug Delivery to the Intestinal Bile Acid Carrier: Synthesis, Function & Molecular Modeling. Division of Pharmacology, College of Pharmacy, The Ohio State University

96. **16 December 1996** The Intestinal Bile Acid Carrier: Structural Requirements and Use in Oral Drug Delivery. Cardiovascular Diseases Research Dept., Searle R&D, *St. Louis*, MO.

97. **15 April 1996** Carrier-Mediated Drug Delivery.
Dept. of Pharmaceutics, The Ohio State University, *Columbus,* OH.

98. **8 April 1996** Prodrug Approaches in Carrier-Mediated Drug Delivery
Dept. of Pharmaceutics, Northeastern University, *Boston,* MA

99. **23 February 1996** Techniques for Assessing Intestinal Transport, Metabolism and Bioavailability Drug Metabolism&Pharmacokinetics, Schering-Plough Research Institute, *Kenilworth*, NJ.

100. **3 May 1995** Oral Absorption Enhancement of HIV-1 Protease Inhibitors By Coupling to Bile Acids. Depts. of Pharmacy and Pharmaceutical Chemistry, *UCSF,* CA.

101. **20 July 1994** Use of the Intestinal Peptide Carrier for an Intestinal Prodrug Approach. Dept. of Pharmaceutics and Toxicology, *Syntex*, Palo Alto, CA.

102. **20 April 1994** Prodrug Targeting to the Intestinal Peptide Carrier. Dept. Pharmaceutical Chemistry, *University of California at San Francisco*, CA.

103. **8 September 1993** New Prodrugs for Increasing the Oral Bioavailability of Foscarnet. Depts. of Pharmaceutics and Metabolism, *Astra Arcus* AB, Södertalje, Sweden.

104. **25 August 1992** Intestinal Transport Mechanisms of Cephalexin and Foscarnet. Dept. Pharmaceutics, *University of Utrecht*, Utrecht-NL.

105. **18 November 1991** Mapping the Binding Site of the Intestinal Peptide Carrier System: A Pharmacophoric Pattern Search. Sixth Annual Meeting of the AAPS, Washington, DC.

106. **22 August 1991** A Prodrug Approach using Molecular Modeling Techniques to Optimize Carrier-Mediated Peptide Transport. *Parke-Davis Warner Lambert,* Pharmaceutical Research Division, Chemistry and Pharmacokinetics & Drug Metabolism Seminar, Ann Arbor, MI.

107. **29 June 1991** Carrier-Mediated Peptide Transport. Dept. of Pharmaceutics, *University of Michigan*, Ann Arbor, MI.

108. **30 November 1990** A Pharmaceutical Prodrug Approach using the Peptide Carrier in the GI Tract: Molecular Modeling as a Tool in Development. Biopharmaceutics and

Pharmaceutical Technology meeting, Center for Bio-Pharmaceutical Sciences, *Leiden University*, Leiden-NL.

109. **23 October 1990** The Use of Ussing Chambers in the Assessment of Intestinal Transport Mechanisms. Dept. of Pharmaceutics, *University of Utrecht*, Utrecht-NL.

110. **30 September 1990** A Prodrug Approach using the Peptide Carrier System: Molecular Mechanics as a Tool in Pharmaceutics. Dept. of Pharmaceutics, *University of Michigan*, Ann Arbor, MI.

111. **28 September 1990** *In Vitro* Assessment of Intestinal Transport Mechanisms. Dept. of Drug Delivery, *SmithKline Beecham* Pharmaceutical R&D, King of Prussia, PA.

112. **22 June 1990** A Prodrug Approach using the Peptide Carrier. Dept. of Drug Delivery, *SmithKline Beecham* Pharmaceutical R&D, King of Prussia, PA.

113. **6 July 1990** The Use of Computer-aided Drug Design in Gastro-Intestinal Drug Delivery. Dept. of Structural Chemistry, *SmithKline Beecham* Pharmaceutical R&D, King of Prussia, PA.

CONSULTING

(Currently active consulting engagements available upon request)

2017-2021
Shimadzu Scientific Instruments, Inc.
Columbia, Maryland
Consultant/Federal Lobbyist

May 2002-2008
Xenoport, Inc.
Scientific Advisory Board Member

United States Phamacopeia, Inc.
Rockville, MD
2006-2010
Member, Resolution 3 Task Force, Basic Sciences

Boehringer Ingelheim, Ridgefield, CT
2003-2006

Concurrent Pharmaceuticals, Cambridge, MA,
2000-2003

In Vitro Technologies, Inc. Baltimore MD
2005

Eli Lilly, Inc., Indianapolis, IN
1999-2014

Monsanto, St. Louis, MO.
1997-2000

PATENTS

1. Transdermal Delivery of Opioid Antagonist Prodrugs, Inventors: Audra L. Stinchcomb and Peter W. Swaan, U.S. Patent # 6,569,449 Awarded May 27, 2003.

2. Spin Trapping Glutathione Precursor/Promoiety: A Powerful Antioxidant with Dual Mechanism of Action. Inventors: Abhijit Ray, Carl P. Weiner, and Peter W. Swaan. U.S. provisional patent application. May 18, 2006.

EDITORIAL

Editorial Board Member

The AAPS Journal (1999 –2010)
Journal of Pharmaceutical Sciences (1998-2010)
Pharmaceutics (2020-now)
Pharmaceutical Fronts (2020-now)

Editor

Pharmaceutical Research; 2003-2008
Journal of Pharmacological and Toxicological Methods; 2005-2008
European Journal of Pharmaceutical Sciences: 2008-2010
Drug Metabolism and Disposition: 2011-2018

Editor-in-Chief

Pharmaceutical Research; 2009-2020

Referee for professional or scientific journals

AAPS Journal
Biochemical Journal
Biochemistry
Biochimica et Biophysica Acta - Biomembranes
Bioorganic Medicinal Chemistry Letters
Chemical Biology
Drug Discovery Today
Drug Metabolism and Disposition
European Journal of Pharmaceutical Sciences
FEBS Letters
Journal of Biological Chemistry
Journal of Chemical Informatics
Journal of Computer-Aided Drug Design
Journal of Controlled Release
Journal of Pharmaceutical Sciences
Journal of Pharmacology and Experimental Therapeutics
Journal of Physiology
Molecular Pharmacology
Molecular Pharmaceutics
Nature
Pharmaceutical Research
Proceedings of the National Academies of Science USA
Science

HONORS AND AWARDS

Fellowships

1991 Shell Undergraduate Fellowship
1994 Postdoctoral Fellowship, Universitywide AIDS Research Program, University of California
1995 Research Award, AIDS Clinical Research Center, University of California at San Francisco
1995 Postdoctoral fellowship, International Federation of Pharmacy (FIP)

Professional and scientific achievement

1992 1st prize Capsugel Graduate Symposium, Royal Academy of sciences, London, UK
1994 Royal Dutch Pharmacy Association (KNMP) Thesis Award
1990-1993 Member of the Pharmaceutical Board for Scientific Affairs, University of Utrecht
1997-2002 Associate Member, Ohio State University Biomedical Engineering Program
1999 Nomination for the M.R. Balshone Award for Distinguished Teaching
1999 New Investigator Award from the American Federation of Pharmaceutical Education (AFPE)
1998-2002 Associate Member, Ohio State University Comprehensive Cancer Center
2000 Nomination for the M.R. Balshone Award for Distinguished Teaching
2000 AAPS New Investigator Award in Pharmaceutics and Pharmaceutical Technology
2002-2003 Investigator, Dorothy M. Davis Heart and Lung Research Institute, The Ohio State University
2010 Fellow, American Association of Pharmaceutical Scientists
2015-now Chair, Board of Grants, American Foundation for Pharmaceutical Education (AFPE)

Task Forces and National Service Committees

2010 Maryland Governor's Task Force to Study Nanobiotechnology

TEACHING

Yearly

Course Number	Course Title	Lecture hours
PHAR504	Physical and Pharmaceutical Chemistry	10
PHAR615	Ethics and Biostatistics	8
MCST601	Introduction to Medical Cannabis History, Culture and Policy	2
PHAR601	Principles of Drug Development	4
PHAR751	Drug Design	2
PHAR707	Drug Transport and Metabolism	8

MASTER AND DOCTORAL THESIS COMPLETED AS MAIN ADVISOR

1. Hulya Ulukan, "Mechanistic Investigation of Irinotecan-induced Intestinal Epithelial Toxicity," January 2001.
2. Yongheng Zhang, "Structure-Function of the Apical Bile Acid Transporter", Fall 2001.
3. Se-ne Huang, "Cellular Biology of Riboflavin", Fall 2001
4. Bao-Quang Sy Le, M.S. Fall 2000
5. Stephanie Bieloski. M.S. March, 2004.
6. Cheng Chang (OSU Biophysics Program). "Structure-activity relationships of transport proteins". January 2005.
7. Antara Banerjee (OSU Biophysics Program). Structural biology of the apical bile acid transporter. Spring 2005
8. Mitch A. Phelps (OSU Biophysics Program). The role of riboflavin in breast cancer (Summer 2005).
9. Amy B. Foraker. "Characterization Of The Endocytic Pathways Regulating Riboflavin (Vitamin B2) Absorption And Trafficking In Human Epithelial Cells." February 2007.
10. Praveen M. Bahadurri (OSU Biophysics Program) "Implications of Transporter Proteins in Drug Discovery and Design" December 2007
11. Chandra M. Khantwal (OSU Biophysics Program) "Structural and functional characterization of the human apical sodium-dependent Bile acid transporter (SLC10A2)" September 2008
12. Clifford A. Mason. "Functional Genomic Approaches in the Understanding of Preterm Birth and the Effect on Placental Transporter Regulation" June 2008
13. Scott Fisher. "Evaluation of the Effects of the Toxic Ethanol Metabolite, Acetaldehyde, on Gastrointestinal Peptide Transport and Paracellular Permeability". 2008
14. Ramesh Dandu "Silk-Elastinlike Hydrogels for Matrix-Mediated Adenoviral Gene Delivery" August 21, 2008.
15. Naissan Hussainzada, "Unraveling Molecular Transport Mechanisms of the Human Ileal Bile Acid/Na^+ Cotransporter: Unique Insights in the Absence of Crystals" December 12, 2008
16. Bahar Zarabi "N-(2-hydroxypropyl) methacrylamide (HPMA) copolymers for targeted delivery of magnetic resonance contrast agents" December 5, 2008
17. Mark P. Borgman. Targeted polymeric drug delivery. August 2009
18. Debbie Sweet-Goldberg. Poly (Amido Amine) Dendrimers: Transepithelial Transport Mechanisms and Applications in Oral Drug Delivery. September, 2010.
19. Lisa M. Bareford, MS 2011
20. Tatiana Claro da Silva "Understanding Structure-Function Relationships and Protein Stability of the Human Apical Sodium-Dependent Bile Acid Transporter ASBT", October 27, 2011
21. Brittany Avaritt "Mechanisms Of Dendrimer-Mediated Oral Drug Delivery", September 2, 2014
22. Joseph D. Stanton "Targeted Polymer Drug Therapy to Pancreatic Cancer" August 15, 2014
23. Yewon "Joanna" Pak, In vitro Efficacy and Intracellular Mechanism of Riboflavin conjugated PEGylated Poly-L-Lysine Dendrimers, March 2017

24. Lindsay Czuba, Molecular Insight into the Structure, Function, and Regulation of Bile Acid Transport, September 2017
25. Matthew Welch, expected Spring 2022
26. Stephanie Shiffka, Evaluation of Bile Acids as Biomarkers and Evolutionary Phenotypes, April 2021
27. Ebehiremen Ayewoh, Molecular Mechanisms of Intestinal Bile Acid Transport and Immunomodulatory Potential of Bile Acids, December 7, 2021
28. Rutu Valapil, expected 2025

GRADUATE STUDENT ACHIEVEMENTS

1. Hulya Ulukan: 1st Prize (Best Poster) at the 31st Annual Pharmaceutics Graduate Student Research Meeting, Kansas City, MO, June 24-26, 1999.
2. Se-Ne Huang: Balshone Award for Outstanding Graduate Student Achievement, Autumn 2000.
3. Se-Ne Huang: 2001 AAPS Graduate Symposium in Pharmaceutics and Pharmaceutical Technologies
4. Yongheng Zhang: 2001 AAPS Graduate Symposium in Pharmacokinetics, Pharmacodynamics and Drug Metabolism
5. Hulya Ulukan; 2001 AAPS Graduate Symposium in Biotechnology
6. Mitch Phelps, Predoctoral Fellowship, Department of Defense, Breast Cancer Research Directive.
7. Amy Foraker, Finalist, Best Graduate Student Poster Presentation, International Society for the Study of Xenobiotics, Vancouver, BC, August 2004.
8. Antara Banerjee, AAPS Workshop on Drug Transporters in ADME: From the bench to the Bedside. Parsippany NJ, March 7-9, 2005, Selection for Poster/Podium Presentation. Analysis of Membrane Topology of the Human Apical Sodium-Dependent Bile Acid Transporter (hASBT) by epitope insertion scanning mutagenesis.
9. Praveen Bahadduri, AAPS Workshop on Drug Transporters in ADME: From the bench to the Bedside. Parsippany NJ, March 7-9, 2005, Selection for Poster/Podium Presentation. Identification of Novel hPEPT1 Inhibitors by In Vitro and Pharmacophore Based Approaches.
10. Antara Banerjee, 2005 AAPS Graduate Symposium in Pharmacokinetics, Pharmacodynamics, Drug Metabolism and Clinical Sciences
11. Chandra M. Khantwal, 2006 AAPS Graduate Symposium in Pharmacokinetics, Pharmacodynamics, Drug Metabolism and Clinical Sciences
12. Amy B. Foraker, 2006 AAPS Graduate Symposium in Pharmacokinetics, Pharmacodynamics, Drug Metabolism and Clinical Sciences
13. Mitch Phelps, DOD Predoctoral Fellowship, Department of Defense, Breast Cancer Initiative for "Riboflavin Carrier Protein and Riboflavin in Breast Tumor Targeting"
14. Mitch Phelps, Predoctoral Fellow, American Foundation of Pharmaceutical Education
15. Mitch Phelps, Predoctoral Fellowship, Pharmaceutical Research and Manufacturer's of America Foundation (PhRMAF)
16. Mark Borgman, Predoctoral Fellow, American Foundation of Pharmaceutical Education, 2007, 2008
17. Naissan Hussainzada, Predoctoral Fellow, American Foundation of Pharmaceutical Education, 2007, 2008

18. Naissan Hussainzada. "A Great SCAM: Elucidating Molecular Mechanisms of ASBT Transport in the Absence of Crystals". Invited presentation at the Globalization of Pharmaceutics Education Network (GPEN) (2008), Leuven, Belgium
19. Brittany Avaritt, Invited presentation at the Globalization of Pharmaceutics Education Network (GPEN) (2010), Melbourne Australia
20. Debbie Goldberg, Predoctoral Fellow, American Foundation of Pharmaceutical Education, 2009, 2010
21. Stephanie Shiffka, Predoctoral Fellow, American Foundation of Pharmaceutical Education, 2019, 2020
22. Ebehiremen Ayewoh, Meyerhoff Graduate Fellowship, 2019

POST DOCTORAL SCHOLARS SUPERVISED

1. Jeffrey Johnston, Ph.D., 2002-2003 (currently Visiting Assistant Professor at The Ohio State University)
2. Abhijit Ray, Ph.D., May 2003- March 2007 (currently research Assistant Professor, University of Utah)
3. Vanessa M. D'Souza, Ph.D., August 2003-September 2005 (currently at Wyeth, Pearl River, NY)
4. Cheng Chang, Ph.D., August 2005-August 2006. Currently at Pfizer, Groton CT
5. Akash Khandelwal, Ph.D., September 2006-October 2007
6. Robyn Moore, PhD, currently Asisstant Professor at Friends University, Kansas
7. Hairat Sabit, PhD, currently at FDA, White Oak, MD
8. Paresh Chothe, currently at Vertex, Worcester, MA
9. Yongmei Pan, currently at National Library of Medicine, NIH, Bethsda MD
10. Thao Nguyen, 2019-now

SERVICE

National Committee Service

1999-2001	Chair, Oral Absorption Focus Group, AAPS
2001	Chair, Annual Meeting Abstract Screening Committee, PDD Section, AAPS
2001	Grant Reviewer and Section Chair (pharmaceutics-physical sciences), American Association of Colleges of Pharmacy, New Investigators Program
2001	Grant Reviewer, Alzheimer's Association
2001	Conference Planning Committee, AAPS Conference on "Pharmaceutics and Drug Delivery, April 22-24, 2002, Crystal Gateway Marriott, Arlington, VA.
2002	Reviewer, RAND Program (Rapid Access to NCI Discovery Resources), National Cancer Institute, NIH.
2003	Co-Organizer, Inaugural AAPS Workshop on Drug Transport, Peachtree City, GA, February 10-12, 2004 (Due to its overwhelming success, this meeting has been held every other year since its inception)
2003	Ad-hoc reviewer, special emphasis panel ZCA1 SRRB-U (M1), Flexible System to Advance Innovative Research (FLAIR), National Cancer Institute, March 19-21, 2003
2003	Ad-hoc reviewer, special emphasis panel ZCA1 SRRB-U (O2), Innovative Toxicology Models for Drug Evaluation, National Cancer Institute, July 23-24, 2003

2003-2006	Grant Reviewer, Alzheimer's Association.
2004	Ad-hoc reviewer, Academic Public Private Partnership program Planning: RFA Initiative, National Cancer Institute, March 11-12, 2004
2004	Ad-hoc Study Section Reviewer, National Cooperative Drug Discovery Groups For Cancer, NCI/NIH.
2004	Member, Annual Meeting Programming Committee, AAPS
2007	Grant reviewer, Telethon Foundation, Italy
2007	Ad-hoc Member, Xenobiotics and Nutrient Disposition and Action (XNDA) Study Section
2007	Ad-hoc Member, SBIR Study Section Review, National Science Foundation.
2003-2006	Vice-Chair, Chair-Elect and Chair, Pharmaceutics and Drug Delivery (PDD) Section, AAPS
2004	Reviewer, National Cooperative Drug Discovery Groups For Cancer, NCI/NIH.
2005-2018	The Wellcome Trust, permanent member Joint Expert Group (ERG) for Translation Awards, Technology Transfer Division, London, UK.
2005	Reviewer, Academic Public Private Partnership (AP4), NCI/NIH
2006	Reviewer, New Jersey Commission on Cancer Research
2006	Reviewer, STW Technology Foundation for Applied Sciences (Dutch Government, similar to NIH STTR grants). Project MBC.7478
2006	Reviewer, Ruth L. Kirschstein NRSA Fellowships in Cancer Nanotechnology Research (RFA-CA-06-010), NCI/NIH, ZCA1 RTRB-Z (M1), March 17, 2006.
2007	Reviewer, Telethon (Italian Foundation for Research)
2007-2009	Ad-hoc Reviewer, Xenobiotics and Nutrient Disposition and Action (XNDA) Study Section, NIH
2009-2012	Member, Xenobiotics and Nutrient Disposition and Action (XNDA) Study Section, NIH
2015-now	Chair, Board of Grants, American Foundation for Pharmaceutical Education
2015	Reviewer, University of Florida College of Pharmacy Graduate Program Review
2018	Member, Virginia Commonwealth University College of Pharmacy Graduate Program review.
2019	Chair, University of Tennessee College of Pharmacy Graduate Program Review
2021	Chair, University of Washington College of Pharmacy Graduate Program Review

MEMBERSHIPS IN SCIENTIFIC, PROFESSIONAL AND SCHOLARLY ORGANIZATIONS

American Association of Pharmaceutical Scientists (AAPS)
American Society for Pharmacology and Experimental Therapeutics (ASPET)
International Society for the Study of Xenobiotics (ISSX)
Member, International Transporter Consortium (ITC)
Maryland Representative, Global Pharmaceutics Education Network (GPEN)